

2022 TECHNICAL
PROGRAMME
AND
EXHIBITION
GUIDE

SPIE. PHOTONICS EUROPE

3-7 APRIL 2022 | PALAIS DE LA MUSIQUE ET DES CONGRÈS | STRASBOURG, FRANCE



SPIE. PHOTONICS EUROPE

OPTICS AND PHOTONICS TECHNOLOGIES—FROM DIGITAL OPTICS TO QUANTUM TECHNOLOGIES TO OPTICAL IMAGING, SENSING, AND METROLOGY. ADDITIONAL TOPICS INCLUDE THZ PHOTONICS, 3D PRINTED OPTICS, PHOTONIC GLASSES, PHOTSENSITIVE MATERIALS, AND BIOPHOTONICS.

Conferences and Courses: 3-7 April 2022

Exhibition: 5-6 April 2022

Palais de la Musique et des Congrès
Strasbourg, France

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SPIE, the international society for optics and photonics, brings engineers, scientists, students, and business professionals together to advance light-based science and technology. The Society, founded in 1955, connects and engages with our global constituency through industry-leading conferences and exhibitions; publications of conference proceedings, books, and journals in the SPIE Digital Library; and career-building opportunities. Over the past five years, SPIE has contributed more than \$22 million to the international optics community through our advocacy and support, including scholarships, educational resources, travel grants, endowed gifts, and public-policy development. www.spie.org.



Safe meeting protocols



Proof of vaccination

Everyone is required to show proof of COVID-19 vaccination or a negative test.



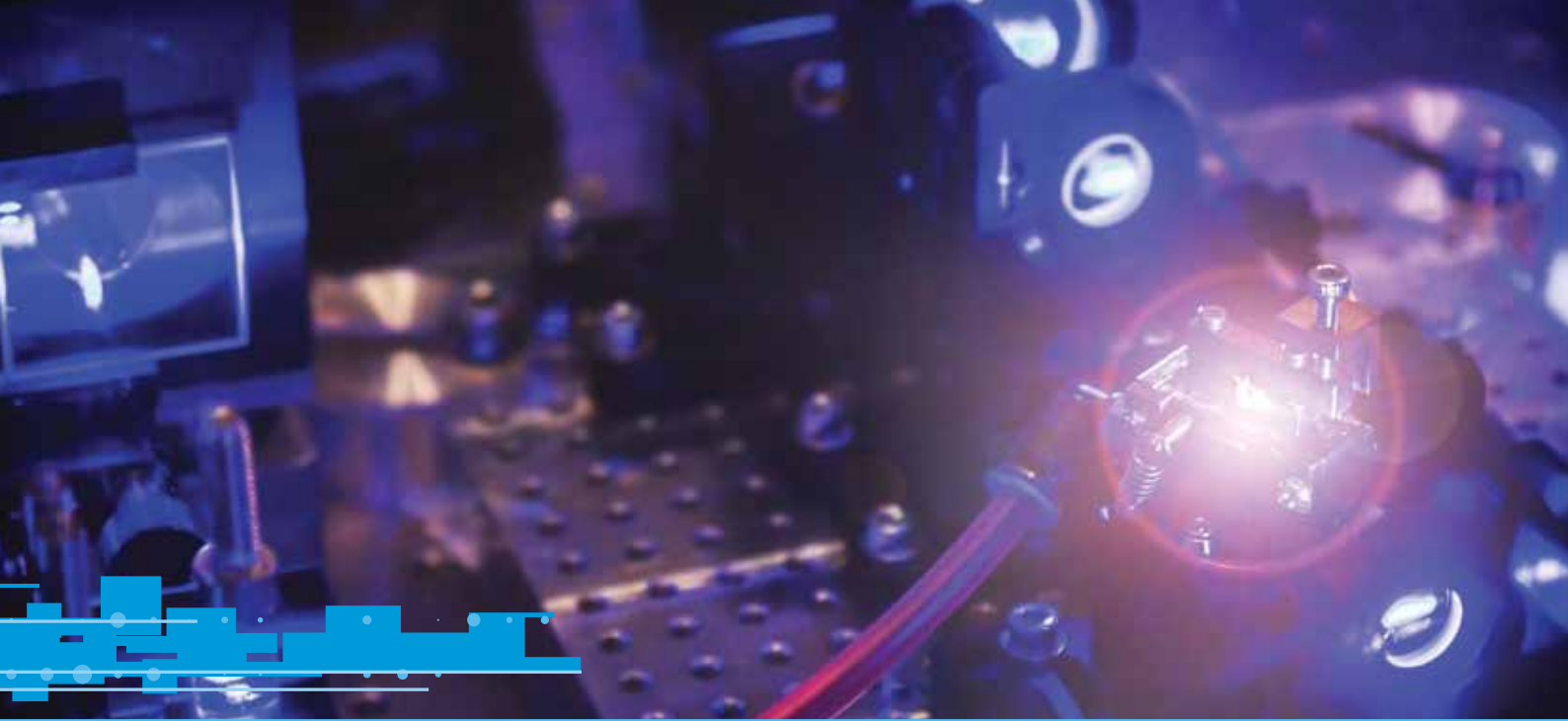
Masks recommended

Masks are recommended for all indoor spaces regardless of vaccination status.



Keep a safe distance

Respect the personal space and comfort level of others.



Thank you to our 2022 cooperating organisations



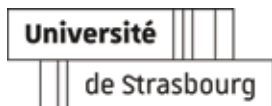
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SPIE Photonics Europe is the major cross-disciplinary event featuring research and innovation from AR/VR and biophotonics to lasers and quantum technologies.



Enjoy real conversations, hear the latest breakthroughs, and make important connections.

Strasbourg Convention & Exhibition Centre Floor Plan pages 8-9

Events Daily Schedule page 10

Hot Topics Sessions pages 12-13

Hot Topics sessions feature presentations from a wide range of leaders in the field, with focus on developing research and visions of future technologies.

Technical Events and Professional Development pages 14, 16

Connect with peers interested in the same topics and explore the latest research, hear different perspectives, and participate in engaging discussions.

Conference Schedule pages 18-19

Educational Courses page 20

Quality training and instruction from the experts.

Industry Programme pages 22, 24-25

Hear industry leaders address the markets and opportunities for photonics in Europe.

Exhibition Directory pages 26-31

Corporate Members pages 32-33

General Information pages 34-35

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Strasbourg Convention & Exhibition Centre

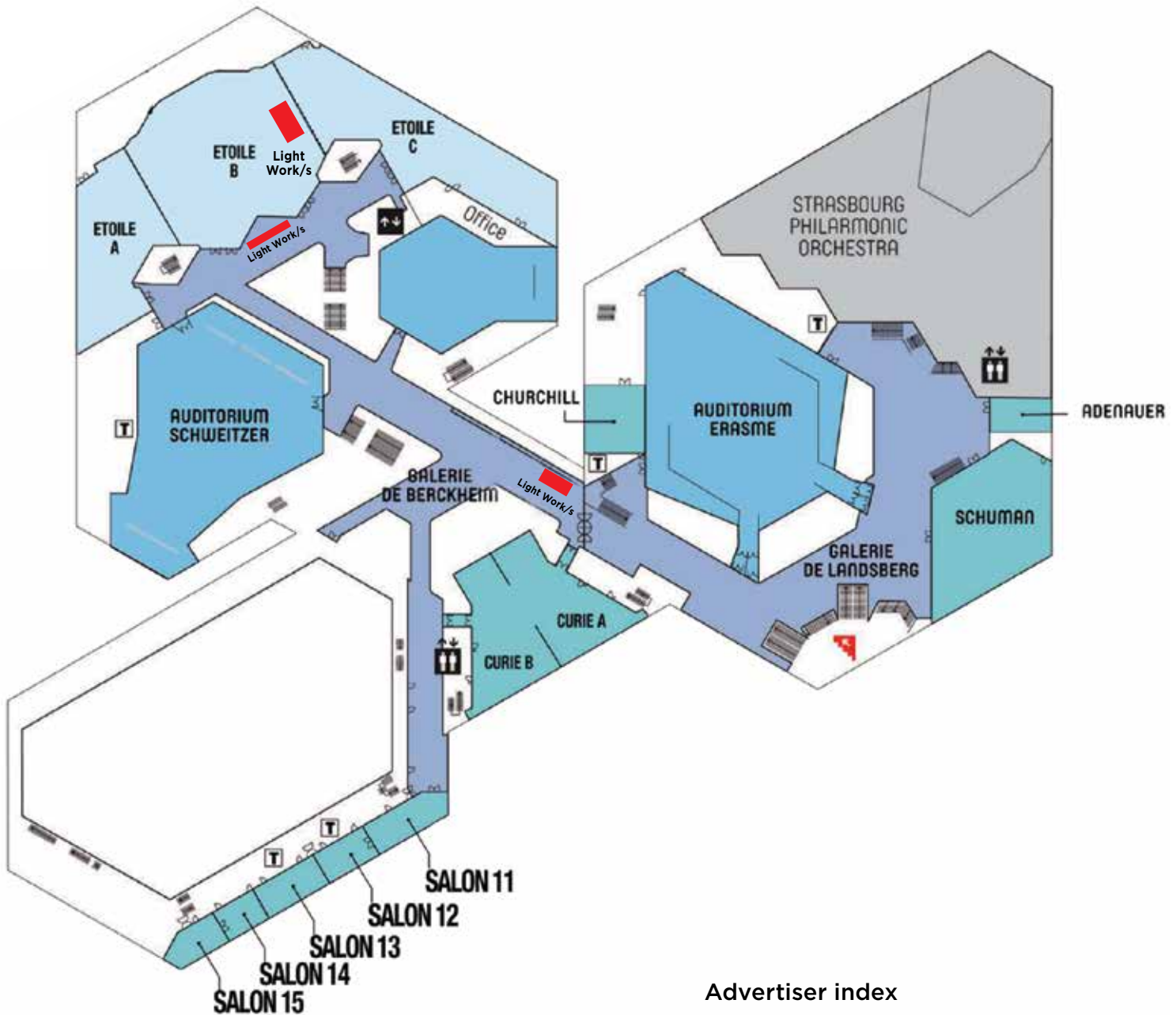
Level/Niveau 0



 = Light Work/s Display, see p. 16.

Strasbourg Convention & Exhibition Centre

Level/Niveau 1



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Event Daily Schedule

SUNDAY 3 April	MONDAY 4 April	TUESDAY 5 April	WEDNESDAY 6 April	THURSDAY 7 April
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View Technical Conference daily schedule, pages 18–19

<i>Plenary: Hot Topics I, (Montgomery, Mahadevan-Jansen, Thienpont, Riel, Punturo) 9:00–11:00, p. 12</i>	EXHIBITION: 10:00–17:00, p.26–31	EXHIBITION: 10:00–16:00, p.26–31	<i>Plenary: Hot Topics III, (Georges, Gigan, Staude) 9:00–10:35, p. 13</i>
Light Work/s Art-Science Photonics Exhibition, 10:00–17:00, p. 16	Horizon Europe: Funding Opportunities and Open Science Policies, 10:15–12:00, p. 22	Company Showcase: scia Systems GmbH, 10:15–10:45, p. 24	9th Sino-French Photonics and Optoelectronics PHOTONET International Research Network Workshop, 8:30–13:00, p. 14
Light Shaping Focus Session, 11:00–18:00, p. 14	SPIE Fellow & Senior Member Luncheon, 12:30–13:30, p. 16	Company Showcase: Phaseform GmbH, 10:45–11:15, p. 24	
Photonics Europe First-Timers Reception, 12:00–13:00, p. 16	ACTPHAST4R and PhotonHub Europe: Driving Innovation in Europe, 13:00–15:00, p. 22	Photonics Europe First-Timers Meetup, 11:00 - 12:00, p. 16	
Charting a Course in the Photonics Industry; Exploring the Universe of Career Path Opportunities, (Mohajeri, Kress, Jansen, Barton, Houbertz) 13:00–14:00, p. 14	How to Make It Abroad: Integration, Community and Chili Powder, (Torres) 14:00–15:00, p. 14	Grand-Est Initiative for Photonics, 11:30–12:30, p. 24	
What Does It Take to Be A Leader? Cultivating Your Leadership Skills in the World of Optics and Photonics, (Mahadevan-Jansen) 14:10–16:00, p. 14	Photonics Europe First-Timers Meetup, 15:00 - 16:00, p. 16	Quantum Technologies: The Road to Commercializing an Emerging Technology, 13:00–15:15, p. 25	
Welcome Reception, 19:00–21:30, p.16	Entrepreneurship in Photonics, 15:15–16:00, p. 24	Innovation Village Awards, 15:30–16:00, p. 25	
	Company Showcase: EKSPILA, 16:00–16:30, p. 24	Confidence as a Key to Success, 17:00–18:30, p. 16	
	<i>Plenary: Hot Topics II, (Berghmans, Pogue, Ferraro) 16:30–18:05, p. 12</i>	LGBTQ+ Social, 17:00–18:00, p. 16	
	SPIE Student Meetup, 17:00–18:00, p. 16	Poster Session: 17:40–19:30, p. 14	
	Poster Session: 18:10–20:00, p. 14	SPIE Members Reception, 19:30–20:30, p. 16	



See full details and updates at spie.org/pe or on the **SPIE App**



Announcing

Photonics Europe On Demand 9–15 May 2022

SPIE is making all conference presentation recordings, poster preview videos and poster PDFs, and recorded plenary and keynote presentations available for on-demand viewing for a full week.

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Hot topics sessions

Hot Topics I

4 April 2022 • 09:00–11:00 CEST
Schweitzer Auditorium, Niveau/Level 0

9:00:

Welcome



Paul Montgomery, Univ. of Strasbourg (France)
2022 Symposium Chair

City of Strasbourg Welcome

Presentation of the 2022 SPIE Mozi Award



Anita Mahadevan-Jansen, Vanderbilt Univ. (United States)
2022 SPIE President

SPIE congratulates **Thomas W. Ebbesen**, Director, The Institute for Advanced Study of the Univ. of Strasbourg (USIAS) and CNRS (France), in recognition of his phenomenal contributions to the field of nano-optics, especially the extraordinary optical transmission through sub-wavelength hole arrays.

9:10:

Introduction to Hot Topics

9:15:

Access to photonics innovation support for European researchers and companies through ACTPHAST4R and PhotonHub Europe



Hugo Thienpont, Director, Brussels Photonics; Vrije Universiteit Brussel (Belgium)

9:30:

Quantum computing: prospects and challenges



Heike Riel, IBM Fellow and Department Head of Science & Technology, IBM Research Zürich (Switzerland)

10:15:

Einstein Telescope, the pioneer project for a third-generation GW observatory in Europe: science, technologies and perspectives



Michele Punturo, Director, National Institute for Nuclear Physics (INFN) and Co-chair Einstein Telescope ISC

Hot Topics II

5 April 2022 • 16:30–18:05 CEST
Schweitzer Auditorium, Niveau/Level 0

16:30:

Welcome and opening remarks



Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:35:

Enhancing optical contrast for cancer detection and therapy guidance



Brian W. Pogue, Univ. of Wisconsin (United States) and Thayer School of Engineering, Dartmouth (United States)

17:20:

Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond



Pietro Ferraro, Institute of Applied Sciences and Intelligent Systems (ISASI-CNR) (Italy)

Hot topics sessions



Hot Topics III

7 April 2022 • 09:00–10:35 CEST
Schweitzer Auditorium, Niveau/Level 0

9:00:

Welcome and opening remarks



Thierry Georges, Oxxius (France)
2022 Symposium Chair

9:05:

A sneak peek with light into opaque materials: from imaging to computing



Sylvain Gigan, Sorbonne Univ. (France)
and Lab. Kastler-Brossel, ENS (France)

9:50:

Active metasurfaces empowered by two- dimensional materials



Isabelle Staude, Friedrich Schiller Univ.
Jena (Germany)



See full details and updates at
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Technical events

Light Shaping Focus Session

4 April 2022 • 11:00-18:00 CEST
Salon 1, Niveau/Level 0

Join world-class speakers in reviewing methods and techniques in spatial light shaping, refractive freeform surfaces, diffractive beam splitters, diffusers, and multichannel array-type components including lens arrays.

Poster Session: Tuesday

5 April 2022 • 18:10-20:00 CEST
Hall Rhin, Poster Area

Conference attendees are invited to attend the SPIE Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

POSTER SETUP: TUESDAY 10:00-17:00

Poster authors, view poster presentation guidelines and set-up instructions at <https://spie.org/pe/poster-guidelines>.

Poster Session: Wednesday

6 April 2022 • 17:40-19:30 CEST
Hall Rhin, Poster Area

Conference attendees are invited to attend the SPIE Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

POSTER SETUP: WEDNESDAY 10:00-17:00

Poster authors, view poster presentation guidelines and set-up instructions at <https://spie.org/pe/poster-guidelines>.

9th Sino-French Photonics and Optoelectronics PHOTONET International Research Network Workshop

7 April 2022 • 8:30-13:00 CEST
Salon 1, Niveau/Level 0

This workshop brings together scientists and engineers working on fundamental concepts in optoelectronics, photonics, biomedical optics, and covers methodological developments of innovative solutions for key research axes.

Professional development

Open to those with a paid registration badge. No advance registration is required. However, seating is limited and will be granted on a first-come, first-served basis.

Charting a Course in the Photonics Industry; Exploring the Universe of Career Path Opportunities

4 April 2022 • 13:00-14:00 CEST
Salon 12, Niveau/Level 1

This panel discussion will help you explore potential career pathways in the world of optics and photonics. Get expert advice on how you can translate your knowledge, abilities, and interests into meaningful work. Whether you end up in academia, industry, or start your own company, getting a clear picture of the options from experienced leaders will help you better manage your career trajectory.

Panelists include:

- **Nelufar Mohajeri**, Director, Membership and Community Development, SPIE, and our event MC
- **Bernard Kress**, Ph.D., Director, Optical Engineering-AR hardware, Google
- **E. Duco Jansen**, Ph.D., Senior Associate Dean for Graduate Education and Faculty Affairs, Professor of Biomedical Engineering and Neurosurgery, Vanderbilt University School of Engineering
- **Jennifer Kehlet Barton**, Ph.D., Director, BIO5 Institute, University of Arizona
- **Ruth Houbertz**, Ph.D., Managing Director & Owner, Thinkmade Engineering & Consulting

What Does It Take to Be A Leader? Cultivating Your Leadership Skills in the World of Optics and Photonics

4 April 2022 • 14:10-16:00 CEST
Salon 12, Niveau/Level 1



Anita Mahadevan-Jansen, Vanderbilt Univ. (United States)

2022 SPIE President

Whether you are a student, early career professional, or established in your career path, this workshop on leadership skills will enhance your professional growth aspirations. We will dive into your experience with leaders, your experience as a leader, the key characteristics of a leader, and challenges leaders face. Through this workshop, engaging conversation and reflection, you will learn how you can develop your own leadership skills no matter your career stage.

How to Make It Abroad: Integration, Community and Chili Powder

5 April 2022 • 14:00-15:00 CEST
Salon 12, Niveau/Level 1



Orlando Torres, Field Engineer for Nanoscribe GmbH

Are you considering or recently began living and working internationally? Are you overwhelmed or intimidated by navigating all the nuances of being in an unfamiliar environment? Join us for this conversation led by Orlando Torres to break down the complexities of international job opportunities. We will explore navigating work permits, networking, landing a job, housing, cultural integration, culinary customs and how to re-frame stigmas around returning home.

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Social and networking events

Light Work/s Art-Science Photonics Exhibition

4 April 2022 • 10:00-17:00 CEST
Foyers Level 0 and 1

“Light Work/s” follows in the footsteps of 2018’s “Light Culture” and will move forwards to explore the frontier between art and science in the field of light, imaging and photonics.



“Radiance”: changing colors of a sunset using lenticular printed photos.

© Mustapha Azeroual



“Rotundum Lux Vestigio”: moving phosphorescent images on the walls of a darkened room created by lasers and motorised glass plates

© Silvi Simon



Photonics Europe First-Timers Reception

4 April 2022 • 12:00-13:00 CEST
Etoile A, Niveau/Level 1

First time to SPIE Photonics Europe? Come to meet and network with fellow first-time attendees in this informal gathering. *(This event is by invitation only)*

Photonics Europe First-Timers Meetup

5 April 2022 • 15:00 - 16:00 CEST
Membership Booth (#507)

An additional networking opportunity is available on the Exhibition floor. While you’re there, hear about the benefits of an SPIE Membership and receive your Member gift.

Photonics Europe First-Timers Meetup

6 April 2022 • 11:00 - 12:00 CEST
Membership Booth (#507)

This is a third opportunity for those who are new to Photonics Europe to check in, ask questions, and network to gain the most out of the experience.



Welcome Reception

4 April 2022 • 19:00-21:30 CEST
Etoile B, Niveau/Level 1

Open to all registered attendees. Come network and socialize with your colleagues!

SPIE Fellow & Senior Member Luncheon

5 April 2022 • 12:30-13:30 CEST
Hall Rhin, Membership Networking Area

All Fellow and Senior Members of SPIE are invited to join your colleagues for an informal SPIE hosted lunch. Fellow and Senior Members planning to attend are asked to RSVP to Brent Johnson (brentj@spie.org).

SPIE Student Meetup

5 April 2022 • 17:00-18:00 CEST
Hall Rhin, Membership Booth

Any students attending Photonics Europe are invited to join this event for an informal meetup with other student attendees, accompanied by drinks and refreshments.

Confidence as a Key to Success

6 April 2022 • 17:00-18:30 CEST
Etoile B, Niveau/Level 1

Join us for an early evening of networking and inspiration.



LGBTQ+ Social

6 April 2022 • 17:00-18:00 CEST
Hilton Hotel

Come join us and socialize and network with other LGBTQ+ scientists and allies in the optics and photonics community.



SPIE Members Reception

6 April 2022 • 19:30-20:30 CEST | Wenger Valentin Room at the CCI Alsace, Eurométropole, 10 place Gutenberg, 67081 Strasbourg.

SPIE Members are invited to an after-dinner reception. Enjoy beer, wine, coffee and desserts.



Photonics
France

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LA PHOTONIQUE

Photonics France is the french federation of photonics, we have the aim to join all the actors of photonics in France : companies, laboratories, universities, schools and associations.

Join us at Spie Photonics Europe

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Looking forward to see you !

What do we do ?

- Represent, defend, coordinate and help to develop the photonic sector
- Promote the sector in France and international

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Conferences

Research and innovation from AR/VR and biophotonics to lasers and quantum technologies

2022 Symposium Chairs



Francis Berghmans
Vrije Universiteit Brussel (Belgium)



Thierry Georges
Oxxius (France)



Paul Montgomery
Univ. of Strasbourg (France)

2022 Programme Track Chairs

Nano- and Quantum Sciences

David L. Andrews, Univ. of East Anglia (United Kingdom)

Optical Imaging and Sensing

Francis Berghmans, Vrije Univ. Brussel (Belgium)

Lasers and Nonlinear Optics

Kyriacos Kalli, Cyprus Univ. of Technology (Cyprus)

Biophotonics

Jürgen Popp, Leibniz-Institut für Photonische Technologien e.V. (Germany)

Sylvain Gioux, Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France)

Valery V. Tuchin, Saratov State Univ. (Russian Federation)

Applications of Photonic Technology

Laurent Vivien, Ctr. de Nanosciences et de Nanotechnologies (France)

John T. Sheridan, Univ. College Dublin (Ireland)

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CONFERENCE SCHEDULE

SUNDAY 3 April	MONDAY 4 April	TUESDAY 5 April	WEDNESDAY 6 April	THURSDAY 7 April
Nano- and Quantum Sciences				
Conf. 12130 Metamaterials XIII (<i>MacDonald, Staude, Zayats</i>); Location: Schuman, Niveau/Level 0				
Conf. 12131 Nanophotonics IX (<i>Andrews, Bain, Nunzi</i>); Location: Curie A, Niveau/Level 1				
Conf. 12133 Quantum Technologies 2022 (<i>Diamanti, Ducci, Treps, Whitlock</i>); Location: Churchill, Niveau/Level 1			Conf. 12132 Advances in Ultrafast Condensed Phase Physics III (<i>Haacke, Yakovlev</i>); Location: Salon 11, Niveau/Level 1	
Conf. 12134 Terahertz Photonics II (<i>Jarrahi, Preu, Turchinovich</i>); Location: Salon 1, Niveau/Level 0				

CONFERENCE SCHEDULE

SUNDAY 3 April	MONDAY 4 April	TUESDAY 5 April	WEDNESDAY 6 April	THURSDAY 7 April
Optical Imaging and Sensing				
	Conf. 12135 3D Printed Optics and Additive Photonic Manufacturing III (<i>Herkommer, von Freymann, Flury</i>); Location: Salon 3, Niveau/Level 0			
Conf. 12136 Unconventional Optical Imaging III (<i>Georges, Popescu, Verrier</i>); Location: Currie B, Niveau/Level 1				
		Conf. 12137 Optics and Photonics for Advanced Dimensional Metrology II (<i>de Groot, Leach, Picart</i>); Location: Auditorium Cassin, Niveau/Level 0		
			Conf. 12138 Optics, Photonics and Digital Technologies for Imaging Applications VII (<i>Schelkens, Kozacki</i>); Location: Salon 1, Niveau/Level 0	
Conf. 12139 Optical Sensing and Detection VII (<i>Berghmans, Zergioti</i>); Location: Salon 2, Niveau/Level 0				
Lasers and Nonlinear Optics				
			Conf. 12140 Micro-Structured and Specialty Optical Fibres VII (<i>Kalli, Peterka, Bunge</i>); Location: Salon 12, Niveau/Level 0	
		Conf. 12141 Semiconductor Lasers and Laser Dynamics X (<i>Sciamanna, Panajotov, Höfling</i>); Location: Etoile A, Niveau/Level 1		
Conf. 12142 Fiber Lasers and Glass Photonics: Materials through Applications III (<i>Ferrari, Seddon, Taccheo</i>); Location: Salon 7, Niveau/Level 0				
	Conf. 12143 Nonlinear Optics and its Applications 2022 (<i>Broderick, Dudley, Peacock</i>); Location: Salon 9, Niveau/Level 0			
Biophotonics				
	Conf. 12144 Biomedical Spectroscopy, Microscopy, and Imaging II (<i>Popp, Gergely, Pavone, Cognet</i>); Location: Salon 6, Niveau/Level 0			
	Conf. 12146 Clinical Biophotonics II (<i>Elson, Gioux, Pogue</i>); Location: Salon 10, Niveau/Level 0		Conf. 12145 Biophotonics in Point-of-Care II (<i>Canva, Giannetti, Altug, Moreau</i>); Location: Salon 10, Niveau/Level 0	
		Conf. 12147 Tissue Optics and Photonics II (<i>Tuchin, Blondel, Zalevsky</i>); Location: Salon 5, Niveau/Level 0		
Applications of Photonics Technology				
	Conf. 12148 Integrated Photonics Platforms II (<i>Baets, O'Brien, Vivien</i>); Location: Salon 4, Niveau/Level 0			
	Conf. 12149 Organic Electronics and Photonics: Fundamentals and Devices III (<i>Reineke, Vandewal, Maes</i>); Location: Etoile C, Niveau/Level 1			
	Conf. 12150 Photonics for Solar Energy Systems IX (<i>Sprafke, Goldschmidt, Mazzarella</i>); Location: Salon 11, Niveau/Level 1			
		Conf. 12151 Photosensitive Materials and their Applications II (<i>McLeod, Villalobos, Tomita, Sheridan</i>); Location: Salon 3, Niveau/Level 0		
Emerging Topics				
Conf. WS202 Light Shaping Focus Session III (<i>Wyrowski, Meuret, Sheridan</i>); Location: Salon 5, Niveau/Level 0	Conf. 12152 Mesophotonics: Physics and Systems at Mesoscale (<i>Lecler, Astratov, Minin</i>); Location: Auditorium Cassin, Niveau/Level 0			Conf. WS203 9th annual Sino-French "Photonics and Optoelectronics" PHOTONET International Research Network Workshop (<i>Blondel, Galak, Peucheret, Bai, Gao, Zhang</i>); Location: Salon 4, Niveau/Level 0


Courses

Take advantage of this great opportunity to meet face-to-face with an expert instructor and a group of people with similar goals and challenges.

Price key: SPIE Member / Non-Member / Student Member

TUESDAY 5 April

SPIE PHOTONICS EUROPE

SC1217 Design, Modeling and Fabrication Techniques for Micro-Optics: Applications to Display, Imaging, Sensing and Metrology (<i>Kress</i>) 08:30-12:30, \$435, €380 / \$505, €440 / \$278, €240	
SC1218 Optical Technologies and Architectures for Virtual Reality (VR), Augmented Reality (AR) and Mixed Reality (MR) Head-Mounted Displays (HMDs) (<i>Kress</i>) 13:30-17:30, \$435, €380 / \$505, €440 / \$278, €240	

SPIE reserves the right to cancel a course due to insufficient advance registration.

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Larry Donalds

Specific Areas of Expertise

- Preform Fabrication by MCVD
- Fiber Optic Draw Towers



Rick Tumminelli

Specific Areas of Expertise

- Rare Earth Doped Preform Manufacturing
- Fiber Measurements

PROCESS ASSISTANCE CONSULTING

Larry and Rick are available to help every step of the way, including post installation and general troubleshooting.

Contact our Optical Fiber Process Development and Manufacturing experts at FiberManufacturing@focenter.com

focenter.com

INDUSTRY EVENTS

Horizon Europe: Funding Opportunities and Open Science Policies

5 April 2022 • 10:15–12:00 CEST
Hall Rhin, Industry Stage

Join European programme research and policy experts to learn about the latest in funding and open science policies as part of Horizon Europe.

10:15:

Welcome and Opening Remarks

Session Chair:

Anna G. Mignani

European Research Council Executive Agency (ERCEA) and National Research Council of Italy (CNR)

10:20:

ERC – Funding opportunities for creative minds from Europe and anywhere in the world



Anna G. Mignani

European Research Council Executive Agency (ERCEA) and National Research Council of Italy (CNR)

10:45:

Open science and the changes in the new framework programme Horizon Europe



Anna Pelagotti

European Research Council Executive Agency (ERCEA)

11:10:

European Innovation Council accelerator: backing visionary entrepreneurs



Andreas Lymberis

Head of Sector
European Innovation Council and SMEs Executive Agency

11:35:

European Innovation Council accelerator: backing visionary entrepreneurs



Audrey Arfi

European Commission, European Research Executive Agency, Marie Skłodowska-Curie Actions-Doctoral Networks

ACTPHAST4R and PhotonHub Europe: Driving Innovation in Europe

5 April 2022 • 13:00–15:00 CEST
Hall Rhin, Industry Stage

Join us to hear about two exciting research initiatives meant to enhance the development of photonics platforms and accelerate technology towards commercialization.

13:00:

One-stop-shop access for European researchers to photonics expertise, know-how and mature technology platforms of Europe's leading competence centres: ACTPHAST4R



Nathalie Debaes

Vrije Universiteit Brussel (Belgium)

13:30:

Breakout Session and Open Discussion for ACTPHAST4R

Moderator:

Nathalie Debaes

Vrije Universiteit Brussel (Belgium)

14:00:

PhotonHub Europe: Photonics innovation Hub for European SME's



Hugo Thienpont

PhotonHub Europe, Vrije Universiteit Brussel (Belgium)

14:30:

Breakout Session and Open Discussion for PhotonHub Europe

Moderator:

Hugo Thienpont

PhotonHub Europe, Vrije Universiteit Brussel (Belgium)

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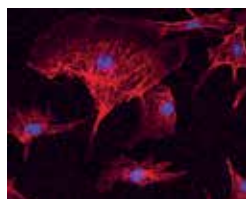
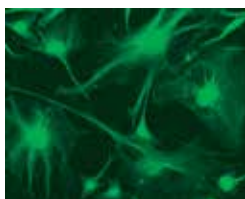
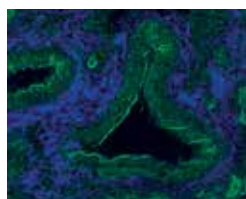
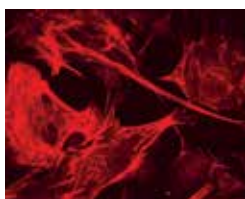
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INDUSTRY EVENTS



Entrepreneurship in Photonics

5 April 2022 • 15:15–16:00 CEST
Hall Rhin, Industry Stage

Learn from a variety of European accelerators and partnership programs what support is available to early stage entrepreneurs in photonics.

Panelists:



Andreas Lymberis

Head of Sector
European Innovation Council (EIC)
Accelerator (Belgium)



Christopher Trummer

Managing Director
TUM Venture Lab Quantum (Germany)



Ronald Bartel

Partner
Gimv, Smart Industries platform (Germany)

Company Showcase: EKSPLA

5 April 2022 • 16:00–16:30 CEST
Hall Rhin, Industry Stage

Join us to hear from EKSPLA about tunable lasers for photoacoustic microscopy.

EKSPLA tunable high repetition rate OPO systems and their application examples for multimodal photoacoustic microscopy



Giedrius Kudaba

Nanosecond Product Line Manager
EKSPLA (Lithuania)

Company Showcase: scia Systems GmbH

6 April 2022 • 10:15–10:45 CEST
Hall Rhin, Industry Stage

Come and hear scia Systems speak about the use of reactive ion etching in the manufacture of optics for AR applications.

Etching of slanted relief gratings for AR applications



Manuela Lötsch

Technical Sales Manager
scia Systems (Germany)

Company Showcase: Phaseform GmbH

6 April 2022 • 10:45–11:15 CEST
Hall Rhin, Industry Stage

Join us to hear from Phaseform, an innovator in adaptive optics technology.

Deformable phase plates: enabling refractive adaptive optics in microscopy



Kaustubh Banerjee

COO and Co-Founder
Phaseform (Germany)

Grand-Est Initiative for Photonics

6 April 2022 • 11:30–12:30 CEST
Hall Rhin, Industry Stage

Come learn about the new initiative in the Grand-Est region driving towards the establishment of a regional center of excellence in photonics.

Presentation of the Grand-Est Initiative for an Institute of Photonics



Marc Sciamanna

Photonics Chair
CentraleSupélec, Metz (France)

Quantum Technologies: The Road to Commercializing an Emerging Technology

6 April 2022 • 13:00–15:15 CEST
Hall Rhin, Industry Stage

Join us for an exciting session featuring leading players driving the commercialization of quantum technologies. Hear about the challenges in moving quantum systems into the marketplace and learn about the quantum landscape in Europe.

13:00:

Welcome and Opening Remarks

Session Chair:



Najwa Sidqi

Knowledge Transfer Manager in Quantum Technologies
Innovate UK Knowledge Transfer Network (United Kingdom)

13:05:

Plug-and-play PICs solutions for low-loss quantum information processing



Caterina Taballione

Senior Quantum Engineer
QuiX Quantum BV (Netherlands)

13:30:

Compact quantum random number generator



Ramy Shelbaya

CEO and co-founder
Quantum Dice (United Kingdom)

13:55:

Quantum light sources for future networking solutions



Scott Dufferwiel

CTO and co-founder
Aegiq (United Kingdom)



14:20:

Quantum memories for scalable quantum computing



Richard Murray

CEO and co-founder
Orca Computing (United Kingdom)

14:45:

Glimpse on the EU quantum commercial landscape



Najwa Sidqi

Knowledge Transfer Manager in Quantum Technologies
Innovate UK Knowledge Transfer Network (United Kingdom)

Innovation Village Awards

6 April 2022 • 15:30–16:00 CEST
Hall Rhin, Industry Stage

The Innovation Village competition aims to find the best innovation by an individual researcher and the best innovation by a multilateral project, organization, or company. Join us to celebrate the 2022 winners!



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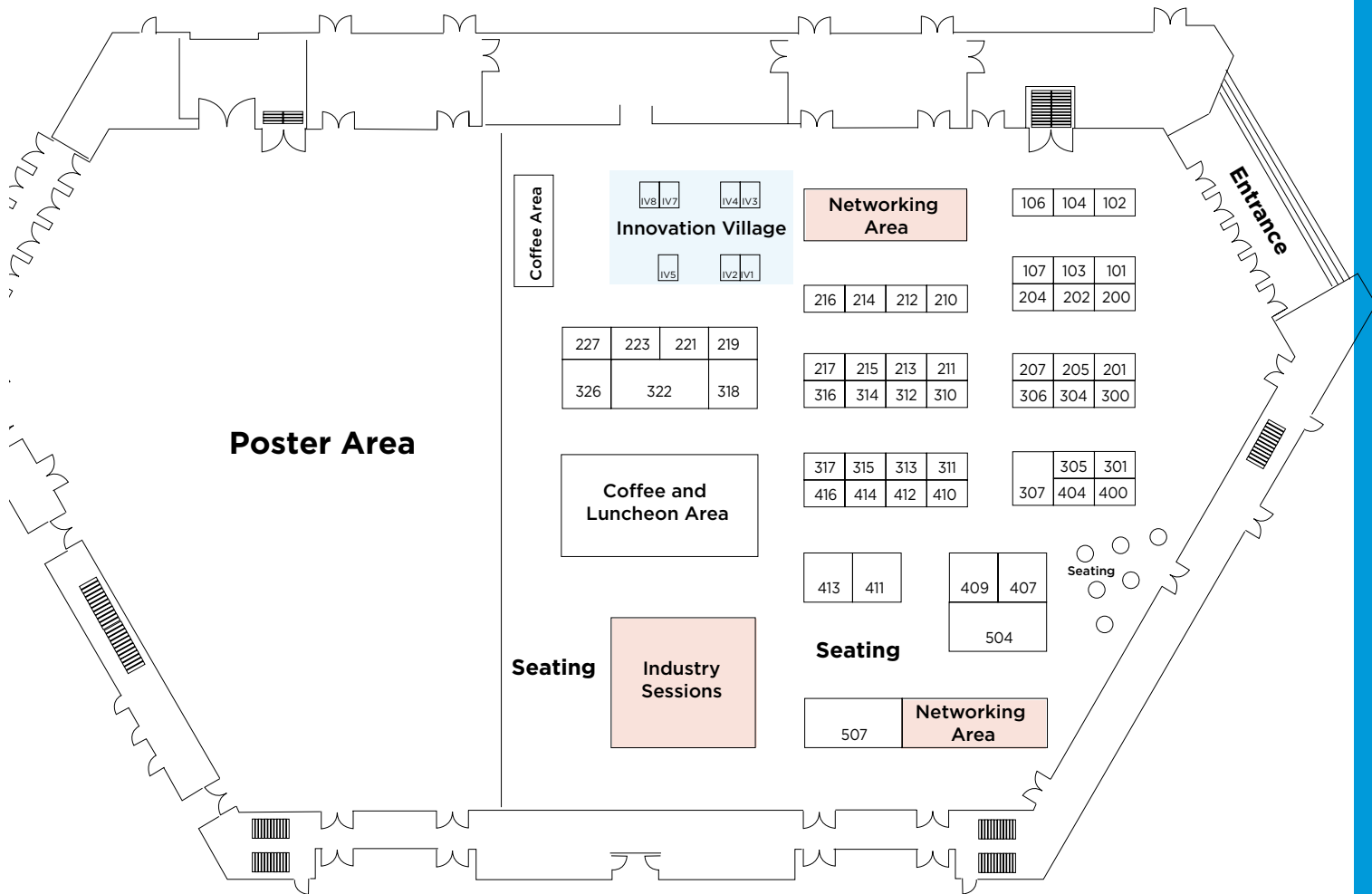
Tuesday 5 April · 10.00-17.00
Wednesday 6 April · 10.00-16.00

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- Cameras and CCD components
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- Optical components, detectors, fibres, materials, substrates
- Displays, communications
- Optical test and measurement equipment
- Electronic imaging components, equipment, and systems
- Finished optics, filters and coatings, optical fabrication equipment
- Electronics and signal analysis equipment
- Optics manufacturing
- Software
- Photonics equipment manufacturing
- Fibre optic components, equipment, and systems
- Resist technology and processing
- High-speed imaging and sensing
- Optical test and measurement equipment
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- Finished optics, filters and coatings, optical fabrication equipment
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- Software for simulation and design
- Photonics equipment manufacturing

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Exhibition floor

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Competitors share their latest findings to photonics visionaries for a chance to win

Winners announced Wednesday 6 April 2022 at the Innovation Village and will be followed by a reception

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General Information

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Palais de la Musique et des Congrès
Main Foyer

Sunday 3 April · 7:30–18:00

Monday 4 April · 7:30–17:00

Tuesday 5 April · 8:00–17:00

Wednesday 6 April · 8:00–17:00

Thursday 7 April · 8:00–16:00

SPIE Cashier

Location: Main Foyer–Open during registration hours

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If you are planning to register onsite, your credit card payment will be processed during registration. If you wish to pay with cash or check, register at the “Need to Register” stations; you will be directed to the Cashier once you have completed registration except for final payment. If you have already registered and wish to add a course, workshop or special event, you may do so at the “Need to Register” stations.

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Location: Salon 8–Open during Registration hours

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Monday and Thursday

Location: Galerie Schweitzer

Tuesday and Wednesday

Location: Exhibition Hall, Hall Rhin



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Monday and Thursday

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Tuesday and Wednesday

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Event venue

Palais de la Musique et des Congrès

Place de Bordeaux,
67082 Strasbourg, France

Transportation

The convention centre is situated in the heart of the European district, accessible via two direct tram lines from the city centre. Only minutes from Strasbourg's historic centre, the TGV rail station, and less than 5 minutes from 3 tram stations.

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CONFERENCE 12130

Monday–Thursday 4–7 April 2022 • Proceedings of SPIE Vol. 12130

Metamaterials XIII

Conference Chairs: Kevin F. MacDonald, Univ. of Southampton (United Kingdom); Isabelle Staude, Friedrich-Schiller-Univ. Jena (Germany); Anatoly V. Zayats, King's College London (United Kingdom)

Program Committee: Hatice Altug, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Sergey I. Bozhevolnyi, Univ. of Southern Denmark (Denmark); Andrea Di Falco, Univ. of St. Andrews (United Kingdom); Tal Ellenbogen, Tel Aviv Univ. (Israel); Jonathan A. Fan, Stanford Univ. (USA); Rachel Grange, ETH Zurich (Switzerland); Sébastien Guenneau, CNRS-Imperial Unite Mixte Internationale (United Kingdom); Maria Kafesaki, Foundation for Research and Technology-Hellas (Greece); Arseniy I. Kuznetsov, A*STAR - Institute of Materials Research and Engineering (Singapore); Tao Li, Nanjing Univ. (China); Stefan Linden, Rheinische Friedrich-Wilhelms-Univ. Bonn (Germany); Natalia M. Litchinitser, Duke Univ. (USA); Ferran Martín, Univ. Autònoma de Barcelona (Spain); Alejandro Martínez, Univ. Politècnica de València (Spain); Martin W. McCall, Imperial College London (United Kingdom); Dragomir N. Neshev, The Australian National Univ. (Australia); Dorota A. Pawlak, Institute of Electronic Materials Technology (Poland); Carsten Rockstuhl, Karlsruher Institut für Technologie (Germany); Mario Silveirinha, Univ. Técnica de Lisboa (Portugal); Philippe Tassin, Chalmers Univ. of Technology (Sweden); Sergei Tretyakov, Aalto Univ. School of Science and Technology (Finland); Din Ping Tsai, Research Ctr. for Applied Sciences - Academia Sinica (Taiwan); Jason G. Valentine, Vanderbilt Univ. (USA)

MONDAY 4 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 11:00

Hot Topics I

Paul Montgomery, Univ. of Strasbourg (France),
2022 Symposium Chair

9:00: **Welcome and Introduction; City of Strasbourg Welcome; Presentation of the 2022 SPIE Mozi Award to Thomas W. Ebbesen**, The Institute for Advanced Study of the Univ. of Strasbourg (USIAS) and CNRS (France), Anita Mahadevan-Jansen, Vanderbilt Univ. (USA), 2022 SPIE President

9:10: **Introduction to Hot Topics**, Paul Montgomery, Univ. of Strasbourg (France), 2022 Symposium Chair

9:15: **Access to photonics innovation support for European researchers and companies through ACTPHAST4R and PhotonHub Europe (Plenary)**, Hugo Thienpont, Vrije Univ. Brussel (Belgium) [12148-500]

9:30: **Quantum computing: prospects and challenges (Plenary)**, Heike Riel, IBM Research - Zürich (Switzerland) [12133-500]

10:15: **Einstein Telescope, the pioneer project for a third-generation GW observatory in Europe: science, technologies and perspectives (Plenary)**, Michele Punturo, Istituto Nazionale di Fisica Nucleare (Italy) [12139-500]

Coffee Break Mon 11:00 to 11:25

SESSION 1

LOCATION: SCHUMAN, NIVEAU/LEVEL 1 MON 11:35 TO 12:50

Analytical and Numerical Modelling

Session Chair: Natalia M. Litchinitser, Duke Univ. (USA)

11:35: **A comprehensive multipolar theory for metasurfaces and metamaterials (Invited Paper)**, Carsten Rockstuhl, Aso Rahimzadegan, Theodosios D. Karamanos, Rasoul Alaei, Aristeidis G. Lamprianidis, Dominik Beutel, Karlsruher Institut für Technologie (Germany); Robert W. Boyd, Univ. of Ottawa (Canada); Christof Holzer, Marjan Krstic, Benedikt Zerulla, Ivan Fernandez-Corbaton, Karlsruher Institut für Technologie (Germany) .. [12130-1]

12:05: **Multiple scattering analysis of resonant modes in quasi-periodic crystals**, Marc Martí Sabaté, Daniel Torrent Martí, Univ. Jaume I (Spain) [12130-2]

12:20: **Design of efficient modally phase-matched SHG waveguides with automatic differentiation**, Ryan Hamerly, NTT Research, Inc. (USA); Alexander Sludds, Saumil Bandyopadhyay, Massachusetts Institute of Technology (USA); David Heydari, Stanford Univ. (USA); Mircea Catuneanu, TU Dresden (Germany); Dirk R. Englund, Massachusetts Institute of Technology (USA); Kambiz Jamshidi, TU Dresden (Germany) [12130-3]

12:35: **Removing grazing incidence reflection with half-bound states and non-Hermitian systems**, Dean A. Patient, Simon A. R. Horsley, Univ. of Exeter (United Kingdom) [12130-4]

Lunch Break Mon 12:50 to 14:05

SESSION 2

LOCATION: SCHUMAN, NIVEAU/LEVEL 1 MON 14:05 TO 15:20

Tunable, Switchable, Reconfigurable, and Programmable Metamaterials I

Session Chair: Anatoly V. Zayats, King's College London (United Kingdom)

14:05: **Flat optics for dynamic wavefront manipulation (Keynote Presentation)**, Mark L. Brongersma, Geballe Lab. for Advanced Materials (GLAM) (USA) [12130-5]

14:50: **Dynamic piezoelectric MEMS-based optical meta-grating with reconfigurable diffraction directions**, Chao Meng, Univ. of Southern Denmark (Denmark); Paul C. V. Thrane, Univ. of Southern Denmark (Denmark) and SINTEF (Norway); Fei Ding, Univ. of Southern Denmark (Denmark); Sergey I. Bozhevolnyi, Univ. of Southern Denmark (Denmark); Christopher A. Dirdal, SINTEF (Norway) [12130-6]

15:05: **Dynamic MEMS-based metasurfaces in the Fabry-Perot regime**, Paul C. Thrane, SINTEF (Norway); Chao Meng, Fei Ding, Univ. of Southern Denmark (Denmark); Christopher A. Dirdal, Jo Gjessing, SINTEF (Norway); Sergey I. Bozhevolnyi, Univ. of Southern Denmark (Denmark) [12130-8]

Coffee Break Mon 15:20 to 15:50

SESSION 3

LOCATION: SCHUMAN, NIVEAU/LEVEL 1 MON 15:50 TO 17:50

Nonlinear Materials

Session Chair: Ivan Fernandez-Corbaton, Karlsruher Institut für Technologie (Germany)

15:50: **Optics on the nanoscale: conquering absorption with nonlinear optics (Invited Paper)**, Natalia M. Litchinitser, Jiannan Gao, Duke Univ. (USA); Maria A. Vincenti, Univ. degli Studi di Brescia (Italy); Jesse Frantz, U.S. Naval Research Lab. (USA); Anthony Clabeau, Univ. Research Foundation (USA); Xingdu Qiao, Liang Feng, Univ. of Pennsylvania (USA); Michael Scalora, U.S. Army Combat Capabilities Development Command (USA) [12130-9]

16:20: **Second-harmonic generation of visible light by a monolithic lithium niobate metasurface**, Attilio Zilli, Politecnico di Milano (Italy); Luca Carletti, Univ. degli Studi di Brescia (Italy); Fabio Moia, Andrea Toma, Istituto Italiano di Tecnologia (Italy); Marco Finazzi, Politecnico di Milano (Italy); Costantino De Angelis, Univ. degli Studi di Brescia (Italy) and Istituto Nazionale di Ottica (Italy); Dragomir N. Neshev, The Australian National Univ. (Australia); Michele Celebrano, Politecnico di Milano (Italy) [12130-10]

16:35: **Large optical nonlinearity of dielectric metasurface-assisted Mie resonance strongly coupled to an epsilon-near-zero mode**, Kuidong Wang, Univ. de Strasbourg (France); Ai-Yin Liu, Hui-Hsin Hsiao, National Taiwan Normal Univ. (Taiwan); Cyriaque Genet, Thomas Ebbesen, Univ. de Strasbourg (France) [12130-11]

16:50: **Enhancing the capabilities of THz metasurface emitters (Invited Paper)**, Tal Ellenbogen, Tel Aviv Univ. (Israel) [12130-12]

17:20: **Non-hermitian 2D materials based on the nonlinear Hall effect (Invited Paper)**, Tiago Morgado, Instituto de Telecomunicações (Portugal); Tatiana G. Rappoport, Instituto de Telecomunicações (Portugal) and Univ. Federal do Rio de Janeiro (Brazil); Sylvain Lannebère, Instituto de Telecomunicações (Portugal); Mário G. Silveirinha, Instituto de Telecomunicações (Portugal) and Instituto Superior Técnico (Portugal) [12130-13]

TUESDAY 5 APRIL

SESSION 4

LOCATION: SCHUMAN, NIVEAU/LEVEL 1 TUE 8:30 TO 10:15

Chiral, Bianisotropic, and Hyperbolic Metamaterials

Session Chair: **Sergey I. Bozhevolnyi**, Univ. of Southern Denmark (Denmark)

8:30: **A new kind of Bragg phenomenon accessed through metadesign** (*Invited Paper*), Martin W. McCall, Imperial College London (United Kingdom) . . . [12130-14]

9:00: **Chirality enhancement in substrate supported nanostructures**, Krzysztof M. Czajkowski, Tomasz J. Antosiewicz, Univ. of Warsaw (Poland) . . . [12130-15]

9:15: **Tunable chiro-optical effects in self-assembled metasurfaces: experiments, simulations and perspectives**, Emilija Petronijevic, Alessandro Belardini, Grigore Leahu, Sapienza Univ. di Roma (Italy); Tiziana Cesca, Carlo Scian, Giovanni Mattei, Univ. degli Studi di Padova (Italy); Concita Sibilia, Sapienza Univ. di Roma (Italy) [12130-16]

9:30: **Nanophotonic chirality transfer to dielectric Mie resonators**, Ershad Mohammadi, Raziman Thottungal Valapu, Alberto G. Curto, Technische Univ. Eindhoven (Netherlands) [12130-17]

9:45: **Molecular chirality sensing employing active and parity-time symmetric media** (*Invited Paper*), Maria Kafesaki, Ioannis Katsantonis, Sotiris Droulias, Foundation for Research and Technology-Hellas (Greece) . [12130-18]

Coffee Break. Tue 10:15 to 10:45

SESSION 5

LOCATION: SCHUMAN, NIVEAU/LEVEL 1 TUE 10:45 TO 12:30

Subwavelength Concentration of Light and Imaging

Session Chair: **Isabelle Staude**, Friedrich-Schiller-Univ. Jena (Germany)

10:45: **Picophotonics: visible invisible** (*Keynote Presentation*), Giorgio Adamo, Eng Aik Chan, Nanyang Technological Univ. (Singapore); Jinxiang Li, Tongjun Liu, Sergei Kurdioumov, Kevin F. MacDonald, Jun-Yu Ou, Nikitas Papisimakis, Eric Plum, Tanchao Pu, Univ. of Southampton (United Kingdom); Carolina Rendón-Barraza, Nanyang Technological Univ. (Singapore); Yu Wang, Univ. of Southampton (United Kingdom); Nikolay I. Zheludev, Univ. of Southampton (United Kingdom) and Nanyang Technological Univ. (Singapore) . [12130-19]

11:30: **Control and characterization of disordered plasmonic metasurfaces by far-field wavefront shaping**, Gauthier Roubaud, Institut Langevin Ondes et Images (France); Sylvain Gigan, Lab. Kastler Brossel (France); Samuel Grébillon, Sébastien Bidault, Institut Langevin Ondes et Images (France) [12130-20]

11:45: **Tunable directional emission from electrically-driven nanostrip tunnel junctions**, Saurabh Kishen, Jinal Tapar, Naresh K. Emani, Indian Institute of Technology Hyderabad (India) [12130-21]

12:00: **Generating broadband colour 3D images from planar metasurfaces** (*Invited Paper*), Diane J. Roth, King's College London (United Kingdom); Mingke Jin, Southern Univ. of Science and Technology of China (China); Alexander E. Minovich, King's College London (United Kingdom) and Friedrich-Schiller-Univ. Jena (Germany); Song Liu, Guixin Li, Southern Univ. of Science and Technology of China (China); Anatoly V. Zayats, King's College London (United Kingdom) . . [12130-22]

Lunch/Exhibition Break Tue 12:30 to 14:00

SESSION 6

LOCATION: SCHUMAN, NIVEAU/LEVEL 1 TUE 14:00 TO 15:30

Tunable, Switchable, Reconfigurable, and Programmable Metamaterials II

Session Chair: **Tal Ellenbogen**, Tel Aviv Univ. (Israel)

14:00: **Dynamic plasmon-empowered electrically controlled metasurfaces** (*Invited Paper*), Sergey I. Bozhevolnyi, Univ. of Southern Denmark (Denmark). . . [12130-23]

14:30: **Functional metasurface quarter-wave plates for simultaneous polarization conversion and beam steering**, Yadong Deng, Univ. of Southern Denmark (Denmark); Cuo Wu, Univ. of Southern Denmark (Denmark) and Univ. of Electronic Science and Technology of China (China); Chao Meng, Sergey I. Bozhevolnyi, Fei Ding, Univ. of Southern Denmark (Denmark) [12130-25]

14:45: **Reconfiguring magnetic resonances with the plasmonic phase-change material In_3SbTe_2** , Lukas Conrads, Andreas Hessler, Konstantin Wirth, Matthias Wuttig, Thomas Taubner, RWTH Aachen Univ. (Germany) [12130-27]

15:00: **Electrochemically-controlled metasurfaces with high-contrast switching at visible frequencies** (*Invited Paper*), Laura N. Liu, Univ. Stuttgart (Germany) [12130-28]

Coffee Break. Tue 15:30 to 16:30

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:30: **Welcome and opening remarks**

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) . [12144-500]

WEDNESDAY 6 APRIL

SESSION 7

LOCATION: SCHUMAN, NIVEAU/LEVEL 1 WED 9:00 TO 10:15

Metamaterials with Extreme and Near-Zero Parameters

Session Chair: **Jason G. Valentine**, Vanderbilt Univ. (USA)

9:00: **Bound states in the continuum and supercavity modes in dielectric structures** (*Invited Paper*), Mikhail V. Rybin, ITMO Univ. (Russian Federation) . . [12130-29]

9:30: **Interaction of complex beams with anisotropic metamaterials**, Vittorio Aita, Diane J. Roth, Anastasiia Zaleska, Alexey V. Krasavin, Luke H. Nicholls, King's College London (United Kingdom); Nikita A. Shevchenko, Univ. of Cambridge (United Kingdom); Francisco J. Rodríguez-Fortuño, Anatoly V. Zayats, King's College London (United Kingdom) [12130-31]

9:45: **Advanced applications of metasurfaces** (*Invited Paper*), Jacob Engelberg, Eitan Edrei, Aharon Weiss, Christian Frydendahl, Zhengli Han, Sita Rama Krish Indukuri, Noa Mazurski, Uriel Levy, The Hebrew Univ. of Jerusalem (Israel) [12130-33]

Coffee Break. Wed 10:15 to 10:45

SESSION 8

LOCATION: SCHUMAN, NIVEAU/LEVEL 1 WED 10:45 TO 12:30

Machine Learning in Metamaterial Design and Application

Session Chair: **Kevin F. MacDonald**, Univ. of Southampton (United Kingdom)

10:45: **Advancing photonic design with machine learning** (*Keynote Presentation*), Alexandra Boltasseva, Purdue Univ. (USA) [12130-34]

11:30: **Improved solutions to optical inverse problems by neural networks and prior assumptions**, Taavi Repän, Yannick Augenstein, Carsten Rockstuhl, Karlsruher Institut für Technologie (Germany) [12130-35]

12:00: **A route to experimental artificial intelligence metasurfaces: from components to integrated systems** (*Invited Paper*), Andrea Fratallocchi, King Abdullah Univ. of Science and Technology (Saudi Arabia) [12130-37]

Lunch/Exhibition Break Wed 12:30 to 13:40

SESSION 9

LOCATION: SCHUMAN, NIVEAU/LEVEL 1 WED 13:40 TO 15:25

New Materials for Metamaterials

Session Chair: **Virginie Ponsinet**, Ctr. de Recherche Paul-Pascal (France)

13:40: **From metamaterials to metaphotonics** (*Invited Paper*), Yuri S. Kivshar, The Australian National Univ. (Australia) [12130-38]

14:10: **Engineering thermo-osmotic metamaterials with large negative thermal expansion: holographic approach**, Branko Kolaric, Univ. de Mons (Belgium) and Univ. of Belgrade (Serbia); Svetlana Savic, Darko M. Vasiljevic, Dejan V. Pantelic, Branislav M. Jelenkovic, Branka Muric, Dušan Ž. Grujic, Institute of Physics Belgrade (Serbia) [12130-39]

14:25: **Monolithic halide perovskite metamaterials and metadevices** (*Invited Paper*), Cesare Soci, Nanyang Technological Univ. (Singapore) [12130-40]

CONFERENCE 12130

14:55: **Electrochemically actuated metasurfaces for dynamic color control** (*Invited Paper*), Jason G. Valentine, Vanderbilt Univ. (USA) . . [12130-41]
Coffee Break. Wed 15:25 to 15:55

SESSION 10

LOCATION: SCHUMAN, NIVEAU/LEVEL 1 WED 15:55 TO 17:40

Novel Effects in Metamaterials: PT-Symmetry, Quantum and Topological Phenomena

Session Chair: **Martin W. McCall**, Imperial College London (United Kingdom)

15:55: **Exceptional surface and compound waves** (*Invited Paper*), Tom G. Mackay, The Univ. of Edinburgh (United Kingdom); Chenzhang Zhou, Akhlesh Lakhtakia, The Pennsylvania State Univ. (USA) [12130-42]

16:25: **Inverse-design of non-Hermitian potentials for light management**, Muriel Botey, Univ. Politècnica de Catalunya (Spain); Waqas W. Ahmed, King Abdullah Univ. of Science and Technology (Saudi Arabia); Ramon Herrero, Univ. Politècnica de Catalunya (Spain); Ying Wu, King Abdullah Univ. of Science and Technology (Saudi Arabia); Kestutis Staliunas, Univ. Politècnica de Catalunya (Spain) [12130-43]

16:40: **Hybrid quantum photonics** (*Invited Paper*), Vladimir M. Shalaev, Purdue Univ. (USA) [12130-44]

17:10: **Supertoroidal skyrmions and space-time superoscillation of light** (*Invited Paper*), Yijie Shen, Nikitas Papisimakis, Optoelectronics Research Ctr. (United Kingdom); Nikolay I. Zheludev, Optoelectronics Research Ctr. (United Kingdom) and Nanyang Technological Univ. (Singapore) [12130-46]

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Wednesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

Out-of-plane symmetry-broken bound state in the continuum in plasmonic metasurfaces, Andreas Aigner, Andreas Tittl, Ludwig-Maximilians-Univ. München (Germany); Stefan A. Maier, Ludwig-Maximilians-Univ. München (Germany) and Imperial College London (United Kingdom); Haoran Ren, Macquarie Univ. (Australia) [12130-45]

Modal theory for twisted waveguides, Fyodor Morozko, Ben-Gurion Univ. of the Negev (Israel) and Belarusian State Univ. (Belarus); Alina Karabchevsky, Ben-Gurion Univ. of the Negev (Israel); Andrey Novitsky, Belarusian State Univ. (Belarus) [12130-61]

Using optical potentials with gain-loss to generate structural colors, Ugo Tricoli, Leon Schlemmer, ONERA (France) [12130-62]

Bound states in the continuum in the multipole approximation, Sergey A. Gladyshev, Artem Shalev, Kristina Frizyuk, Konstantin Ladutenko, Andrey A. Bogdanov, ITMO Univ. (Russian Federation) [12130-63]

Designing metasurfaces to manipulate antenna radiation, James R. Capers, Univ. of Exeter (United Kingdom); Stephen J. Boyes, Defence Science and Technology Lab. (United Kingdom); Alastair P. Hibbins, Simon A. R. Horsley, Univ. of Exeter (United Kingdom) [12130-64]

Suspended dielectric one-dimensional photonic crystals for optical processing and optomechanics, Ali A. Darki, Aurélien R. Dantan, Jens V. Nygaard, Søren P. Madsen, Alexios Parthenopoulos, Christian Toft-Vandborg, Aarhus Univ. (Denmark) [12130-66]

Neural network-aided design and fabrication of deformation robust flexible flat optics, Arturo Burguete-Lopez, Maksim O. Makarenko, Fedor Getman, Qizhou Wang, Andrea Fratallocchi, King Abdullah Univ. of Science and Technology (Saudi Arabia) [12130-67]

Multi-color/-channel holography with noninterleaved geometric gap-surface plasmon metasurface, Sören im Sande, Yadong Deng, Sergey I. Bozhevolnyi, Fei Ding, Univ. of Southern Denmark (Denmark) [12130-69]

Dynamic electro-optic reflective metasurfaces, Christopher Damgaard-Carstensen, Martin Thomaschewski, Fei Ding, Sergey I. Bozhevolnyi, Univ. of Southern Denmark (Denmark) [12130-72]

Imprinted periodic surface textures enhance the directionality of the emission of thin phosphor films, Elena Cabello-Olmo, Instituto de Ciencia de Materiales de Sevilla (Spain); Pau Molet, Agustin Mihi, Institut de Ciència de Materials de Barcelona (Spain); Gabriel Sebastián Lozano Barbero, Hernán Míguez García, Instituto de Ciencia de Materiales de Sevilla (Spain) . [12130-73]

Modelling polarisation properties of plasmonic nanorod metamaterial in the nonlocal regime, Jingyi Wu, Anton Y. Bykov, Alexey V. Krasavin, Anatoly V. Zayats, King's College London (United Kingdom) [12130-75]

Graphene/liquid crystal-based multifunctional structure for tunable metasurfaces, Giovanni Magno, Marco Grande, Antonella D'Orazio, Politecnico di Bari (Italy) [12130-76]

Metasurface for broadband Raman signal enhancement beyond single-molecule detection level, Saied Izadshenas Jahromi, Karolina Slowik, Piotr Maslowski, Nicolaus Copernicus Univ. (Poland); Tobias Herr, Ctr. for Free-Electron Laser Science (Germany) [12130-78]

Super-collimation with axisymmetric photonics, Darius Gailevicius, Indre Meskelaite, Edvinas Aleksandravicius, Martynas Peckus, Vilnius Univ. (Lithuania); Lina Grineviciute, Ctr. for Physical Sciences and Technology (Lithuania); Victor B. Taranenkov, International Ctr. 'Institute of Applied Optics' (Ukraine); Kestutis Staliunas, Institució Catalana de Recerca i Estudis Avançats (Spain) [12130-79]

Acoustic metamaterials for non-Hermitian sound propagation management, Helena Arias Casals, Univ. Politècnica de Catalunya (Spain); Tetsu Magariyachi, Sony Corp. (Japan); Ramon Herrero, Muriel Botey, Kestutis Staliunas, Univ. Politècnica de Catalunya (Spain) [12130-82]

Optical properties of hyperbolic nanoresonators, Maria Bancerek, Krzysztof M. Czajkowski, Alexander Korneluk, Dominika Switlik, Tomasz J. Antosiewicz, Univ. of Warsaw (Poland) [12130-83]

Tailored light scattering through hyperuniform disorder in self-organized arrays of high-index nanodisks, Alexander N. Sprafke, Peter M. Piechulla, Bodo Fuhrmann, Ralf B. Wehrspohn, Martin-Luther-Univ. Halle-Wittenberg (Germany); Evgeniia Slivina, Carsten Rockstuhl, Karlsruher Institut für Technologie (Germany) [12130-84]

Switchable dual mode terahertz beamsplitter and perfect absorber, Veysel Erçağlar, Bilkent Univ. (Turkey); Hodjat Hajian, NANOTAM-Nanotechnology Research Ctr., Bilkent Univ. (Turkey); Andriy E. Serebryannikov, Adam Mickiewicz Univ. (Poland); Ekmel Özbay, Bilkent Univ. (Turkey) [12130-86]

THURSDAY 7 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 10:35

Hot Topics III

Thierry Georges, Oxxius (France), 2022 Symposium Chair

9:00: **Welcome and opening remarks**

9:05: **A sneak peek with light into opaque materials: from imaging to computing** (*Plenary*), Sylvain Gigant, Lab. Kastler Brossel (France) . [12136-500]

9:50: **Active metasurfaces empowered by two-dimensional materials** (*Plenary*), Isabelle Staude, Friedrich-Schiller-Univ. Jena (Germany) . [12130-500]

Coffee Break. Thu 10:35 to 11:00

SESSION 11

LOCATION: SCHUMAN, NIVEAU/LEVEL 1 THU 11:00 TO 12:15

Manufacturing Metamaterials and Metasurfaces

Session Chair: **Frank F. Neubrech**, Ruprecht-Karls-Univ. Heidelberg (Germany)

11:00: **Self assembled meta-atoms and metasurfaces** (*Invited Paper*), Virginie Ponsinet, Maeva Lafitte, Univ. de Bordeaux (France); Rajam Elanchelyan, Univ. de Montpellier (France); Cian A. Cummins, Univ. de Bordeaux (France); Alberto Alvarez Fernandez, Univ. College London (United Kingdom); Philippe Barois, Alexandre Baron, Olivier Mondain-Monval, Guillaume Fleury, Univ. de Bordeaux (France) [12130-47]

11:30: **Deep learning-assisted FIB nanofabrication**, Oleksandr Buchnev, James A. Grant-Jacob, Robert W. Eason, Nikolay I. Zheludev, Ben Mills, Kevin F. MacDonald, Univ. of Southampton (United Kingdom) [12130-48]

12:00: **High-resolution broad-angle colour definition with self-assembled plasmonic coaxial nanocavity arrays**, Alexey V. Krasavin, King's College London (United Kingdom); Haibin Ni, Lu Zhang, An Ping, Chao Pan, Jianxin Cheng, Nanjing Univ. of Information Science & Technology (China); Ming Wang, Nanjing Normal Univ. (China); Jianhua Chang, Nanjing Univ. of Information Science & Technology (China); Anatoly V. Zayats, King's College London (United Kingdom) [12130-50]

Lunch Break Thu 12:15 to 13:25

SESSION 12

LOCATION: SCHUMAN, NIVEAU/LEVEL 1 THU 13:25 TO 15:10

Sensors, Light Harvesting, Biophotonics, and Other Applications

Session Chair: **Isabelle Staude**, Friedrich-Schiller-Univ. Jena (Germany)

13:25: **Scalable and efficient photonic designs using disordered metamaterial nanounits** (*Invited Paper*), Ekmel Özbay, Bilkent Univ. (Turkey) . . [12130-51]

13:55: **Trapping atoms using metasurfaces**, Amit K. Agrawal, National Institute of Standards and Technology (USA) [12130-52]

14:10: **Stable trapping of photonic metasurfaces in microfluidic environments** (*Invited Paper*), Meisam Askari, Tomasz Plaskocinski, Andrea Di Falco, Univ. of St. Andrews (United Kingdom) [12130-53]

14:40: **Metamaterial energy harvesting** (*Invited Paper*), Wakana Kubo, Tokyo Univ. of Agriculture and Technology (Japan) [12130-54]

Coffee Break Thu 15:10 to 15:40

SESSION 13

LOCATION: SCHUMAN, NIVEAU/LEVEL 1 THU 15:40 TO 17:10

Metamaterial Multiphysics and Integration

Session Chair: **Andrea Di Falco**, Univ. of St. Andrews (United Kingdom)

15:40: **Cloaking of bulk and surface mechanical waves** (*Invited Paper*), Stéphane Brûlé, Ménard (Vinci Group) (France); Stefan Enoch, CNRS (France); Sebastien Guenneau, CNRS (United Kingdom) [12130-55]

16:10: **Near-field dipole-dipole energy transfer: the use of microwaves to enlighten optics**, Kseniia Lezhennikova, Institut Fresnel (France) and Multiwave Technologies AG (Switzerland) and ITMO Univ. (Russian Federation); Redha Abdeddaim, Stefan Enoch, Institut Fresnel (France); Stanislav Glybovski, ITMO Univ. (Russian Federation); Tryfon Antonakakis, Multiwave Technologies AG (Switzerland); Jérôme Wenger, Institut Fresnel (France); C. Martijn de Sterke, The Univ. of Sydney (Australia); Kaizad Rustomji, Institut Fresnel (France) [12130-56]

16:25: **Radial bound states in the continuum for polarization-invariant nanophotonics**, Lucca Kühner, Luca Sortino, Rodrigo Berté, Juan Wang, Ludwig-Maximilians-Univ. München (Germany); Haoran Ren, Macquarie Univ. (Australia); Stefan A. Maier, Ludwig-Maximilians-Univ. München (Germany); Yuri S. Kivshar, The Australian National Univ. (Australia); Andreas Tittl, Ludwig-Maximilians-Univ. München (Germany) [12130-57]

16:40: **Manipulating circularly polarized optical radiation with functional metasurfaces** (*Invited Paper*), Fei Ding, Univ. of Southern Denmark (Denmark) . [12130-58]

ON DEMAND PRESENTATIONS

SESSION 2

LOCATION: SCHUMAN, NIVEAU/LEVEL 1 MON 14:05 TO 15:20

Tunable, Switchable, Reconfigurable, and Programmable Metamaterials I

Session Chair: **Anatoly V. Zayats**, King's College London (United Kingdom)

0:00: **Optically controllable coupling between edge and topological waveguide modes of certain graphene metasurfaces**, Yupei Wang, Nicolae C. Panoiu, Univ. College London (United Kingdom) [12130-7]

SESSION 6

LOCATION: SCHUMAN, NIVEAU/LEVEL 1 MON 14:00 TO 15:30

Tunable, Switchable, Reconfigurable, and Programmable Metamaterials II

Session Chair: **Tal Ellenbogen**, Tel Aviv Univ. (Israel)

0:00: **Symmetry-selective surface mode excitation through a double temporal-sheet system with phase differences**, Ya-wen Tsai, National Tsing Hua Univ. (Taiwan); Emanuele Galiffi, The City Univ. of New York Advanced Science Research Ctr. (USA); Ta-Jen Yen, National Tsing Hua Univ. (Taiwan); Yao-Ting Wang, Imperial College London (United Kingdom) [12130-24]

SESSION 7

LOCATION: SCHUMAN, NIVEAU/LEVEL 1 MON 9:00 TO 10:15

Metamaterials with Extreme and Near-Zero Parameters

Session Chair: **Jason G. Valentine**, Vanderbilt Univ. (USA)

0:00: **Kerker effect-based dumbbell scattering in all-dielectric spheroidal particle**, Anar K. Ospanova, National Univ. of Science and Technology MISIS (Russian Federation) and Al-Farabi Kazakh National Univ. (Kazakhstan); Mikhail M. Bukharin, National Univ. of Science and Technology MISIS (Russian Federation); Vladimir Y. Pecherkin, Joint Institute for High Temperatures (Russian Federation); Vladimir B. Ilin, Saint Petersburg State Univ. (Russian Federation); Leonid M. Vasilyak, Joint Institute for High Temperatures (Russian Federation); Alexey A. Basharin, National Univ. of Science and Technology/ Institute for Theoretical and Applied Electromagnetics, RAS (Russian Federation) and Univ. of Eastern Finland/Institute of Photonics (Finland); Boris S. Luk'yanchuk, M. V. Lomonosov Moscow State Univ. (Russian Federation) . . . [12130-30]

0:00: **The effect of spatial dispersion in dynamics of femtosecond laser pulses in hyperbolic metamaterials**, Vladimir B. Novikov, Alexey P. Leontiev, Kirill S. Napol'sky, Tatiana V. Murzina, M. V. Lomonosov Moscow State Univ. (Russian Federation) [12130-32]

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

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Poster Setup: Wednesday 10:00 to 17:00

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Symmetrical and nonsymmetrical excitation of plasmon oscillations in clusters consisting of two SiC cylinders, Nikita Anyutin, Russian New Univ. (Russian Federation) [12130-60]

Controlling the propagation of localized photons using planar bi-nonlinear bi-anisotropic nanometasurfaces of spatial gradient, Igor P. Rudenok, Olesya Kakorina, Volgograd State Univ. (Russian Federation) [12130-68]

Modified dipoles, Maria V. Cojocari, National Univ. of Science and Technology MISIS (Russian Federation); Alexey A. Basharin, National Univ. of Science and Technology MISIS (Russian Federation) and Institute for Theoretical and Applied Electrodynamics (Russian Federation) [12130-71]

Tunable optical isolators based on anisotropic Weyl semimetals with a twist, Vladislav Chistyakov, ITMO Univ. (Russian Federation) [12130-77]

2D hybrid epsilon near-zero platform for nanophotonics, Alessandro Pianelli, Michal Dudek, Urszula Chodorow, Przemyslaw Morawiak, Rafal Kowardziej, Karol Sielezin, Janusz Parka, Wojskowa Akademia Techniczna im. Jaroslawa Dabrowskiego (Poland) [12130-81]

A guiding criterion for reinforcing cubic nonlinearity of epsilon-near-zero media: the nondegenerate Kerr effect, Anton V. Kharitonov, Kazan Federal Univ. (Russian Federation) [12130-85]

Bound states in the continuum in gyrotropic structures for magnetic field detection, Diana Shakirova, Andrey A. Bogdanov, ITMO Univ. (Russian Federation) [12130-89]

SESSION 11

LOCATION: SCHUMAN, NIVEAU/LEVEL 1 MON 11:00 TO 12:15

Manufacturing Metamaterials and Metasurfaces

Session Chair: **Frank F. Neubrech**, Ruprecht-Karls-Univ. Heidelberg (Germany)

0:00: **A highly directive flower-shaped vertical metamaterials perfect absorber and emitter based on generalized Kerker condition**, Hao-Yuan Tsai, National Tsing Hua Univ. (Taiwan); Che-Chin Chen, Taiwan Instrument Research Institute (Taiwan); Takuo Tanaka, RIKEN (Japan); Ta-Jen Yen, National Tsing Hua Univ. (Taiwan) [12130-49]

CONFERENCE 12131

Sunday–Thursday 3–7 April 2022 • Proceedings of SPIE Vol. 12131

Nanophotonics IX

Conference Chairs: David L. Andrews, Univ. of East Anglia (United Kingdom); Angus J. Bain, Univ. College London (United Kingdom); Jean-Michel Nunzi, Queen's Univ. (Canada)

Program Committee: Antonio Ambrosio, Istituto Italiano di Tecnologia (Italy); Sophie Brasselet, Institut Fresnel (France); Michele Celebrano, Politecnico di Milano (Italy); Crina M. Cojocaru, Univ. Politècnica de Catalunya (Spain); Céline Fiorini-Debuisschert, Commissariat à l'Énergie Atomique (France); Vincent Ginis, Vrije Univ. Brussel (Belgium); Martti Kauranen, Tampere Univ. of Technology (Finland); Arseniy I. Kuznetsov, A*STAR - Institute of Materials Research and Engineering (Singapore); Christoph Lienau, Carl von Ossietzky Univ. Oldenburg (Germany); Raúl J. Martín-Palma, Univ. Autónoma de Madrid (Spain); Jesper Mork, Technical Univ. of Denmark (Denmark); Jean-Luc Pelouard, Ctr. de Nanosciences et de Nanotechnologies (France); Mohsen Rahmani, Nottingham Trent Univ. (United Kingdom); Monika Ritsch-Marte, Medizinische Univ. Innsbruck (Austria); Kalachelvi Saravanamuttu, McMaster Univ. (Canada); Haim Suchowski, Tel Aviv Univ., School of Physics and Astronomy (Israel); Jun Wang, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China); Anatoly V. Zayats, King's College London (United Kingdom)

SUNDAY 3 APRIL

SESSION 1

LOCATION: CURIE A, NIVEAU/LEVEL 1 SUN 13:40 TO 15:10

Plasmonics I

Session Chair: Jean-Michel Nunzi, Queen's Univ. (Canada)

13:40: **Purcell effect in plasmonic and dielectric nanoscale resonators** (*Invited Paper*), Sébastien Bidault, Institut Langevin Ondes et Images (France). . . [12131-1]

14:10: **Few femtosecond plasmon transients probed with nm-scale sensitivity**, Péter Sándor, Béla Lovász, Wigner Research Ctr. for Physics (Hungary); Zsuzsanna Pápa, Wigner Research Ctr. for Physics (Hungary) and ELI-ALPS Research Institute (Hungary); Balázs Bánhegyi, Péter Rácz, Péter Dombi, Wigner Research Ctr. for Physics (Hungary) [12131-2]

14:30: **Optomagnetism in plasmonic nanostructures**, Vage Karakhanyan, Clément Eustache, Yannick Lefier, Thierry Grosjean, Univ. Bourgogne Franche-Comté (France) [12131-3]

14:50: **On chip manipulation of surface plasmon polaritons excited by a deterministic quantum emitter**, Cuo Wu, Univ. of Southern Denmark (Denmark) and Univ. of Electronic Science and Technology of China (China); Shailesh Kumar, Univ. of Southern Denmark (Denmark); Yinhui Kan, Nanjing Univ. of Aeronautics and Astronautics (China); Danylo Komisar, Univ. of Southern Denmark (Denmark); Zhiming Wang, Univ. of Electronic Science and Technology of China (China); Sergey I. Bozhevolnyi, Fei Ding, Univ. of Southern Denmark (Denmark) [12131-4]

Coffee Break. Sun 15:10 to 15:40

SESSION 2

LOCATION: CURIE A, NIVEAU/LEVEL 1 SUN 15:40 TO 17:40

Plasmonics II

15:40: **Light-absorption in nanoantennas: from hot carriers to thermo-optical effects** (*Invited Paper*), Giulia Tagliabue, Ecole Polytechnique Fédérale de Lausanne (Switzerland). [12131-5]

16:10: **Time-varying and reconfigurable driven photonics** (*Invited Paper*), Riccardo Sapienza, Imperial College London (United Kingdom). [12131-108]

16:40: **Plasmonic zero mode waveguide for enhanced single molecule detection**, Alemayehu Nana Koya, Maria Antonietta Parracino, Istituto Italiano di Tecnologia (Italy). [12131-6]

17:00: **Surface plasmons propagation along metallic rough diffraction gratings**, Thiaka Gueye, Christelle Varenne, Amadou Ndiaye, Institut Pascal, Univ. Clermont Auvergne (France); Olivier Parriaux, Lab. Hubert Curien (France) and Univ. Jean Monnet (France); Colette Veillas, Lab. Hubert Curien (France) and Univ. Jean Monnet (France); Stéphanie Reynaud, Lab. Hubert Curien (France) and Univ. Jean Monnet (France); Jérôme Brunet, Institut Pascal, Univ. Clermont Auvergne (France); Yves Jourlin, Lab. Hubert Curien (France) and Univ. Jean Monnet Saint-Etienne (France) [12131-7]

17:20: **Coherent modulation of the nonlinear emission of a plasmonic nanoantenna by dual-beam pumping**, Attilio Zilli, Politecnico di Milano (Italy); Andrea Locatelli, Univ. degli Studi di Brescia (Italy); Agostino Di Francescantonio, Politecnico di Milano (Italy); Xiaofei Wu, Julius-Maximilians-Univ. Würzburg (Germany); Thorsten Feichtner, Politecnico di Milano (Italy) and Julius-Maximilians-Univ. Würzburg (Germany); Paolo Biagioni, Politecnico di Milano (Italy); Costantino De Angelis, Univ. degli Studi di Brescia (Italy); Bert Hecht, Julius-Maximilians-Univ. Würzburg (Germany); Marco Finazzi, Michele Celebrano, Politecnico di Milano (Italy). [12131-10]

MONDAY 4 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 11:00

Hot Topics I

Paul Montgomery, Univ. of Strasbourg (France),
2022 Symposium Chair

9:00: **Welcome and Introduction; City of Strasbourg Welcome; Presentation of the 2022 SPIE Mozi Award to Thomas W. Ebbesen**, The Institute for Advanced Study of the Univ. of Strasbourg (USIAS) and CNRS (France), Anita Mahadevan-Jansen, Vanderbilt Univ. (USA), 2022 SPIE President

9:10: **Introduction to Hot Topics, Paul Montgomery**, Univ. of Strasbourg (France), 2022 Symposium Chair

9:15: **Access to photonics innovation support for European researchers and companies through ACTPHAST4R and PhotonHub Europe** (*Plenary*), Hugo Thienpont, Vrije Univ. Brussel (Belgium) [12148-500]

9:30: **Quantum computing: prospects and challenges** (*Plenary*), Heike Riel, IBM Research - Zürich (Switzerland). [12133-500]

10:15: **Einstein Telescope, the pioneer project for a third-generation GW observatory in Europe: science, technologies and perspectives** (*Plenary*), Michele Punturo, Istituto Nazionale di Fisica Nucleare (Italy) [12139-500]

Coffee Break. Mon 11:00 to 11:30

SESSION 3

LOCATION: CURIE A, NIVEAU/LEVEL 1 MON 11:30 TO 12:40

Nano-Antennae I

Session Chair: Rolf Szedlak, Technische Univ. Wien (Austria)

11:30: **Unidirectional emission of single-molecules based on DNA-orgami assembled ultracompact antennas** (*Invited Paper*), Maria Sanz-Paz, Fangjia Zhu, Mauricio Pilo-Pais, Guillermo Acuna, Univ. de Fribourg (Switzerland) [12131-11]

12:00: **Numerical study of disorder in nanoantennas**, Denis Langevin, Patrick Bouchon, Julien Jaeck, Riad Haïdar, ONERA (France) [12131-12]

12:20: **DNA origami-assisted unidirectional plasmonic nanoantennas**, Mina Yesilyurt, Jer-Shing Huang, Leibniz-Institut für Photonische Technologien e.V. (Germany). [12131-13]

Lunch Break Mon 13:00 to 14:10

SESSION 4

LOCATION: CURIE A, NIVEAU/LEVEL 1 MON 14:10 TO 15:30

Nano-Antennae II

Session Chair: Rolf Szedlak, Technische Univ. Wien (Austria)

14:10: **Femtosecond LIPSS on indium-tin-oxide thin films at IR wavelengths**, Balázs Bánhegyi, László Péter, Péter Dombi, Zsuzsanna Pápa, Wigner Research Ctr. for Physics (Hungary). [12131-14]

14:30: **Fano-like resonances in modulated single layers for angular and frequency selectivity of light**, Julianija Nikitina, Ctr. for Physical Sciences and Technology (Lithuania) and Vilnius Univ. (Lithuania); Ceren Babayigit, Univ. of California, Irvine (USA); Kęstutis Staliūnas, ICREA (Spain) and Univ. Politècnica de Catalunya (Spain) and Vilnius Univ. (Lithuania); Lina Grineviciute, Ctr. for Physical Sciences and Technology (Lithuania) and Vilnius Univ. (Lithuania). [12131-15]

14:50: **Creating and moving nanoantenna cold spots anywhere**, Alexander J. Vernon, Francisco J. Rodríguez-Fortuño, King's College London (United Kingdom) [12131-16]

15:10: **Telecom-frequency, silicon-based impurities embedded in dielectric Mie resonators towards directional emission**, Mario Khoury, Institut Matériaux Microélectronique Nanosciences de Provence (France) [12131-17]

Coffee Break Mon 15:30 to 16:00

SESSION 5

LOCATION: CURIE A, NIVEAU/LEVEL 1 MON 16:00 TO 18:10

Nonlinear Phenomena

Session Chair: **Angus J. Bain**, Univ. College London (United Kingdom)

16:00: **Frequency comb operation induced by a giant Kerr nonlinearity in quantum cascade lasers** (*Invited Paper*), Benedikt Schwarz, Nikola Opacak, Florian Pilat, Technische Univ. Wien (Austria); Dmitry Kazakov, Harvard Univ. (USA); Sandro Dal Cin, Maximilian Beiser, Technische Univ. Wien (Austria); Lorenzo Columbo, Politecnico di Torino (Italy); Johannes Hillbrand, Technische Univ. Wien (Austria); Marco Piccardo, Federico Capasso, Harvard Univ. (USA) . . [12131-18]

16:30: **Nonlinear two-quantum energy transfer from plasmons to excitons extends the applications of quantum dots in optoelectronics**, Victor A. Krivenkov, Univ. del País Vasco (Spain) and National Research Nuclear Univ. MEPhI (Russian Federation); Pavel Samokhvalov, Ivan S. Vasil'evskii, National Research Nuclear Univ. MEPhI (Russian Federation); Ana Sánchez-Iglesias, CIC BiomaGUNE (Spain); Marek Grzelczak, Ctr. de Física de Materiales (Spain) and Donostia International Physics Ctr. (Spain); Yury Rakovich, Ctr. de Física de Materiales (Spain) and Donostia International Physics Ctr. (Spain) and IKERBASQUE, Basque Foundation for Science (Spain); Nikolai I. Kargin, National Research Nuclear Univ. MEPhI (Russian Federation); Igor Nabiev, Univ. de Reims Champagne-Ardenne (France) and National Research Nuclear Univ. MEPhI (Russian Federation) [12131-19]

16:50: **Ultrafast and nonlinear characterization of Weyl semimetal niobium phosphide thin films**, Benjamin Tilmann, Ludwig-Maximilians-Univ. München (Germany); Avandira Pandeya, Max-Planck-Institut für Mikrostrukturphysik (Germany); Gustavo Grinblat, Univ. de Buenos Aires (Argentina); Leonardo De S. Menezes, Ludwig-Maximilians-Univ. München (Germany) and Univ. Federal de Pernambuco (Brazil); Yi Li, Southern Univ. of Science and Technology of China (China); Chandra Shekhar, Claudia Felser, Max-Planck-Institut für Chemische Physik Fester Stoffe (Germany); Stuart S. P. Parkin, Amílcar Bedoya-Pinto, Max-Planck-Institut für Mikrostrukturphysik (Germany); Stefan A. Maier, Ludwig-Maximilians-Univ. München (Germany) [12131-20]

17:10: **Nonlinear conversion efficiency enhancement in gold grating nanostructure**, Crina M. Cojocaru, Shroddha Mukhopadhyay, Jose Trull, Laura Rodríguez-Suné, Univ. Politècnica de Catalunya (Spain); Michael Scalora, U.S. Army Aviation and Missile Command (USA) and U.S. Army Combat Capabilities Development Command (USA); Maria Antonietta Vincenti, Univ. degli Studi di Brescia (Italy); Giuseppe Leo, Univ. de Paris (France) and CNRS (France) [12131-21]

17:30: **Origin of second harmonic generation in gold plasmonic nanostructures**, Sandy Mathew, Institut NÉEL, CNRS (France) and Univ. Grenoble Alpes (France); Maeliss Ethis de Corny, Institut NÉEL (France); Nicolas Chauvet, Institut NÉEL, CNRS (France) and Univ. Grenoble Alpes (France); Laureen Moreaud, Ctr. d'Elaboration de Matériaux et d'Etudes Structurales (France); Guillaume Laurent, Institut NÉEL (France); Serge Huant, Institut NÉEL, CNRS (France) and Univ. Grenoble Alpes (France); Erik Dujardin, Ctr. d'Elaboration de Matériaux et d'Etudes Structurales, CNRS (France); Gilles Nogues, Guillaume Bachelier, Institut NÉEL, CNRS (France) and Univ. Grenoble Alpes (France) [12131-22]

TUESDAY 5 APRIL

SESSION 6

LOCATION: CURIE A, NIVEAU/LEVEL 1 TUE 8:20 TO 10:30

Nanoparticle Photonics I

Session Chair: **Antonio Ambrosio**, Istituto Italiano di Tecnologia (Italy)

8:40: **Rare-earth ions-doped ferroelectric nanocrystals for optical sensing of electric potential in biological systems**, Athulya Muraleedharan, Ecole Normale Supérieure de Paris-Saclay (France); Jingye Zou, Christine Bogicevic, Fabienne Karolak, CentraleSupélec (France); Simon Vassant, CEA-Paris-Saclay (France); Karen Perronet, Ecole Normale Supérieure de Paris-Saclay (France); Brahim Dkhil, CentraleSupélec (France); Céline Fiorini, CEA-Paris-Saclay (France); François Treussart, Ecole Normale Supérieure de Paris-Saclay (France) [12131-25]

9:00: **Nanophosphor-based photonic architectures for efficient light conversion**, Elena Cabello-Olmo, Jose María Víaña, Thi Tuyen Ngo, Victor Castaing, Instituto de Ciencia de Materiales de Sevilla (Spain); Gabriel Sebastián Lozano Barbero, Instituto de Ciencia de Materiales de Sevilla, Consejo Superior de Investigaciones Científicas (Spain); Hernán Miguez, Instituto de Ciencia de Materiales de Sevilla (Spain) [12131-26]

9:40: **Theranostic NIR-active tumor cell targeting conjugated polymer nanoparticles**, Miao Zhao, Edward Leggett, Struan Bourke, King's College London (United Kingdom); Souzana Poursanidou, Univ. of Hertfordshire (United Kingdom); Sadie Carter-Searjeant, Steve Po, Marciano Palma do Carmo, King's College London (United Kingdom); Lea Ann Dailey, Univ. Wien (Austria); Philip Manning, Newcastle Univ. (United Kingdom); Sean G. Ryan, Laura Urbano, Univ. of Hertfordshire (United Kingdom); Mark A. Green, Aliaksandra Rakovich, King's College London (United Kingdom) [12131-27]

10:00: **Coherent quantum nanophotonics: challenges and opportunities** (*Invited Paper*), Nir Rotenberg, Queen's Univ. (Canada) [12131-29]

Coffee Break Tue 10:30 to 11:00

SESSION 7

LOCATION: CURIE A, NIVEAU/LEVEL 1 TUE 11:00 TO 12:40

Plasmonics III

Session Chairs: **Jesper Mørk**, Technical Univ. of Denmark (Denmark); **Alexey V. Krasavin**, King's College London (United Kingdom)

10:50: **Rolled-up multilayer nanostructures** (*Invited Paper*), Humeyra Caglayan, Mohsin Habib, Ibrahim Issah, Tampere Univ. (Finland) . . . [12131-30]

11:20: **Wavelength-tuneable photoacoustics in plasmonic Au/SiO₂/Au nanoparticles**, Yuanyang Xie, Anton Bykov, Alexey Krasavin, King's College London (United Kingdom); Pang Wang, Zhejiang Univ. (China); Anatoly Zayats, King's College London (United Kingdom) [12131-31]

11:40: **Smart photopolymer for advanced hybrid nanoplasmonics**, Renaud B. Bachelot, Dandan G., Ali Issa, Safi Jradi, Christophe Coureau, Univ. de Technologie Troyes (France); Sylvie Marguet, CEA-Paris-Saclay (France) and CNRS (France) [12131-32]

12:00: **Enhancement of photoluminescence properties in silver nanoparticles based organic luminophores**, Jelena Mikelsone, Aivars Vembris, Institute of Solid State Physics, Univ. of Latvia (Latvia) . . . [12131-33]

12:20: **Nonadiabatic nano-optical tunneling of photoelectrons in plasmonic near-fields**, Béla Lovász, Péter Sándor, Zsolt Kiss, Balázs Bánhegyi, Péter Rácz, Wigner Research Ctr. for Physics (Hungary); Zsuzsanna Pápa, Wigner Research Ctr. for Physics (Hungary) and ELI-ALPS Research Institute (Hungary); Judit Budai, ELI-ALPS Research Institute (Hungary); Christine Prietl, Joachim Krenn, Karl-Franzens-Univ. Graz (Austria); Péter Dombi, Wigner Research Ctr. for Physics (Hungary) and ELI-ALPS Research Institute (Hungary) [12131-34]

Lunch/Exhibition Break Tue 12:40 to 14:00

SESSION 8

LOCATION: CURIE A, NIVEAU/LEVEL 1 TUE 14:00 TO 15:30

Waveguides

Session Chair: **Christoph Lienau**, Carl von Ossietzky Univ. Oldenburg (Germany)

14:00: **Surface-bound edge modes of periodic waveguides for spatial filtering** (*Invited Paper*), Ignas Lukošiusas, Darius Gailevičius, Vilnius Univ. (Lithuania); Kęstutis Staliūnas, ICREA (Spain) [12131-35]

14:30: **Complex wave-vectors in lossy materials: from polarisation-loss locking to bullseye metasurface**, Sinuhé Perea-Puente, Francisco J. Rodríguez-Fortuño, King's College London (United Kingdom) [12131-36]

14:50: **Guiding light with surface exciton-polaritons in atomically thin superlattices**, S. A. Elrafei, T. V. Raziman, Technische Univ. Eindhoven (Netherlands); S. De Vega, ICFO - Institut de Ciències Fotòniques (Spain); F. Javier García de Abajo, ICFO - Institut de Ciències Fotòniques (Spain) and Institució Catalana de Recerca i Estudis Avançats (Spain); J. Gómez Rivas, A. G. Curto, Technische Univ. Eindhoven (Netherlands) [12131-37]

Coffee Break Tue 15:30 to 16:30

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:30: **Welcome and opening remarks**

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianello" (Italy) . [12144-500]

CONFERENCE 12131

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Tuesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

Light harvesting complexes using biomimetic metallic nanoparticle-quantum dot assemblies, Steve Po, Marciano Palma do Carmo, Miao Zhao, America Mendoza, King's College London (United Kingdom); David Mack, Mónica Mota, Imperial College London (United Kingdom); Aliaksandra Rakovich, King's College London (United Kingdom) [12131-51]

Extracting the optical properties of random media with mutual extinction, Alfredo Rates, Willem L. Vos, Ad Lagendijk, Minh Duy Truong, Univ. Twente (Netherlands) [12131-72]

Confocal Raman spectroscopy for submicron spatial temperature determination, Georgios Ctistis, Christian Niklas, Hainer Wackerbarth, Institut für Nanophotonik Göttingen e.V. (Germany) [12131-75]

Rewritable hollow sphere photonic crystal based paper with ionic liquid as ink for a durable written information storage system, Wouter Vander Ghinst, Kuo Zhong, Yovan De Coene, Koen Clays, KU Leuven (Belgium) [12131-77]

Coherent perfect absorption by a single nanoparticle, Alexey Proskurin, Andrey Bogdanov, ITMO Univ. (Russian Federation); Denis Baranov, Moscow Institute of Physics and Technology (Russian Federation) [12131-79]

Development of chirp reduction technique for spherical beams interference lithography, Ratish Rao Nagaraj Rao, Thomas Kämpfe, Frederic Celle, Lab. Hubert Curien (France); Anton Savchenko, Institut für Technische Optik (Germany); Emilie Gamet, Yves Jourlin, Lab. Hubert Curien (France) [12131-83]

Simple, sustainable fabrication of fully solution-processed, transparent, metal-semiconductor-metal photodetectors using a surgical blade as an alternative to conventional tools, Muzeyyen Savas, Ahmet Faruk Yazıcı, Aysenur Arslan, Evren Mutlugun, Talha Erdem, Abdullah Gül Univ. (Turkey) [12131-85]

On-fringe optical trapping of dielectric microparticles in air, Aaron Schäpers, Jochen Fick, Institut NEEL, CNRS (France) [12131-86]

Observation of mode-mixing in the eigenmodes of an optical microcavity, Corné Koks, Martin P. Van Exter, Leiden Univ. (Netherlands) [12131-87]

Amplification of organic semiconductor luminescence in thin films with silver nanoparticles, Raivis Silis, Jelena Mikelsone, Aivars Vembris, Institute of Solid State Physics, Univ. of Latvia (Latvia) [12131-88]

Electromagnetic forces induced by virtual excitation, Sergei Lepeshov, ITMO Univ. (Russian Federation); Alex Krasnok, Florida International Univ. (USA) [12131-89]

Femtosecond laser modification of plasmonic color and diffuse reflectance of semicontinuous aluminum film-insulator-metal mirror structures, Michał P. Nowak, Institute of Optoelectronics, Military Univ. of Technology (Poland); Bogusz Stępak, Fluence sp. z o.o. (Poland); Mateusz Pielach, Yuriy Stepanenko, Institute of Physical Chemistry PAS (Poland); Tomasz Wojciechowski, Institute of Physics, Polish Academy of Sciences (Poland); Bartosz Bartoszewicz, Institute of Optoelectronics, Military Univ. of Technology (Poland); Urszula Chodorow, Institute of Applied Physics, Military Univ. of Technology (Poland); Przemysław Wachulak, Piotr Nyga, Institute of Optoelectronics, Military Univ. of Technology (Poland) [12131-90]

Plasmon excitation in array of double-walled carbon nanotubes by free-electron beam, Aleksei Kadochkin, Igor Zolotovskii, Ulyanovsk State Univ. (Russian Federation), Institute of Nanotechnologies of Microelectronics (Russian Federation); Sergey Moiseev, Ulyanovsk State Univ. (Russian Federation), Ulyanovsk State Technical Univ. (Russian Federation), Kotelnikov Institute of Radio Engineering and Electronics (Russian Federation); Andrei A. Fotiadi, Univ. de Mons (Belgium) [12131-91]

Light structuring photonic hook via temperature mediated effects, Maya Hen Shor Peled, Ben-Gurion Univ. of the Negev (Israel); Paolo Maioli, Univ. de Lyon (France); Alina Karabchevsky, Ben-Gurion Univ. of the Negev (Israel) [12131-92]

Periodically nanostructured optical coatings for the manipulation of laser radiation, Lina Grinevičiute, Julianija Nikitina, Ctr. for Physical Sciences and Technology (Lithuania); Ceren Babayigit, Univ. of California, Irvine (USA); Darius Gailevičius, Vilnius Univ. (Lithuania); Tomas Tolenis, Ctr. for Physical Sciences and Technology (Lithuania); Martynas Peckus, Vilnius Univ. (Lithuania); Kęstutis Staliūnas, ICREA (Spain) [12131-93]

Multiplexed trapping with multifocal diffractive lenses, Francisco Misael Muñoz Pérez, Vicente Ferrando, Univ. Politècnica de València (Spain); Walter D. Furlan, Univ. de València (Spain); Juan A. Monsoriu, J. Ricardo Arias González, Univ. Politècnica de València (Spain) [12131-94]

Control of particle trapping in solid-state nanopores with magnetic functionalities: an overview, Alemayehu Nana Koya, Istituto Italiano di Tecnologia (Italy) and Wolaita Sodo University (Ethiopia); Joel Kuttruff, University of Konstanz (Germany); Tilaike Tapani, Umeå University (Sweden); Sreyash Sarkar, Ornella Vaccarelli, University of Luxembourg (Luxembourg); Nicolò Maccaferri, Umeå University (Sweden) [12131-96]

Artificial neuron integrated with lithium niobate, Lucas Grosjean, Fadi Baida, Maria-Pilar Bernal, Institut Franche-Comte Electronique Mecanique Thermique et Optique (France) [12131-98]

Control of the light extraction from a photonic crystal nanocavity by coupling with a nanoparticle, Abdullah Al Abiad, Blandine Edouard Guichardaz, Fadi Baida, Institut Franche-Comte Electronique Mecanique Thermique et Optique (France) [12131-100]

Measuring Nanoscale Deformation in Plasmonic Materials due to Thermal Stress, Tiernan McCaughery, Queen's Univ Belfast (United Kingdom); Robert Bowman, Queen's University Belfast (United Kingdom) [12131-104]

Plasmonic-induced molecular transfer and its perspectives in plant science, Sonja Johannsmeier, Anke Londenberg, Laser Zentrum Hannover e.V. (Germany); Miroslav Zabic, Jana Schiwack, Jens Boch, Leibniz Universität Hannover (Germany); Tammo Ripken, Laser Zentrum Hannover e.V. (Germany); Dag Heinemann, Leibniz Universität Hannover (Germany) [12131-105]

Bloch surface wave on a multicore fiber, Clément Eustache, FEMTO-ST Institute, University of Bourgogne Franche-Comte, CNRS (France); Aude L. Lereu, Aix Marseille Univ, CNRS, Centrale Marseille, Institut Fresnel (France); Roland Salut, FEMTO-ST Institute, University of Bourgogne Franche-Comte, CNRS (France); Antonin Moreau, Aix Marseille Univ, CNRS, Centrale Marseille, Institut Fresnel (France); Miguel A. Suarez, FEMTO-ST Institute, University of Bourgogne Franche-Comte, CNRS (France); Emiliano Descrovi, Department of Applied Science and Technology, Polytechnic University of Turin (Italy); Julien Lumeau, Aix Marseille Univ, CNRS, Centrale Marseille, Institut Fresnel (France); Thierry Grosjean, FEMTO-ST Institute, University of Bourgogne Franche-Comte, CNRS (France) [12131-106]

Nanophysical characterization of chemical vapor deposition-grown monolayer graphene for high-performance electrode : Raman, surface-enhanced Raman spectroscopy, and electrostatic force microscopy studies, Won Hwa Park, Inha Univ. (Korea, Republic of) [12131-109]

WEDNESDAY 6 APRIL

SESSION 9

LOCATION: CURIE A, NIVEAU/LEVEL 1 WED 8:30 TO 10:30

Structured Light

Session Chair: **David L. Andrews**, Univ. of East Anglia (United Kingdom)

8:30: **Vortex crystals with dynamic topologies** (*Invited Paper*), Marco Piccardo, Michael De Oliveira, Vincenzo Aglieri, Andrea Toma, Istituto Italiano di Tecnologia (Italy); Andrew Forbes, Univ. of the Witwatersrand, Johannesburg (South Africa); Antonio Ambrosio, Istituto Italiano di Tecnologia (Italy) [12131-40]

9:00: **Optical tweezing chiral particles with 3D structured light** (*Invited Paper*), Kayn A. Forbes, Dale Green, Univ. of East Anglia (United Kingdom) [12131-41]

9:30: **Knotting polarization curves by tightly focusing polychromatic structured light beams**, Manuel F. Ferrer-Garcia, Alessio D'Errico, Univ. of Ottawa (Canada); Hugo Laroque, Massachusetts Institute of Technology (USA); Alicia Sit, Ebrahim Karimi, Univ. of Ottawa (Canada) [12131-42]

10:10: **Dynamic higher-order Bessel-Gauss beam interference generation of rotating beams**, Gabrielius Kontenis, Darius Gailevičius, Vilnius Univ. (Lithuania), Femtika Ltd. (Lithuania); Noe Jimenez, Univ. Politècnica de València (Spain); Kęstutis Staliūnas, Vilnius Univ. (Lithuania), Institució Catalana de Recerca i Estudis Avançats (Spain), Univ. Politècnica de Catalunya (Spain) [12131-44]

Coffee Break. Wed 10:30 to 11:00

SESSION 10

LOCATION: CURIE A, NIVEAU/LEVEL 1 WED 11:00 TO 12:10

Surfaces

Session Chair: **Martti Kauranen**, Tampere Univ. (Finland)

11:00: **Metallic nanoparticle reshaping by multipulse femtosecond laser irradiation** (*Invited Paper*), Balint Eles, Univ. de Lyon (France) and Univ. Jean Monnet Saint-Etienne (France) and Institut d'Optique Graduate School (France); Jan Siegel, Instituto de Óptica "Daza de Valdés", Consejo Superior de Investigaciones Científicas (Spain); Julien Lumeau, Antonin Moreau, Aix Marseille Univ. (France) and CNRS (France) and Ecole Centrale de Marseille (France); Christophe Hubert, Nathalie Destouches, Univ. de Lyon (France) and Univ. Jean Monnet Saint-Etienne (France) and CNRS (France) [12131-45]

11:30: **Formation and investigation of highly-regular laser induced periodic surface structures on metals using IR and UV femtosecond lasers**, Tauras Bukelis, Ona Balachnaitė, Simas Butkus, Domas Paipulas, Vilnius Univ. (Lithuania) [12131-46]

11:50: **Self-complementary metasurfaces: novel platform for surface waves manipulation**, Oleh Y. Yermakov, ITMO Univ. (Russian Federation) and V. N. Karazin Kharkiv National Univ. (Ukraine); Vladimir Lenets, Andrey Sayanskiy, ITMO Univ. (Russian Federation); Juan D. Baena, Univ. Nacional de Colombia (Colombia); Enrica Martini, Univ. degli Studi di Siena (Italy); Stanislav Glybovski, ITMO Univ. (Russian Federation); Stefano Maci, Univ. degli Studi di Siena (Italy) [12131-48]

Lunch/Exhibition Break Wed 12:10 to 13:40

SESSION 11

LOCATION: CURIE A, NIVEAU/LEVEL 1 WED 13:40 TO 15:10

Energy Transfer I

Session Chair: **David L. Andrews**, Univ. of East Anglia (United Kingdom)

13:40: **Inverse design in quantum nanophotonics** (*Invited Paper*), Robert Bennett, Univ. of Glasgow (United Kingdom) [12131-49]

14:10: **Coincidence technique to study ion-induced electron emission from atomically thin materials** (*Invited Paper*), Anna Niggas, Technische Univ. Wien (Austria); Janine Schwestka, TU Wien (Austria); David Weichselbaum, Technische Univ. Wien (Austria); René Heller, Helmholtz-Zentrum Dresden-Rossendorf (Germany); Friedrich Aumayr, Richard A. Wilhelm, Technische Univ. Wien (Austria) [12131-50]

14:40: **Exploring complex systems dynamics with Rydberg atoms** (*Invited Paper*), Shannon Whitlock, Institut de Science et d'Ingénierie Supramoléculaires (France) [12131-56]

Coffee Break Wed 15:10 to 15:40

SESSION 12

LOCATION: CURIE A, NIVEAU/LEVEL 1 WED 15:40 TO 17:00

Energy Transfer II

Session Chair: **Angus J. Bain**, Univ. College London (United Kingdom)

15:40: **Plasmonic control of analyte motion**, Marciano Palma do Carmo, King's College London (United Kingdom); David Mack, Imperial College London (United Kingdom); Diane J. Roth, Steve Po, Miao Zhao, King's College London (United Kingdom); Stefan A. Maier, Ludwig-Maximilians-Univ. München (Germany); Paloma A. Huidobro, Instituto de Telecomunicações, Instituto Superior Técnico, Univ. de Lisboa (Portugal); Aliaksandra Rakovich, King's College London (United Kingdom) [12131-78]

16:00: **Environment-assisted electron capture** (*Invited Paper*), Nicolas Sisourat, Sorbonne Univ. (France) [12131-54]

16:30: **Electric-field-controlled resonant energy transfer between polar ground-state molecules and highly-excited Rydberg atoms** (*Invited Paper*), Stephen D. Hogan, Univ. College London (United Kingdom) [12131-55]

LOCATION: CURIE A, NIVEAU/LEVEL 1 17:00 TO 18:00

Discussion Session

Join us for a lively panel discussion addressing the latest issues in nanophotonics.

THURSDAY 7 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 10:35

Hot Topics III

Thierry Georges, Oxxius (France), 2022 Symposium Chair

9:00: Welcome and opening remarks

9:05: **A sneak peek with light into opaque materials: from imaging to computing** (*Plenary*), Sylvain Gigan, Lab. Kastler Brossel (France) [12136-500]

9:50: **Active metasurfaces empowered by two-dimensional materials** (*Plenary*), Isabelle Staude, Friedrich-Schiller-Univ. Jena (Germany) [12130-500]

Coffee Break Thu 10:35 to 11:00

SESSION 13

LOCATION: CURIE A, NIVEAU/LEVEL 1 THU 11:00 TO 11:30

Nanoparticle Photonics II

Session Chair: **Anatoly V. Zayats**, King's College London (United Kingdom)

11:00: **Laser-scanning imaging and electrophoresis of single nanoparticles** (*Invited Paper*), Filip Strubbe, Lucas Oorlynck, Univ. Gent (Belgium); Yera Y. Ussembayev, Univ. Gent (Germany); Juan C. Fraire, Charlotte Hinnekens, Kevin Braeckmans, Univ. Gent (Belgium) [12131-57]

SESSION 14

LOCATION: CURIE A, NIVEAU/LEVEL 1 THU 11:30 TO 12:30

Fundamentals

Session Chair: **Anatoly V. Zayats**, King's College London (United Kingdom)

11:30: **Molecules in (fancy) cavities**, Benedikt Zerulla, Marjan Krstić, Dominik Beutel, Christof Holzer, Carsten Rockstuhl, Ivan Fernandez-Corbaton, Karlsruher Institut für Technologie (Germany) [12131-67]

11:50: **Sensing the position of a single scatterer in opaque media using mutual extinction and transparency**, Minh Duy Truong, Ad Lagendijk, Alfredo Rates, Willem L. Vos, Univ. Twente (Netherlands) [12131-68]

12:10: **Enhanced multipolar transitions near 2D material nanoislands**, Gilles Rosolen, Bjorn Maes, Univ. de Mons (Belgium) [12131-69]

SESSION 15

LOCATION: CURIE A, NIVEAU/LEVEL 1 THU 12:30 TO 13:10

Plasmonics and Sensing

Session Chair: **Anatoly V. Zayats**, King's College London (United Kingdom)

12:30: **Optical reading of single cells mechanical properties with slow Bloch mode cavity**, Ali Kheir Aldine, Institut des Nanotechnologies de Lyon (France); Lotfi Berguiga, Cécile Jamois, Audry-Deschamps Marie-Charlotte, Magalie Faivre, Taha Benyattou, Institut des Nanotechnologies de Lyon (France) [12131-62]

12:50: **Ultrahigh sensitivity SERS detection of DNA and protein translocating through a plasmonic nanopores**, Denis Garoli, Istituto Italiano di Tecnologia (Italy) [12131-63]

ON DEMAND PRESENTATIONS

CONFERENCE 12131

SESSION 2

LOCATION: CURIE A, NIVEAU/LEVEL 1 MON 15:40 TO 17:40

Plasmonics II

0:00: **Tunable localized surface plasmon resonance in copper sulfide nanocrystals (Cu₂-xS) for surface-enhanced near-infrared absorption spectroscopy**, Anastasia Sapunova, Daler Dadadzhyanov, Aliaksei U. Dubavik, Igor Gladskikh, Tigran A. Vartanyan, ITMO Univ. (Russian Federation). [12131-8]

SESSION 8

LOCATION: CURIE A, NIVEAU/LEVEL 1 MON 14:00 TO 15:30

Waveguides

Session Chair: **Christoph Lienau**, Carl von Ossietzky Univ. Oldenburg (Germany)

0:00: **Silicon nanocoupler for the directional color-selective Bloch surface waves excitation studied by leakage radiation microscopy**, Dmitry N. Gulkin, Daniil A. Shilkin, Anna A. Popkova, Boris Afinogenov, M. V. Lomonosov Moscow State Univ. (Russian Federation); Kestutis Kuršelis, Boris N. Chichkov, Institut für Quantenoptik, Leibniz Univ. Hannover (Germany); Vladimir O. Bessonov, M. V. Lomonosov Moscow State Univ. (Russian Federation) and A. N. Frumkin Institute of Physical Chemistry and Electrochemistry (Russian Federation) [12131-39]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

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SERS-active gold-decorated silicon nanowire substrates for label-free detection of bilirubin, Anna Kartashova, M. V. Lomonosov Moscow State Univ. (Russian Federation) [12131-74]

Second and third-harmonic generation in strongly oblate ellipsoidal quantum dot under electric field, Gagik Ohanyan, David Hayrapetyan, Russian-Armenian Univ. (Armenia) [12131-80]

Creation of Au/TiO₂ hybrid nanoparticles via laser ablation in liquid, Ekaterina Ponkratova, Marina Karsakova, Dmitry Zuev, ITMO Univ. (Russian Federation) [12131-81]

Optical properties of nanoporous aluminum oxide activated by molecular clusters of pseudoisocyanine dye, Rezida Nabiullina, Igor Nikitin, Eugenia Soloveva, Igor Gladskikh, Anton A. Starovoytov, ITMO Univ. (Russian Federation) [12131-82]

Plasmon excitation in array of double-walled carbon nanotubes by free-electron beam, Aleksei Kadochkin, Igor Zolotovskii, Ulyanovsk State Univ. (Russian Federation) and Institute of Nanotechnologies of Microelectronics (Russian Federation); Sergey Moiseev, Ulyanovsk State Univ. (Russian Federation) and Ulyanovsk State Technical Univ. (Russian Federation) and Kotel'nikov Institute of Radio Engineering and Electronics (Russian Federation); Andrei A. Fotiadi, Univ. de Mons (Belgium) [12131-91]

Increasing the brightness and efficiency of quantum dot light-emitting diodes by optimizing the PMMA electron-blocking layer, Anastasia Tkach, Mariya Zvaigzne, Anna Saunina, National Research Nuclear Univ. MEPhI (Russian Federation); Alexey Alexandrov, A. N. Frumkin Institute of Physical Chemistry and Electrochemistry (Russian Federation) and National Research Nuclear Univ. MEPhI (Russian Federation); Dmitriy Lypenko, A. N. Frumkin Institute of Physical Chemistry and Electrochemistry (Russian Federation) and National Research Nuclear Univ. MEPhI (Russian Federation); Vladimir Nikitenko, National Research Nuclear Univ. MEPhI (Russian Federation); Igor Nabiev, National Research Nuclear Univ. MEPhI (Russian Federation) and Univ. de Reims Champagne-Ardenne (France); Pavel Samokhvalov, National Research Nuclear Univ. MEPhI (Russian Federation) [12131-95]

On the role of bound states in the continuum in luminescence enhancement of 2D photonic crystals with Ge(Si) nanoislands, Margarita Stepikhova, Institute for Physics of Microstructures (Russian Federation); Sergey Dyakov, Skolkovo Institute of Science and Technology (Russian Federation); Artem Yablonskiy, Alexey V. Novikov, Dmitry V. Yurasov, Zakhary F. Krasilnik, Institute for Physics of Microstructures (Russian Federation) [12131-97]

Flexible and cost-effective substrate for detection of analytes using surface enhanced Raman spectroscopy (SERS), Richa Goel, Vimarsh Awasthi, Indian Institute of Technology Delhi (India); Vijayant Bhardwaj, Institute of Technology Delhi (India); Satish K. Dubey, Indian Institute of Technology Delhi (India) [12131-103]

Detection of the local glass transition temperature of a nanosized polymer using plasmonic nanostructures, Elena Chernykh, Sergey S. Kharintsev, Kazan Federal Univ. (Russian Federation) [12131-107]

SESSION 11

LOCATION: CURIE A, NIVEAU/LEVEL 1 MON 13:40 TO 15:10

Energy Transfer I

Session Chair: **David L. Andrews**, Univ. of East Anglia (United Kingdom)

0:00: **FRET system based on composites of zinc oxide tetrapods and carbon dots**, Mariia Stepanova, ITMO University (Russian Federation); Valeriy Kondratev, Center for Nanotechnologies, Alferov University (Russian Federation); Victor Zakharov, Anna Orlova, ITMO Univ. (Russian Federation) ... [12131-53]

SESSION 13

LOCATION: CURIE A, NIVEAU/LEVEL 1 MON 11:00 TO 11:30

Nanoparticle Photonics II

Session Chair: **Anatoly V. Zayats**, King's College London (United Kingdom)

0:00: **Augmentation of magnetic field induced birefringence and chain formation in a magnetic fluid by the addition of silica nanoparticles**, Urveshkumar Soni, Rucha Desai, Charotar Univ. of Science and Technology (CHARUSAT) (India) [12131-58]

0:00: **Magneto-luminescent properties of nanocomposite Fe₃O₄@SiO₂-CdTe in culture medium**, Antonina I. Dadadzhyanova, Anastasiya V. Kurilova, Aliaksei U. Dubavik, Anna O. Orlova, ITMO Univ. (Russian Federation)[12131-59]

0:00: **Photocatalytic activity of composites based on ZnO tetrapods and magnetite nanoparticles**, Anna Matiushkina, Anna Orlova, ITMO Univ. (Russian Federation) [12131-60]

SESSION 14

LOCATION: CURIE A, NIVEAU/LEVEL 1 MON 11:30 TO 12:30

Fundamentals

Session Chair: **Anatoly V. Zayats**, King's College London (United Kingdom)

0:00: **Quantum thermodynamics and laser cooling with silicon vacancies in diamond**, Paul Eastham, Conor Murphy, Trinity College Dublin (Ireland) [12131-70]

0:00: **Highly confined 2D exciton-polaritons in monolayer semiconductors**, Itai Epstein, Tel Aviv Univ. (Israel) [12131-71]

SESSION 15

LOCATION: CURIE A, NIVEAU/LEVEL 1 MON 12:30 TO 13:10

Plasmonics and Sensing

Session Chair: **Anatoly V. Zayats**, King's College London (United Kingdom)

0:00: **Modeling of a gas sensor based on plasmon-induced transparency: influence of the dielectric spacer layer quality on the performance**, Maxim Gushchin, Tigran A. Vartanyan, ITMO Univ. (Russian Federation); Vladimir O. Okunev, Microsensor Technology LLC (Russian Federation) [12131-61]

0:00: **Plasmonic nanopore trapping for single-molecule detection of peptides with single-amino-acid resolution by surface-enhanced Raman spectroscopy: towards single-molecule protein sequencing**, Jian-an Huang, Yingqi Zhao, Univ. of Oulu (Finland) [12131-65]

CONFERENCE 12132

Wednesday–Thursday 6–7 April 2022 • Proceedings of SPIE Vol. 12132

Advances in Ultrafast Condensed Phase Physics III

Conference Chairs: **Stefan Haacke**, Institut de physique et chimie des matériaux de Strasbourg (France); **Vladislav Yakovlev**, Max-Planck-Institut für Quantenoptik (Germany)

Program Committee: **Joachim Burgdörfer**, Vienna Univ. of Technology (Austria); **Sofie Canton**, Deutsches Elektronen-Synchrotron (Germany); **Giulio N. Cerullo**, Politecnico di Milano (Italy); **Peter Hommelhoff**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Misha Ivanov**, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); **Jacek Kubicki**, Adam Mickiewicz Univ. (Poland); **Maciej Lorenc**, CNRS-Rennes (France); **Hamed Merdji**, CEA-Saclay (France); **Martin Schultze**, Technische Univ. Graz (Austria); **Jelena Sjakste**, Ecole Polytechnique (France)

WEDNESDAY 6 APRIL

SESSION 1

LOCATION: SALON 11, NIVEAU/LEVEL 1 WED 8:30 TO 10:30

Novel Tools I

Session Chair: **Stefan Haacke**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France)

8:30: **Attosecond dynamics of core excitons** (*Invited Paper*), Giacomo Inzani, Politecnico di Milano (Italy); Shunsuke Sato, University of Tsukuba (Japan); Giacinto Lucarelli, Bruno Moio, Politecnico di Milano (Italy); Rocio Borrego-Varillas, Fabio Frassetto, Luca Poletto, Institute for Photonics and Nanotechnologies, IFN-CNR (Italy); Hannes Hubener, Umberto De Giovannini, Angel Rubio, Max Planck Institute for the Structure and Dynamics of Matter (Germany); Mauro Nisoli, Matteo Lucchini, Politecnico di Milano (Italy) [12132-1]

9:10: **Light springs and magnetic vortices**, Mauro Fanciulli, Lab. Interactions, Dynamiques et Lasers (France); Matteo Pancaldi, Emanuele Pedersoli, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Mekha Vimal, David Bresteau, Martin Luttmann, Lab. Interactions, Dynamiques et Lasers (France); Dario De Angelis, Primoz R. Rebernik, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Benedikt Rösner, Paul Scherrer Institut (Switzerland); Carlo Spezzani, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Ricardo C. Sousa, Ioan-Lucian Prejbeanu, Laurent Vila, Bernard Dieny, Spintec (France); Giovanni De Ninno, Flavio Capotondi, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Maurizio Sacchi, Institut des nanosciences de Paris (France) and Synchrotron SOLEIL (France); Thierry Ruchon, Lab. Interactions, Dynamiques et Lasers (France) [12132-2]

9:30: **Photoexcited electron dynamics and energy loss rate in silicon: temperature dependence and main scattering channels**, Raja Sen, Lab. des Solides Irradiés (France); Jelena Sjakste, Lab. des Solides Irradiés, CNRS (France); Nathalie Vast, Lab. des Solides Irradiés (France) [12132-3]

9:50: **DFT modelling of fused silica electronic structure under strong laser-induced excitation**, Arshak A. Tsaturyan, Elena Silaeva, Razvan Stoian, Jean-Philippe Colombier, Univ. Jean Monnet Saint-Etienne (France) .. [12132-4]

10:10: **Ultrafast photoisomerization studied by time-resolved photoelectron spectroscopy**, Camilo Granados, Max Born Institute (Germany); Evgenii Titov, Univ. Potsdam (Germany); Johannes Hummert, Evgenii Ikonnikov, Max Born Institute (Germany); Stefan Haacke, Institut de Physique et de Chimie des Matériaux de Strasbourg (France); Roland Mitric, Institut für Physikalische und Theoretische Chemie, Julius-Maximilians-Univ. Würzburg (Germany); Oleg Kornilov, Max Born Institute (Germany) ... [12132-5]

Coffee Break. Wed 10:30 to 11:00

SESSION 2

LOCATION: SALON 11, NIVEAU/LEVEL 1 WED 11:00 TO 12:20

Novel Tools II

Session Chair: **Maciej Lorenc**, Institut de Physique de Rennes (France)

11:00: **Quantum Aspects of the Interaction between Free Electron, Light, and Photonic Nanostructures** (*Invited Paper*), F. Javier García de Abajo, ICFO - Institut de Ciències Fotòniques (Spain) [12132-6]

11:40: **Size dependence of the photoinduced phase transition in Ti3O5 nanocrystals**, Ritwika Mandal, Institut de Physique de Rennes (France) [12132-7]

12:00: **Fundamental study of ablation mechanisms in crystalline silicon and gold by femtosecond laser pulses: classical approach of two-temperature model**, Hardik Vaghasiya, Stephan Krause, Paul-Tiberiu Miclea, Martin Luther University Halle-Wittenberg, ZIK Sili-nano, Halle (Germany) and Fraunhofer Center for Silicon Photovoltaics CSP (Germany) [12132-35]

Lunch/Exhibition Break Wed 12:20 to 13:30

SESSION 3

LOCATION: SALON 11, NIVEAU/LEVEL 1 WED 13:30 TO 15:20

Ultrafast Magnetism and Phase Transition

Session Chair: **Mauro Nisoli**, Politecnico di Milano (Italy)

13:30: **Ultrafast extreme ultraviolet to hard X-ray pulses as probes of materials dynamics** (*Invited Paper*), Majed Chergui, Ecole Polytechnique Fédérale de Lausanne (Switzerland) [12132-9]

14:00: **Dynamical limits by downsizing for the photoswitching in a molecular material revealed by time-resolved X-ray diffraction**, Alix Volte, European Synchrotron Radiation Facility (France); Maciej Lorenc, Céline Mariette, Herve Cailleau, Univ. de Rennes 1 (France); Marie-Laure Boillot, Institut de Chimie Moléculaire et des Matériaux d'Orsay (France); Cristian Enachescu, Univ. "Alexandru Ioan Cuza" din Iasi (Romania) [12132-10]

14:20: **Observation of spin voltage and accumulation by spin-resolved femtosecond photoelectron spectroscopy**, Kevin Bühlmann, Francisco Carrión, Grégoire Saerens, Andreas Fognini, Andreas Vaterlaus, Yves Acremann, ETH Zurich (Switzerland) [12132-11]

14:40: **Exploring the phase-diagram of molecular crystals during ultrafast photo-induced non-equilibrium dynamics**, Roman Bertoni, Univ. de Rennes 1 (France) [12132-12]

15:00: **Ultrafast magnetization dynamics probed by X-ray resonant magnetic scattering**, Cyril Leveille, Nicolas Jaouen, Synchrotron SOLEIL (France); Erick Burgos-Parra, Yanis Sassi, Nicolas Reyren, Vincent Cros, Unité mixte de Physique, CNRS, Thalès, Université Paris-Saclay (France); Michel Viret, Jean-Yves Chaudreau, SPEC, CEA, CNRS, Université Paris-Saclay (France) [12132-13]

Coffee Break. Wed 15:20 to 15:50

SESSION 4

LOCATION: SALON 11, NIVEAU/LEVEL 1 WED 15:50 TO 17:50

Electron Dynamics I

Session Chair: **Jelena Sjakste**, Ecole Polytechnique (France)

15:50: **Dynamic screening of quasiparticles in WS₂ monolayers** (*Invited Paper*), Stefano Calati, Humboldt-Universitaet (Germany) and Fritz-Haber-Institut der Max-Planck-Gesellschaft (Germany); Qiuyang Li, Columbia University (USA) and University of Michigan (USA); Xiaoyang Zhu, Columbia University (USA); Julia Stähler, Humboldt-Universitaet (Germany) and Fritz-Haber-Institut der Max-Planck-Gesellschaft (Germany) [12132-14]

16:30: **Ultrafast optical manipulation of the stacking order in Td-WTe₂**, Oscar Granas, Uppsala Univ. (Sweden); Shaozheng Ji, Nankai Univ. (China); Amit K. Prasad, Jonas Weissenrieder, KTH Royal Institute of Technology (Sweden) [12132-15]

17:10: **Probing the spin texture of photoexcited topological insulators with circular dichroism**, Evangelos Papalazarou, Jiuxiang Zhang, Anahita Omoumi, Zhesheng Chen, Jonathan Caillaux, Marino Marsi, Lab. de Physique des Solides (France) [12132-17]

17:30: **Ab initio calculations of the ultrafast relaxation dynamics and electronic transport properties in semiconductors**, Raja Sen, Nathalie Vast, Jelena Sjakste, Lab. des Solides Irradiés, CNRS (France) and Ecole Polytechnique (France) [12132-18]

CONFERENCE 12132

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Wednesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

Ultrafast laser generation of overcritical, nanoplasmas inside dielectrics, Mostafa Hassan, Kazem Ardaneh, Rémi Meyer, Remo Giust, Institut Franche-Comte Electronique Mecanique Thermique et Optique (France); Xie Chen, Tianjin Univ. (China); Benoit Morel, Ismail Oudghiri-Idrissi, Luca Furfaro, Luc Froehly, Institut Franche-Comte Electronique Mecanique Thermique et Optique (France); Arnaud Couairon, Ecole Polytechnique (France) and CNRS (France); Guy Bonnaud, CEA-Paris-Saclay (France) and Univ. Paris-Saclay (France); Francois Courvoisier, Institut Franche-Comte Electronique Mecanique Thermique et Optique (France) [12132-31]

La_B nanotip as an ultrafast electron source, Onkar Bhorade, Ivan Blum, Jonathan Houard, Bernard Deconihout, Angela Vella, Univ. de Rouen Normandie (France) [12132-32]

Different fingerprints for the OISTR mechanism in the magnetic alloys experiments, Mohamed F. Elhanoty, Olle Eriksson, Ronny Knut, Olof Karis, Oscar Granas, Uppsala Univ. (Sweden) [12132-33]

Electron-lattice relaxation time dynamics and separation time dynamic of multiple pulse femtosecond laser ablation process on gold., Hardik Vaghasiya, Martin Luther University Halle-Wittenberg, ZIK Sili-nano, Halle (Germany) and Fraunhofer Center for Silicon Photovoltaics CSP (Germany); Stephan Krause, Martin Luther University Halle-Wittenberg, ZIK Sili-nano, Halle, Germany (Germany) and Fraunhofer Center for Silicon Photovoltaics CSP (Germany); Paul-Tiberiu Miclea, Martin Luther University Halle-Wittenberg, ZIK Sili-nano, Halle (Germany) and Fraunhofer Center for Silicon Photovoltaics CSP (Germany) [12132-34]

THURSDAY 7 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 10:35

Hot Topics III

Thierry Georges, Oxxius (France), 2022 Symposium Chair

9:00: Welcome and opening remarks

9:05: **A sneak peek with light into opaque materials: from imaging to computing** (*Plenary*), Sylvain Gigan, Lab. Kastler Brossel (France) . [12136-500]

9:50: **Active metasurfaces empowered by two-dimensional materials** (*Plenary*), Isabelle Staude, Friedrich-Schiller-Univ. Jena (Germany) . [12130-500]

Coffee Break. Thu 10:35 to 11:00

SESSION 5

LOCATION: SALON 11, NIVEAU/LEVEL 1 THU 11:00 TO 12:40

Nonadiabatic Molecular Dynamics

Session Chairs: **Maciej Lorenc**, Institut de Physique de Rennes (France); **Luca Perfetti**, Lab. des Solides Irradiés (France)

11:00: **Terahertz conductivity and charge transfer dynamics in electrochemically doped P3HT** (*Invited Paper*), Natalie Banerji, Demetra Tsokkou, Priscila Cavassin, Gonzague Rebetz, Olivier Bardagot, Univ. Bern (Switzerland) [12132-19]

11:40: **Ultrafast charge and energy transfer dynamics of novel pyrrolopyrrole cyanine sensitizers for transparent and colorless dye-sensitized solar cells**, Ilias Nikolinos, Institut de Physique et de Chimie des Matériaux de Strasbourg, CNRS (France) and Univ. de Strasbourg (France); Thibaut Baron, Univ. de Nantes (France); Waad Naim, Thomas Alnasser, Univ. de Picardie Jules Verne (France) and CNRS (France); Yann Pellegrin, Univ. de Nantes (France) and CNRS (France); Frédéric Sauvage, Univ. de Picardie Jules Verne (France) and CNRS (France); Fabrice Odobel, Univ. de Nantes (France); Stefan Haacke, Institut de Physique et de Chimie des Matériaux de Strasbourg, CNRS (France) [12132-20]

12:00: **Strong light-matter coupling with intermolecular terahertz vibrations in organic materials**, Maria Kaek, Ran Damari, Sharly Fleischer, Tal Schwartz, Tel Aviv Univ. (Israel) [12132-21]

12:20: **Ultrafast light-induced strain and symmetry breaking in ferroic materials**, Ruizhe Gu, Gwenaëlle Vaudel, Vincent Juve, Institut des Molécules et Matériaux du Mans (France); Stéphane Fusil, Vincent Garcia, Unité Mixte de Physique CNRS/Thales (France); Daniel Sando, The Univ. of New South Wales (Australia); Mads Weber, Institut des Molécules et Matériaux du Mans (France); Charles Paillard, Lab. de Mécanique des Sols, Structures et Matériaux (France); Vitaliy E. Goussev, Lab. d'Acoustique de l'Univ. du Maine (France); Houssny Bouyanfif, Univ. de Picardie Jules Verne (France); Brahim Dkhil, Lab. de Mécanique des Sols, Structures et Matériaux (France); Claire Laulhé, Synchrotron SOLEIL (France) and Univ. Paris-Saclay (France); Pascal Ruello, Institut des Molécules et Matériaux du Mans (France) [12132-22]

Lunch Break Thu 12:40 to 13:40

SESSION 6

LOCATION: SALON 11, NIVEAU/LEVEL 1 THU 13:40 TO 15:00

Strong Field

Session Chair: **Natalie Banerji**, Univ. Bern (Switzerland)

13:40: **High harmonic generation in strongly correlated materials** (*Invited Paper*), Koichiro Tanaka, Kyoto Univ. (Japan) [12132-23]

14:20: **Laser dielectric interactions: new insight from double-pulse experiments**, Stéphane Guizard, CEA-DRF (France) [12132-25]

14:40: **Ultrafast excitation of electrons in crystals: insights from nonequilibrium band structure calculations**, Thibault J. Y. Derrien, HiLASE Ctr. (Czech Republic) [12132-26]

Coffee Break. Thu 15:00 to 15:30

SESSION 7

LOCATION: SALON 11, NIVEAU/LEVEL 1 THU 15:30 TO 17:10

Electron Dynamics II

Session Chair: **Pascal Ruello**, Le Mans Univ. (France)

15:30: **Hot carriers and screening effects in a two dimensional electron gas** (*Invited Paper*), Luca Perfetti, Lab. des Solides Irradiés (France). [12132-27]

16:10: **Ultrafast photoluminescence of TiO₂ thin layers**, Adrien Girault, CNRS (France) and Saint-Gobain (France); Marc Ziegler, Olivier Crégut, CNRS (France); Matteo Balestrieri, Hervé Montgaud, Iryna Gozhyk, Saint-Gobain Recherche (France) and CNRS (France); Lorenzo Mancini, Saint-Gobain Recherche (France); Davide Sciacca, Saint-Gobain Recherche (France); Mathieu Gallart, Pierre Gilliot, CNRS (France) [12132-28]

16:30: **Recombination dynamics in high energy (>3.5 eV) GaNAIN quantum dots: influence of lateral confinement, electric field and the dark-level trapping**, Maryna Hrytsaienko, Mathieu Gallart, Mark Ziegler, Olivier Crégut, Pierre Gilliot, Institut de Physique et de Chimie des Matériaux de Strasbourg (France); Sebastian Tamariz, Raphael Butté, Nicolas Grandjean, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Bernd H. Hönerlage, Institut de Physique et de Chimie des Matériaux de Strasbourg (France) [12132-29]

CONFERENCE 12133

Monday–Wednesday 4–6 April 2022 • Proceedings of SPIE Vol. 12133

Quantum Technologies 2022

Conference Chairs: **Eleni Diamanti**, CNRS, Sorbonne Univ. (France); **Sara Ducci**, Univ. Paris 7-Diderot (France); **Nicolas Treps**, Lab. Kastler Brossel (France); **Shannon Whitlock**, Univ. Strasbourg ISIS (France)

Program Committee: **Kai Bongs**, The Univ. of Birmingham (United Kingdom); **Philippe Bouyer**, Lab. Photonique, Numérique et Nanosciences (France); **Félix Bussièrès**, id Quantique SA (Switzerland); **Thomas Gerrits**, National Institute of Standards and Technology (USA); **Hugues de Riedmatten**, ICFO - Institut de Ciències Fotòniques (Spain); **Chiara Macchiavello**, Univ. degli Studi di Pavia (Italy); **Tracy E. Northup**, Univ. Innsbruck (Austria); **Fabio Sciarrino**, Sapienza Univ. di Roma (Italy); **Paolo Villoresi**, Univ. degli Studi di Padova (Italy); **Frank Wilhelm-Mauch**, Univ. des Saarlandes (Germany)

MONDAY 4 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 11:00

Hot Topics I

Paul Montgomery, Univ. of Strasbourg (France),
2022 Symposium Chair

9:00: **Welcome and Introduction; City of Strasbourg Welcome; Presentation of the 2022 SPIE Mozi Award to Thomas W. Ebbsen**, The Institute for Advanced Study of the Univ. of Strasbourg (USIAS) and CNRS (France), **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA), 2022 SPIE President

9:10: **Introduction to Hot Topics, Paul Montgomery**, Univ. of Strasbourg (France), 2022 Symposium Chair

9:15: **Access to photonics innovation support for European researchers and companies through ACTPHAST4R and PhotonHub Europe (Plenary)**, Hugo Thienpont, Vrije Univ. Brussel (Belgium) [12148-500]

9:30: **Quantum computing: prospects and challenges (Plenary)**, Heike Riel, IBM Research - Zürich (Switzerland) [12133-500]

10:15: **Einstein Telescope, the pioneer project for a third-generation GW observatory in Europe: science, technologies and perspectives (Plenary)**, Michele Punturo, Istituto Nazionale di Fisica Nucleare (Italy) [12139-500]

Coffee Break Mon 11:00 to 11:30

SESSION 1

LOCATION: CHURCHILL, NIVEAU/LEVEL 1 MON 11:30 TO 12:40

Quantum Sensing and Metrology I

Session Chair: **Mattia Walschaers**, Lab. Kastler Brossel (France)

11:30: **Long-lived spin squeezing in a trapped-atom clock on a chip (Invited Paper)**, Jakob Reichel, Lab. Kastler Brossel (France) [12133-1]

12:00: **First temperature measurement in neurons by ODMR techniques**, Marco Genovese, Istituto Nazionale di Ricerca Metrologica (Italy) [12133-2]

12:20: **Parameter estimation of time and frequency shifts with generalized Hong, Ou and Mandel interferometry**, Nicolas Fabre, Ctr. for Quantum Optical Technologies, Ctr. of New Technologies, Univ. of Warsaw (Poland) and Univ. Complutense de Madrid (Spain) [12133-3]

Lunch Break Mon 12:40 to 13:50

SESSION 2

LOCATION: CHURCHILL, NIVEAU/LEVEL 1 MON 13:50 TO 15:10

Quantum Sensing and Metrology II

Session Chair: **Nicolas Treps**, Lab. Kastler Brossel (France)

13:50: **Ghost displacement**, John Jeffers, Gioan Tassi, Univ. of Strathclyde (United Kingdom); Ugo Zanforlin, Gerald S. Buller, Heriot-Watt Univ. (United Kingdom) [12133-4]

14:10: **Quantum-enhanced interferometry with large heralded photon-number states**, Monika E. Mycroft, Univ. of Warsaw (Poland); Guillaume S. Thekkadath, Bryn A. Bell, Chris G. Wade, Andreas Eckstein, David S. Phillips, Raj B. Patel, Clarendon Lab., Univ. of Oxford (United Kingdom); Adam Buraczewski, Univ. of Warsaw (Poland); Adriana E. Lita, Thomas Gerrits, Sae W. Nam, National Institute of Standards and Technology (USA); Magdalena Stobinska, Univ. of Warsaw (Poland); Alex I. Lvovsky, Clarendon Lab., Univ. of Oxford (United Kingdom); Ian A. Walmsley, Clarendon Lab., Univ. of Oxford (United Kingdom) and Imperial College London (United Kingdom) [12133-5]

14:30: **Detection protocol for non-Gaussian quantum steering**, Carlos E. Lopetegui, Lab. Kastler Brossel, École normale supérieure - PSL, CNRS (France) and Sorbonne Univ. (France) and Collège de France (France); Manuel Gessner, Lab. Kastler Brossel, École normale supérieure - PSL, CNRS (France) and Sorbonne Univ. (France) and Collège de France (France); Matteo Fadel, Univ. Basel (Switzerland); Nicolas Treps, Lab. Kastler Brossel, École normale supérieure - PSL, CNRS (France) and Sorbonne Univ. (France) and Collège de France (France); Mattia Walschaers, Lab. Kastler Brossel, École normale supérieure - PSL, CNRS (France) and Sorbonne Univ. (France) and Collège de France (France) [12133-6]

14:50: **Spin noise spectroscopy of metastable helium**, Shikang Liu, Pascal Neveu, Louka Hemmen, Univ. Paris-Saclay (France); Etienne Brion, Univ. Paul Sabatier (France); E. Wu, East China Normal Univ. (China); Fabien Bretenaker, Fabienne Goldfarb, Univ. Paris-Saclay (France) [12133-7]

Coffee Break Mon 15:10 to 15:40

SESSION 3

LOCATION: CHURCHILL, NIVEAU/LEVEL 1 MON 15:40 TO 17:50

Quantum Components and their Applications I

Session Chair: **Sara Ducci**, Lab. Matériaux et Phénomènes Quantiques (France)

15:40: **Guided-wave solutions for non-classical state production (Invited Paper)**, Virginia D'Auria, Mohamed Fauzi Melalkia, Institut de Physique de Nice (France); Tecla Gabrielli, Istituto Nazionale di Ottica (CNR-INO) and European Laboratory for Non-linear Spectroscopy (Italy); Antoine Petitjean, Institut de Physique de Nice (France); Alessandro Zavatta, Istituto Nazionale di Ottica (CNR-INO) and European Laboratory for Non-linear Spectroscopy (Italy); Sébastien Tanzilli, Jean Etesse, Institut de Physique de Nice (France) [12133-8]

16:10: **On-chip integration of superconducting nanowire single-photon detectors and reconfigurable optical circuits in lithium-niobate-on-insulator waveguides**, Emma Lomonte, Martin Wolff, Fabian Beutel, Simone Ferrari, Carsten Schuck, Wolfram Pernice, Francesco Lenzi, Westfälische Wilhelms-Universität Münster (Germany) [12133-9]

16:30: **On-chip III-V monolithic integration of entangled photons pairs sources and polarizing beamsplitters**, Maria I. Amanti, Félicien Appas, Univ. de Paris (France); Aristide Lemaitre, Ctr. de Nanosciences et de Nanotechnologies, Univ. Paris-Saclay, CNRS (France); Martina Morassi, Ctr. de Nanosciences et de Nanotechnologies, Univ. Paris-Saclay, CNRS (France); Florent Baboux, Sara Ducci, Univ. de Paris (France) [12133-10]

16:50: **True single-photon-based interferometric generation of single-photon added coherent states**, Petr Steindl, Kirsten Kannevorff, Victoria Domínguez Tubío, Wolfgang Löffler, Leiden Univ. (Netherlands) [12133-11]

17:10: **Multicell atomic quantum memory as a hardware-efficient quantum repeater node**, Chang Li, Institut de Science et d'Ingénierie Supramoléculaires, Univ. de Strasbourg (France) and CNRS (France) [12133-12]

17:30: **Anyonic two-photon statistics and hybrid entanglement with a semiconductor chip**, Florent Baboux, Lab. Matériaux et Phénomènes Quantiques, Univ. de Paris (France); Saverio Francesconi, Arnault Raymond, Nicolas Fabre, Lab. Matériaux et Phénomènes Quantiques (France); Aristide Lemaitre, Ctr. de Nanosciences et de Nanotechnologies (France) and CNRS (France); Perola Milman, Maria I. Amanti, Sara Ducci, Lab. Matériaux et Phénomènes Quantiques (France) [12133-39]

TUESDAY 5 APRIL

SESSION 4

LOCATION: CHURCHILL, NIVEAU/LEVEL 1 TUE 9:00 TO 10:30

Quantum Cryptography and Communication I

Session Chair: **Chang LI**, Institut de Science et d'Ingénierie Supramoléculaires (France)

9:00: **Quantum communication networks and their use for protocols beyond just QKD** (*Invited Paper*), Siddarth K. Joshi, Univ. of Bristol (United Kingdom). [12133-13]

9:30: **A long-lived spectrally multiplexed solid-state optical quantum memory for high-rate quantum repeaters**, Antariksha Das, Mohsen Falamarzi Askarani, Jacob H. Davidson, Gustavo C. Amaral, QuTech, Technische Univ. Delft (Netherlands); Neil Sinclair, Caltech (USA); Daniel Oblak, Institute for Quantum Science and Technology, Univ. of Calgary (Canada); Joshua A. Slater, Sara Marzban, QuTech, Technische Univ. Delft (Netherlands); Charles W. Thiel, Rufus L. Cone, Montana State Univ. (USA); Wolfgang Tittel, QuTech, Technische Univ. Delft (Netherlands) [12133-14]

9:50: **Single-pass femtosecond parametric process towards continuous-variable quantum networks**, Francesca Sansavini, Lab. Kastler Brossel, Sorbonne Univ., CNRS (France) and Ecole normale supérieure - PSL (France) and Collège de France (France); Matthieu Ansquer, Lab. Kastler Brossel, Sorbonne Univ., CNRS (France) and Ecole normale supérieure - PSL (France) and Collège de France (France); Tiphaine Kouadou, Nicolas Treps, Valentin Parigi, Lab. Kastler Brossel, Sorbonne Univ., CNRS (France) and Ecole normale supérieure - PSL (France) and Collège de France (France) [12133-15]

10:10: **Quantum memories for fundamental physics in space**, Jan-Michael Mol, Institut für Quantentechnologien, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany); Luisa Esguerra, Institut für Optische Sensordysteme, Deutsches Zentrum für Luft- und Raumfahrt eV (Germany) and Institut für Optik und Atomare Physik, Technische Univ. Berlin (Germany); Matthias Meister, Institut für Quantentechnologien, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany); Janik Wolters, Institut für Optische Sensordysteme, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany) and Institut für Optik und Atomare Physik, Technische Univ. Berlin (Germany); Lisa Wörner, Institut für Quantentechnologien, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany) [12133-16]

Coffee Break. Tue 10:30 to 11:00

SESSION 5

LOCATION: CHURCHILL, NIVEAU/LEVEL 1 TUE 11:00 TO 12:40

Quantum Cryptography and Communication II

Session Chair: **Florent Baboux**, Lab. Matériaux et Phénomènes Quantiques (France)

11:00: **Experimental analysis of quantum position verification**, Kirsten Kannevorff, Petr Steindl, Leiden Univ. (Netherlands); Rene Allerstorfer, Philip Verduyn Lunel, Florian Speelman, Harry Bührman, QuSoft (Netherlands); Wolfgang Löffler, Leiden Univ. (Netherlands) [12133-17]

11:20: **Receiver-device-independent quantum key distribution**, Marie Ioannou, Maria Ana Pereira, Davide Rusca, Fadri Grünenfelder, Alberto Boaron, Matthieu Perrenoud, Univ. de Genève (Switzerland); Alastair A. Abbott, Univ. Grenoble Alpes (France); Pavel Sekatski, Univ. de Genève (Switzerland); Jean-Daniel Bancal, Univ. Paris-Saclay (France) and CEA (France) and CNRS (France); Nicolas Maring, Hugo Zbinden, Nicolas Brunner, Univ. de Genève (Switzerland) [12133-18]

11:40: **Quantum key distribution and classical communication coherent deployment with shared hardware and joint digital signal processing**, Raphael Aymeric, Yves Jaouën, Cédric Ware, Romain Alléaume, Télécom Paris (France) [12133-19]

12:00: **Towards low-cost monolithic QRNGs**, Nicola Massari, Fondazione Bruno Kessler (Italy); Yu Zou, AlpsenTek (Switzerland); Manuel Moreno Garcia, Sony (Norway); Luca Parmesan, Alessandro Tontini, Fondazione Bruno Kessler (Italy); Sonia Mazzucchi, Nicolò Leone, Stefano Azzini, Lorenzo Pavesi, University of Trento (Italy); Ingo Herrmann, Thomas Strohm, Robert Bosch GmbH (Germany) [12133-20]

12:20: **Optical quantum state engineering with multimode resources: between a drawback to be circumvented and an advantage to be exploited**, Mohamed Faouzi Melalkia, Univ. Côte d'Azur (France) and Institut de Physique de Nice, CNRS (France); Juliette Huynh, Univ. Côte d'Azur (France) and Institut de Physique de Nice, CNRS (France); Léandre Brunel, Univ. Côte d'Azur (France) and Institut de Physique de Nice, CNRS (France); Sébastien Tanzilli, Univ. Côte d'Azur (France) and Institut de Physique de Nice, CNRS (France); Virginia D'Auria, Univ. Côte d'Azur (France) and Institut de Physique de Nice, CNRS (France); Jean Etesse, Univ. Côte d'Azur (France) and Institut de Physique de Nice, CNRS (France) [12133-21]

Lunch/Exhibition Break Tue 12:40 to 14:00

SESSION 6

LOCATION: CHURCHILL, NIVEAU/LEVEL 1 TUE 14:00 TO 15:30

Quantum Sensing and Metrology III

Session Chair: **Nicolas Treps**, Lab. Kastler Brossel (France)

14:00: **Towards the quantum limit for two bright-source separation estimation**, Giacomo Sorelli, Clémentine Rouvière, Ilya Karuseichyk, David Barral, Manuel Gessner, Mattia Walschaers, Nicolas Treps, Lab. Kastler Brossel (France) [12133-23]

14:20: **Characterizing the spatial mode decomposition of SPDC: from projective methods to imaging**, Alessio D'Errico, Felix Hufnagel, Seyedeh Fatemeh Dehghan Manshadi, Univ. of Ottawa (Canada); Filippo Miatto, Xanadu Quantum Technologies Inc. (Canada); Mohammadreza Rezaee, Ebrahim Karimi, Xiaoqin Gao, Univ. of Ottawa (Canada) [12133-24]

14:40: **Observation of pairs of atoms at opposite momenta in an equilibrium interacting Bose gas**, Antoine Tenart, Gaétan Hercé, Jan-Philipp Bureik, Alexandre Dareau, David Clément, Lab. Charles Fabry (France) [12133-26]

Coffee Break. Tue 15:00 to 16:30

15:00: **Integrated photonic quantum information processing with silicon nitride photonic processors** (*Invited Paper*), Jelmer J. Renema, QuiX Quantum BV (Netherlands) [12133-36]

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:30: **Welcome and opening remarks**

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) [12144-500]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Tuesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

GaN laser diodes for cold-atom quantum sensors and optical atomic clocks, Stephen P. Najda, Piotr Perlin, Tadek Suski, Szymon Stanczyk, Mike Leszczynski, Dario Schiavon, TopGaN Ltd. (Poland); Thomas Slight, Sivers Photonics Ltd. (United Kingdom); Steffan Gwyn, Scott Watson, Anthony Kelly, Univ. of Glasgow (United Kingdom); Martin Knapp, Mohsin Haji, National Physical Lab. (United Kingdom); John Macarthur, Jack W. Thomas, Fraunhofer Ctr. for Applied Photonics (United Kingdom) [12133-41]

QKD attack rating: prioritizing is the key to practical security, Rupesh Kumar, Univ. of York (United Kingdom); Francesco Mazzoncini, Télécom Paris (France); Hao Qin, National Univ. of Singapore (Singapore); Romain Alléaume, Télécom Paris (France) [12133-42]

Everlasting secure key agreement from the quantum computational timelock, Vyas Nilesh, Romain Alléaume, Télécom Paris (France) [12133-43]

Towards a self-tuning quantum key distribution transmitter using a genetic algorithm, Yuen San Lo, Toshiba Europe Ltd. (United Kingdom) [12133-45]

Complex natural gradient optimization for optical quantum circuit design, Yuan Yao, Télécom Paris (France) and Institut Polytechnique de Paris (France); Pierre Cussenot, Ecole Polytechnique (France) and Institut Polytechnique de Paris (France); Richard A Wolf, Télécom Paris (France) and Institut Polytechnique de Paris (France); Filippo Miatto, Xanadu Quantum Technologies Inc. (Canada) and Télécom Paris (France) and Institut Polytechnique de Paris (France) [12133-46]

GaN-based external-cavity diode lasers for strontium ion cooling, John Macarthur, Jack Thomas, Fraunhofer Ctr. for Applied Photonics (United Kingdom); Stephen P. Najda, Topgan Quantum Technologies, Ltd. (United Kingdom); Shaun Jones, ALTER TECHNOLOGY TÜV NORD UK Ltd. (United Kingdom) [12133-47]

Storage of single photon and two photons states in an all-optical quantum memory, Viviane Cotte, Univ. Paris-Saclay (France); Hector Simon, Univ. Paris Saclay (France); Rosa Tualle-Brouri, Univ. Paris-Saclay (France) [12133-48]

High-brightness narrowband fiber laser for quantum dot excitation tunable from 770 nm to 980 nm, Maximilian Brinkmann, Tim Hellwig, Sven Dobner, Niklas Lüpken, Refined Laser Systems GmbH (Germany) . . . [12133-51]

Spectroscopy of defect centers in hBN, Pablo Tieben, Hiren Dobarya, Nora Bahrami, Andreas Schell, Leibniz Univ. Hannover (Germany) [12133-52]

Using optically pumped magnetometers to identify initial damage in bulk material during fatigue testing, Kerstin Thiemann, Andreas Blug, Peter Koss, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany); Ali Durmaz, Fraunhofer-Institut für Werkstoffmechanik IWM (Germany); Gennadii Laskin, Alexander Bertz, Frank Kühnemann, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany); Thomas Straub, Fraunhofer-Institut für Werkstoffmechanik IWM (Germany) [12133-53]

Applications of machine learning to long-range quantum routing, Patrycja Tulewicz, Institute of Spintronics and Quantum Information, Adam Mickiewicz Univ. (Poland); Karol Bartkiewicz, Institute of Spintronics and Quantum Information, Adam Mickiewicz Univ. (Poland) and Palacký Univ. Olomouc (Czech Republic) and Institute of Physics of the CAS, v.v.i. (Czech Republic) . . . [12133-54]

Hybrid photon-phonon blockade, Shilan Abo, Grzegorz Chimczak, Ravindra Chhajlani, Anna Kowalewska-Kudlaszyk, Adam Miranowicz, Adam Mickiewicz Univ. (Poland) [12133-55]

Superresolution using transverse-spatial NOON states, Markus Hiekkamäki, Tampere University (Finland); Frédéric Bouchard, National Research Council of Canada (Canada); Rafael F. Barros, Marco Ornigotti, Robert Fickler, Tampere University (Finland) [12133-59]

Quantum computing calculations for nuclear structure and nuclear data, Isaac A Hobday, Paul Stevenson, University of Surrey (United Kingdom); James Benstead, AWE (United Kingdom) [12133-61]

WEDNESDAY 6 APRIL

SESSION 7

LOCATION: CHURCHILL, NIVEAU/LEVEL 1 WED 9:00 TO 10:30

Novel Quantum Platforms and Hybrid Devices I

Session Chair: **Sara Ducci**, Lab. Matériaux et Phénomènes Quantiques (France)

9:00: **Broad diversity of near-infrared single-photon emitters in silicon** (*Invited Paper*), Anais Dreau, Univ. Montpellier (France) [12133-27]

9:30: **Cavity QED with a Rydberg superatom: coherent control, single-shot detection, and conditional optical phase flips**, Julien Vaneecloo, Sébastien Garcia, Alexei Ourjoumtsev, CNRS (France) and Collège de France (France) [12133-28]

9:50: **Creation of low-charge-noise nitrogen-vacancy centers in diamond with solid-immersion lens-assisted laser writing**, Viktoria Yurgens, Josh A. Zuber, Sigurd Flagan, Marta De Luca, Brendan Shields, Ilaria Zardo, Patrick Maletinsky, Richard J. Warburton, Univ. Basel (Switzerland); Tomasz Jakubczyk, Univ. of Warsaw (Poland) [12133-29]

10:10: **High-resolution imaging and manipulation of cold atoms through a multimode fiber**, Sébastien Garcia, Nicolas Vitrant, Kilian Müller, Alexei Ourjoumtsev, Collège de France, CNRS (France) [12133-30]

Coffee Break. Wed 10:30 to 11:00

SESSION 8

LOCATION: CHURCHILL, NIVEAU/LEVEL 1 WED 11:00 TO 11:40

Novel Quantum Platforms and Hybrid Devices II

Session Chair: **Shannon Whitlock**, Institut de Science et d'Ingénierie Supramoléculaires (France)

11:00: **Integrating silicon detectors in a photonic chip**, Martino Bernard, Mher Ghulinyan, Fabio Acerbi, Giovanni Paternoster, Fondazione Bruno Kessler (Italy) [12133-31]

11:20: **A new platform for atom-ion hybrid experiments**, Carlo Sias, Lucia Duca, Elia Perego, Federico Berto, Naoto Mizukami, Istituto Nazionale di Ricerca Metrologica (Italy) [12133-32]

SESSION 9

LOCATION: CHURCHILL, NIVEAU/LEVEL 1 WED 11:40 TO 12:20

Quantum Components and their Applications II

Session Chair: **Sara Ducci**, Lab. Matériaux et Phénomènes Quantiques (France)

11:40: **Optimization and noise study of a warm vapor EIT memory on the Cs D1 line**, Luisa Esguerra, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany) and Technische Univ. Berlin (Germany); Leon Messner, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany) and Institut für Physik, Humboldt-Univ. zu Berlin (Germany); Elizabeth Robertson, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany) and Institute for Optics and Atomic Physics, Technische Univ. Berlin (Germany); Mustafa Gündogan, Institut für Physik, Humboldt-Univ. zu Berlin (Germany); Janik Wolters, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany) and Institut für Optik und Atomare Physik, Technische Univ. Berlin (Germany) [12133-34]

12:00: **Influence of extended defects and surfaces on the electromagnetic properties of negatively charged NV center in diamond**, Reyhaneh Ghassemizadeh, Wolfgang Körner, Daniel Urban, Fraunhofer-Institut für Werkstoffmechanik IWM (Germany); Christian Elsässer, Fraunhofer-Institut für Werkstoffmechanik IWM (Germany) and Freiburg Materials Research Ctr., Univ. of Freiburg (Germany) [12133-35]

Lunch/Exhibition Break Wed 12:20 to 13:40

LOCATION: CHURCHILL, NIVEAU/LEVEL 1 13:00 TO 15:10

Session of Related Interest. The Road to Commercializing an Emerging Technology

This Session is part of <https://spie.org/conferences-and-exhibitions/photronics-europe/programme/industry-events>SPIE Photonics Europe Industry Programme>

Hear industry leaders address the markets and opportunities for photonics in Europe and join us for an exciting session featuring leading players driving the commercialization of quantum technologies.

Hear about the challenges in moving quantum systems into the marketplace and learn about the quantum landscape in Europe.

[VIEW FULL SESSION PROGRAM HERE](#)

Coffee Break. Wed 15:10 to 15:50

SESSION 10

LOCATION: CHURCHILL, NIVEAU/LEVEL 1 WED 15:50 TO 16:40

Quantum Simulation and Computing

Session Chair: **Shannon Whitlock**, Institut de Science et d'Ingénierie Supramoléculaires (France)

15:50: **Zooming in on Fermi gases in two dimensions** (*Invited Paper*), Philipp Preiss, Max-Planck-Institut für Quantenoptik (Germany) [12133-37]

16:20: **Certification of non-Gaussian states using double homodyne detection**, Ganaël Roeland, Sorbonne Univ. (France); Ulysse Chabaud, Caltech (USA); Mattia Walschaers, Frédéric Grosshans, Valentina Parigi, Damian Markham, Nicolas Treps, Sorbonne Univ. (France) [12133-38]

CONFERENCE 12133

ON DEMAND PRESENTATIONS

SESSION 6

LOCATION: CHURCHILL, NIVEAU/LEVEL 1 MON 14:00 TO 15:30

Quantum Sensing and Metrology III

Session Chair: **Nicolas Treps**, Lab. Kastler Brossel (France)

0:00: **Quantum lidar with multiplexed photo detection**, Nigam Samantaray, Hao Yang, John Jeffers, Univ. of Strathclyde (United Kingdom) [12133-22]

0:00: **Super-sensitive rotation measurement with an orbital angular momentum atom-light hybrid interferometer**, Sheng Ming, Shanghai Jiao Tong Univ. (China)..... [12133-25]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

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Influence of QKD apparatus parameters on the backflash attack, Sergey A. Bogdanov, Ivan S. Sushchev, SFB Lab. Ltd. (Russian Federation) and Quantum Technology Ctr., M. V. Lomonosov Moscow State Univ. (Russian Federation); Andrey N. Klimov, Quantum Technology Ctr., M. V. Lomonosov Moscow State Univ. (Russian Federation); Kirill E. Bugay, Daniil S. Bulavkin, Dmitry A. Dvoretzky, SFB Lab. Ltd. (Russian Federation) and Bauman Moscow State Technical Univ. (Russian Federation)..... [12133-57]

Quantum aliasing: a negative influence of data scarcity on quantum machine learning, Shan Suthaharan, Univ of North Carolina at Greensboro (USA)..... [12133-58]

Dynamic assertion for quantum circuits based on stabilizers, Chen-yuan Lin, Department of EE National Cheng Kung University (Taiwan); Shang-Wei Lin, School of Computer Science and Engineering Nanyang Technological University (Singapore); Yean-Ru Chen, Department of EE National Cheng Kung University (Taiwan)..... [12133-60]

CONFERENCE 12134

Monday–Tuesday 4–5 April 2022 • Proceedings of SPIE Vol. 12134

Terahertz Photonics II

Conference Chairs: **Mona Jarrahi**, Univ. of California, Los Angeles (USA); **Sascha Preu**, Technische Univ. Darmstadt (Germany); **Dmitry Turchinovich**, Univ. Bielefeld (Germany)

Program Committee: **Jan C. Balzer**, Univ. of Duisburg-Essen (Germany); **Enrique Castro-Camus**, Centro de Investigaciones en Óptica, A.C. (Mexico); **Jean-François Lampin**, Institute of Electronics, Microelectronics and Nanotechnology (France); **Hiroaki Minamide**, RIKEN (Japan); **Taiichi Otsuji**, Tohoku Univ. (Japan); **Willie J. Padilla**, Duke Univ. (USA); **Romain Peretti**, Institut d'Electronique de Microélectronique et de Nanotechnologie (France); **Emilien Peytavit**, Institut d'Electronique de Microélectronique et de Nanotechnologie (France); **Marco Rahm**, Technische Univ. Kaiserslautern (Germany); **François Simoens**, CEA-LETI (France); **Andreas Stöhr**, Univ. Duisburg-Essen (Germany); **Zach Taylor**, Aalto Univ. (Finland); **Shang Hua Yang**, National Tsing Hua Univ. (Taiwan); **Nezih Tolga Yardimci**, Univ. of California, Los Angeles (USA)

MONDAY 4 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 11:00

Hot Topics I

Paul Montgomery, Univ. of Strasbourg (France),
2022 Symposium Chair

- 9:00: **Welcome and Introduction; City of Strasbourg Welcome; Presentation of the 2022 SPIE Mozi Award to Thomas W. Ebbesen**, The Institute for Advanced Study of the Univ. of Strasbourg (USIAS) and CNRS (France), **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA), 2022 SPIE President
- 9:10: **Introduction to Hot Topics, Paul Montgomery**, Univ. of Strasbourg (France), 2022 Symposium Chair
- 9:15: **Access to photonics innovation support for European researchers and companies through ACTPHAST4R and PhotonHub Europe (Plenary)**, Hugo Thienpont, Vrije Univ. Brussel (Belgium) [12148-500]
- 9:30: **Quantum computing: prospects and challenges (Plenary)**, Heike Riel, IBM Research - Zürich (Switzerland) [12133-500]
- 10:15: **Einstein Telescope, the pioneer project for a third-generation GW observatory in Europe: science, technologies and perspectives (Plenary)**, Michele Punturo, Istituto Nazionale di Fisica Nucleare (Italy) [12139-500]
- Coffee Break Mon 11:00 to 11:30

SESSION 1

LOCATION: SALON 1, NIVEAU/LEVEL 0 MON 11:30 TO 12:20

Sources and Detectors I

Session Chair: **Mikhail A. Belkin**, Technische Univ. München (Germany)

- 11:30: **Optoelectronic terahertz generation by coherent and incoherent semiconductor light sources (Invited Paper)**, Jan C. Balzer, Univ. Duisburg-Essen (Germany) [12134-1]
- 12:00: **A new single shot THz detection strategy with electro-optic sampling**, Julien Rehault, Philipp Krauspe, Natalie Banerji, Univ. Bern (Switzerland) [12134-2]
- Lunch Break Mon 12:20 to 13:50

SESSION 2

LOCATION: SALON 1, NIVEAU/LEVEL 0 MON 13:50 TO 15:20

Sources and Detectors II

Session Chair: **Romain Peretti**, Institut d'Electronique de Microélectronique et de Nanotechnologie (France)

- 13:50: **QCL and fibre laser-driven frequency combs (Invited Paper)**, Michael Jaidl, Dominik Theiner, Benedikt Limbacher, Maximilian Beiser, Aaron M Andrews, Gottfried U Strasser, Juraj Darmo, Karl Unterrainer, Technische Univ. Wien (Austria) [12134-4]
- 14:20: **Terahertz quantum cascade laser sources based on difference-frequency mixing with improved outcoupling efficiency (Invited Paper)**, Wolfhard Oberhausen, Walter Schottky Institut (Germany); Jae Hyun Kim, The Univ. of Texas at Austin (USA); Gerhard Böhm, Mikhail A. Belkin, Walter Schottky Institut (Germany) [12134-5]
- 14:50: **THz resonant tunnelling diodes, oscillators, detectors, applications (Invited Paper)**, Michael Feiginov, Technische Univ. Wien (Austria) [12134-6]
- Coffee Break Mon 15:20 to 15:50

SESSION 3

LOCATION: SALON 1, NIVEAU/LEVEL 0 MON 15:50 TO 17:40

Sources and Detectors III

Session Chair: **Jan C. Balzer**, Univ. Duisburg-Essen (Germany)

- 15:50: **Laser-free fully-electronic THz signal generation and detection (Invited Paper)**, Aydin Babakhani, UCLA Samueli School of Engineering (USA) . . [12134-7]
- 16:20: **Harnessing ultrafast spin and charge currents for terahertz photonics (Invited Paper)**, Tom S. Seifert, Freie Univ. Berlin (Germany) [12134-8]
- 16:50: **Terahertz time domain spectroscopy data processing: analysing uncertainties to push boundaries (Invited Paper)**, Mélanie Lavancier, Sophie Eliet Barois, Elsa Denakpo, Juliette Vlieghe, Nabil Vindas, Institut d'Electronique de Microélectronique et de Nanotechnologie (France); Francis Hindle, Arnaud Cuisset, Univ. du Littoral Côte d'Opale (France); Romain Peretti, Institut d'Electronique de Microélectronique et de Nanotechnologie (France) . . [12134-9]
- 17:20: **Planarized tapered waveguides for THz quantum cascade laser frequency combs**, Urban Senica, Tudor Olariu, Andres Forrer, Paolo Micheletti, Mattias Beck, Jérôme Faist, Giacomo Scalari, ETH Zurich (Switzerland) [12134-10]

TUESDAY 5 APRIL

SESSION 4

LOCATION: SALON 1, NIVEAU/LEVEL 0 TUE 8:30 TO 10:10

Metamaterials

Session Chair: **Martin R. Hofmann**, Ruhr-Univ. Bochum (Germany)

- 8:30: **An ultrastrongly coupled single THz meta-atom (Invited Paper)**, Giacomo Scalari, Shima Rajabali, Sergej Markmann, Elsa Jöchl, ETH Zurich (Switzerland); Erika Cortese, Simone De Liberato, Univ. of Southampton (United Kingdom); Mattias Beck, Christian Lehner, Werner Wegscheider, Jérôme Faist, ETH Zurich (Switzerland) [12134-11]
- 9:00: **Dispersion-engineered metasurfaces for spoof surface plasmon polaritons at terahertz frequencies (Invited Paper)**, Marco Rahm, Sven Becker, Technische Univ. Kaiserslautern (Germany) [12134-12]
- 9:30: **Light matter interaction enhancement through spatial confinement in the THz range: towards spectral analysis of single objects**, Theo Hannotte, Mélanie Lavancier, Louis Thomas, Sergey Mitryukovskiy, Jean-François Lampin, Romain Peretti, Institut d'Electronique de Microélectronique et de Nanotechnologie (France) [12134-13]
- 9:50: **Enhanced-dynamic THz emission in a coupled metal Epsilon Near Zero metasurface**, Eviatar Minerbi, Symeon Sideris, Tal Ellenbogen, Tel Aviv Univ. (Israel) [12134-14]
- Coffee Break Tue 10:10 to 10:40

SESSION 5

LOCATION: SALON 1, NIVEAU/LEVEL 0 TUE 10:40 TO 12:20

Communication and Applications

Session Chair: **Giacomo Scalari**, ETH Zurich (Switzerland)

- 10:40: **THz metrology with monolithic tunable two-color diode lasers (Invited Paper)**, Martin R. Hofmann, Nils Surkamp, Alexandra Gerling, Ruhr-Univ. Bochum (Germany); Martin Honsberg, Sebastian Schmidtman, Joachim Sacher, Sacher Lasertechnik GmbH (Germany); Uttam Nandi, Sascha Preu, Technische Univ. Darmstadt (Germany); Carsten Brenner, Ruhr-Univ. Bochum (Germany) [12134-16]

CONFERENCE 12134

11:10: **Terahertz waveguide: the fundamental component for sustainable world connectivity** (*Invited Paper*), Shaghik Atakaramians, The Univ. of New South Wales (Australia); Haisu Li, Beijing Jiaotong Univ. (China); Muhammad Talal Ali Khan, Qigejian Wang, Syed Daniyal A. Shah, The Univ. of New South Wales (Australia); Rajour Tanyi Ako, Madhu Bhaskaran, Sharath Sriram, RMIT Univ. (Australia); Withawat Withayachumnankul, The Univ. of Adelaide (Australia); Andrea Blanco-Redondo, Nokia Bell Labs. (USA); Boris Kuhlmeier, The Univ. of Sydney (Australia) [12134-17]

11:40: **THz photonics-based transmitter using multicore fiber combined with UTC-PD array for high-data transmission in 300 GHz band**, Bewindin Alfred Sawadogo, Lab. de Physique des Lasers, Atomes et Molécules (France); Aritrio Bandyopadhyay, Malek Zegaoui, Mohammed Zaknourne, Institut d'Electronique de Microélectronique et de Nanotechnologie (France); Géraud Bouwmans, Pascal Szriftgiser, Karen Baudelle, Monika Bouet, Lab. de Physique des Lasers, Atomes et Molécules (France); Davy P. Gaillot, Institut d'Electronique de Microélectronique et de Nanotechnologie (France); Esben Andresen, Lab. de Physique des Lasers, Atomes et Molécules (France); Guillaume Ducournau, Institut d'Electronique de Microélectronique et de Nanotechnologie (France); Laurent Bigot, Lab. de Physique des Lasers, Atomes et Molécules (France) [12134-18]

12:00: **Shear interferometry for terahertz wavefront sensing**, Mostafa Agour, Aswan Univ. (Egypt) and Bremer Institut für angewandte Strahltechnik GmbH (Germany); Claas Falldorf, Bremer Institut für angewandte Strahltechnik GmbH (Germany); Fatima Taleb, Enrique Castro-Camus, Martin Koch, Philipps-Universität Marburg (Germany); Ralf B. Bergmann, Bremer Institut für angewandte Strahltechnik GmbH (Germany) [12134-21]

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:30: **Welcome and opening remarks**

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) . [12144-500]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Tuesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at <https://spie.org/EPE/Poster-Guidelines>

Assessing the hydration state of agarose-based hydrogels using terahertz spectroscopy, Mark Justine Zapanta, Annelies Postelmans, Wouter Saeyns, KU Leuven (Belgium) [12134-24]

Terahertz and mid-infrared near-field optical imaging and Kelvin probe force microscopy of laser-switched phase change material $\text{Ge}_3\text{Sb}_2\text{Te}_6$, Julian Barnett, RWTH Aachen Univ. (Germany); Lukas Wehmeier, TU Dresden (Germany); Andreas Heßler, Martin Lewin, Julian Pries, Matthias Wuttig, RWTH Aachen Univ. (Germany); J. M. Klopff, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Susanne C. Kehr, Lukas M. Eng, TU Dresden (Germany); Thomas Taubner, RWTH Aachen Univ. (Germany) [12134-25]

Terahertz double wire-grid polarizer by nanoimprint lithography, Alexandre Chicharo, INL - International Iberian Nanotechnology Lab. (Portugal); Tatiana G. Rappoport, Instituto de Telecomunicações, Instituto Superior Técnico, University of Lisbon, (Portugal); Chun-Da Liao, Pieter de Beule, Jérôme Borme, INL - International Iberian Nanotechnology Lab. (Portugal); Nuno M. R. Peres, Pedro Alpuim, INL - International Iberian Nanotechnology Lab. (Portugal) and Centro de Física das Universidades do Minho e Porto (CF-UM-UP), Universidade do Minho (Portugal) [12134-31]

ON DEMAND PRESENTATIONS

SESSION 1

LOCATION: SALON 1, NIVEAU/LEVEL 0 MON 11:30 TO 12:20

Sources and Detectors I

Session Chair: **Mikhail A. Belkin**, Technische Univ. München (Germany)

0:00: **Terahertz wave detection in GaSe:S crystals by femtosecond laser pulses at a wavelength 1.5 microns**, Olesya Shevchenko, Nazar A. Nikolaev, Institute of Automation and Electrometry of the SB (Russian Federation); Konstantin Kokh, Institute of Geology and Mineralogy SB (Russian Federation) . [12134-3]

SESSION 4

LOCATION: SALON 1, NIVEAU/LEVEL 0 MON 8:30 TO 10:10

Metamaterials

Session Chair: **Martin R. Hofmann**, Ruhr-Universität Bochum (Germany)

0:00: **A 135 degree, spoof surface plasmon polariton bend for 1 THz band**, Muhammed A. Unutmaz, Ankara Yıldırım Beyazıt Univ. (Turkey); Mesut Demircioğlu, Mehmet Ünlü, TOBB ETÜ (Turkey) [12134-15]

SESSION 5

LOCATION: SALON 1, NIVEAU/LEVEL 0 MON 10:40 TO 12:20

Communication and Applications

Session Chair: **Giacomo Scalari**, ETH Zurich (Switzerland)

0:00: **A misalignment-insensitive sub-THz data link based on an AI nonlinear equalizer**, Pouya Torkaman, Govind Sharan Yadav, Xuanwei Miao, Kai-Ming Feng, Shang-Hua Yang, National Tsing Hua Univ. (Taiwan) [12134-19]

0:00: **Injection-seeded backward terahertz-wave parametric oscillators at 0.3 and 0.5 THz bands for nondestructive imaging applications**, Yuma Takida, Kouji Nawata, Takashi Notake, Hiroaki Minamide, RIKEN (Japan) . . . [12134-20]

SESSION 6

LOCATION: ON DEMAND MON 0:00 TO 0:00

Joint Session: Terahertz Imaging

0:00: **Terahertz compressive imaging for object classification**, Yan Zhang, Capital Normal Univ. (China) [12136-36]

0:00: **Transport of intensity equation-based terahertz full-field phase imaging**, Lu Rong, Shiyu Wang, Yunxin Wang, Jie Zhao, Shufeng Lin, Dayong Wang, Beijing Univ. of Technology (China) [12136-39]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Tuesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

Polarization-controlled terahertz spectroscopy of multilayer graphene nanostructures, Anatoly Kvitsinskiy, ITMO Univ. (Russian Federation); Maxim G. Rybin, A. M. Prokhorov General Physics Institute (Russian Federation); Anton D. Zaitsev, Kirill V. Bogdanov, Dmitry V. Zikov, ITMO Univ. (Russian Federation); Elena D. Obraztsova, A. M. Prokhorov General Physics Institute (Russian Federation) and Moscow Institute of Physics and Technology (Russian Federation) . . [12134-22]

Optimizing the performance of the CPW-to-spoof surface plasmon polariton waveguides for 0.3 THz band, Muhammed A. Unutmaz, Ankara Yıldırım Beyazıt Univ. (Turkey); Mehmet Ünlü, TOBB ETÜ (Turkey) [12134-23]

Rapid genetic discrimination in plants through terahertz spectroscopy, Urbi Kundu, Aparajita Bandyopadhyay, Amartya Sengupta, Indian Institute of Technology Delhi (India) [12134-26]

Investigation of the loss performance of the spoof surface plasmon polariton waveguides at 1 THz band, Mesut Demircioğlu, TOBB ETÜ (Turkey); Muhammed A. Unutmaz, Ankara Yıldırım Beyazıt Univ. (Turkey); Mehmet Ünlü, TOBB ETÜ (Turkey) [12134-28]

Modeling the performance of a THz plasmonic crystal-based amplifier in a hydrodynamic regime, Ilya V. Gorbenko, Ioffe Institute (Russian Federation) . . [12134-29]

Comparison of time-domain antenna performances for the terahertz photoconductive sources and detectors, Ahmet C. Songur, Mehmet Ünlü, TOBB ETÜ (Turkey) [12134-30]

CONFERENCE 12135

Monday–Tuesday 4–5 April 2022 • Proceedings of SPIE Vol. 12135

3D Printed Optics and Additive Photonic Manufacturing III

Conference Chairs: **Alois M. Herkommer**, Univ. Stuttgart (Germany); **Georg von Freymann**, Technische Univ. Kaiserslautern (Germany); **Manuel Flury**, Institut National des Sciences Appliquées de Strasbourg (France)

Program Committee: **Klaus Bade**, Karlsruhe Institut für Technologie (Germany); **Muriel Carin**, Univ. de Bretagne-Sud (France); **Thierry Engel**, IREPA LASER (France); **Harald Giessen**, Univ. Stuttgart (Germany); **Kevin J. Heggarty**, IMT Atlantique (France); **Andreas Heinrich**, Hochschule Aalen - Technik und Wirtschaft (Germany); **Hans Peter Herzig**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Christian Kooß**, Karlsruhe Institut für Technologie (Germany); **David Pietroy**, Univ. Jean Monnet Saint-Etienne (France); **Michael Thiel**, Nanoscribe GmbH (Germany); **Michael Totzeck**, Carl Zeiss SMT GmbH (Germany); **Reinhard Voelkel**, SUSS MicroOptics SA (Switzerland)

MONDAY 4 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 11:00

Hot Topics I

Paul Montgomery, Univ. of Strasbourg (France),
2022 Symposium Chair

9:00: **Welcome and Introduction; City of Strasbourg Welcome; Presentation of the 2022 SPIE Mozi Award to Thomas W. Ebbesen**, The Institute for Advanced Study of the Univ. of Strasbourg (USIAS) and CNRS (France); **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA), 2022 SPIE President

9:10: **Introduction to Hot Topics**, Paul Montgomery, Univ. of Strasbourg (France), 2022 Symposium Chair

9:15: **Access to photonics innovation support for European researchers and companies through ACTPHAST4R and PhotonHub Europe (Plenary)**, Hugo Thienpont, Vrije Univ. Brussel (Belgium) [12148-500]

9:30: **Quantum computing: prospects and challenges (Plenary)**, Heike Riel, IBM Research - Zürich (Switzerland) [12133-500]

10:15: **Einstein Telescope, the pioneer project for a third-generation GW observatory in Europe: science, technologies and perspectives (Plenary)**, Michele Punturo, Istituto Nazionale di Fisica Nucleare (Italy) [12139-500]

Coffee Break Mon 11:00 to 11:30

SESSION 1

LOCATION: SALON 3, NIVEAU/LEVEL 0 MON 11:30 TO 12:40

Two-Photon Lithography

Session Chair: **Alois M. Herkommer**, Institut für Technische Optik (Germany)

11:30: **Advancement in two-photon grayscale lithography (Invited Paper)**, Andrea Bertoncini, Yann Tanguy, Alok Tungal, Nicole Lindenmann, Timo Sartor, Roman Reiner, Matthias Blaicher, Sebastian Fisher, Mana Taghdiri, Fabian B. Niesler, André Radke, Michael Thiel, Nanoscribe GmbH & Co. KG (Germany) . . . [12135-1]

12:00: **Molecular engineering of two-photon chromophores towards highly sensitive photoresists for high-throughput parallel direct laser writing**, Emma Van Elslande, Ecole Normale Supérieure de Lyon (France); Luis Adrian Pérez Covarrubias, IMT Atlantique Bretagne-Pays de la Loire (France); Caroline Arnoux, Patrice L. Baldeck, Akos Banyasz, Ecole Normale Supérieure de Lyon (France); Kevin J. Heggarty, IMT Atlantique Bretagne-Pays de la Loire (France); Cyrille Monnereau, Ecole Normale Supérieure de Lyon (France) [12135-2]

12:20: **Improving print accuracy and eliminating striations in volumetric additive manufacturing: a novel approach to tomographic optimization, and a latent image printing method**, Charles M. Rackson, Robert R. McLeod, Univ. of Colorado Boulder (USA) [12135-3]

Lunch Break Mon 12:40 to 14:10

SESSION 2

LOCATION: SALON 3, NIVEAU/LEVEL 0 MON 14:10 TO 15:00

Applications for Optics I

Session Chair: **Georg von Freymann**, Technische Univ. Kaiserslautern (Germany)

14:10: **Complex 3D printed microoptical systems: from a pinhole camera to a spectrometer (Invited Paper)**, Andrea Toulouse, Johannes Drozella, Simon Thiele, Institut für Technische Optik (Germany); Harald Giessen, Univ. Stuttgart (Germany); Alois M. Herkommer, Institut für Technische Optik (Germany) [12135-4]

14:40: **Fully monolithic and additively manufactured mounting structures for optical elements**, Patrick Pfuhl, Michael Heil, Markus Degünther, Technische Hochschule Mittelhessen (Germany) [12135-6]

Coffee Break Mon 15:00 to 15:30

SESSION 3

LOCATION: SALON 3, NIVEAU/LEVEL 0 MON 15:30 TO 17:00

Technologies

Session Chair: **Frédéric Antoni**, ICube (France)

15:30: **Numerical modeling for large-scale parts fabricated by Directed Energy Deposition (Invited Paper)**, Vaibhav Nain, IREPA LASER (France); Thierry Engel, Institut National des Sciences Appliquées de Strasbourg (France); Muriel Carin, Institut de recherche Henri Dupuy de Lôme (France); Didier Boisselier, IREPA LASER (France) [12135-8]

16:00: **Selective laser sintering (SLS) of various lunar soil simulants for Moon base manufacturing: experimental results and numerical modelling**, Danijela Ignjatovic Stupar, International Space Univ. (France); Grégoire Robert Chabrol, ECAM Strasbourg-Europe (France); Abdoul Razak Ibrahim Baraze, ECAM Strasbourg-Europe (France); Thierry Cutard, IMT Mines Albi-Carmaux (France); Sylvain Lecler, Institut National des Sciences Appliquées de Strasbourg (France); Jocelyne Brendle, Institut de Sciences des Matériaux de Mulhouse (France) [12135-9]

16:20: **Laser bioprinting of cell-laden bioinks for organ-on-chip and sensor applications**, Evina Elezoglou, Institute of Communication and Computer Systems (Greece); Katerina Tsilingiri, Biomedical Research Foundation, Academy of Athens (Greece); Maria Chliara, Marianna Chatzipetrou, Institute of Communication and Computer Systems (Greece); Symeon Papazoglou, PhosPrint (Greece); Apostolos Klinakis, Biomedical Research Foundation, Academy of Athens (Greece); Ioanna Zergioti, Institute of Communication and Computer Systems (Greece) [12135-10]

16:40: **Humink: additive manufacturing at the nanoscale**, Pascal Boncenne, Amin M'Barki, Humink (France) [12135-23]

CONFERENCE 12135

TUESDAY 5 APRIL

SESSION 4

LOCATION: SALON 3, NIVEAU/LEVEL 0 TUE 8:30 TO 10:20

Applications for Optics II

Session Chair: **Andrea Toulouse**, Institut für Technische Optik (Germany)

8:30: **3D optical components with properties controllable by external stimuli** (*Invited Paper*), Francesca D'elia, Scuola Normale Superiore (Italy); Dario Pisignano, Univ. di Pisa (Italy); Andrea Camposo, Istituto Nanoscienze (Italy) [12135-13]

9:00: **Volumetric 3D printing of flexible gradient index lenses**, Gabriel T. Seymour, Charles M. Rackson, Robert R. McLeod, Univ. of Colorado Boulder (USA) [12135-14]

9:20: **Design, laser direct writing prototyping and characterization of fan-out diffractive optical elements for optical interconnect applications**, Athanasios Kyriazis, Koen Vanmol, Gebirge Yizengaw Belay, Hugo Thienpont, Jürgen Van Erps, Vrije Univ. Brussel (Belgium) [12135-15]

9:40: **Tailoring light out of optical fiber by integrated micro-optics**, Shlomi Lightman, Raz Gvishi, Omer Porat, Ayelet Teitelboim, Soreq Nuclear Research Ctr. (Israel) [12135-16]

10:00: **Investigation of the ability of SLB 3D printing process for fabrication of micro-optical structures with PDMS**, Payam Habibzadeh Kavkani, Mostafa Mostafaei, Hadis Goudarzi, Mohammadreza Riahi, Niloofar Azimbeik, K.N. Toosi Univ. of Technology (Iran, Islamic Republic of) . [12135-17]

Coffee Break. Tue 10:20 to 10:50

SESSION 5

LOCATION: SALON 3, NIVEAU/LEVEL 0 TUE 10:50 TO 12:20

Applications for Optics III

Session Chair: **Alois M. Herkommer**, Institut für Technische Optik (Germany)

10:50: **Generation and propagation of airy beams and one inch diameter focusing optics using 3D printed optics** (*Invited Paper*), Frederick H. Long, Stephanie Maruca Donnelly, Evan Jones, Austin Granmoe, Mitch Wlodawski, Tyler Fenske, Muhammed Kamal, David Dantsker, Damien M. Marianucci, George L. Fischer, U.S. Army Combat Capabilities Development Command (USA); Charles G. Dupuy, Hooman Akhavan, Samuel P. Grimm, Nanovox, LLC (USA) [12135-18]

11:20: **Unified approach for generation of zeroth- and high-order Bessel beams from single-mode optical fibers with 3D printed structures**, Innem Venkata Anudeep Kumar Reddy, King Abdullah Univ. of Science and Technology (Saudi Arabia) and Univ. at Buffalo (USA); Andrea Bertoni, Carlo Liberale, King Abdullah Univ. of Science and Technology (Saudi Arabia) [12135-19]

11:40: **Maskless lithography with holographic feedback for the fabrication of optical elements**, Tolga Gürçan, Bogaziçi Üniv. (Turkey); Muhammed Fatih Toy, Istanbul Medipol Üniv. (Turkey) [12135-20]

12:00: **Advanced manufacturing techniques for wafer-level freeform micro optics with high refractive index**, Andrea Kneidinger, Martin Eibelhuber, Christine Thanner, Patrick Schuster, EV Group E. Thallner GmbH (Austria) [12135-21]

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:30: **Welcome and opening remarks**

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) . [12144-500]

ON DEMAND PRESENTATIONS

SESSION 3

LOCATION: SALON 3, NIVEAU/LEVEL 0 MON 15:30 TO 17:00

Technologies

Session Chair: **Frédéric Antoni**, ICube (France)

0:00: **Utilizing 3-D printable refractive spherical arrays to produce multiple beam patterns by altering LED positioning**, Akila Udage, Rensselaer Polytechnic Institute (USA) [12135-22]

0:00: **3D printing with polyvinyl chloride (PVC) using selective laser baking method**, Mostafa Mostafaei, Payam Habibzadeh Kavkani, Arezoo Shabani, Zahra Faramarzi, niloofar azimbeik, Mohammadreza Riahi, K.N. Toosi Univ. of Technology (Iran, Islamic Republic of) [12135-12]

CONFERENCE 12136

Sunday–Thursday 3–7 April 2022 • Proceedings of SPIE Vol. 12136

Unconventional Optical Imaging III

Conference Chairs: **Marc P. Georges**, Liège Univ. (Belgium); **Gabriel Popescu**, Univ. of Illinois at Urbana-Champaign (USA); **Nicolas Verrier**, IRIMAS-Univ. de Haute-Alsace (France)

Program Committee: **Tatiana Alieva**, Univ. Complutense de Madrid (Spain); **Pierre H. Chavel**, Institut d'Optique Graduate School (France); **Jürgen W. Czarske**, TU Dresden (Germany); **Julien Fade**, Univ. de Rennes 1 (France); **Corinne Fournier**, Univ. Jean Monnet Saint-Etienne (France); **Irene Georgakoudi**, Tufts Univ. (USA); **Sylvain Gioux**, Univ. de Strasbourg (France); **Olivier Haeberlé**, Univ. de Haute Alsace (France); **Elizabeth M.C. Hillman**, Columbia Univ. (USA); **Giancarlo Pedrini**, Institut für Technische Optik (Germany); **Neus Sabater**, Technicolor (France); **Anne Sentenac**, Institut Fresnel (France); **Guohai Situ**, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China); **Enrique Tajahuerce**, Univ. Jaume I (Spain); **Pauline Trouvé**, ONERA (France); **Wilfried Uehring**, iCube-SERTIT (France); **Laura Waller**, Univ. of California, Berkeley (USA); **Keisuke Goda**, The Univ. of Tokyo (Japan)

SUNDAY 3 APRIL

SESSION 1

LOCATION: CURIE B, NIVEAU/LEVEL 1 SUN 13:20 TO 15:00

Applications: Biomed I

Session Chair: **Marc P. Georges**, Ctr. Spatial de Liège (Belgium)

13:20: **Nonlinear optical microscopy of developing and brain tissue** (*Keynote Presentation*), Emmanuel Beaufrepaire, Ecole Polytechnique (France). . . [12136-1]

14:00: **Three-dimensional super-resolved imaging using random illumination microscopy (3D-RIM)**, Benoît Rogez, Guillaume Giroussens, Aix Marseille Univ. (France) and CNRS (France); Lorry Mazzella, Aix Marseille Univ. (France) and CNRS (France); Simon Labouesse, Aix Marseille Univ. (France) and CNRS (France); Thomas Mangeat, Univ. de Toulouse (France); Jérôme Idier, Ecole Central de Nantes (France) and CNRS (France); Marc Allain, Aix Marseille Univ. (France) and CNRS (France); Anne Sentenac, Loïc Le Goff, Aix Marseille Univ. (France) and CNRS (France) [12136-2]

14:20: **Axial organization of muscular myosin identified by the optical and computational pipeline FAMOUS**, Claire Lefort, XLIM (France); Mathieu Chalvidal, Univ. Paul Sabatier (France); Fabienne Baraige, Alexis Parente, Univ. de Limoges (France); Erwan Ferrandon, XLIM, UMR CNRS 7252 (France) and Univ. de Limoges (France); Véronique Blanquet, PEIRENE (France); Henri Massias, XLIM (France); Laetitia Magnol, PEIRENE (France); Emilie Chouzenoux, CentraleSupélec (France) and Univ. Paris-Saclay (France) [12136-3]

14:40: **Smart scanning fluorescent microscope for cell sheet imaging**, Faris Abouakil, Huicheng Meng, Marie-Anne Burcklen, Hervé Rigneault, Loïc LeGoff, Frédéric Galland, Institut Fresnel (France) [12136-4]

Coffee Break. Sun 15:00 to 15:30

SESSION 2

LOCATION: CURIE B, NIVEAU/LEVEL 1 SUN 15:30 TO 16:50

Advanced Methods: Ultrafast/Time of Flight

Session Chair: **Marc P. Georges**, Ctr. Spatial de Liège (Belgium)

15:30: **Ultrafast imaging in flow** (*Keynote Presentation*), Keisuke Goda, The Univ. of Tokyo (Japan) [12136-5]

16:10: **A CMOS solid state streak camera with subnanosecond temporal resolution**, Wilfried Uehring, Jean-Baptiste Schell, iCube (France); Vincent Wlotzko, Patrick Summ, Optronis GmbH (Germany) [12136-6]

16:30: **Ultrafast time-of-flight imaging with SPAD and picosecond laser for validation of the stray light rejection in an optical calibration facility**, Lionel Clermont, Ctr. Spatial de Liège, Univ. de Liège (Belgium); Wilfried Uehring, iCube, Univ. de Strasbourg (France); Wassim Khaddour, iCube, Univ. de Strasbourg (France); Pascal Blain, Ctr. Spatial de Liège, Univ. de Liège (Belgium); Emmanuel Mazy, Marc P. Georges, Ctr. Spatial de Liège, Univ. de Liège (Belgium) [12136-8]

MONDAY 4 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 11:00

Hot Topics I

Paul Montgomery, Univ. of Strasbourg (France),
2022 Symposium Chair

9:00: **Welcome and Introduction; City of Strasbourg Welcome; Presentation of the 2022 SPIE Mozi Award to Thomas W. Ebbesen**, The Institute for Advanced Study of the Univ. of Strasbourg (USIAS) and CNRS (France), **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA), 2022 SPIE President

9:10: **Introduction to Hot Topics**, Paul Montgomery, Univ. of Strasbourg (France), 2022 Symposium Chair

9:15: **Access to photonics innovation support for European researchers and companies through ACTPHAST4R and PhotonHub Europe** (*Plenary*), Hugo Thienpont, Vrije Univ. Brussel (Belgium) [12148-500]

9:30: **Quantum computing: prospects and challenges** (*Plenary*), Heike Riel, IBM Research - Zürich (Switzerland) [12133-500]

10:15: **Einstein Telescope, the pioneer project for a third-generation GW observatory in Europe: science, technologies and perspectives** (*Plenary*), Michele Punturo, Istituto Nazionale di Fisica Nucleare (Italy) [12139-500]

Coffee Break. Mon 11:00 to 11:30

SESSION 3

LOCATION: CURIE B, NIVEAU/LEVEL 1 MON 11:30 TO 12:30

Advanced Methods: Digital Holography I

Session Chair: **Gabriel Popescu**, Univ. of Illinois (USA)

11:30: **Effects of some model approximations in the reconstructions of digital in-line holograms: simulations, experiments on calibrated objects and model refinement assessment**, Thomas Olivier, Dylan Brault, Sachin Joshi, Thomas Brard, Alexey Brodoline, Lab. Hubert Curien (France); Loïc Méès, Univ. de Lyon, CNRS (France); Corinne Fournier, Lab. Hubert Curien (France) [12136-10]

11:50: **Total internal reflection holographic microscopy for cellular imaging**, Tolga Gürçan, Bogaziçi Üniv. (Turkey); Muhammed F. Toy, Medipol Univ. (Turkey) [12136-11]

12:10: **Confidential optical data transmission through multimode fibres based on holographic transmission matrix measurements**, Stefan Rothe, TU Dresden (Germany); Karl-Ludwig Besser, Technische Univ. Braunschweig (Germany); Nektarios Koukourakis, TU Dresden (Germany); Eduard Jorswieck, Technische Univ. Braunschweig (Germany); Jürgen W. Czarske, TU Dresden (Germany) [12136-12]

Lunch Break Mon 12:30 to 13:40

SESSION 4

LOCATION: CURIE B, NIVEAU/LEVEL 1 MON 13:40 TO 15:40

Advanced Methods: Phase Imaging

Session Chair: **Nicolas Verrier**, IRIMAS-Univ. de Haute-Alsace (France)

13:40: **Lensless phase imaging microscopy by multiple intensity diffraction pattern** (*Invited Paper*), Giancarlo Pedrini, Antonius Schiebelbein, Institut für Technische Optik (Germany); Elena Achimova, Vladimir Abaskin, Institute of Applied Physics (Moldova) [12136-13]

14:10: **Polarization-sensitive Fourier ptychography microscopy using dome-shaped LED illuminator**, Mahdieh GholamiMayani, USN, Vestfold (Norway); Dag Werner Breiby, Norwegian Univ. of Science and Technology (Norway); Muhammad Nadeem Akram, Univ. of South-Eastern Norway (Norway) [12136-14]

CONFERENCE 12136

14:30: **Nonlinear primal dual-method phase retrieval for X-ray in-line phase contrast imaging**, Kannara Mom, CREATIS, Institut National des Sciences Appliquées de Lyon (France); Max Langer, Grenoble INP (France); Bruno Sixou, CREATIS (France) [12136-15]

14:50: **Terahertz ptychography with efficient FOV for breast cancer tissue imaging**, Yuchen Zhao, Ctr. Spatial de Liège, Univ. de Liège (Belgium); Delphine Cerica, Montefiore Institute, Liège Univ. (Belgium); Mohamed Boutaayamou, Montefiore Institute, Liège Univ. (Belgium); Jacques Verly, Montefiore Institute, Liège Univ. (Belgium); Marc P. Georges, Ctr. Spatial de Liège, Univ. de Liège (Belgium) [12136-42]

15:10: **LEAD fluorescence microscopy performing at 0.8 million frames per second for 3D imaging flow cytometry (Invited Paper)**, Adela Ben-Yakar, The Univ. of Texas at Austin (USA) [12136-67]

Coffee Break Mon 15:40 to 16:00

SESSION 5

LOCATION: CURIE B, NIVEAU/LEVEL 1 MON 16:00 TO 17:40

Advanced Methods: Wavefront Sensing

Session Chair: **Marc P. Georges**, Ctr. Spatial de Liège (Belgium)

16:00: **Multispectral image reconstruction with neural networks for minimally invasive 3D lensless fiber endoscopy using a diffuser**, Tom Glosemeyer, Yazhi Zheng, Julian Lich, Robert Kuschmierz, Jürgen W. Czarske, TU Dresden (Germany) [12136-18]

16:20: **Model eye assessment by 3D fast-scanning peripheral refraction wavefront sensor**, Alejandro Calabuig, Eberhard Karls Univ. Tübingen (Germany); Ajay Pinate, Carl Zeiss Vision International GmbH (Germany); Nikolai Suchkov, Eberhard Karls Univ. Tübingen (Germany); Siegfried Wahl, Eberhard Karls Univ. Tübingen (Germany) and Carl Zeiss Vision International GmbH (Germany) [12136-19]

17:00: **Customizing the optical memory effect with wavefront shaping**, Hasan Yilmaz, Bilkent Univ. (Turkey) [12136-21]

17:20: **Shack-Hartmann-based wavefront and intensity sensing via U-Net**, Feng-Chun Hsu, Chun-Yu Lin, National Yang Ming Chiao Tung Univ. (Taiwan); Chia-Yuan Chang, National Cheng Kung Univ. (Taiwan); Shean-Jen Chen, National Yang Ming Chiao Tung Univ. (Taiwan) [12136-22]

17:40: **Multiplane phase retrieval with monochromatic terahertz sources (Invited Paper)**, Nikolay V. Petrov, ITMO Univ. (Russian Federation); Adrien Chopard, Univ. de Bordeaux (France) and Lytid (France); Elizaveta G. Tsiplakova, ITMO Univ. (Russian Federation); Jean-Baptiste Perraud, Jean-Paul Guillet, Univ. de Bordeaux (France); Olga A. Smolyanskaya, ITMO Univ. (Russian Federation); Patrick Mounaix, Univ. de Bordeaux (France) [12136-34]

TUESDAY 5 APRIL

SESSION 6

LOCATION: CURIE B, NIVEAU/LEVEL 1 TUE 8:30 TO 10:20

Advanced Methods: Computational Imaging

Session Chair: **Jürgen W. Czarske**, TU Dresden (Germany)

8:30: **Compressive sensing instrumental concepts for space applications (Invited Paper)**, Valentina Raimondi, Istituto di Fisica Applicata "Nello Carrara" (Italy); Massimo Baldi, Istituto di Fisica Applicata (Italy); Dirk Berndt, IPMS (Germany); Tiziano Bianchi, Politecnico di Torino - DET (Italy); Guzmán Borque Gallego, csem (Switzerland); Donato Borrelli, LEONARDO SPA (Italy); Chiara Corti, Francesco Corti, Marco Corti, SAITEC srl (Italy); Ulrike A. Dauderstadt, Peter Dürr, IPMS (Germany); Andrea Gonnelli, Istituto di Fisica Applicata (Italy); Sara Francés González, IPMS (Germany); Donatella Guzzi, Istituto di Fisica Applicata (Italy); Detlef Kunze, IPMS (Germany); Demetrio Labate, LEONARDO SPA (Italy); Nicolas Lamquin, ACRI-ST (France); Cinzia Lastrì, Istituto di Fisica Applicata (Italy); Enrico Magli, Politecnico di Torino - DET (Italy); Emiliano Marzi, Vanni Nardino, Istituto di Fisica Applicata (Italy); Christophe Pache, csem (Switzerland); Lorenzo Palombi, Istituto di Fisica Applicata (Italy); Giuseppe Pilato, Enrico Suetta, LEONARDO SPA (Italy); Diego Valsesia, Politecnico di Torino - DET (Italy); Michael Wagner, IPMS (Germany) [12136-23]

9:00: **Hyperspectral compressive microscopy based on structured light sheet and deep convolutional neural network**, Sébastien Crombez, Institut Lumière Matière (France); Chloé Exbrayat-Heritier, Florence Ruggiero, Institut de Génomique fonctionnelle (France); Cédric Ray, Institut Lumière Matière (France); Nicolas Ducros, CREATIS (France) [12136-24]

9:20: **Compressive sensing for earth observation: the effect of a moving scene**, Luca Oggioni, Giorgio Pariani, INAF - Osservatorio Astronomico di Brera (Italy) [12136-25]

9:40: **Giga-voxel multispectral time-resolved imaging with single-pixel detection and data fusion**, Armin J. M. Lenz, Univ. Jaume I (Spain); Fernando Soldevila, Lab. Kastler Brossel, CNRS (France) and Sorbonne Univ. (France); Alberto Ghezzi, Politecnico di Milano (Italy) and Consiglio Nazionale delle Ricerche (Italy); Andrea Farina, CNR-Istituto di Fotonica e Nanotecnologie (Italy); Cosimo D'Andrea, Politecnico di Milano (Italy) and Istituto Italiano di Tecnologia (Italy); Enrique Tajahuerce, Univ. Jaume I (Spain) [12136-26]

10:00: **A fast computational approach for high spectral resolution imaging**, Laurent Mahieu-Williams, Antonio Lorente-Mur, Univ. de Lyon (France) and CREATIS (France); Valeriya Pronina, Skolkovo Institute of Science and Technology (Russian Federation); Bruno Montcel, Françoise Peyrin, Nicolas Ducros D.D.S., Univ. de Lyon (France) and CREATIS (France) [12136-27]
Coffee Break Tue 10:20 to 10:50

SESSION 7

LOCATION: CURIE B, NIVEAU/LEVEL 1 TUE 10:50 TO 12:10

Advanced Methods: Micro-/Nanoscscopy

Session Chair: **Irene Georgakoudi**, Tufts Univ. (USA)

10:50: **Lock-in incoherent differential phase contrast imaging**, Chiara Bonati, Damien Loterie, Timothé Laforest, Christophe Moser, Ecole Polytechnique Fédérale de Lausanne (Switzerland) [12136-28]

11:10: **Continuous scanning microscopy using deep learning deblurring**, Michael J. Fanous, Beckman Institute for Advanced Science and Technology (USA); Gabriel Popescu, Beckman Institute for Advanced Science & Technology (USA) [12136-29]

11:30: **Fast laser scanning imaging for single nanoparticle analysis**, Lucas Oorlyncq, Yera Y. Ussembayev, Juan C. Fraire, Charlotte Hinnekens, Kevin Braeckmans, Filip Strubbe, Univ. Gent (Belgium) [12136-31]

11:50: **Light field multiphoton microscopy with temporal focusing-based volume selective excitation**, Feng-Chun Hsu, Yong Da Sie, Chun-Yu Lin, National Yang Ming Chiao Tung Univ. (Taiwan); Yvonne Yuling Hu, National Cheng Kung Univ. (Taiwan); Shean-Jen Chen, National Yang Ming Chiao Tung Univ. (Taiwan) [12136-32]

Lunch/Exhibition Break Tue 12:10 to 14:00

SESSION 8

LOCATION: CURIE B, NIVEAU/LEVEL 1 TUE 14:00 TO 16:00

Advanced Methods: Polarization

Session Chair: **Francisco E. Robles**, Wallace H. Coulter Dept. of Biomedical Engineering at Georgia Institute of Technology (USA)

14:00: **Polarization-enhanced laparoscopy yields promise for improved visualization of peritoneal cancer metastases**, Irene Georgakoudi, Robert Trout, Einstein Gnanatheepam, Ahmed Gado, Christopher Reik, Artem Dinh, Tufts Univ. (USA); Thomas Schnelldorfer, Tufts Medical Ctr. (USA) [12136-33]

14:20: **Machine learning for white matter fibre tract visualization in the human brain via Mueller matrix polarimetric data**, Richard I. McKinley, Inselspital, Bern Univ. (Switzerland); Leonard A. Felger, Inselspital, Univ. Bern (Switzerland); Ekkehard Hewer, Lausanne University Hospital and University of Lausanne (Switzerland); Theoni Maragkou, Univ. Bern (Switzerland); Michael Murek, Inselspital, Univ. Bern (Switzerland); Tatiana Novikova, Lab. de Physique des Interfaces et des Couches Minces (France) and Institut Polytechnique de Paris, Ecole Polytechnique (France); Omar Rodríguez-Núñez, Lab. de Physique des Interfaces et des Couches Minces (France) and Institut Polytechnique de Paris, Ecole Polytechnique (France); Angelo Pierangelo, Lab. de Physique des Interfaces et des Couches Minces (France) and Institut Polytechnique de Paris, Ecole Polytechnique (France); Philippe Schucht, Inselspital, Univ. Bern (Switzerland) [12136-35]

14:40: **Polarized light: a promising tool to probe the cervical microstructure of pregnant women**, Angelo Pierangelo, Jean Rehbinder, Jérémy Vizet, Junha Park, Razvigor Ossikovski, Lab. de Physique des Interfaces et des Couches Minces, CNRS (France) and Ecole Polytechnique (France); Jean-Charles Vanel, Lab. de Physique des Interfaces et des Couches Minces, CNRS (France) and Ecole Polytechnique (France); André Nazac, CHU Brugmann (Belgium) and Univ. Libre de Bruxelles (Belgium) [12136-37]

15:00: **Chiral structured illumination microscopy: fast imaging chiral domains at super-resolution**, Shiang-Yu Huang, Leibniz-Institut für Photonische Technologien e.V. (Germany) and Friedrich-Schiller-Univ. Jena (Germany); Jiwei Zhang, Leibniz-Institut für Photonische Technologien e.V. (Germany) and Northwestern Polytechnical Univ. (China); Ronny Förster, Christian Karras, Leibniz-Institut für Photonische Technologien e.V. (Germany); Rainer Heintzmann, Leibniz-Institut für Photonische Technologien e.V. (Germany) and Friedrich-Schiller-Univ. Jena (Germany); Jer-Shing Huang, Leibniz-Institut für Photonische Technologien e.V. (Germany) [12136-38]

15:20: **Temperature stable and versatile polarization modulators for bioimaging applications**, Jean Rehbinder, CNRS (France) and Univ. de Strasbourg (France); Jean Dellinger, Briséis Varin, Marc Torzynski, Yoshitake Takakura, Christian Heinrich, Jihad Zallat, Univ. de Strasbourg (France) [12136-40]

15:40: **Swept-wavelength null polarimetry for weak linear birefringence imaging**, Xavier Theillier, Sylvain Rivet, Matthieu Dubreuil, Yann Le Grand, Université de Bretagne Occidentale (France) [12136-99]

Coffee Break Tue 16:00 to 16:30

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:30: Welcome and opening remarks

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) . [12144-500]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Tuesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

Combined electronic speckle pattern interferometry and digital holography for analysis of deformations in magnetic shape memory actuators, Gennadii Laskin, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany); Jonas Heider, René Schnetzler, ETO MAGNETIC GmbH (Germany); Markus Fratz, Annelie Schiller, Alexander Bertz, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany); Markus Laufenberg, ETO MAGNETIC GmbH (Germany); Daniel Carl, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany) [12136-77]

Hypothetical photo-nuclear effects, dating and imaging on the Shroud of Turin, Jean-Pierre R. Laude, Laude Consulting (France) [12136-79]

Contrast gloss evaluation by use of a camera-based gloss meter, Stijn Beuckels, Jan Audenaert, Frédéric B. Leloup, Peter Hanselaer, KU Leuven (Belgium) [12136-80]

Visual inspection via anomaly detection by automated uncertainty propagation, Johannes Meyer, Matthias Hartrumpf, Thomas Längle, Jürgen Beyerer, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung IOSB (Germany) [12136-81]

Classification of environmental microfibers using stimulated Raman microspectroscopy, Luca Genchi, Sergey P. Laptinok, Cecilia Martin, Fadiyah M. Baalkhuyur, Carlos M. Duarte, Carlo Liberale, King Abdullah Univ. of Science and Technology (Saudi Arabia) [12136-82]

Experimental validation of dynamic activation of pixelated holograms for retinal projection display, Matthias Colard, CEA-LETI (France); Olivier Haeblerlé, Univ. de Haute-Alsace (France); Christophe Martinez, CEA-LETI (France) [12136-85]

Joint qualitative and quantitative evaluation of fast image dehazing based on dark channel prior, Lyes Aksas, Univ. de Haute Alsace (France); Pierre-Jean Lapray, Univ. of Haute-Alsace (France); Alban Foulonneau, Laurent Bigué, Univ. de Haute Alsace (France) [12136-86]

Evaluation of a dual-modal tissue imaging framework based on information fusion using optical coherence and bioimpedance tomography, Zhe Liu, Yunjie Yang, Pierre Bagnaninchi, The Univ. of Edinburgh (United Kingdom) [12136-87]

Autofocus algorithms for lensless on-chip microscopy validated on synthetic targets for microfluidic applications and particle tracking, Zan Cimperman, Peter Naglic, Franjo Pernuš, Boštjan Likar, Miran Bürmen, Univ. of Ljubljana (Slovenia) [12136-89]

Application of compressive sensing for image acquisition in different environments, Giorgio Pariani, Luca Oggioni, Michele Frangiamore, Lorenzo Cabona, Paola Galli, Alessio Zanatta, Andrea Bianco, INAF - Osservatorio Astronomico di Brera (Italy) [12136-92]

A cheap, fast, and versatile illumination system for technical cleanliness, Dominic Buchta, Albrecht C. Brandenburg, Stefan Adolph, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany) [12136-93]

WEDNESDAY 6 APRIL

SESSION 10

LOCATION: CURIE B, NIVEAU/LEVEL 1 WED 8:30 TO 10:30

Advanced Methods: Light Scattering

Session Chair: **Giancarlo Pedrini**, Institut für Technische Optik (Germany)

8:30: **Imaging with scattered light: exploiting speckle to see deeper and sharper** (*Invited Paper*), Ori Katz, The Hebrew Univ. of Jerusalem (Israel) [12136-43]

9:00: **Epi-illumination quantitative phase imaging (QPI) and 3D refractive index (RI) tomography in thick scattering samples with quantitative oblique back-illumination microscopy** (*Invited Paper*), Francisco E. Robles, Georgia Institute of Technology (USA) and Emory Univ. School of Medicine (USA) [12136-44]

9:30: **Computational imaging through scattering media beyond the memory effect range using varying random illumination**, Lei Zhu, Fernando Soldevila Torres, Claudio Moretti, Alexandra D'Arco, Antoine Boniface, Lab. Kastler Brossel (France); Xiaopeng Shao, Xidian Univ. (China); Hilton B. de Aguiar, Sylvain Gigon, Lab. Kastler Brossel (France) [12136-45]

9:50: **Two-layer neural network: a model-based technique to focus and image through scattering media**, Alexandra D'Arco, Sylvain Gigon, Lab. Kastler Brossel, Ecole Normal Supérieure (France); Antoine Boniface, Ecole Polytechnique Fédérale de Lausanne (Switzerland) [12136-46]

10:10: **Underwater imaging method and apparatus utilizing multiple beam interference**, Shangqing Liu, Willow Optics Corp. (Canada) [12136-47]

Coffee Break Wed 10:30 to 11:00

11:00: **Single image depth-from-defocus with a learned covariance: algorithm and performance model for co-design**, Benjamin Buat, Pauline Trouvé-Peloux, Frédéric Champagnat, Guy Le Besnerais, ONERA (France) [12136-48]

11:20: **On design of hybrid diffractive optics for achromatic extended depth-of-field (EDoF) RGB imaging**, SayyedReza MiriRostami, Samuel Pinilla, Igor A. Shevkunov, Vladimir Katkovnik, Karen Eguiazarian, Tampere Univ. (Finland) [12136-49]

11:40: **On the use of differentiable optical models for lens and neural network co-design**, Frédéric Champagnat, Marius Dufraisie, Pauline Trouvé-Peloux, Jean-Baptiste Volatier, ONERA (France) [12136-50]

12:00: **Comparison of three methods for end-to-end optimization of hybrid optical/digital imaging systems with professional optical design software**, Alice Fontbonne, Lab. Charles Fabry, CNRS (France); Hervé Sauer, Lab. Charles Fabry, CNRS (France); François Goudail, Lab. Charles Fabry, CNRS (France) [12136-51]

Lunch/Exhibition Break Wed 12:20 to 14:00

14:20: **Unsupervised regularized inverse method for 3D reconstruction in tomographic diffractive microscopy**, Laurence Denneulin, Fabien Momey, Lab. Hubert Curien, CNRS (France) and Univ. Jean Monnet Saint-Etienne (France); Matthieu Debailleul, IRIMAS, Univ. de Haute-Alsace (France) and IUT de Mulhouse (France); Asemare M. Taddese, IRIMAS, Univ. de Haute-Alsace (France) and IUT de Mulhouse (France); Nicolas Verrier, IRIMAS, Univ. de Haute-Alsace (France) and IUT de Mulhouse (France); Olivier Haeblerlé, IRIMAS, Univ. de Haute-Alsace (France) and IUT de Mulhouse (France) [12136-53]

14:40: **Replacing the gold standard of SEM with OCT for forensic studies regarding metallic fractures**, Gheorghe Hutiu, Univ. "Aurel Vlaicu" din Arad (Romania); Virgil-Florin Duma, Univ. "Aurel Vlaicu" din Arad (Romania) and Univ. Politehnica Timisoara (Romania); Dorin Demian, Univ. "Aurel Vlaicu" din Arad (Romania); Adrian Bradu, Adrian Podoleanu, Univ. of Kent (United Kingdom) ... [12136-54]

Coffee Break Wed 15:00 to 15:30

15:30: **From phase imaging to CNN-based quantitative representation**, Cédric P. Allier, Lionel Hervé, Chiara Paviolo, Ondrej Mandula, Olivier Cioni, William Pierré, CEA-LETI (France); Kiran Padmanabhan, Francesca Andriani, Institut de Génomique Fonctionnelle de Lyon (France); Sophie Morales, CEA-LETI (France) [12136-57]

15:50: **Mode-mapping qOBM microscopy to virtual hematoxylin and eosin (H&E) histology via deep learning**, Tanishq Abraham, Univ. of California, Davis (USA); Paloma C. Costa, Georgia Institute of Technology (USA) and Emory Univ. (USA); Caroline E. Filan, Francisco Robles, Georgia Institute of Technology (USA) and Emory Univ. (USA); Richard M. Levenson M.D., Univ. of California, Davis (USA) [12136-58]

16:10: **Label-free flow cytometric detection of circulating tumor cell clusters is enabled in whole blood samples by machine learning-based signal analysis**, Irene Georgakoudi, Nilay Vora, Tufts Univ. (USA); Prashant Shekhar, Embry-Riddle Aeronautical Univ. (USA); Abani Patra, Tufts Univ. (USA) [12136-59]

CONFERENCE 12136

16:30: **Presentation will move to the On-Demand Digital Forum: Label-free 3D embryo characterization with artificial confocal microscopy (ACM)**, Neha Goswami, Beckman Institute for Advanced Science and Technology, Univ. of Illinois (USA); Nastasia Z. E. Lai, Rachel B. Arcanjo, Univ. of Illinois (USA); Xi Chen, Beckman Institute for Advanced Science and Technology (USA); Romana A. Nowak, Univ. of Illinois (USA); Nicola Winston, Univ. of Illinois at Chicago (USA); Gabriel Popescu, Beckman Institute for Advanced Science and Technology (USA) and Univ. of Illinois (USA) [12136-60]

16:50: **Learning-based high-resolution lensless fiber bundle imaging for tumor**, Jiachen Wu, Tsinghua Univ. (China) and TU Dresden (Germany); Tijue Wang, Robert Kuschmierz, TU Dresden (Germany); Ortrud Uckermann, Roberta Galli, Gabriele Schackert, Universitätsklinikum Carl Gustav Carus Dresden (Germany); Liangcai Cao, Tsinghua Univ. (China); Jürgen W. Czarske, TU Dresden (Germany). [12136-62]

THURSDAY 7 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 10:35

Hot Topics III

Thierry Georges, Oxxius (France), 2022 Symposium Chair

9:00: **Welcome and opening remarks**

9:05: **A sneak peek with light into opaque materials: from imaging to computing** (*Plenary*), Sylvain Gigan, Lab. Kastler Brossel (France) . [12136-500]

9:50: **Active metasurfaces empowered by two-dimensional materials** (*Plenary*), Isabelle Staude, Friedrich-Schiller-Univ. Jena (Germany) . [12130-500]

Coffee Break. Thu 10:35 to 11:00

SESSION 14

ROOM: CURIE B, NIVEAU/LEVEL 1 THU 11:00 TO 12:40

Advanced Methods: Multimodal/Hyperspectral

Session Chair: **Marc P. Georges**, Ctr. Spatial de Liège (Belgium)

11:00: **Distributed spectral measurement of nonlinear Raman cascade process along an optical nanofiber**, Gil Fanjoux, Yosri Haddad, Institut Franche-Comte Electronique Mecanique Thermique et Optique (France) and Univ. Bourgogne Franche-Comté (France); Samuel Margueron, Institut Franche-Comte Electronique Mecanique Thermique et Optique (France) and Univ. Bourgogne Franche-Comté (France); Jean-Charles Beugnot, Institut Franche-Comte Electronique Mecanique Thermique et Optique (France) and Univ. Bourgogne Franche-Comté (France) [12136-63]

11:20: **High-resolution snapshot hyperspectral computed tomography imaging spectrometer: real-world applications**, Mads Svanborg Peters, Newtec Engineering A/S (Denmark) and Univ. of Southern Denmark (Denmark); René Lyngge Eriksen, Univ. of Southern Denmark (Denmark); Bjarke Jørgensen, Newtec Engineering A/S (Denmark) [12136-64]

11:40: **Multimodal microscopy from tomographic diffraction microscopy acquisitions**, Riadh Abbessi, Steve Laroche, Nicolas Verrier, Jean-Baptiste Courbot, Matthieu Debailleul, Olivier Haeberlé, IUT de Mulhouse (France) [12136-66]

12:00: **Multimodal compressive microscopy of fluorescence dynamics and transmittance spectra**, Lukas Klein, Institute of Plasma Physics of the CAS, v.v.i. (Czech Republic); Jan Touš, CRYTUR spol s.r.o. (Czech Republic); Karel Zidek, Institute of Plasma Physics of the CAS, v.v.i. (Czech Republic) [12136-100]

12:20: **Cell cycle analysis from phase and fluorescence images with a simple and compact microscope**, Ondrej Mandula, Université Grenoble Alpes, CEA, LETI, DTBS (France); Jean-Philippe Kleman, Françoise LACROIX, Université Grenoble Alpes, CEA, CNRS, IBS (France); Cedric Allier, Université Grenoble Alpes, CEA, LETI, DTBS (France); Lionel Herve, Sophie Morales, Université Grenoble Alpes (France). [12136-102]

Lunch Break Thu 12:40 to 13:40

SESSION 15

ROOM: CURIE B, NIVEAU/LEVEL 1 THU 13:40 TO 15:20

Applications: Biomed II

Session Chair: **Olivier Haeberlé**, Univ. de Haute-Alsace (France)

13:40: **Tomographic phase microscopy at single cell scale without a-priori knowledge of cell orientations: smart strategies for rotation angles recovery**, Lisa Miccio, Daniele Pirone, Daniele Sirico, Francesco Merola, Pasquale Memmolo, Vittorio Bianco, Zhe Wang, Jaromír Běhal, Danila Del Giudice, Martina Mugnano, Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) [12136-68]

14:00: **On the use of multiloop Fourier ptychographic microscopy for observing cells and tissues**, Vittorio Bianco, Pasquale Memmolo, Jaromír Běhal, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy); Daniele Pirone, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) and Univ. degli Studi di Napoli Federico II (Italy); Marika Valentino, Martina Mugnano, Vito Pagliarulo, Lisa Miccio, Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) [12136-69]

14:20: **3D live cell imaging of whole organoids in time-lapse using intensity diffraction tomography**, William Pierré, Lionel Hervé, Cédric P. Allier, Sophie Morales, CEA-Grenoble (France); Sergei Grudin, Institut National de Recherche en Informatique et en Automatique (France); Pierre RAY, Christophe Arnout, Magali Dhellemmes, INSERM (France) [12136-70]

14:40: **Real-time direct observation of the formation of insulin spherulites by a new super-resolution microscopy**, Min Zhang, Henrik Pinholt, Xin Zhou, Vito Foderà, Nikos Hatzakis, Univ. of Copenhagen (Denmark) [12136-71]

15:00: **Label-free higher harmonic generation microscopy for real time visualization of Osteogenesis Imperfecta 3D fibroblasts culture**, Yuanyuan Ma, Jasmijn M. Rootlieb, Vrije Universiteit Amsterdam (Netherlands); Lisanne E. Wisse, Amsterdam UMC (Netherlands); Laura van Huizen, Ludo van Haasterecht, Vrije Universiteit Amsterdam (Netherlands); Dimitra Micha, Elisabeth M.W. Eekhoff, Peter Kloen, Thomas Rustemeyer, Amsterdam UMC (Netherlands); Marie L. Groot, Vrije Universiteit Amsterdam (Netherlands) [12136-98]

Coffee Break. Thu 15:20 to 15:40

SESSION 16

ROOM: CURIE B, NIVEAU/LEVEL 1 THU 15:40 TO 17:30

Advanced Methods: Digital Holography II

Session Chair: **Nicolas Verrier**, IRIMAS-Univ. de Haute-Alsace (France)

15:40: **Focus plane estimation in digital holographic microscopy** (*Invited Paper*), Corinne Fournier, Dylan Brault, Thomas Olivier, Univ. Jean Monnet Saint-Etienne (France); Nicolas Faure, BioMérieux SA (France); Sophie Dixneuf, BIOASTER (France); Louis Thibon, Univ. Jean Monnet Saint-Etienne (France); Loïc Mèès, Univ. de Lyon, CNRS (France); Loïc Denis, Univ. Jean Monnet Saint-Etienne (France) [12136-72]

16:10: **Extended autofocusing capabilities in digital holographic microscopy with transformer neural networks**, Louis Andréoli, Stéphane Cuenat, Antoine N. André, Patrick Sandoz, Raphaël Couturier, Guillaume J. Laurent, Maxime Jacquot, Institut Franche-Comte Electronique Mecanique Thermique et Optique (France) [12136-73]

16:30: **An integrated top-stage incubator and lens-free holographic imaging system for culture monitoring applications**, Zeynep Ozbilgin, Istanbul Medipol Üniv. (Turkey); Sevdenur Aksit, Istanbul Technical Univ. (Turkey); M. Fatih Toy, Istanbul Medipol Üniv. (Turkey) [12136-74]

16:50: **Digital holography in microplastic identification**, Vittorio Bianco, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy); Marika Valentino, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) and Univ. degli Studi di Napoli Federico II (Italy); Jaromír Běhal, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy); Daniele Pirone, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) and Univ. degli Studi di Napoli Federico II (Italy); Simona Itri, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) and Univ. of Campania "L. Vanvitelli" (Italy); Raffaella Mossotti, Giulia Dalla Fontana, Ettore Stella, Sistemi e Tecnologie Industriali Intelligenti per il Manifatturiero Avanzato (Italy); Lisa Miccio, Pasquale Memmolo, Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) [12136-75]

17:10: **Tracking-free approach to bacterial motility analysis from DHM**, Megan M. Dubai, Portland State Univ. (USA); Chris Lindensmith, Jet Propulsion Lab., Caltech (USA); Jay Nadeau, Portland State Univ. (USA) [12136-76]

ON DEMAND PRESENTATIONS

SESSION 2

LOCATION: CURIE B, NIVEAU/LEVEL 1 MON 15:30 TO 16:50

Advanced Methods: Ultrafast/Time of Flight

Session Chair: **Marc P. Georges**, Ctr. Spatial de Liège (Belgium)

0:00: **Evolution and prospects of burst image sensors from micro- to femtosecond resolution**, Takeharu G. Etoh, Osaka Univ. (Japan); Nguyen H. Ngo, Yoshiyuki Matsunaga, Ritsumeikan Univ. (Japan); Yutaka Hirose, Panasonic Corp. (Japan); Hideki Mutoh, Link Research Corp. (Japan); Takayoshi G. Shimura, Heiji G. Watanabe, Osaka Univ. (Japan); Kosei Takehara, Kindai Univ. (Japan); Shimonomura Kazuhiro, Ritsumeikan Univ. (Japan); Edoardo Charbon, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . [12136-7]

SESSION 8

LOCATION: CURIE B, NIVEAU/LEVEL 1 MON 14:00 TO 16:00

Advanced Methods: Polarization

Session Chair: **Francisco E. Robles**, Wallace H. Coulter Dept. of Biomedical Engineering at Georgia Institute of Technology (USA)

0:00: **Phase vortex production in the polarization interferometer**, Kseniya N. Gavril'eva, Yurii S. Gudin, Anastasia A. Ryzhaya, Egor V. Shalymov, Alexander A. Sevryugin, Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation); Andrey L. Sokolov, Precision Systems and Instruments Corp. (Russian Federation); Vladimir Y. Venediktov, Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation) . . . [12136-41]

SESSION 9

LOCATION: ON DEMAND MON 0:00 TO 0:00

Joint Session: Terahertz Imaging

0:00: **Terahertz compressive imaging for object classification**, Yan Zhang, Capital Normal Univ. (China) . . . [12136-36]

0:00: **Transport of intensity equation-based terahertz full-field phase imaging**, Lu Rong, Shiyu Wang, Yunxin Wang, Jie Zhao, Shufeng Lin, Dayong Wang, Beijing Univ. of Technology (China) . . . [12136-39]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Tuesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

Optical design of microscope objectives for the spectral range of 0.21-1 μm, Alla Uvarova, Alexey Bakholdin, ITMO Univ. (Russian Federation) . . . [12136-83]

In vivo compound eye imaging using full-field optical coherence tomography, Pawan Kumar, Mohamed Nijas, Renu John, Indian Institute of Technology Hyderabad (India) . . . [12136-88]

Quantitative phase imaging for practical medicine: a new approach to the study of cellular immunity in multiple sclerosis patients, Irina Vasilenko M.D., A.N. Kosygin Russian State Univ. (Russian Federation) and M.F. Vladimirovsky Moscow Regional Clinical and Research Institute (MONIKI) (Russian Federation) and Pirogov Russian National Research Medical Univ. (Russian Federation); Yulia Chuksina, Yulia Belova, Ekaterina Novikova, Sergey Kotov, M.F. Vladimirovsky Moscow Regional Clinical and Research Institute (MONIKI) (Russian Federation); Vladislav Metelin, Nina Shikhina, A.N. Kosygin Russian State Univ. (Russian Federation) and M.F. Vladimirovsky Moscow Regional Clinical and Research Institute (MONIKI) (Russian Federation) . . . [12136-90]

Algorithm for the automated determination of the forms to electrical discharge processes used to analyze the formed electrolyte plasma and predict the properties of the formed metal oxide layers, Evgeny A. Semenishchev, Viacheslav Voronin, Moscow State Univ. of Technology "STANKIN" (Russian Federation) . . . [12136-94]

Mobile Smartphone-based Augmented Reality for Industry Remote Monitoring and Maintenance, Ivan Naumov, Don State Technical Univ. (Russian Federation); M. Sinakin, LLC "DAR" (Russian Federation); Evgeny A. Semenishchev, Moscow State Univ. of Technology "STANKIN" (Russian Federation); Nikolay Gapon, Don State Technical Univ. (Russian Federation) . . . [12136-95]

Biologically inspired compound eye as multichannel motion measurement sensor, Vitalii Antonenko, Volodymyr N. Borovytsky, National Technical Univ. of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" (Ukraine) . . . [12136-97]

SESSION 12

LOCATION: CURIE B, NIVEAU/LEVEL 1 MON 14:00 TO 15:00

Advanced Methods: Tomography and OCT

Session Chair: **Olivier Haeberlé**, Univ. de Haute-Alsace (France)

0:00: **OCT-assisted needle for epidural injection**, Mohamed Nijas, Pawan Kumar, Aswathy Vijay, Renu John, Indian Institute of Technology Hyderabad (India) . . . [12136-56]

SESSION 14

LOCATION: CURIE B, NIVEAU/LEVEL 1 MON 11:00 TO 12:40

Advanced Methods: Multimodal/Hyperspectral

Session Chair: **Marc P. Georges**, Ctr. Spatial de Liège (Belgium)

0:00: **Enhanced hyperspectral imaging with tandem AOTF**, Grigoriy N. Martynov, Alexey Gorevoy, Milana Sharikova, Alexander Machikhin, Vitold Pozhar, Scientific and Technological Ctr. of Unique Instrumentation RAS (Russian Federation) . . . [12136-65]

Optics and Photonics for Advanced Dimensional Metrology II

Conference Chairs: **Peter J. de Groot**, Zygo Corporation (USA); **Richard K. Leach**, The Univ. of Nottingham (United Kingdom); **Pascal Picart**, Lab. d'Acoustique de l'Univ. du Maine (France)

Program Committee: **Jürgen W. Czarske**, Technische Univ. Dresden (Germany); **Fengzhou Fang**, Tianjin Univ. (China); **Pietro Ferraro**, Istituto Nazionale di Ottica (Italy); **Cosme Furlong**, Worcester Polytechnic Institute (USA); **Yoshio Hayasaki**, Utsunomiya Univ. (Japan); **Michał Józwiak**, Warsaw Univ. of Technology (Poland); **Dae Wook Kim**, College of Optical Sciences, The Univ. of Arizona (USA); **Peter H. Lehmann**, Univ. Kassel (Germany); **Paul C. Montgomery**, Univ. de Strasbourg (France); **Andreas Ostendorf**, Ruhr-Univ. Bochum (Germany); **Yukitoshi Otani**, Utsunomiya Univ. (Japan); **Heidi Ottevaere**, Vrije Univ. Brussel (Belgium); **Nicolas Passilly**, FEMTO-ST (France); **Gabriel Popescu**, Univ. of Illinois (USA); **Christof Pruss**, Univ. Stuttgart (Germany); **Guohai Situ**, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China); **Rong Su**, The Univ. of Nottingham (United Kingdom); **Jean-François Vandenrijt**, Ctr. Spatial de Liège (Belgium); **Xiaocong Yuan**, Nankai Univ. (China)

TUESDAY 5 APRIL

SESSION 1

LOCATION: CASSIN, NIVEAU/LEVEL 1 TUE 9:00 TO 10:10

Optical Measurements of Length, Form, and Position

Session Chair: **Peter J. de Groot**, Zygo Corporation (USA)

9:00: **Precision displacement laser interferometry** (*Invited Paper*), Felipe Guzman, Texas A&M Univ. (USA) [12137-1]

9:30: **Holographical image-based vibrometry with monochromatic and event based cameras**, Simon Hartlieb, Maciej Boguslawski, Tobias Haist, Institut für Technische Optik (Germany) and Univ. Stuttgart (Germany); Stephan Reichelt, Univ. Stuttgart (Germany) [12137-2]

9:50: **Single-shot wavelength meter on a photonic chip for absolute distance measurement using frequency scanning interferometry**, Pablo D. Ruiz, Charles R. Coggrave, Christos A. Pallikarakis, Jonathan M. Huntley, Loughborough Univ. (United Kingdom); Han Du, Univ. of Southampton (United Kingdom); Callum G. Littlejohns, Univ. of Southampton (United Kingdom) and Optoelectronics Research Ctr. (United Kingdom); M. Banakar, X. Yan, D. T. Tran, Univ. of Southampton (United Kingdom) [12137-5]

Coffee Break Tue 10:10 to 10:40

SESSION 2

LOCATION: CASSIN, NIVEAU/LEVEL 1 TUE 10:40 TO 12:10

On-machine and In-process Metrology

Session Chair: **Pablo D. Ruiz**, Loughborough Univ. (United Kingdom)

10:40: **Towards industrial applications of optical in-line measurement of geometry** (*Invited Paper*), Mikael Sjö Dahl, Lulea Univ. of Technology (Sweden) [12137-6]

11:10: **Measurement of laser-based powder bed fusion surfaces using light scattering and one-class support vector machines**, Mingyu Liu, The Univ. of Nottingham (United Kingdom); Nicola Senin, Univ. degli Studi di Perugia (Italy); Richard Leach, The Univ. of Nottingham (United Kingdom) [12137-7]

11:30: **Mirau type coherence scanning interferometer with integrated vibration compensation**, Hüseyin Serbes, Sebastian Hagemeier, Peter Lehmann, Univ. Kassel (Germany) [12137-9]

11:50: **Precision measurement of large optics by use of a scanning point multiwavelength interferometer**, Marc Wendel, AMETEK Germany GmbH (Germany) [12137-10]

Lunch/Exhibition Break Tue 12:10 to 14:00

SESSION 3

LOCATION: CASSIN, NIVEAU/LEVEL 1 TUE 14:00 TO 15:30

Light Properties and Optical Metrology

Session Chair: **Andrew Henning**, Univ. of Huddersfield (United Kingdom)

14:00: **Exploring the coherence function for optical metrology and beyond** (*Invited Paper*), Claas Falldorf, Bremer Institut für angewandte Strahltechnik GmbH (Germany) [12137-11]

14:50: **A model for speckle noise in phase data from digital holographic measurements**, Erwan Meteyer, Pascal Picart, Charles Pézerat, Le Mans Univ. (France) [12137-13]

15:10: **Polarimetric femtosecond-laser lidar for multispectral material probing**, Yu Han, David Salido-Monzú, Jemil Butt, Andreas Wieser, ETH Zurich (Switzerland) [12137-15]

Coffee Break Tue 15:30 to 16:30

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:30: **Welcome and opening remarks**

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) . [12144-500]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

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Interferometric phase-extraction algorithm insensitive to the refractive-index dispersion for the thickness profiling of a transparent plate, Jurim Jeon, Sung Tae Kim, Yangjin Kim, Pusan National Univ. (Korea, Republic of) . . . [12137-40]

Simultaneous thickness and surface profiling of blank mask using harmonic phase-iterative method and wavelength-scanning interferometry, Sung Tae Kim, Yangjin Kim, Pusan National Univ. (Korea, Republic of) [12137-41]

Multiwavelength digital holography with meter scale synthetic wavelengths at micrometer precision, Tobias Seyler, Jens Kiessling, Markus Fratz, Annelie Schiller, Jonas Stevanovic, Alexander Bertz, Daniel Carl, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany) . . . [12137-49]

Development of a sinusoidal pseudochirp material measure for the characterization of optical surface topography measuring instruments, Andre Felgner, Sai Gao, Dorothee Hueser, Uwe Brand, Physikalisch-Technische Bundesanstalt (Germany) [12137-51]

Dynamic short- and large-coherence interferometry to characterize the induced vibrations and topology change of the cryogenic mirror of the Einstein Telescope prototype, Jesús Vilaboa Pérez, Ctr. Spatial de Liège, Univ. de Liège (Belgium); Jérôme Loicq, Technische Univ. Delft (Netherlands) . . . [12137-56]

Simultaneous local reflectance and topography measurement with white light interference microscopy, Sébastien Marbach, Rémy Claveau, Christophe Cordier, Paul Montgomery, Manuel Flury, Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France) and Univ. de Strasbourg (France) [12137-58]

Adaptive wavefront sensor for accurate characterization and evaluation of circular optical elements, Rania M. Abdelazeem, Cairo Univ. (Egypt); Mostafa Agour, Aswan Univ. (Egypt) [12137-59]

WEDNESDAY 6 APRIL

SESSION 4

LOCATION: CASSIN, NIVEAU/LEVEL 1 WED 14:00 TO 15:10

Measuring Instruments Using Advanced Photonic Devices

Session Chair: Mikael Sjö Dahl, Lulea Univ. of Technology (Sweden)

14:00: **Surface figure metrology based on geometric phase components** (*Invited Paper*), Ki-Nam Joo, Hyo Mi Park, Hyo bin Jeong, Chosun Univ. (Korea, Republic of); Young-Sik Ghim, Korea Research Institute of Standards and Science (Korea, Republic of); Daewook Kim, Charlotte E. Guthery, The Univ. of Arizona (USA) [12137-17]

14:30: **Metasurface-based ultracompact instrumentation to support future smart manufacturing**, Andrew Henning, Daniel Townsend, Haydn Martin, Xiang (Jane) Jiang, Univ. of Huddersfield (United Kingdom) . . [12137-18]

14:50: **Transfer of an AlGaAs/GaAs crystalline Bragg mirror from a GaAs substrate to a fused silica substrate by direct bonding**, Victor Hui, Lab. d'Annecy de Physique des Particules (France); Agathe André, CEA-LETI (France); Alexandre Arnoult, Laboratoire d'Analyse et d'Architecture des Systèmes (France); Pascal Besson, Christophe Dubarry, CEA-LETI (France); Chantal Fontaine, Laboratoire d'Analyse et d'Architecture des Systèmes (France); Frank Fournel, Victor Lumineau, Christelle Navonne, CEA-LETI (France); Laurent Pinard, Laboratoire des Matériaux Avancés (France); Raffaele Flaminio, Lab. d'Annecy de Physique des Particules (France) [12137-20]

Coffee Break Wed 15:10 to 15:40

SESSION 5

LOCATION: CASSIN, NIVEAU/LEVEL 1 WED 15:40 TO 16:30

Quantitative Imaging for 3D Metrology

Session Chair: Mingyu Liu, The Univ. of Nottingham (United Kingdom)

15:40: **Minimally invasive computational 3D lensless fiber endomicroscopy** (*Invited Paper*), Robert Kuschmierz, Jürgen Czarske, TU Dresden (Germany) [12137-22]

16:10: **Super-resolved 3D optical profiling for surface metrology using structured illumination**, Lena Zhukova, Roger Artigas, Guillem Carles, Sensofar-Tech, S.L. (Spain) [12137-25]

SESSION 6

LOCATION: CASSIN, NIVEAU/LEVEL 1 WED 16:30 TO 18:00

Optical Micro- and Nanometrology

Session Chair: Maxime Jacquot, FEMTO-ST (France)

16:30: **New needs to measure soft matter at micro-/nanoscale: a new possibility thanks to digital holography** (*Invited Paper*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) . . . [12137-26]

17:00: **Minimally invasive lensless fiber endoscopy using distal holographic image formation for technical inspections and biomedicine**, Johannes Gürtler, Robert Kuschmierz, Jürgen Czarske, TU Dresden (Germany) [12137-27]

17:20: **Measuring angle-resolved dynamic deformation of micromirrors with digital stroboscopic holography**, Pooja Thakkar, Markus Bainschab, Takashi Sasaki, Markus Zauner, Dominik Holzmann, Clément Fleury, Jaka Pribošek, Silicon Austria Labs. GmbH (Austria); Adrien Piot, Silicon Austria Labs GmbH (Austria) [12137-29]

17:40: **Advanced FEM simulation and Bayesian parameter reconstruction for high-precision dimensional microscopy**, Philipp-Immanuel Schneider, Phillip Manley, JCMwave GmbH (Germany) and Zuse Institute Berlin (Germany); Jan Krüger, Physikalisch-Technische Bundesanstalt (Germany); Lin Zschiedrich, JCMwave GmbH (Germany) and Zuse Institute Berlin (Germany); Rainer Köning, Bernd Bodermann, Physikalisch-Technische Bundesanstalt (Germany); Sven Burger, Zuse Institute Berlin (Germany) and JCMwave GmbH (Germany) [12137-30]

THURSDAY 7 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 10:35

Hot Topics III

Thierry Georges, Oxxius (France), 2022 Symposium Chair

9:00: Welcome and opening remarks

9:05: **A sneak peek with light into opaque materials: from imaging to computing** (*Plenary*), Sylvain Gigan, Lab. Kastler Brossel (France) . [12136-500]

9:50: **Active metasurfaces empowered by two-dimensional materials** (*Plenary*), Isabelle Staude, Friedrich-Schiller-Univ. Jena (Germany) . [12130-500]

Coffee Break Thu 10:35 to 11:00

SESSION 7

LOCATION: CASSIN, NIVEAU/LEVEL 1 THU 11:00 TO 12:10

Metrology of Complex Surfaces and Materials

Session Chair: Claas Falldorf, Bremer Institut für angewandte Strahltechnik GmbH (Germany)

11:00: **High resolution noncontact freeform surface metrology using interference microscopy** (*Invited Paper*), Alexander Sohn, Nelson Cardenas, Neil Naples, Facebook Technologies, LLC (USA); Xavier C. Colonna de Lega, Jan C. Liesener, Thomas Dresel, Peter de Groot, Zygo Corporation (USA) [12137-31]

11:30: **Full-field optical analysis of defect detection in 3D printing composite**, Vito Pagliarulo, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy); Pietro Russo, Istituto per i Polimeri, Compositi e Biomateriali (Italy); Jaromir Běhal, Gennaro D'Angelo, Giulia Leone, Berardo Ruggiero, Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) [12137-32]

11:50: **Approaching optical metrology with multiple light sources and compressive sensing**, André F. Müller, Claas Falldorf, Bremer Institut für angewandte Strahltechnik GmbH (Germany); Ralf B. Bergmann, Bremer Institut für angewandte Strahltechnik GmbH (Germany) and Univ. Bremen (Germany) . . [12137-34]

Lunch Break Thu 12:10 to 13:30

SESSION 8

LOCATION: CASSIN, NIVEAU/LEVEL 1 THU 13:30 TO 14:30

Large-Scale Measurements

Session Chair: Pascal Picart, Lab. d'Acoustique de l'Univ. du Maine (France)

13:50: **Simultaneous path following and obstacle avoidance of field-tracked vehicles via model predictive control with deep deterministic policy gradient**, Yu-Cheng Sung, Chun-Ting Sung, Wen-Chuan Tseng, Shean-Jen Chen, National Yang Ming Chiao Tung Univ. (Taiwan) [12137-37]

14:10: **High-resolution 3D pose sensing from nano- to macro-scale by phase-based computer vision**, Antoine N. André, Patrick Sandoz, Maxime Jacquot, Guillaume J. Laurent, Institut Franche-Comte Electronique Mecanique Thermique et Optique, CNRS (France) and Univ. Bourgogne Franche-Comté (France) [12137-38]

CONFERENCE 12137

ON DEMAND PRESENTATIONS

SESSION 1

LOCATION: CASSIN, NIVEAU/LEVEL 1 MON 9:00 TO 10:10

Optical Measurements of Length, Form, and Position

Session Chair: **Peter J. de Groot**, Zygo Corporation (USA)

0:00: **Three-dimensional displacements measurement with two-point source interference**, Ju-Yi Lee, Tzu-Kuan Lin, National Central Univ. (Taiwan); Hung-Lin Hsieh, National Taiwan Univ. of Science and Technology (Taiwan) . . . [12137-3]

0:00: **Development of a coplanar grating interferometer for displacement and angle measurements**, Yi-Teng Hsu, Hung-Lin Hsieh, National Taiwan Univ. of Science and Technology (Taiwan) . . . [12137-4]

SESSION 3

LOCATION: CASSIN, NIVEAU/LEVEL 1 MON 14:00 TO 15:30

Light Properties and Optical Metrology

Session Chair: **Andrew Henning**, Univ. of Huddersfield (United Kingdom)

0:00: **Accuracy-enhanced diffraction image profilometry using foreign aberration for resolving image ambiguity**, Guo-Wei Wu, Liang-Chia Chen, National Taiwan Univ. (Taiwan) . . . [12137-14]

0:00: **Fringe-pattern analysis using deep learning with uncertainty quantification**, Shijie Feng, Nanjing Univ. of Science and Technology (China) . . [12137-16]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

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Optical inspection system for simultaneously measuring thicknesses and refractive indexes of multilayered transparent substrates, Chien-Sheng Liu, Chang-Yu Jen, National Chung Cheng Univ. (Taiwan) . . . [12137-39]

Deep convolutional neural network-based surface defect detection for wafer polishing jig, Chao-Ching Ho, Xuan Yan, Sankarsan Mohanty, Yu-wei Lin, National Taipei Univ. of Technology (Taiwan) . . . [12137-42]

Precision inspection of functional microsurface by Moiré interferometry, Saïd Meguellati, Univ. Ferhat Abbas de Sétif (Algeria) . . . [12137-44]

Trihedral reflectors with cylindrical surface for three-dimensional autocollimation systems, Mikhail Nikitin, Igor Konyakhin, ITMO Univ. (Russian Federation) . . . [12137-45]

Development of a linear encoder based on common-optical-path design, Pei-Chieh Chen, Hung-Lin Hsieh, National Taiwan Univ. of Science and Technology (Taiwan); Ju-Yi Lee, National Central Univ. (Taiwan) . . . [12137-46]

Research of video endoscopy errors when controlling defects of the rotor blades of turbines of a large unit power, Liliانا Rodikova, Valery Korotaev, Aleksandr Timofeev, Viktoria Ryzhova, Victoria Lykhanova, ITMO Univ. (Russian Federation) . . . [12137-47]

Monitoring of nonlinear strain waves in opaque materials using digital holography in reflection configuration, Anna A. Zhikhoreva, Andrey Belashov, Yaroslav Beltukov, Irina Semenova, Ioffe Institute (Russian Federation) . . . [12137-50]

Investigation of the error in a gamma spectrometer based on a scintillation crystal and a silicon photomultiplier tube, Ilya Bokaty, Valery Korotaev, Viktoria Ryzhova, ITMO Univ. (Russian Federation); Aleksandr Titov, Geomash Engineering Ltd. (Russian Federation); Lilianna Rodikova, ITMO Univ. (Russian Federation) . . . [12137-52]

Analysis of the optoacoustic method for nondestructive testing of the rotor blades of a turboshaft engine, Viktoria Lukyanova, Viktoria Ryzhova, ITMO Univ. (Russian Federation); Artur Alaviali, The Gromov Flight Research Institute (Russian Federation); Valery Korotaev, Lilianna Rodikova, ITMO Univ. (Russian Federation) . . . [12137-53]

Review of nondestructive testing methods for compressor rotor blades of gas turbine engines, Viktoria Lukyanova, Viktoria Ryzhova, ITMO Univ. (Russian Federation); Artur Alaviali, The Gromov Flight Research Institute (Russian Federation); Valery Korotaev, Lilianna Rodikova, ITMO Univ. (Russian Federation) . . . [12137-54]

Research of thermal imaging systems for detection and surveillance mounted on flying vehicles for the purpose monitoring and ecological control, Pavel Safonov, Valery Korotaev, Lilianna Rodikova, ITMO Univ. (Russian Federation) . . . [12137-54]

Diffraction from rough phase steps, Morteza Jafari Siavashani, Institute for Advanced Studies in Basic Sciences (Iran, Islamic Republic of); Elyas Nasimdoost, Institute for Advanced Studies in Basic Sciences (Iran, Islamic Republic of); Parviz Elahi, Bogaziçi Univ. (Turkey); Ali-Reza Moradi, Institute for Advanced Studies in Basic Sciences (Iran, Islamic Republic of) . . . [12137-60]

SESSION 4

LOCATION: CASSIN, NIVEAU/LEVEL 1 MON 14:00 TO 15:10

Measuring Instruments Using Advanced Photonic Devices

Session Chair: **Mikael Sjö Dahl**, Lulea Univ. of Technology (Sweden)

0:00: **New critical dimension optical metrology for submicron high-aspect-ratio structures using spectral reflectometry with supercontinuum laser illumination**, Wei-Hsin Chein, Fu-Sheng Yang, Komal Thakur, Guo-Wei Wu, Liang-Chia Chen, National Taiwan Univ. (Taiwan) . . . [12137-21]

SESSION 6

LOCATION: CASSIN, NIVEAU/LEVEL 1 MON 16:30 TO 18:00

Optical Micro- and Nanometrology

Session Chair: **Maxime Jacquot**, FEMTO-ST (France)

0:00: **Spatial modulation microscopy of subwavelength nanoparticles for silicon metrology**, Anton Sofronov, SAMSUNG Advanced Institute of Technology (Russian Federation) . . . [12137-28]

SESSION 7

LOCATION: CASSIN, NIVEAU/LEVEL 1 MON 11:00 TO 12:10

Metrology of Complex Surfaces and Materials

Session Chair: **Claas Falldorf**, Bremer Institut für angewandte Strahltechnik GmbH (Germany)

0:00: **Accuracy-enhanced diffraction image profilometry using foreign aberration for resolving image ambiguity**, Guo-Wei Wu, Liang-Chia Chen, National Taiwan Univ. (Taiwan) . . . [12137-33]

Optics, Photonics and Digital Technologies for Imaging Applications VII

Conference Chairs: **Peter Schelkens**, Vrije Univ. Brussel (Belgium); **Tomasz Kozacki**, Warsaw Univ. of Technology (Poland)

Program Committee: **Olivier Aubreton**, Univ. de Bourgogne (France); **Jan T. Bosiers**, Teledyne DALSA (Netherlands); **Daping Chu**, Univ. of Cambridge (United Kingdom); **Gabriel Cristóbal**, Consejo Superior de Investigaciones Científicas (Spain); **Jana Dittmann**, Otto-von-Guericke-Universität Magdeburg (Germany); **Marek Domanski**, Univ. of Poznan (Poland); **Touradj Ebrahimi**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Boris Escalante-Ramírez**, Univ. Nacional Autónoma de México (Mexico); **Pascuala García-Martínez**, Univ. de València (Spain); **Laurent Jacques**, Univ. Catholique de Louvain (Belgium); **Dragan Kukolj**, RT-RK Institute for Computer Based Systems (Serbia); **Jukka-Tapani Mäkinen**, VTT Technical Research Ctr. of Finland (Finland); **Maria S. Millán García-Varela**, Univ. Politècnica de Catalunya (Spain); **Cristian Perra**, Univ. degli Studi di Cagliari (Italy); **Stuart W. Perry**, Canon Information Systems Research (Australia); **Pasi Saarikko**, Oculus VR, LLC (USA); **Martin Schrader**, Nokia Research Ctr. (Finland); **Tomoyoshi Shimobaba**, Chiba Univ. (Japan); **Lea Skorin-Kapov**, Univ. of Zagreb (Croatia); **Colin James Richard Sheppard**, National Univ. of Singapore (Singapore); **Athanassios N. Skodras**, Univ. of Patras (Greece); **Andrew G. Tescher**, AGT Associates (USA); **Frédéric Truchetet**, Univ. de Bourgogne (France); **Gerald Zauner**, FH OÖ Forschungs & Entwicklungs GmbH (Austria)

WEDNESDAY 6 APRIL

SESSION 1

LOCATION: SALON 1, NIVEAU/LEVEL 0 WED 9:00 TO 11:10

Learning-based Solutions

Session Chair: **David Blinder**, Vrije Univ. Brussel (Belgium)

9:00: **Noise robust focal distance detection in laser material processing using CNNs and Gaussian processes**, Sepehr Elahi, Bilkent Univ. (Turkey); Can Polat, Bogaziçi Univ. (Turkey); Omid Safarzadeh, International Bank of Azerbaijan (Azerbaijan, Republic of); Parviz Elahi, Bogaziçi Univ. (Turkey). [12138-33]

9:20: **Machine learning-based high-precision and real-time focus detection for laser material processing systems**, Can Polat, Gizem Nuran Yapici, Bogaziçi Univ. (Turkey); Sepehr Elahi, Bilkent Univ. (Turkey); Parviz Elahi, Bogaziçi Univ. (Turkey). [12138-34]

9:40: **Sargassum detection and path estimation using neural networks**, José Antonio Lopez Portillo, Univ. Nacional Autónoma de México (Mexico); Iván Casasola, Posgrado en ciencias e Ingeniería en Computacion, Universidad Nacional Autónoma de México (Mexico); Boris Escalante-Ramírez, Jimena Olveres Montiel, Univ. Nacional Autónoma de México (Mexico); Jaime Arriaga, Technische Univ. Delft (Netherlands); Christian Appendini, Univ. Nacional Autónoma de México (Mexico) [12138-35]

Coffee Break. Wed 10:00 to 10:30

10:30: **Neuron segmentation in epifluorescence microscopy imaging with deep learning**, Fernando González, Boris Escalante-Ramírez, Jimena Olveres Montiel, José Bargas Díaz, Miguel Serrano, Univ. Nacional Autónoma de México (Mexico) [12138-1]

10:50: **Deep learning-enhanced microscopy by training a convolutional neural network with data collected using a line-scanning confocal microscope**, Amir Mohammad Ketabchi, Berna Morova, Nima Bavili, Alper Kiraz, Koç Univ. (Turkey) [12138-2]

SESSION 2

LOCATION: SALON 1, NIVEAU/LEVEL 0 WED 11:10 TO 12:30

Image Analysis

Session Chair: **Juan Martínez-Carranza**, Warsaw Univ. of Technology (Poland)

11:10: **Effective laser pest control with modulated UV-A light trapping for mushroom fungus gnats**, Sumesh Nair, Chia-Wei Hsu, National Yang Ming Chiao Tung Univ. (Taiwan); Yvonne Y. Hu, National Cheng Kung Univ. (Taiwan); Ming-Jeh Chien, Lohas Biotech Development Corp. (Taiwan); Shean-Jen Chen, National Yang Ming Chiao Tung Univ. (Taiwan). [12138-7]

11:30: **Optical coherence tomography versus microscopy for the study of Aloe Vera leaves**, Roxana-Mariana Beiu, Univ. "Aurel Vlaicu" din Arad (Romania); Virgil-Florin Duma, Univ. "Aurel Vlaicu" din Arad (Romania) and Univ. Politehnica Timisoara (Romania); Corina Mnerie, Univ. "Aurel Vlaicu" din Arad (Romania); Andrea-Claudia Beiu, Technische Univ. Eindhoven (Netherlands); Mihaela Dochia, Lucian Copolovici, Univ. "Aurel Vlaicu" din Arad (Romania); George M. Dobre, Adrian Bradu, Adrian G. H. Podoleanu, Univ. of Kent (United Kingdom). [12138-8]

11:50: **Integration of augmented reality and image processing in plasma dynamic analysis: digital concepts and structural system design**, Haider Al-Juboori, Institute of Technology Carlow (Ireland); Tom McCormack, School of Physics, University College Dublin (Ireland). [12138-9]

12:10: **COVID-19 detection from lung ultrasound images**, Melisa Mateu, Jimena Olveres Montiel, Boris Escalante-Ramírez, Univ. Nacional Autónoma de México (Mexico) [12138-10]

Lunch/Exhibition Break Wed 12:30 to 14:00

SESSION 3

LOCATION: SALON 1, NIVEAU/LEVEL 0 WED 14:00 TO 15:00

Image Acquisition and Computational Imaging

Session Chair: **Juan Martínez-Carranza**, Warsaw Univ. of Technology (Poland)

14:00: **Optical spatial differentiation with ultrathin freestanding subwavelength gratings**, Ali A. Darki, Aurélien R. Dantan, Jens V. Nygaard, Søren P. Madsen, Alexios Parthenopoulos, Christian Vandborg, Aarhus Univ. (Denmark) [12138-11]

14:20: **BDC: boosting the performance of optical microscopy using blind deconvolution and illumination correction**, Shuhe Zhang, Tos T.J. M. Berendschot, Maastricht Univ. Medical Ctr. (Netherlands); Jinhua Zhou, Meng Shao, Anhui Medical Univ. (China). [12138-13]

14:40: **Mid-infrared speckle reduction technique for hyperspectral imaging**, Maroun Hjeij, Luiz Poffo, Fonctions Optiques pour les Technologies de l'information (France); Bastien Billiot, Agro Innovation International (France); Ronan Le Page, Pascal Besnard, Jean-Marc Goujon, Univ. de Rennes (France). [12138-15]

Coffee Break. Wed 15:00 to 15:30

SESSION 4

LOCATION: SALON 1, NIVEAU/LEVEL 0 WED 15:30 TO 17:10

Applications

Session Chair: **Peter Schelkens**, Vrije Univ. Brussel (Belgium)

15:30: **Towards a demonstrator setup for a wide-field-of-view visible to near-infrared camera aiming to characterize the solar radiation reflected by the Earth**, Luca Schifano, Royal Meteorological Institute of Belgium (Belgium); Fabian Duerr, Francis Berghmans, Vrije Univ. Brussel (Belgium); Steven Dewitte, Royal Meteorological Institute of Belgium (Belgium); Lien Smeesters, Vrije Univ. Brussel (Belgium) [12138-16]

15:50: **On-board satellite data processing to achieve smart information collection**, Christofer Schwartz, Ingo Sander, Rodolfo Jordão, KTH Royal Institute of Technology (Sweden); Fredrik Bruhn, Mälardalen University (Sweden); Mathias Persson, Unibap AB (Sweden); Joakim Ekblad, Saab AB (Sweden); Christer Fuglesang, KTH Royal Institute of Technology (Sweden) [12138-17]

16:10: **Compact angle diversity receiver concept for visible light positioning**, Felix Lichtenegger, Claude Leiner, Christian Sommer, Andreas Weiss, Andreas Kröppf, Saman Zahiri-Rad, JOANNEUM RESEARCH Forschungsgesellschaft mbH (Austria) [12138-18]

16:30: **Path following of field-tracked robots based on model predictive control with visual-inertial odometry and identified state-space dynamic model**, Chun-Ting Sung, Wen-Chuan Tseng, National Yang Ming Chiao Tung Univ. (Taiwan); Meng-Hui Hsu, Kun Shan Univ. (Taiwan); Shean-Jen Chen, National Yang Ming Chiao Tung Univ. (Taiwan) and National Applied Research Labs. (Taiwan). [12138-19]

16:50: **Multi-incident holography profilometry for low- and high gradient object**, Moncy Sajeev Idicula, Patryk Mitura, Michal Józwick, Warsaw Univ. of Technology (Poland); Hyon-Gon Choo, Electronics and Telecommunications Research Institute (Korea, Republic of); Juan Martínez-Carranza, Warsaw Univ. of Technology (Poland); Kai Wen, Xidian University (China) and Warsaw Univ. of Technology (Poland); Tomasz Kozacki, Warsaw Univ. of Technology (Poland). . . [12138-20]

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Wednesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

Galvanometer scanners for biomedical imaging: control structures, Corina Mnerie, Univ. "Aurel Vlaicu" din Arad (Romania); Virgil-Florin Duma, Univ. "Aurel Vlaicu" din Arad (Romania) and Univ. Politehnica Timisoara (Romania) [12138-36]

A study on the utilization of deep learning for identifying fractional orbital angular momentum beams in atmospheric turbulence media, Youngbin Na, Do-Kyeong Ko, Gwangju Institute of Science and Technology (Korea, Republic of). [12138-38]

Gibbs ringing and the Fresnel transform, Yue Wang, John J. Healy, Univ. College Dublin (Ireland) [12138-39]

Monocentric cameras design for 3D scenes capturing and projection, Thibault Behaghel, Lab. d'Astrophysique de Marseille (France); Eduard R. Muslimov, ASTRON (Netherlands). [12138-40]

Speckled based, fluorescence compressive imaging via a multimode fiber, Benjamin Lochocki, VU Amsterdam, Department of Physics and Astronomy (Netherlands) and Advanced Research Center for Nanolithography (ARCNL) (Netherlands); Max V. Verweg, VU Amsterdam (Netherlands) and Advanced Research Center for Nanolithography (ARCNL) (Netherlands); Johannes F. de Boer, VU Amsterdam, Department of Physics and Astronomy (Netherlands); Lyubov V. Amitonova, Advanced Research Center for Nanolithography (ARCNL) (Netherlands) and VU Amsterdam, Department of Physics and Astronomy (Netherlands) [12138-46]

Multisensor characterization of WEEE polymers: spectral fingerprints for the recycling industry, Andréa de Lima Ribeiro, Margret C. Fuchs, Sandra Lorenz, Helmholtz-Zentrum Dresden-Rossendorf, Helmholtz Institute Freiberg for Resource Technology (Germany); Christian Röder, Institute of Applied Physics, Faculty of Chemistry and Physics, Technische Universität Bergakademie (Germany); Yuleika Madriz, Erik Herrmann, Richard Gloaguen, Helmholtz-Zentrum Dresden-Rossendorf, Helmholtz Institute Freiberg for Resource Technology (Germany); Johannes Heitmann, Institute of Applied Physics, Faculty of Chemistry and Physics, Technische Universität Bergakademie (Germany) [12138-47]

Towards video-rate label-free fiber nano-endoscopy, Ksenia Abrashitova, Lyubov Amitonova, ARCNL (Netherlands). [12138-48]

Glioma classification for fast intraoperative pathology with third harmonic generation microscopy and deep learning, Max Blokker, Vrije Universiteit Amsterdam (Netherlands); Philip C. de Witt Hamer, Pieter Wesseling, Amsterdam UMC location VU University Medical Center (Netherlands); Marloes L. Groot, Vrije Universiteit Amsterdam (Netherlands); Mitko Veta, Eindhoven University of Technology (Netherlands). [12138-49]

The Venus infrared atmospheric gases linker instrument concept for solar occultation studies of Venus atmosphere composition and structure onboard the Venus Orbiter Mission of the Indian Space Research Organization, Andrey Patrakeev, Alexander Trokhimovskiy, Oleg Korablev, Space Research Institute (Russian Federation); Franck Montmessin, LATMOS/IPSL, UVSQ Université Paris-Saclay, Sorbonne Université, CNRS (France); Denis Belyaev, Anna Fedorova, Space Research Institute (Russian Federation); Sandrine Maloreau, Gabriel Guignan, LATMOS/IPSL, UVSQ Université Paris-Saclay, Sorbonne Université, CNRS (France); Yuriy Ivanov, Main Astronomical Observatory (Ukraine); Yuiy Kalinnikov, VNIIFTRI (Russian Federation) [12138-50]

THURSDAY 7 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 10:35

Hot Topics III

Thierry Georges, Oxxius (France), 2022 Symposium Chair

9:00: **Welcome and opening remarks**

9:05: **A sneak peek with light into opaque materials: from imaging to computing** (*Plenary*), Sylvain Gigan, Lab. Kastler Brossel (France) . [12136-500]

9:50: **Active metasurfaces empowered by two-dimensional materials** (*Plenary*), Isabelle Staude, Friedrich-Schiller-Univ. Jena (Germany) . [12130-500]

Coffee Break. Thu 10:35 to 11:00

SESSION 5

LOCATION: SALON 1, NIVEAU/LEVEL 0 THU 11:00 TO 12:20

Standardization of Plenoptic Coding and Media Security Frameworks

Session Chair: **Peter Schelkens**, Vrije Univ. Brussel (Belgium)

11:00: **JPEG pleno light field: current standard and future directions**, Cristian Perra, Univ. degli Studi di Cagliari (Italy); Saeed Mahmoudpour, Vrije Univ. Brussel (Belgium); Carla Pagliari, Instituto Militar de Engenharia (Brazil) . . [12138-22]

11:20: **Definition of common test conditions for the new JPEG pleno holography standard**, Antonio M. G. Pinheiro, Joao Prazeres, Univ. da Beira Interior (Portugal); Antonin Gilles, b&t;&t;com (France); Tobias Birnbaum, Raees K. Kizhakkumkara Muhamad, Peter Schelkens, Vrije Univ. Brussel (Belgium) [12138-23]

11:40: **A standard way for computing numerical reconstructions of digital holograms**, Tobias Birnbaum, David Blinder, Raees K. Kizhakkumkara Muhamad, Vrije Univ. Brussel (Belgium); Antonin Gilles, b&t;&t;com (France); Cristian Perra, Univ. degli Studi di Cagliari (Italy); Tomasz Kozacki, Warsaw University of Technology (Poland); Peter Schelkens, Vrije Univ. Brussel (Belgium) [12138-24]

12:00: **Media security framework inspired by emerging challenges in fake media and NFT**, Frederik Temmermans, Vrije Univ. Brussel (Belgium); Deepayan Bhowmik, Univ. of Stirling (United Kingdom); Fernando Pereira, Instituto de Telecomunicações (Portugal); Touradj Ebrahimi, Ecole Polytechnique Fédérale de Lausanne (Switzerland). [12138-25]

Lunch Break Thu 12:20 to 13:40

SESSION 6

LOCATION: SALON 1, NIVEAU/LEVEL 0 THU 13:40 TO 15:40

Displays and Projections

Session Chair: **David Blinder**, Vrije Univ. Brussel (Belgium)

13:40: **SLM pixel apodization for the attenuation of selected diffractive orders in computer-generated holography** (*Invited Paper*), Michal Makowski, Joanna Starobrat, Andrzej Kolodziejczyk, Maciej Sypek, Adam Kowalczyk, Jaroslaw Suszek, Warsaw Univ. of Technology (Poland) . [12138-26]

14:00: **Polygon hologram using controllable energy angular spectrum method and analytical spectrum calculation**, Wang Fan, Tomoyoshi Shimobaba, Tomoyoshi Ito, Takashi Kakue, Chiba Univ. (Japan) [12138-27]

14:20: **Accuracy of 3D image manipulation through linear transformation of wide-angle hologram**, Tomasz Kozacki, Moncy Sajeev Idicula, Maksymilian Chlipala, Juan Martínez-Carranza, Warsaw Univ. of Technology (Poland) [12138-29]

15:00: **Optimal dense and random addressing design of emissive points in a retinal projection device**, Fabian Rainouard, CEA-LETI (France) and Univ. de Haute-Alsace (France) and Lab. Jean Kuntzmann (France); Matthias Colard, CEA-LETI (France) and Univ. de Haute-Alsace (France); Olivier Haerberlé, Univ. de Haute-Alsace (France); Edouard Oudet, Lab. Jean Kuntzmann (France); Christophe Martinez, CEA-LETI (France) [12138-31]

15:20: **Composite waveguide holographic display**, Eduard R. Muslimov, ASTRON (Netherlands); Damir Akhmetov, Danila Kharitonov, Ilya Guskov, Nadezhda K. Pavlycheva, Kazan National Research Technical Univ. named after A. N. Tupolev - KAI (Russian Federation) [12138-32]

ON DEMAND PRESENTATIONS

SESSION 1

LOCATION: SALON 1, NIVEAU/LEVEL 0 MON 9:00 TO 11:10

Learning-based Solutions

Session Chair: **David Blinder**, Vrije Univ. Brussel (Belgium)

0:00: **Multimodal super-resolution reconstruction based on encoder-decoder network**, Bowen Wang, Nanjing Univ. of Science and Technology (China); Yan Zou, Minqi Wang, Nanjing University of Science and Technology (China). [12138-3]

0:00: **Synthetic apertures for array ptychography imaging via deep learning**, Sheng Li, Nanjing Univ. of Science and Technology (China). [12138-4]

0:00: **Super-resolution reconstruction of pseudo-color infrared image based on dual path propagation**, Minqi Wang, Bowen Wang, Nanjing Univ. of Science and Technology (China) [12138-5]

0:00: **Single-shot prediction of image interior orientation by deep learning**, Vladimir A. Knyaz, Vladimir V. Kniaz, GosNIIAS (Russian Federation) and Moscow Institute of Physics and Technology (Russian Federation)[12138-6]

SESSION 3

LOCATION: SALON 1, NIVEAU/LEVEL 0 MON 14:00 TO 15:00

Image Acquisition and Computational Imaging

Session Chair: **Juan Martínez-Carranza**, Warsaw Univ. of Technology (Poland)

0:00: **Processing of the spectral and spatial information in the devices performing image multispectral analysis**, Boris S. Gurevich, Kirill V. Zaitchenko, Institute for Analytical Instrumentation (Russian Federation) [12138-14]

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

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Global intelligent system for waste disposal objects monitoring using the discrete orthogonal transformations based on neural network remote sensing image processing, Mareta Kazaryan, North Ossetian State Medical Academy (Russian Federation); Evgeny A. Semenishchev, Viacheslav V. Voronin, Moscow State Univ. of Technology “STANKIN” (Russian Federation) . . . [12138-41]

Technique for analyzing the working table on a robotic complex based on the study of point data in a two-dimensional measurement space, Evgeny A. Semenishchev, Viacheslav V. Voronin, Moscow State Univ. of Technology “STANKIN” (Russian Federation); Aleksandr Zelensky, Marina zdanova, Andrey Alepko, Moscow State Univ. of Technology (Russian Federation). . . [12138-42]

Transform-based quality assessment with deep learning for imaging applications, Viacheslav V. Voronin, Evgeny A. Semenishchev, Aleksander A. Zelensky, Moscow State Univ. of Technology “STANKIN” (Russian Federation) . [12138-43]

Multi-Level Deep Learning Depth and Color Fusion for Action Recognition, Aleksander A. Zelensky, Viacheslav V. Voronin, Marina M. Zhdanova, Moscow State Univ. of Technology “STANKIN” (Russian Federation); Nikolay Gapon, Olga Tokareva, Moscow State Univ. of Technology (Russian Federation); Evgeny A. Semenishchev, Moscow State Univ. of Technology “STANKIN” (Russian Federation) [12138-44]

IVOLGA: a high-resolution heterodyne near-infrared spectroradiometer for Doppler studies of Venus atmospheric dynamics, Sergei Zenevich, Space Research Institute (Russian Federation); Iskander Sh. Gazizov, Moscow Institute of Physics & Technology (Russian Federation) and Space Research Institute (Russian Federation); Maxim V Spiridonov, Space Research Institute (Russian Federation); Alexander V Rodin, Moscow Institute of Physics & Technology (Russian Federation) [12138-52]

CONFERENCE 12139

Sunday–Thursday 3–7 April 2022 • Proceedings of SPIE Vol. 12139

Optical Sensing and Detection VII

Conference Chairs: **Francis Berghmans**, Vrije Univ. Brussel (Belgium); **Ioanna Zergioti**, National Technical Univ. of Athens (Greece)

Program Committee: **Francesco Chiavaioli**, Istituto di Fisica Applicata “Nello Carrara” (Italy); **Thomas Geernaert**, Vrije Univ. Brussel (Belgium); **Roger M. Groves**, Technische Univ. Delft (Netherlands); **Jane Hodgkinson**, Cranfield Univ. (United Kingdom); **Jiri Homola**, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); **Anna G. Mignani**, Istituto di Fisica Applicata Nello Carrara (Italy); **Sinead O’Keefe**, Univ. of Limerick (Ireland); **Kate Sugden**, Aston Univ. (United Kingdom); **Alessandro Tredicucci**, NEST (Italy); **Waclaw Urbanczyk**, Wroclaw Univ. of Technology (Poland); **Jan Van Roosbroeck**, FBGS International (Belgium); **Libo Yuan**, Harbin Engineering Univ. (China)

SUNDAY 3 APRIL

SESSION 1

LOCATION: SALON 2, NIVEAU/LEVEL 0 SUN 13:10 TO 15:00

Detection for Visible Light Communication Applications

Session Chair: **Francis Berghmans**, Vrije Univ. Brussel (Belgium)

13:10: **A combined optical-electronic simulation approach for a comprehensive discussion of the performance of visible light positioning under tunable lighting conditions** (*Invited Paper*), Saman Zahiri-Rad, Felix Lichtenegger, Claude Leiner, Andreas Peter Weiss, Christian Sommer, JOANNEUM RESEARCH Forschungsgesellschaft mbH (Austria); Erich Leitgeb, Technische Univ. Graz (Austria) [12139-1]

13:40: **Visible light communication cooperative system to support indoor guidance services**, Manuela Vieira, Instituto Superior de Engenharia de Lisboa (Portugal); Manuel A. Vieira, UNINOVA (Portugal) and Instituto Superior de Engenharia de Lisboa (Portugal) and Instituto Politécnico de Lisboa (Portugal); Paula Louro, UNINOVA (Portugal) and Instituto Superior de Engenharia de Lisboa (Portugal); João Rodrigues, Instituto Superior de Engenharia de Lisboa (Portugal); Pedro A. Vieira, Instituto Politécnico de Lisboa (Portugal) and Instituto Superior de Engenharia de Lisboa (Portugal) ... [12139-2]

14:00: **Decoding techniques for indoors navigation using VLC**, Paula Louro, Instituto Superior de Engenharia de Lisboa (Portugal); Manuela Vieira, Manuel A. Vieira, Instituto Superior de Engenharia de Lisboa (Portugal) and UNINOVA (Portugal) [12139-3]

14:20: **Cooperative vehicular visible light communication in smarter split intersections**, Manuel A. Vieira, Manuela Vieira, Paula Louro, Pedro A. Vieira, Instituto Superior de Engenharia de Lisboa (Portugal) [12139-4]

14:40: **Human activity recognition based on fusing inertial sensors with an optical receiver**, Ziad Salem, Felix Lichtenegger, Andreas Peter Weiss, Claude Leiner, Christian Sommer, Franz-Peter Wenzl, JOANNEUM RESEARCH Forschungsgesellschaft mbH (Austria) [12139-5]

Coffee Break. Sun 15:00 to 15:30

SESSION 2

LOCATION: SALON 2, NIVEAU/LEVEL 0 SUN 15:30 TO 17:00

Detector Technologies

Session Chair: **Ioanna Zergioti**, National Technical Univ. of Athens (Greece)

15:30: **Thin nanostructured NbN films for fast and sensitive optical detectors from NIR to THz** (*Invited Paper*), Guido Torrioli, Francesco Martini, Fabio Chiarello, CNR-Istituto di Fotonica e Nanotecnologie (Italy); Jérôme Faist, ETH Zurich (Switzerland); Andres Forrer, Institute of Quantum Electronics (Switzerland); Alessandro Gaggero, Roberto Leoni, Francesco Mattioli, CNR-Istituto di Fotonica e Nanotecnologie (Italy); Giacomo Scalari, ETH Zurich (Switzerland); Sara Cibella, CNR-Istituto di Fotonica e Nanotecnologie (Italy) ... [12139-6]

16:00: **Excess noise measurements in $Al_{0.85}Ga_{0.15}As_{0.56}Sb_{0.44}$ avalanche photodiodes**, Xiao Jin, The Univ. of Sheffield (United Kingdom); Bingtian Guo, Univ. of Virginia (USA); Harry Lewis, The Univ. of Sheffield (United Kingdom); SeungHyun Lee, The Ohio State Univ. (USA); Baolai Liang, Univ. of California, Los Angeles (USA); Sanjay Krishna, The Ohio State Univ. (USA); Joe Campbell, Univ. of Virginia (USA); John David, The Univ. of Sheffield (United Kingdom) ... [12139-7]

MONDAY 4 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 11:00

Hot Topics I

Paul Montgomery, Univ. of Strasbourg (France),
2022 Symposium Chair

9:00: **Welcome and Introduction; City of Strasbourg Welcome; Presentation of the 2022 SPIE Mozi Award to Thomas W. Ebbesen**, The Institute for Advanced Study of the Univ. of Strasbourg (USIAS) and CNRS (France), **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA), 2022 SPIE President

9:10: **Introduction to Hot Topics**, Paul Montgomery, Univ. of Strasbourg (France), 2022 Symposium Chair

9:15: **Access to photonics innovation support for European researchers and companies through ACTPHAST4R and PhotonHub Europe** (*Plenary*), Hugo Thienpont, Vrije Univ. Brussel (Belgium) [12148-500]

9:30: **Quantum computing: prospects and challenges** (*Plenary*), Heike Riel, IBM Research - Zürich (Switzerland) [12133-500]

10:15: **Einstein Telescope, the pioneer project for a third-generation GW observatory in Europe: science, technologies and perspectives** (*Plenary*), Michele Punturo, Istituto Nazionale di Fisica Nucleare (Italy) [12139-500]

Coffee Break. Mon 11:00 to 11:20

SESSION 3

LOCATION: SALON 2, NIVEAU/LEVEL 0 MON 11:20 TO 12:50

Integrated, Lab-on-Chip, and Resonance-based Sensors I

Session Chair: **Ioanna Zergioti**, National Technical Univ. of Athens (Greece)

11:20: **On-chip near-infrared spectral sensor for nondestructive material analysis** (*Invited Paper*), Anne van Klinken, Technische Univ. Eindhoven (Netherlands); Fang Ou, Technische Univ. Eindhoven (Netherlands) and MantiSpectra B.V. (Netherlands); Chenhui Li, Don M. J. van Elst, Technische Univ. Eindhoven (Netherlands); Maurangelo Petruzzella, MantiSpectra B.V. (Netherlands); Kaylee D. Hakkel, Technische Univ. Eindhoven (Netherlands); Francesco M. Pagliano, Technische Univ. Eindhoven (Netherlands) and MantiSpectra B.V. (Netherlands); Petar Sevo, MantiSpectra B.V. (Netherlands); René P. J. van Veldhoven, Andrea Fiore, Technische Univ. Eindhoven (Netherlands) [12139-12]

11:50: **Development of ASPICs for applications in sensing systems**, Stanislaw Stopinski, Warsaw Univ. of Technology (Poland) and VIGO System S.A. (Poland); Anna Jusza, Warsaw Univ. of Technology (Poland); Krzysztof Anders, Warsaw Univ. of Technology (Poland) and VIGO System S.A. (Poland); Slawomir Szostak, Andrzej Kazmierczak, Mateusz Slowikowski, Warsaw Univ. of Technology (Poland); Ryszard Piramidowicz, Warsaw Univ. of Technology (Poland) and VIGO System S.A. (Poland) [12139-13]

12:10: **Towards the most convenient configuration of integrated photonic sensor for implementation in SiO_2/TiO_2 sol-gel derived waveguide film technology**, Andrzej Kazmierczak, Muhammad Ali Butt, Warsaw Univ. of Technology (Poland); Magdalena Zięba, Cuma Tyszkiewicz, Paweł Karasiński, Silesian Univ. of Technology (Poland); Ryszard Piramidowicz, Warsaw Univ. of Technology (Poland) [12139-14]

12:30: **Silicon photonics temperature and refractive index sensor for curing process monitoring in composite material industry**, Ioannis Pouloupoulos, Charalampos Zervos, Georgios Syriopoulos, National Technical Univ. of Athens (Greece); Jeroen Missinne, imec (Belgium); Michal Szaj, Argotech a.s. (Czech Republic); Hercules Avramopoulos, National Technical Univ. of Athens (Greece) [12139-15]

Lunch Break. Mon 12:50 to 14:00

SESSION 4

LOCATION: SALON 2, NIVEAU/LEVEL 0 MON 14:00 TO 15:30

Integrated, Lab-on-Chip, and Resonance-based Sensors II

Session Chair: **Francesco Chiavaioli**, Istituto di Fisica Applicata “Nello Carrara” (Italy)

14:00: **A miniature biophotonics platform for the diagnosis of cancer biomarkers** (*Invited Paper*), Marianneza Chatzipetrou, National Technical Univ. of Athens (Greece); George Tsekenis, Biomedical Research Foundation, Academy of Athens (Greece); Lefteris Gounaridis, National Technical Univ. of Athens (Greece); Erik Schreuder, René G. Heideman, LioniX International BV (Netherlands); Apostolos Klinakis, Biomedical Research Foundation, Academy of Athens (Greece); Hercules Avramopoulos, Ioanna Zergioti, National Technical Univ. of Athens (Greece) [12139-16]

14:30: **On the dynamic monitoring of the variations in blood viscosity by resonant optical signal**, Lucas Garnier, Hervé Lhermite, Univ. de Rennes 1 (France); Timothée Labouret, SATT Ouest Valorisation (France); Arnaud Saint-Jalmes, Hervé Cormerais, Véronique Vié, Bruno Bêche, Univ. de Rennes 1 (France) [12139-17]

14:50: **Development of a new plasmonic transducer for the detection of biological species**, Emilie Laffont, Nicolas N. Crespo-Monteiro, Univ. Jean Monnet Saint-Etienne (France); Pierre Berini, Univ. of Ottawa (Canada); Yves Jourlin, Univ. Jean Monnet Saint-Etienne (France) [12139-18]

15:10: **Enhanced sensing to characterize microdroplets through induced optical phenomena in integrated optomicrofluidic lab-on-a-chip**, Leonardo Zanini, Annamaria Zaltron, Riccardo Zamboni, Enrico Turato, Cinzia Sada, Univ. degli Studi di Padova (Italy) [12139-19]

Coffee Break Mon 15:30 to 16:00

SESSION 5

LOCATION: SALON 2, NIVEAU/LEVEL 0 MON 16:00 TO 17:50

Integrated, Lab-on-Chip, and Resonance-based Sensors III

Session Chair: **Ioanna Zergioti**, National Technical Univ. of Athens (Greece)

16:00: **Nanoparticles sensing and imaging with free-space excited whispering gallery mode microresonators** (*Invited Paper*), Davide D'Ambrosio, Gianluca Gagliardi, Pietro Malara, Antonio Giorgini, Marialuisa Capezzuto, Saverio Avino, Istituto Nazionale di Ottica (Italy); Xavier Zambrana Puyalto, Istituto Italiano di Tecnologia (Italy) [12139-20]

16:30: **Machine-learning based analysis of time sequences for multiplexed microresonator sensor**, Anton V. Saetchnikov, Ruhr-Univ. Bochum (Germany); Elina A. Tcherniavskaja, Vladimir A. Saetchnikov, Belarusian State Univ. (Belarus); Andreas Ostendorf, Ruhr-Univ. Bochum (Germany) [12139-21]

16:50: **Selectivity of glycerol droplet microresonator humidity sensor**, Lase Milgrave, Pauls R. Kristaps, Inga Brice, Janis Alnis, Agars Atvars, Univ. of Latvia (Latvia) [12139-22]

17:10: **Enhancement in label-free optical sensing and detection using electrokinetic concentration**, Prabodh Panindre, New York Univ. (USA); Sunil Kumar, Yong-Ak Song, New York Univ. Abu Dhabi (United Arab Emirates) [12139-23]

17:30: **Early stage, label-free detection of breast cancer based on exosome's protein content alteration**, Mandana Jalali, Daniel Erni, Univ. Duisburg-Essen (Germany) [12139-99]

TUESDAY 5 APRIL

SESSION 6

LOCATION: SALON 2, NIVEAU/LEVEL 0 TUE 9:40 TO 10:20

Hyperspectral-Imaging-based Techniques for Sensing

Session Chair: **Francesco Chiavaioli**, Istituto di Fisica Applicata “Nello Carrara” (Italy)

9:40: **Modelling of a tunable and room temperature operable mid-infrared photodetector using graphene nanoribbons**, Vinod Sharma, Jinal Tapar, Saurabh Kishen, Naresh K. Emani, Indian Institute of Technology Hyderabad (India) [12139-10]

10:00: **Novel snapshot hyperspectral imager based on diffractive elements**, Robin Hahn, Johannes Görres, Tobias Haist, Wolfgang Osten, Stephan Reichelt, Institut für Technische Optik (Germany) [12139-25]

Coffee Break Tue 10:20 to 10:50

SESSION 7

LOCATION: SALON 2, NIVEAU/LEVEL 0 TUE 10:50 TO 12:40

Optical Fibre-based Sensors I

Session Chair: **Médéric Loyez**, Univ. de Mons (Belgium)

10:50: **Evaluation of a novel inorganic scintillator for applications in low dose rate (LDR) brachytherapy using both TE-cooled and room temperature silicon photomultipliers (SiPMs)** (*Invited Paper*), Michael Martyn, Galway Clinic (Ireland); Wern Kam, Univ. of Limerick (Ireland); Agnese Giaz, Simona Cometti, Romualdo Santoro, Univ. degli Studi dell'Insubria (Italy); Peter Woulfe, Galway Clinic (Ireland) and Univ. of Limerick (Ireland); Massimo Caccia, Univ. degli Studi dell'Insubria (Italy); Sinead O'Keefe, Univ. of Limerick (Ireland) [12139-28]

11:20: **Evaluation of scintillation detectors for ultrahigh dose-rate x-ray beam dosimetry**, Shahirah Shaharuddin, National Univ. of Ireland, Galway (Ireland); Alexander Hart, Magdalena Bazalova-Carter, Univ. of Victoria (Canada); Luc Beaulieu, Cloe Giguere, Univ. Laval (Canada); Christoph Kleefeld, Mark J. Foley, National Univ. of Ireland, Galway (Ireland) . . . [12139-29]

11:40: **Evaluating the temperature dependence of an inorganic scintillator detector using the HYPERSCINT research platform**, Owen Mc Laughlin, National Univ. of Ireland, Galway (Ireland); Michael Martyn, Galway Clinic (Ireland); Christoph Kleefeld, Mark J. Foley, National Univ. of Ireland, Galway (Ireland) [12139-30]

12:00: **Dosimetric performance of an inorganic optical fibre dosimeter when temporally separating Cherenkov radiation**, Majed Alharbi, Ministry of Education (Saudi Arabia); Nahuel Facundo Martínez Clemente, Univ. Nacional del Centro de la Provincia de Buenos Aires (Argentina); Mark J. Foley, National Univ. of Ireland, Galway (Ireland) [12139-31]

12:20: **An algorithm to optimize the optical sensor design for tip clearance and tip timing measurements**, Josu Amorebieta, Joseba Zubia, Gaizka Durana, Univ. del País Vasco (Spain) and Euskal Herriko Univ. (Spain) [12139-92]

Lunch/Exhibition Break Tue 12:40 to 13:40

SESSION 8

LOCATION: SALON 2, NIVEAU/LEVEL 0 TUE 13:40 TO 15:50

Optical Fibre-based Sensors II

Session Chair: **Francesco Chiavaioli**, Istituto di Fisica Applicata “Nello Carrara” (Italy)

13:40: **System for epidural needle guidance enabled by fiber-optics distributed shape sensing** (*Invited Paper*), Carlo Molardi, Aida Amantayeva, Nargiz Adilzhanova, Nazarbayev Univ. (Kazakhstan); Wilfried Blanc, Gaizka d'Azur (France); Daniele Tosi, Nazarbayev Univ. (Kazakhstan) [12139-32]

14:10: **PfHRP2 detection using plasmonic optical fibers: a step towards early malaria diagnosis**, Médéric Loyez, Mathilde Wells, Stéphanie Hambye, Univ. de Mons (Belgium); François Hubinon, Magnetrap (Belgium); Bertrand Blankert, Ruddy Wattiez, Christophe Caucheteur, Univ. de Mons (Belgium) [12139-33]

14:30: **Temperature and humidity discrimination in Brillouin distributed fiber optic sensing using machine learning algorithms**, Christos Karapanagiotis, Konstantin Hicke, Katerina Krebber, Bundesanstalt für Materialforschung und -prüfung (Germany) [12139-34]

14:50: **Dual-parameter sensing with a multicore fiber interferometer**, Jose A. Flores-Bravo, Joseba Zubia, Joel Villatoro, Univ. del País Vasco (Spain) [12139-35]

15:10: **Plasmon resonance spectral peak shift due to morphing of gold nanoparticles for strain sensing**, Xiang Wang, Rinze Benedictus, Roger M. Groves, Technische Univ. Delft (Netherlands) [12139-36]

15:30: **Transverse and longitudinal magneto-optical effects with a functionalized microstructured optical fiber**, Alexis Dufour, Damien Jamon, Emmanuel Marin, Lab. Hubert Curien (France); Sophie Neveu, Lab. PHENIX (France); Frederic Arnould, Sylvain Girard, François Royer, Lab. Hubert Curien (France) [12139-37]

Coffee Break Tue 15:50 to 16:30

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:30: **Welcome and opening remarks**

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti “Eduardo Caianiello” (Italy) . [12144-500]

CONFERENCE 12139

WEDNESDAY 6 APRIL

SESSION 9

LOCATION: SALON 2, NIVEAU/LEVEL 0 WED 8:40 TO 10:30

Laser-based Sensing

Session Chair: **Maria Konstantaki**, Foundation for Research and Technology-Hellas (Greece)

8:40: **Demonstration of frequency-stabilized quantum cascade laser dual-comb spectroscopy** (*Invited Paper*), Pitt Allmendinger, IRsweep AG (Switzerland); Kenichi Komagata, Atif Shehzad, Renaud Matthey, Valentin J. Wittwer, Univ. de Neuchâtel (Switzerland); Andreas Hugi, Pierre Jouy, Markus Mangold, IRsweep AG (Switzerland); Sandro Dal Cin, Gottfried Strasser, Benedikt Schwarz, Technische Univ. Wien (Austria); Michele Gianella, Lukas Emmenegger, EMPA (Switzerland); Thomas Südmeyer, Stéphane Schilt, Univ. de Neuchâtel (Switzerland) [12139-39]

9:10: **Real-time and on-field CO₂ sensing based on a fast frequency modulation OPO system**, Florent Défossez, Institut de Recherche en Sciences et Management des Risques (Belgium); Yves Hernandez, Jean-Bernard Lecourt, Alexandre Gognau, Simon Boivin, Multitel A.S.B.L. (Belgium); Raphaël Vallon, Bertrand Parvitte, Virginie Zéninari, Groupe de spectrométrie moléculaire et atmosphérique (France); Sylvain Brohez, Institut de Recherche en Sciences et Management des Risques (Belgium); Dorothée Dewaele, Fabrice Cazier, Univ. du Littoral Côte d'Opale (France); André G. Peremans, Laurent Lamard, LaserSpec (Belgium); Antonio Baylon, Euro-Multitel SA (Belgium) [12139-40]

9:30: **Fibre enhanced Raman spectroscopy for detecting atmospheric and (climate) harmful gases**, Tim Kutz, Christian Niklas, Hainer Wackerbarth, Georgios Ctistis, Institut für Nanophotonik Göttingen e.V. (Germany) [12139-41]

9:50: **Forecasting the appearance of future anodized strips in the extrusion process via nondestructive optical testing**, Julian Schmid, Moazz Rauf Nizami, Igor Alekseenko, Detlef Russ, Institut für Lasertechnologien in der Medizin und Messtechnik an der Univ. Ulm (Germany); Björn Biehler, ASCONA GmbH (Germany); Daniel Claus, Peter Mayr, Institut für Lasertechnologien in der Medizin und Messtechnik an der Univ. Ulm (Germany) [12139-42]

10:10: **Remote sensing of climate-relevant greenhouse gases in the atmospheric column by laser heterodyne radiometry**, Fengjiao Shen, Univ. du Littoral Côte d'Opale (France) and Hefei Univ. (China); Jingjing Wang, Univ. du Littoral Côte d'Opale (France) and Anhui Institute of Optics and Fine Mechanics (China); Tu Tan, Zhensong Cao, Anhui Institute of Optics and Fine Mechanics (China); Stéphane Plus, Univ. de Lille (France); Pascal Jeseck, Yao-Veng Te, Sorbonne Univ. (France); Weidong Chen, Univ. du Littoral Côte d'Opale (France); Xiaoming Gao, Anhui Institute of Optics and Fine Mechanics (China) [12139-43]

Coffee Break Wed 10:30 to 11:00

SESSION 10

LOCATION: SALON 2, NIVEAU/LEVEL 0 WED 11:00 TO 11:40

Luminescence-based Sensors

Session Chair: **Maria Konstantaki**, Foundation for Research and Technology-Hellas (Greece)

11:00: **Optical biosensor for the detection of low concentrations of hydrogen peroxide in milk samples**, Helena Vasconcelos, Ana Beatriz Matias Teixeira, João Mendes, João Araújo, Bernardo Dias, Pedro A. S. Jorge, INESC TEC (Portugal); Cristina M. Saraiva, Univ. de Trás-os-Montes e Alto Douro (Portugal); Luis C. C. Coelho, José Manuel M. M. de Almeida, INESC TEC (Portugal) [12139-44]

11:20: **Room temperature sensing of ozone in ppb level, based on the photoluminescence of ZnO**, Argyro Klini, IESL-FORTH (Greece); Emmanouella Christaki, Evangelia Vasilaki, Vassilios Binas, IESL-FORTH (Greece) and Univ. of Crete (Greece); Emmanouil Gagaoudakis, IESL-FORTH (Greece); Maria Vamvakaki, IESL-FORTH (Greece) and Univ. of Crete (Greece) . . [12139-45]

Lunch/Exhibition Break Wed 11:40 to 13:30

SESSION 11

LOCATION: SALON 2, NIVEAU/LEVEL 0 WED 13:30 TO 15:00

Fiber-Grating-based Sensors I

Session Chair: **Maria Konstantaki**, Foundation for Research and Technology-Hellas (Greece)

13:30: **New demodulation technique based on spectral envelopes intersection for plasmonic fiber grating sensors** (*Invited Paper*), Maxime Lobry, Univ. de Mons (Belgium) and Univ. Libre de Bruxelles (Belgium); Hadrien Fasseaux, Médéric Loyez, Karima Chah, Univ. de Mons (Belgium); Erik Goormaghtigh, Univ. Libre de Bruxelles (Belgium); Francesco Baldini, Istituto di Fisica Applicata "Nello Carrara" (Italy); Ruddy Wattiez, Christophe Caucheteur, Univ. de Mons (Belgium); Francesco Chiavaioli, Istituto di Fisica Applicata "Nello Carrara" (Italy) [12139-47]

14:00: **Grating-assisted narrowband cladding mode excitation in photonic crystal fibers for surface refractometry**, Olga Rusyakina, Vrije Univ. Brussel (Belgium) and Univ. de Mons (Belgium); Tigran Baghdasaryan, Vrije Univ. Brussel (Belgium); Karima Chah, Univ. de Mons (Belgium); Pawel Mergo, Krzysztof Poturaj, Maria Curie-Skłodowska Univ. (Poland); Hugo Thienpont, Vrije Univ. Brussel (Belgium); Christophe Caucheteur, Univ. de Mons (Belgium); Francis Berghmans, Thomas Geernaert, Vrije Univ. Brussel (Belgium) [12139-48]

14:20: **Phase analysis method of plasmonic tilted fiber Bragg grating based biosensors**, Hadrien Fasseaux, Médéric Loyez, Karima Chah, Christophe Caucheteur, Univ. de Mons (Belgium) [12139-49]

14:40: **Comparison between different inscription methods of FBG in CYTOP polymer optical fiber**, Karima Chah, Ying-Gang Nan, Ivan Chapalo, Patrice Mégret, Christophe Caucheteur, Univ. de Mons (Belgium) . . . [12139-50]

Coffee Break Wed 15:00 to 15:30

SESSION 12

LOCATION: SALON 2, NIVEAU/LEVEL 0 WED 15:30 TO 17:20

Fiber-Grating-based Sensors II

Session Chair: **Ioanna Zergioti**, National Technical Univ. of Athens (Greece)

15:30: **Smart railway traffic monitoring using fiber Bragg grating sensors**, Bastien Van Esbeem, Cyrille Finet, Robin Vandebrouck, Damien Kinet, Univ. de Mons (Belgium); Kévin Boelen, Corentin Guyot, B-SENS (Belgium); Christophe Caucheteur, Univ. de Mons (Belgium) [12139-51]

15:50: **Monitoring of the muscle effort in wheelchair users using FBG-based sensors**, Matilde Rocha, Instituto de Telecomunicações (Portugal) and Univ. of Aveiro (Portugal); Cátia Tavares, Instituto of Nanostructures, Nanomodelling and Nanofabrication (Portugal) and Instituto de Telecomunicações (Portugal) and Univ. of Aveiro (Portugal); Ana Catarina Nepomuceno, Instituto de Telecomunicações (Portugal) and Univ. de Aveiro (Portugal); Paulo Antunes, Instituto of Nanostructures, Nanomodelling and Nanofabrication (Portugal) and Instituto de Telecomunicações (Portugal) and Univ. of Aveiro (Portugal); M. Fátima Domingues, Nélia J. Alberto, Instituto de Telecomunicações (Portugal) and Univ. of Aveiro (Portugal) [12139-52]

16:10: **Fibre Bragg gratings: monitoring of infusion process in liquid composite molding manufacturing**, Thomas D. Allsop, The Univ. of Hull (United Kingdom) and Aston Univ. (United Kingdom); Mohammad W. Tahir, Kaushal Bhavsar, The Univ. of Hull (United Kingdom); Lin Zhang, David J. Webb, Aston Univ. (United Kingdom); Jim M. Gilbert, The Univ. of Hull (United Kingdom) [12139-53]

16:30: **Effect of radiation and temperature on high temperature resistant fiber Bragg gratings**, Thomas Blanchet, Romain Cotillard, CEA-Paris-Saclay (France); Adriana Morana, Lab. Hubert Curien (France); Rudy Desmarchelier, CEA-Paris-Saclay (France); Emmanuel Marin, Youcef Ouerdane, Aziz Boukenter, Lab. Hubert Curien (France); Damien Fourmentel, Stéphane Bréaud, CEA-Cadarache (France); Andrei Gussarov, SCK CEN (Belgium); Christophe Destouches, CEA-Cadarache (France); Sylvain Girard, Lab. Hubert Curien (France); Guillaume Laffont, CEA-Paris-Saclay (France) and CEA-LIST (France). [12139-54]

16:50: **Optical fiber sensors in agricultural applications** (*Invited Paper*), Maria Konstantaki, Anuja Padhye, Foundation for Research and Technology-Hellas (Greece); Emmanouel Anthoulakis, Nikolaos Poupouridis, Foundation for Research and Technology-Hellas (Greece) and Univ. of Crete (Greece); Zacharias Diamantakis, Nikos Gavalas, Vasilis Laderos, Wines of Crete (Greece); Stelios Christodoulou, IONOS (Greece); Stavros Pissadakis, Foundation for Research and Technology-Hellas (Greece) [12139-55]

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Wednesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

Railway monitoring system using optical fiber Fabry-Pérot interferometer, Daniel Káčik, Ivan Martincek, Univ. of Žilina (Slovakia); Norbert Tarjány, Matej Gorauš, Univ. of Žilina (Slovakia) [12139-68]

Non-invasive indoor activity monitoring using photonic based accelerometers, Ana Catarina Nepomuceno, Nélia Alberto, Instituto de Telecomunicações (Portugal); Paulo S. André, Instituto de Telecomunicações Aveiro (Portugal) and Univ. de Lisboa (Portugal); Ayman Radwan, Instituto de Telecomunicações (Portugal); Paulo Antunes, Univ. of Aveiro (Portugal) and Instituto de Telecomunicações (Portugal); M. Fátima Domingues, Instituto de Telecomunicações (Portugal) [12139-70]

THURSDAY 7 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 10:35

Hot Topics III

Thierry Georges, Oxxius (France), 2022 Symposium Chair

9:00: Welcome and opening remarks

9:05: **A sneak peek with light into opaque materials: from imaging to computing** (*Plenary*), Sylvain Gigan, Lab. Kastler Brossel (France) . [12136-500]

9:50: **Active metasurfaces empowered by two-dimensional materials** (*Plenary*), Isabelle Staude, Friedrich-Schiller-Univ. Jena (Germany) . [12130-500]

Coffee Break. Thu 10:35 to 11:00

SESSION 13

LOCATION: SALON 2, NIVEAU/LEVEL 0 THU 11:00 TO 12:30

Spectroscopy-based Sensing I

Session Chair: Francis Berghmans, Vrije Univ. Brussel (Belgium)

11:00: **Fiber sensors with multispectral approach for biomedical and industrial applications** (*Invited Paper*), Iskander Usenov, art photonics GmbH (Germany) and Technische Univ. Berlin (Germany); Tatiana Sakharova, art photonics GmbH (Germany); Alexander Novikov, art photonics GmbH (Germany) and Technische Univ. Berlin (Germany); Andrey Bogomolov, art photonics GmbH (Germany) and Samara State Technical Univ. (Russian Federation); Alexey Bocharnikov, Viacheslav Artyushenko, art photonics GmbH (Germany) . [12139-56]

11:30: **Portable FT-NIR spectroscopic sensor for detection of chemical precursors of explosives using advanced prediction algorithms**, Adamantia Maria Grammatikaki, National Technical Univ. of Athens (Greece); Adam Raptakis, Lefteris Gounaridis, Institute of Communication and Computer Systems (Greece) and National Technical Univ. of Athens (Greece); Andreas Athanopoulos, National Technical Univ. of Athens (Greece); Dimitrios Gounaridis, Panos Groumas, Aris Dadoukis, Evangelos Maltezos, Lazaros Karagiannidis, Institute of Communication and Computer Systems (Greece) and National Technical Univ. of Athens (Greece); Eleftherios Ouzounoglou, Institute of Communication and Computer Systems (Greece); Angelos Amditis, Hercules Avramopoulos, Christos Kouloumentas, Institute of Communication and Computer Systems (Greece) and National Technical Univ. of Athens (Greece) . [12139-57]

11:50: **Time-resolved infrared spectroscopic measurement techniques during CW-laser matter interaction of fiber-reinforced polymers (FRP)**, Hartmut Borchert, Institut Franco-Allemand de Recherches de Saint-Louis (France) . [12139-58]

12:10: **Graphene optomechanical transduction for mass sensing**, Thijs Geurts, Sébastien Hentz, Thomas Alava, CEA-LETI (France) . [12139-59]

Lunch Break . [12139-60] Thu 12:30 to 13:40

SESSION 14

LOCATION: SALON 2, NIVEAU/LEVEL 0 THU 13:40 TO 15:10

Spectroscopy-based Sensing II

Session Chair: Francis Berghmans, Vrije Univ. Brussel (Belgium)

13:40: **One-dimensional convolutional neural networks design for fluorescence spectroscopy with prior knowledge: explainability techniques applied to olive oil fluorescence spectra** (*Invited Paper*), Francesca Venturini, Zürcher Hochschule für Angewandte Wissenschaften (Switzerland); Umberto Michelucci, TOELT LLC (Switzerland); Michela Sperti, Politecnico di Torino (Italy); Arnaud Gucciardi, TOELT LLC (Switzerland); Marco Agostino Deriu, Politecnico di Torino (Italy) . [12139-60]

14:10: **Optical spectroscopy enhancing acrylamide sensing in French fries production increasing food safety**, Lien Smeesters, Indy Magnus, Hugo Thienpont, Wendy Meulebroeck, Vrije Univ. Brussel (Belgium) and Flanders Make (Belgium) . [12139-61]

14:50: **Improvement of the sensitivity of chalcogenide-based infrared sensors dedicated to the in situ detection of organic molecules in aquatic environment**, Marion Baillieul, Univ. Pardubice (Czech Republic); Emmanuel Rinnert, Ifremer (France); Jonathan Lemaitre, FOTON Institut, Univ. de Rennes 1 (France); Karine Michel, BRGM (France); Florent Colas, Ifremer (France); Gilles Lérondel, Institut Charles Delaunay (France); Loïc Bodiou, Fonctions Optiques pour les Technologies de l'information, Univ. de Rennes 1 (France); Guillaume Demésy, Gilles Renversez, Institut Fresnel (France); Timothée Toury, Institut Charles Delaunay (France); Joel Charrier, FOTON Institut, Univ. de Rennes 1 (France); Petr Nemeč, Univ. Pardubice (Czech Republic); Virginie Nazabal, Institut de Sciences Chimiques de Rennes, Univ. de Rennes 1 (France) . [12139-64]

Plasmon-exciton coupling improves the efficiency of the quantum dot-enhanced photodetector at high excitation intensities due to the increased biexciton emission, Victor A. Krivenkov, Univ. del País Vasco (Spain) and National Research Nuclear Univ. MEPhI (Russian Federation); Pavel S. Samokhvalov, Igor L. Martynov, National Research Nuclear Univ. MEPhI (Russian Federation); Yury P. Rakovich, Ctr. de Física de Materiales (Spain) and Donostia International Physics Ctr. (Spain) and IKERBASQUE, Basque Foundation for Science (Spain); Igor R. Nabiev, Univ. de Reims Champagne-Ardenne (France) and National Research Nuclear Univ. MEPhI (Russian Federation) . [12139-72]

New insights and limits on the polarization-dependent sensing performance of nanocoated tilted fiber Bragg gratings, Zhihong Li, Xianxin Yang, Haiyong Zhu, Wenzhou Univ. (China); Francesco Baldini, Francesco Chiavaioli, Istituto di Fisica Applicata "Nello Carrara" (Italy) . [12139-73]

Analysis of structural vibration effect on plasma current measurement using FOCS, SungMoon Kim, PrasadaRaju Dandu, Univ. de Mons (Belgium); Andrei Gussarov, SCK CEN (Belgium); Alessandro Danisi, George Vayakis, ITER Organization (France); Marc Wuilpart, Univ. de Mons (Belgium) . [12139-75]

Development of a sensor platform for drone-borne measurement of CO2, Weidong Chen, Hajar Mzioui, Univ. du Littoral Côte d'Opale (France); Laurent Brutier, Univ du Littoral Côte d'Opale (France); Natalie Verbrugge, Zhen Liu, Anastasia Penkina, Minh Nhut Ngo, Dorothee Dewaele, Fabrice Cazier, Tong Nguyen Ba, Univ. du Littoral Côte d'Opale (France) . [12139-76]

One-dimensional photonic crystal used for relative humidity sensing based on the phase shift of the Bloch surface waves, Roman Kanok, Petr Hlubina, Lucie Gembalová, Dalibor Ciprian, VŠB-Technical Univ. of Ostrava (Czech Republic) . [12139-77]

Utilization of optical properties of magnetic fluid for detecting the presence of magnetic fields, Norbert Tarjányi, Daniel Káčik, Univ. of Žilina (Slovakia) . [12139-78]

Quantum transport studies on type-II superlattice absorber configurations for infrared photodetection, Anuja Singh, Bhaskaran Muralidharan, Indian Institute of Technology Bombay (India) . [12139-79]

Compact optical fluorescence sensor for food quality control using artificial neural networks: application to olive oil, Gucciardi Arnaud, Umberto Michelucci, TOELT LLC (Switzerland); Francesca Venturini, Zürcher Hochschule für Angewandte Wissenschaften (Switzerland); Michela Sperti, Marco Agostino Deriu, Politecnico di Torino (Italy) . [12139-80]

Chemical analysis of olive oils from fluorescence spectra thanks to one-dimensional convolutional neural networks, Michela Sperti, Politecnico di Torino (Italy); Arnaud Gucciardi, Umberto Michelucci, TOELT LLC (Switzerland); Francesca Venturini, Zürcher Hochschule für Angewandte Wissenschaften (Switzerland); Marco Agostino Deriu, Politecnico di Torino (Italy) . [12139-81]

Estimating the elasticity properties of arterial phantoms using fiber-based laser doppler vibrometry, Yu-Ting Liu, National Taiwan Univ. (Taiwan); Shu-Sheng Lee, National Taiwan Ocean Univ. (Taiwan); Hsiang-Chieh Lee, Chih-Kung Lee, National Taiwan Univ. (Taiwan) . [12139-91]

Monitoring the temperature and vibration response of underground optical fibres collocated with the EAC power distribution cables using state-of-the-art distributed sensing instruments, Andreas Ioannou, Charalambos Kouzoupou, Maria Argyrou, Kyriacos Kalli, Cyprus Univ. of Technology (Cyprus); Pierpaolo Marchesini, Michael Mondanos, Rumen Karaulanov, Silixa Ltd. (United Kingdom); Andreas Stavrou, Marios Papaconstantinou, Electricity Authority of Cyprus (Cyprus) . [12139-93]

Machine learning applied to BOTDR optical fibre distributed sensing in a controlled environment, Andreas Ioannou, Charalambos Kouzoupou, Maria Argyrou, Kyriacos Kalli, Adamos Landos, Sotirios Chatzis, Cyprus Univ. of Technology (Cyprus) . [12139-95]

Partially-coated TFBGs for biosensing, Tianbo Zhu, Médéric Loyez, Karima Chah, Christophe Caucheteur, Univ. de Mons (Belgium) . [12139-96]

Colorimetry by a smartphone, Leonardo Ciaccheri, Barbara Adinolfi, Andrea A. Mencaglia, Anna Grazia Mignani, Istituto di Fisica Applicata "Nello Carrara" (Italy) . [12139-97]

Combination of nanolithography and wet chemistry for the fabrication of an ultrasensitive SERS nanostars array applied to cancer metabolite detection, Alexandre Chicharo, Alexandra Teixeira, Maria Relvas, Marta Aranda-Palomer, Francisca Guedes, Martin Lopez-Garcia, Jérôme Borme, Lorena Diéguez, Sara Abalde-Cela, INL - International Iberian Nanotechnology Lab. (Portugal) . [12139-101]

CONFERENCE 12139

ON DEMAND PRESENTATIONS

SESSION 2

LOCATION: SALON 2, NIVEAU/LEVEL 0 MON 15:30 TO 17:00

Detector Technologies

Session Chair: **Ioanna Zergioti**, National Technical Univ. of Athens (Greece)

0:00: **Design of high-performance UV photodetection and gas dual-sensor based on GaN nanorods coupled by aluminum plasmonics**, Yu-Ping Kuang, Abhishek Dubey, Ta-Jen Yen, National Tsing Hua Univ. (Taiwan) . . . [12139-11]

SESSION 6

LOCATION: SALON 2, NIVEAU/LEVEL 0 MON 9:40 TO 10:20

Hyperspectral-Imaging-based Techniques for Sensing

Session Chair: **Francesco Chiavaioli**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

0:00: **Study of moisture content in leaves through regression analysis of terahertz images**, Mayuri Kashyap, Aparajita Bandyopadhyay, Amartya Sengupta, Indian Institute of Technology Delhi (India) . . . [12139-26]

0:00: **Detection of adulterants in commodity products using Raman hyperspectral imaging**, Diksha Garg, Aparajita Bandyopadhyay, Amartya Sengupta, Indian Institute of Technology Delhi (India) . . . [12139-27]

SESSION 8

LOCATION: SALON 2, NIVEAU/LEVEL 0 MON 13:40 TO 15:50

Optical Fibre-based Sensors II

Session Chair: **Francesco Chiavaioli**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

0:00: **High performance tunable fiber-optic current sensor based on Faraday rotation in toroidal sensing coil**, Somarpita Pradhan, Ali Masoudi, Gilberto Brambilla, Optoelectronics Research Ctr., Univ. of Southampton (United Kingdom) . . . [12139-38]

SESSION 10

LOCATION: SALON 2, NIVEAU/LEVEL 0 MON 11:00 TO 11:40

Luminescence-based Sensors

Session Chair: **Maria Konstantaki**, Foundation for Research and Technology-Hellas (Greece)

0:00: **Novel strategy for designing NIR fluorescence-ON probe for wide-range dynamic pH sensing via acid induced oligomerization**, Linjun Tang, Kyushu Institute of technology (Japan) . . . [12139-46]

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

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Real-time displacement measurement by using EDF sigma laser with double-pass cascaded-chirped long-period fiber grating, Koken Fukushima, Atsushi Wada, Makoto Okano, Satoshi Tanaka, National Defense Academy (Japan); Fumihiko Ito, Shimane Univ. (Japan) . . . [12139-66]

Wavelength modulation spectroscopy of ethane at sub parts-per-billion-by-volume level using a 30-meters long mid-IR antiresonant hollow-core fiber, Piotr Jaworski, Karol Krzempek, Pawel E. Koziol, Piotr Bojęś, Grzegorz Dudzik, Wrocław Univ. of Science and Technology (Poland); Dakun Wu, Fei Yu, Univ. of Chinese Academy of Sciences (China) and Shanghai Institute of Optics and Fine Mechanics (China); Meisong Liao, Shanghai Institute of Optics and Fine Mechanics (China); Krzysztof M. Abramski, Wrocław Univ. of Science and Technology (Poland) . . . [12139-67]

Brillouin optical time domain analysis with dual-frequency self-injection locked DFB laser, Cesar López-Mercado, Ctr. de Investigación Científica y de Educación Superior de Ensenada B.C. (Mexico); Pavel Itrin, Dmitry A. Korobko, Igor O. Zolotovskii, Ulyanovsk State Univ. (Russian Federation); Andrei A. Fotiadi, Univ. de Mons (Belgium) and Ioffe Institute (Russian Federation) and Ulyanovsk State Univ. (Russian Federation) . . . [12139-71]

Optical system for laser identification of small-sized metal objects for automated control systems, Vladislav A. Komisarov, Aleksei A. Chebotarev, ITMO Univ. (Russian Federation); Radik M. Akhmadullin, ITMO Univ. (Russian Federation) and AO NPP Signal (Russian Federation); Dmitriy E. Kukushkin, Dmitry A. Sinev, ITMO Univ. (Russian Federation) . . . [12139-74]

Multibeam optical sensor for drone coordinate measurements, Dmytro Averin, Volodymyr N. Borovytsky, National Technical Univ. of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" (Ukraine) . . . [12139-82]

Reading spectrometric information in the acousto-optic spectrum analyzers of radio signals and diffraction spectral devices of the optical range, Dmitry O. Moskaletz, Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation); Oleg D. Moskaletz, Vasily I. Kazakov, Saint-Petersburg State Univ. of Aerospace Instrumentation (Russian Federation) . . . [12139-83]

Use of fluorescence spectroscopy to evaluate the effect of heating time on conventional and organic soybean oils, Carla Regina Borges Lopes, Heron Dominguez Torres da Silva, Lilia Coronato Courrol, Univ. Federal de São Paulo (Brazil) . . . [12139-85]

Fluorescence spectroscopy for analysis of the addition of conventional soybean oil aliquots to organic soybean oil, Carla Regina Borges Lopes, Heron Dominguez Torres da Silva, Lilia Coronato Courrol, Univ. Federal de São Paulo (Brazil) . . . [12139-87]

Feature importance evaluation on LiDAR system atmospheric backscatter impact, Caijiao Song, Qianqian Wang, Beijing Institute of Technology (China); Bin Shan, Xiaobing Wang, Huayin Ordnance Test Ctr. (China); Xiangjun Xu, Haida Liu, Geer Teng, Linji Lv, Mengyu Bao, Beijing Institute of Technology (China) . . . [12139-94]

Anti-Stokes Raman scattering induced in defects of amorphous carbon thin films, Svetlana S. Sapparina, Sergey S. Kharintsev, Kazan Federal Univ. (Russian Federation) . . . [12139-100]

SESSION 14

LOCATION: SALON 2, NIVEAU/LEVEL 0 MON 13:40 TO 15:10

Spectroscopy-based Sensing II

Session Chair: **Francis Berghmans**, Vrije Univ. Brussel (Belgium)

0:00: **Practical application of a model of an optical spectral device based on an acousto-optic tunable filter with a frequency-hopping change of the control signal for measurement of optical spectra**, Aleksandr Khomutov, Saint-Petersburg State Univ. of Aerospace Instrumentation (Russian Federation) . . . [12139-63]

CONFERENCE 12140

Wednesday–Thursday 6–7 April 2022 • Proceedings of SPIE Vol. 12140

Micro-Structured and Specialty Optical Fibres VII

Conference Chairs: **Kyriacos Kalli**, Cyprus Univ. of Technology (Cyprus); **Pavel Peterka**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic); **Christian-Alexander Bunge**, Hochschule für Telekommunikation Leipzig (Germany)

Program Committee: **Ryszard Buczynski**, Institute of Electronic Materials Technology (Poland); **Jean-Luc Adam**, Univ. de Rennes 1 (France); **Jean-Louis Auguste**, XLIM Institut de Recherche (France); **Ole Bang**, Technical Univ. of Denmark (Denmark); **Neil G. R. Broderick**, The Univ. of Auckland (New Zealand); **Adrian L. Carter**, Nufern (USA); **Liang Dong**, Ctr. for Optical Materials Science + Engineering Technologies (USA); **Henry H. Du**, Stevens Institute of Technology (USA); **Sebastien Fevrier**, XLIM Institut de Recherche (France); **Karl-Friedrich Klein**, Technische Hochschule Mittelhessen (Germany); **Jonathan C. Knight**, Univ. of Bath (United Kingdom); **Michael Komodromos**, Frederick Univ. (Cyprus); **Walter Margulis**, Acreo Swedish ICT AB (Sweden); **Carlos F. Marques**, Univ. de Aveiro (Portugal); **Chengbo Mou**, Shanghai Univ. (China); **Saeed Rehman**, Fibercore Ltd. (United Kingdom); **Valerio Romano**, Bern Univ. of Applied Sciences (Switzerland); **Kunimasa Saitoh**, Hokkaido Univ. (Japan); **Sergei V. Semyonov**, Fiber Optics Research Ctr. (Russian Federation); **Radan Slavik**, Univ. of Southampton (United Kingdom); **Hwa-Yaw Tam**, The Hong Kong Polytechnic Univ. (Hong Kong, China); **Antreas Theodosiou**, Lumoscribe Ltd. (Cyprus); **Waclaw Urbanczyk**, Wroclaw Univ. of Technology (Poland); **David J. Webb**, Aston Univ. (United Kingdom); **Katrin Wondraczek**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Alexei M. Zheltikov**, Lomonosov Moscow State Univ. (Russian Federation)

WEDNESDAY 6 APRIL

SESSION 1

LOCATION: SALON 12, NIVEAU/LEVEL 1 WED 9:00 TO 10:30

Photonic Crystal Fibers and Hollow-Core Fibers

Session Chairs: **Christian-Alexander Bunge**, Hochschule für Technik, Wirtschaft und Kultur Leipzig (Germany); **Pavel Peterka**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic)

9:00: **Advances in hollow-core to standard fiber interconnection technology** (*Invited Paper*), Matěj Komanec, Dmytro Suslov, Ailing Zhong, Daniel Dousek, Stanislav Zvánovec, Czech Technical Univ. in Prague (Czech Republic); Eric R. Numkam Fokoua, Francesco Poletti, David J. Richardson, Radan Slavik, Optoelectronics Research Ctr. (United Kingdom), Univ. of Southampton (United Kingdom) [12140-1]

9:30: **Transient differential pressure-induced loss variation in as-drawn hollow core optical fibres**, Shuichiro Rikimi, Thomas W. Kelly, Peter Horak, Univ. of Southampton (United Kingdom); Yong Chen, Univ. of Southampton (United Kingdom) and Lumenicity® Ltd. (United Kingdom); Ian A. Davidson, Univ. of Southampton (United Kingdom); Simon Bawn, Lumenicity® Ltd. (United Kingdom); Thomas D. Bradley, Austin A. Taranta, Francesco Poletti, David J. Richardson, Natalie V. Wheeler, Univ. of Southampton (United Kingdom) [12140-2]

9:50: **Modal analysis and experimental study of multimode graded-index microstructured fibres for highly efficient supercontinuum generation**, Fathima Shabana M.A., XLIM, CNRS (France) and Univ. de Limoges (France) and LEUKOS (France); Vincent Tombelaine, Guillaume Huss, LEUKOS (France); Amar Nath Ghosh, Institut Franche-Comte Electronique Mecanique Thermique et Optique, CNRS (France) and Univ. Bourgogne Franche-Comté (France) and Optoelectronics Research Ctr., Univ. of Southampton (United Kingdom); Thibaut Sylvestre, Institut Franche-Comte Electronique Mecanique Thermique et Optique, CNRS (France) and Univ. Bourgogne Franche-Comté (France); Jean-Louis Auguste, François Reynaud, Philippe Leproux, XLIM, CNRS (France) and Univ. de Limoges (France) [12140-3]

10:10: **Silica hollow-core antiresonant fiber for harsh environment mid-infrared sensing applications**, Xavier Insou, Fonctions Optiques pour les Technologies de l'information (France) and Souriau SAS (France); Simon Le Méhauté, Loïc Bodiou, Fonctions Optiques pour les Technologies de l'information (France) and Univ. de Rennes 1 (France); Sébastien Claudot, Souriau SAS (France) and ITD, Eaton (France); Laurent Provino, Adil Haboucha, David Landais, Achille Monteville, Olivier Le Goffic, Thierry Taunay, David Méchin, Photonics Bretagne (France); Lionel Quélet, IDIL Fibres Optiques (France); Thierry Chartier, Joël Charrier, Monique Thual, Fonctions Optiques pour les Technologies de l'information (France) and Univ. de Rennes 1 (France). [12140-4]

Coffee Break Wed 10:30 to 11:00

SESSION 2

LOCATION: SALON 12, NIVEAU/LEVEL 1 WED 11:00 TO 12:20

Specialty Fibers for Fiber Lasers I

Session Chairs: **Pavel Peterka**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic); **Matěj Komanec**, Czech Technical Univ. in Prague (Czech Republic)

11:00: **High concentration Er-doped phosphate glass optical fibers for single-frequency fiber amplifiers** (*Invited Paper*), Nadia Giovanna Boetti, LINKS Foundation (Italy); Phillip Booker, Laser Zentrum Hannover e.V. (Germany) and Cluster of Excellence Quantum Frontiers (Germany); Diego Pugliese, Politecnico di Torino (Italy) and Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali (Italy); Joris Lousteau, Politecnico di Milano (Italy) and Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali (Italy); Alberto Rovera, Politecnico di Torino (Italy); Peter Wessels, Laser Zentrum Hannover e.V. (Germany) and Cluster of Excellence Quantum Frontiers (Germany); Jörg Neumann, Laser Zentrum Hannover e.V. (Germany); D. Kracht, Laser Zentrum Hannover e.V. (Germany) and Cluster of Excellence Quantum Frontiers (Germany); Davide Janner, Politecnico di Torino (Italy) and Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali (Italy); Daniel Milanese, Univ. degli Studi di Parma (Italy) and Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali (Italy) [12140-5]

11:30: **The effect of fiber fabrication process on the photoluminescence properties of Ho-doped optical fiber preforms and fibers** (*Invited Paper*), Petr Varak, Ivan Kašík, Pavel Peterka, Jan Aubrecht, Jan Mrazek, Michal Kamradek, Ondrej Podrazky, Ivo Barton, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic); Ryszard Buczyński, Warsaw Univ. of Technology (Poland); Marcin Franczyk, Lukaszewicz Research Network (Poland); Pavel Honzátko, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic) [12140-6]

12:00: **Sub-500fs high power quasicommon-path FCPA laser using an all-solid step-index flexible PM VLMA Yb-doped fiber amplifier**, Tristan Guezennec, Laurent Provino, Photonics Bretagne (France); Eric Lallier, Thales Research & Technology (France); Olivier Le Goffic, David Landais, Achille Monteville, Thierry Taunay, Adil Haboucha, Photonics Bretagne (France) [12140-8]

Lunch/Exhibition Break Wed 12:20 to 13:40

SESSION 3

LOCATION: SALON 12, NIVEAU/LEVEL 1 WED 13:40 TO 15:00

Specialty Fibers for Fiber Lasers II

Session Chairs: **Pavel Peterka**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic); **Nadia Giovanna Boetti**, LINKS Foundation (Italy)

13:40: **2-18 μm mid-infrared supercontinuum generation in a step-index chalcogenide fiber**, Arnaud Lemièrre, Rémi Bizot, Frédéric Désévéday, Grégory Gadret, Jean-Charles Jules, Pierre Mathey, Bertrand Kibler, Frédéric Smektala, Lab. Interdisciplinaire Carnot de Bourgogne (France) [12140-10]

14:00: **High alumina content optical fibres by powder methods**, Dunia Blaser-Lopez, Berner Fachhochschule (Switzerland) and Univ. Bern (Switzerland); Sönke Pilz, Carlos Pedrido, Berner Fachhochschule (Switzerland); Valerio Romano, Berner Fachhochschule (Switzerland) and Univ. Bern (Switzerland) [12140-11]

14:20: **Broadband fiber-optic thulium-doped amplifier for wavelengths beyond the L-band**, Jan Pokorný, Jan Aubrecht, Pavel Peterka, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic) [12140-12]

CONFERENCE 12140

14:40: **Optimising draw parameters for the fabrication of low loss silicon-core optical fibre**, Clarissa Harvey, Korbinian Mühlberger, Taras Oriekhov, Michael Fokine, KTH Royal Institute of Technology (Sweden) [12140-13]
Coffee Break Wed 15:00 to 15:30

SESSION 4

LOCATION: SALON 12, NIVEAU/LEVEL 1 WED 15:30 TO 18:00

Sensors and Telecommunication Devices based on Optical Fibers

Session Chairs: **Christian-Alexander Bunge**, Hochschule für Technik, Wirtschaft und Kultur Leipzig (Germany); **Pavel Peterka**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic)

15:30: **Optomechanical measurements of optical fiber coating for radiation dosimetry and structural health monitoring** (*Invited Paper*), Shlomi Zilberman, Yosef London, Soreq Nuclear Research Ctr. (Israel); Alon Bernstein, Kavita Sharma, Hilel Hagai Diamandi, Mirit Hen, Elad Zehavi, Gil Bashan, Bar-Ilan Univ. (Israel); Garry Berkovic, Amnon Zentner, Moshe Mayoni, Ehud Shafir, Soreq Nuclear Research Ctr. (Israel); Avi Zadok, Bar-Ilan Univ. (Israel) [12140-14]

16:00: **Metaphotonics meet fibers: boosting in-coupling efficiencies and trapping objects with a single fiber** (*Invited Paper*), Markus A. Schmidt, Leibniz-Institut für Photonische Technologien e.V. (Germany) [12140-31]

16:30: **D-shape optical fiber immunosensors based on SPR for cortisol detection: simulation and experimental procedure**, Maria Simone Soares, Diogo Rodrigues, Miguel Vidal, Margarida Facão, Univ. de Aveiro (Portugal); Nunzio Cennamo, L. Zeni, Univ. degli Studi della Campania Luigi Vanvitelli (Italy); Christophe Caucheteur, Univ. de Mons (Belgium); Florinda M. Costa, Cátia Leitão, Sónia O. Pereira, Nuno Santos, Carlos F. Marques, Univ. de Aveiro (Portugal) [12140-15]

16:50: **Plastic scintillator-based fibre dosimeters for measurement of X-ray pulses in a clinical setting**, Wern Kam, Univ. of Limerick (Ireland); Andreas Ioannou, Cyprus Univ. of Technology (Cyprus); Michael Martyn, Frank J. Sullivan, Galway Clinic (Ireland); Andreas Posporis, Cyprus Univ. of Technology (Cyprus); Peter Woulfe, Galway Clinic (Ireland); Kyriacos Kalli, Cyprus Univ. of Technology (Cyprus); Sinead O'Keeffe, Univ. of Limerick (Ireland) [12140-16]

17:10: **Femtosecond laser modified Fabry-Pérot interferometer optical fibre tip sensor for monitoring dissolved oxygen**, Andreas Ioannou, Sotia Zavrou, Aristi Christofi, Kyriacos Kalli, Cyprus Univ. of Technology (Cyprus) [12140-17]

17:30: **Comparison of multimode LD pump beam shaping in step-index and graded-index fibers and its influence on Raman lasing** (*Invited Paper*), Alexey G. Kuznetsov, Alexey A. Wolf, Ilya N. Nemov, Sergey I. Kablukov, Sergey A. Babin, Institute of Automation and Electrometry of the SB (Russian Federation) [12140-9]

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Wednesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

Non-Hermitian management of light in multimode fibers, Mohammad Nayeem Akhter, Salim Benadouda Ivars, Ramon Herrero Simon, Muriel Botey Cumella, Kestutis Staliūnas, Univ. Politècnica de Catalunya (Spain) . . [12140-29]

Robust method for finding the modes in a fibre with an unknown refractive index profile, Lubomír Škvarenina, Johanna Trägårdh, Stephen Simpson, Institute of Scientific Instruments of The Czech Academy of Sciences (Czech Republic) [12140-30]

THURSDAY 7 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 10:35

Hot Topics III

Thierry Georges, Oxxius (France), 2022 Symposium Chair

9:00: **Welcome and opening remarks**

9:05: **A sneak peek with light into opaque materials: from imaging to computing** (*Plenary*), Sylvain Gigan, Lab. Kastler Brossel (France) . [12136-500]

9:50: **Active metasurfaces empowered by two-dimensional materials** (*Plenary*), Isabelle Staude, Friedrich-Schiller-Univ. Jena (Germany) . [12130-500]

Coffee Break Thu 10:35 to 11:00

SESSION 5:

LOCATION: CEST | SALON 12, NIVEAU/LEVEL 1 11:00 TO 12:30

Modelling and Testing of Specialty Fibers and Components

Session Chairs: **Christian-Alexander Bunge**, Hochschule für Technik, Wirtschaft und Kultur Leipzig (Germany), **Pavel Peterka**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic)

11:00: **Selective excitation of LP01 and LP11 polarization modes in a birefringent optical fiber using a Wollaston prism** (*Invited Paper*), Kinga Zolnacz, Marta Bernas, Waclaw Urbanczyk, Wroclaw Univ. of Science and Technology (Poland) [12140-20]

11:30: **Conversion of LP11 modes to vortex modes in an adiabatically twisted highly birefringent optical fiber**, Marta Bernas, Kinga Zolnacz, Maciej Napiórkowski, Gabriela Statkiewicz-Barabach, Waclaw Urbanczyk, Wroclaw Univ. of Science and Technology (Poland) [12140-21]

11:50: **Experimental characterization of mode content in fibers using S2 imaging without a DFT**, Alex Chedid, Yves Quiquempois, Esben Ravn Andresen, Laurent Bigot, Univ. de Lille (France) and Lab. de Physique des Lasers, Atomes et Molécules (France) [12140-22]

12:10: **Performance analysis for mode confinement loss of photonic crystal fiber with circular air hole rings around the solid core**, Ritu Raj Singh, Netaji Subhas Univ. of Technology Delhi (India); Devansh Srivastava, Indian Institute of Information Technology, Ranchi (India); Wridheeman Bhattacharya, Indian Institute of Information Technology (India); Nishit Malviya, Indian Institute of Information Technology, Ranchi (India); Anamika Singh, Visvesvaraya National Institute of Technology, Nagpur (India) [12140-23]

SESSION 6

LOCATION: SALON 12, NIVEAU/LEVEL 1 THU 13:40 TO 15:30

Fiber Gratings and Optical Fiber Components

Session Chairs: **Pavel Peterka**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic); **Christian-Alexander Bunge**, Hochschule für Technik, Wirtschaft und Kultur Leipzig (Germany)

13:40: **Pre-strain effects on CYTOP fibre Bragg grating temperature sensors** (*Invited Paper*), Andreas Posporis, Andreas Ioannou, Kyriacos Kalli, Cyprus Univ. of Technology (Cyprus) [12140-24]

14:10: **Perfluorinated polymer fibre Bragg grating sensors for distributed low-dose clinical X-ray measurements**, Olugbenga J. Olusoji, Univ. of Limerick (Ireland); Wern Kam, Univ. of Limerick (Ireland) and Health Research Institute, Univ. of Limerick (Ireland); Andreas Ioannou, Andreas Posporis, Photonics and Optical Sensors Research Lab., Cyprus Univ. of Technology (Cyprus); Fintan McGuinness, Univ. of Limerick (Ireland); Peter Woulfe, Department of Radiotherapy Physics, Galway Clinic (Ireland); Kyriacos Kalli, Photonics and Optical Sensors Research Lab., Cyprus Univ. of Technology (Cyprus); Sinead O'Keeffe, Univ. of Limerick (Ireland) and Health Research Institute, Univ. of Limerick (Ireland) [12140-25]

14:30: **Study of bare and plasmonic tilted fiber Bragg gratings in the detection of a heart failure biomarker: relevance of different spectral demodulation methods**, Miguel Vidal, Maria Simone Soares, Institute of Nanostructures, Nanomodelling and Nanofabrication (Portugal) and Univ. de Aveiro (Portugal); Maxime Lobry, Christophe Caucheteur, Univ. de Mons (Belgium); Florinda M. Costa, Carlos Marques, Institute of Nanostructures, Nanomodelling and Nanofabrication (Portugal) and Univ. de Aveiro (Portugal); Sónia O. Pereira, Institute of Nanostructures, Nanomodelling and Nanofabrication (Portugal); Cátia Leitão, Institute of Nanostructures, Nanomodelling and Nanofabrication (Portugal) and Univ. de Aveiro (Portugal); Médéric Loyez, Univ. de Mons (Belgium) [12140-26]

14:50: **High curvature microlenses for optical fibers**, Tony Hajj, Univ. de Strasbourg (France) and Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France); Djamil Bouaziz, Univ. de Strasbourg (France); Zaeid Bouhafs, Assia Guessoum, Univ. Ferhat Abbas Sétif 1 (Algeria); Grégoire Chabrol, Univ. de Strasbourg (France) and Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France); Nacer-E. Demagh, Univ. Ferhat Abbas Sétif 1 (Algeria); Sylvain Lecler, Ecole Centrale de Lyon (France) [12140-27]

15:10: **Few-mode optical fibers for application in future telecommunication networks**, Krzysztof Anders, Pawel Bortnowski, Pawel Komorowski, Anna Jusza, Pawel Mazurek, Jaroslaw Turkiewicz, Warsaw Univ. of Technology (Poland); Pawel Mergo, Maria Curie-Skłodowska Univ. (Poland); Krzysztof Markiewicz, Tomasz Nasilowski, InPhoTech (Poland); Ryszard Piramidowicz, Warsaw Univ. of Technology (Poland) [12140-28]

ON DEMAND PRESENTATIONS

SESSION 2

LOCATION: SALON 12, NIVEAU/LEVEL 1 MON 11:00 TO 12:20

Specialty Fibers for Fiber Lasers I

Session Chairs: **Pavel Peterka**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic); **Matěj Komanec**, Czech Technical Univ. in Prague (Czech Republic)

0:00: **Characterization of Bi-directional EDFA in L-band (1595-1610 nm) for long distance transmissions**, Sarbojeet Bhowmick, Josef Vojtech, Lada Altmannová, Radek Velc, Martin Šlapak, Ondrej Havliš, CESNET z.s.p.o. (Czech Republic) [12140-7]

SESSION 4

LOCATION: SALON 12, NIVEAU/LEVEL 1 MON 15:30 TO 18:00

Sensors and Telecommunication Devices based on Optical Fibers

Session Chairs: **Christian-Alexander Bunge**, Hochschule für Technik, Wirtschaft und Kultur Leipzig (Germany); **Pavel Peterka**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic)

0:00: **Numerical analysis of octagonal photonic crystal fiber for orbital angular momentum propagation**, Ashish Tummuri, Shweta Mittal, Ankur Saharia, Manish Tiwari, Manipal Univ. Jaipur (India) [12140-19]

0:00: **Micrometric deflection laser sensor with polarized light pumping**, Julián M. Estudillo-Ayala, Univ. de Guanajuato (Mexico) [12140-18]

CONFERENCE 12141

Tuesday–Thursday 5–7 April 2022 • Proceedings of SPIE Vol. 12141

Semiconductor Lasers and Laser Dynamics X

Conference Chairs: **Marc Sciamanna**, CentraleSupélec (France); **Krassimir Panajotov**, Vrije Univ. Brussel (Belgium); **Sven Höfling**, Julius-Maximilians-Univ. Würzburg (Germany)

Program Committee: **Erwin A.J.M. Bente**, Technische Univ. Eindhoven (Netherlands); **Dieter Bimberg**, Technische Univ. Berlin (Germany); **Stefan Breuer**, Technische Univ. Darmstadt (Germany); **Weng W. Chow**, Sandia National Labs. (USA); **Kent D. Choquette**, Univ. of Illinois at Urbana-Champaign (USA); **Tomasz G. Czystanowski**, Lodz Univ. of Technology (Poland); **Gadi Eisenstein**, Technion-Israel Institute of Technology (Israel); **Frédéric Grillot**, École Nationale Supérieure des Télécommunications (France); **Hitoshi Kawaguchi**, Nara Institute of Science and Technology (Japan); **Fumio Koyama**, Tokyo Institute of Technology (Japan); **Michael Kneissl**, Technische Univ. Berlin (Germany); **Anders G. Larsson**, Chalmers Univ. of Technology (Sweden); **Fan-Yi Lin**, National Tsing Hua Univ. (Taiwan); **Cristina Masoller**, Univ. Politècnica de Catalunya (Spain); **Luke J. Mawst**, Univ. of Wisconsin-Madison (USA); **Rainer Michalzik**, Univ. Ulm (Germany); **Jesper Mørk**, Technical Univ. of Denmark (Denmark); **Johann Peter Reithmaier**, Univ. Kassel (Germany); **Carlo Sirtori**, Univ. Paris 7-Denis Diderot (France); **Peter M. Smowton**, Cardiff Univ. (United Kingdom)

TUESDAY 5 APRIL

SESSION 1

LOCATION: ETOILE A, NIVEAU/LEVEL 1 TUE 10:30 TO 12:00

Laser Physics

Session Chair: **Marc Sciamanna**, CentraleSupélec (France)

10:30: **Quantum optics in room temperature quantum dot ensembles** (*Invited Paper*), Gadi Eisenstein, Technion-Israel Institute of Technology (Israel). [12141-1]

11:00: **Non-Hermitian coupled semiconductor laser array**, Ramon Herrero, Judith Medina Pardell, Muriel Botey, Kestutis Staliunas, Univ. Politècnica de Catalunya (Spain) [12141-2]

11:20: **Optical square waves in a multi-quantum-well laser with nonlinear optoelectronic feedback**, Md Shariful Islam, Georgia Tech-Lorraine (France) and Georgia Institute of Technology (USA); Anton V. Kovalev, Evgeny A. Viktorov, ITMO Univ. (Russian Federation); David S. Citrin, Alexandre Locquet, Georgia Tech-Lorraine (France) and Georgia Institute of Technology (USA) [12141-3]

Lunch/Exhibition Break Tue 12:00 to 13:30

SESSION 2

LOCATION: ETOILE A, NIVEAU/LEVEL 1 TUE 13:30 TO 16:00

VCSEL

Session Chair: **Stefan Bittner**, CentraleSupélec (France)

13:30: **VCSELS in the visible red spectral range for display and sensor applications** (*Invited Paper*), Michael Jetter, Univ. Stuttgart (Germany) [12141-5]

14:00: **High-speed VCSEL photonics for datacenter networks** (*Invited Paper*), Fumio Koyama, Tokyo Institute of Technology (Japan) [12141-6]

14:30: **Vertical-cavity surface-emitting lasers with post-supported high-contrast gratings towards 100 Gbps data rate** (*Invited Paper*), Anjin Liu, Jing Zhang, Chenxi Hao, Institute of Semiconductors (China); Dieter Bimberg, Center of NanoPhotonics Institut fuer Festkoerperphysik, TU Berlin (Germany) and Bimberg Chinese-German Ctr for Green Photonics, CIOMP, CAS (China) .. [12141-7]

15:00: **Passive mode locking with face-to-face VCSELS**, Tushar Malica, CentraleSupélec (France) and Univ. de Lorraine (France) and Lab. Matériaux Optiques, Photonique et Systèmes (France); Krassimir Panajotov, VUB B-PHOTONICS (Belgium) and G. Nadjakov Institute of Solid State Physics Bulgarian Academy of Sciences (Bulgaria); Eugene A. Avrutin, Univ. of York (United Kingdom); Marc Sciamanna, CentraleSupélec (France) and Univ. de Lorraine (France) and Lab. Matériaux Optiques, Photonique et Systèmes (France) [12141-8]

15:20: **Vertical external-cavity surface-emitting lasers: mode-locked dynamics and master equation**, Julien Javaloyes, Univ. de les Illes Balears (Spain); Svetlana V. Gurevich, Denis Hessel, Westfälische Wilhelms-Universität Münster (Germany) [12141-9]

15:40: **Impact of strain-induced bow on the performance of VCSELS on 150mm GaAs- and Ge-substrate wafers**, Jack Baker, Sara Gillgrass, Tomas Peach, Craig P. Allford, Cardiff Univ. (United Kingdom); J. Iwan Davies, Andrew D. Johnson, Andrew M. Joel, Sung Wook Lim, IQE (United Kingdom); Samuel Shutts, Cardiff Univ. (United Kingdom); Peter M. Smowton, Cardiff Univ. (United Kingdom) and Institute for Compound Semiconductors (United Kingdom) [12141-10]

Coffee Break Tue 16:00 to 16:30

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:30: **Welcome and opening remarks**

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) . [12144-500]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Tuesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at
<https://spie.org/EPE/Poster-Guidelines>

Widely tunable single mode emission despite the small free spectral range of a long multisection slotted laser operating near 850 nm, Michael Dillane, Aritra Roy, Tomasz Piwowski, Tyndall National Institute (Ireland) and Univ. College Cork (Ireland) and CAPP, Munster Technological Univ. (Ireland) . [12141-44]

Integrated photonic transmitter for mode division multiplexing system, Aleksandra Pasnikowska, Stanislaw Stopinski, Pawel Bortnowski, Krzysztof Anders, Ryszard Piramidowicz, Warsaw Univ. of Technology (Poland) [12141-48]

Fabrication and characterization of AlGaInP-based MECSELS with different cavity and gain crystal configurations, Ana Cutuk, Michael Jetter, Peter Michler, Univ. Stuttgart (Germany) [12141-52]

WEDNESDAY 6 APRIL

SESSION 3

LOCATION: ETOILE A, NIVEAU/LEVEL 1 WED 9:20 TO 10:20

High-Performance Lasers

Session Chair: **Jesper Mørk**, Technical Univ. of Denmark (Denmark)

9:20: **Experimental study of a tunable hybrid III-V-on-silicon laser for spectral characterization of fiber Bragg grating sensors**, Jean-Baptiste Quéléne, Univ. Paris-Saclay (France) and CEA-LIST (France); Didier Pohl, Safran (France); David Bitauld, III-V Lab. (France); Karim Hassan, CEA-Grenoble (France); Guillaume Laffont, Univ. Paris-Saclay (France) and CEA-LIST (France) [12141-14]

9:40: **A Littrow type diode laser with independent control of cavity length and grating rotation**, Lucia Duca, Elia Perego, Carlo Sias, Istituto Nazionale di Ricerca Metrologica (Italy) and LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy) [12141-15]

10:00: **Membrane external-cavity surface-emitting lasers (MECSELS): State of the art in broadband (> 25 THz) tuning and antiresonant gain structure design**, Hermann Kahle, Philipp Tatar-Mathes, Patrik Rajala, Mircea Guina, Tampere University (Finland) [12141-51]

Coffee Break Wed 10:20 to 10:50

SESSION 4

LOCATION: ETOILE A, NIVEAU/LEVEL 1 WED 10:50 TO 11:50

Laser-based Frequency Combs I

Session Chair: **Mikhail A. Belkin**, Technische Univ. München (Germany)

10:50: **Lateral mode switching in broader ridge waveguide Fabry-Perot quantum cascade laser frequency combs**, Sandro Dal Cin, Florian Pilat, Benedikt Schwarz, Gottfried Strasser, Technische Univ. Wien (Austria) [12141-17]

11:10: **The linewidth enhancement factor of a semiconductor frequency comb: a spectrally-resolved measurement technique**, Florian Pilat, Nikola Opačak, Technische Univ. Wien (Austria); Dmitry Kazakov, Harvard Univ. (USA) and Technische Univ. Wien (Austria); Sandro Dal Cin, Technische Univ. Wien (Austria); Federico Capasso, Harvard Univ. (USA); Gottfried Strasser, Technische Univ. Wien (Austria); Benedikt Schwarz, Technische Univ. Wien (Austria) and Harvard Univ. (USA) [12141-18]

11:30: **Influence of the cavity design on the differential gain and linewidth enhancement factor of a QD comb laser**, Thibaut Renaud, Heming Huang, Télécom Paris (France); Géza Kurczveil, Raymond G. Beausoleil, Di D. Liang, Hewlett Packard Labs. (USA); Frédéric Grillot, Télécom Paris (France) and The Univ. of New Mexico (USA) [12141-19]

Lunch/Exhibition Break Wed 11:50 to 13:30

SESSION 5

LOCATION: ETOILE A, NIVEAU/LEVEL 1 WED 13:30 TO 14:20

Quantum Cascade Lasers

Session Chair: **Benedikt Schwarz**, Technische Univ. Wien (Austria)

13:30: **Mid-infrared integrated photonics on the InP platform** (*Invited Paper*), Kevin Zhang, Dominik Burghart, Alex Gardanow, Rudolf Mayer, Ralf Meyer, Gerhard Böhm, Mikhail A. Belkin, Walter Schottky Institut (Germany) [12141-20]

14:00: **Fast swept continuous wave quantum cascade laser operating in external cavity with polygon mirror**, Dmitry G. Revin, Stephen J. Matcher, The Univ. of Sheffield (United Kingdom) [12141-22]

SESSION 6

LOCATION: ETOILE A, NIVEAU/LEVEL 1 WED 14:20 TO 17:20

New Laser Structures

Session Chair: **Michael Jetter**, Univ. Stuttgart (Germany)

14:20: **Squeezing of intensity noise in semiconductor nanolasers and nanoLEDs with extreme confinement of light** (*Invited Paper*), Jesper Mørk, Technical Univ. of Denmark (Denmark) [12141-25]

14:50: **PbS quantum dot lasers: towards high quality tuneable emission across the short-wave infrared**, Guy L. Whitworth, Mariona Dalmases, Nima Taghipour, Gerasimos Konstantatos, ICFO - Institut de Ciències Fotòniques (Spain) [12141-26]

15:10: **Influence of time-distribution in lasers subject to feedback from long FBGs**, Martin Skönderas, Mennatallah A. Z. Kandil, Spencer W. Jolly, Thomas Geernaert, Martin Virte, Vrije Univ. Brussel (Belgium) [12141-27]

Coffee Break Wed 15:30 to 16:00

16:00: **Low frequency noise blue external cavity diode laser**, Georges Perin, Dominique Mammez, Antoine Congar, Pascal Besnard, Fonctions Optiques pour les Technologies de l'information (France); Karim Manamanni, Vincent Roncin, Frédéric Du Burck, Lab. de Physique des Lasers (France); Stéphane Trebaol, Fonctions Optiques pour les Technologies de l'information (France) [12141-28]

16:20: **Electro-optic synchronization of two tunable semiconductor slotted lasers for wider tuning range application**, Aritra Roy, Michael Dillane, Tyndall National Institute (Ireland) and Univ. College Cork (Ireland); Saroj K. Patra, Tyndall National Institute (Ireland); Tomasz Piwonski, Tyndall National Institute (Ireland) and Univ. College Cork (Ireland) [12141-29]

16:40: **The relevance of valence band engineering in interband cascade lasers**, Hedwig M. Knötig, Rolf Szedlak, Technische Univ. Wien (Austria); Josephine Nauschütz, Robert Weih, nanoplus Nanosystems and Technologies GmbH (Germany); Nikola Opačak, Technische Univ. Wien (Austria); Sven Höfling, Julius-Maximilians-Univ. Würzburg (Germany); Johannes Koeth, nanoplus Nanosystems and Technologies GmbH (Germany); Gottfried Strasser, Benedikt Schwarz, Technische Univ. Wien (Austria) [12141-30]

17:00: **Generation of ultrashort pulses by saturable absorbers with and without DBR in a red-emitting VECSEL**, Ana Čutuk, Marius Großmann, Michael Jetter, Peter Michler, Univ Stuttgart (Germany) [12141-50]

THURSDAY 7 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 10:35

Hot Topics III

Thierry Georges, Oxxius (France), 2022 Symposium Chair

9:00: **Welcome and opening remarks**

9:05: **A sneak peek with light into opaque materials: from imaging to computing** (*Plenary*), Sylvain Gigan, Lab. Kastler Brossel (France) [12136-500]

9:50: **Active metasurfaces empowered by two-dimensional materials** (*Plenary*), Isabelle Staude, Friedrich-Schiller-Univ. Jena (Germany) [12130-500]

Coffee Break Thu 10:35 to 11:00

SESSION 7

LOCATION: ETOILE A, NIVEAU/LEVEL 1 THU 11:00 TO 12:30

Laser-based Frequency Combs II

Session Chair: **Frédéric Grillot**, Télécom Paris (France)

11:00: **Interband cascade laser frequency combs** (*Invited Paper*), Benedikt Schwarz, Maximilian Beiser, Florian Pilat, Sandro Dal Cin, Johannes Hillbrand, Technische Univ. Wien (Austria); Robert Weih, Johannes Koeth, nanoplus Nanosystems and Technologies GmbH (Germany); Sven Höfling, Julius-Maximilians-Univ. Würzburg (Germany) [12141-31]

11:30: **Optical injection and mode-coupling effects in two-color lasers**, Mohammadshahab Abdollahi, Pablo Marin-Palomo, Martin Virte, VUB B-PHOTONICS (Belgium) [12141-32]

11:50: **Demystifying FM comb formation in semiconductor lasers: the liquid state of mode locking**, Günter Steinmeyer, Weidong Chen, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany) [12141-33]

12:10: **Polarization dynamics in VCSELs subject to optical frequency comb injection**, Yaya Doumbia, Delphine Wolfersberger, CentraleSupélec (France); Krassimir Panajotov, Vrije Univ. Brussel (Belgium); Marc Sciamanna, CentraleSupélec (France) [12141-34]

Lunch Break Thu 12:30 to 13:40

SESSION 8

LOCATION: ETOILE A, NIVEAU/LEVEL 1 THU 13:40 TO 16:00

Spatio-temporal Laser Dynamics

Session Chair: **Marc Sciamanna**, CentraleSupélec (France)

13:40: **Controlling semiconductor laser dynamics by cavity geometry** (*Invited Paper*), Hui Cao, Yale Univ. (USA) [12141-35]

14:10: **Stochastic spectral reconstruction by chaotic laser emission** (*Invited Paper*), Alice Boschetti, Diederik S. Wiersma, Univ. degli Studi di Firenze (Italy) [12141-36]

14:40: **Complex spatio-temporal polarization dynamics of a broad-area VCSEL in continuous-wave operation**, Stefan Bittner, Marc Sciamanna, CentraleSupélec (France) [12141-37]

15:00: **Modes in microchip lasers**, Matas Plukys, Eugenijus Gaizauskas, Darius Gailevicius, Vilnius Univ. (Lithuania); Kestutis Staliunas, Vilnius Univ. (Lithuania) and Univ. Politècnica de Catalunya (Spain) and Institució Catalana de Recerca i Estudis Avançats (Spain) [12141-38]

15:20: **Nonlinear structured light in a self-imaging laser cavity based on III-V semiconductor nanotechnology**, Nathan Vigne, Institut d'Électronique et des Systèmes (France); Adrian Bartolo, Institut de Physique de Nice (France); Grégoire Beaudoin, Luc Legratiet, Ctr. de Nanosciences et de Nanotechnologies (France); Mathias Marconi, Institut de Physique de Nice (France); Konstantinos Pantzas, Ctr. de Nanosciences et de Nanotechnologies (France); Svetlana V. Gurevich, Ctr. for Nonlinear Science (Germany); Julien Javaloyes, Univ. de les Illes Balears (Spain); Isabelle Sagnes, Ctr. de Nanosciences et de Nanotechnologies (France); Massimo Giudici, Institut de Physique de Nice (France); Arnaud Garnache, Institut d'Électronique et des Systèmes (France) [12141-39]

15:40: **Influence of time-delayed feedback on the dynamics of temporal localized structures in passively mode-locked semiconductor lasers**, Thomas Seidel, Westfälische Wilhelms-Univ. Münster (Germany); Julien Javaloyes, Univ. de les Illes Balears (Spain); Svetlana V. Gurevich, Westfälische Wilhelms-Univ. Münster (Germany) [12141-40]

CONFERENCE 12141

ON DEMAND PRESENTATIONS

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

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Stabilizing Brillouin lasing in high-Q optical fiber cavity pumped from self-injection locked DFB laser, José Luis Bueno Escobedo, Serguei V. Miridonov, Ma. Carmen Maya-Sánchez, Ctr. de Investigación Científica y de Educación Superior de Ensenada B.C. (Mexico); Dmitry A. Korobko, Igor O. Zolotovskii, Ulyanovsk State Univ. (Russian Federation); Andrei A. Fotiadi, Univ. de Mons (Belgium) and Ioffe Institute (Russian Federation) and Ulyanovsk State Univ. (Russian Federation) [12141-41]

Strong feedback regime of self-injection locking and external cavity laser, Nikita M. Kondratiev, Ramzil R. Galiev, Ilya Gorelov, Artem Shitikov, Valery E. Lobanov, Russian Quantum Ctr. (Russian Federation) [12141-42]

Enhanced self-injection locking of semiconductor laser to high-Q microresonator, Ramzil R. Galiev, Nikita M. Kondratiev, Valery E. Lobanov, Russian Quantum Ctr. (Russian Federation); Igor A. Bilenko, Russian Quantum Ctr. (Russian Federation) and M. V. Lomonosov Moscow State Univ. (Russian Federation) [12141-43]

SESSION 3

LOCATION: ETOILE A, NIVEAU/LEVEL 1 MON 9:20 TO 10:20

High-Performance Lasers

Session Chair: **Jesper Mørk**, Technical Univ. of Denmark (Denmark)

0:00: **Multisection waveguide method for facet temperature reduction and improved reliability of high-power laser diodes**, Kaveh Ebadi, Bilkent Univ. (Turkey); Yuxian Liu, State Key Lab. of Transient Optics and Photonics (China); Ali Kaan Sünnetçioglu, Sinan Gündogdu, Serdar Sengül, Bilkent Univ. (Turkey); Yuliang Zhao, Yu Lan, Guowen Yang, Univ. of Chinese Academy of Sciences (China); Abdullah Demir, Bilkent Univ. (Turkey) [12141-11]

0:00: **A 100 W class narrow linewidth stack pump source for metastable rare gas laser**, Peng Lei, Zhifan Zhang, Xingbing Wang, Duluo Zuo, Huazhong Univ. of Science and Technology (China) [12141-12]

0:00: **Transceiver-based on InGaAs/GaAs quantum well-dot microlaser and p-i-n photodiode**, Natalia V. Kryzhanovskaya, HSE Univ. (Russian Federation); Fedor Zubov, Mikhail V. Maximov, St. Petersburg Academic Univ. (Russian Federation); Eduard I. Moiseev, Anna Dragunova, HSE Univ. (Russian Federation); Nikolay A. Kaluzhnyy, Sergey A. Mintairov, Ioffe Institute (Russian Federation); Konstantin Ivanov, Ivan Makhov, HSE Univ. (Russian Federation); Julia Guseva, Ioffe Institute (Russian Federation); Nikita Fominikh, St. Petersburg Academic Univ. (Russian Federation); Alexey E. Zhukov, HSE Univ. (Russian Federation) [12141-13]

SESSION 4

LOCATION: ETOILE A, NIVEAU/LEVEL 1 MON 10:50 TO 11:50

Laser-based Frequency Combs I

Session Chair: **Mikhail A. Belkin**, Technische Univ. München (Germany)

0:00: **Microresonator-stabilized gain-switched frequency combs for on-chip photonics**, Artem Shitikov, Valery E. Lobanov, Nikita M. Kondratiev, Russian Quantum Ctr. (Russian Federation); Nikita Y. Dmitriev, Russian Quantum Ctr. (Russian Federation) and Moscow Institute of Physics and Technology (Russian Federation); Igor A. Bilenko, Russian Quantum Ctr. (Russian Federation) and M. V. Lomonosov Moscow State Univ. (Russian Federation) [12141-16]

SESSION 5

LOCATION: ETOILE A, NIVEAU/LEVEL 1 MON 13:30 TO 14:20

Quantum Cascade Lasers

Session Chair: **Benedikt Schwarz**, Technische Univ. Wien (Austria)

0:00: **Narrow-linewidth interband cascade lasers subject to optical feedback**, Yu Deng, Xiang-Yi Li, Zhuo-Fei Fan, Cheng Wang, ShanghaiTech Univ. (China) [12141-21]

0:00: **Nonlinear dynamics modeling of quantum cascade lasers with tilted optical feedback**, Xing-Guang Wang, Cheng Wang, ShanghaiTech Univ. (China) [12141-23]

0:00: **Stability and instability of a quantum cascade laser subject to optical injection**, Yi-Bo Peng, Bin-Bin Zhao, Cheng Wang, ShanghaiTech Univ. (China) [12141-24]

CONFERENCE 12142

Sunday–Thursday 3–7 April 2022 • Proceedings of SPIE Vol. 12142

Fiber Lasers and Glass Photonics: Materials through Applications III

Conference Chairs: **Maurizio Ferrari**, CNR-Istituto di Fotonica e Nanotecnologie (Italy); **Angela B. Seddon**, The Univ. of Nottingham (United Kingdom); **Stefano Taccheo**, Politecnico di Torino (Italy), Swansea Univ. (United Kingdom)

Program Committee: **Lidia Armelao**, CNR-DSCTM (Italy); **Rolindes Balda**, Univ. del País Vasco (Spain); **John M. Ballato**, Clemson Univ. (USA); **Wilfried Blanc**, Lab. de physique de la matière condensée (France); **Monica Bollani**, CNR-Istituto di Fotonica e Nanotecnologie (Italy); **Patrice Camy**, Ctr. de Recherche sur les Ions, les Matériaux et la Photonique (France); **Amol Choudhary**, Indian Institute of Technology Delhi (India); **Cosimo D'Andrea**, Politecnico di Milano (Italy); **Miroslav Dramicanin**, Univ. of Belgrade (Serbia); **Matthias L. Jäger**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Shibin Jiang**, AdValue Photonics, Inc. (USA); **Maria Losurdo**, Istituto di Nanotecnologia (Italy); **Anna Lukowiak**, Institute of Low Temperature and Structure Research PAN (Poland); **Jacob I. Mackenzie**, Univ. of Southampton (United Kingdom); **Christos Markos**, Technical Univ. of Denmark (Denmark); **Virginie Nazabal**, Univ. de Rennes 1 (France); **Laeticia C. Petit**, Tampere Univ. (Finland); **Nasser N. Peyghambarian**, College of Optical Sciences, The Univ. of Arizona (USA); **Francesco Prudenzano**, Politecnico di Bari (Italy); **Alexander Quandt**, Univ. of the Witwatersrand (South Africa); **Gediminas Račiukaitis**, Ctr. for Physical Sciences and Technology (Lithuania); **Roberto Scotti**, Univ. degli Studi di Milano-Bicocca (Italy); **Akira Shirakawa**, The Univ. of Electro-Communications (Japan); **Lukasz Sojka**, Wrocław Univ. of Science and Technology (Poland); **Irina T. Sorokina**, Norwegian Univ. of Science and Technology (Norway); **Claudia Wickleder**, Univ. Siegen (Germany)

SUNDAY 3 APRIL

LOCATION: SALON 7, NIVEAU/LEVEL 0 13:10 TO 13:25

Welcome and Introduction

Welcome Remarks by **Stefano Taccheo**, Politecnico di Torino (Italy)

Fiber Lasers and Glass Photonics Conference Chair

SESSION 1

LOCATION: SALON 7, NIVEAU/LEVEL 0 SUN 13:25 TO 15:25

Materials and Components I: Nanocrystals, Nanoparticles, and Plasmonics

Session Chair: **Maurizio Ferrari**, CNR-Istituto di Fotonica e Nanotecnologie (Italy)

13:25: **Glass powder doping of nanocrystal-doped fibres: challenges and results** (*Invited Paper*), Dominik Dorosz, AGH Univ. of Science and Technology (Poland); Marcin Kochanowicz, Białystok Univ. of Technology (Poland); Magdalena Lesniak, AGH Univ. of Science and Technology (Poland); Robert Müller, Martin Lorenz, Jens Kobelke, Katrin Wondraczek, Leibniz-Institut für Photonische Technologien e.V. (Germany); Rafael Valiente, Andrea Diego-Rucabado, Israel Cano, Fernando Aguado, Univ. de Cantabria (Spain); Jürgen Gluch, Isabel Kinski, Fraunhofer-Institut für Keramische Technologien und Systeme IKTS (Germany); Matthias L. Jäger, Leibniz-Institut für Photonische Technologien e.V. (Germany) [12142-1]

13:55: **Physical phenomena behind photodoping in doped metal oxide nanocrystals** (*Invited Paper*), Ilka Kriegel, Istituto Italiano di Tecnologia (Italy) . [12142-2]

14:25: **Planar and rectangular ceramic Yb:YAG laser waveguides**, Jan Hostaša, Istituto di Scienza e Tecnologia dei Materiali Ceramici, Consiglio Nazionale per la Ricerca (Italy); Guido Toci, Istituto Nazionale di Ottica, Consiglio Nazionale per la Ricerca (Italy); Laura Esposito, Istituto di Scienza e Tecnologia dei Materiali Ceramici, Consiglio Nazionale per la Ricerca (Italy); Barbara Patrizi, Matteo Vannini, Istituto Nazionale di Ottica, Consiglio Nazionale per la Ricerca (Italy); Angela Pirri, Istituto di Fisica Applicata "Nello Carrara," Consiglio Nazionale per la Ricerca (Italy); Francesco Picelli, Istituto di Scienza e Tecnologia dei Materiali Ceramici, Consiglio Nazionale per la Ricerca (Italy), Univ. degli Studi di Parma (Italy); Andreana Piancastelli, CNR ISTECC, National Research Council, Institute of Science and Technology for Ceramics (Italy); Mauro Pucci, CNR INO, National Research Council, National Institute of Optics (Italy); Valentina Biasini, Istituto di Scienza e Tecnologia dei Materiali Ceramici, Consiglio Nazionale per la Ricerca (Italy) . [12142-3]

14:40: **Exploiting surface plasmon resonance for integrated optics**, Peter Rogin, Jenny Kampka, Kira Fries, Peter W. de Oliveira, Leibniz-Institut für Neue Materialien gGmbH (Germany) [12142-4]

15:10: **Porphyrin functionalized ZnO/SiO₂ hybrid nanoparticles as scintillator agent**, Silvia Mostoni, Roberta Crapanzano, Univ. degli Studi di Milano-Bicocca (Italy); Irene Villa, Institute of Physics of Materials of the CAS, v.v.i. (Czech Republic); Massimiliano D'Arienzo, Barbara Di Credico, Mauro Fasoli, Anna Vedda, Roberto Scotti, Univ. degli Studi di Milano-Bicocca (Italy) . [12142-6]

Coffee Break. Sun 15:25 to 15:55

SESSION 2

LOCATION: SALON 7, NIVEAU/LEVEL 0 SUN 15:55 TO 17:40

Materials and Components II: Films, Novel Concepts, and Processes

Session Chair: **Ilka Kriegel**, Istituto Italiano di Tecnologia (Italy)

15:55: **Tungsten oxide films for near-infrared photonics and sensing** (*Invited Paper*), Silvia M. Pietralunga, CNR-Istituto di Fotonica e Nanotecnologie (Italy); Hao Chen, Politecnico di Milano (Italy); Alice Carlotto, CNR-Istituto di Fotonica e Nanotecnologie (Italy) and CSMFO Lab. and Fondazione Bruno Kessler (FBK) Photonics Unit (Italy); Osman Sayginer, Technische Univ. München (Germany); Thi Ngoc Lam Tran, CNR-Istituto di Fotonica e Nanotecnologie (Italy) and Ho Chi Minh City Univ. of Technology (Vietnam); Alessandro Chiasera, CNR-Istituto di Fotonica e Nanotecnologie (Italy) and CSMFO Lab. and Fondazione Bruno Kessler (FBK) Photonics Unit (Italy) [12142-7]

16:25: **DNA-origami assisted unidirectional single meta-emitters** (*Invited Paper*), Jer-Shing Huang, Leibniz-Institut für Photonische Technologien e.V. (Germany) [12142-8]

16:55: **RF-sputtering fabrication of flexible glass-based 1D photonic crystals**, Alice Carlotto, Institute of Photonics and Nanotechnologies (IFN-CNR) CSMFO Lab. and Fondazione Bruno Kessler (FBK) Photonics Unit (Italy) and IFN-CNR (Italy); Osman Sayginer, Technische Univ. München (Germany); Hao Chen, Politecnico di Milano (Italy); Thi Ngoc Lam Tran, Institute of Photonics and Nanotechnologies (IFN-CNR) CSMFO Lab. and Fondazione Bruno Kessler (FBK) Photonics Unit (Italy) and Politecnico di Milano (Italy) and Ho Chi Minh City Univ. of Technology (Vietnam); Rossana Dell'Anna, Centre for Materials and Microsystems, Micro Nano Facility, Fondazione Bruno Kessler (Italy); Anna Szczurek, Stefano Varas, Institute of Photonics and Nanotechnologies (IFN-CNR) CSMFO Lab. and Fondazione Bruno Kessler (FBK) Photonics Unit (Italy); Bartosz Babiarczuk, Justyna Krzak, Wrocław Univ. of Science and Technology (Poland); Oreste S. Bursi, Daniele Zonta, Univ. degli Studi di Trento (Italy) and Institute of Photonics and Nanotechnologies (IFN-CNR) CSMFO Lab. and Fondazione Bruno Kessler (FBK) Photonics Unit (Italy); Anna Lukowiak, Institute of Low Temperature and Structure Research (Poland); Giancarlo C. Righini, Microdevices for Photonics Lab., Istituto di Fisica Applicata "Nello Carrara" (Italy); Maurizio Ferrari, Institute of Photonics and Nanotechnologies (IFN-CNR) CSMFO Lab. and Fondazione Bruno Kessler (FBK) Photonics Unit (Italy); Silvia M. Pietralunga, Istituto di Fotonica e Nanotecnologie, Consiglio Nazionale delle Ricerche (Italy); Alessandro Chiasera, Institute of Photonics and Nanotechnologies (IFN-CNR) CSMFO Lab. and Fondazione Bruno Kessler (FBK) Photonics Unit (Italy) [12142-9]

17:10: **Gas sensing using xerogel coated whispering gallery mode resonators**, Davor Ristic, Institut Ruder Boškovic (Croatia); Daniil Zhivotkov, Institut Ruder Boškovic (Croatia), Saratov State Univ. (Russian Federation); Snigdha Thekke Thalakkal, Vlatko Gašparić, Institut Ruder Boškovic (Croatia); Elena A. Romanova, Saratov State Univ. (Russian Federation); Mile Ivanda, Institut Ruder Boškovic (Croatia) [12142-10]

CONFERENCE 12142

17:25: **SiO₂-TiO₂ hybrid coatings applied on polymeric materials for flexible photonics applications**, Anna Szczurek, Istituto di Fotonica e Nanotecnologie CSMFO Lab. and Fondazione Bruno Kessler (Italy); Lam Thi Ngoc Tran, Istituto di Fotonica e Nanotecnologie CSMFO Lab. and Fondazione Bruno Kessler (Italy), Politecnico di Milano (Italy), Ho Chi Minh City Univ. of Technology (Vietnam); Stefano Varas, Istituto di Fotonica e Nanotecnologie CSMFO Lab. and Fondazione Bruno Kessler (Italy); Daniel Lewandowski, Anna Gąsiorek, Bartosz Babiarczuk, Wrocław Univ. of Science and Technology (Poland); Alice Carlotto, Istituto di Fotonica e Nanotecnologie CSMFO Lab. and Fondazione Bruno Kessler (Italy), IFN-CNR (Italy); Alessandro Chiasera, Maurizio Ferrari, Istituto di Fotonica e Nanotecnologie CSMFO Lab. and Fondazione Bruno Kessler (Italy); Anna Łukowiak, Institute of Low Temperature and Structure Research (Poland); Justyna Krzak, Wrocław Univ. of Science and Technology (Poland). [12142-11]

Rolindes Balda, Depto de Física Aplicada I, Escuela de Ingeniería de Bilbao, Universidad del País Vasco UPV-EHU (Spain); Joaquin Fernandez, Donostia International Physics Center DIPC (Spain); Giancarlo C. Righini, Istituto di Fisica Applicata "Nello Carrara" (Italy); Monica Bollani, CNR-Istituto di Fotonica e Nanotecnologie (Italy); Francesco Scotognella, Politecnico di Milano (Italy) and Ctr. for Nano Science and Technology, Istituto Italiano di Tecnologia (Italy); Daniele Zonta, Dept. of Civil, Environmental and Mechanical Engineering, University of Trento (Italy) and CNR-Istituto di Fotonica e Nanotecnologie (Italy); Oreste Bursi, Dept. of Civil, Environmental and Mechanical Engineering, University of Trento (Italy); Pawel Gluchowski, Anna Lukowiak, Institute of Low Temperature and Structure Research (Poland); Maurizio Ferrari, Alessandro Chiasera, CNR-Istituto di Fotonica e Nanotecnologie (Italy) [12142-15]

12:10: **Mid-infrared fibreoptics: review of status quo and future directions**, Angela B. Seddon, The Univ. of Nottingham (United Kingdom). [12142-99]

Lunch Break Mon 12:30 to 13:55

MONDAY 4 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 11:00

Hot Topics I

Paul Montgomery, Univ. of Strasbourg (France),
2022 Symposium Chair

9:00: **Welcome and Introduction; City of Strasbourg Welcome; Presentation of the 2022 SPIE Mozi Award to Thomas W. Ebbesen**, The Institute for Advanced Study of the Univ. of Strasbourg (USIAS) and CNRS (France), **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA), 2022 SPIE President

9:10: **Introduction to Hot Topics, Paul Montgomery**, Univ. of Strasbourg (France), 2022 Symposium Chair

9:15: **Access to photonics innovation support for European researchers and companies through ACTPHAST4R and PhotonHub Europe (Plenary)**, Hugo Thienpont, Vrije Univ. Brussel (Belgium) [12148-500]

9:30: **Quantum computing: prospects and challenges (Plenary)**, Heike Riel, IBM Research - Zürich (Switzerland) [12133-500]

10:15: **Einstein Telescope, the pioneer project for a third-generation GW observatory in Europe: science, technologies and perspectives (Plenary)**, Michele Punturo, Istituto Nazionale di Fisica Nucleare (Italy) [12139-500]

Coffee Break. Mon 11:00 to 11:30

SESSION 3

LOCATION: SALON 7, NIVEAU/LEVEL 0 MON 11:30 TO 12:30

Special Session Honoring Anne-Marie Jurdyc: Early Stage Researchers and Woman Scientists

Session Chair: **Mariola O. Ramirez**, Univ. Autónoma de Madrid (Spain)

In Memoriam

Anne-Marie Jurdyc, CNRS (France)

Anne-Marie Jurdyc, was a Director of Research CNRS at Institut Lumière Matière in Lyon, France. Spectroscopist and physico-chemist of the solid, she developed her research in connection with the optical properties of rare earth ions such as Er³⁺, Dy³⁺ or Pr³⁺ in glasses or optical fibers with the aim of improving performance of all-optical amplifiers at so-called "telecom" wavelengths. She then turned to fiber sensors, sometimes doped with nanoparticles and using the RAMAN effect in particular.

Dedicated, benevolent and always listening, she was fully invested in this role at the interface between science and the human, a role that she particularly liked.

11:30: **Double-doped borate glass light guide with high luminance**, Michelle Grüne, Bernd Ahrens, Fachhochschule Südwestfalen (Germany); Peter W. Nolte, Fraunhofer-Institut für Mikrostruktur von Werkstoffen und Systemen IMWS, Anwendungszentrum für Anorganische Leuchtstoffe (Germany); Stefan Schweizer, Fachhochschule Südwestfalen (Germany). [12142-13]

11:50: **Photon management in SiO₂-SnO₂:Yb³⁺ hybrid 1D microcavity**, Thi Ngoc Lam Tran, CNR-Istituto di Fotonica e Nanotecnologie (Italy) and Politecnico di Milano (Italy) and Ho Chi Minh City Univ. of Technology and Education (Vietnam); Anna Szczurek, CNR-Istituto di Fotonica e Nanotecnologie (Italy); Alice Carlotto, CNR-Istituto di Fotonica e Nanotecnologie (Italy) and CNR-Istituto di Fotonica e Nanotecnologie (Italy); Alessandro Cian, Fondazione Bruno Kessler, Sensors and Devices, Micro Nano Facility (Italy); Stefano Varas, CNR-Istituto di Fotonica e Nanotecnologie (Italy); Erica Iacob, Fondazione Bruno Kessler (Italy); Gloria Ischia, Univ. degli Studi di Trento (Italy); Osman Sayginer, Chair of Biological Imaging and TranslaTUM, Technische Universität München (Germany); Simone Berneschi, Gualtiero Nunzi Conti, Istituto di Fisica Applicata "Nello Carrara" (Italy);

SESSION 4

LOCATION: SALON 7, NIVEAU/LEVEL 0 MON 13:55 TO 15:10

Special Session on the International Year of Glass I

Session Chair: **Anna Lukowiak**, Institute of Low Temperature and Structure Research PAN (Poland)

13:55: **Transparent oxyfluoride nanoglass ceramic films obtained by sol-gel: the key of processing (Invited Paper)**, Eugenia Cruz, Instituto de Cerámica y Vidrio (Spain); Rolindes B. Balda, Univ. del País Vasco (Spain); Joaquin Fernández, Donostia International Physics Ctr. (Spain); Alicia Duran Carrera, Yolanda Castro, Instituto de Cerámica y Vidrio (Spain) [12142-16]

14:25: **Functional glasses and glass-ceramics: the alkali niobosilicates systems (Invited Paper)**, Maria Rita Cicconi, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany). [12142-17]

14:55: **Polarization shaping of a femtosecond Bessel beam to control birefringence writing in silica**, Mostafa Hassan, Institut Franche-Comte Electronique Mecanique Thermique et Optique (France); Jiafeng Lu, Benjamin Sapaly, Matthieu Lancry, Institut de Chimie Moléculaire et des Matériaux d'Orsay (France); Francois Courvoisier, Institut Franche-Comte Electronique Mecanique Thermique et Optique (France). [12142-19]

Coffee Break. Mon 15:10 to 15:40

SESSION 5

LOCATION: SALON 7, NIVEAU/LEVEL 0 MON 15:40 TO 17:10

Special Session on the International Year of Glass II

Session Chair: **Maria Rita Cicconi**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

16:10: **Luminescent bioactive nanoglasses: different approaches to gain photoactivity**, Anna Lukowiak, Katarzyna Halubek-Gluchowska, Marzena Fandzloch, Weronika Bodylska, Damian Szymanski, Institute of Low Temperature and Structure Research (Poland); Beata Borak, Wrocław Univ. of Science and Technology (Poland); Yuriy Gerasymchuk, Institute of Low Temperature and Structure Research (Poland). [12142-21]

16:25: **Shaping nanoparticles in optical fibers through thermal engineering**, Zhuorui Lu, Thibaut Robine, Institut de Physique de Nice (France); Malgorzata Guzik, Univ. of Wrocław (Poland); Matthieu Bellec, Institut de Physique de Nice (France); Daniele Tosi, Nazarbayev Univ. (Kazakhstan) and National Lab. Astana (Kazakhstan); Carlo Molardi, Nazarbayev Univ. (Kazakhstan); Franck Pigeonneau, MINES ParisTech (France); Wilfried Blanc, Institut de Physique de Nice (France) [12142-23]

16:40: **Photonic glasses with luminescent particles: fabrication challenges and opportunities for novel photonics applications (Invited Paper)**, Heike Ebdendorff-Heidepriem, University of Adelaide (Australia). [12142-24]

LOCATION: SALON 7, NIVEAU/LEVEL 0 17:10 TO 17:40

International Year of Glass Panel Discussion

Moderator: **Anna Lukowiak**, Institute of Low Temperature and Structure Research (Poland)

TUESDAY 5 APRIL

SESSION 6

LOCATION: SALON 7, NIVEAU/LEVEL 0 TUE 8:30 TO 10:30

Special Session Honoring Antonio Lucianetti. Materials and Components III: Fibers, Components, Fabrication, and Properties

Session Chair: **Angela B. Seddon**, The Univ. of Nottingham (United Kingdom)

In Memoriam

Antonio Lucianetti, Bergamo (Italy)/HiLASE (Czech Republic)

Antonio was a key member of HiLASE Centre team in Prague, Czech Republic and the leader of the research program aiming to design and develop a 100 J / 10 Hz laser system scalable to 1 kJ level. Antonio promoted advanced numerical modelling, material characterization methods and adaptive optics activities within HiLASE.

He was not only a great international scientist but also a collaborative colleague, a mentor and a friend through his whole career.

Antonio was the essence of kindness, duty and intellectual curiosity. He left many friends around the world as well in his native Bergamo, Italy, where was able to fulfil his passion for mountains and the night sky, being the co-founder of the Amateur Astronomers Club of Bergamo.

8:30: **Functionalised optical fiber devices for nonlinear photonics: from high harmonics generation to frequency comb** (*Invited Paper*), Francesco De Lucia, Nico Englebert, Francois Leo, Service OPERA-Photonique, Univ. Libre de Bruxelles (Belgium); Pier J. A. Sazio, Adam H. Lewis, Rex H. S. Bannerman, James C. Gates, Gilberto Brambilla, Optoelectronics Research Ctr., Univ. of Southampton (United Kingdom) [12142-25]

9:00: **Composite material glass photonics: from 2D materials to catalysts inside active optical fibres** (*Invited Paper*), Pier J. A. Sazio, Zepler Institute, Univ. of Southampton (United Kingdom); Francesco De Lucia, Univ. Libre de Bruxelles (Belgium); Adam H. Lewis, Zepler Institute, Univ. of Southampton (United Kingdom); Walter Belardi, Physique des Lasers Atomes et Molécules, Univ. de Lille (France); Matthew Potter, Robert Raja, Univ. of Southampton (United Kingdom); Daniel W. Hewak, Zepler Institute, Univ. of Southampton (United Kingdom) [12142-26]

9:30: **Tellurite-germanate ZnTe: glass-ceramics doped with EuF₃ for optical fiber application**, Magdalena Lesniak, Bartłomiej Starzyk, AGH Univ. of Science and Technology (Poland); Marcin Kochanowicz, Białystok Univ. of Technology (Poland); Marta Kuwik, Univ. of Silesia (Poland); Jacek M. Zmojda, Piotr Miluski, Białystok Univ. of Technology (Poland); Lesly GLoria Jiménez, AGH Univ. of Science and Technology (Poland); Agata Baranowska, Jan Dorosz, Białystok Univ. of Technology (Poland); Wojciech A. Pisarski, Joanna Pisarska, Univ. of Silesia (Poland); Dominik Dorosz, AGH Univ. of Science and Technology (Poland) [12142-27]

9:45: **High-power laser-induced damage investigations of mirrors with several substrate materials in combination with heat transfer simulations**, Kevin Kiedrowski, Marco Jupé, Laser Zentrum Hannover e.V. (Germany); Michael Kennedy, Henrik Ehlers, LASEROPTIK GmbH (Germany); Andreas Wienke, Laser Zentrum Hannover e.V. (Germany); Detlev Ristau, Leibniz Univ. Hannover (Germany) and Cluster of Excellence PhoenixD "Photonics, Optics, and Engineering - Innovation Across Disciplines" (Germany) [12142-28]

10:00: **Direct-laser-writing of arbitrary long waveguides in optical fibers**, Matthieu Bellec, Léo Colliard, Institut de Physique de Nice, Univ. Côte d'Azur, CNRS (France); Guillaume Bilodeau, Tommy Boillard, Réal Vallée, Martin Bernier, Ctr. d'optique photonique et laser (COPL), Univ. Laval (Canada) [12142-30]

10:15: **Investigation of NIR emission in Yb³⁺/Er³⁺ - doped fluoroindate glasses for optical fiber application**, Bartłomiej Starzyk, Gloria Lesly Jiménez, Magdalena Lesniak, AGH Univ. of Science and Technology (Poland); Marcin Kochanowicz, Białystok Univ. of Technology (Poland); Marta Kuwik, Univ. of Silesia (Poland); Jacek M. Zmojda, Piotr Miluski, Agata Baranowska, Białystok Univ. of Technology (Poland); Binitha Shrestha, The University of Texas at Austin (USA); Jan Dorosz, Białystok Univ. of Technology (Poland); Joanna Pisarska, Wojciech A. Pisarski, Univ. of Silesia (Poland); Dominik Dorosz, AGH Univ. of Science and Technology (Poland) [12142-38]

Coffee Break. Tue 10:30 to 11:00

SESSION 7

LOCATION: SALON 7, NIVEAU/LEVEL 0 TUE 11:00 TO 12:45

Materials and Components IV: Sources

Session Chair: **Pier J. A. Sazio**, Univ. of Southampton (United Kingdom)

12:00: **Laser gain characterization and CW laser operation in Nd:CaF₂ co-doped with Gd³⁺ and Y³⁺ buffer ions**, Cesare Meroni, Alain Braud, Jean-Louis Doualan, Ctr. de Recherche sur les Ions, les Matériaux et la Photonique (France); Sébastien Montant, Cedric Maunier, CEA-Cesta (France); Patrice Camy, Ctr. de Recherche sur les Ions, les Matériaux et la Photonique (France) . . [12142-33]

12:15: **On-chip photonics erbium-doped amplifiers: fabrication and characterization of Al₂O₃:Er³⁺ and development as a laser platform**, Dawson B. Bonneville, Ward A. P. M. Hendriks, Carlos E. Osornio-Martínez, Soheila Mardani, Kai Wang, Anne M. Dijkstra, Sonia M. Garcia-Blanco, MESA + Institute for Nanotechnology, Univ. Twente (Netherlands) [12142-34]

12:30: **Dysprosium doped glasses for application in visible light sources**, Anna Jusza, Paulina Grajek, Maria Karczewska, Warsaw Univ. of Technology (Poland); Paweł Mergo, Maria Curie-Skłodowska Univ. (Poland); Ryszard Piramidowicz, Warsaw Univ. of Technology (Poland) [12142-40]

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:30: **Welcome and opening remarks**

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) . [12144-500]

WEDNESDAY 6 APRIL

SESSION 9

LOCATION: SALON 7, NIVEAU/LEVEL 0 WED 8:45 TO 10:30

Mid-Infrared Laser Sources: Special Session

Session Chair: **Sendy Phang**, The Univ. of Nottingham (United Kingdom)

8:45: **High-power middle IR and long-wave IR frequency comb generators based on mode-locked polycrystalline Cr:ZnS lasers** (*Invited Paper*), Sergey Vasilyev, Viktor O. Smolski, IPG Photonics Corp. (USA); Jeremy M. Peppers, The Univ. of Alabama at Birmingham (USA); Igor S. Moskalev, Mikhail S. Mirov, Yury Barnakov, IPG Photonics Corp. (USA); Sergey B. Mirov, The Univ. of Alabama at Birmingham (USA) [12142-43]

9:15: **Mid-infrared fibre lasing beyond 5 µm wavelength in a cerium (III) doped, chalcogenide glass, small-core step index fibre** (*Invited Paper*), Joel Nunes, The Univ. of Nottingham (United Kingdom); Lukasz Sojka, Wrocław Univ. of Science and Technology (Poland); Richard Crane, David Furniss, The Univ. of Nottingham (United Kingdom); Zhuoqi Tang, Fibercore Ltd. (United Kingdom); David Mabwa, Boyu Xiao, Trevor M. Benson, Mark C. Farries, The Univ. of Nottingham (United Kingdom); Nikolaos Kalfagiannis, Nottingham Trent Univ. (United Kingdom); Emma Barney, Sendy Phang, The Univ. of Nottingham (United Kingdom); Slavomir Sujecki, Wrocław Univ. of Science and Technology (Poland); Angela B. Seddon, The Univ. of Nottingham (United Kingdom) [12142-44]

9:45: **Pulsed mid-infrared fluoride fiber laser with operating wavelength near 3 µm**, Lukasz Sojka, Lukasz Pajewski, Wrocław Univ. of Science and Technology (Poland); Angela B. Seddon, Trevor M. Benson, George Green Institute for Electromagnetics Research, The Univ. of Nottingham (United Kingdom); Mark C. Farries, David Furniss, George Green Institute for Electromagnetics Research, The Univ. of Nottingham (United Kingdom); Samir Lamrini, LISA Laser Products GmbH (Germany); Slavomir Sujecki, Wrocław Univ. of Science and Technology (Poland) [12142-45]

10:00: **Recent progress in fiber-based supercontinuum sources**, Thibaut Sylvestre, Institut Franche-Comte Electronique Mecanique Thermique et Optique, CNRS, Univ. Bourgogne-Franche-Comté (France); Etienne Genier, Univ. de Lille (France); Amar N. Ghosh, Optoelectronics Research Ctr., Univ. of Southampton (United Kingdom); Patrick Bowen, NKT Photonics A/S (Denmark); Goery Genty, Tampere Univ. (Finland); Johann Troles, Univ. de Rennes 1 (France); Arnaud Mussot, Lab. de Physique des Lasers, Atomes et Molécules, Univ. de Lille (France); Anna C. Peacock, Optoelectronics Research Ctr., Univ. of Southampton (United Kingdom); Mariusz Klimczak, Univ. of Warsaw (Poland); Alexander M. Heidt, Univ. Bern (Switzerland); John C. Travers, Heriot-Watt Univ. (United Kingdom); Ole Bang, DTU Fotonik, Technical Univ. of Denmark (Denmark); John M. Dudley, Institut Franche-Comte Electronique Mecanique Thermique et Optique, CNRS, Univ. Bourgogne-Franche-Comté (France) [12142-47]

CONFERENCE 12142

10:15: **Multiring core fibers co-doped with Tm³⁺ and Ho³⁺ for broadband emission in the eye-safe spectral range**, Piotr Miluski, Marcin Kochanowicz, Jacek M. Zmojda, Agata Baranowska, Białystok Univ. of Technology (Poland); Magdalena Leśniak, Dominik Dorosz, AGH Univ. of Science and Technology (Poland); Krzysztof Markowski, Jan Dorosz, Białystok Univ. of Technology (Poland) [12142-48]
Coffee Break Wed 10:30 to 11:00

SESSION 10

LOCATION: SALON 7, NIVEAU/LEVEL 0 WED 11:00 TO 12:15

Fibers and Waveguide Sources I: Two-micron Lasers

Session Chair: **Stefano Taccheo**, Politecnico di Torino (Italy)

11:00: **Broadband filterless tuneability in self-mode-locked Tm-doped fiber lasers** (*Invited Paper*), Dennis C. Kirsch, Leibniz-Institut für Photonische Technologien e.V. (Germany); Anastasia E. Bednyakova, Novosibirsk State Univ. (Russian Federation); Maria Chernysheva, Leibniz-Institut für Photonische Technologien e.V. (Germany) [12142-49]

11:30: **Tunable wavelength-stabilized mode-locked thulium-doped fiber laser beyond 2000 nm**, Moritz Bartnick, Gayathri Bharathan, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Thorsten A. Goebel, Ria G. Krämer, Stefan Nolte, Friedrich-Schiller-Univ. Jena (Germany); Camille-Sophie Brès, Ecole Polytechnique Fédérale de Lausanne (Switzerland) [12142-50]

11:45: **2 um Raman laser based on CO₂-filled hollow-core silica fiber** (*Invited Paper*), Yazhou Wang, Olav Thorbjørn Sandberg Schiess, Technical Univ. of Denmark (Denmark); Rodrigo Correa, Univ. of Central Florida (USA); Christos Markos, Technical Univ. of Denmark (Denmark) and NORBLIS IVS (Denmark) [12142-51]

Lunch/Exhibition Break Wed 12:15 to 13:35

SESSION 11

LOCATION: SALON 7, NIVEAU/LEVEL 0 WED 13:35 TO 15:05

Fiber Lasers, Infrared, and Visible Lasers

Session Chair: **Dominik Dorosz**, AGH Univ. of Science and Technology (Poland)

13:35: **Multimodal hollow-core fibers: a new route for few-cycle visible pulse generation** (*Invited Paper*), Riccardo Piccoli, Énergie Matériaux Télécommunications Research Ctr., Institut National de la Recherche Scientifique (Canada) and Weizmann Institute of Science (Israel); Jeffrey M. Brown, Le Ctr. de Physique Théorique, Ecole Polytechnique (France) and Louisiana State Univ. (USA) and Wisconsin Lutheran College (USA); Young-Gyun Jeong, Andrea Rovere, Luca Zanutto, Énergie Matériaux Télécommunications Research Ctr., Institut National de la Recherche Scientifique (Canada); Mette B. Gaarde, Louisiana State Univ. (USA); Francois Légaré, Énergie Matériaux Télécommunications Research Ctr., Institut National de la Recherche Scientifique (Canada); Arnaud Couairon, Le Ctr. de Physique Théorique, Ecole Polytechnique (France); John C. Travers, Heriot-Watt Univ. (United Kingdom); Roberto Morandotti, Énergie Matériaux Télécommunications Research Ctr., Institut National de la Recherche Scientifique (Canada) and Univ. of Electronic Science and Technology of China (China); Bruno E. Schmidt, few-cycle Inc. (Canada); Luca Razzari, Énergie Matériaux Télécommunications Research Ctr., Institut National de la Recherche Scientifique (Canada) [12142-52]

14:05: **Highly efficient SRS in SF₆ and CF₄ gas-filled photonic bandgap fiber** (*Invited Paper*), Roy Avrahamy, S. Edelstein, A. Halstuch, D. Belker, Amiel A. Ishaaya, Ben-Gurion Univ. of the Negev (Israel) [12142-53]

14:35: **Study of periodic amplitude fluctuations in a mode-lock Ytterbium fiber laser delivering 1 MHz pulse train**, Simon Boivinnet, Jean-Bernard Lecourt, Yves Hernandez, Multitel Innovation Ctr. (Belgium) [12142-55]

14:50: **C-Band tunable Brillouin fiber-laser with sub-Hz intrinsic linewidth**, Amith Karuvath, Fonctions Optiques pour les Technologies de l'information (France); Ananthu Sebastian, iXblue SAS (France); Pascal Besnard, Fonctions Optiques pour les Technologies de l'information (France) [12142-56]

Coffee Break Wed 15:05 to 15:40

SESSION 12

LOCATION: SALON 7, NIVEAU/LEVEL 0 WED 15:40 TO 17:10

Fibers and Waveguide Sources II: Fibers and Materials

Session Chair: **Wilfried Blanc**, Institut de Physique de Nice (France)

15:40: **Progress in developing optically active fibers in Poland** (*Invited Paper*), Paweł Bortnowski, Anna Jusza, Krzysztof Anders, Warsaw Univ. of Technology (Poland); Paweł Mergo, Maria Curie-Skłodowska Univ. (Poland); Ryszard Piramidowicz, Warsaw Univ. of Technology (Poland) [12142-58]

16:10: **Luminescence of Bi₃TeBO₉ micro-crystals doped with Nd³⁺ ions** (*Invited Paper*), Dobrosława Kasprowicz, Taras Zhezhera, Poznan Univ. of Technology (Poland); Paweł Gluchowski, Institute of Low Temperature and Structure Research (Poland); Maciej Chrunik, Andrzej Majchrowski, Wojskowa Akademia Techniczna im. Jarosława Dąbrowskiego (Poland) [12142-59]

16:40: **Novel approach of the technology of transparent glass-ceramic optical fibers**, Piotr Golonko, Karolina Sadowska, Marcin Kochanowicz, Jan Dorosz, Piotr Miluski, Białystok Univ. of Technology (Poland); Dominik Dorosz, Magdalena Leśniak, AGH Univ. of Science and Technology (Poland); Jacek M. Zmojda, Białystok Univ. of Technology (Poland) [12142-60]

16:55: **Laser-induced damages in silica multimode optical fibers**, Mario Ferraro, Sapienza Univ. di Roma (Italy) and Univ. della Calabria (Italy); Fabio Mangini, Univ. degli Studi di Brescia (Italy); Yifan Sun, Mario Zitelli, Rocco Crescenzi, Sapienza Univ. di Roma (Italy); Alioune Niang, Sapienza Univ. di Roma (Italy); Maria Caterina Crocco, Vincenzo Formoso, Raffaele G. Agostino, Riccardo Barberi, Antonio De Luca, Univ. della Calabria (Italy); Alessandro Tonello, Univ. de Limoges (France); Sergey A. Babin, Novosibirsk State Univ. (Russian Federation); Vincent Couderc, Univ. de Limoges (France); Stefan Wabnitz, Sapienza Univ. di Roma (Italy) and Novosibirsk State Univ. (Russian Federation) [12142-62]

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Wednesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

Photoluminescence of Er/Yb-doped zinc-silicate glass and glass ceramics with ZnO and Zn, SiO₂ nanoparticles, Petr Varak, Institute of Photonics and Electronics of the ČAS, v.v.i. (Czech Republic); Jan Baborak, Jakub Cajzl, Pavla Nekvindova, Univ. of Chemistry and Technology Prague (Czech Republic) [12142-80]

Surface roughness optimization during femtosecond UV laser ablation, Domyka Stonyte, Vytautas Jukna, Simas Butkus, Domas Paipulas, Vilnius Univ. (Lithuania) [12142-83]

Evaluation of the uncertainty on phase noise for optoelectronic oscillators, Patrice Salzenstein, CNRS / Institut Franche-Comte Electronique Mecanique Thermique et Optique (France); Ekaterina Pavlyuchenko, CNRS (France) [12142-84]

Fiber to resonator coupling multicriteria optimization with COMSOL multiphysics, Patrice Salzenstein, CNRS / Institut Franche-Comte Electronique Mecanique Thermique et Optique (France); David Bassir, Univ. de Technologie de Belfort-Montbéliard (France) and École normale supérieure Paris-Saclay (France); David Perez de Lara, Guangdong Technion Israel Institute of Technology (China) [12142-85]

Numerical simulations and experimental analysis of scanning techniques for low-roughness surfaces using UV femtosecond pulses, Evaldas Kazukauskas, Simas Butkus, Laser Research Ctr., Vilnius Univ. (Lithuania); Vytautas Jukna, Laser Research Ctr., Vilnius Univ. (Lithuania); Domas Paipulas, Laser Research Ctr., Vilnius Univ. (Lithuania); Valdas Sirutkaitis, Laser Research Ctr. (Lithuania) [12142-86]

Accuracy of Brillouin frequencies for material characterization by light scattering, Patrice Salzenstein, CNRS / Institut Franche-Comte Electronique Mecanique Thermique et Optique (France); David Bassir, Centre National de la Recherche Scientifique (CNRS), CMLA – ENS Cachan, Université Paris Saclay (France) and Université Technologique de Belfort-Montbéliard (UTBM) (France) and Institute of Industry Technology (China); Ekaterina Pavlyuchenko, CNRS (France) [12142-87]

Integration of Mach-Zehnder interferometer on optical fiber using UV femtosecond laser pulses, Kamilė Kasačiūnaitė, Simas Butkus, Domas Paipulas, Laser Research Ctr., Vilnius Univ. (Lithuania) [12142-88]

Spectroscopic properties of fluoroindate glass and glass-ceramics doped with Eu³⁺ ions, Bartłomiej Starzyk, Magdalena Lesniak, Gloria Lesly Jimenez Miranda, AGH Univ. of Science and Technology (Poland); Marcin Kochanowicz, Białystok Univ. of Technology (Poland); Marta Kuwik, Univ. of Silesia (Poland); Jacek M. Zmojda, Piotr Miluski, Agata Baranowska, Jan Dorosz, Białystok Univ. of Technology (Poland); Wojciech A. Pisarski, Joanna Pisarska, Univ. of Silesia (Poland); Piotr Jelen, Dominik Dorosz, AGH Univ. of Science and Technology (Poland) [12142-89]

Colour tuneable upconversion photonic materials for anticounterfeiting security inks, Sheila Torres-García, Christian Hernández-Álvarez, Miguel Medina-Alayón, Pablo Acosta-Mora, Javier del-Castillo, Ángel C. Yanes, Jorge Méndez-Ramos, Univ. de La Laguna (Spain); Amador Menéndez-Velázquez, IDONIAL Centro Tecnológico (Spain) [12142-90]

High intense UV-blue upconversion luminescence in NaYbF₄:Tm³⁺-based nanostructured materials to boost photocatalysis. Miguel Medina-Alayón, Sheila Torres-García, Christian Hernández-Álvarez, Javier del-Castillo, Ángel C Yanes, Pablo Acosta-Mora, Jorge Méndez-Ramos, Univ. de La Laguna (Spain); Amador Menéndez-Velázquez, IDONIAL Centro Tecnológico (Spain). [12142-91]

SiO₂-CaO-ZnO nanoglass as multifunctional material. Weronika Bodylska, Institute of Low Temperature and Structure Research (Poland); Beata Borak, Wrocław University of Science and Technology (Poland); Marzena Fandzloch, Institute of Low Temperature and Structure Research (Poland); Joanna Trzcńska-Wencel, Patrycja Golińska, Katarzyna Roszek, Nicolaus Copernicus University in Toruń (Poland); Anna Lukowiak, Institute of Low Temperature and Structure Research (Poland) [12142-95]

Amorphous WO₃ as transparent conductive oxide in the near-IR. Hao Chen, Politecnico di Milano (Italy) and CNST@PoliMi, Istituto Italiano di Tecnologia (Italy); Alice Carlotto, CNR-Istituto di Fotonica e Nanotecnologie (Italy) and CSMFO Lab. and Fondazione Bruno Kessler (FBK) Photonics Unit (Italy); Cristina Armellini, CSMFO Lab. and Fondazione Bruno Kessler (FBK) Photonics Unit (Italy); Marco Cassinelli, Mario Caironi, CNST@PoliMi, Istituto Italiano di Tecnologia (Italy); Mohamed Zaghoul, Alberto Tagliaferri, Politecnico di Milano (Italy) and CNST@PoliMi, Istituto Italiano di Tecnologia (Italy); Alessandro Chiasera, CNR-Istituto di Fotonica e Nanotecnologie (Italy) and CSMFO Lab. and Fondazione Bruno Kessler (FBK) Photonics Unit (Italy); Silvia M. Pietralunga, CNR-Istituto di Fotonica e Nanotecnologie (Italy) and CNST@PoliMi, Istituto Italiano di Tecnologia (Italy). [12142-97]

Production of optical waveguide in planar glass substrate fabricated with femtoprint. Mateo Tunon de Lara, Karima Chah, Univ. de Mons (Belgium); Loic Amez-Droz, Univ. Libre de Bruxelles (Belgium) and Univ. de Liège (Belgium); Pierre Lambert, Univ. Libre de Bruxelles (Belgium); Christophe Collette, Liège Univ. (Belgium) and Univ. Libre de Bruxelles (Belgium); Christophe Caucheteur, Univ. de Mons (Belgium) [12142-98]

THURSDAY 7 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 10:35

Hot Topics III

Session Chair: **Thierry Georges**, Oxxius (France), 2022 Symposium Chair

9:00: **Welcome and opening remarks**

9:05: **A sneak peek with light into opaque materials: from imaging to computing** (*Plenary*), Sylvain Gigan, Lab. Kastler Brossel (France) . [12136-500]

9:50: **Active metasurfaces empowered by two-dimensional materials** (*Plenary*), Isabelle Staude, Friedrich-Schiller-Univ. Jena (Germany) . [12130-500]

Coffee Break. Thu 10:35 to 11:00

SESSION 13

LOCATION: SALON 7, NIVEAU/LEVEL 0 THU 11:00 TO 12:45

Applications I

Session Chair: **Riccardo Piccoli**, Institut National de la Recherche Scientifique (Israel)

11:00: **Recent updates on hollow core fibre technology** (*Invited Paper*), Francesco Poletti, Optoelectronics Research Ctr. (United Kingdom) . [12142-64]

11:30: **Whispering gallery modes silica resonators – a platform for optical sensing** (*Invited Paper*), Eyal Yacoby, Yosef London, Yekutiel Meshorer, Sharone Goldring, Chana Goren, Shaul Pearl, Soreq Nuclear Research Ctr. (Israel) [12142-65]

12:00: **Light sources and materials for Covid-2 and transmissible diseases**, Stefano Taccheo, Politecnico di Torino (Italy) [12142-66]

12:30: **Scalable disordered hyperuniform architectures on silica obtained by solid state dewetting**, Monica Bollani, CNR-Istituto di Fotonica e Nanotecnologie (Italy); Chiara Barri, Politecnico di Milano (Italy); Mohammed Bouabdellaoui, Aix Marseille Univ. (France); Luca Fagiani, Politecnico di Milano (Italy); Zeinab Chehadi, Aix-Marseille Univ. (France); Marco Salvalaglio, Axel Voigt, TU Dresden (Germany); Alexey Fedorov, CNR-Istituto di Fotonica e Nanotecnologie (Italy); David Grosso, Jean-Benoit Claude, Jerome Wenger, Marco Abbarchi, Aix Marseille Univ. (France) [12142-68]

Lunch Break Thu 12:45 to 13:55

SESSION 14

LOCATION: SALON 7, NIVEAU/LEVEL 0 THU 13:55 TO 15:40

Applications II

Session Chair: **Monica Bollani**, CNR-Istituto di Fotonica e Nanotecnologie (Italy)

13:55: **Soft nanoimprint lithography of metal oxides for applications in photonic** (*Invited Paper*), Marco Abbarchi, Aix-Marseille Univ. (France) [12142-69]

14:25: **Enhancing photocatalysis by means of upconversion photonics materials for pollutant degradation and hydrogen generation: “bridge the gap”** (*Invited Paper*), Pablo Acosta-Mora, Jorge Méndez Ramos, Javier del-Castillo, Sheila Torres-García, Christian Hernández-Álvarez, Miguel Medina-Alayón, Ángel C. Yanes, Univ. de La Laguna (Spain); Amador Menéndez-Velázquez, IDONIAL Centro Tecnológico (Spain) [12142-70]

14:55: **Laser energy delivery method and apparatus using multiple beam interference**, Joyce Liu, Cornell Univ. (USA) [12142-71]

15:10: **Ionizing radiation profiling through the induced refractive index change in backscattering-enhanced optical fibers**, Massimo Olivero, Aurora Bellone, Martha Y. Segura Sarminento, Politecnico di Torino (Italy); Wilfried Blanc, Franck Blanc, Mourad Benabdesselam, CNRS, Institut de Physique de Nice (France); Daniele Tosi, Nazarbayev Univ. (Kazakhstan); Guido Perrone, Politecnico di Torino (Italy) [12142-72]

15:25: **Optical isolator based on Sagnac effect**, Jaroslav Kodz, Kestutis Regelskis, Julijanas Zeludevicius, Nikolajus Gavrilinas, Ctr. for Physical Sciences and Technology (Lithuania) [12142-73]

Coffee Break. Thu 15:40 to 16:00

SESSION 15

LOCATION: SALON 7, NIVEAU/LEVEL 0 THU 16:00 TO 17:15

Fiber Lasers: Novel Concepts

Session Chair: **Stefano Taccheo**, Politecnico di Torino (Italy)

16:00: **Broadband NIR luminescence in double-core germanate optical fiber** (*Invited Paper*), Marcin Kochanowicz, Karolina Sadowska, Krzysztof Markowski, Jacek M. Zmójda, Piotr Miluski, Agata Baranowska, Białystok Univ. of Technology (Poland); Marta Kuwik, Univ. of Silesia (Poland); Magdalena Lesniak, AGH Univ. of Science and Technology (Poland); Joanna Pisarska, Wojciech A. Pisarski, Univ. of Silesia (Poland); Jan Dorosz, Białystok Univ. of Technology (Poland); Dominik Dorosz, AGH Univ. of Science and Technology (Poland) [12142-74]

16:30: **Effect of bi-directional excitation and external feedback on the mode structure of distributed-feedback lasers**, Jerry Yeung, Anirban Sarkar, Markus Pollnau, Advanced Technology Institute, Univ. of Surrey (United Kingdom) [12142-75]

16:45: **Design of an Er³⁺:InF₃ fiber laser pumped with red light**, Mario Christian Falconi, Antonella Maria Loconsole, Andrea Annunziato, Politecnico di Bari (Italy); Solenn Cozic, Samuel Poulain, Le Verre Fluoré (France); Francesco Prudenzano, Politecnico di Bari (Italy) [12142-76]

17:00: **Feasibility investigation of Ho:Nd codoped InF₃ fibers pumped at 808 nm wavelength**, Antonella Maria Loconsole, Mario Christian Falconi, Andrea Annunziato, Politecnico di Bari (Italy); Solenn Cozic, Samuel Poulain, Le Verre Fluoré (France); Francesco Prudenzano, Politecnico di Bari (Italy) [12142-77]

ON DEMAND PRESENTATIONS

SESSION 2

ROOM: SALON 7, NIVEAU/LEVEL 0 MON 15:55 TO 17:40

Materials and Components II: Films, Novel Concepts, and Processes

Session Chair: **Ilka Kriegel**, Istituto Italiano di Tecnologia (Italy)

0:00: **High-quality polyimide (PI) film laser micromachining based on controllable photothermal/photochemical combined process**, Tian Zhang, Congyi Wu, Weinan Liu, Jun Xu, Youmin Rong, Guojun Zhang, Huazhong Univ. of Science and Technology (China); Yu Huang, Huazhong University of Science and Technology (China) [12142-12]

CONFERENCE 12142

SESSION 3

ROOM: SALON 7, NIVEAU/LEVEL 0 MON 11:30 TO 12:30

Special Session Honoring Anne-Marie Jurdyc: Early Stage Researchers and Woman Scientists

Session Chair: **Mariola O. Ramirez**, Univ. Autónoma de Madrid (Spain)

In Memoriam

Anne-Marie Jurdyc, CNRS (France)

Anne-Marie Jurdyc, was a Director of Research CNRS at Institut Lumière Matière in Lyon, France. Spectroscopist and physico-chemist of the solid, she developed her research in connection with the optical properties of rare earth ions such as Er³⁺, Dy³⁺ or Pr³⁺ in glasses or optical fibers with the aim of improving performance of all-optical amplifiers at so-called "telecom" wavelengths. She then turned to fiber sensors, sometimes doped with nanoparticles and using the RAMAN effect in particular.

Dedicated, benevolent and always listening, she was fully invested in this role at the interface between science and the human, a role that she particularly liked.

0:00: **Raman spectroscopy and its application for intra-operative assessment of lymph node in breast cancer patients**, Surekha Barkur, Radu Boitor, Raluca Mihai, Emad Rakha, Ioan Notingher, The Univ. of Nottingham (United Kingdom) [12142-14]

SESSION 4

ROOM: SALON 7, NIVEAU/LEVEL 0 MON 13:55 TO 15:10

Special Session on the International Year of Glass I

Session Chair: **Anna Lukowiak**, Institute of Low Temperature and Structure Research PAN (Poland)

0:00: **Alkali-germanate glass-ceramics doped with manganese and chromium ions**, Anastasiia N. Babkina, Ekaterina Kulpina, Kseniia Zyryanova, Andrei Bukhvostov, Natalia Kuzmenko, Alexandre Ignatiev, ITMO Univ. (Russian Federation); Victor Klinkov, Peter the Great St. Petersburg Polytechnic University (Russian Federation) [12142-18]

SESSION 5

ROOM: SALON 7, NIVEAU/LEVEL 0 MON 15:40 TO 17:10

Special Session on the International Year of Glass II

Session Chair: **Maria Rita Cicconi**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

0:00: **Spectral properties of cesium lead iodide perovskite nanocrystals in borogermanate glass at different temperatures**, Anastasiia N. Babkina, Aleksandra Pavliuk, Rufina Harisova, Kseniia Zyryanova, Alexander Ignatiev, Nikolai V. Nikonov, ITMO Univ. (Russian Federation) [12142-22]

SESSION 6

ROOM: SALON 7, NIVEAU/LEVEL 0 MON 8:30 TO 10:30

Special Session Honoring Antonio Lucianetti. Materials and Components III: Fibers, Components, Fabrication, and Properties

Session Chair: **Angela B. Seddon**, The Univ. of Nottingham (United Kingdom)

In Memoriam

Antonio Lucianetti, Bergamo (Italy)/HiLASE (Czech Republic)

Antonio was a key member of HiLASE Centre team in Prague, Czech Republic and the leader of the research program aiming to design and develop a 100 J / 10 Hz laser system scalable to 1 kJ level. Antonio promoted advanced numerical modelling, material characterization methods and adaptive optics activities within HiLASE.

He was not only a great international scientist but also a collaborative colleague, a mentor and a friend through his whole career.

Antonio was the essence of kindness, duty and intellectual curiosity. He left many friends around the world as well in his native Bergamo, Italy, where was able to fulfil his passion for mountains and the night sky, being the co-founder of the Amateur Astronomers Club of Bergamo.

0:00: **Peculiarities of pulsed laser radiation spectrum controlling in the presence of temperature gradients inside the acousto-optic dispersive delay line**, Sergey N. Mantsevich, M. V. Lomonosov Moscow State Univ. (Russian Federation); Konstantin B. Yushkov, National Univ. of Science and Technology MISIS (Russian Federation); Sergey Tretiakov, Tver State Univ. (Russian Federation) [12142-29]

SESSION 8

ROOM: ON DEMAND MON 0:00 TO 0:00

Materials and Components V: Active Materials and Glass Ceramics

0:00: **Spectroscopy of Ho³⁺-doped fluoride glasses for green double-clad fiber lasers**, Esrom Kifle, Pavel A. Loiko, Univ. de Caen Normandie (France); Thiphaine Rault, Thibaud Berthelot, Solenn Cozic, Franck Joulain, Le Verre Fluoré (France); Thierry Georges, Oxxius SA (France); Dragan Stojcevski, KERDRY Thin Film Technologies (France); Florent Starecki, Univ. de Caen Normandie (France); Damien Deubel, KERDRY Thin Film Technologies (France); Alain Braud, Jean-Louis Doualan, Patrice Camy, Univ. de Caen Normandie (France) [12142-35]

0:00: **Synthesis and mid-infrared luminescence of "mixed" Er:(Lu,Y,La)2O3 transparent ceramics**, Liza Basyrova, Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche, Univ. de Caen Normandie, CEA, CNRS (France); Stanislav S. Balabanov, G.G. Devyatkh Institute of Chemistry of High-Purity Substances (Russian Federation); Pavel A. Loiko, Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche, Univ. de Caen Normandie, CEA, CNRS (France); Dmitry Permin, G.G. Devyatkh Institute of Chemistry of High-Purity Substances (Russian Federation); Denis Y. Kosyanov, G.G. Devyatkh Institute of Chemistry of High-Purity Substances (Russian Federation) and Far Eastern Federal Univ. (Russian Federation); Timofey Evstropov, Sergey Filofeev, G.G. Devyatkh Institute of Chemistry of High-Purity Substances (Russian Federation); Jean-Louis Doualan, Alain Braud, Patrice Camy, Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche, Univ. de Caen Normandie, CEA, CNRS (France) [12142-36]

0:00: **Crystal growth, structure and spectroscopy of Dy:(Y,Lu)VO4 vanadate: A promising material for yellow lasers**, Sami Slimi, Univ. Rovira i Virgili (Spain); Pavel A. Loiko, Ctr. de Recherche sur les Ions, les Matériaux et la Photonique (France); Zhonghuan Zhang, Univ. Rovira i Virgili (Spain); Bin Zhao, Yan Liu, Fuzhou Univ. (China); Ge Zhang, Fujian Institute of Research on the Structure of Matter (China); Rosa Maria Solé, Magdalena Aguiló, Francesc Díaz, Univ. Rovira i Virgili (Spain); Li Wang, Valentin Petrov, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Weidong Chen, Fujian Institute of Research on the Structure of Matter (China) and Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Xavier Mateos, Univ. Rovira i Virgili (Spain) [12142-37]

0:00: **Excited-state absorption and upconversion pumping of Tm:KLu(WO4)2 crystal**, Florent Starecki, Lauren Guillemot, Pavel A. Loiko, Alain Braud, Jean-Louis Doualan, Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche, Univ. de Caen Normandie, CEA, CNRS (France); Magdalena Aguiló, Francesc Díaz, Xavier Mateos, Univ. Rovira i Virgili (Spain); Patrice Camy, Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche, Univ. de Caen Normandie, CEA, CNRS (France) [12142-39]

0:00: **Modelling and spectroscopy of an Tm:Er:Yb:Ho for broadband amplification**, Riccardo Ballarini, Lorenzo Scavarda, Politecnico di Torino (Italy); Marcin Kochanowicz, Jacek M. Zmójda, Piotr Miluski, Białystok Univ. of Technology (Poland); Mario Christian Falconi, Politecnico di Bari (Italy); Nadia Giovanna Boetti, LINKS Foundation (Italy); Dario Laneve, Vincenza Portosi, Politecnico di Bari (Italy); Dominik Dorosz, AGH Univ. of Science and Technology (Poland); Francesco Prudenzeno, Politecnico di Bari (Italy); Stefano Taccheo, Politecnico di Torino (Italy) [12142-41]

0:00: **Liquid phase epitaxy growth and spectroscopy of terbium-doped LiYF4 crystalline layers**, Gurvan Brasse, Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche, Univ. de Caen Normandie, CEA, CNRS (France); Amandine Baillard, Pavel A. Loiko, Abdelmjid Benayad, Alain Braud, Patrice Camy, Ctr. de Recherche sur les Ions, les Matériaux et la Photonique (France) [12142-42]

SESSION 9

ROOM: SALON 7, NIVEAU/LEVEL 0 MON 8:45 TO 10:30

Mid-Infrared Laser Sources: Special Session

Session Chair: **Sendy Phang**, The Univ. of Nottingham (United Kingdom)

0:00: **Growth and spectroscopy of Er³⁺-doped Na₅Y₉F₃₂ (5NaF-9YF₃) crystal**, Liza Basyrova, Pavel A. Loiko, Jean-Louis Doualan, Abdelmjid Benayad, Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche, Univ. de Caen Normandie, CEA, CNRS (France); Ghassen Zin Elabedine, Rosa Maria Solé, Magdalena Aguiló, Francesc Díaz, Xavier Mateos, Universitat Rovira i Virgili, Physics and Crystallography of Materials (FiCMA) (Spain); Elena Dunina, Alexey Kornienko, Vitebsk State Technological University (Belarus); Alain Braud, Christophe Labbé, Patrice Camy, Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche, Univ. de Caen Normandie, CEA, CNRS (France) ... [12142-46]

SESSION 11

ROOM: SALON 7, NIVEAU/LEVEL 0 MON 13:35 TO 15:05

Fiber Lasers, Infrared, and Visible Lasers

Session Chair: **Dominik Dorosz**, AGH Univ. of Science and Technology (Poland)

0:00: **Quasi-CW and pulsed generation in coupled Raman fiber lasers with PT symmetry**, Dmitry V. Churkin, Sergey V. Smirnov, Novosibirsk State Univ. (Russian Federation) [12142-57]

SESSION 12

ROOM: SALON 7, NIVEAU/LEVEL 0 MON 15:40 TO 17:10

Fibers and Waveguide Sources II: Fibers and Materials

Session Chair: **Wilfried Blanc**, Institut de Physique de Nice (France)

0:00: **Novel Dy³⁺-doped phosphate glasses for yellow fiber lasers**, Diego Pugliese, Politecnico di Torino (Italy) and Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali (Italy); Sami Slimi, Fisica i Cristal·lografia de Materials i Nanomaterials, Univ. Rovira i Virgili (Spain); Pavel A. Loiko, Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche, Univ. de Caen Normandie, CEA, CNRS (France); Zhonghuan Zhang, Fisica i Cristal·lografia de Materials i Nanomaterials, Univ. Rovira i Virgili (Spain); Martha Y. Segura Sarminento, LINKS Foundation (Italy); Guido Perrone, Politecnico di Torino (Italy); Nadia Giovanna Boetti, LINKS Foundation (Italy); Rosa Maria Solé, Univ. Rovira i Virgili, Fisica i Cristal·lografia de Materials i Nanomaterials (Spain); Magdalena Aguiló, Francesc Díaz, Fisica i Cristal·lografia de Materials i Nanomaterials, Univ. Rovira i Virgili (Spain); Joris Lousteau, Politecnico di Milano (Italy) and Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali (Italy); Xavier Mateos, Fisica i Cristal·lografia de Materials i Nanomaterials, Univ. Rovira i Virgili (Spain) [12142-61]

0:00: **Er-doped tapered fiber amplifier for high peak power sub-ns pulse amplification**, Maxim M. Khudyakov, Andrey E. Levchenko, Vladimir V. Velmiskin, Konstantin K. Bobkov, Dianov Fiber Optics Research Ctr., A. M. Prokhorov General Physics Institute (Russian Federation); Svetlana S. Aleshkina, Mikhail M. Bubnov, Dianov Fiber Optics Research Ctr., A. M. Prokhorov General Physics Institute (Russian Federation); Mikhail V. Yashkov, Aleksey N. Gur'yanov, G.G. Devyatikh Institute of Chemistry of High-Purity Substances (Russian Federation); Leonid V. Kotov, Wyant College of Optical Sciences, The Univ. of Arizona (USA); Mikhail E. Likhachev, Dianov Fiber Optics Research Ctr., A. M. Prokhorov General Physics Institute (Russian Federation) . [12142-63]

ROOM: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup : Wednesday 10:00 AM – 5:00 PM

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

Supermode noise suppression in harmonically mode-locked fiber laser by continuous wave injection, Dmitry A. Korobko, Pavel A. Itrin, Valeria Ribenek, Dmitrii A. Stoliarov, Ulyanovsk State Univ. (Russian Federation); Andrei A. Fotiadi, Ulyanovsk State Univ. (Russian Federation) and Univ. de Mons (Belgium) [12142-81]

Harmonically mode-locked fiber laser with fine repetition rate tuning through continuous wave injection, Dmitry A. Korobko, Valeria Ribenek, Dmitrii A. Stoliarov, Ulyanovsk State Univ. (Russian Federation); Andrei A. Fotiadi, Ulyanovsk State Univ. (Russian Federation) and Univ. de Mons (Belgium) [12142-82]

Laser-fabricated surfaces with wetting gradient for nanophotonic structures creation, Nadezhda Shchedrina, Marina Karsakova, Ekaterina Ponkratova, Artur Karamyants, Dmitry A. Zuev, Galina V. Odintsova, ITMO Univ. (Russian Federation) [12142-92]

Composite ZnO-Yb₂O₃-Er₂O₃ transparent ceramics: structure and spectral-luminescent properties, Olga S. Dymshits, Elena Gorokhova, S. I. Vavilov State Optical Institute (Russian Federation); Liza Basyrova, Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche, Univ. de Caen Normandie, CEA, CNRS (France); Ivan Venevtsev, Peter the Great Saint-Petersburg Polytechnic Univ. (Russian Federation); Irina P. Alekseeva, Alexander Khubetsov, Sergey Eron'ko, Eugenia Oreschenko, S. I. Vavilov State Optical Institute (Russian Federation); Alexander A. Zhilin, D. V. Efremov Institute of Electrophysical Apparatus (Russian Federation); Pavel A. Loiko, Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche, Univ. de Caen Normandie, CEA, CNRS (France) [12142-93]

Transparent glass-ceramics based on Ti³⁺-doped ZnAl₂O₄ nanocrystals: synthesis, structure and optical properties, Kirill Ereemeev, Olga S. Dymshits, Irina P. Alekseeva, Alexander Khubetsov, Marina Y. Tsenet, Svetlana Zapalova, S. I. Vavilov State Optical Institute (Russian Federation); Liza Basyrova, Ctr. de Recherche sur les Ions, les Matériaux et la Photonique (France); Pavel A. Loiko, Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche, Univ. de Caen Normandie, CEA, CNRS (France); Alexander A. Zhilin, D.V. Efremov Institute of Electrophysical Apparatus (Russian Federation) [12142-94]

All-fiber high-peak power chirped pulse amplifier based on a triple-cladding fiber for pulse stretching and a highly-Yb-doped pedestal fiber for pulse amplification, Konstantin K. Bobkov, Fiber Optics Research Ctr. (Russian Federation); Denis S. Lipatov, Mikhail Y. Salganskiy, G.G. Devyatikh Institute of Chemistry of High-Purity Substances (Russian Federation); Dmitry Khydiakov, A. M. Prokhorov General Physics Institute of the RAS (Russian Federation); Alexey N. Guryanov, G.G. Devyatikh Institute of Chemistry of High-Purity Substances (Russian Federation); Mikhail E. Likhachev, Fiber Optics Research Ctr. (Russian Federation) [12142-96]

SESSION 15

ROOM: SALON 7, NIVEAU/LEVEL 0 MON 16:00 TO 17:15

Fiber Lasers: Novel Concepts

Session Chair: **Stefano Taccheo**, Politecnico di Torino (Italy)

0:00: **Generation of modulation instability-induced high-repetition-rate pulse train with high-phase modulation depth**, Aleksei Abramov, Igor O. Zolotovskii, Ulyanovsk State Univ. (Russian Federation); Vladimir A. Kamynin, A. M. Prokhorov General Physics Institute (Russian Federation); Dmitriy A. Korobko, Marina S. Yavtushenko, Andrei Domanov, Ulyanovsk State Univ. (Russian Federation); Andrei A. Fotiadi, Univ. de Mons (Belgium); Aleksandr Alekseev, Ulyanovsk State Univ. (Russian Federation) [12142-78]

0:00: **Giant pulse generation in the fibers with inscribed Bragg gratings**, Aleksei Abramov, Igor O. Zolotovskii, Ulyanovsk State Univ. (Russian Federation); Vladimir A. Kamynin, A. M. Prokhorov General Physics Institute (Russian Federation); Andrei A. Fotiadi, Dmitriy A. Stolyarov, Ulyanovsk State Univ. (Russian Federation) [12142-79]

CONFERENCE 12143

Monday-Wednesday 4-6 April 2022 • Proceedings of SPIE Vol. 12143

Nonlinear Optics and its Applications 2022

Conference Chairs: Neil G. R. Broderick, The Univ. of Auckland (New Zealand); John M. Dudley, Institut Franche-Comte Electronique Mecanique Thermique et Optique (France); Anna C. Peacock, Univ. of Southampton (United Kingdom)

Program Committee: Fabio Biancalana, Heriot-Watt Univ. (United Kingdom); Andrea Blanco-Redondo, Nokia Bell Labs. (USA); Camille Brès, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Zhigang Chen, Nankai Univ. (China); Moti Fridman, Bar-Ilan Univ. (Israel); Goëry Genty, Tampere Univ. of Technology (Finland); Nicolas Y. Joly, Max-Planck-Institut für die Physik des Lichts (Germany); Mariusz Klimczak, Univ. of Warsaw (Poland); Marco Liscidini, Univ. degli Studi di Pavia (Italy); Kathy Lüdge, Technische Univ. Berlin (Germany); Arnaud Mussot, Lab de Physique des Lasers, Atomes et Molécules (France); Michelle Y. Sander, Boston Univ. (USA); Dawn T. H. Tan, Singapore Univ. of Technology & Design (Singapore); Giovanna Tissoni, Institut de Physique de Nice (France)

MONDAY 4 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 11:00

Hot Topics I

Paul Montgomery, Univ. of Strasbourg (France),
2022 Symposium Chair

9:00: **Welcome and Introduction; City of Strasbourg Welcome; Presentation of the 2022 SPIE Mozi Award to Thomas W. Ebbesen,** The Institute for Advanced Study of the Univ. of Strasbourg (USIAS) and CNRS (France), Anita Mahadevan-Jansen, Vanderbilt Univ. (USA), 2022 SPIE President

9:10: **Introduction to Hot Topics, Paul Montgomery,** Univ. of Strasbourg (France), 2022 Symposium Chair

9:15: **Access to photonics innovation support for European researchers and companies through ACTPHAST4R and PhotonHub Europe (Plenary),** Hugo Thienpont, Vrije Univ. Brussel (Belgium) [12148-500]

9:30: **Quantum computing: prospects and challenges (Plenary),** Heike Riel, IBM Research - Zürich (Switzerland) [12133-500]

10:15: **Einstein Telescope, the pioneer project for a third-generation GW observatory in Europe: science, technologies and perspectives (Plenary),** Michele Punturo, Istituto Nazionale di Fisica Nucleare (Italy) [12139-500]

Coffee Break Mon 11:00 to 11:30

SESSION 1

LOCATION: SALON 9, NIVEAU/LEVEL 0 MON 11:30 TO 12:40

Quantum Nonlinear Photonics

Session Chair: Hanieh Fattahi, Max-Planck-Institut für Quantenoptik (Germany)

11:30: **Quantum photonics with AlGaAs chips: state engineering and applications (Invited Paper),** Sara Ducci, Lab. Matériaux et Phénomènes Quantiques (France) [12143-1]

12:00: **Nonlinear quantum interferometer in the time and frequency domains,** Sara Meir, Eliahu Cohen, Moti Fridman, Bar-Ilan Univ. (Israel) [12143-2]

12:20: **Nonlinear dynamics at the quantum limit in the unbalanced Dicke model,** Kevin Stitely, Andrus Giraldo, Scott A. Parkins, Bernd Krauskopf, The Univ. of Auckland (New Zealand) [12143-3]

Lunch Break Mon 12:40 to 13:50

SESSION 2

LOCATION: SALON 9, NIVEAU/LEVEL 0 MON 13:50 TO 15:20

Ultrafast Measurement and Characterization

Session Chair: Thibaut Sylvestre, FEMTO-ST (France)

13:50: **Femtosecond fieldoscopy (Invited Paper),** Hanieh Fattahi, Max-Planck-Institut für Quantenoptik (Germany) [12143-4]

14:20: **Phase and amplitude single-shot measurement of spontaneous modulation instability,** Alexandre Lebel, Francois Copie, Lab. de Physique des Lasers, Atomes et Molécules (France); Alexey M. Tikan, Institut de Physique, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Gennady El, Giacomo Roberti, Northumbria Univ. (United Kingdom); Stephane Randoux, Pierre Suret, Lab. de Physique des Lasers, Atomes et Molécules (France) [12143-5]

14:40: **Targeted generation, characterization, and simulation of ultrafast complex pulses,** Mariem Guesmi, Petra Vesela, Karel Židek, Centrum TOPTEC - Institute of Plasma Physics of the CAS, v.v.i. (Czech Republic) [12143-6]

15:00: **Single-shot observations of the space-time dynamics of light in a recirculating optical fiber loop: the example of higher-order modulation instability,** Francois Copie, Pierre Suret, Stéphane Randoux, Univ. de Lille (France) [12143-7]

Coffee Break Mon 15:20 to 15:50

SESSION 3

LOCATION: SALON 9, NIVEAU/LEVEL 0 MON 15:50 TO 17:40

Nonlinear Sources and Combs

Session Chair: François Leo, Univ. Libre de Bruxelles (Belgium)

16:20: **All-fiber multicomponent coherent light source,** Eve-Line Bancel, PhLAM/IRCICA (France) and ONERA (France); Etienne Genier, PhLAM/IRCICA (France); Rosa Santagata, ONERA (France); Alexandre Kudlinski, Matteo Conforti, Géraud Bouwmans, Olivier Vanvincq, Andy Cassez, Arnaud Mussot, PhLAM/IRCICA (France) [12143-9]

16:40: **Two octave supercontinuum generation in a nonsilica graded-index multimode fiber,** Zahra Eslami, Lauri Salmela, Tampere Univ. (Finland); Adam Filipkowski, Dariusz Pysz, Institute of Microelectronics and Photonics (Poland); Mariusz Klimczak, Ryszard Buczynski, Univ. of Warsaw (Poland); John M. Dudley, FEMTO-ST (France); Goëry Genty, Tampere Univ. (Finland) [12143-11]

17:00: **Inverse design of remotely generated uniform plasma channels in air,** Arnaud Couairon, Ecole Polytechnique (France); Long Zou, Ecole Polytechnique (France) and Shanghai Jiao Tong Univ. (China); Chen Sun, Jin Yu, Shanghai Jiao Tong Univ. (China) [12143-12]

17:20: **Exploiting the geometry of optical fibers for igniting helical-shape plasma filaments,** Mario Ferraro, Sapienza Univ. di Roma (Italy); Fabio Mangini, Univ. degli Studi di Brescia (Italy); Mario Zitelli, Alioune Niang, Rocco Crescenzi, Sapienza Univ. di Roma (Italy); Tigran Mansuryan, Alessandro Tonello, Vincent Couderc, Univ. de Limoges (France); Antonio De Luca, Univ. della Calabria (Italy); Sergey A. Babin, Novosibirsk State Univ. (Russian Federation); Fabrizio Frezza, Sapienza Univ. di Roma (Italy); Stefan Wabnitz, Sapienza Univ. di Roma (Italy) and Novosibirsk State Univ. (Russian Federation) [12143-13]

TUESDAY 5 APRIL

SESSION 4

LOCATION: SALON 9, NIVEAU/LEVEL 0 TUE 8:30 TO 10:20

Nonlinear Pulse Dynamics

Session Chair: Hanieh Fattahi, Max-Planck-Institut für Quantenoptik (Germany)

8:30: **Temporal solitons in coherently driven active resonators (Invited Paper),** François Leo, Univ. Libre de Bruxelles (Belgium) [12143-14]

9:00: **Pulse and kink solutions in a ring resonator with coupled light?,** Rodrigues Bitha, Andrus Giraldo, Neil G. R. Broderick, Bernd Krauskopf, The Univ. of Auckland (New Zealand) [12143-15]

9:20: **Dynamics of temporal localized states in time-delayed optically injected Kerr Gires-Tournois interferometers,** Thomas Seidel, Westfälische Wilhelms-Univ. Münster (Germany); Julien Javaloyes, Univ. de les Illes Balears (Spain); Svetlana V. Gurevich, Westfälische Wilhelms-Univ. Münster (Germany) [12143-16]

9:40: **Accurate fiber-optic emulator of fundamental four-wave mixing theory,** Anastasiia Sheveleva, Ugo Andral, Bertrand Kibler, Pierre Colman, Lab. Interdisciplinaire Carnot de Bourgogne (France); John M. Dudley, Institut FEMTO-ST, Univ. Bourgogne Franche-Comté (France); Christophe Finot, Lab. Interdisciplinaire Carnot de Bourgogne (France) [12143-17]

10:00: **A multitude of multipulse solitons of the nonlinear Schrödinger equation with quartic dispersion,** Ravindra Bandara, The Univ. of Auckland (New Zealand) [12143-18]

Coffee Break Tue 10:20 to 10:50

SESSION 5

LOCATION: SALON 9, NIVEAU/LEVEL 0 TUE 10:50 TO 12:30

Multimode Dynamics I

Session Chair: **Peter Horak**, Optoelectronics Research Ctr. (United Kingdom)

10:50: **Spatiotemporal complexity: multimode fiber light sources and their applications** (*Invited Paper*), Katarzyna Krupa, Institute of Physical Chemistry PAS (Poland) [12143-19]

11:20: **Towards a new understanding of optical poling efficiency in multimode fibers**, Maxime Jonard, XLIM Institut de Recherche (France); Maggy Colas, Institut de Recherche sur les Céramiques, Univ. de Limoges (France); Yann Leventoux, Tigran Mansuryan, XLIM Institut de Recherche (France); Julie Cornette, Institut de Recherche sur les Céramiques (France); Alessandro Tonello, XLIM Institut de Recherche (France); Stefan Wabnitz, Mario Zitelli, Sapienza Univ. di Roma (Italy); Fabio Mangini, Univ. degli Studi di Brescia (Italy); Mario Ferraaro, Yifan Sun, Sapienza Univ. di Roma (Italy); Vincent Couderc, Claire Lefort, XLIM Institut de Recherche (France) . [12143-21]

11:40: **Dissipative solitons and frequency combs in a ring quantum cascade laser** (*Invited Paper*), Lorenzo Luigi L. Columbo, Dipartimento di Elettronica e Telecomunicazioni, Politecnico di Torino (Italy); Marco Piccardo, Harvard John A. Paulson School of Engineering and Applied Sciences, Harvard University, Cambridge (USA) and Center for Nano Science, Fondazione Istituto Italiano di Tecnologia and Technology, Milano (Italy); Franco Prati, Luigi Lugiatto, Dipartimento di Scienza e Alta Tecnologia, Università dell'Insubria, Como (Italy); Massimo Brambilla, Dipartimento di Fisica Interateneo and CNR-IFN, Università e Politecnico di Bari (Italy); Alessandra Gatti, Dipartimento di Scienza e Alta Tecnologia, Università dell'Insubria, Como (Italy) and Istituto di Fotonica e Nanotecnologie IFN-CNR (Italy); Carlo Silvestri, Mariangela Gioannini, Dipartimento di Elettronica e Telecomunicazioni, Politecnico di Torino (Italy); Nikola Opacak, Institute of Solid State Electronics, TU Wien (Austria); Benedikt Schwarz, Institute of Solid State Electronics (Austria); Federico Capasso, Harvard John A. Paulson School of Engineering and Applied Sciences, Cambridge (USA) . [12143-8]

12:10: **Discretized X-wave in a multimode optical fiber**, Karolina Stefanska, Lab. Interdisciplinaire Carnot de Bourgogne (France) and Wroclaw Univ. of Science and Technology (Poland); Pierre Béjot, Lab. Interdisciplinaire Carnot de Bourgogne (France); Karol Tarnowski, Wroclaw Univ. of Science and Technology (Poland); Bertrand Kibler, Lab. Interdisciplinaire Carnot de Bourgogne (France) [12143-23]

Lunch/Exhibition Break Tue 12:30 to 13:50

SESSION 6

LOCATION: SALON 9, NIVEAU/LEVEL 0 TUE 13:50 TO 17:10

Nonlinear Material Systems I

Session Chair: **Thibaut Sylvestre**, FEMTO-ST (France)

13:50: **Nonlinear topological photonics** (*Invited Paper*), Hrvoje Buljan, Univ. of Zagreb (Croatia) [12143-24]

14:20: **Time-varying optical nonlinearities near an epsilon-near-zero condition**, Anton Bykov, King's College London (United Kingdom); Guixin Li, Institute for Quantum Science and Engineering, Southern Univ. of Science and Technology (China); Anatoly V. Zayats, King's College London (United Kingdom) [12143-25]

14:40: **Turbulence control by time-symmetry breaking**, Salim Benadouda Ivars, Muriel Botey, Ramon Herrero, Univ. Politècnica de Catalunya (Spain); Kestutis Staliunas, Univ. Politècnica de Catalunya (Spain) and Institució Catalana de Recerca i Estudis Avançats (Spain) [12143-28]

15:00: **All-optical Fredkin gate using silicon nitride microring resonator**, Menglong He, Kambiz Jamshidi, TU Dresden (Germany) [12143-29]

15:20: **Second harmonic generation in silicon oxynitride thin films**, Jakub Lukeš, Karel Zidek, Institute of Plasma Physics of the CAS, v.v.i. (Czech Republic) [12143-70]

Coffee Break Tue 16:00 to 16:30

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:30: **Welcome and opening remarks**

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienza Applicata e Sistemi Intelligenti "Eduardo Caianello" (Italy) . [12144-500]

WEDNESDAY 6 APRIL

SESSION 7

LOCATION: SALON 9, NIVEAU/LEVEL 0 WED 8:30 TO 10:20

Nonlinear Material Systems II

Session Chair: **Hrvoje Buljan**, Univ. of Zagreb (Croatia)

8:30: **Parametric phase-sensitive amplification in silicon nitride waveguides** (*Invited Paper*), Victor Torres-Company, Peter Andrekson, Magnus Karlsson, ping Zhao, Zhichao Ye, Chalmers Univ. of Technology (Sweden) [12143-30]

9:00: **Polyvinylcarbazole: a new material for passive optical limiting**, Olivier Muller, Morgane Guerchoux, Silke Braun, Théo Jean, Manon Dandois, Lionel Merlat, Institut Franco-Allemand de Recherches de Saint-Louis (France). [12143-31]

9:20: **Experimental and theoretical study of second and third harmonic generation in amorphous silicon**, Laura Rodríguez-Suné, Univ. Politècnica de Catalunya (Spain); Michael Scalora, U.S. Army Combat Capabilities Development Command (USA); Crina M. Cojocaru, Univ. Politècnica de Catalunya (Spain); Neset Akozbek, US Army (USA); Ramon Vilaseca, Jose F. Trull, Univ. Politècnica de Catalunya (Spain) [12143-32]

9:40: **Electric-field poling of silicon nitride waveguides for the linear phase modulation**, Boris Zabelich, Edgars Nitiss, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Anton Stroganov, LIGENTEC SA (Switzerland); Camille-Sophie Brès, Ecole Polytechnique Fédérale de Lausanne (Switzerland) [12143-33]

10:00: **Investigation of LBO and BBO subnanosecond optical parametric amplifiers operating in the visible spectrum range**, Julius Vengelis, Gabrielė Stanionytė, Eglė Vėjalytė, Viktorija Tamulienė, Vygandas Jarutis, Vilnius Univ. (Lithuania) [12143-34]

Coffee Break Wed 10:20 to 10:50

SESSION 8

LOCATION: SALON 9, NIVEAU/LEVEL 0 WED 10:50 TO 12:20

Nonlinear Sources and Dynamics

Session Chair: **Victor Torres Company**, Chalmers Univ. of Technology (Sweden)

10:50: **Pulse dynamics in microlasers** (*Invited Paper*), Soizic Terrien, The Univ. of Auckland (New Zealand) [12143-35]

11:20: **Polarization symmetry breaking of regenerative pulses in excitable microlasers with delayed optical feedback**, Stefan Ruschel, The Univ. of Auckland (New Zealand); Venkata Anirudh Pammi, Ctr. de Nanosciences et de Nanotechnologies (France); Bernd Krauskopf, Neil G. R. Broderick, The Univ. of Auckland (New Zealand); Sylvain Barbay, Ctr. de Nanosciences et de Nanotechnologies (France) [12143-36]

11:40: **Investigation of optical parametric generator pumped by subnanosecond passively Q-switched micro-laser pulses**, Jonas Banyš, Justina Savickytė, Ona Balachninaite, Simona Armalytė, Viktorija Tamulienė, Vygandas Jarutis, Julius Vengelis, Vilnius Univ. (Lithuania) [12143-37]

12:00: **Computation of Kerr lensing effect in laser amplifiers**, Christoph Pflaum, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . [12143-38]

Lunch/Exhibition Break Wed 12:20 to 13:50

SESSION 9

LOCATION: SALON 9, NIVEAU/LEVEL 0 WED 13:50 TO 15:20

Multimode Dynamics II

Session Chair: **Katarzyna Krupa**, Institute of Physical Chemistry PAS (Poland)

13:50: **Multimode effects in nonlinear fibre optics: from telecommunications to high-harmonic generation** (*Invited Paper*), Peter Horak, Optoelectronics Research Ctr. (United Kingdom) [12143-39]

14:20: **Fast nonlinear integration of the nonlinear Schrödinger equation using a neural network**, Lauri Salmela, Tampere Univ. (Finland); Mathilde Hary, Tampere Univ. (Finland) and Institut FEMTO-ST, Univ. Bourgogne Franche-Comté (France); Mehdi Mabed, John M. Dudley, Institut FEMTO-ST, Univ. Bourgogne Franche-Comté (France); Goëry Genty, Tampere Univ. (Finland) [12143-40]

14:40: **Light propagation in disordered aperiodic Mathieu lattices generated with two different randomization methods**, Jadranka Vasiljević, Institute of Physics Belgrade (Serbia); Dejan V. Timotijević, Institute for Multidisciplinary Research, Univ. of Belgrade (Serbia); Dragana M. Jović Savić, Institute of Physics Belgrade (Serbia) [12143-41]

CONFERENCE 12143

15:00: **Suppression of filamentation in refractive index-modulated Kerr media**, Edvinas Aleksandravičius, Darius Gailevičius, Audrius Dubietis, Vilnius Univ. (Lithuania); Kęstutis Staliūnas, Vilnius Univ. (Lithuania), Institució Catalana de Recerca i Estudis Avançats (Spain), Univ. Politècnica de Catalunya (Spain) . . . [12143-42]

Coffee Break. Wed 15:20 to 15:50

SESSION 10

LOCATION: SALON 9, NIVEAU/LEVEL 0 WED 15:50 TO 17:30

Novel Materials and Sources

Session Chair: **Peter Horak**, Optoelectronics Research Ctr. (United Kingdom)

15:50: **THz generation in GaSe crystal pumped below and around the bandgap**, Dongwei Zhai, Emilie Herault, IMEP-LAHC, Univ. Savoie Mont Blanc (France); Frederic Garet, Jean-Louis Coutaz, IMEP-LAHC - Univ. Savoie Mont Blanc (France) [12143-45]

16:10: **Structural and optical properties of atomically engineered Ir/Al₂O₃ nanocomposites**, Pallabi Paul, Paul Schmitt, Friedrich-Schiller-Univ. Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany); Zilong Wang, Ludwig-Maximilians-University (Germany) and Max Planck Institute of Quantum Optics (Germany); Weiwei Li, Matthias F. Kling, Max Planck Institute of Quantum Optics (Germany) and Ludwig-Maximilians-University (Germany); Andreas Tünnermann, Adriana V. Szeghalmi, Friedrich-Schiller-Univ. Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany) [12143-46]

16:30: **Switching of ultrashort laser pulses by nonlinear optics in thin films**, Morten Steinecke, Laser Zentrum Hannover e.V. (Germany); Marco Jupé, Laser Zentrum Hannover e.V. (Germany) and Cluster of Excellence PhoenixD (Germany); Andreas Wienke, Laser Zentrum Hannover e.V. (Germany); Detlev Ristau, Institut für Quantenoptik, Leibniz Univ. Hannover (Germany) and Cluster of Excellence PhoenixD (Germany) [12143-47]

16:50: **On-chip carrier-envelope phase scanner**, Václav Hanus, Beatrix Fehér, Wigner Research Ctr. for Physics (Hungary); Zsuzsanna Pápa, Wigner Research Ctr. for Physics (Hungary) and ELI-ALPS Research Institute (Hungary); Judit Budai, ELI-ALPS Research Institute (Hungary); Pallabi Paul, Adriana V. Szeghalmi, Friedrich-Schiller-Univ. Jena (Germany); Péter Dombi, Wigner Research Ctr. for Physics (Hungary) [12143-48]

17:10: **Nonlinear passive rotation-time-symmetric system as a single photon source**, Ewelina Lange, Grzegorz Chimczak, Adam Mickiewicz Univ. (Poland) [12143-49]

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Wednesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

Propagation of broadband light pulses through LIPSS nanoripples fabricated on diamond, Daniel Talan Echarri, CERN (Switzerland) and TECNUN - Univ. de Navarra (Spain); Alejandro San-Blas, CEIT-IK4, Basque Research & Technology Alliance (Spain) and TECNUN - Univ. de Navarra (Spain); Miguel Martinez-Calderon, CERN (Switzerland); Santiago M. Olaizola, TECNUN - Univ. de Navarra (Spain) and CEIT-IK4, Basque Research & Technology Alliance (Spain); Eduardo Granados, CERN (Switzerland) [12143-52]

Investigation of femtosecond supercontinuum generation in different length photonic crystal fibers, Miglė Kuliešaitė, Jokūbas Pimpė, Vyngandas Jarutis, Julius Vengelė, Vilnius Univ. (Lithuania) [12143-54]

One- and two-photon absorption circular dichroism of optically active chiral systems, Watheq Al-Basheer, King Fahd Univ. of Petroleum & Minerals (Saudi Arabia) [12143-56]

Nonlinear optical properties of core-shell silver nanoparticles with sodium citrate and ligand claddings, Arturs Bundulis, Jelena Mikelsone, Institute of Solid State Physics, Univ. of Latvia (Latvia) [12143-57]

Nonlinear optical methacrylate-based filters for optical limiting, Jade Caillieaudeaux, Univ. de Haute Alsace (France) and French-German Research Institut of Saint-Louis (France); Christelle Delaite, Anne-Sophie Schuller, Univ. de Haute Alsace (France); Olivier Muller, Morgane Guerchou, Manon Dandois, Lionel Merlat, French-German Research Institut of Saint-Louis (France) [12143-61]

Evaluation of aerodynamic levitation laser heating technique for synthesis of silicate glasses with gold nanoparticles, Jan Baborak, Univ. of Chemistry and Technology Prague (Czech Republic); Alessio Zandona, Conditions Extrêmes et Matériaux : Haute température et Irradiation, CNRS (France); Petr Varak, Univ. of Chemistry and Technology Prague (Czech Republic); Maureen Yembele, Conditions Extrêmes et Matériaux : Haute température et Irradiation, CNRS (France); Pavla Nekvindova, Univ. of Chemistry and Technology Prague (Czech Republic); Mathieu Allix, Emmanuel Veron, Michael Pitcher, Cécile Genevois, Conditions Extrêmes et Matériaux : Haute température et Irradiation, CNRS (France) [12143-64]

Optical deep learning with nonlinear multimode signals in the time-domain, Yuval Tamir, Moti Fridman, Bar-Ilan Univ. (Israel) [12143-69]

Impact of phase modulation on the performance of photonic delay-based reservoir computing with semiconductor lasers, Ian Bauwens, Krishan Harkhoe, Vrije Univ. Brussel (Belgium); Peter Bienstman, Univ. Gent (Belgium); Guy Verschaffelt, Guy Van der Sande, Vrije Univ. Brussel (Belgium) . . . [12143-71]

Enhancement of nonlinear multiphoton processes in subwavelength resonators, Anastasia Zalogina, Pavel Tonkaev, Aditya Tripathi, Australian National Univ (Australia); Hoo-Cheol Lee, Korea University (Korea, Republic of); Luca Carletti, University of Brescia (Italy); Hong-Gyu Park, Korea University (Kiribati, Republic of); Sergey Kruk, Australian National Univ (Australia) and Paderborn University (Germany); Yuri Kivshar, Australian National Univ (Australia) [12143-72]

Effective soliton order and universal scaling laws for pulse self-compression over large dispersion variations, Pritha Dey, Vijayan C, Sivarama Krishnan, IIT Madras (India) [12143-75]

ON DEMAND PRESENTATIONS

SESSION 3

LOCATION: SALON 9, NIVEAU/LEVEL 0 MON 15:50 TO 17:40

Nonlinear Sources and Combs

Session Chair: **François Leo**, Univ. Libre de Bruxelles (Belgium)

0:00: **Optical frequency comb generation in a quasicollinear acousto-optic filter with an opto-electronic feedback loop**, Grogorii D. Slinkov, Sergey N. Mantsevich, Vladimir I. Balakshy, M. V. Lomonosov Moscow State Univ. (Russian Federation) [12143-10]

SESSION 5

LOCATION: SALON 9, NIVEAU/LEVEL 0 MON 10:50 TO 12:30

Multimode Dynamics I

Session Chair: **Peter Horak**, Optoelectronics Research Ctr. (United Kingdom)

0:00: **(2D+1) vortex solitons in two-core Kerr fibers**, Aleksei A. Kalinovich, Boris S. Bryantsev, Irina G. Zakharova, M. V. Lomonosov Moscow State Univ. (Russian Federation) [12143-20]

SESSION 6

LOCATION: SALON 9, NIVEAU/LEVEL 0 MON 13:50 TO 17:10

Nonlinear Material Systems I

Session Chair: **Thibaut Sylvestre**, FEMTO-ST (France)

0:00: **Solitons at subharmonic generation in PT-symmetric photonic systems**, Aleksei A. Kalinovich, Irina G. Zakharova, Maria Valentinovna Komissarova, M. V. Lomonosov Moscow State Univ. (Russian Federation) [12143-26]

0:00: **Two-color self-similar laser beams in active periodic structures with PT-symmetry and quadratic nonlinearity**, Aleksei A. Kalinovich, Tatiana M. Lysak, Irina G. Zakharova, M. V. Lomonosov Moscow State Univ. (Russian Federation) [12143-27]

SESSION 9

LOCATION: SALON 9, NIVEAU/LEVEL 0 MON 13:50 TO 15:20

Multimode Dynamics II

Session Chair: **Katarzyna Krupa**, Institute of Physical Chemistry PAS (Poland)

0:00: **Dynamics of localized spectral modes in random fiber Raman lasers with point-like mirror assisted feedback**, Nikolay A. Aprelov, Artem E. Kirik, Ilya D. Vatnik, Dmitry V. Churkin, Novosibirsk State Univ. (Russian Federation) . . . [12143-43]

SESSION 10

LOCATION: SALON 9, NIVEAU/LEVEL 0 MON 15:50 TO 17:30

Novel Materials and Sources

Session Chair: **Peter Horak**, Optoelectronics Research Ctr. (United Kingdom)

0:00: **Influence of Kerr nonlinearity on the formation of temporal optical-terahertz solitons**, Aleksei A. Kalinovich, M. V. Lomonosov Moscow State Univ. (Russian Federation); Sergey V. Sazonov, M. V. Lomonosov Moscow State Univ. (Russian Federation) and Russian Research Ctr. Kurchatov Institute (Russian Federation); Irina G. Zakharova, M. V. Lomonosov Moscow State Univ. (Russian Federation). [12143-44]

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

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Theory of transverse-electric electromagnetic wave propagation in a shielded circle cylindrical waveguide filled with nonlinear medium, Stanislav Tikhov, Dmitry Valovik, Penza State Univ. (Russian Federation) [12143-51]

Nonlinear spatio-temporal dynamics of guided exciton-polaritons in planar structures strongly coupled to transition metal dichalcogenide monolayers, Alexey Mikhin, Fedor A. Benimetskiy, Alexey V. Yulin, Vasily Kravtsov, Anton K. Samusev, ITMO Univ. (Russian Federation); Dmitry N. Krizhanovskii, The Univ. of Sheffield (United Kingdom) [12143-53]

Modeling of Brillouin-like amplification in rare-earth-doped optical fibers, Andrei A. Fotiadi, Univ. de Mons (Belgium) and Ioffe Physical-Technical Institute (Russian Federation) and Ulyanovsk State Univ. (Russian Federation); Dmitry A. Korobko, Igor O. Zolotovskii, Ulyanovsk State Univ. (Russian Federation) [12143-58]

Thermally-enabled excitation of platons in high-quality-factor optical microresonators, Valery Evg Lobanov, Nikita M. Kondratiev, Russian Quantum Ctr. (Russian Federation) [12143-59]

Few-cycle pulses in a nonlinear medium taking into account transitions between high-energy levels, Sergey V. Sazonov, Dmitry Yu. Zagursky, Irina G. Zakharova, M. V. Lomonosov Moscow State Univ. (Russian Federation). [12143-60]

Application of two-photon absorption technique for single-event effects simulation in silicon microelectronic devices, Andrey N. Egorov, Oleg B. Mavritskii, Alexander A. Pechenkin, Dmitry V. Savchenkov, Marta S. Kholina, National Research Nuclear Univ. MEPhI (Russian Federation) [12143-62]

Numerical investigation of broadband dual pump phase sensitive amplification in a dispersion tailored fiber, Debanuj Chatterjee, Indian Institute of Technology Madras (India); Andrey I. Konyukhov, Saratov State Univ. (Russian Federation); Alexej A. Sysoliatin, A. M. Prokhorov General Physics Institute of the RAS (Russian Federation); Deepa Venkitesh, Indian Institute of Technology Madras (India) [12143-63]

Nonlinear optical and transport phenomena in Van der Waals heterostructure of two-dimensional magnets, Gulnaz Rakhmova, ITMO Univ. (Russian Federation) [12143-65]

Collinear acousto-optic filtering of airy polychromatic light beams in lithium niobate crystals, Vasily I. Kazakov, Saint-Petersburg State Univ. of Aerospace Instrumentation (Russian Federation); Gennadiy Kulak, A. Ropot, Mozyr State Pedagogical Univ. (Belarus); Oleg V. Shakin, Saint-Petersburg State Univ. of Aerospace Instrumentation (Russian Federation) [12143-66]

The impact of the CdSe/CdS nanoplatelets colloids concentration to the optical gain, Alexander M. Smirnov, M. V. Lomonosov Moscow State Univ. (Russian Federation) and Kotelnikov Institute of Radioengineering and Electronics (Russian Federation); Vladimir N. Mantsevich, Bedil M. Saidjonov, Roman V. Vasiliev, Vladimir S. Dneprovskii, M. V. Lomonosov Moscow State Univ. (Russian Federation) [12143-68]

CONFERENCE 12144

Monday–Thursday 4–7 April 2022 • Proceedings of SPIE Vol. 12144

Biomedical Spectroscopy, Microscopy, and Imaging II

Conference Chairs: **Jürgen Popp**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Csilla Gergely**, Lab. Charles Coulomb (France)

Conference Co-Chairs: **Francesco Saverio S. Pavone**, LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy); **Laurent Cognet**, Univ. de Bordeaux (France)

Program Committee: **Peter E. Andersen**, Technical Univ. of Denmark (Denmark); **James M. Brewer**, Univ. of Glasgow (United Kingdom); **Arthur E. T. Chiou**, National Yang-Ming Univ. (Taiwan); **Jürgen W. Czarske**, TU Dresden (Germany); **Johannes F. de Boer**, Vrije Univ. Amsterdam (Netherlands); **Kishan Dholakia**, Univ. of St. Andrews (United Kingdom); **Dror Fixler**, Bar-Ilan Univ. (Israel); **Sylvain Gioux**, Univ. de Strasbourg (France); **Kirill V. Larin**, Univ. of Houston (USA); **Qingming Luo**, Hainan Univ. (China); **Thomas G. Mayerhöfer**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany); **David D. Sampson**, The Univ. of Western Australia (Australia); **Ernst H. K. Stelzer**, Johann Wolfgang Goethe-Universität Frankfurt am Main (Germany); **Hugo Thienpont**, Vrije Univ. Brussel (Belgium); **Siva Umamathy**, Indian Institute of Science (India); **I. Alex Vitkin**, Ontario Cancer Institute (Canada); **Gert von Bally**, Ctr. for Biomedical Optics and Photonics (Germany); **Brian C. Wilson**, Princess Margaret Hospital (Canada)

MONDAY 4 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 11:00

Hot Topics I

Paul Montgomery, Univ. of Strasbourg (France),
2022 Symposium Chair

9:00: **Welcome and Introduction; City of Strasbourg Welcome; Presentation of the 2022 SPIE Mozi Award to Thomas W. Ebbesen**, The Institute for Advanced Study of the Univ. of Strasbourg (USIAS) and CNRS (France); **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA), 2022 SPIE President

9:10: **Introduction to Hot Topics, Paul Montgomery**, Univ. of Strasbourg (France), 2022 Symposium Chair

9:15: **Access to photonics innovation support for European researchers and companies through ACTPHAST4R and PhotonHub Europe (Plenary)**, Hugo Thienpont, Vrije Univ. Brussel (Belgium) [12148-500]

9:30: **Quantum computing: prospects and challenges (Plenary)**, Heike Riel, IBM Research - Zürich (Switzerland) [12133-500]

10:15: **Einstein Telescope, the pioneer project for a third-generation GW observatory in Europe: science, technologies and perspectives (Plenary)**, Michele Punturo, Istituto Nazionale di Fisica Nucleare (Italy) [12139-500]

SESSION 1

LOCATION: SALON 6, NIVEAU/LEVEL 0 MON 13:30 TO 15:10

Neurophotronics I

Session Chair: **Laurent Cognet**, Univ. de Bordeaux (France)

13:30: **Custom-access serial holography for the 3D measurement of spike correlations between neurons in mouse visual cortex**, Walther Akemann, Sébastien Wolf, Ecole Normale Supérieure (France); Vincent Villette, CNRS (France); Benjamin Mathieu, Astou Tangara, INSERM (France); Jozsua Fodor, YMETRY (France); Cathie Ventalon, Jean-François Léger, CNRS (France); Stéphane Dieudonné, INSERM (France); Laurent Bourdieu, CNRS (France) [12144-1]

13:50: **Measurement of intraneuronal transport in vivo in zebrafish larvae brain by tracking nanocrystal-labelled endosomes with fast nonlinear microscopy**, Baptiste Grimaud, École normale supérieure Paris-Saclay (France); Maxence Fréaud, INRAE (France); Ferial Terras, École normale supérieure Paris-Saclay (France); Karine Duroure, Institut de la Vision (France); Valérie Bercier, KU Leuven (Belgium); Gaëlle Allard, École normale supérieure Paris-Saclay (France); Elodie Chaudan, Thierry Gacoin, Ecole Polytechnique (France); Filippo Del Bene, Institut de la Vision (France); François Marquier, École normale supérieure Paris-Saclay (France); Christelle Langevin, INRAE (France); François Treussart, École normale supérieure Paris-Saclay (France) [12144-2]

14:10: **A flexible two-photon endoscope for fast functional imaging and cell-precise optogenetic photo-stimulation of neurons in freely moving animals**, Nicolò Accanto, François Blot, Valeria Zampini, Florence Bui, Antonio Lorca Camara, Christophe Tourain, Institut de la Vision (France); Noam Badt, Ori Katz, The Hebrew Univ. of Jerusalem (Israel); Valentina Emiliani, Institut de la Vision (France) [12144-3]

14:30: **All-optical perturbational approach to study information integration among distributed cortical regions**, Francesco A. Resta, LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy) and Univ. degli Studi di Firenze (Italy); Giacomo Mazzamuto, Univ. degli Studi di Firenze (Italy) and Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy) and LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy); Emilia Conti, Anna Letizia Allegra Mascarò, LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy) and Istituto di Neuroscienze, Consiglio Nazionale delle Ricerche (Italy); Francesco Saverio S. Pavone, LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy) and Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy) [12144-4]

14:50: **An AOD breakthrough for volumetric 2P optogenetic applications**, Pietro Ricci, LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy); Marco Marchetti, Light4Tech (Italy); Michele Sorelli, Lapo Turrini, Francesco A. Resta, Vladislav Gavryusev, Giuseppe de Vito, Giuseppe Sancataldo, Francesco Vanzì, Ludovico Silvestri, Francesco Saverio S. Pavone, LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy) [12144-5]

Coffee Break Mon 15:10 to 15:40

SESSION 2

LOCATION: SALON 6, NIVEAU/LEVEL 0 MON 15:40 TO 17:20

Neurophotronics II

Session Chair: **Laurent Cognet**, Univ. de Bordeaux (France)

15:40: **Deep tissue 3D single-particle tracking using self-interference in near-infrared**, Karen Caicedo, Antony Lee, Pierre Bon, Laurent Cognet, Lab. Photonique, Numérique et Nanosciences (France) [12144-6]

16:00: **Holography-based 3D real-time single-particle tracking for intraneuronal transport characterization**, Florian Semmer, Marie-Charlotte Chandeclerc, François Treussart, Karen Perronet, François Marquier, LuMIn (France) [12144-7]

16:20: **Monitoring spinal cord injury in mice with a multimodal label-free imaging approach**, Clara Manesco, Joshua de Lizaraga, Lab. Charles Coulomb, Univ. de Montpellier, CNRS (France); Bela Varga, Lab. Charles Coulomb, Univ. de Montpellier, CNRS (France); Thierry Cloitre, Lab. Charles Coulomb, Univ. de Montpellier, CNRS (France); Marta Martin, Lab. Charles Coulomb, Univ. de Montpellier, CNRS (France); Yannick Gerber, MMDN, Univ. de Montpellier, INSERM (France); Florence Perrin, MMDN, Univ. de Montpellier, INSERM (France); Csilla Gergely, Lab. Charles Coulomb, Univ. de Montpellier, CNRS (France) [12144-8]

16:40: **Fiber-based optrodes: dual optical and electrical probe for optogenetics**, Jelena Petrovic, Fred Lange, Dennis Hohlfeld, Univ. Rostock (Germany) [12144-9]

17:00: **3D micropatterned multiphoton stimulation via deep learning-based computer-generated holography with temporal focusing confinement**, Liang-Wei Chen, Feng-Chun Hsu, Chun-Yu Lin, National Yang Ming Chiao Tung Univ. (Taiwan); Yvonne Yuling Y. Hu, National Cheng Kung Univ. (Taiwan); Shean-Jen Chen, National Yang Ming Chiao Tung Univ. (Taiwan) and Taiwan Instrument Research Institute, National Applied Research Labs. (Taiwan) [12144-10]

TUESDAY 5 APRIL

SESSION 3

LOCATION: SALON 6, NIVEAU/LEVEL 0 TUE 8:30 TO 10:10

Raman Spectroscopy and Imaging I

Session Chair: Jürgen Popp, Friedrich-Schiller-Univ. Jena (Germany)

8:30: **Effect of antibiotic resistance in E-coli using Raman spectroscopy** (*Invited Paper*), Suraj Kumar Singh, Taru Verma, Dipankar Nandi, Indian Institute of Science, Bengaluru (India); Siva Umaphathy, Indian Institute of Science Education and Research, Bhopal (India). [12144-11]

9:00: **On-the-fly Raman image microscopy by reinforcement machine learning** (*Invited Paper*), Tamiki Komatsuzaki, Koji Tabata, Hokkaido Univ. (Japan); Hiroyuki Kawagoe, Osaka Univ. (Japan); James Nicholas Taylor, Hokkaido Univ. (Japan); Kentaro Mochizuki, Kyoto Prefectural Univ. of Medicine (Japan); Toshiki Kubo, Osaka Univ. (Japan); Jean-Emmanuel Clement, Hokkaido Univ. (Japan); Yasuaki Kumamoto, Osaka Univ. (Japan); Yoshinori Harada, Kyoto Prefectural Univ. of Medicine (Japan); Atsuyoshi Nakamura, Hokkaido Univ. (Japan); Katsumasa Fujita, Osaka Univ. (Japan). [12144-12]

9:30: **Comparative analysis of red blood cell under normal and microgravity simulated conditions using optical tweezer**, Sarika Hinge, Jyotsana P. Dixit, Gauri R. Kulkarni, Pandit B. Vidyasagar, Savitribai Phule Pune Univ. (India). [12144-14]

9:50: **Electronic Raman scattering calibration for quantitative surface-enhanced Raman spectroscopy and improved biostatistical analysis**, Wonil Nam, Yuming Zhao, Xiang Ren, Masoud Agah, Inyoung Kim, Wei Zhou, Virginia Tech (USA). [12144-64]

Coffee Break. Tue 10:10 to 10:40

SESSION 4

LOCATION: SALON 6, NIVEAU/LEVEL 0 TUE 10:40 TO 12:40

Raman Spectroscopy and Imaging II

Session Chair: Siva Umaphathy, Indian Institute of Science, Bengaluru (India)

10:40: **Ultrabroadband time-domain Raman spectroscopy using synchronized mode-locked lasers** (*Invited Paper*), Kotaro Hiramatsu, The Univ. of Tokyo (Japan) and PRESTO, Japan Science and Technology Agency (Japan); Keisuke Goda, The Univ. of Tokyo (Japan) and Univ. of California, Los Angeles (USA) and Wuhan Univ. (China). [12144-16]

11:10: **Developing multimodal imaging data analysis techniques: understanding the skin biochemistry of discoid lupus erythematosus** (*Invited Paper*), Hannah U. Holtkamp, Claude Aguerarary, Michel K. Nieuwoudt, Gus Grey, The Univ. of Auckland (New Zealand); Federico Marini, Sapienza Univ. di Roma (Italy); Cather M. Simpson, The Univ. of Auckland (New Zealand); Paul Jarrett, Middlemore Hospital (New Zealand) and The Univ. of Auckland (New Zealand). [12144-17]

11:40: **Background-free stimulated Raman scattering microscopy with acousto-optic tunable filter**, Elisa Grassi, Siarhei P. Laptinok, Luca Genchi, Carlo Liberale, King Abdullah Univ. of Science and Technology (Saudi Arabia). [12144-18]

12:00: **Label-free classification of T-cell differentiation via deep learning of hyperspectral stimulated Raman scattering microscopy images**, Bryce Manifold, Dan Fu, Univ. of Washington (USA). [12144-19]

12:20: **Towards high-content cell and tissue imaging with stimulated Raman scattering microscopy**, Maximilian Brinkmann, Sven Dobner, Tim Hellwig, Niklas Lüpken, Refined Laser Systems GmbH (Germany). [12144-20]

Lunch/Exhibition Break Tue 12:40 to 13:40

SESSION 5

LOCATION: SALON 6, NIVEAU/LEVEL 0 TUE 13:40 TO 16:00

Advanced Microscopy and Imaging I

Session Chair: Tamiki Komatsuzaki, Hokkaido Univ. (Japan)

14:00: **Super-resolved imaging under total internal reflexion using random illumination microscopy (RIM)**, Kevin Affanokoué, Guillaume Maire, Institut Fresnel (France); Thomas Mangeat, Ctr. de Biologie Intégrative, Univ. de Toulouse (France); Simon Labouesse, Institut de Biologie du Développement de Marseille (France); Claire Estibal, Ctr. de Biologie Intégrative (France); Benoît Rogez, Guillaume Giroussens, Loïc Legoff, Julien Savatier, Laurent Gallais, Marc Allain, Institut Fresnel (France); Jérôme Idier, Lab. des Sciences du Numérique de Nantes (France); Anne Sentenac, Institut Fresnel (France). [12144-22]

14:20: **Axially-swept adaptive optics light sheet fluorescence microscopy for high resolution neuroimaging in the drosophila brain**, Mathias Mercier, Sophia Imperato, Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (France); Cynthia Veilly, Fabrice Harms, Imagine Optic SA (France); Alexandra Fragola, Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (France). [12144-23]

14:40: **Ultrafast light field tomography**, Jorge Tordera Mora, Liang Gao, UCLA Samueli School of Engineering (USA). [12144-24]

15:00: **Multimodal handheld endomicroscopic system designed for in vivo laser ablation and nonlinear imaging with a large field of view**, Chenting Lai, Bernhard Messerschmidt, Sven Flämig, Karl Reichwald, Grintech GmbH (Germany); Hyeonsoo Bae, Leibniz-Institut für Photonische Technologien e.V. (Germany) and Institutes für Physikalische Chemie, Friedrich-Schiller-Univ. Jena (Germany); Matteo Calvarese, Leibniz-Institut für Photonische Technologien e.V. (Germany); Tobias Meyer, Leibniz-Institut für Photonische Technologien e.V. (Germany) and Institutes für Physikalische Chemie, Friedrich-Schiller-Univ. Jena (Germany); Michael Schmitt, Institutes für Physikalische Chemie, Friedrich-Schiller-Univ. Jena (Germany); Franziska Hoffmann, Orlando Guntinas-Lichius, Universitätsklinikum Jena (Germany); Jürgen Popp, Institutes für Physikalische Chemie, Friedrich-Schiller-Univ. Jena (Germany) and Leibniz-Institut für Photonische Technologien e.V. (Germany). [12144-25]

15:20: **Needle-size fibre endoscope with 3D printed DOEs for minimally invasive procedures in biomedicine**, Elias Scharf, Robert Kuschmierz, TU Dresden (Germany); Ronja Stephan, Michael Steinke, Leibniz Univ. Hannover (Germany); Jürgen W. Czarske, TU Dresden (Germany). [12144-26]

15:40: **Dynamics of colliding homogenous and heterogenous plasmas produced by nanosecond-laser ablation**, Haider Al-Juboori, Institute of Technology Carlow (Ireland); Tom D. McCormack, Univ. College Dublin (Ireland) [12144-34]

Coffee Break. Tue 16:00 to 16:30

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:30: **Welcome and opening remarks**

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA). [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti “Eduardo Caianiello” (Italy). [12144-500]

WEDNESDAY 6 APRIL

SESSION 6

LOCATION: SALON 6, NIVEAU/LEVEL 0 WED 8:30 TO 10:30

Advanced Microscopy and Imaging II

Session Chair: Freek Ariese, Vrije Univ. Amsterdam (Netherlands)

8:30: **The study of cell death mechanisms via simultaneous Raman and transport of intensity phase-imaging techniques** (*Invited Paper*), Shane Carney, Ting C. Khoo, Univ. at Albany (USA); Jonathan Barra-Carrasco, Albany Medical College (USA); Samaneh Ghazanfarpour, Shahab B Jangjoo, Anna V. Sharikova, Univ. at Albany (USA); Margarida Barroso, Albany Medical College (USA); Supriya D. Mahajan, Univ. at Buffalo (USA); Jonathan C. Petrucci, Alexander Khmaladze, Univ. at Albany (USA). [12144-27]

9:00: **Understanding neurodegeneration in human organoid retina with optical microscopy** (*Invited Paper*), Jürgen W. Czarske, Nektarios Koukourakis, Stefan Rothe, Felix Wagner, Mike O. Karl, TU Dresden (Germany). [12144-28]

9:30: **Evaluation of microbial colony growth parameters by laser speckle imaging**, Ilya Balmages, Riga Technical Univ. (Latvia); Janis Liepins, Ernests Tomass Auzins, Anitra Zile, Institute of Microbiology and Biotechnology, Univ. of Latvia (Latvia); Dmitrijs Bliznuks, Riga Technical Univ. (Latvia); Ilze Lihacova, Alexey Lihachev, Institute of Atomic Physics and Spectroscopy, Univ. of Latvia (Latvia). [12144-30]

9:50: **Fast analysis of virus-antibody interaction by common path interferometric microscopy**, Samer Alhaddad, Houda Bey, Institut Langevin Ondes et Images, Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris, CNRS (France) and Univ. PSL (France); Pascale Boulanger, Institut de Biologie Intégrative de la Cellule, Univ. Paris-Saclay, CEA, CNRS (France); Claude Boccara, Institut Langevin Ondes et Images, Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris, CNRS (France) and Univ. PSL (France); Martine Boccara, Institut Langevin Ondes et Images, Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris, CNRS (France) and Univ. PSL (France) and Institut de biologie de l’Ecole Normale Supérieure (France); Ignacio Izeddin, Institut Langevin Ondes et Images, Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris, CNRS (France) and Univ. PSL (France). [12144-31]

CONFERENCE 12144

10:10: **Spectroscopic thermo-elastic optical coherence tomography for tissue characterization**, Aaron Doug Deen, Heleen M.M. van Beusekom, Erasmus University Medical Center (Netherlands); Tom Pfeiffer, Institut für Biomedizinische Optik (Germany); Mathijs Stam, Erasmus University Medical Center (Netherlands); Dominique de Kleijn, University Medical Center Utrecht (Netherlands); Jolanda Wentzel, Erasmus University Medical Center (Netherlands); Robert Huber, Institut für Biomedizinische Optik (Germany); Antonius F.W. van der Steen, Gijs van Soest, Tianshi Wang, Erasmus University Medical Center (Netherlands) [12144-67]
Coffee Break Wed 10:30 to 11:00

SESSION 7

LOCATION: SALON 6, NIVEAU/LEVEL 0 WED 11:00 TO 12:40

Advanced Microscopy and Imaging III

Session Chair: **Claire Lefort**, XLIM (France)

11:00: **Three-dimensional spatial bandwidth of microscope optics** (*Invited Paper*), Volodymyr N. Borovytsky, National Technical Univ. of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" (Ukraine) [12144-32]

11:30: **An instrumental and computational pipeline for visualizing free viral particles** (*Invited Paper*), Claire Lefort, Erwan Ferrandon, XLIM (France); Cecile McLaughlin, Univ. de Limoges (France) and Ctr. de Recherches Sémiotiques (France); Emilie Chouzenoux, Center for Visual Computing, OPIS Group (France) and CentraleSupélec (France); Sophie Alain, Univ. de Limoges (France) and RESINFIT UMR-S 1092, INSERM (France) and Ctr. Hospitalier Univ. de Limoges (France) [12144-35]

12:00: **A miniaturized chip for 3D optical imaging of tissue regeneration in vivo**, Laura Sironi, Univ. degli Studi di Milano-Bicocca (Italy); Claudio Conci, Lorenzo Gentili, Politecnico di Milano (Italy); Mario Marini, Univ. degli Studi di Milano-Bicocca (Italy); Margaux Bouzin, Univ. degli Studi di Milano-Bicocca (Italy); Rebeca Martínez Vázquez, CNR-Istituto di Fotonica e Nanotecnologie (Italy); Emanuela Jacchetti, Giulio Cerullo, Politecnico di Milano (Italy); Roberto Osellame, CNR-Istituto di Fotonica e Nanotecnologie (Italy) and Politecnico di Milano (Italy); Maria Farsari, Elmina Kabouraki, Foundation for Research and Technology-Hellas (Greece); Anthi Ranella, Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas (Greece); Laura D'Alfonso, Univ. degli Studi di Milano-Bicocca (Italy); Nikos Kehagias, Nanotypos (Greece); Maddalena Collini, Giuseppe Chirico, Univ. degli Studi di Milano-Bicocca (Italy); Manuela Teresa Raimondi, Politecnico di Milano (Italy) . . [12144-36]

12:20: **Raman and stimulated Raman scattering characterization of Alzheimer's disease brain tissue**, Freek Ariese, LaserLaB, Vrije Universiteit Amsterdam (Netherlands); Benjamin Lochock, Loes Ettema, LaserLaB (Netherlands); Jeroen J.H. Hoozemans, Amsterdam UMC, Dept Pathology (Netherlands); Johannes F. De Boer, LaserLaB (Netherlands) [12144-68]

Lunch/Exhibition Break Wed 12:40 to 14:10

SESSION 8

LOCATION: SALON 6, NIVEAU/LEVEL 0 WED 14:10 TO 15:10

Multiphoton Microscopy I

Session Chair: **Shane Carney**, Univ. at Albany (USA)

14:10: **To Improve in-vivo drosophila brain images of fast temporal focusing multiphoton microscopy by multistage U-Net image restoration**, YuHao Tseng, National Yang Ming Chiao Tung Univ. (Taiwan); Yvonne Yuling Y. Hu, National Cheng Kung Univ. (Taiwan); Chia-Wei Hsu, Chun-Yu Lin, National Yang Ming Chiao Tung Univ. (Taiwan); Hsueh-Cheng Chiang, National Cheng Kung Univ. (Taiwan); Shean-Jen Chen, National Yang Ming Chiao Tung Univ. (Taiwan) and National Applied Research Labs., Taiwan Instrument Research Institute (Taiwan) [12144-37]

14:30: **Investigation of tumor extracellular matrix using polarimetric second-harmonic generation microscopy and texture analysis**, Viktoras Mazeika, Mykolas Maciulis, Laser Research Ctr., Vilnius Univ. (Lithuania); Lukas Kontenis, Laser Research Ctr., Vilnius Univ. (Lithuania), Light Conversion Ltd. (Lithuania); Edvardas Zurauskas, Vilnius Univ. (Lithuania); Martynas Riauka, Mehdi Alizadeh, Laser Research Ctr., Vilnius Univ. (Lithuania); Kamdin Mirsanaye, Univ. of Toronto (Canada); Virginijus Barzda, Laser Research Ctr., Vilnius Univ. (Lithuania), Univ. of Toronto (Canada) [12144-38]

14:50: **Investigation of melanoma tissue with nonlinear multimodal polarimetric microscopy using texture analysis and machine learning**, Martynas Riauka, Viktoras Mazeika, Mykolas Maciulis, Vilnius Univ. (Lithuania); Lukas Kontenis, Light Conversion Ltd. (Lithuania); Edvardas Zurauskas, Mehdi Alizadeh, Vilnius Univ. (Lithuania); Kamdin Mirsanaye, Virginijus Barzda, Univ. of Toronto (Canada) [12144-39]

Coffee Break Wed 15:10 to 15:40

SESSION 9

LOCATION: SALON 6, NIVEAU/LEVEL 0 WED 15:40 TO 17:30

Optical Coherence Tomography

Session Chair: **Jürgen W. Czarke**, TU Dresden (Germany)

15:40: **A longitudinal study of cervical tissue composition changes during normal pregnancy in mice using spectroscopic photoacoustic** (*Invited Paper*), Yan Yan, Jose Galaz, Maryam Basij, Wayne State Univ. (USA); Steven Yellon, Loma Linda University (USA); Nardhy Gomez-Lopez, Mohammad Mehrmohammadi, Wayne State Univ. (USA) [12144-40]

16:10: **Dental radiography optimization using OCT**, Ralph-Alexandru Erdelyi, Univ. Politehnica Timisoara (Romania); Virgil-Florin Duma, Univ. "Aurel Vlaicu" din Arad (Romania); Cosmin Sinescu, Univ. de Medicina si Farmacie "Victor Babes" din Timisoara (Romania); George M. Dobre, Adrian Bradu, Adrian G. H. Podoleanu, Univ. of Kent (United Kingdom) [12144-41]

16:30: **GaAsBi light emitting diodes for 1050nm broadband light sources**, Thomas B. Rockett, Nada A. Adham, Matthew Carr, John P. R. David, Robert D. Richards, The Univ. of Sheffield (United Kingdom) [12144-42]

16:50: **Bone perfusion evaluation in high-energy fracture model of orthopaedic trauma with dynamic contrast-enhanced fluorescence imaging and optical coherence tomography**, Valentin V. Demidov, Geisel School of Medicine, Dartmouth College (USA); Megan Clark, Petr Bruza, Thayer School of Engineering at Dartmouth (USA); I. Leah Gitajn, Dartmouth-Hitchcock Medical Ctr. (USA); Jonathan T. Elliott, Geisel School of Medicine, Dartmouth College (USA) [12144-43]

17:10: **Optical coherence tomography guided Brillouin microscopy to study early embryonic development**, Yogeshwari S. Ambekar, Manmohan Singh, Alexander W. Schill, Univ. of Houston (USA); Jitao Zhang, Wayne State University (USA); Christian Zevallos Delgado, Behzad Khajavi, Salavat R. Aglyamov, Univ. of Houston (USA); Richard H. Fennell, Baylor College of Medicine (USA); Giuliano Scarcelli, Univ. of Maryland, College Park (USA); Kirill V. Larin, Univ. of Houston (USA) [12144-44]

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Wednesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

Macular edema degeneration classification on OCT and fundus images with portable platform based on artificial intelligence methods, Loredana Buzura, Monica Loredana Budileanu, Radu Papara, Univ. Tehnica din Cluj Napoca (Romania); Horea Demea, OftaReview Ctr. de Investigatii (Romania); Ramona M. Galatus, Univ. Tehnica din Cluj Napoca (Romania) [12144-52]

Automatic cell identification and analysis on in vivo reflectance confocal microscopy images of the human epidermis, Imane Lboukili, Johnson & Johnson Santé Beauté France SAS (France); Xavier Descombes, Institut National de Recherche en Informatique et en Automatique, Univ. Côte d'Azur, CNRS (France) and Lab. d'Informatique, Signaux et Systèmes de Sophia Antipolis (France); Georgios N. Stamatas, Johnson & Johnson Santé Beauté France SAS (France) [12144-61]

3D molecular phenotyping of the human brain Broca's area using light-sheet fluorescence microscopy, Marina Scardigli, Univ. degli Studi di Firenze (Italy) and LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy); Irene Costantini, Univ. degli Studi di Firenze (Italy) and LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy) and Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy); Niameh Brady, Mohamed Baghdad, LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy); Josephine Ramazzotti, Giacomo Mazzamuto, Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy) and LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy); Filippo Maria Castelli, LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy); Curzio Checcucci, Univ. degli Studi di Firenze (Italy) and LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy); Ludovico Silvestri, Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy) and Univ. degli Studi di Firenze (Italy); Paolo Frasconi, Univ. degli Studi di Firenze (Italy); Francesco Saverio S. Pavone, Univ. degli Studi di Firenze (Italy) and LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy) and Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy) [12144-62]

Monitoring dynamic collagen reorganization in human dermis during uniaxial stretching with second/third harmonic generation microscopy, Mengyao Zhou, Ludo van Haastrecht, Yuanyuan Ma, Vrije university Amsterdam (Netherlands); Frank van Mourik, Flash Pathology (Netherlands); Paul van Zuijlen, Amsterdam UMC (Netherlands); Marie Louise Groot, Vrije university Amsterdam (Netherlands) [12144-66]

Unsupervised unmixing of hyperspectral Raman datasets with the RamanLIGHT app, Robert W Schmidt, Vrije Universiteit Amsterdam (Netherlands); Sander Woutersen, University of Amsterdam (Netherlands); Freek Ariese, Vrije Universiteit Amsterdam (Netherlands) [12144-69]

Label-free stimulated Raman scattering imaging utilized for correlating silicone content in breast tissue with capsular contracture in an intra-patient study, Liron Zada, VU Amsterdam (Netherlands); Ludo van Haasterecht M.D., VUmc Amsterdam (Netherlands); Robert W Schmidt, VU Amsterdam (Netherlands); Erik de Bakker M.D., VUmc Amsterdam (Netherlands); Marie Louise Groot, Freek Ariese, VU Amsterdam (Netherlands) [12144-70]

Stimulated Raman scattering simulation for imaging optimization, Liron Zada, Bart Fokker, Hechter A Leslie, VU Amsterdam (Netherlands); Dick Vethaak, VU Amsterdam (Netherlands) and deltares (Netherlands); Johannes F de Boer, Freek Ariese, VU Amsterdam (Netherlands) [12144-71]

Instant histopathological assessment of fresh lung biopsies taken for diagnosing interstitial lung diseases using third and second harmonic generation microscopy, Laura M.G. van Huizen, Vrije Universiteit Amsterdam (Netherlands); Kirsten A. Kalverda, Amsterdam Universitair Medische Centra (Netherlands); Venerino Poletti, Ospedale GB Morgagni (Italy); Peter I Bonta, Chris Dickhoff, Amsterdam Universitair Medische Centra (Netherlands); Frank van Mourik, Flash Pathology B.V. (Netherlands); Jouke T Annema, Amsterdam Universitair Medische Centra (Netherlands); Marloes Groot, Vrije Universiteit Amsterdam (Netherlands) [12144-72]

THURSDAY 7 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 10:35

Hot Topics III

Thierry Georges, Oxxius (France), 2022 Symposium Chair

9:00: **Welcome and opening remarks**

9:05: **A sneak peek with light into opaque materials: from imaging to computing** (*Plenary*), Sylvain Gigan, Lab. Kastler Brossel (France) [12136-500]

9:50: **Active metasurfaces empowered by two-dimensional materials** (*Plenary*), Isabelle Staude, Friedrich-Schiller-Univ. Jena (Germany) [12130-500]

Coffee Break Thu 10:35 to 11:00

SESSION 10

LOCATION: SALON 6, NIVEAU/LEVEL 0 THU 11:00 TO 13:00

Multiphoton Microscopy II

Session Chair: **Mohammad Mehrmohammadi**, Wayne State Univ. (USA)

11:00: **In vivo 3D imaging in drosophila brain using rapid dual-resonant volumetric multiphoton microscopy with deep restoration**, Chia Wei Hsu, Chi-Yu Wang, Chun-Yu Lin, National Yang Ming Chiao Tung Univ. (Taiwan); Yvonne Yuling Hu, Chun-Yuan Wu, Hsueh-Cheng Chiang, National Cheng Kung Univ. (Taiwan); Shean-Jen Chen, National Yang Ming Chiao Tung Univ. (Taiwan) and National Applied Research Labs., Taiwan Instrument Research Institute (Taiwan) [12144-46]

11:20: **A direct wavefront sensing device resilient to scattering for use in adaptive optics two-photon microscopy of the mouse brain**, Sophia Imperato, Lab. de Physique et d'Etude des Matériaux, Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris, CNRS (France) and Univ. PSL (France); Fabrice Harms, Cynthia Veilly, Imagine Optic SA (France); Mathias Mercier, Lab. de Physique et d'Etude des Matériaux, Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris, CNRS (France) and Univ. PSL (France); Laurent Bourdieu, Institut de biologie de l'Ecole Normale Supérieure, Univ. PSL, INSERM, CNRS (France); Alexandra Fragola, Lab. de Physique et d'Etude des Matériaux, Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris, CNRS (France) and Univ. PSL (France) [12144-47]

11:40: **Analysis of collagen types I & II at bone fracture healing tissue using polarization SHG**, Anupama Nair, National Yang Ming Chiao Tung Univ. (Taiwan); Shu-Chun Chuang, Yi-Shan Lin, Chung-Hwan Chen, Kaohsiung Medical Univ. (Taiwan); Chi-Hsiang Lien, National United Univ. (Taiwan); Shean-Jen Chen, National Yang Ming Chiao Tung Univ. (Taiwan) [12144-48]

12:00: **In vivo biophotonic analysis of preimplantation embryonic development**, Irina V. Larina, Baylor College of Medicine (USA) [12144-49]

12:20: **Revealing chirality of biological structures using different polarimetric SHG microscopy techniques**, Mehdi Alizadeh, Viktoras Mažeika, Mykolas Maciulis, Martynas Riauka, Vilnius Univ. (Lithuania); Virginijus Barzda, Univ. of Toronto Mississauga (Canada), Vilnius Univ. (Lithuania), Univ. of Toronto (Canada) [12144-50]

12:40: **Focal field engineered infrared-sensitive third-order sum frequency generation microscopy**, Jyothsna Konkada Manattayil, A.S. Lal Krishna, Indian Institute of Science, Bengaluru (India); Hyunmin Kim, Daegu Gyeongbuk Institute of Science & Technology (Korea, Republic of); Varun Raghunathan, Indian Institute of Science, Bengaluru (India) [12144-51]

ON DEMAND PRESENTATIONS

SESSION 3

LOCATION: SALON 6, NIVEAU/LEVEL 0 MON 8:30 TO 10:10

Raman Spectroscopy and Imaging I

Session Chair: **Jürgen Popp**, Friedrich-Schiller-Univ. Jena (Germany)

0:00: **Soft tissue tumor size prediction using precise fiber-optic Raman probes: in silico investigations**, Subitcha Jayasankar, Sujatha N., Indian Institute of Technology Madras (India) [12144-13]

0:00: **Detection of influenza A and B viruses in a buffer medium using SERS method and machine learning technologies**, Artem Tabarov, Vladimir V. Vitkin, ITMO Univ. (Russian Federation); Daria Danilenko, Smorodintsev Research Institute of Influenza (Russian Federation); Evgeniy Popov, Alexander Dobroslovina, Olga Andreeva, Arina Shemanaeva, Valeriia Kurikova, Olga Kuznetsova, ITMO Univ. (Russian Federation) [12144-15]

SESSION 7

LOCATION: SALON 6, NIVEAU/LEVEL 0 MON 11:00 TO 12:40

Advanced Microscopy and Imaging III

Session Chair: **Claire Lefort**, XLIM (France)

0:00: **Development of images multispectral processing for the skin cancer early diagnostics**, Boris S. Gurevich, Kirill V. Zaitchenko, Institute for Analytical Instrumentation (Russian Federation) [12144-33]

SESSION 9

LOCATION: SALON 6, NIVEAU/LEVEL 0 MON 15:40 TO 17:30

Optical Coherence Tomography

Session Chair: **Jürgen W. Czarske**, TU Dresden (Germany)

0:00: **Machine learning classifiers for noninvasive glucose detection using a single wavelength mid-infrared photoacoustic spectroscopy**, Abdulrahman Aloraynan, Univ. of Waterloo (Canada) and Umm Al-Qura Univ. (Saudi Arabia); Shazzad Rassel, Chao Xu, Dayan Ban, Univ. of Waterloo (Canada) [12144-45]

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Wednesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

Label-free holographic registration of perinuclear peculiarities during PpIX-induced death of HeLa cells, Daria A. Gorbenko, ITMO Univ. (Russian Federation); Andrey V. Belashov, Irina V. Semenova, Ioffe Institute (Russian Federation); Iliya K. Litvinov, Institute of Cytology (Russian Federation); Oleg S. Vasyutinskii, Ioffe Institute (Russian Federation); Tatyana N. Belyaeva, Anna V. Salova, Institute of Cytology (Russian Federation) [12144-53]

Intracellular accumulation, localization, and fluorescence specifics of radachlorin photosensitizer in HeLa cells, Anna A. Zhikhoreva, Andrey V. Belashov, Ioffe Institute (Russian Federation); Iliya Litvinov, Anna V. Salova, Tatyana N. Belyaeva, Elena S. Kornilova, Institute of Cytology (Russian Federation); Irina V. Semenova, Oleg S. Vasyutinskii, Ioffe Institute (Russian Federation) [12144-54]

Analysis of Raman spectra using the multivariate curve resolution-alternating least squares (MCR-ALS) algorithm, Irina Matveeva, Yulia A. Khristoforova, Lyudmila A. Bratchenko, Valery P. Zakharov, Samara Univ. (Russian Federation) [12144-55]

Multivariate analysis of Raman features of the skin to study the metabolism of the human body, Lyudmila A. Bratchenko, Ivan A. Bratchenko, Yulia A. Khristoforova, Samara Univ. (Russian Federation); Daria Y. Konovalova, Alexander A. Moryatov, Sergey V. Kozlov, Peter A. Lebedev, Samara State Medical Univ. (Russian Federation); Valery P. Zakharov, Samara Univ. (Russian Federation) [12144-56]

Optical modeling of compact Raman biomedical probe for endoscopic applications, Anastasia A. Shatskaya, Yulia A. Frolova, Dmitry N. Artyemyev, Samara Univ. (Russian Federation) [12144-57]

Helicobacter pylori diagnosis by Raman spectroscopy, Evgeniy Popov, Anton Polishchuk, Artem Tabarov, Valeriia Kurikova, Anton V. Kovalev, Vladimir V. Vitkin, ITMO Univ. (Russian Federation) [12144-58]

CONFERENCE 12144

Combination of the Raman and autofluorescence spectroscopy with cancer growth risk factors for skin cancer detection, Yulia A. Khristoforova, Ivan A. Bratchenko, Lyudmila A. Bratchenko, Samara Univ. (Russian Federation); Alexandr A. Moryatov, Sergey V. Kozlov, Samara State Medical Univ. (Russian Federation); Valery P. Zakharov, Samara Univ. (Russian Federation)[12144-59]

Molecular simulations for investigation of optical field influence on energy and dipole moment of biomolecules, Elina K. Nepomnyashchaya, Maksim A. Baranov, Elena N. Velichko, Peter the Great Saint-Petersburg Polytechnic Univ. (Russian Federation)[12144-63]

Plasmonic tags designed for SERS mapping of tissue using medical red lasers, Vasilisa O Svinko, Alisa I Shevchuk, Aleksei N Smirnov, Vladimir V Sharoiko, Elena V Solovyeva, Saint-Petersburg State University, Institute of Chemistry (Russian Federation)[12144-65]

CONFERENCE 12145

Wednesday–Thursday 6–7 April 2022 • Proceedings of SPIE Vol. 12145

Biophotonics in Point-of-Care II

Conference Chairs: **Michael T. Canva**, CNRS (France); **Ambra Giannetti**, Istituto di Fisica Applicata “Nello Carrara”–CNR (Italy); **Hatice Altug**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Julien Moreau**, Institut d’Optique Graduate School (France)

Program Committee: **Francis Berghmans**, Vrije Univ. Brussel (Belgium); **Jakub Dostálek**, AIT Austrian Institute of Technology GmbH (Austria); **Laura M. Lechuga Gómez**, Institut Català de Nanociència i Nanotecnologia (Spain); **Thierry Livache**, Aryballe Technologies (France); **Boris Mizaikoff**, Univ. Ulm (Germany); **Genni Testa**, IREA–CNR (Italy); **Nathalie Vermeulen**, Vrije Univ. Brussel (Belgium); **Bruno Wacogne**, Femto-st (France)

WEDNESDAY 6 APRIL

SESSION 1

LOCATION: SALON 10, NIVEAU/LEVEL 0 WED 8:30 TO 10:30

Applications of POCT I

Session Chair: **Michael T. Canva**, Univ. de Sherbrooke (Canada)

8:30: **Mid-infrared biophotonics: from precision diagnostics to in vivo applications** (*Invited Paper*), Boris Mizaikoff, Univ. Ulm (Germany) ... [12145-1]

9:10: **An all optical device for the measurement of esophageal pressure, bile and pH**, Francesco Baldini, Francesco Chiavaioli, Giovanni Bartolozzi, Istituto di Fisica Applicata “Nello Carrara” (Italy); Kerstin Schroeder, Tobias Habisreuther, Leibniz-Institut für Photonische Technologien e.V. (Germany); Martin Hahn, Martin Satzke, OSCOMED GmbH (Germany); Steffen Goerlich, Johannes Gäbler, JETI Technische Instrumente GmbH (Germany); Antonio Taddei, Univ. degli Studi di Firenze (Italy); Paolo Cecchi, Cecchi s.r.l. (Italy); Dario Bovio, Biocubica S.r.l. (Italy) [12145-2]

9:30: **Portable optical biosensor with plasmonic-based sensing for quantitative detection of multiple analytes from milk**, Margherita Bolognesi, Mario Prosa, Consiglio Nazionale delle Ricerche (Italy); Michael Toerker, Fraunhofer-Institut für Organische Elektronik, Elektronenstrahl- und Plasmatechnik FEP (Germany); Laura Lopez-Sanchez, Plasmore S.r.l. (Italy); Emilia Benvenuti, Consiglio Nazionale delle Ricerche (Italy); Paola Pellacani, Plasmore S.r.l. (Italy); Alexander Elferink, Wageningen Food Safety Research (Netherlands); Andreas Morschhauser, Fraunhofer-Institut für Elektronische Nanosysteme ENAS (Germany); Etienne Haenni, David Kallweit, Ctr. Suisse d’Electronique et de Microtechnique SA (Switzerland); Claudia Keibler-Willner, Fraunhofer-Institut für Organische Elektronik, Elektronenstrahl- und Plasmatechnik FEP (Germany); Franco Marabelli, Univ. degli Studi di Pavia (Italy); Jeroen Peters, Wageningen Food Safety Research (Netherlands); Stefano Toffanin, Consiglio Nazionale delle Ricerche (Italy) [12145-3]

9:50: **Photonic- and plasmonic-encoded microlenses for monitoring pathogens on surfaces by exploiting fluorescence microscopy with a smartphone** (*Invited Paper*), Giuseppe Barillaro, Univ. di Pisa (Italy) ... [12145-4]

Coffee Break Wed 10:30 to 11:00

SESSION 2

LOCATION: SALON 10, NIVEAU/LEVEL 0 WED 11:00 TO 12:20

Photonic and Nanophotonic Sensing Means I

Session Chair: **Julien Moreau**, Institut d’Optique Graduate School (France)

11:00: **SPR and SERS sensors for serological assays of COVID-19 antibodies** (*Invited Paper*), Jean-François Masson, Maryam Hojjat Jodaylami, Pierre Ricard, Malama Chisanga, Hannah Williams, Julien Coutu, Univ. de Montréal (Canada) [12145-5]

11:40: **A new approach to quantitative SERS with high sensitivity: vertical gap control**, Samir Adhikari, Minjun Kim, Chungnam National Univ. (Korea, Republic of); Jong-Min Lee, Hallym Univ. (Korea, Republic of); Yudong Jang, Donghan Lee, Chungnam National Univ. (Korea, Republic of) [12145-6]

12:00: **One- and two-photon crosslinked polymer hydrogel microstructures for optical spectroscopy and biosensing applications**, Yevhenii M. Morozov, AIT Austrian Institute of Technology GmbH (Austria) and Institute for Information Recording (Ukraine); Nestor Gisbert Quilis, AIT Austrian Institute of Technology GmbH (Austria); Fiona Diehl, Sven Klees, Jonas Grün, Ulrich Jonas, Univ. Siegen (Germany); Jakub Dostálek, AIT Austrian Institute of Technology GmbH (Austria) and Institute of Physics of the CAS, v.v.i. (Czech Republic) [12145-7]

Lunch/Exhibition Break Wed 12:20 to 13:30

SESSION 3

LOCATION: SALON 10, NIVEAU/LEVEL 0 WED 13:30 TO 15:10

Photonic and Nanophotonic Sensing Means II

Session Chair: **Ambra Giannetti**, Istituto di Fisica Applicata “Nello Carrara” (Italy)

13:30: **Plasmonic biosensors for medical diagnostics** (*Invited Paper*), Jiří Homola, Marketa Bockova, Tomas Springer, Jiri Slaby, Institute of Photonics and Electronics CAS (Czech Republic) [12145-8]

14:10: **Imaging an odor: from plasmonic-based device to an array of Mach Zehnder Interferometers**, Cyril Herrier, Nevena Morel, Romain Dubreuil, Jie Liu, Bertrand Gautheron, Aryballe Technologies (France); Loic Laplatine, CEA-LETI-DOPT (France); Tristan Rousselle, Thierry Livache, Aryballe Technologies (France) [12145-9]

14:30: **Rolling circle amplification tailored for plasmonic biosensors**, Katharina Schmidt, Bernadette Lechner, Simone Hageneder, Yasaman Ahmadi, AIT Austrian Institute of Technology GmbH (Austria); Maria Minunni, Univ. degli Studi di Firenze (Italy); Erik Reimhult, Univ. für Bodenkultur Wien (Austria); Ivan Barišič, Jakub Dostálek, AIT Austrian Institute of Technology GmbH (Austria) ... [12145-10]

14:50: **All-dielectric crescent silicon metasurface towards bioassays**, Juan Wang, Ludwig-Maximilians-Univ. München (Germany) [12145-11]

Coffee Break Wed 15:10 to 15:40

SESSION 4

LOCATION: SALON 10, NIVEAU/LEVEL 0 WED 15:40 TO 17:50

Enabling Technologies for Lab-on-a-Chip

Session Chair: **Ambra Giannetti**, Istituto di Fisica Applicata “Nello Carrara” (Italy)

15:40: **Thin Film Sensing by Metal-Insulator-Metal Plasmonic Structures** (*Invited Paper*), Zouheir Sekkat, Moroccan Foundation for Advanced Science, Innovation and Research (Morocco); Siham Refki, shinji hayashi, Moroccan Foundation for Advanced Science (Morocco) [12145-12]

16:20: **Gold surface bio-engineering: a chemical perspective** (*Invited Paper*), Syed Hars Hussain, Univ Lyon, Ecole Centrale de Lyon, CNRS, INSA Lyon, Université Claude Bernard Lyon 1, CPE Lyon, CNRS (France) and Univ Lyon, Université Claude Bernard Lyon 1, CNRS, INSA Lyon, Ecole Centrale de Lyon, CPE Lyon, INL, (France); Thomas Géhin, Univ Lyon, CNRS, INSA Lyon, Ecole Centrale de Lyon, Université Claude Bernard Lyon 1, CPE Lyon, INL, (France); Christelle Yeromonahos, Virginie Monnier, Magali Phaner-Goutorbe, Univ Lyon, Ecole Centrale de Lyon, CNRS, INSA Lyon, Université Claude Bernard Lyon 1, CPE Lyon, CNRS (France); Anne Laure Deman, Univ Lyon, Université Claude Bernard Lyon 1, CNRS, INSA Lyon, Ecole Centrale de Lyon, CPE Lyon, INL, (France); Emmanuelle Laurenceau, Jean-Pierre Cloarec, Univ Lyon, Ecole Centrale de Lyon, CNRS, INSA Lyon, Université Claude Bernard Lyon 1, CPE Lyon, CNRS (France); Yann Chevolot, INL UMR 5270- Univ. Lyon CNRS, Ecole Centrale de Lyon (France) [12145-13]

17:00: **Fiber optic probe with antifouling polymer brush biointerface for bi-modal biosensing in complex liquid samples**, Roger Hasler, AIT Austrian Institute of Technology GmbH (Austria); Ivana Víssová, Markéta Vrabcová, Milan Houska, Monika Spasovová, Hana Lísalová, Institute of Physics of the CAS, v.v.i. (Czech Republic); Jakub Dostálek, Institute of Physics of the CAS, v.v.i. (Czech Republic) and AIT Austrian Institute of Technology GmbH (Austria) [12145-14]

17:20: **Open microfluidic point-of-care diagnostic platform with freely configurable detection unit** (*Invited Paper*), Claudia Gärtner, Richard Klemm, Christian Moche, Nadine Hlawatsch, Holger Becker, microfluidic ChipShop GmbH (Germany) [12145-16]

CONFERENCE 12145

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

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Poster Setup: Wednesday 10:00 to 17:00

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<https://spie.org/EPE/Poster-Guidelines>

Electrochemical plasmonic optical fiber grating biosensor for cancer biomarker detection, Maxime Lobry, Médéric Loyez, Marc Debligny, Karima Chah, Univ. de Mons (Belgium); Erik Goormaghtigh, Univ. Libre de Bruxelles (Belgium); Christophe Caucheteur, Univ. de Mons (Belgium) [12145-22]

THURSDAY 7 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 10:35

Hot Topics III

Thierry Georges, Oxxius (France), 2022 Symposium Chair

9:00: **Welcome and opening remarks**

9:05: **A sneak peek with light into opaque materials: from imaging to computing** (*Plenary*), Sylvain Gigan, Lab. Kastler Brossel (France) . [12136-500]

9:50: **Active metasurfaces empowered by two-dimensional materials** (*Plenary*), Isabelle Staude, Friedrich-Schiller-Univ. Jena (Germany) . [12130-500]

Coffee Break Thu 10:35 to 11:10

SESSION 5

LOCATION: SALON 10, NIVEAU/LEVEL 0 THU 11:10 TO 12:30

Applications of POCT II

Session Chair: **Julien Moreau**, Institut d'Optique Graduate School (France)

11:10: **Chemical and biochemical sensing meet optics: a successful marriage in POCT** (*Invited Paper*), Francesco Baldini, Istituto di Fisica Applicata "Nello Carrara" (Italy) [12145-15]

11:50: **Biosensing platform on optical fibre tip for lysozyme detection**, Alain Castaño, Advanced Optical Technologies S.L. (Spain) and Univ. del País Vasco (Spain); Javier Barroso, Tecnalia (Spain); Raúl J. Martín-Palma, Univ. Autónoma de Madrid (Spain); Iker García, Advanced Optical Technologies S.L. (Spain); Joseba Zubia, Oskar Arribabalaga, Univ. del País Vasco (Spain) [12145-17]

Lunch Break Thu 12:30 to 13:40

SESSION 6

LOCATION: SALON 10, NIVEAU/LEVEL 0 THU 13:40 TO 15:40

Applications of POCT III

Session Chair: **Michael T. Canva**, Univ. de Sherbrooke (Canada)

13:40: **Semiconductor photonic biosensor for quasi-continuous monitoring of environmental water for the presence of pathogenic bacteria** (*Invited Paper*), Jan J. Dubowski, Univ. de Sherbrooke (Canada) [12145-19]

14:20: **Surface plasmon resonance for the in situ detection of metallic ions in ocean**, Lionel Lartigue, Lab. Charles Fabry (France) and Institut d'Optique Graduate School (France) [12145-20]

14:40: **Mirroring action potentials: noninvasive recording of cell electrical activities** (*Invited Paper*), Francesco Tantussi, Giuseppina Iachetta, Aliaksandr Hubarevich, Michele Dipalo, Francesco De Angelis, Istituto Italiano di Tecnologia (Italy) [12145-21]

15:20: **Tapered tip optical fiber refractometer with dramatically enhanced sensitivity**, Hamed Nikbakht, Vrije University Amsterdam (Netherlands); Mert Yusuf Erdolu, Koc University (Turkey); Chunyu Lu, Vrije University Amsterdam (Netherlands); Bob van Someren, Elf Software (Netherlands); B. Imran Avci, Vrije University Amsterdam (Netherlands) [12145-29]

ON DEMAND PRESENTATIONS

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

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Development of multicomponent probes for visual detection of structured RNA and single-stranded DNA analytes, Daria A. Gorbenko, Maria S. Rubel, Liubov A. Shkodenko, ITMO Univ. (Russian Federation) [12145-23]

Joint methodology based on optical densitometry and dynamic light scattering for liver function assessment, Ekaterina A. Savchenko, Ilya N. Kolokolnikov, Elina K. Nepomnyashchaya, Elena N. Velichko, Peter the Great Saint-Petersburg Polytechnic Univ. (Russian Federation) [12145-24]

Evaluation of mesh accuracy for flow modeling using the finite element method, Jim Corman-Hijar, Ruth E. Rubio-Noriega, Maria A. Alvarado, Instituto Nacional de Investigación y Capacitación de Telecomunicaciones (Peru) and Univ. Nacional de Ingeniería (Peru) [12145-25]

Portable SPR biosensor for microbial water monitoring, Genni Testa, Istituto per il Rilevamento Elettromagnetico dell'Ambiente (Italy); Favia Squeglia, Istituto di Biostrutture e Bioimmagini (Italy); Daniela Marasco, Univ. degli Studi di Napoli Federico II (Italy); Rita Berisio, Istituto di Biostrutture e Bioimmagini (Italy); Romeo Bernini, Istituto per il Rilevamento Elettromagnetico dell'Ambiente (Italy) [12145-26]

Autonomous UV fluorescence sensor for marine water monitoring, Gianluca Persichetti, Genni Testa, Romeo Bernini, Istituto per il Rilevamento Elettromagnetico dell'Ambiente (Italy) [12145-27]

CONFERENCE 12146

Monday-Tuesday 4-5 April 2022 • Proceedings of SPIE Vol. 12146

Clinical Biophotonics II

Conference Chairs: Daniel S. Elson, Imperial College London (United Kingdom); Sylvain Gioux, Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France); Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA)

Program Committee: Arjen Amelink, TNO (Netherlands); Albert Claude Boccara, Institut Langevin Ondes et Images (France); Irving J. Bigio, Boston Univ. (USA); Olga M. Conde, Univ. de Cantabria (Spain); Gooitzen M. van Dam, Univ. Medical Ctr. Groningen (Netherlands); Hamid Dehghani, The Univ. of Birmingham (United Kingdom); Michele Diana, L'Institut hospitalo-universitaire de Strasbourg (France); Turgut Durduran, ICFO - Institut de Ciències Fotòniques (Spain); Michalina J. Gora, Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France); Frédéric Leblond, Polytechnique Montréal (Canada); Vasilis Ntziachristos, Technische Univ. München (Germany); Antonio Pifferi, Politecnico di Milano (Italy); David D. Sampson, Univ. of Surrey (United Kingdom); Paola Taroni, Politecnico di Milano (Italy); Ton G. van Leeuwen, Amsterdam UMC (Netherlands); Alexander L. Vahrmeijer, Leiden Univ. Medical Ctr. (Netherlands)

MONDAY 4 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 11:00

Hot Topics I

Paul Montgomery, Univ. of Strasbourg (France),
2022 Symposium Chair

9:00: **Welcome and Introduction; City of Strasbourg Welcome; Presentation of the 2022 SPIE Mozi Award to Thomas W. Ebesen**, The Institute for Advanced Study of the Univ. of Strasbourg (USIAS) and CNRS (France), Anita Mahadevan-Jansen, Vanderbilt Univ. (USA), 2022 SPIE President

9:10: **Introduction to Hot Topics, Paul Montgomery**, Univ. of Strasbourg (France), 2022 Symposium Chair

9:15: **Access to photonics innovation support for European researchers and companies through ACTPHAST4R and PhotonHub Europe (Plenary)**, Hugo Thienpont, Vrije Univ. Brussel (Belgium) [12148-500]

9:30: **Quantum computing: prospects and challenges (Plenary)**, Heike Riel, IBM Research - Zürich (Switzerland) [12133-500]

10:15: **Einstein Telescope, the pioneer project for a third-generation GW observatory in Europe: science, technologies and perspectives (Plenary)**, Michele Punturo, Istituto Nazionale di Fisica Nucleare (Italy) [12139-500]

Coffee Break. Mon 11:00 to 11:20

SESSION 1

LOCATION: SALON 10, NIVEAU/LEVEL 0 MON 11:20 TO 12:50

Introductory Session

Session Chairs: Daniel S. Elson, Imperial College London (United Kingdom); Sylvain Gioux, Univ. de Strasbourg (France); Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA)

11:20: **Clinical advances in optical and optoacoustic imaging (Invited Paper)**, Vasilis Ntziachristos, Helmholtz Zentrum München GmbH (Germany) . [12146-1]

11:50: **Noninvasive optoacoustic imaging of the human brain validated with magnetic resonance angiography**, Ruiqing Ni, Xosé Luís Deán-Ben, Univ. Zürich (Switzerland) and ETH Zurich (Switzerland); Valérie Treyer, UniversitätsSpital Zürich (Switzerland) and Univ. Zürich (Switzerland); Jan Klohs, Univ. Zürich (Switzerland) and ETH Zurich (Switzerland); Anton Gietl, Christoph Hock, Univ. Zürich (Switzerland) and UniversitätsSpital Zürich (Switzerland); Roger M. Nitsch, Univ. Zürich (Switzerland); Daniel Razansky, Univ. Zürich (Switzerland) and ETH Zurich (Switzerland) [12146-2]

12:10: **Examining the role of fluid shear stress in intraperitoneal photoimmunotherapy delivery and efficacy**, Aaron Sorrin, Cindy Liu, Keri Zhou, Katherine May, Yihao Lin, Idrisa Rahman, Univ. of Maryland, College Park (USA); Dana M. Roque, Univ. of Maryland School of Medicine (USA); Huang-Chiao Huang, Univ. of Maryland, College Park (USA) [12146-3]

12:30: **Autonomous OCT volumetric scanning with robotic endoscope**, Guiqiu Liao, ICube Laboratory, University of Strasbourg (France) and Computer Science, University of Verona (Italy); Fernando Gonzalez Herrera, ICube Laboratory, University of Strasbourg (France) and Katholieke Universiteit Leuven (Belgium); Zhongkai Zhang, ICube Laboratory, University of Strasbourg (France); Ameya Pore, Computer Science, University of Verona (Italy) and Biomedical engineering, Universitat Politècnica de Catalunya (Spain); Luca Sestini, ICube Laboratory, University of Strasbourg (France) and Politecnico di Milano (Italy); Sujit Kumar Sahu, Biorobotics Institute, Scuola Superiore Sant'Anna (Italy) and ICube Laboratory, University of Strasbourg (France); Oscar Caravaca-Mora, Wellman Center for Photomedicine, Massachusetts General Hospital (USA); Philippe Zanne, Benoit Rosa, ICube Laboratory, University of Strasbourg (France); Diego Dall'Alba, Paolo Fiorini, Computer Science, University of Verona (Italy); Michel de Mathelin, Florent Nageotte, ICube Laboratory, University of Strasbourg (France); Michalina J. Gora, Wyss Center for Bio and Neuroengineering (Switzerland) [12146-40]

Lunch Break Mon 12:50 to 13:50

SESSION 2

LOCATION: SALON 10, NIVEAU/LEVEL 0 MON 13:50 TO 15:40

Diagnostics and Treatment

Session Chairs: Daniel S. Elson, Imperial College London (United Kingdom); Sylvain Gioux, Univ. de Strasbourg (France); Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA)

13:50: **Optical guidance for radiation therapy (Invited Paper)**, Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [12146-5]

14:20: **Evaluation of endovascular light delivery for photodynamic therapy in the pancreas using a porcine model**, Alain Garcia, L'Institut hospitalo-univ. de Strasbourg (France); Arjen Bogaards, Virtual Biotech (Germany); Tina Saeidi, Univ. of Toronto (Canada); Lothar Lilje, Princess Margaret Cancer Ctr. (Canada) and Univ. of Toronto (Canada); Lee Swanstrom, Benoit Gallix, L'Institut hospitalo-univ. de Strasbourg (France) [12146-6]

14:40: **Clinically relevant pure porphyrin nanoparticles for photodynamic therapy and priming applications**, Jillian Stable, Brandon Gaitan, Wen-An Chiu, Univ. of Maryland, College Park (USA); Baktiar Karim, Frederick National Lab. for Cancer Research (USA); Nina Connolly, Univ. of Maryland School of Medicine (USA); Robert Robey, National Cancer Institute (USA); Graeme Woodworth, Univ. of Maryland School of Medicine (USA); Michael M. Gottesman, National Cancer Institute (USA); Huang-Chiao Huang, Univ. of Maryland, College Park (USA) [12146-7]

15:00: **Clinical translation of optical quantification of muscle function to aid pelvic floor muscle rehabilitation following partial spinal cord injury**, Andrew J. Macnab, The Univ. of British Columbia (Canada) and Stellenbosch Institute for Advanced Study (South Africa) and Stellenbosch Univ. (South Africa); Willy N. J. M. Colier, Marica Maresse, Parivash Pourabbassi, Artinis Medical Systems B.V. (Netherlands); Lynn Stothers, The Univ. of British Columbia (Canada) and International Collaboration On Repair Discoveries (Canada); Naser Hakimi, Artinis Medical Systems B.V. (Netherlands) . [12146-8]

Coffee Break. Mon 15:40 to 16:10

SESSION 3

LOCATION: SALON 10, NIVEAU/LEVEL 0 MON 16:10 TO 17:50

Macroscopic Imaging

Session Chairs: Daniel S. Elson, Imperial College London (United Kingdom); Sylvain Gioux, Univ. de Strasbourg (France); Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA)

16:10: **Seeing is believing: hyperspectral imaging for early cancer detection (Invited Paper)**, Sarah E. Bohndiek, Univ. of Cambridge (United Kingdom) [12146-10]

16:40: **Surgical spectral sensing and imaging (Invited Paper)**, Daniel S. Elson, Imperial College London (United Kingdom) [12146-11]

17:10: **Wide field, deep learning endoscopic oxygenation imaging of biological tissues in real-time with 3D profile corrected SSOP**, Luca Baratelli, Enagnon Aguénounon, Manuel Flury, Sylvain Gioux, Univ. de Strasbourg (France) and Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France) [12146-12]

17:30: **Comparison of intraoperative functional brain maps obtained with RGB imaging with preoperative functional magnetic resonance imaging maps: a task-based and resting-state study**, Charly Caredda, Anne Josset, Eric Van Reeth, Laurent Mahieu-Williams, Raphaël Sablong, Michaël Sdika, CREATIS (France); Fabien C. Schneider, Univ. Jean Monnet Saint-Etienne (France); Jacques Guyotat, Hospices Civils de Lyon (France); Bruno Montcel, CREATIS (France) [12146-14]

17:50: **Blood flow mapping using machine learning analysis of multiple exposure speckle imaging data**, Chao-Yueh Yu, Chang Gung Univ. (Taiwan); Marc Chammas, Univ. Paris-Saclay (France) and Institut d'Optique Graduate School (France) and Lab. Charles Fabry (France); Frédéric Pain, Univ. Paris Saclay (France) and Institut d'Optique Graduate School (France) and Lab. Charles Fabry (France); Hsin-Hon Lin, Chang Gung Univ. (Taiwan) . . [12146-13]

TUESDAY 5 APRIL

SESSION 4

LOCATION: SALON 10, NIVEAU/LEVEL 0 TUE 9:00 TO 10:30

Spectroscopy and Multimodal

Session Chairs: **Daniel S. Elson**, Imperial College London (United Kingdom); **Sylvain Gioux**, Univ. de Strasbourg (France); **Brian W. Pogue**, Thayer School of Engineering at Dartmouth (USA)

9:00: **Choosing a reflectance spectroscopy technique for a clinical application - Instrumentation and data analysis considerations for fiber-optic and wide-field techniques** (*Invited Paper*), Anouk L. Post, The Netherlands Cancer Institute (Netherlands) [12146-15]

9:30: **Three-dimensional tissue reconstruction and tracking of a diffuse reflectance spectroscopy probe for real-time tissue classification in upper gastrointestinal cancer surgery**, Ioannis Gkouzionis, Scarlet Nazarian, Ara Darzi, Nisha Patel, Christopher Peters, Daniel Elson, Imperial College London (United Kingdom) [12146-16]

9:50: **Intraoperative blood perfusion assessment using real-time oxygenation imaging**, Silvère Ségau, Luca Baratelli, Michele Diana, Sylvain Lecler, Sylvain Gioux, Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France) [12146-19]

10:10: **LED-based photoacoustic imaging of the lymphatic vessels in patients with secondary lymphedema**, Saskia van Heumen, Jonas JM Riksen, Erasmus MC (Netherlands); Mithun Kuniyil Ajith Singh, Cyberdyne Inc. (Japan); Gijs van Soest, Dalibor Vasilic, Erasmus MC (Netherlands) . . [12146-41]

Coffee Break Tue 10:30 to 11:00

SESSION 5

LOCATION: SALON 10, NIVEAU/LEVEL 0 TUE 11:00 TO 12:30

Microscopy

Session Chairs: **Daniel S. Elson**, Imperial College London (United Kingdom); **Sylvain Gioux**, Univ. de Strasbourg (France); **Brian W. Pogue**, Thayer School of Engineering at Dartmouth (USA)

11:00: **Translation of higher harmonic generation microscopy for intra-operative pathology in the clinic** (*Invited Paper*), Marloes Groot, Vrije Univ. Amsterdam (Netherlands) [12146-20]

11:30: **Development of a fast large area multiphoton exoscope (FLAME) for clinical skin imaging**, Juvinch Vicente, Kristina Shrestha, Amanda F. Durkin, Mihaela Balu, Beckman Laser Institute and Medical Clinic (USA) [12146-21]

11:50: **Miniaturized multi-aperture microscope**, Norbert Danz, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany); Jürgen Hess, Fraunhofer-Projektzentrum für Mikroelektronische und Optische Systeme für die Biomedizin (Germany); Peter Dannberg, Felix Kraze, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany) [12146-22]

12:10: **No differences in retinal fluorescence between Alzheimer's disease patients and controls after oral curcumin in an amyloid proven cohort**, Benjamin Lochocki, VU Amsterdam, Department of Physics and Astronomy (Netherlands); Jurre den Haan, Frederique J. Hart, Amsterdam UMC-location VUmc, Alzheimer Center, Neurology (Netherlands); Maurice A.G.M. Kroon, E. Marleen Kemper, Amsterdam UMC-location AMC, Department of Pharmacy and Clinical Pharmacology (Netherlands); Charlotte E. Teunissen, Amsterdam UMC-location VUmc, Department of Clinical Chemistry (Netherlands); Bart van Berckel, Amsterdam UMC-location VUmc, Department of Nuclear Medicine (Netherlands); Aleid van de Kreeke, Amsterdam UMC-location AMC, Ophthalmology Department (Netherlands); Philip Scheltens, Amsterdam UMC-location VUmc, Alzheimer Center, Neurology (Netherlands); Jeroen J.M. Hoozemans, Amsterdam UMC-location VUmc, Department of Pathology (Netherlands); Frank D. Verbraak, Amsterdam UMC-location VUmc, Ophthalmology Department (Netherlands); Femke H. Bouwman, Amsterdam UMC-location VUmc, Alzheimer Center (Netherlands); Johannes F. de Boer, VU Amsterdam, Department of Physics and Astronomy (Netherlands) . . [12146-42]

Lunch/Exhibition Break Tue 12:30 to 13:40

SESSION 6

LOCATION: SALON 10, NIVEAU/LEVEL 0 TUE 13:40 TO 16:00

Fluorescence-Guided Surgery

Session Chairs: **Daniel S. Elson**, Imperial College London (United Kingdom); **Sylvain Gioux**, Univ. de Strasbourg (France); **Brian W. Pogue**, Thayer School of Engineering at Dartmouth (USA)

13:40: **Image-guided surgery using near-infrared fluorescence imaging** (*Invited Paper*), Alexander L. Vahrmeijer M.D., Leiden Univ. Medical Ctr. (Netherlands) [12146-24]

14:10: **Optical imaging and deep learning towards surgical precision** (*Invited Paper*), Michele Diana, ICube (France) [12146-25]

14:40: **Robust estimation of 5-ALA-induced PpIX contributions in multiple-wavelength excitation fluorescence spectroscopy in guided neurosurgery for improving glioma classification**, Arthur Gautheron, Michaël Sdiika, Univ. de Lyon, Institut National des Sciences Appliquées de Lyon (France) and Univ. Jean Monnet Saint-Etienne, CREATIS (France) and INSERM, CNRS (France); Mathieu Hébert, Univ. de Lyon, Univ. Jean Monnet Saint-Etienne (France) and Institut d'Optique Graduate School (France) and Lab. Hubert Curien, CNRS (France); Bruno Montcel, Univ. de Lyon, Institut National des Sciences Appliquées de Lyon (France) and Univ. Jean Monnet Saint-Etienne, CREATIS (France) and INSERM, CNRS (France) [12146-26]

15:00: **Indocyanine green (ICG) fluorescence detection from colon tissue using flexible bundle-fiber optics**, Ra'ed Malallah, Gareth Gallagher, Niall Hardy, Jeffrey Dalli, Univ. College Dublin (Ireland); Dan Wu, Donal O'Shea, Royal College of Surgeons in Ireland (Ireland); John Sheridan, Ronan A. Cahill, Univ. College Dublin (Ireland) [12146-27]

15:20: **Initial experience of perfusion assessment in a rabbit model of orthopaedic trauma surgery using fluorescent microspheres and hyperspectral imaging cryomacrotome**, Xinyue Han, Dartmouth College (USA); Valentin Demidov, Dartmouth-Hitchcock Medical Ctr. (USA) and Geisel School of Medicine (USA); Dennis Wirth, Dartmouth-Hitchcock Medical Ctr. (USA); Brook Byrd, Scott C. Davis, Thayer School of Engineering at Dartmouth (USA); Ida L. Gitajn, Dartmouth-Hitchcock Medical Ctr. (USA) and Geisel School of Medicine (USA); Jonathan T. Elliott, Dartmouth-Hitchcock Medical Ctr. (USA) [12146-28]

15:40: **Objective interrogation of signal presentation from surgical near-infrared fluorescence systems for user and computerised interpretation.**, Jeffrey Dalli, Univ. College Dublin (Ireland) and Mater Misericordiae Univ. Hospital (Ireland); Gareth Gallagher, Abhinav Jindal, Univ. College Dublin (Ireland); Jonathan P Epperlein, IBM Research Europe (Ireland); Niall P. Hardy, Univ. College Dublin (Ireland) and Mater Misericordiae Univ. Hospital (Ireland); Ra'ed Malallah, Univ. College Dublin (Ireland); Kilian O'Donoghue, Tyndall National Institute (Ireland); Padraig Cantillon-Murphy, Tyndall National Institute (Ireland) and Univ. College Cork (Ireland); Pol G Mac Aonghusa, IBM Research Europe (Ireland); Ronan A. Cahill, Univ. College Dublin (Ireland) and Mater Misericordiae Univ. Hospital (Ireland) [12146-29]

Coffee Break Tue 16:00 to 16:30

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:30: **Welcome and opening remarks**

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) . [12144-500]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Tuesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

Differences of corneal biomechanical parameters for keratoconus patients. Zane Jansone-Langina, Rita Mikelsone, Univ. of Latvia (Latvia); Jana Gertnere, The Dr. Solomatin Eye Ctr. (Latvia) [12146-32]

Processing of multimodal images for assessment of rare skin diseases, Emilija V. Plorina, Univ. of Latvia (Latvia); Ainars Rudzitis, Pauls Stradiņš Clinical Univ. Hospital (Latvia) and Longeneis Ltd. (Latvia); Norbert Kiss M.D., Semmelweis Univ. (Hungary); Alexey Lihachev, Ilze Lihacova, Univ. of Latvia (Latvia) [12146-34]

Design of brain simulating liquid and numeric phantoms for evaluating hemodynamic changes in intraoperative functional brain mapping studies, Charly Caredda, Laurent Mahieu-Williams, Raphaël Sablong, Michaël Sdika, CREATIS (France); Jacques Guyotat, Hospices Civils de Lyon (France); Bruno Montcel, CREATIS (France) [12146-37]

Nanoparticle-enhanced laser tissue soldering. Oscar Cipolato, Lucas Dosnon, Inge K. Herrmann, ETH Zurich (Switzerland) [12146-39]

Instant intra-operative histopathological assessment of fresh lung tumor biopsies using third and second harmonic generation microscopy, Laura M.G. van Huizen, Vrije Universiteit Amsterdam (Netherlands); Johannes M.A. Daniels, Teodora Radonic, Amsterdam Universitair Medische Centra (Netherlands); Max Blokker, Vrije Universiteit Amsterdam (Netherlands); Frank van Mourik, Flash Pathology B.V. (Netherlands); Jouke T. Annema, Amsterdam Universitair Medische Centra (Netherlands); Marloes Groot, Vrije Universiteit Amsterdam (Netherlands) [12146-43]

ON DEMAND PRESENTATIONS

SESSION 1

LOCATION: SALON 10, NIVEAU/LEVEL 0 MON 11:20 TO 12:50

Introductory Session

Session Chairs: **Daniel S. Elson**, Imperial College London (United Kingdom); **Sylvain Gioux**, Univ. de Strasbourg (France); **Brian W. Pogue**, Thayer School of Engineering at Dartmouth (USA)

0:00: **Differentiation of benign and malignant breast lesions: compression optical coherence elastography vs ultrasound strain elastography,** Ekaterina V. Gubarkova, Privolzhsky Research Medical Univ. (Russian Federation); Alexander Sovetsky, Institute of Applied Physics (Russian Federation); Dmitry Vorontsov, Pavel Budai, Nizhny Novgorod Regional Oncologic Hospital (Russian Federation); Marina Sirotkina, Anton Plekhanov, Privolzhsky Research Medical Univ. (Russian Federation); Sergey Kuznetsov, Nizhny Novgorod Regional Oncologic Hospital (Russian Federation); Lev Matveev, Alexander Matveyev, Institute of Applied Physics (Russian Federation); Alexey Vorontsov, Nizhny Novgorod Regional Oncologic Hospital (Russian Federation); Vladimir Zaitsev, Institute of Applied Physics (Russian Federation); Natalia Gladkova, Privolzhsky Research Medical Univ. (Russian Federation) [12146-4]

SESSION 4

LOCATION: SALON 10, NIVEAU/LEVEL 0 MON 9:00 TO 10:30

Spectroscopy and Multimodal

Session Chairs: **Daniel S. Elson**, Imperial College London (United Kingdom); **Sylvain Gioux**, Univ. de Strasbourg (France); **Brian W. Pogue**, Thayer School of Engineering at Dartmouth (USA)

0:00: **Surface-enhanced Raman spectroscopy of human blood for the identification of noncommunicable diseases,** Ivan A. Bratchenko, Lyudmila Bratchenko, Sahar Al-Sammarræ, Samara Univ. (Russian Federation); Daria Konovalova, Peter Lebedev, Samara State Medical Univ. (Russian Federation); Valery Zakharov, Samara Univ. (Russian Federation) [12146-17]

0:00: **Real-time optical diagnosis of prostate cancer: a clinical study on fresh biopsy cores,** Suse J. van Breugel, The Photon Factory (New Zealand) and The Univ. of Auckland (New Zealand) and The Dodd-Walls Ctr. for Photonic and Quantum Technologies (New Zealand); Liam Quinn, The Photon Factory (New Zealand) and The Dodd-Walls Ctr. for Photonic and Quantum Technologies (New Zealand) and The Univ. of Auckland (New Zealand); Hannah Holtkamp, The Photon Factory (New Zealand) and The Univ. of Auckland

(New Zealand); Ariane Araquel-Laciamento, Counties Manukau District Health Board (New Zealand); Satya Amirapu, The Univ. of Auckland (New Zealand); Komal Srinivasa, Auckland District Health Board (New Zealand); Irene Low, Mary Christie, Counties Manukau District Health Board (New Zealand); Michel K. Nieuwoudt, The Univ. of Auckland (New Zealand) and The Dodd-Walls Ctr. for Photonic and Quantum Technologies (New Zealand) and The MacDiarmid Institute for Advanced Materials and Nanotechnology (New Zealand); Morgan R. Pokorny, Counties Manukau District Health Board (New Zealand) and Auckland District Health Board (New Zealand); Ramya Nagarajan, Counties Manukau District Health Board (New Zealand) and The Univ. of Auckland (New Zealand); M. Cather Simpson, The Univ. of Auckland (New Zealand) and The Dodd-Walls Ctr. for Photonic and Quantum Technologies (New Zealand); Kamran Zargar-Shoshtari, Counties Manukau District Health Board (New Zealand) and The Univ. of Auckland (New Zealand) and Auckland District Health Board (New Zealand); Claude Aguergeray, The Photon Factory (New Zealand) and The Dodd-Walls Ctr. for Photonic and Quantum Technologies (New Zealand) and The Univ. of Auckland (New Zealand) [12146-18]

SESSION 5

LOCATION: SALON 10, NIVEAU/LEVEL 0 MON 11:00 TO 12:30

Microscopy

Session Chairs: **Daniel S. Elson**, Imperial College London (United Kingdom); **Sylvain Gioux**, Univ. de Strasbourg (France); **Brian W. Pogue**, Thayer School of Engineering at Dartmouth (USA)

0:00: **Controlled local fixation for artefact-free real-time imaging of bowel blood vessel networks by OCT angiography,** Maksim G. Ryabkov, Privolzhsky Research Medical Univ. (Russian Federation); Mikhail A. Sizov, E.L. Berezov City Clinical Hospital No. 7 (Russian Federation); Pavel A. Shilyagin, Institute of Applied Physics (Russian Federation); Peter V. Peretyagin, Evgeniya L. Bederina, Privolzhsky Research Medical Univ. (Russian Federation); Alexander A. Moiseev, Grigory V. Gelikonov, Institute of Applied Physics (Russian Federation); Natalia D. Gladkova, Elena B. Kiseleva, Privolzhsky Research Medical Univ. (Russian Federation) [12146-23]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

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Quantified autofluorescence signals of A375 human melanoma cell samples: an in-vitro study, Afshan Shirravand, Medical Laser Research Ctr., ACECR (Iran, Islamic Republic of); Ezeddin Mohajerani, Laser and Plasma Research Institute (Iran, Islamic Republic of); Leila Ataie Fashtami, Royan Institute for Stem Cell Biology and Technology (Iran, Islamic Republic of); Shirin Farivar, Mohammad Hosein Ghazimoradi, Shahid Beheshti Univ. (Iran, Islamic Republic of) [12146-30]

PDT planning for endoscopic tumor treatment using radachlorin, Vladimir V. Klimenko, St. Petersburg Clinical Scientific and Practical Cancer Ctr. (Russian Federation); Alina Akkalaeva, Nikolay Knyazev, Albina A. Avanesyan, Alexey Bogdanov, Saint Petersburg Clinical Scientific and Practical Cancer Ctr. (Russian Federation) [12146-35]

Investigating the sclera fluorescence in order to obtain AGE related diagnostic information, Dmitriy V. Kornilin, Vladimir N. Grishanov, Samara Univ. (Russian Federation); Igor V. Malov, Samara State Medical Univ. (Russian Federation) [12146-38]

Efficiency increasing of medical diagnostic systems which use multispectral processing method, Boris S. Gurevich, Kirill V. Zaitchenko, Institute for Analytical Instrumentation (Russian Federation) [12146-36]

CONFERENCE 12147

Tuesday–Thursday 5–7 April 2022 • Proceedings of SPIE Vol. 12147

Tissue Optics and Photonics II

Conference Chairs: **Valery V. Tuchin**, Saratov State Univ. (Russian Federation); **Walter C. P. M. Blondel**, Ctr. de recherche en automatique de Nancy (France); **Zeev Zalevsky**, Bar-Ilan Univ. (Israel)

Program Committee: **Marine Amouroux**, Univ. de Lorraine (France); **Stefan Andersson-Engels**, Irish Photonic Integration Ctr. (IPIC) (Ireland); **Anabela Da Silva**, Institut Fresnel (France); **Elina A. Genina**, Saratov State Univ. (Russian Federation); **Steven L. Jacques**, Univ. of Washington (USA); **Malgorzata Jedrzejewska-Szczerska**, Gdansk Univ. of Technology (Poland); **Alwin Kienle**, Institut für Lasertechnologien in der Medizin und Messtechnik (Germany); **Irina V. Larina**, Baylor College of Medicine (USA); **Kirill V. Larin**, Univ. of Houston (USA); **Hui Ma**, Tsinghua Univ. (China); **Teemu S. Myllylä**, Univ. of Oulu (Finland); **Tatiana Novikova**, Lab. de Physique des Interfaces et des Couches Minces (France); **Luís Oliveira**, Instituto Superior de Engenharia do Porto (Portugal); **Alexander V. Priezzhev**, M.V. Lomonosov Moscow State Univ. (Russian Federation); **Natan T. Shaked**, Tel Aviv Univ. (Israel); **Kirill I. Zaytsev**, A. M. Prokhorov General Physics Institute of the RAS (Russian Federation); **Dan Zhu**, Huazhong Univ. of Science and Technology (China); **Haishan Zeng**, BC Cancer Research Ctr. (Canada)

TUESDAY 5 APRIL

SESSION 1

LOCATION: SALON 5, NIVEAU/LEVEL 0 TUE 9:20 TO 10:30

Skin Optics, Microcirculation, and Flowmetry

Session Chairs: **Zeev Zalevsky**, Bar-Ilan Univ. (Israel); **Walter C.P.M. Blondel**, Univ. de Lorraine (France)

9:20: **Usage of speckle analysis for remote skin probing and elastography** (*Invited Paper*), Zeev Zalevsky, Bar-Ilan Univ. (Israel) [12147-1]

9:50: **How a highly reflective material on the skin surface may affect the light distribution within the skin**, Thereza Cury Fortunato, Institute Tergos Research and Education, Bright Photomedicine S.A. (Brazil); Lilian T. Moriyama, Univ. de São Paulo (Brazil) [12147-2]

10:10: **Skin oxygen saturation measurement using a noncontact optical device: optical phantoms development and metrological characterization**, Julien Azzi, Univ. de Lorraine (France) and Ctr. Hospitalier Régional Univ. de Nancy (France); Philippe Arnoux, Univ. de Lorraine, CNRS (France) and Lab. Réactions et Génie des Procédés (France); Hanène Mansour, Univ. de Lorraine, Nancy Automatic Research Ctr., CNRS (France) and Ctr. Hospitalier Univ. de Nancy (France); Louis Botrus, Univ. de Lorraine (France); Sébastien Le Cunff, SD Innovation S.A.S. (France); Athanase Benetos, Ctr. Hospitalier Univ. de Nancy (France) and Univ. de Lorraine, INSERM, DCAC (France); Walter Blondel, Marine Amouroux, Univ. de Lorraine (France) [12147-5]

Coffee Break Tue 10:30 to 11:00

SESSION 2

LOCATION: SALON 5, NIVEAU/LEVEL 0 TUE 11:00 TO 12:50

Light Propagation in Tissues, Modelling, and Optical Phantoms I

Session Chair: **Zeev Zalevsky**

11:00: **Optical properties of Spectralon assessed by replication of literature data in Monte Carlo simulations** (*Invited Paper*), Boris Majaron, Jožef Stefan Institute (Slovenia) and Univ. of Ljubljana (Slovenia); Tilen Žel, Univ. of Ljubljana (Slovenia) [12147-6]

11:30: **Comparative study of optical properties estimation on liquid optical phantoms using spatially-resolved diffuse reflectance spectroscopy and double integrating spheres methods**, Victor Colas, Marine Amouroux, Christian Daul, Clarice Perrin-Mozet, Walter Blondel, Univ. de Lorraine (France) [12147-7]

11:50: **Monte Carlo simulations to study light propagation through the skin of different phototypes**, Otávio Perez Palamoni, Institute Tergos Research and Education, Bright Photomedicine S.A. (Brazil) and Univ. Federal de São Carlos (Brazil); Ana Carolina de Magalhães, Institute Tergos Research and Education, Bright Photomedicine S.A. (Brazil) and Insper (Brazil); Lilian T. Moriyama, Univ. de São Paulo (Brazil); Marcelo Victor Pires de Sousa, Thereza Cury Fortunato, Institute Tergos Research and Education, Bright Photomedicine S.A. (Brazil) [12147-8]

12:10: **Quantification of the bulk optical properties of pear tissues for simulation of laser transmittance through intact pear**, Manju Joseph, Annelies Postelmans, Wouter Saeys, KU Leuven (Belgium) [12147-9]

12:30: **Evaluation of penetration depth of near-infrared irradiation generated by tunable ultra-short pulsed laser in ex vivo samples of mouse head**, Diana Galiakhmetova, Viktor V. Dremmin, Aleksandr Koviakov, Dmitrii Stoliarov, Neville Ngum, Rhein Parri, Sergei G. Sokolovski, Edik Rafailov, Aston Univ. (United Kingdom) [12147-10]

Lunch/Exhibition Break Tue 12:50 to 14:00

SESSION 3

LOCATION: SALON 5, NIVEAU/LEVEL 0 TUE 14:00 TO 15:30

Light Propagation in Tissues, Modelling, and Optical Phantoms II

Session Chair: **Zeev Zalevsky**, Bar-Ilan Univ. (Israel)

14:00: **The roles of birefringence and scattering of polarized light in visual perception of the entopic phenomena: Haidinger's and Boehm's brushes** (*Invited Paper*), Igor V. Meglinski, Aston Univ. (United Kingdom); Ivan Lopushenko, Alexander Bykov, Univ. of Oulu (Finland); Gary Misson, Stephen J. Anderson, Aston Univ. (United Kingdom) [12147-11]

14:30: **Spatial frequency domain imaging with a bucket detector**, Armin J. M. Lenz, Institute of New Imaging Technologies, Univ. Jaume I (Spain); Pere Clemente, Vicent Climent, Jesús Lancis, Enrique Tajahuerce, Univ. Jaume I (Spain) [12147-14]

14:50: **Contrast sensitivity at different background brightness levels and objective scattering index changes in patients before and after cataract removal surgery**, Zane Jansone-Langina, Renars Truksa, Univ. of Latvia (Latvia); M. Ozolins, Univ. of Latvia (Latvia) and Institute of Solid State Physics (Latvia); Andrei Solomatin, TThe Dr Solomatin eye center (Latvia); Irgors Solomatins, The Dr Solomatin eye center (Latvia) [12147-15]

15:10: **Ex-corpore human blood flow system for flow and physiological control in retina-mimicking silicone phantoms**, Vincent S. Zoutenbier, Vrije Universiteit (Netherlands); Arjen Amelink, TNO (Netherlands) and Vrije Universiteit (Netherlands); Johannes F de Boer, Vrije Universiteit (Netherlands) . [12147-51]

Coffee Break Tue 15:30 to 16:30

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:30: **Welcome and opening remarks**

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) . [12144-500]

WEDNESDAY 6 APRIL

SESSION 4

LOCATION: SALON 5, NIVEAU/LEVEL 0 WED 9:00 TO 10:10

Speckle-based Techniques, Optical Coherence Tomography, and Tissue Elastography I

Session Chair: **Walter C.P.M. Blondel**, Univ. de Lorraine (France)

9:00: **Emerging methods of optical elastography for ocular biomechanics** (*Invited Paper*), Kirill V. Larin, Univ. of Houston (USA) [12147-16]

9:30: **Quantitative elastography imaging without contact: combining full-field digital holography and noise-correlation**, Agathe Marmin, ICube, CNRS (France); Sybille Facca, CHU de Strasbourg, Fédération de Médecine Translationnelle de Strasbourg, ICube, CNRS (France); Stefan Catheline, Lab. of Therapeutic Applications of Ultrasound, INSERM (France); Amir Nahas, ICube, CNRS (France) [12147-17]

THURSDAY 7 APRIL

9:50: **Towards prediction of radiotherapy outcome: imaging viable cancer cell clusters in irradiated tumors with optical coherence tomography**, Valentin V. Demidov, Geisel School of Medicine (USA); Natalia Demidova, Univ. of Toronto (Canada); Costel Flueraru, National Research Council Canada (Canada); I. Alex Vitkin, Univ. of Toronto (Canada) [12147-18]
Coffee Break. Wed 10:10 to 10:40

SESSION 5

LOCATION: SALON 5, NIVEAU/LEVEL 0 WED 10:40 TO 11:50

Speckle-based Techniques, Optical Coherence Tomography, and Tissue Elastography II

Session Chair: **Tatiana Novikova**, Lab. de Physique des Interfaces et des Couches Minces (France)

11:10: **Artefactual movement bias quantitation for multiple exposure speckle imaging of blood flow using the synthetic exposure approach**, Marc Chammas, Univ. Paris-Saclay (France) and Lab. Charles Fabry, Institut d'Optique Graduate School (France); Chao-Yueh Yu, Hsin-Hon Lin, Chang Gung Univ. (Taiwan); Frédéric Pain, Univ. Paris-Saclay (France) and Lab. Charles Fabry, Institut d'Optique Graduate School (France) [12147-23]

11:30: **Multiscale laser speckle contrast imaging of renal microcirculation**, Blaire Lee, Olga Sosnovtseva, Univ. of Copenhagen (Denmark); Dmitry Postnov, Aarhus Univ. (Denmark) [12147-24]

SESSION 6

LOCATION: SALON 5, NIVEAU/LEVEL 0 WED 11:50 TO 12:20

Vibrational Spectroscopy, Drug delivery, Photodynamic Therapies

Session Chair: **Tatiana Novikova**, Lab. de Physique des Interfaces et des Couches Minces (France)

11:50: **Imaging near-infrared luminescent nanoformulations to guide drug delivery and photoinduced therapy** (*Invited Paper*), Tymish Y. Ohulchanskyy, Shenzhen Univ. (China) and Univ. at Buffalo (USA) [12147-26]

Lunch/Exhibition Break Wed 12:20 to 13:50

SESSION 7

LOCATION: SALON 5, NIVEAU/LEVEL 0 WED 13:50 TO 15:30

Polarization Techniques and Microscopy

Session Chair: **Irina V. Larina**, Baylor College of Medicine (USA)

13:50: **Preterm birth risk assessment with imaging Mueller polarimetry: mice model of pregnancy** (*Invited Paper*), Hee Ryung Lee, Lab. de Physique des Interfaces et des Couches Minces (France); Ilyas Saytashev, Vinh Nguyen Du Le, Florida International Univ. (USA); Mala Mahendroo, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Jessica Ramella-Roman, Herbert Wertheim College of Medicine, Florida International Univ. (USA); Tatiana Novikova, Lab. de Physique des Interfaces et des Couches Minces (France) and Florida International Univ. (USA) [12147-30]

14:20: **Polarized light methods in breast and colon cancer prognostication studies: the role of birefringent stroma of the tumour microenvironment** (*Invited Paper*), I. Alex Vitkin, Univ. Health Network (Canada) [12147-31]

14:50: **Solid tumors nanomechanical fingerprints and collagen-based optical signatures**, Andreas Stylianou, European Univ. Cyprus (Cyprus) and Univ. of Cyprus (Cyprus); Chrysovalantis Voutouri, Fotios Mpekris, Antonia Papoui, Univ. of Cyprus (Cyprus); Katerina Polemiotiou, European Univ. Cyprus (Cyprus); Triantafyllos Stylianopoulos, Univ. of Cyprus (Cyprus) [12147-32]

15:10: **In-vivo polarization sensitive optical coherence tomography for fibrosis quantification in interstitial lung disease**, Margherita Vaselli, Vrije Univ Amsterdam (Netherlands); Kirsten Kalverda, Peter Bonta, Jouke Annema, AUMC (Netherlands); Johannes F de Boer, Vrije Univ Amsterdam (Netherlands). [12147-52]

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Wednesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

Elimination of single-beam substitution error in diffuse reflectance measurements using an integrating sphere revisited, Neža Golmajer Zima, Jožef Stefan Institute (Slovenia); Boris Majaron, Jožef Stefan Institute (Slovenia) and Univ. of Ljubljana (Slovenia) [12147-39]

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 10:35

Hot Topics III

Thierry Georges, Oxxius (France), 2022 Symposium Chair

9:00: **Welcome and opening remarks**

9:05: **A sneak peek with light into opaque materials: from imaging to computing** (*Plenary*), Sylvain Gigan, Lab. Kastler Brossel (France) . [12136-500]

9:50: **Active metasurfaces empowered by two-dimensional materials** (*Plenary*), Isabelle Staude, Friedrich-Schiller-Univ. Jena (Germany) . [12130-500]

Coffee Break. Thu 10:35 to 11:00

SESSION 8

LOCATION: SALON 5, NIVEAU/LEVEL 0 THU 11:00 TO 12:30

Multimodal Approaches

Session Chair: **Kirill V. Larin**, Univ. of Houston (USA)

11:00: **Morphological and metabolic assessment of artificial human stem cell-based 3D tissue models with multimode photonic system** (*Invited Paper*), Sergei G. Sokolovski, Viktor V. Dremine, Aston Univ. (United Kingdom); Ayman El-Tamer, Maria Surnina, Laser nanoFab GmbH (Germany); Céline Lancelot, StratiCell Ltd. (Belgium); Edik Rafailov, Aston Univ. (United Kingdom) . [12147-34]

11:30: **The effects of radiotherapy on tumour microvasculature: insights from optical coherence angiography and dynamic contrast-enhanced MR imaging towards adaptive radiation medicine.**, Nader Allam, Univ. of Toronto, Univ. Health Network (Canada); William Jeffrey Zabel, Univ. of Toronto, Univ. Health Network (Canada); Valentin Demidov, Geisel School of Medicine at Dartmouth (USA); Blake Jones, Univ. of Toronto (Canada); Luuk van der Pol, Technische Univ. Eindhoven (Netherlands); Warren Foltz, Univ. Health Network (Canada); Costel Flueraru, National Research Council Canada (Canada); Edward Taylor, Univ. Health Network (Canada); I. Alex Vitkin, Univ. of Toronto, Univ. Health Network (Canada) [12147-36]

11:50: **Tissue characterization by multispectral fiber probes**, Iskander Usenov, art photonics GmbH (Germany) and Technische Univ. Berlin (Germany); Alexander Novikov, art photonics GmbH (Germany); Andrey Bogomolov, art photonics GmbH (Germany) and Samara State Technical Univ. (Russian Federation); Tatiana Sakharova, Alexey Bocharnikov, Viacheslav Artyushenko, art photonics GmbH (Germany) [12147-37]

12:10: **Safety of use of the ENDOSWIR near-infrared optical imaging device on human tissues: prospective blind study**, Jean-Luc Collig, Noemie Dutrieux, Institut pour l'Avancée des Biosciences (France); Patricia Le Coupance, CEA-LETI (France); Hugo Gil, Ctr. Hospitalier Univ. Grenoble Alpes (France); Anne Koenig, CEA-LETI (France); Patrick Abraham, LYNRED (France); Jean Louis Quesada, Jean-Luc Cracowski, Christian Righini, Ctr. Hospitalier Univ. Grenoble Alpes (France) [12147-38]

ON DEMAND PRESENTATIONS

SESSION 1

LOCATION: SALON 5, NIVEAU/LEVEL 0 MON 9:20 TO 10:30

Skin Optics, Microcirculation, and Flowmetry

Session Chairs: **Zeev Zalevsky**, Bar-Ilan Univ. (Israel); **Walter C.P.M. Blondel**, Univ. de Lorraine (France)

0:00: **Investigation of blood microcirculation and temperature distribution in the skin at the 2 microns laser radiation exposure**, Mariya S. Kopyeva, A. M. Prokhorov General Physics Institute (Russian Federation) and RUDN Univ. (Russian Federation); Serafima A. Filatova, A. M. Prokhorov General Physics Institute (Russian Federation); Vladimir A. Kamynin, A. M. Prokhorov General Physics Institute of the RAS (Russian Federation); Pavel V. Novokreshchenov, Ilya M. Pushkar, Vadim V. Astashov, Tamara K. Tchekhlava, RUDN Univ. (Russian Federation); Vladimir B. Tsvetkov, A. M. Prokhorov General Physics Institute (Russian Federation) [12147-3]

0:00: **Feasibility of videocapillaroscopy for characterization of microvascular patterns in skin lesions**, Anastasia V. Guryleva, Scientific and Technological Ctr. of Unique Instrumentation (Russian Federation) and Bauman Moscow State Technical University (Russian Federation); Alexander S. Machikhin, Demid D. Khokhlov, Scientific and Technological Ctr. of Unique Instrumentation (Russian Federation); Mikhail V. Volkov, Scientific and Technological Ctr. of Unique Instrumentation (Russian Federation) and ITMO Univ. (Russian Federation); Valeriya I. Bukova, Scientific and Technological Ctr. of Unique Instrumentation (Russian Federation) and Bauman Moscow State Technical University (Russian Federation); Milana O. Sharikova, Scientific and Technological Ctr. of Unique Instrumentation (Russian Federation); Ekaterina V. Orlova, Lyudmila M. Smirnova, I.M. Sechenov First Moscow State Medical Univ. (Russian Federation) [12147-4]

CONFERENCE 12147

SESSION 3

LOCATION: SALON 5, NIVEAU/LEVEL 0 MON 14:00 TO 15:30

Light Propagation in Tissues, Modelling, and Optical Phantoms II

Session Chair: **Zeev Zalevsky**, Bar-Ilan Univ. (Israel)

0:00: **Immediate subsurface skin blood flow monitoring using diffuse correlation spectroscopy: finite element simulations**, Vysakh Vasudevan, Sujatha N., Indian Institute of Technology Madras (India) [12147-13]

SESSION 4

LOCATION: SALON 5, NIVEAU/LEVEL 0 MON 9:00 TO 10:10

Speckle-based Techniques, Optical Coherence Tomography, and Tissue Elastography I

Session Chair: **Walter C.P.M. Blondel**, Univ. de Lorraine (France)

0:00: **Optical screening method to observe the biological activities of lentil (Lens culinaris) seeds quantitatively under the exposure of polyethylene microplastics (PEMPs) using ultrahigh accurate Biospeckle optical coherence tomography**, Yakdehige Sanath Kumara De Silva, Saitama Univ. (Japan); Uma Maheswari Rajagopalan, Shibaura Institute of Technology (Japan); Danyang Li, Hirofumi Kadono, Saitama Univ. (Japan) [12147-19]

0:00: **Biospeckle Optical Coherence Tomography (bOCT) reveals variable effects of acid mine drainage (AMD) on monocot and dicot seed germination**, Danyang Li, Saitama Univ. (Japan); Uma Maheswari Rajagopalan, Shibaura Institute of Technology (Japan); Hirofumi Kadono, Yakdehige Sanath Kumara De Silva, Saitama Univ. (Japan) [12147-20]

SESSION 5

LOCATION: SALON 5, NIVEAU/LEVEL 0 MON 10:40 TO 11:50

Speckle-based Techniques, Optical Coherence Tomography, and Tissue Elastography II

Session Chair: **Tatiana Novikova**, Lab. de Physique des Interfaces et des Couches Minces (France)

0:00: **Speckle noise reduction of modulated images generated by spatial frequency domain imaging technique based on interferometric approach**, Rania Abdelazeem, Omnia Hamdy, Cairo Univ. (Egypt) [12147-22]

SESSION 6

LOCATION: SALON 5, NIVEAU/LEVEL 0 MON 11:50 TO 12:20

Vibrational Spectroscopy, Drug delivery, Photodynamic Therapies

Session Chair: **Tatiana Novikova**, Lab. de Physique des Interfaces et des Couches Minces (France)

0:00: **Temperature sensing during remote cargo release using polymer capsules modified with gold nanoparticles and nanodiamonds**, Elena Gerasimova, Vitaly Yaroshenko, Pavel Talianov, Oleksii Peltek, Mikhail Baranov, Polina Kapitanova, Dmitry Zuev, ITMO Univ. (Russian Federation); Alexander Timin, National Research Tomsk Polytechnic Univ. (Russian Federation); Mikhail Zyuzin, ITMO Univ. (Russian Federation) [12147-27]

0:00: **Influence of annealing temperature on the cytotoxicity upconversion nanoparticles on different cell lines**, Roman A. Verkhovskii, Roman A. Anisimov, Maria V. Lomova, Saratov State Univ. (Russian Federation); Daria K. Tuchina, Ekaterina N. Lazareva, Saratov State Univ. (Russian Federation) and National Research Tomsk State Univ. (Russian Federation); Anna A. Doronkina, Saratov State Univ. (Russian Federation); Artyom M. Mylnikov, Nikita A. Navolokin, Saratov State Medical Univ. (Russian Federation); Vyacheslav I. Kochubey, Saratov State Univ. (Russian Federation); Irina Yanina, Saratov State Univ. (Russian Federation) and National Research Tomsk State Univ. (Russian Federation) [12147-29]

0:00: **Direct optical generation of singlet oxygen induces the apoptosis of tumor cells**, Irina N. Makovik, Elena V. Potapova, Orel State Univ. named after I. S. Turgenev (Russian Federation); Viktor V. Dremmin, Orel State Univ. named after I. S. Turgenev (Russian Federation) and Aston Univ. (United Kingdom); Andrey V. Dunaev, Orel State Univ. named after I. S. Turgenev (Russian Federation) [12147-28]

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

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Poster Setup: Wednesday 10:00 to 17:00

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The application of the multimodal approach for studying optical properties of bile in obstructive jaundice, Ksenia Y. Kandurova, Nadezhda Golubova, Vadim Prizemin, Orel State Univ. named after I. S. Turgenev (Russian Federation); Dmitry Sumin M.D., Orel Regional Clinical Hospital (Russian Federation) and Orel State Univ. named after I. S. Turgenev (Russian Federation); Nikita Adamenkov M.D., N.A. Semashko Emergency Medical Care Hospital (Russian Federation); Vladimir Shabalin, Saint Petersburg State Univ. of Architecture and Civil Engineering (Russian Federation); Andrian V. Mamoshin, Orel State Univ. named after I. S. Turgenev (Russian Federation) and Orel Regional Clinical Hospital (Russian Federation); Elena V. Potapova, Orel State Univ. named after I. S. Turgenev (Russian Federation) [12147-41]

Direct optical generation of singlet oxygen in the regulation of vascular tone, Irina N. Makovik, Orel State Univ. named after I. S. Turgenev (Russian Federation); Mikhail Volkov, ITMO University (Russian Federation); Lyubov Eratova, Orel State Univ. named after I. S. Turgenev (Russian Federation); Denis Myalitsin, ITMO University (Russian Federation); Viktor V. Dremmin, Orel State Univ. named after I. S. Turgenev (Russian Federation) and Aston Univ. (United Kingdom) [12147-42]

Increasing the optical transparency of skeletal muscles via irradiation with IR lasers, Ahmed H. Sheet, Omnia Hamdy, Mohamed Abdel Harith, National Institute of Laser Enhanced Sciences (Egypt) [12147-44]

Application of optical-electronic methods in research of new formations in biological tissues, Ekaterina A. Tsygankova, Victoria A. Ryzhova, Ruslan D. Khlynov, Anastasiia D. Chistiakova, Valery V. Korotaev, ITMO Univ. (Russian Federation) [12147-45]

Calculation of the instrument matrix of an automated video Stokes polarimeter, Ruslan D. Khlynov, Victoria A. Ryzhova, Ekaterina A. Tsygankova, Anastasiia D. Chistiakova, Valery V. Korotaev, ITMO Univ. (Russian Federation) . [12147-46]

Spectral study of pathological tissues with different degrees of differentiation, Ekaterina A. Tsygankova, Victoria A. Ryzhova, Ruslan D. Khlynov, Anastasiia D. Chistiakova, Valery V. Korotaev, ITMO Univ. (Russian Federation) [12147-47]

3D bladder tissue models for bimodal fluorescence imaging, Elizaveta Kozlikina, A. M. Prokhorov General Physics Institute (Russian Federation) and National Research Nuclear Univ. MEPhI (Russian Federation); Maxim Loshchenov, Arkadii Moskalev, A. M. Prokhorov General Physics Institute (Russian Federation); Nina Kalyagina, A.M. Prokhorov General Physics Institute (Russian Federation) and National Research Nuclear Univ. MEPhI (Russian Federation); Walter Blondel, Univ. de Lorraine, CNRS (France) [12147-49]

Laser Doppler flowmetry in wearable implementation for detection of the features of the functional state of the microcirculatory bed in arterial hypertension, Yulia I. Loktionova, Orel State Univ. named after I.S. Turgenev (Russian Federation); Maria Mikhailova, Federal State Institution NMRC TPM of the Ministry of Healthcare (Russian Federation) and Orel State Univ. named after I.S. Turgenev (Russian Federation); Andrey Korolev, Federal State Institution NMRC TPM of the Ministry of Healthcare (Russian Federation); Alexander Gorshkov, Federal State Institution NMRC TPM of the Ministry of Healthcare (Russian Federation); Elena Zharkikh, Orel State Univ. named after I.S. Turgenev (Russian Federation); Andrey Fedorovich, Federal State Institution NMRC TPM of the Ministry of Healthcare (Russian Federation); Evgenii A. Zherebtsov, Orel State Univ. named after I.S. Turgenev (Russian Federation) and Univ. of Oulu (Finland) [12147-50]

SESSION 8

LOCATION: SALON 5, NIVEAU/LEVEL 0 MON 11:00 TO 12:30

Multimodal Approaches

Session Chair: **Kirill V. Larin**, Univ. of Houston (USA)

0:00: **Optical needle biopsy for multimodal detection of the malignant liver tumours**, Evgenii A. Zherebtsov, Orel State Univ. named after I.S. Turgenev (Russian Federation) and Univ. of Oulu (Finland); Andrian V. Mamoshin, Orel State Univ. named after I.S. Turgenev (Russian Federation) and Orel Regional Clinical Hospital (Russian Federation); Valery V. Shupletsov, Elena V. Potapova, Ksenia Y. Kandurova, Orel State Univ. named after I.S. Turgenev (Russian Federation); Viktor V. Dremmin, Orel State Univ. named after I.S. Turgenev (Russian Federation) and Aston Univ. (United Kingdom); Andrey V. Dunaev, Orel State Univ. named after I.S. Turgenev (Russian Federation) [12147-35]

CONFERENCE 12148

Monday–Wednesday 4–6 April 2022 • Proceedings of SPIE Vol. 12148

Integrated Photonics Platforms II

Conference Chairs: **Roel G. Baets**, Univ. Gent (Belgium); **Peter O'Brien**, Tyndall National Institute (Ireland); **Laurent Vivien**, Ctr. de Nanosciences et de Nanotechnologies (France), CNRS, Univ. Paris Saclay (France)

Program Committee: **Frédéric Boeuf**, STMicroelectronics (France); **José Capmany Francoy**, Univ. Politècnica de Valencia (Spain); **Frederic Y. Gardes**, Univ. of Southampton (United Kingdom); **Jin Guo**, CUMEC (China); **Martijn J. R. Heck**, Aarhus Univ. (Denmark); **Takaaki Ishigure**, Keio Univ. (Japan); **Robert E. Mallard**, Canadian Microelectronics Corp. (Canada); **Lorenzo Pavesi**, Univ. degli Studi di Trento (Italy); **Stefan F. Preble**, Rochester Institute of Technology (USA); **Pol Van Dorpe**, IMEC (Belgium); **Kevin A. Williams**, Technische Univ. Eindhoven (Netherlands); **Jeremy Witzens**, RWTH Aachen Univ. (Germany); **Dan-Xia Xu**, National Research Council Canada (Canada); **Koji Yamada**, National Institute of Advanced Industrial Science and Technology (Japan); **Zhiping Zhou**, Peking Univ. (China)

MONDAY 4 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 11:00

Hot Topics I

Session Chair: **Paul Montgomery**, Univ. of Strasbourg (France),
2022 Symposium Chair

9:00: **Welcome and Introduction; City of Strasbourg Welcome; Presentation of the 2022 SPIE Mozi Award to Thomas W. Ebbesen**, The Institute for Advanced Study of the Univ. of Strasbourg (USIAS) and CNRS (France); **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA), 2022 SPIE President

9:10: **Introduction to Hot Topics, Paul Montgomery**, Univ. of Strasbourg (France), 2022 Symposium Chair

9:15: **Access to photonics innovation support for European researchers and companies through ACTPHAST4R and PhotonHub Europe (Plenary)**, Hugo Thienpont, Vrije Univ. Brussel (Belgium) [12148-500]

9:30: **Quantum computing: prospects and challenges (Plenary)**, Heike Riel, IBM Research - Zürich (Switzerland) [12133-500]

10:15: **Einstein Telescope, the pioneer project for a third-generation GW observatory in Europe: science, technologies and perspectives (Plenary)**, Michele Punturo, Istituto Nazionale di Fisica Nucleare (Italy) [12139-500]

Coffee Break Mon 11:00 to 11:30

SESSION 1

LOCATION: SALON 4, NIVEAU/LEVEL 0 MON 11:30 TO 12:30

Light Emitters

Session Chair: **Laurent Vivien**, Ctr. de Nanosciences et de Nanotechnologies (France)

11:30: **Mid-IR emission from integrated rare earth (Dy³⁺, Pr³⁺)-doped chalcogenides waveguides for sensing applications**, Loic Bodiou, Foton Institute, Univ. of Rennes 1 (France); Marion Baillieul, Univ. Pardubice (Czech Republic); Virginie Nazabal, Institut des Sciences Chimiques de Rennes, CNRS (France); Jonathan Lemaitre, Foton Institute, CNRS (France); Albane Benardais, Institut des Sciences Chimiques de Rennes, CNRS (France); Sofiane Meziani, Nathalie Lorrain, Yannick Dumeige, Foton Institute, Univ. of Rennes 1 (France); Petr Nemeč, Univ. Pardubice (Czech Republic); Joël Charrier, Foton Institute, Univ. of Rennes 1 (France) [12148-1]

11:50: **Erbium-doped sol-gel derived silica-titania films**, Magdalena Zięba, Cuma Tyszkiewicz, Katarzyna Wojtasik, Silesian Univ. of Technology (Poland); Dominik Dorosz, AGH Univ. of Science and Technology (Poland); Paweł Karasiński, Silesian Univ. of Technology (Poland) [12148-2]

12:10: **Er-doped hybrid waveguide amplifiers with multiple spatially engineered active layers for on-chip optical gain enhancement**, John-Olof Rönn, Kalle Niiranen, Mikael Saarniheimo, Sami Sneek, Beneq Oy (Finland); Zhipei Sun, Aalto Univ. (Finland) [12148-3]

Lunch Break Mon 12:30 to 13:40

SESSION 2

LOCATION: SALON 4, NIVEAU/LEVEL 0 MON 13:40 TO 15:00

Passive and Active Photonic Devices I

Session Chair: **Laurent Vivien**, Ctr. de Nanosciences et de Nanotechnologies (France)

13:40: **Highly efficient silicon nitride grating couplers with metal back reflector enabled by cryogenic deep silicon etching**, Emma Lomonte, Maik Stappers, Westfälische Wilhelms-Univ. Münster (Germany); Francesco Lenzini, University of Muenster (Germany); Wolfram Pernice, Westfälische Wilhelms-Univ. Münster (Germany) [12148-4]

14:00: **Highlight of polarization filtering effect in passive porous silicon ridge waveguides**, Fabien Cassio, Luiz Poffo, Nathalie Lorrain, Parastesh Pirasteh, Jonathan Lemaitre, Mohammed Guendouz, Fonctions Optiques pour les Technologies de l'information (France) [12148-5]

14:20: **Low-loss all-optical ns-switching for scalable photon routing based on a generic integrated photonics foundry platform**, Fabian Ruf, Lars Nielsen, Mircea Balaurouiu, Nicolas Volet, Aarhus Univ. (Denmark); Martijn J. R. Heck, Aarhus Univ. (Denmark) and Technische Univ. Eindhoven (Netherlands) [12148-6]

14:40: **Development of a SiON-based integrated platform for the blue/near-UV wavelength range**, Loic Bodiou, Pramitha P. Kamath, Jean-Claude Simon, Monique Thual, Foton Institute, Univ. de Rennes 1 (France); Julie Stervinou, Christophe Levallois, Foton Institute, Institut National des Sciences Appliquées de Rennes (France); Joël Charrier, Foton Institute, Univ. de Rennes 1 (France); Stéphane Trebaol, Foton Institute, Univ. of Rennes 1 (France) [12148-7]

Coffee Break Mon 15:00 to 15:30

SESSION 3

LOCATION: SALON 4, NIVEAU/LEVEL 0 MON 15:30 TO 16:50

Simulation and Modelling

Session Chair: **Laurent Vivien**, Ctr. de Nanosciences et de Nanotechnologies (France)

15:30: **Dimensionality reduction for efficiency human and computer codesign in integrated photonics**, Pierre Colman, Anastasia Sheveleva, Christophe Finot, Univ. Bourgogne Franche-Comté (France) [12148-8]

15:50: **Mask synthesis for silicon photonics devices**, Rainer Zimmermann, Synopsys GmbH (Germany); Luis Orbe, Synopsys Netherlands BV (Netherlands); Bernd Küchler, Synopsys GmbH (Germany); Ji Li, Synopsys, Inc. (China); Jim Burdorf, William Stanton, Synopsys, Inc. (USA); Tung-Yu Su, Synopsys Taiwan Co., Ltd. (Taiwan); Remco Stoffer, Synopsys Netherlands BV (Netherlands); Ulrich Klostermann, Wolfgang Demmerle, Synopsys GmbH (Germany) [12148-9]

16:30: **Optimization study of all-dielectric metamaterial cladding for increased integration density of PIC**, Andraz Debevc, Marko Topič, Janez Krč, Univ. of Ljubljana (Slovenia) [12148-12]

CONFERENCE 12148

TUESDAY 5 APRIL

SESSION 4

LOCATION: SALON 4, NIVEAU/LEVEL 0 TUE 13:40 TO 14:20

Linear- and Nonlinear-based Photonic Devices

Session Chair: **Peter O'Brien**, Tyndall National Institute (Ireland)

13:40: **A silicon oxynitride platform for linear and nonlinear NIR photonics**, Gioele Piccoli, Univ. degli Studi di Trento (Italy) and Fondazione Bruno Kessler (Italy); Matteo Sanna, Massimo Borghi, Lorenzo Pavesi, Univ. degli Studi di Trento (Italy); Mher Ghulinyan, Fondazione Bruno Kessler (Italy). [12148-13]

SESSION 5

LOCATION: SALON 4, NIVEAU/LEVEL 0 TUE 14:20 TO 15:00

Passive and Active Photonic Devices II

Session Chair: **Roel G. Baets**, Univ. Gent (Belgium)

14:20: **Silicon photonic free-space beam steered optical switch using wavelength tuned nanoantennas**, Konstantinos Lekkas, George T. Kanellos, Univ. of Bristol (United Kingdom). [12148-16]

14:40: **Self-heating analysis of monolithically integrated hybrid III-V/Si PIN diode**, Qian Ding, ETH Zurich (Switzerland); Pengyan Wen, Bernd Gotsmann, Kirsten E. Moselund, IBM Research - Zürich (Switzerland); Andreas Schenk, ETH Zurich (Switzerland). [12148-18]

Coffee Break. Tue 15:00 to 16:30

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:30: **Welcome and opening remarks**

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA). [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy). [12144-500]

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WEDNESDAY 6 APRIL

SESSION 6

LOCATION: SALON 4, NIVEAU/LEVEL 0 WED 9:00 TO 10:30

Special Session on EU-Funded Integrated Photonics Projects I

Session Chair: **Roel G. Baets**, Univ. Gent (Belgium)

9:00: **European Photonics and PIC pilot lines: EC view** (*Invited Paper*), Werner Steinhögl, European Commission (Belgium). [12148-20]

9:30: **ACTPHAST and PhotonHub: Pan-European open access initiatives to photonics innovation support for researchers and companies** (*Invited Paper*), Hugo Thienpont, Vrije Univ. Brussel (Belgium). [12148-21]

10:00: **PIXAPP: the photonics packaging pilot line** (*Invited Paper*), Padraic E. Morrissey, Tyndall National Institute (Ireland). [12148-22]

Coffee Break. Wed 10:30 to 11:00

SESSION 7

LOCATION: SALON 4, NIVEAU/LEVEL 0 WED 11:00 TO 12:30

Special Session on EU-Funded Integrated Photonics Projects II

Session Chair: **Peter O'Brien**, Tyndall National Institute (Ireland)

11:00: **JePPIX: InP photonic integrated circuits for accelerated product development** (*Invited Paper*), Kevin A. Williams, Technische Univ. Eindhoven (Netherlands). [12148-23]

12:00: **INSPIRE: InP on SiN photonic integrated circuits realized through wafer-scale microtransfer printing** (*Invited Paper*), Martijn J. R. Heck, Eindhoven Univ. of Technology (Netherlands). [12148-25]

Lunch/Exhibition Break. Wed 12:30 to 14:00

SESSION 8

LOCATION: SALON 4, NIVEAU/LEVEL 0 WED 14:00 TO 15:30

Special Session on EU-Funded Integrated Photonics Projects III

Session Chair: **Roel G. Baets**, Univ. Gent (Belgium)

14:00: **Photonics integrated circuits from innovations to commercial solutions: MedPhab pilot line for accelerated industrial uptake** (*Invited Paper*), Jussi A. Hiltunen, VTT Technical Research Centre of Finland (Finland). [12148-26]

14:30: **InSiDe: a cardiovascular screening device based on silicon photonics** (*Invited Paper*), Soren Aasmul, Medtronic Netherlands (Netherlands); Simeon Beeckman, Univ. Gent (Belgium). [12148-27]

15:00: **MORPHIC: MEMS enhanced silicon photonics for programmable circuits** (*Invited Paper*), Muhammad Umar Khan, Iman Zand, Univ. Gent (Belgium); Pierre Edinger, Gaehun Jo, Simon J. Bleiker, KTH Royal Institute of Technology (Sweden); Alain Yuji Takabayashi, Ecole Polytechnique Federale de Lausanne (Switzerland); Cleitus Antony, Giuseppe Talli, Jun Su Lee, Tyndall National Institute (Ireland); Peter Verheyen, imec vzw (Belgium); Tigers Jonuzi, VLC photonics (Spain); Jan Wutte, Commscope connectivity (Belgium); Frank Niklaus, Kristinn B. Gylfason, KTH Royal Institute of Technology (Sweden); Wim Bogaerts, Univ. Gent (Belgium). [12148-28]

Coffee Break. Wed 15:30 to 16:00

SESSION 9

LOCATION: SALON 4, NIVEAU/LEVEL 0 WED 16:00 TO 17:30

Special Session on EU-Funded Integrated Photonics Projects IV

Session Chair: **Roel G. Baets**, Univ. Gent (Belgium)

16:30: **NEBULA project: combining BTO-based plasmonic modulators with neuromorphic augmented receivers for higher than 100Gbaud intra- and inter- data center interconnects** (*Invited Paper*), Konstantinos Vyrsokinos, Aristotle Univ. of Thessaloniki (Greece). [12148-30]

17:00: **Hydroptics: photonics sensing platform for process optimisation in the oil industry** (*Invited Paper*), Sargis Hakobyan, Alpes Lasers SA (Switzerland). [12148-31]

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Wednesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

Design, simulation and performance comparison of Sol rectangular waveguide and SMF for methane detection, Shalini Vardhan, Ritu Raj Singh, Netaji Subhas Univ. of Technology (India). [12148-32]

ON DEMAND PRESENTATIONS

SESSION 3

LOCATION: SALON 4, NIVEAU/LEVEL 0 MON 15:30 TO 16:50

Simulation and ModellingSession Chair: **Laurent Vivien**, Ctr. de Nanosciences et de Nanotechnologies (France)

0:00: **A fiber-to-waveguide, 1D grating coupler design using genetic algorithm for 1550 nm applications**, Beyza Akcay, TOBB Univ. of Economics and Technology (Turkey); Hasan Alper Gunes, TOBB ETÜ (Turkey); Hamza Kurt, KAIST (Korea, Republic of); Mehmet Ünlü, TOBB Univ. of Economics and Technology (Turkey) [12148-11]

SESSION 4

LOCATION: SALON 4, NIVEAU/LEVEL 0 MON 13:40 TO 14:20

Linear- and Nonlinear-based Photonic DevicesSession Chair: **Peter O'Brien**, Tyndall National Institute (Ireland)

0:00: **Compact integrated dual-comb source based on self-injection locking of the laser diode**, Nikita Dmitriev, Russian Quantum Ctr. (Russian Federation) [12148-14]

SESSION 5

LOCATION: SALON 4, NIVEAU/LEVEL 0 MON 14:20 TO 15:00

Passive and Active Photonic Devices IISession Chair: **Roel G. Baets**, Univ. Gent (Belgium)

0:00: **Trade-off design exploration between footprint and bandwidth for vertical cavity Ge-on-Si photodetectors using gain peak**, Marcelo Rubinde-Celis, Univ. Nacional de Ingeniería (Peru); Ruth E. Rubio-Noriega, Instituto Nacional de Investigación y Capacitación de Telecomunicaciones, Univ. Nacional de Ingeniería (Peru) [12148-19]

LOCATION: HALL RHIN, POSTER AREA 17:40 TO 19:30

Posters-Wednesday

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Poster Setup: Wednesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

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Cross-section exploration of a silicon-on-insulator evanescent field sensor in the form of Mach-Zehnder interferometer, Freddy Jara Poma, Univ. Nacional Mayor de San Marcos (Peru); M. Elisia A. Alvarado, Ruth E. Rubio-Noriega, Instituto Nacional de Investigación y Capacitación de Telecomunicaciones, Univ. Nacional de Ingeniería (Peru) [12148-33]

Particle swarm assisted subwavelength Y-branch power divider, Johrdan Saavedra, Univ. Nacional de Ingeniería (Peru); Roy Prosopio-Galarza, Maria A. Alvarado, Instituto Nacional de Investigación y Capacitación de Telecomunicaciones (Peru); Ruth E. Rubio-Noriega, Instituto Nacional de Investigación y Capacitación de Telecomunicaciones, Univ. Nacional de Ingeniería (Peru) [12148-34]

Genetic algorithm based, on-chip, fishbone grating waveguide and transition design for time-domain operation, Ahmet O. Sakin, Hasan Alper Gunes, TOBB ETÜ (Turkey); Hamza Kurt, KAIST (Korea, Republic of); Mehmet Ünlü, TOBB ETÜ (Turkey) [12148-35]

Waveguide-to-substrate, vertical bend coupler design for 3D photonic integrated circuits, Hasan Alper Gunes, TOBB ETÜ (Turkey); Hamza Kurt, KAIST (Korea, Republic of); Mehmet Ünlü, TOBB ETÜ (Turkey) [12148-36]

Optical neural network in form of photonic integrated circuit for optic and photonic education, Iryna Avdeionok, Volodymyr N. Borovytsky, National Technical Univ. of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" (Ukraine) . . [12148-37]

Side-coupled microring resonator-based add drop filter in silicon photonics, Anamika Singh, Yash Bawankar, Visvesvaraya National Institute of Technology, Nagpur (India) [12148-38]

Organic Electronics and Photonics: Fundamentals and Devices III

Conference Chairs: **Sebastian Reineke**, TU Dresden (Germany); **Koen Vandewal**, Univ. Hasselt (Belgium); **Wouter Maes**, Univ. Hasselt (Belgium)

Program Committee: **Artem A. Bakulin**, Imperial College London (United Kingdom); **David Beljonne**, Univ. de Mons (Belgium); **Vladimir Dyakonov**, Julius-Maximilians-Univ. Würzburg (Germany); **Malte C. Gather**, Univ. of St. Andrews (United Kingdom); **Peter Ho**, National Univ. of Singapore (Singapore); **Kristiaan Neyts**, Univ. Gent (Belgium); **Markus Clark Scharber**, Johannes Kepler Univ. Linz (Austria); **Franky So**, North Carolina State Univ. (USA); **Natalie Stingelin**, Georgia Institute of Technology (USA); **He Yan**, Hong Kong Univ. of Science and Technology (Hong Kong, China); **Eli Zysman-Colman**, Univ. of St. Andrews (United Kingdom)

MONDAY 4 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 11:00

Hot Topics I

Session Chair: **Paul Montgomery**, Univ. of Strasbourg (France), 2022 Symposium Chair

9:00: **Welcome and Introduction; City of Strasbourg Welcome; Presentation of the 2022 SPIE Mozi Award to Thomas W. Ebesen**, The Institute for Advanced Study of the Univ. of Strasbourg (USIAS) and CNRS (France), **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA), 2022 SPIE President

9:10: **Introduction to Hot Topics, Paul Montgomery**, Univ. of Strasbourg (France), 2022 Symposium Chair

9:15: **Access to photonics innovation support for European researchers and companies through ACTPHAST4R and PhotonHub Europe (Plenary)**, Hugo Thienpont, Vrije Univ. Brussel (Belgium) [12148-500]

9:30: **Quantum computing: prospects and challenges (Plenary)**, Heike Riel, IBM Research - Zürich (Switzerland) [12133-500]

10:15: **Einstein Telescope, the pioneer project for a third-generation GW observatory in Europe: science, technologies and perspectives (Plenary)**, Michele Punturo, Istituto Nazionale di Fisica Nucleare (Italy) [12139-500]

Coffee Break Mon 11:00 to 11:30

SESSION 1

LOCATION: ETOILE C, NIVEAU/LEVEL 1 MON 11:30 TO 12:40

Organic Light Emitting Diodes I

Session Chair: **Andreas Sperlich**, Julius-Maximilians-Univ. Würzburg (Germany)

11:30: **Optimising the triplet sensitizer for DABNA based deep blue hyperfluorescent OLEDs (Invited Paper)**, Andrew P. Monkman, Kleitos Stavrou, Larissa Gomes-Franca, Andrew Danos, Durham Univ. (United Kingdom) [12149-1]

12:00: **Triplet-to-singlet exciton transfer in hyperfluorescent OLED materials**, Piotr de Silva, Technical Univ. of Denmark (Denmark) [12149-2]

12:20: **Ultra-short optical pulse generation and laser perspective in an Alq3 based micro OLED**, Daan Lenstra, Technische Univ. Eindhoven (Netherlands); Alexis Fischer, Amani Ouirimi, Univ. Paris 13 (France); Alex Chamberlain Chime, Univ. de Dschang (Cameroon); Nixon Loganathan, Mahmoud Chakaroun, Univ. Paris 13 (France) [12149-3]

Lunch Break Mon 12:40 to 13:50

SESSION 2

LOCATION: ETOILE C, NIVEAU/LEVEL 1 MON 13:50 TO 15:30

Organic Light Emitting Diodes II

Session Chair: **Andrew P. Monkman**, Durham Univ. (United Kingdom)

14:20: **The interplay of excited state energy levels in donor-acceptor TADF compounds**, Tom Cardeynaels, Simon Paredis, Univ. Hasselt (Belgium); Andrew Danos, Andrew P. Monkman, Durham Univ. (United Kingdom); Dirk Vanderzande, Univ. Hasselt (Belgium); Benoît Champagne, Univ. de Namur (Belgium); Wouter Maes, Univ. Hasselt (Belgium) [12149-5]

14:40: **Towards thermally activated delayed fluorescence compounds with minimized solid-state conformational disorder**, Tomas Serevicius, Rokas Skaisgiris, Irina Fiodorova, Karolis Kazlauskas, Sigita Tumkevicius, Saulius Jursenas, Vilnius Univ. (Lithuania) [12149-6]

15:00: **Bicolor organic LEDs for neuronal activation and silencing (Invited Paper)**, Caroline Murawski, Kurt-Schwabe-Institut für Mess- und Sensortechnik e.V. (Germany); Giuseppe Ciccone, TU Dresden (Germany); Ilenia Meloni, Kurt-Schwabe-Institut für Mess- und Sensortechnik e.V. (Germany); Rodrigo F. Lahore, Johannes Vierock, Humboldt-Univ. zu Berlin (Germany); Hans Kleemann, TU Dresden (Germany); Peter Hegemann, Humboldt-Univ. zu Berlin (Germany); Karl Leo, TU Dresden (Germany) [12149-7]

Coffee Break Mon 15:30 to 16:00

SESSION 3

LOCATION: ETOILE C, NIVEAU/LEVEL 1 MON 16:00 TO 17:40

Electrochemical Devices

Session Chair: **Caroline Murawski**, Kurt-Schwabe-Institut für Mess- und Sensortechnik e.V. (Germany)

16:00: **Side-chain engineering control of mixed conduction in oligoethylene glycol-substituted polythiophenes (Invited Paper)**, Christine K. Luscombe, Okinawa Institute of Science and Technology Graduate Univ. (Japan) [12149-8]

16:30: **Absorbance spectra deconvolution and THz spectroscopy: tools to access fundamental mechanisms limiting the development of bioelectronic and energy storage devices**, Olivier Bardagot, Gonzague Rebetez, Priscila Cavassin, Julien Réhault, Natalie Banerji, Univ. Bern (Switzerland) [12149-9]

16:50: **Morphology of poly(3-hexylthiophene) dictates electrochemical doping mechanisms**, Priscila Cavassin, Isabelle Holzer, Olivier Bardagot, Julien Réhault, Natalie Banerji, Univ. Bern (Switzerland) [12149-10]

17:10: **Towards sustainable and efficient light-emitting electrochemical cells (Invited Paper)**, Ludvig Edman, Umeå Univ. (Sweden) [12149-11]

TUESDAY 5 APRIL

SESSION 4

LOCATION: ETOILE C, NIVEAU/LEVEL 1 TUE 8:50 TO 10:20

Charge and Exciton Transport

Session Chair: **Eli Zysman-Colman**, Univ. of St. Andrews (United Kingdom)

8:50: **Purified and functionalized carbon nanotubes for optical and electronic applications (Invited Paper)**, Jana Zaumseil, Ruprecht-Karls-Univ. Heidelberg (Germany) [12149-12]

9:20: **Impact of the crystalline order on the exciton diffusion length in organic thin films of donor-acceptor-donor molecules based on triazatruxene units**, Jiang Jing, Emilie Steveler, Institut National des Sciences Appliquées de Strasbourg (France) and Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France); Nicolas Leclerc, Institut de Chimie et Procédés pour l'Energie, l'Environnement et la Santé, CNRS (France); Anthony D'Aléo, Benoit Heinrich, Institut de physique et chimie des matériaux de Strasbourg (France); Wilfried Uhring, Thomas Heiser, Univ. de Strasbourg (France) and Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France) [12149-13]

9:40: **Quasi-steady-state measurement of exciton diffusion length in organic semiconductors**, Drew B. Riley, Oskar J. Sandberg, Wei Li, Paul Meredith, Ardan Armin, Swansea Univ. (United Kingdom) [12149-14]

10:00: **Exploring the intrinsic limits of near-infrared detectors by novel materials design**, Sam Gielen, Univ. Hasselt (Belgium); Christina Kaiser, Swansea Univ. (United Kingdom); Jochen Vanderspikken, Omar Beckers, Univ. Hasselt (Belgium); Ardan Armin, Paul Meredith, Swansea Univ. (United Kingdom); Koen Vandewal, Wouter Maes, Univ. Hasselt (Belgium) [12149-15]

Coffee Break Tue 10:20 to 10:50

SESSION 5

LOCATION: ETOILE C, NIVEAU/LEVEL 1 TUE 10:50 TO 12:40

Organic Light Emitting Diodes III

Session Chair: **Koen Vandewal**, Univ. Hasselt (Belgium)

10:50: **Design of high performance organic thermally activated delayed fluorescence dendrimer emitters for solution-processed organic light-emitting diodes** (*Invited Paper*), Eli Zysman-Colman, Dianming Sun, Univ. of St. Andrews (United Kingdom) [12149-17]

11:20: **Technology to optimize rubrene for solid-State NIR-to-vis upconversion**, Edvinas Radiunas, Lukas Naimovicus, Augustina Jozeliunaite, Saulius Jursenas, Edvinas Orentas, Karolis Kazlauskas, Vilnius Univ. (Lithuania) [12149-18]

11:40: **Device dimensions govern self heating-induced tristability in OLED lighting tiles**, Anton Kirch, Axel Fischer, Dresden Integrated Ctr. for Applied Physics and Photonic Materials (Germany); Matthias Liero, Annegret Glitzky, Jürgen Fuhrmann, Weierstrass-Institut für Angewandte Analysis und Stochastik (Germany); Sebastian Reineke, Dresden Integrated Ctr. for Applied Physics and Photonic Materials (Germany) [12149-19]

12:00: **Heat treatment of organic glasses for high-performance organic light-emitting diodes**, Dinara Samigullina, Elisabeth B. Schwarz, Paul-Anton Will, Simone Lenk, Sebastian Reineke, TU Dresden (Germany) [12149-20]

12:20: **Analysis and optimization of light outcoupling in OLEDs with different emitting dipole orientations**, Milan Kovacic, Janez Krc, Marko Topic, Univ. of Ljubljana (Slovenia) [12149-21]

Lunch/Exhibition Break Tue 12:40 to 13:50

SESSION 6

LOCATION: ETOILE C, NIVEAU/LEVEL 1 TUE 13:50 TO 16:00

Photovoltaics and Energy Conversion

Session Chair: **Michael Sommer**, Technische Univ. Chemnitz (Germany)

13:50: **Polymer acceptors with flexible spacers afford efficient and mechanically robust all-polymer solar cells** (*Invited Paper*), Ergang Wang, Zewdneh Genene, Chalmers Univ. of Technology (Sweden) [12149-22]

14:20: **Efficiency-enhanced scalable organic photovoltaics using roll-to-roll (R2R) nanoimprint lithography**, Mohammed Amir Yakob, Jani Lamminaho, Univ. of Southern Denmark (Denmark); Ashish Prajapati, Ben-Gurion Univ. of the Negev (Israel); Karlis Petersons, Stensborg A/S (Denmark); Horst-Günter Rubahn, Univ. of Southern Denmark (Denmark); Jan Stensborg, Stensborg A/S (Denmark); Gil Shalev, Ben-Gurion Univ. of the Negev (Israel); Morten Madsen, Univ. of Southern Denmark (Denmark) [12149-23]

14:40: **Large organic functional cations as building blocks in low-dimensional hybrid perovskites: new semiconductors for optoelectronics**, Dirk Vanderzande, Univ. Hasselt (Belgium) and imec (Belgium); Wouter Van Gompel, Paul-Henry Denis, Martijn Mertens, Arthur Maufort, Univ. Hasselt (Belgium); Laurence Lutsen, imec (Belgium) . . [12149-24]

15:00: **Supramolecular structure design of organic monolayers for photo-energy conversion**, Martin Presselt, Jasmin Finkelmeyer, Leibniz-Institut für Photonische Technologien e.V. (Germany); Saunak K. Das, Angewandte Physikalische Chemie (Germany) and Ruprecht-Karls-Univ. Heidelberg (Germany); Maximilian L. Hupfer, Friedrich-Schiller-Univ. Jena (Germany) [12149-25]

15:20: **Photovoltaic spatial light modulators for self-powered smart windows**, Yuhan Zhong, Jing Wang, Sadiara Fall, Yaochen Lin, Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie, CNRS (France) and Univ. de Strasbourg (France); Nicolas Brouckaert, Univ. of Southampton (United Kingdom); Chaima Mahmoudi, Wenziz Muzuzu, Nicolas Leclerc, Institut de Chimie et Procédés pour l'Energie, l'Environnement et la Santé, CNRS (France) and Univ. de Strasbourg (France); Malgosia Kaczmarek, Univ. of Southampton (United Kingdom); Martin Brinkmann, Institut Charles Sadron, CNRS (France); Thomas Heiser, Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie, CNRS (France) and Univ. de Strasbourg (France) [12149-26]

15:40: **Nonequilibrium effects boost Voc in organic solar cells**, Martijn Kemerink, Ruprecht-Karls-Univ. Heidelberg (Germany) [12149-27]

Coffee Break Tue 16:00 to 16:30

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair16:30: **Welcome and opening remarks**

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) . [12144-500]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

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Integrated symmetrical organic/semiconductor structures produced by hybrid processes: photonic micro-resonators cavities, Rémi Sevestre, Nathalie Coulon, Lucas Garnier, Hervé Lhermite, Alain Moréac, Hervé Cormerais, Laurent Le Brizoual, France Le Bihan, Didier Balcon, Bruno Bêche, Univ. de Rennes 1 (France) [12149-41]

A study on realization of vertically stacked organic pulse oximetry sensors with low power and high reliability, Seunghee Lee, Seunghyup Yoo, KAIST (Korea, Republic of) [12149-43]

Symmetrical versus asymmetrical molecular configuration in metal-assisted-through-space charge transfer TADF emitters, Armands Ruduss, Žanis Sisojevs, Riga Technical Univ. (Latvia); Aivars Vembris, Kitija A. Štucere, Institute of Solid State Physics, Univ. of Latvia (Latvia); Kaspars Traskovskis, Riga Technical Univ. (Latvia) [12149-44]

TADF active carbene-metal-amide complexes exhibiting through-space charge transfer: an impact of metal atom, Annija Jece, Armands Ruduss, Riga Technical Univ. (Latvia); Kitija A. Štucere, Aivars Vembris, Institute of Solid State Physics, Univ. of Latvia (Latvia); Kaspars Traskovskis, Riga Technical Univ. (Latvia) [12149-47]

Laser gain medium of DCM derivatives in active matrix, Patricija Paulsone, Elmars Zarins, Aivars Vembris, Institute of Solid State Physics, Univ. of Latvia (Latvia) [12149-48]

Cyano-substituted rubrene compounds for NIR-to-visible photon upconversion, Lukas Naimovicus, Edvinas Radiunas, Augustina Jozeliunaite, Edvinas Orentas, Karolis Kazlauskas, Vilnius Univ. (Lithuania) [12149-49]

Substantial TADF OLED performance improvement by simple emitter structure modification, Dovydas Banevicius, Gediminas Kreiza, Domantas Berenis, Tomas Javorskis, Edvinas Orentas, Saulius Jursenas, Karolis Kazlauskas, Vilnius Univ. (Lithuania) [12149-50]

SU-8 waveguide thermo-optical coefficient depending on size and coating, Anete Berzina, Arturs Bundulis, Institute of Solid State Physics, Univ. of Latvia (Latvia) [12149-51]

Study of the impact of pump laser pulse duration on the amplified spontaneous emission threshold of organic thin films, Raphaël Florentin, Anthony Dall'Agnol, Sébastien Forget, Sébastien Chénais, Lab. de Physique des Lasers (France) [12149-53]

Continuous-wave lasing properties of organic semiconductor lasers, Anthony Dall'Agnol, Sébastien Forget, Raphaël Florentin, Sébastien Chénais, Lab. de Physique des Lasers (France) and Univ. Paris 13 (France) . . . [12149-54]

Spectroscopic studies of new series of alkaline earth elements (Mg, Ca, Sr, Ba) correlated metallophosphonates, Parameshwari Ganesan, Ctr. de Recherche sur les Ions, les Matériaux et la Photonique (France) and Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche (France) and Univ. de Caen Normandie (France); Geoffrey Lethoux, Lab. de Cristallographie et Sciences des Matériaux (France) and Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche (France) and Univ. de Caen Normandie (France); Christophe Labbé, Ctr. de Recherche sur les Ions, les Matériaux et la Photonique (France); Olivier Perez, Lab. de Cristallographie et Sciences des Matériaux (France) and Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche (France) and Univ. de Caen Normandie (France); Jean-Michel Rueff, Lab. de Cristallographie et Sciences des Matériaux (France); Paul-Alain Jaffrès, Lab. de Chimie, Electrochimie, Moléculaires et Chimie Analytique (France) and Univ. de Bretagne Occidentale (France); Julien Cardin, Ctr. de Recherche sur les Ions, les Matériaux et la Photonique (France) . [12149-55]

CONFERENCE 12149

Laser-induced transfer of graphene on flexible substrates for touch sensor application, Adamantia Logotheti, Filimon Zacharatos, Symeon Papazoglou, National Technical Univ. of Athens (Greece); Amaia Pesquera, Amaia Zurutuza, Graphenea S.A. (Spain); Ioanna Zergioti, National Technical Univ. of Athens (Greece) [12149-55]

Thermal control of organic semiconductor films for explosives detection, Edward B. Ogugu, Ross N. Gillanders, Graham A. Turnbull, Univ. of St. Andrews (United Kingdom) [12149-57]

Optical and electroluminescence studies of original iridium metal complexes with aromatic staking effect, Margarita Anna Zommere, Institute of Solid State Physics, Univ. of Latvia (Latvia); Kirills Dmitrijevs, Kaspars Traskovskis, Valdis Kokars, Riga Technical Univ. (Latvia); Aivars Vembris, Institute of Solid State Physics, Univ. of Latvia (Latvia) [12149-58]

Carbazole derivatives with pyridinium ion as emitters for light-emitting electrochemical cells, Adriana Maurucaite, Institute of Solid State Physics, Univ. of Latvia (Latvia); Kaspars Leduskrasts, Edgars Suna, Latvian Institute of Organic Synthesis (Latvia); Aivars Vembris, Institute of Solid State Physics, Univ. of Latvia (Latvia) [12149-59]

Carbene-metal complexes as through-space TADF emitters, Kitija A. Stucere, Institute of Solid State Physics, Univ. of Latvia (Latvia); Armands Ruduss, Kaspars Traskovskis, Riga Technical Univ. (Latvia); Aivars Vembris, Institute of Solid State Physics, Univ. of Latvia (Latvia) [12149-60]

WEDNESDAY 6 APRIL

SESSION 7

LOCATION: ETOILE C, NIVEAU/LEVEL 1 WED 8:40 TO 10:10

New Materials, Concepts, and Devices I

Session Chair: **Wouter Maes**, Univ. Hasselt (Belgium)

8:40: **Sustainable syntheses of (defective) conjugated copolymers for organic electronic devices** (*Invited Paper*), Michael Sommer, Technische Univ. Chemnitz (Germany) [12149-28]

9:10: **Smart integration of organic light-emitting transistors with organic photodiodes for ultracompact plasmonic sensors**, Mario Prosa, Emilia Benvenuti, Istituto per lo Studio dei Materiali Nanostrutturati (Italy); David Kallweit, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Paola Pellacani, Plasmore S.r.l. (Italy); Michael Toerker, Fraunhofer-Institut für Organische Elektronik, Elektronenstrahl- und Plasmatechnik FEP (Germany); Margherita Bolognesi, Istituto per lo Studio dei Materiali Nanostrutturati (Italy); Laura Lopez-Sanchez, Plasmore S.r.l. (Italy); Franco Marabelli, Univ. degli Studi di Pavia (Italy); Stefano Toffanin, Istituto per lo Studio dei Materiali Nanostrutturati (Italy) [12149-29]

9:30: **Functional organic cations in low-dimensional hybrid organic-inorganic perovskites: charge transfer processes**, Wouter Van Gompel, Univ. Hasselt (Belgium); Melissa Van Landeghem, Univ. Hasselt (Belgium) and Univ. Antwerp (Belgium); María Gélvez-Rueda, AMOLF (Netherlands) and Technische Univ. Delft (Netherlands); Ferdinand Grozema, Technische Univ. Delft (Netherlands); Sabine Van Doorslaer, Etienne Goovaerts, Univ. Antwerpen (Belgium); Laurence Lutsen, imec (Belgium) and Univ. Hasselt (Belgium); Dirk Vanderzande, Univ. Hasselt (Belgium) [12149-30]

9:50: **Materials design based on theoretical characterization: Improving open-shell organic molecules for electronic applications**, Sebastian Schellhammer, TU Dresden (Germany); Frank Ortman, Technische Universität München (Germany) [12149-31]

Coffee Break Wed 10:10 to 10:40

SESSION 8

LOCATION: ETOILE C, NIVEAU/LEVEL 1 WED 10:40 TO 12:10

New Materials, Concepts, and Devices II

Session Chair: **Sebastian Reineke**, TU Dresden (Germany)

10:40: **Persistent luminescence from stable photoinduced charge-separated state** (*Invited Paper*), Ryota Kabe, Okinawa Institute of Science and Technology Graduate Univ. (Japan) [12149-32]

11:10: **Continuous-wave readable and subsecond programmable luminescent tags based on organic room temperature phosphorescence**, Tim Achenbach, Max Gmelch, Heidi Thomas, Sebastian Reineke, TU Dresden (Germany) [12149-33]

11:30: **Photothermal techniques for ultraprecise measurements of the photoluminescence quantum yield of molecular emitters in solution**, Sigurd Mertens, Koen Vandewal, Univ. Hasselt (Belgium) [12149-34]

11:50: **Spin-orbit coupling and helical molecular orbitals in oligoynone-bridged bifluorene conformers**, Paulius Baronas, Eglė Tankelevičiūtė, Saulius Juršėnas, Vilnius Univ. (Lithuania) [12149-35]

Lunch/Exhibition Break Wed 12:10 to 13:30

SESSION 9

LOCATION: ETOILE C, NIVEAU/LEVEL 1 WED 13:30 TO 15:20

New Materials, Concepts, and Devices III

Session Chair: **Michael Sommer**, Technische Univ. Chemnitz (Germany)

13:30: **Low-threshold polariton lasing in fluorene-based oligomers**, Graham A. Turnbull, Mengjie Wei, Arvydas Ruseckas, Univ. of St. Andrews (United Kingdom); Van T. N. Mai, Atul Shukla, Ilene Allison, Shih-Chun Lo, Ebinazar B. Namdas, The Univ. of Queensland (Australia); Ifor D. W. Samuel, Univ. of St. Andrews (United Kingdom) [12149-36]

13:50: **Polariton luminescence in organic molecular systems: non-Markovian fano resonances and hot luminescence**, Boris D. Fainberg, Vladimir A. Osipov, Holon Institute of Technology (Israel) [12149-37]

14:10: **Investigations of spontaneous and stimulated emission properties of original glass-forming pyraniliden derivatives in thin films with and without silver nanoparticles**, Aivars Vembris, Patricija Pailsone, Raivis Silis, Jelena Mikelsone, Institute of Solid State Physics, Univ. of Latvia (Latvia); Elmars Zarins, Valdis Kokars, Riga Technical Univ. (Latvia) [12149-38]

14:30: **High-performance organic electronics: bipolar transistors and GHz devices** (*Invited Paper*), Karl Leo, TU Dresden (Germany) [12149-39]

15:00: **High-temperature superfluorescence in hybrid Perovskites** (*Invited Paper*), Franky So, North Carolina State Univ (USA); Kenan Gundogdu, North Carolina State Univ. (USA) [12149-40]

ON DEMAND PRESENTATIONS

SESSION 4

LOCATION: ETOILE C, NIVEAU/LEVEL 1 MON 8:50 TO 10:20

Charge and Exciton Transport

Session Chair: **Eli Zysman-Colman**, Univ. of St. Andrews (United Kingdom)

0:00: **Playing with molecular orientation for controlling the device performance in organic electronic devices**, Shubham Sharma, Yuki Kurokawa, Shuichi Nagamatsu, Shyam S. Pandey, Kyushu Institute of Technology (Japan) [12149-16]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

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Poster Setup: Tuesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

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Substrate patterning of organic light-emitting diodes for the simultaneous enhancement of the outcoupling efficiency and reduction of spectral shifting, Savanna Lloyd, Japan Advanced Institute of Science and Technology (Japan); Tatsuya Tanigawa, IMRA America, Inc. (Japan); Hideyuki Murata, Japan Advanced Institute of Science and Technology (Japan) [12149-46]

P3HT: PCBm organic polymer supported plasmonic photo-catalysis and sensing., Ahmed Alanazi, James H. Rice, University College Dublin (Ireland) . . . [12149-63]

CONFERENCE 12150

Monday–Tuesday 4–5 April 2022 • Proceedings of SPIE Vol. 12150

Photonics for Solar Energy Systems IX

Conference Chairs: **Alexander N. Sprafke**, Martin-Luther Univ. Halle-Wittenberg (Germany); **Jan Christoph Goldschmidt**, Fraunhofer-Institut für Solare Energiesysteme ISE (Germany); **Luana Mazzarella**, Technische Univ. Delft (Netherlands)

Program Committee: **Benedikt Bläsi**, Fraunhofer-Institut für Solare Energiesysteme (Germany); **Christoph J. Brabec**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Mark Brongersma**, Geballe Lab. for Advanced Materials (GLAM) (USA); **Ning Dai**, Shanghai Institute of Technical Physics (China); **Klaus Jäger**, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); **Jung-Ho Lee**, Hanyang Univ. (Korea, Republic of); **Ulrich Wilhelm Paetzold**, Karlsruher Institut für Technologie (Germany); **Gregory Pandraud**, Ommatidia LIDAR (Netherlands); **Martin P. Pfeiffer**, Heliatek GmbH (Germany)

MONDAY 4 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 11:00

Hot Topics I

Session Chair: **Paul Montgomery**, Univ. of Strasbourg (France),
2022 Symposium Chair

9:00: **Welcome and Introduction; City of Strasbourg Welcome; Presentation of the 2022 SPIE Mozi Award to Thomas W. Ebbesen**, The Institute for Advanced Study of the Univ. of Strasbourg (USIAS) and CNRS (France), **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA), 2022 SPIE President

9:10: **Introduction to Hot Topics**, **Paul Montgomery**, Univ. of Strasbourg (France), 2022 Symposium Chair

9:15: **Access to photonics innovation support for European researchers and companies through ACTPHAST4R and PhotonHub Europe (Plenary)**, **Hugo Thienpont**, Vrije Univ. Brussel (Belgium) [12148-500]

9:30: **Quantum computing: prospects and challenges (Plenary)**, **Heike Riel**, IBM Research - Zürich (Switzerland) [12133-500]

10:15: **Einstein Telescope, the pioneer project for a third-generation GW observatory in Europe: science, technologies and perspectives (Plenary)**, **Michele Punturo**, Istituto Nazionale di Fisica Nucleare (Italy) [12139-500]

Coffee Break. Mon 11:00 to 11:30

SESSION 1

LOCATION: SALON 11, NIVEAU/LEVEL 1 MON 11:30 TO 12:30

Perovskite-based Tandems I

Session Chair: **Jan Christoph Goldschmidt**, Philipps-Univ. Marburg (Germany)

11:30: **Improving perovskite/silicon tandem solar cells with optical simulations (Invited Paper)**, **Klaus Jäger**, Johannes Sutter, Philipp Tockhorn, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); **Martin Hammerschmidt**, Philipp-Immanuel Schneider, JCMwave GmbH (Germany); **Steve Albrecht**, Christiane Becker, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany) [12150-2]

12:00: **Nanotextured perovskite/silicon tandem solar cells with >28% efficiency (Invited Paper)**, **Philipp Tockhorn**, Johannes Sutter, Klaus Jäger, Philipp Wagner, Amran Al-Ashouri, Bernd Stannowski, Steve Albrecht, Christiane Becker, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany) [12150-1]

Lunch Break. Mon 12:30 to 13:50

SESSION 2

LOCATION: SALON 11, NIVEAU/LEVEL 1 MON 13:50 TO 15:20

Perovskite-based Tandems II

Session Chair: **Luana Mazzarella**, Technische Univ. Delft (Netherlands)

13:50: **Optical optimization of front-side texture in perovskite/silicon tandem solar cells (Invited Paper)**, **Rudi Santbergen**, Ivo Smink, Malte R. Vogt, Nasim Rezaei, Olindo Isabella, Technische Univ. Delft (Netherlands) [12150-3]

14:20: **Energy yield modelling and optics of perovskite-based tandem photovoltaics**, **Fabrizio Gota**, Karlsruher Institut für Technologie (Germany) . . . [12150-4]

14:40: **Introducing the PVMD toolbox, a new comprehensive modelling software to simulate building integrated- and tandem PV systems**, **Malte R. Vogt**, K. G. Subramanian, C. Ruiz Tobon, A. Alcaniz Moya, M. Singh, A. Nour El Din, M. Jayan, T. Stark, Z. Wang, E. G. Goma, J. G. Etxebarria, H. Ziar, M. Zeman, Rudi Santbergen, Olindo Isabella, Technische Univ. Delft (Netherlands) [12150-5]

15:00: **Beneficial instability: self-optimizing optical performance in mixed halide perovskite**, **Julia van der Burgt**, Susan Rigter, Erik Garnett, AMOLF (Netherlands) [12150-6]

Coffee Break. Mon 15:20 to 15:50

SESSION 3

LOCATION: SALON 11, NIVEAU/LEVEL 1 MON 15:50 TO 17:50

Perovskite Characterization

Session Chair: **Klaus Jaeger**, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany)

16:20: **A scaling law for the time derivative of TR-PL allows for a quantitative assessment of radiative and nonradiative recombination parameters of perovskite materials (Invited Paper)**, **Guillaume Vidon**, Institut Photovoltaïque d'Ile-de-France (France); **Stefania Cacovich**, Institut Photovoltaïque d'Ile-de-France, Ecole Polytechnique, CNRS (France); **Marie Legrand**, Daniel Ory, Electricité de France (France) and Institut Photovoltaïque d'Ile-de-France (France); **Daniel Suchet**, Institut Photovoltaïque d'Ile-de-France, Ecole Polytechnique, CNRS (France); **Jean-Baptiste Puel**, Electricité de France (France) and Institut Photovoltaïque d'Ile-de-France (France); **Jean-François Guillemoles**, CNRS (France) and Institut Photovoltaïque d'Ile-de-France (France) [12150-8]

16:50: **Accurate quantification of photon recycling and the photon escape probability in perovskite thin films and its relevance for luminescent coupling effects in perovskite-based tandem photovoltaics**, **Paul Fassl**, **Ulrich W. Paetzold**, Karlsruher Institut für Technologie (Germany) [12150-9]

17:10: **Opto-electronic properties of inverted perovskites solar cells with organic cations interfacial passivation**, **Daniel Ory**, Electricité de France (France); **Guillaume Vidon**, Institut Photovoltaïque d'Ile-de-France (France); **Laxman Gouda**, Matteo Degani, Univ. degli Studi di Pavia (Italy); **Jean-Baptiste Puel**, Marie Legrand, Electricité de France (France); **Jean-François Guillemoles**, **Stefania Cacovich**, CNRS (France); **Giulia Grancini**, Univ. degli Studi di Pavia (Italy) [12150-10]

17:30: **Mapping absorption coefficient of photovoltaic absorbers through photoluminescence imaging**, **Marie Legrand**, Institut Photovoltaïque d'Ile-de-France, Electricité de France S.A. (France); **Baptiste Bérenguier**, **Guillaume Vidon**, Institut Photovoltaïque d'Ile-de-France, Ecole Polytechnique, CNRS (France); **Daniel Ory**, Institut Photovoltaïque d'Ile-de-France (France); **Jean-François Guillemoles**, Institut Photovoltaïque d'Ile-de-France, Ecole Polytechnique, CNRS (France) [12150-11]

TUESDAY 5 APRIL

SESSION 4

LOCATION: SALON 11, NIVEAU/LEVEL 1 TUE 8:50 TO 10:40

Innovative Nanostructures

Session Chair: **Alexander N. Sprafke**, Martin-Luther-Univ. Halle-Wittenberg (Germany)

8:50: **Effect of feature size on the reflective behaviour of the MorphoColor™ concept (Invited Paper)**, **Adrian Callies**, **Andreas Wessels**, Fraunhofer-Institut für Solare Energiesysteme ISE (Germany); **Andreas W Bett**, University of Freiburg, Institute of Physics (Germany); **Benedikt Bläsi**, **Oliver Höhn**, Fraunhofer-Institut für Solare Energiesysteme ISE (Germany) . [12150-13]

9:20: **Light trapping gratings for solar cells: an analytical approach to find the best periods (Invited Paper)**, **Benedikt Bläsi**, **Mario Hanser**, **Adrian Callies**, Fraunhofer-Institut für Solare Energiesysteme ISE (Germany); **Klaus Jäger**, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); **Oliver Höhn**, Fraunhofer-Institut für Solare Energiesysteme ISE (Germany) . [12150-14]

9:50: **Breaking the shackles of the shading/resistance loss trade-off in concentrator solar cells: effectively transparent contacts for elimination of shading losses (Invited Paper)**, **Stefan Wil Tabernig**, AMOLF (Netherlands); **Anastasia Soeriyadi**, **Udo Roemer**, **Andreas Pusch**, The Univ. of New South Wales (Australia); **Dimitry Lamers**, AMOLF (Netherlands); **Michael Nielsen**, The Univ. of New South Wales (Australia); **Albert Polman**, AMOLF (Netherlands); **Nicholas Ekins-Daukes**, The Univ. of New South Wales (Australia) . . . [12150-15]

CONFERENCE 12150

10:20: **Nearly hyperuniform antireflection coatings made from high-index nanodisks for silicon heterojunction solar cells**, Peter M. Piechulla, Martin-Luther-Univ. Halle-Wittenberg (Germany); Evgeniia Slivina, Karlsruher Institut für Technologie (Germany); Derk Baetzner, Meyer Burger Research AG (Switzerland); Ivan Fernandez-Corbaton, Prerak Dhawan, Karlsruher Institut für Technologie (Germany); Ralf B. Wehrspohn, Alexander N. Sprafke, Martin-Luther-Univ. Halle-Wittenberg (Germany); Carsten Rockstuhl, Karlsruher Institut für Technologie (Germany). [12150-17]
Coffee Break. Tue 10:40 to 11:10

SESSION 5

LOCATION: SALON 11, NIVEAU/LEVEL 1 TUE 11:10 TO 12:20

Innovative Applications I

Session Chair: **Benedikt Bläsi**, Fraunhofer-Institut für Solare Energiesysteme ISE (Germany)

11:10: **Enhanced photon upconversion using single- and multilayer metasurfaces** (*Invited Paper*), Christiane Becker, Doguscan Ahiboz, Phillip Manley, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); Elina Andresen, Christian Würth, Ute Resch-Genger, Bundesanstalt für Materialforschung und -prüfung (Germany) [12150-18]

11:40: **Upconversion for harvesting subbandgap photons in perovskite solar cells**, Roja Singh, Karlsruher Institut für Technologie (Germany) [12150-19]

12:00: **Inverse opal TiO₂-based heterocomposite photonic structures for slow photon-assisted visible light photocatalysis**, Thomas Lourdu Madanu, Sebastien Mouchet, Olivier Deparis, Bao-Lian Su, Univ. de Namur (Belgium) . . . [12150-20]

Lunch/Exhibition Break Tue 12:20 to 14:00

SESSION 6

LOCATION: SALON 11, NIVEAU/LEVEL 1 TUE 14:00 TO 15:30

Innovative Applications II

Session Chair: **Christiane Becker**, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany)

14:00: **Thermodynamics of a nanowire solar cell: towards the ultimate limit** (*Invited Paper*), Ksenia Korzun, Philemon Koolen, Ilya Kolpakov, Emanuele Bochicchio, Jaime Gómez Rivas, Jos E. M. Haverkort, Technische Univ. Eindhoven (Netherlands) [12150-22]

14:50: **Dual-mode photonic textiles for radiative heat management**, Muluneh G. Abebe, Alice De Corte, Gilles Rosolen, Bjorn Maes, Univ. de Mons (Belgium) [12150-24]

15:10: **Optically resonant bulk heterojunction PbS quantum dot solar cell**, Stefan Wil Tabernig, AMOLF (Netherlands) [12150-33]

Coffee Break. Tue 15:30 to 16:30

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:30: **Welcome and opening remarks**

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) . [12144-500]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Tuesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

Enhancing broadband light absorption in ultrathin film absorbers for solar fuel generation, Sa'ar Shor Peled, Daniel A. Grave, Vitali Gelberg, Joshua Pelleg, Ben-Gurion Univ. of the Negev (Israel) [12150-21]

Application of innovations grouped under the name giant photoconversion, Zbigniew T. Kuznicki, Patrick Meyrueis, Mikael Hosatte, Marek Basta, Segton Advanced Technology (France) [12150-28]

SIM-SEG code giving a complete insight into electronic and photovoltaic performances basing on non-destructive optical measurements, Marek Basta, Zbigniew T. Kuznicki, Mikael Hosatte, Segton Advanced Technology (France) [12150-30]

ON DEMAND PRESENTATIONS

SESSION 3

LOCATION: SALON 11, NIVEAU/LEVEL 1 MON 15:50 TO 17:50

Perovskite Characterization

Session Chair: **Klaus Jaeger**, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany)

0:00: **Tweaking the band gap and photoluminescence of CsPbI₃ perovskite by Mn alloying**, Nivedita Pandey, Subhananda Chakrabarti, Indian Institute of Technology Bombay (India) [12150-12]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

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Investigating sunlight trapping efficiency of an ultrathin, ultrabroadband, thermostable, zirconium nitride (ZrN)-based metasurface for solar thermophotovoltaic systems, Sumbel Ijaz, Information Technology Univ. of the Punjab (Pakistan); Ahsan S. Rana, Air Univ. (Pakistan); Muhammad Zubair, Muhammad Qasim Mehmood, Information Technology Univ. of the Punjab (Pakistan) [12150-25]

Experimental investigation of blue and green colour emission in CsPbX₃ (X= Cl & Br) quantum dots with theoretical insight, Nivedita Pandey, Subhananda Chakrabarti, Indian Institute of Technology Bombay (India) [12150-26]

First principle investigation of red-emitting CsPbI₃ QDs with experimental details for solar device applications, Nivedita Pandey, Subhananda Chakrabarti, Indian Institute of Technology Bombay (India) [12150-27]

Dynamic spectra of concentrator monoSi PVC, Arkadiy V. Blank, M. V. Lomonosov Moscow State Univ. (Russian Federation) [12150-29]

CONFERENCE 12151

Tuesday–Thursday 5–7 April 2022 • Proceedings of SPIE Vol. 12151

Photosensitive Materials and their Applications II

Conference Chairs: Robert R. McLeod, Univ. of Colorado Boulder (USA); Inmaculada Pascual Villalobos, Univ. de Alicante (Spain); Yasuo Tomita, Univ. of Electro-Communications (Japan); John T. Sheridan, Univ. College Dublin (Ireland)

Program Committee: Andrea Bianco, Istituto Nazionale di Astrofisica (Italy); Augusto Beléndez, Univ. de Alicante (Spain); Hans I. Bjelkhagen, Glyndwr Univ. (United Kingdom); Friedrich-Karl Bruder, Covestro AG (Germany); Ivan B. Divliansky, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Antonio Fimia Gil, Univ. Miguel Hernández (Spain); Martin Fally, Univ. Wien (Austria); Sergi Gallego Rico, Univ. de Alicante (Spain); Jinxin Guo, Beijing Univ. of Technology (China); Yuan Luo, National Taiwan Univ. (Taiwan); Christian Ley, Univ. de Haute Alsace (France); Izabela Naydenova, Dublin Institute of Technology (Ireland); Nikolay V. Nikonov, ITMO Univ. (Russian Federation); Sergey B. Odínokov, Bauman Moscow State Technical Univ. (Russian Federation); Tina Sabel, Technische Univ. Berlin (Germany); Oksana V. Sakhno, Fraunhofer-Institut für Angewandte Polymerforschung IAP (Germany); Takeo Sasaki, Tokyo Univ. of Science (Japan); Kalaichelvi Saravanamuttu, McMaster Univ. (Canada); Amy C. Sullivan, Univ. of Colorado Boulder (USA); Xiaodi Tan, Fujian Normal Univ. (China)

TUESDAY 5 APRIL

SESSION 1

LOCATION: SALON 3, NIVEAU/LEVEL 0 TUE 13:00 TO 13:30

Holography Anniversaries: A Historical Perspective

Session Chair: John T. Sheridan, Univ. College Dublin (Ireland)

13:00: **Celebrating holography anniversaries: a historical perspective** (*Invited Paper*), Augusto Beléndez Vázquez, Univ. de Alicante (Spain); John T. Sheridan, Univ. College Dublin (Ireland); Inmaculada Pascual, Univ. de Alicante (Spain) [12151-1]

SESSION 2

LOCATION: SALON 3, NIVEAU/LEVEL 0 TUE 13:30 TO 15:50

Modeling, Characterization, and Applications of Photopolymer Materials I

Session Chair: John T. Sheridan, Univ. College Dublin (Ireland)

13:30: **Mechanism of grating formation in a fast-curing and water-resistant photopolymerisable glass**, Tatsiana Mikulchik, Brian Rogers, Pamela Stoeva, Alicja Kaworek, Mohamed Oubaha, Suzanne Martin, Dervil Cody, Izabela Naydenova, Technological Univ. Dublin (Ireland) [12151-2]

13:50: **Spectroscopic study of plasmon-induced photopolymerization**, Amine Khitous, Olivier Soppera, Institut de Sciences des Matériaux de Mulhouse (France) [12151-3]

14:10: **Development of photosensitive sol-gel material for high refractive index modulation using thermal treatment during post exposure diffraction efficiency growth process**, Brian Rogers, Tatsiana Mikulchik, Pamela Stoeva, Dervil Cody, Mohamed Oubaha, Suzanne Martin, Izabela Naydenova, Technological Univ. Dublin (Ireland) [12151-4]

14:30: **Demonstration examples of Bayfol® HX vHOE's in see-through display applications**, Friedrich-Karl Bruder, Johannes Frank, Sven Hansen, Alexander Lorenz, Christel Manecke, Richard Meisenheimer, Covestro AG (Germany); Jack Mills, Covestro LLC (USA); Lena Pitzer, Igor Pochorovski, Thomas Roelle, Brita Wewer, Covestro AG (Germany) [12151-5]

14:50: **Bending in the holograms stored in hydrogel matrices**, Kheloud Berramdane, Manuel G. Ramirez, Univ. de Alicante (Spain); Maria Isabel Lucio, Paola Zezza, Maria-José Bañuls, Angel Maquieira, Univ. Politècnica de València (Spain); Marta Morales-Vidal, Augusto Beléndez Vázquez, Inmaculada Pascual, Univ. de Alicante (Spain) [12151-6]

15:10: **New photosensitive materials based on triazene derivatives**, Andrea Bianco, Paola Galli, INAF - Osservatorio Astronomico di Brera (Italy); Paola Moretti, Emma Minelli, Chiara Bertarelli, Politecnico di Milano (Italy) .. [12151-7]

15:30: **Inverse design of two-beam holographic exposure systems**, Robert R. McLeod, Andrew N. Sias, Univ. of Colorado Boulder (USA) [12151-8]

Coffee Break. Tue 15:50 to 16:30

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:30: **Welcome and opening remarks**

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti “Eduardo Caianiello” (Italy) . [12144-500]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

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Poster Setup: Tuesday 10:00 to 17:00

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Modelling a laser-driven white light source with curved phosphors, Dimitrios Kyrginas, Gérald Ledru, Georges Zissis, Lab. Plasma et Conversion d’Energie, Univ. Paul Sabatier (France) [12151-47]

WEDNESDAY 6 APRIL

SESSION 3

LOCATION: SALON 3, NIVEAU/LEVEL 0 WED 8:30 TO 10:20

Modeling, Characterization, and Applications of Photopolymer Materials II

Session Chair: Inmaculada Pascual Villalobos, Univ. de Alicante (Spain)

8:30: **Photosensitive materials for holographic recording and application in sensors** (*Invited Paper*), Izabela Naydenova, Muhammad Irfan, Brian Rogers, Pamela Stoeva, Graceson Antony, Tatsiana Mikulchik, Sabad-E Gul, Dervil Cody, John Cassidy, Suzanne Martin, Technological Univ. Dublin (Ireland) [12151-9]

9:00: **Thiol-based photopolymer for direct laser writing**, Paola Galli, Luca Oggioni, Andrea Bianco, INAF - Istituto Nazionale di Astrofisica (Italy) . [12151-10]

9:20: **Photopolymer characterization by high frequency pulsed laser**, Daniel Puerto Garcia, Sergi Gallego Rico, Joan Josep Sirvent-Verdú, Manuel Ortuño, Andrés Marquez, Inmaculada Pascual, Augusto Beléndez Vázquez, Univ. de Alicante (Spain) [12151-11]

9:40: **A study of reflection holograms with varying exposure intensities**, Andrew N. Sias, Robert R. McLeod, Amy C. Sullivan, Jamie Kowalski, Univ. of Colorado Boulder (USA) [12151-12]

10:00: **A method of writing high-intensity holograms over large exposure regions**, Andrew N. Sias, Robert R. McLeod, Amy C. Sullivan, Jamie Kowalski, Univ. of Colorado Boulder (USA) [12151-13]

Coffee Break. Wed 10:20 to 10:40

SESSION 9

LOCATION: SALON 3, NIVEAU/LEVEL 0 THU 15:30 TO 17:10

Sol-Gel, Perovskites, and Metal Oxide Materials

Session Chair: **Robert R. McLeod**, Univ. of Colorado Boulder (USA)

15:30: **Microstructuration of luminescent sol gel coating by nanoimprint**, Léa Marichez, Emilie Gamet, Isabelle Verrier, Lab. Hubert Curien (France); Daniel Zambon, Institut de Chimie de Clermont-Ferrand (France); Valentin Gâté, SILSEF SAS (France); Geneviève Chadeyron, Institut de Chimie de Clermont-Ferrand (France); Yves Jourlin, Lab. Hubert Curien (France)[12151-40]

15:50: **Laser curing of metal-oxide thin films with high refractive indices integrated in POF plasmonic sensors**, Laurent Noel, Institut de Sciences des Matériaux de Mulhouse, CNRS (France); Francesco Arcadio, Nunzio Cennamo, Luigi Zeni, Univ. degli Studi della Campania Luigi Vanvitelli (Italy); Olivier Soppera, CNRS (France) [12151-41]

16:10: **Perovskite plasticity: exploiting instability for self-optimized performance**, Julia van der Burgt, Susan Rigter, Francesca Scalerandi, Erik Garnett, AMOLF (Netherlands) [12151-42]

16:30: **Direct deep UV photopatterning of metal oxide thin films from nanocrystal colloids: a simpler and faster process at room temperature**, Quentin Kirscher, Dominique Berling, Institut de Sciences des Matériaux de Mulhouse, CNRS, Univ. de Haute Alsace (France); Fabien Grasset, Institut des Sciences Chimiques de Rennes, CNRS, Univ. de Haute Alsace (France); Olivier Soppera, CNRS (France) [12151-43]

16:50: **Tuning and transfer of slow photons from TiO2 inverse opal photonic crystals to BiVO4 nanoparticles for visible light photocatalysis**, Thomas Lourdu Madanu, Bao-Lian Su, Olivier Deparis, Sebastien Mouchet, Univ. de Namur (Belgium). [12151-44]

ON DEMAND PRESENTATIONS

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

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A hybrid system of MoS2/Au nanoparticles/Si nanowire heterostructure as a low-cost, highly stable solar-driven hydrogen evolution, Chun-Yen Chen, Ching-Han Mao, Ta-Jen Yen, National Tsing Hua Univ. (Taiwan) [12151-45]

Broadband admittance spectroscopy of silicon PVC, Arkadiy V. Blank, Natalia Suhareva, Nikita Zuev, Alla Chebotareva, M. V. Lomonosov Moscow State Univ. (Russian Federation) [12151-46]

YAG:Yb3+ levitating polycrystal translational cooling induced by IR radiation, Vadim Rybin, Semyon Rudyi, Dmitry Shcherbinin, Maxim Semynin, Andrey Ivanov, ITMO Univ. (Russian Federation) [12151-48]

SESSION 5

LOCATION: SALON 3, NIVEAU/LEVEL 0 MON 13:50 TO 15:20

Modeling, Characterization, and Applications of Photopolymer Materials IV

Session Chair: **Robert R. McLeod**, Univ. of Colorado Boulder (USA)

0:00: **Varifocal metalens based optical sectioning fluorescence imaging system**, Yu-Hsin Chia, Institute of Medical Device and Imaging, National Taiwan Univ. (Taiwan); Hsin-Yu Kuo, Institute of Medical Device and Imaging, National Taiwan Univ. (Taiwan) and YongLin Institute of Health, National Taiwan Univ. (Taiwan); Cheng Hung Chu, Institute of Medical Device and Imaging, National Taiwan Univ. (Taiwan) and Research Ctr. for Applied Sciences - Academia Sinica (Taiwan) and RIKEN Ctr. for Advanced Photonics (Japan); Sunil Vyas, Institute of Medical Device and Imaging, National Taiwan Univ. (Taiwan); Mu Ku Chen, National Taiwan Univ. (Taiwan) and Research Ctr. for Applied Sciences - Academia Sinica (Taiwan) and City Univ. of Hong Kong (Hong Kong, China); Yi-You Huang, Institute of Medical Device and Imaging, National Taiwan Univ. (Taiwan) and National Taiwan Univ. Hospital (Taiwan); Yuan Luo, Institute of Medical Device and Imaging, National Taiwan Univ. (Taiwan) and YongLin Institute of Health (Taiwan); Din Ping Tsai, National Taiwan Univ. (Taiwan) and Research Ctr. for Applied Sciences - Academia Sinica (Taiwan) and City Univ. of Hong Kong (Hong Kong, China). . . . [12151-21]

0:00: **Time-lapse imaging using dual-color coded quantitative differential phase contrast microscopy**, Ying-Ju Chen, Yu-Zi Lin, Sunil Vyas, Tai-Horng Young, Yuan Luo, National Taiwan Univ. (Taiwan). [12151-22]

SESSION 6

LOCATION: SALON 3, NIVEAU/LEVEL 0 MON 15:50 TO 17:20

Photopolymerizable Nanocomposite Materials and Azopolymer, and their Applications

Session Chair: **Robert R. McLeod**, Univ. of Colorado Boulder (USA)

0:00: **Anomalous polarization-dependent holographic performance of photopolymers induced by fullerene nanoparticles**, Po Hu, Yuxin Chen, Jie Liu, Mingyong Chen, Xiao Lin, Xiaodi Tan, Fujian Normal Univ. (China)[12151-25]

0:00: **High-contrast volume holographic gratings recorded in photopolymerizable nanocomposite materials with panchromatic recording sensitivity**, Asako Narita, Yuko Iso, Tomoko Shimada, Shuma Hasegawa, The Univ. of Electro-Communications (Japan); Juro Ohshima, Nissan Chemical Corp. (Japan); Yasuo Tomita, The Univ. of Electro-Communications (Japan) [12151-26]

0:00: **Ag nanoparticle-doped holographic photopolymer: mechanism of metallic nanoparticle**, Jialing Jian, Westlake Institute of Advanced Research (China); Jinxin Guo, Beijing Univ. of Technology (China); Yasuo Tomita, The Univ. of Electro-Communications (Japan); Dayong Wang, Xinping Zhang, Beijing Univ. of Technology (China) [12151-27]

SESSION 7

LOCATION: SALON 3, NIVEAU/LEVEL 0 MON 11:00 TO 12:00

Liquid Crystal and Photorefractive Materials

Session Chair: **Robert R. McLeod**, Univ. of Colorado Boulder (USA)

0:00: **Photorefractive effect of smectic liquid crystals and their application to laser ultrasonic remote sensing**, Takeo Sasaki, Takaaki Yagami, Toshinobu Takashi, Khoa Van Le, Yumiko Naka, Tokyo Univ. of Science (Japan). [12151-31]

CONFERENCE 12152

Monday–Tuesday 4–5 April 2022 • Proceedings of SPIE Vol. 12152

Mesophotonics: Physics and Systems at Mesoscale

Conference Chairs: **Sylvain Lecler**, Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France); **Vasily N. Astratov**, The Univ. of North Carolina at Charlotte (USA); **Igor V. Minin**, National Research Tomsk State Univ. (Russian Federation)

MONDAY 4 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 11:00

Hot Topics I

Paul Montgomery, Univ. of Strasbourg (France),
2022 Symposium Chair

9:00: **Welcome and Introduction; City of Strasbourg Welcome; Presentation of the 2022 SPIE Mozi Award to Thomas W. Ebbesen**, The Institute for Advanced Study of the Univ. of Strasbourg (USIAS) and CNRS (France), **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA), 2022 SPIE President

9:10: **Introduction to Hot Topics**, Paul Montgomery, Univ. of Strasbourg (France), 2022 Symposium Chair

9:15: **Access to photonics innovation support for European researchers and companies through ACTPHAST4R and PhotonHub Europe (Plenary)**, Hugo Thienpont, Vrije Univ. Brussel (Belgium) [12148-500]

9:30: **Quantum computing: prospects and challenges (Plenary)**, Heike Riel, IBM Research - Zürich (Switzerland) [12133-500]

10:15: **Einstein Telescope, the pioneer project for a third-generation GW observatory in Europe: science, technologies and perspectives (Plenary)**, Michele Punturo, Istituto Nazionale di Fisica Nucleare (Italy) [12139-500]

Coffee Break. Mon 11:00 to 11:30

SESSION 1

LOCATION: CASSIN, NIVEAU/LEVEL 1 MON 11:30 TO 12:40

Meso-device

Session Chair: **Aloise Degiron**, Ctr. de Nanosciences et de Nanotechnologies (France)

11:30: **All-optical neural networks for structured light on a chip (Invited Paper)**, Alina Karabchevsky, Ben-Gurion Univ. of the Negev (Israel) . . . [12152-1]

12:00: **Perfect absorber based reusable biosensor**, Venu Gopal Achanta, Shilpa Samdani, Abhinav Kala, Tata Institute of Fundamental Research (India) . . [12152-2]

12:20: **Cavity resonator integrated grating filters: a mesoscale platform for nonlinear optical devices**, Olivier Gauthier-Lafaye, Antoine Monmayrant, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France); François Renaud, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France) and Institut Fresnel (France); Elisabeth Hemsley, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France); Evgueni Popov, Institut Fresnel (France); Stéphane Calvez, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France); Anne-Laure Fehrembach, Institut Fresnel (France) [12152-3]

Lunch Break Mon 12:40 to 13:50

SESSION 2

LOCATION: CASSIN, NIVEAU/LEVEL 1 MON 13:50 TO 15:00

Meso-focusing I

Session Chair: **Peter Lehmann**, Univ. Kassel (Germany)

13:50: **Wide-field-of-view optical detectors based on fused fiber-optic tapers for high-speed optical wireless communication (Invited Paper)**, Boon S. Ooi, Omar Alkhazragi, Abderrahmen Trichili, King Abdullah Univ. of Science and Technology (Saudi Arabia) [12152-4]

14:20: **Tailored optical fiber tips photonic nanojet characterization**, Djamilia Bouaziz, ICube, Univ. de Strasbourg (France) and Institut d'Optique et de Mécanique de Precision, Univ. of Ferhat Abbas Sétif 1 (Algeria); Tony Hajji, Stéphane Perrin, ICube, Univ. de Strasbourg (France); Grégoire Chabrol, ECAM Strasbourg-Europe (France); Assia Guessoum, Nacer Eddine Demagh, Institut d'Optique et de Mécanique de Precision, Univ. of Ferhat Abbas Sétif 1 (Algeria); Sylvain Lecler, ICube, Univ. de Strasbourg (France) [12152-5]

14:40: **Sphere choice in Mirau interferometric microsphere assisted profilometry**, Rayenne Boudoukha, Stéphane Perrin, ICube (France); Assia Guessoum, Nacer Eddine Demagh, Univ. Ferhat Abbas Sétif 1 (Algeria); Paul C. Montgomery, Sylvain Lecler, ICube (France) [12152-7]

Coffee Break. Mon 15:00 to 15:30

SESSION 3

LOCATION: CASSIN, NIVEAU/LEVEL 1 MON 15:30 TO 17:30

Super-Resolution

Session Chair: **Boon S. Ooi**, King Abdullah Univ. of Science and Technology (Saudi Arabia)

15:30: **The use of microsphere assistance in interference microscopy with high numerical aperture objective lenses (Invited Paper)**, Lucie Hueser, Tobias Pahl, Marco Künne, Peter Lehmann, Univ. Kassel (Germany) . . [12152-8]

16:30: **Optical super-resonances in dielectric microsphere particles**, Zengbo Wang, Bangor Univ. (United Kingdom); Boris Luk'yanchuk, M. V. Lomonosov Moscow State Univ. (Russian Federation); Baidong Wu, Bing Yan, Bangor Univ. (United Kingdom); Ahmetova Assel, Igor Yaminsky, M. V. Lomonosov Moscow State Univ. (Russian Federation); Haibo Yu, Lianqing Liu, Shenyang Institute of Automation (China) [12152-10]

17:00: **Label-free plasmon-enhanced phase imaging using nanostructured metallic films (Invited Paper)**, Brian Abbey, Eugeniu Balaur, La Trobe Univ. (Australia) [12152-12]

TUESDAY 5 APRIL

Coffee Break. Tue 10:00 to 10:30

SESSION 5

LOCATION: SALON 12 NIVEAU/LEVEL 1 TUE 10:30 TO 12:40

Metamaterial

Session Chair: **Sylvain Lecler**, ICube (France)

10:30: **All-dielectric metalenses for improving pixel photodetector arrays: a step towards ultrafast single photon quantum sensor (Invited Paper)**, Stefan Enoch, Redha Abdeddaim, Institut Fresnel (France); Etiennette Auffray, CERN (Switzerland); Marthe Azzi, Jean-Benoit Claude, Institut Fresnel (France); Andrea Fiorella, Alberto Gola, Fondazione Bruno Kessler (Italy); Kseniia Lezhennikova, Julien Lumeau, Institut Fresnel (France); Stefano Merzi, Fondazione Bruno Kessler (Italy); Elena Mikheeva, Institut Fresnel (France); Marco Pagaroni, Marco Pizzichemi, Matteo Salomoni, CERN (Switzerland); Jérôme Wenger, Institut Fresnel (France); Paul Lecoq, Multiwave Metacrystal (Switzerland) [12152-18]

11:00: **Active metasurfaces for the spontaneous emission of vector vortex beams and other forms of complex light (Invited Paper)**, Aloise Degiron, Univ. de Paris (France) and CNRS (France) [12152-19]

11:30: **Mesoscopic self-collimation under arbitrary incidence: diffraction-less beam propagation under the light cone**, Antoine Monmayrant, Olivier Gauthier-Lafaye, Sergio Ivan Flores Esparza, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France); Giovanna Calò, Giovanni Magno, Politecnico di Bari (Italy) [12152-20]

11:50: **A vectorial structured light holographic optical trap for control of fluorescent particles**, Ané Kritzing, Univ. of Pretoria (South Africa); Valeria Rodríguez-Fajardo, Univ. of the Witwatersrand, Johannesburg (South Africa); Sifiso A. Nsiband, Patricia B. C. Forbes, Univ. of Pretoria (South Africa); Andrew Forbes, Univ. of the Witwatersrand, Johannesburg (South Africa) [12152-16]

12:10: **Generation of structured laser beams (Invited Paper)**, Andrew Forbes, Univ. of the Witwatersrand, Johannesburg (South Africa) [12152-21]

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 16:30 TO 18:05

Hot Topics II

Francis Berghmans, Vrije Univ. Brussel (Belgium)
2022 Symposium Chair

16:30: **Welcome and opening remarks**

16:35: **Enhancing optical contrast for cancer detection and therapy guidance** (*Plenary*), Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [12146-500]

17:20: **Cell by lens: arguments and divagations for next visionary challenges in biophotonics and beyond** (*Plenary*), Pietro Ferraro, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy) . [12144-500]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Tuesday 10:00 to 17:00

View poster presentation guidelines and set-up instructions at

<https://spie.org/EPE/Poster-Guidelines>

An optical visualization of free virions for revealing the first public enemy, Petra Pelletier, Univ. de Limoges (France) and Univ. de Paris (France); Erwan Ferrandon, XLIM (France); Magali Boeplflug, Univ. de Poitiers (France); Camelia Popescu, Univ. de Limoges (France) and IRCER, UMR CNRS 7315 (France); Yann Launay, Cecile McLaughlin, Univ. de Limoges (France); Sophie Alain, INSERM (France) and Univ. de Limoges (France) and CHU Limoges (France); Claire Lefort, XLIM (France) [12152-24]

ON DEMAND PRESENTATIONS

SESSION 2

LOCATION: CASSIN, NIVEAU/LEVEL 1 MON 13:50 TO 15:00

Meso-focusing I

Session Chair: **Peter Lehmann**, Univ. Kassel (Germany)

0:00: **CMOS compatible design of photonic nanojet**, Aneesh Vincent Veluthandath, Ganapathy Senthil Murugan, Univ. of Southampton (United Kingdom) [12152-6]

SESSION 3

LOCATION: CASSIN, NIVEAU/LEVEL 1 MON 15:30 TO 17:30

Super-Resolution

Session Chair: **Boon S. Ooi**, King Abdullah Univ. of Science and Technology (Saudi Arabia)

0:00: **Ball lens-assisted smartphone microscopy with diffraction-limited resolution**, Vasily N. Astratov, Boya Jin, The Univ. of North Carolina at Charlotte (USA); Anton A. Erykalin, Alexey V. Maslov, Lobachevsky State Univ. of Nizhny Novgorod (Russian Federation) [12152-11]

SESSION 4

LOCATION: SALON 12 NIVEAU/LEVEL 1 MON 8:30 TO 8:30

Meso-focusing II

Session Chair: **Sylvain Lecler**, ICube (France)

0:00: **Radiation force of Bessel pincer light-sheets on a nanoscale dielectric sphere**, Shu Zhang, Bing Wei, Qun Wei, Renxian Li, Ningning Song, Xidian Univ. (China) [12152-13]

0:00: **Optical spin torque on a magneto-dielectric Mie sphere illuminated by an Airy light-sheet**, Ningning Song, Bing Wei, Renxian Li, Ruike Yang, Shu Zhang, Xidian Univ. (China) [12152-14]

0:00: **Optical spin torque on a Rayleigh particle by photonic hook**, Bojian Wei, Shuhong Gong, Renxian Li, Xidian Univ. (China); Pavel F. Baranov, Tomsk Polytechnic University (Russian Federation); Oleg V. Minin, Igor V. Minin, National Research Tomsk State Univ. (Russian Federation) [12152-15]

0:00: **Photothermics of plasmomechanical systems**, Alemayehu Nana Koya, Wolaita Sodo Univ. (Ethiopia) [12152-17]

LOCATION: HALL RHIN, POSTER AREA 18:10 TO 20:00

Posters-Tuesday

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Poster Setup: Tuesday 10:00 to 17:00

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Subwavelength field localization based on dielectric mesoscale particle with single and blind nanohole array, Oleg V. Minin, National Research Tomsk State Univ. (Russian Federation); Song Zhou, Huaiyin Institute of Technology (China); Yinghui Cao, Jilin Univ. (China); Pavel Baranov, Tomsk Polytechnic University (Russian Federation); Igor V. Minin, National Research Tomsk State Univ. (Russian Federation) [12152-23]

Mesotronic era of dielectric photonics, Igor V. Minin, Oleg V. Minin, Tomsk Polytechnic Univ. (Russian Federation); Boris S. Luk'yanchuk, M. V. Lomonosov Moscow State Univ. (Russian Federation) [12152-25]

Manipulation of mesoscopic particles using a structured beam in optical tweezers, Ram Nandan Kumar, Sauvik Roy, Anand Dev Ranjan, IISER Kolkata (India) [12152-26]

CONFERENCE WS202

Monday 4-4 April 2022 • Proceedings of SPIE Vol. WS202

Light Shaping Focus Session III

Conference Chairs: **Frank Wyrowski**, Friedrich-Schiller-Univ. Jena (Germany); **Youri Meuret**, KU Leuven (Belgium); **John T. Sheridan**, Univ. College Dublin (Ireland)

MONDAY 4 APRIL

LOCATION: SCHWEITZER AUDITORIUM, NIVEAU/LEVEL 0 9:00 TO 11:00

Hot Topics I

Paul Montgomery, Univ. of Strasbourg (France),
2022 Symposium Chair

9:00: **Welcome and Introduction; City of Strasbourg Welcome; Presentation of the 2022 SPIE Mozi Award to Thomas W. Ebbesen**, The Institute for Advanced Study of the Univ. of Strasbourg (USIAS) and CNRS (France), **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA), 2022 SPIE President

9:10: **Introduction to Hot Topics, Paul Montgomery**, Univ. of Strasbourg (France), 2022 Symposium Chair

9:15: **Access to photonics innovation support for European researchers and companies through ACTPHAST4R and PhotonHub Europe (Plenary)**, Hugo Thienpont, Vrije Univ. Brussel (Belgium) [12148-500]

9:30: **Quantum computing: prospects and challenges (Plenary)**, Heike Riel, IBM Research - Zürich (Switzerland) [12133-500]

10:15: **Einstein Telescope, the pioneer project for a third-generation GW observatory in Europe: science, technologies and perspectives (Plenary)**, Michele Punturo, Istituto Nazionale di Fisica Nucleare (Italy) [12139-500]

Coffee Break. Mon 11:00 to 11:30

SESSION 1

LOCATION: SALON 5, NIVEAU/LEVEL 0 MON 11:30 TO 12:20

Light Shaping I

11:30: **Design and realization of micro-optical irregular fly's-eye condensers for arbitrary light distributions**, Leo Maximilian Wilhelm, Peter Schreiber, Dirk Michaelis, Peter Dannberg, Philipp Schleicher, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany) [WS202-1]

Lunch Break Mon 12:20 to

SESSION 2

LOCATION: SALON 5, NIVEAU/LEVEL 0 MON 13:30 TO 17:20

Light Shaping II

13:30: **Advanced freeform optics for general lighting applications**, Youri Meuret, KU Leuven (Belgium) [WS202-2]

14:20: **From freeform to diffuser design: a unified light shaping approach**, Frank Wyrowski, LightTrans GmbH (Germany) [WS202-3]

Coffee Break. Mon 15:10 to 15:40

15:40: **Beam shaping of high-power and high-energy laser sources**, Dirk Hauschild, LIMO GmbH (Germany) [WS202-4]

16:30: **Holography: introduction and application**, John T. Sheridan, Univ. College Dublin (Ireland) [WS202-5]

LOCATION: SALON 5, NIVEAU/LEVEL 0 17:20 TO 18:00

Discussion

CONFERENCE WS203

Thursday 7-7 April 2022 • Proceedings of SPIE Vol. WS203

9th annual Sino-French “Photonics and Optoelectronics” PHOTONET International Research Network Workshop

Conference Chairs: **Walter C. P. M. Blondel**, Ctr. de recherche en automatique de Nancy (France); **Boris Gralak**, Institut Fresnel (France); **Christophe Peucheret**, Fonctions Optiques pour les Technologies de l'information (France)

THURSDAY 7 APRIL

LOCATION: SALON 4, NIVEAU/LEVEL 0 8:30 TO 8:45

Welcome and Introduction

SESSION 1

LOCATION: SALON 4, NIVEAU/LEVEL 0 THU 8:45 TO 9:30

Integrated Optics and Optical Communications

8:45: **Enabling technologies for high-capacity radio access networks: photonic THz communications**, Lu Zhang, Zhejiang Univ. (China) . [WS203-8]

9:00: **Deterministic design of focusing apodized subwavelength grating coupler**, DingShan Gao, Huazhong Univ. of Science and Technology (China) . . . [WS203-9]

9:15: **Fiber to the room: new kind of customer premise networking to extend the FTTH experience**, Philippe Chanclou, Orange SA (France) [WS203-10]

SESSION 2

LOCATION: SALON 4, NIVEAU/LEVEL 0 THU 9:30 TO 10:30

Biomedical Optics and Biophotonics

9:30: **Tissue optical clearing for whole-organ imaging**, Dan Zhu, Wuhan National Lab. for Optoelectronics (China) [WS203-13]

9:45: **All-optical computing of real-time FFT for ultrahigh speed optical coherence tomography**, Ping Xue, Tsinghua Univ. (China) [WS203-14]

10:00: **Diffuse reflectance spectroscopy with polarization gating**, Anabela Da Silva, Institut Fresnel (France) [WS203-12]

10:15: **Human skin optical properties modelling and estimation using autofluorescence and diffuse reflectance spectroscopy**, Victor Colas, Marine Amouroux, Christian Daul, Walter Blondel, Univ. de Lorraine (France) . . . [WS203-11]

LOCATION: SALON 4, NIVEAU/LEVEL 0 10:30 TO 11:00

PHOTONET Network Discussion and Coffee Break

SESSION 3

LOCATION: SALON 4, NIVEAU/LEVEL 0 THU 11:00 TO 12:45

Emerging Materials and Concepts in Photonics

11:00: **Extreme nonlinear optics in epsilon-near-zero materials**, Yuanmu Yang, Tsinghua Univ. (China) [WS203-5]

11:15: **Position-controlled quantum emitters in hexagonal boron nitride**, Hong-Hua Fang, Tsinghua Univ. (China) [WS203-4]

11:30: **Nonreciprocal magneto-bi-plasmonic slot waveguide**, Sevag Abadian, Ctr. de Nanosciences et de Nanotechnologies (France); Giovanni Magno, Ctr. de Nanosciences et de Nanotechnologies (France) and Politecnico di Bari (Italy); Vy Yam, Béatrice Dagens, Ctr. de Nanosciences et de Nanotechnologies (France) [WS203-6]

11:45: **Spatial dispersion and the sign of the imaginary part of the permeability**, Boris Gralak, Institut Fresnel (France) [WS203-3]

12:00: **Quasi-normal modes computations of frequency-dispersive photonic open structures**, Guillaume Demésy, Institut Fresnel (France) [WS203-2]

12:15: **Topological reconstruction of elastomer stretched patterns**, Regis Barille, Univ. d'Angers (France) [WS203-7]

12:30: **Analysis of the TE band structure in high-contrast honeycomb media**, Maxence Cassier, Institut Fresnel, CNRS (France); Michael I. Weinstein, Columbia Univ. (USA) [WS203-1]

LOCATION: SALON 4, NIVEAU/LEVEL 0 12:45 TO 13:00

Closing Remarks and Adjourn

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