

OPTICS & PHOTONICS International Congress



OPIC 2016

17-20 May 2016

PACIFICO YOKOHAMA | Yokohama, Japan

Congress Program

■ Plenary Session

■ Joint Sessions

■ Specialized International Conferences

- ALPS '16 : The 5th Advanced Lasers and Photon Sources
- BISC '16 : Biomedical Imaging and Sensing Conference 2016
- CLES 2016 : Conference on Laser Energy Science
- HEDS 2016 : International Conference on High Energy Density Science 2016
- LEDIA '16 : The 4th International Conference on Light-Emitting Devices and Their Industrial Applications
- LIC '16 : The 4th Laser Ignition Conference 2016
- LSSE 2016 : Laser Solution for Space and the Earth
- OMC '16 : The 3rd Optical Manipulation Conference
- PLD '16 : The 5th Pacific-rim Laser Damage Conference
- SLPC 2016 : The 2nd Smart Laser Processing Conference
- XOPT '16 : International Conference on X-ray Optics, Detectors, Sources, and Their Applications 2016

広エリア&小スポット 3Dガルバノ AXIALSCAN-70 スキャナシステム

最小スポットを追求した
CO₂レーザー専用3Dスキャナ

- 小スポットによるハイスピード加工
- 最大2000×2000mmフィールドエリア
- 製造ラインでの大型サンプルの高速加工に最適
- 多様な使用方法に対応するソフトウェア



デモ機あり
CO₂レーザー用

高出力&高速 3Dガルバノ AXIALSCAN-30 スキャナシステム

ファイバレーザーとの組み合わせ、
3D加工機用途に

- 最大4kW入射可能
- Z軸へガルバノモーターを採用し、高速3D加工を実現
- 多くの販売実績に裏付けされた信頼性とユーザインタフェース



デモ機あり
1μmレーザー用

超高速 2Dガルバノ UHSS ULTRA-HIGH-SPEED SCANNER スキャナシステム

かつてないスキャンスピード！
最大200m/secを実現

- 超短パルスレーザーに最適
- 高密度微細加工や高速アニーリングに最適
- 低ドリフト：< 150 μrad*



デモ機あり
1μmレーザー用

* 30分ウォームアップ後から8時間、環境温度変化 +/-1K以内のとき



光技術をサポートする
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OPTICS & PHOTONICS International Congress 2016

Date: May 17 (Tue.)~20 (Fri.), 2016

Organized by OPTICS & PHOTONICS International Council

Specialized International Conference Organized by

The Laser Society of Japan
The Japan Society of Applied Physics
Institute of Laser Engineering, Osaka University
Akasaki Research Center (ARC), Nagoya University
Japan Laser Processing Society
The Micro Solid-State Photonics Group of The Laser Society of Japan
The Executive Committee of Laser Solution for Space and the Earth
RIKEN SPring-8 Center / Research Center for Ultra-Precision Science & Technology,
Osaka University

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Ministry of Land, Infrastructure, Transport and Tourism
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The Optical Society of Japan
Optoelectronic Industry and Technology Development Association (OITDA)
Institute for Laser Technology (ILT)
Japan Photonics Council (JPC)
SPIE (USA)
OSA (USA)
Landesmesse Stuttgart GmbH (Germany)
PIDA (Taiwan)
KAPID (Korea)
Photonics Media (USA)

Welcome to OPIC 2016



Yoshiaki Kato

Chair

OPIC 2016 Organizing Committee

President, GPI

President, The Laser Society of Japan



Yasukazu Izawa

Chair

OPIC 2016 Steering Committee

Director, Inst. for Laser Technology

Since 2012, OPIC has been held every year at Yokohama as an international forum to present and discuss the most up-to-date R & D activities in optics and photonics in the world and to exchange the thoughts on the role of optics and photonics in the future of our society. The jointly organized and co-located OPIE will provide the opportunity to show the state-of-art technologies, embodying the future possibility of optics and photonics.

At the plenary session, four distinguished speakers will present very up-dated status of the hot topics; new photonic imaging device, innovation in material science, international observatory project and European extreme light project.

This year, OPIC 2016 is composed of 11 professional conferences, the largest number since its beginning, thanks to joining of Laser Solution for Space and the Earth (LSSE 2016) and International Conference on X-ray optics, detectors, sources, and their applications (XOPT '16). With these new additions, broad range of fields will be covered at OPIC 2016, including light sources, optical manipulation, visible and x-ray optics, biology, space, laser fusion, high density physics, laser processing and industrial applications.

We sincerely appreciate the authorized supports of the Ministry of Education, Culture, Sports, Science and Technology (MEXT), the Ministry of Economics, Trade, and Industry (METI), the Ministry of Agriculture, Forestry and Fishery (MAFF), the Ministry of Health, Labor and Welfare (MHLW), the Ministry of Land, Infrastructure, Transport and Tourism, (MLIT), and Japan Business Federation. We would also like to thank the funding organizations and the companies for strong supports to OPIC 2016.

One of the special features of OPIC is that OPIC is “hand-made”, i.e. each conference is planned and operated by the Chair and his consortium of scientists based on their own ideals to strengthen the research and network in their specific field. We hope OPIC 2016 will contribute to all participants for information exchanges and personal contacts among different fields and disciplines.

Program at a Glance

■ Plenary
 ■ Joint
 ■ Parallel
 ■ Poster

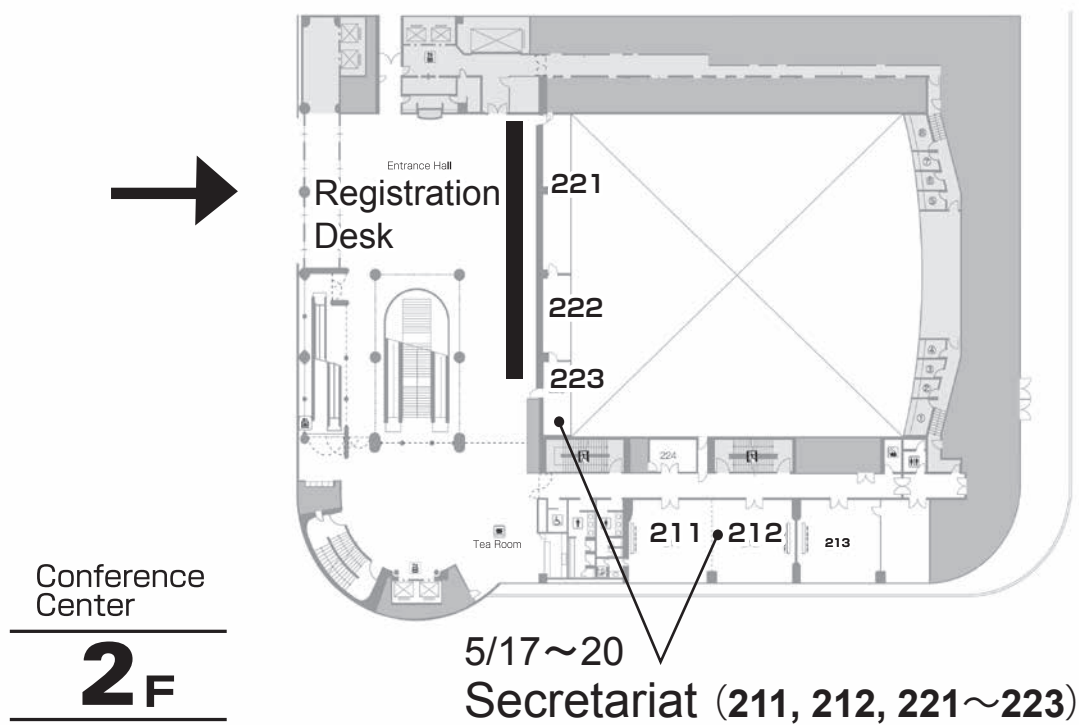
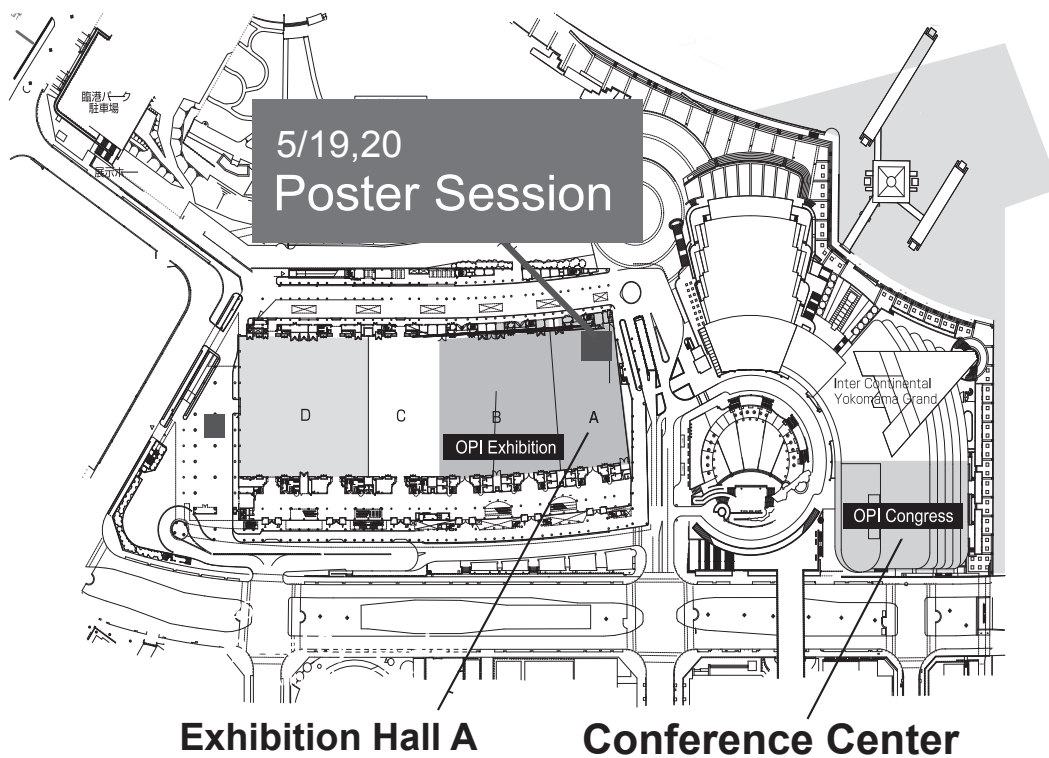
Date	Room	Room 302 ALPS '16	Room 511+512 ALPS '16	Room 419 BISC '16	Room 418 CLES 2016	Room 311+312 HEDS 2016	Room 411+412 LEDIA '16	
Tue 17 May	9:00 -	Opening ALPS1 Frequency comb generation			Opening CLES1 Integrated Experiment (Electron)	Opening HEDS1 Plenary		
	10:00 -	Coffee Break						
	11:00 -	ALPS2 Applications of optical frequency comb	ALPS3 Ultrafast technologies		CLES2 Electron Transport and Generation	HEDS2 High-Field Physics I		
	12:00 -	Lunch						
	13:00 -				Lunch			
	14:00 -	ALPS4 Fiber-based novel sources	ALPS5 Petawatt and high power lasers		CLES3 Proton Fast Ignition	HEDS3 High-Field Physics II		
	15:00 -	Coffee Break						
	16:00 -	ALPS6 Fiber lasers and laser diodes	ALPS7 Ultrafast light sources		CLES4 Ion Acceleration	HEDS4 Ultra-fast Imaging		
	17:00 -							
18:00 -								
Wed 18 May	9:00 - 12:10	Plenary session 9:00 - 9:15 Greetings: Andreas Ostendorf (Congress Chair), Sadao Nakai (IAB Chair), Reinhart Poprawe (IAB) 9:15 - 9:55 Plenary Retinal Imaging Laser Eyewear : from Low-Vision Aids to Smart Glass Mitsuru Sugawara, President, QD Laser Inc., Japan 9:55 - 10:35 Plenary Cultivation of Electro-Active Functionality in Transparent Oxides Hideo Hosono, Professor, Tokyo Institute of Technology, Japan 10:50 - 11:30 Plenary The Thirty Meter Telescope project Masanori Iye, Professor Emeritus, National Astronomical Observatory of Japan 11:30 - 12:10 Plenary ELI: The CERN of laser research Georg Korn, CSO, Head of Department of Experimental Program, Extreme Light Infrastructure (ELI)						
	12:10 -	Lunch						
	13:00 -							
	14:00 -	ALPS, XOPT, HEDS Joint Session 1	ALPS8 Novel structured lasers/ nonlinear media	BISC & OMC Joint Session [Room 414+415]	CLES5 Magnetic Field Assisted fast Ignition	ALPS, XOPT, HEDS Joint Session 1 Joint Session 2 [Room 302]	LED1 Special Session 1 (Industrial Applications)	
	15:00 -	Coffee Break						
	16:00 -	ALPS, XOPT, HEDS Joint Session 2	ALPS9 Metamaterials, Photon handling		CLES6 High Field Generation with Laser		LED2 Special Session 2 (Industrial Applications)	
17:00 -								
18:00 -	18:00 - 20:00 OPIC 2016 Reception (ROOM 501+502)							
Thu 19 May	9:00 -	ALPS10 High power lasers	ALPS11 Biomedical imaging and applications	Opening BISC1 OCT, Phase Imaging	CLES7 Integrated Simulation and Modeling	HEDS5 Particle Acceleration I	LED3 Bulk & Epitaxy	
	10:00 -	Coffee Break						
	11:00 -	ALPS12 Photonic lasers and applications	ALPS13 Biomedical spectroscopy	BISC2 Microscopy	CLES8 Novel Scheme of Fast Ignition	HEDS6 Particle Acceleration II	LED3 Bulk & Epitaxy	
	12:00 -	Lunch						
	13:00 -	ALPSp14 [Exhibition Hall A] Poster Session		BISC3 Holography	CLES9 High Energy Density Physics with High Intensity Lasers	HEDS7 Commercial Products for HEDS HEDS8 Radiation Sources I	LEDp4 Short Presentations for Poster Session	
	14:00 -	Coffee Break						
	15:00 -			Organized Session BISC4 Adaptive Optics: Pushing the boundaries of deep imaging in living cells and tissues	CLES10 Fuel Assembly Production	HEDS9 Radiation Sources II HEDS10 Student Session	LEDp4 [Exhibition Hall A] Poster Session	
	16:00 -							
17:00 -								
18:00 -								
Fri 20 May	9:00 -			BISC5 Multi-modal Imaging, Photo-acoustic Imaging	CLES11 Integrated experiment and simulation	HEDS11 Plenary HEDS12 Particle Acceleration III	LED5 LEDs	
	10:00 -							
	11:00 -			BISCp6 [Exhibition Hall A] Poster Session	Coffee Break			
	12:00 -				CLES12 Electron Generation	HEDS13 Particle Acceleration IV	LED6 Nanostructures	
	13:00 -	Lunch						
	14:00 -		BISC7 Nano, Fluorescence, Spectral Imaging, Biosensor		CLES13 Super Penetration and NIF Status and Prospects	HEDSp14 [Exhibition Hall A] Poster Session	LED7 AlGaIn & Devices	
	15:00 -	Coffee Break						
	16:00 -			BISC8 Brain imaging, spectral imaging, image processing	CLES14 High Intensity Laser development	Coffee Break		
	17:00 -			Closing	Summary Closing	HEDS15 Particle Acceleration V & Radiation Sources III	LED8 Lasers LED9 Tutorial Closing	
18:00 -								

Program at a Glance

Room 301 LIC '16	Room 316 LSSE 2016	Room 414+415 OMC '16	Room 413 PLD '16	Room 416+417 SLPC 2016 / ALPS '16	Room 313+314 XOPT '16	Exhibition Hall A, B	Room Time
	Opening LSSE1 Space Debris Detection Remediation 1 Lunch LSSE2 Space Debris Detection Remediation 2 Coffee Break LSSE3 Space Debris Detection Remediation 3			Opening SLPC1 Plenary SLPC2 Beam Sources and Components for Smart Laser Processing Lunch SLPC3 Additive Manufacturing Coffee Break SLPC4 Micro & Nano Processing			9:00 -
							10:00 -
							11:00 -
							12:00 -
							13:00 -
							14:00 -
							15:00 -
							16:00 -
17:00 -							
18:00 -							
Plenary session 9:00 - 9:15 Greetings: Andreas Ostendorf (Congress Chair), Sadao Nakai (IAB Chair), Reinhart Poprawe (IAB) 9:15 - 9:55 Plenary Retinal Imaging Laser Eyewear : from Low-Vision Aids to Smart Glass Mitsuru Sugawara, President, QD Laser Inc., Japan 9:55 - 10:35 Plenary Cultivation of Electro-Active Functionality in Transparent Oxides Hideo Hosono, Professor, Tokyo Institute of Technology, Japan 10:50 - 11:30 Plenary The Thirty Meter Telescope project Masanori Iye, Professor Emeritus, National Astronomical Observatory of Japan 11:30 - 12:10 Plenary ELI: The CERN of laser research Georg Korn, CSO, Head of Department of Experimental Program, Extreme Light Infrastructure (ELI)							ROOM 501+502
Lunch							9:00 - 12:10
LIC+PLD+SLPC Joint Session 1 Coffee Break LIC+PLD+SLPC Joint Session 2	LSSE4 Remote Sensing	BISC & OMC Joint Session Coffee Break BISC & OMC Joint Session	LIC+PLD+SLPC Joint Session 1 (PLD1) Joint Session 2 (PLD2) [Room 301]	LIC+PLD+SLPC Joint Session 1 (SLPC5) Joint Session 2 (SLPC6) [Room 301]	ALPS, XOPT, HEDS Joint Session 1 Joint Session 2 [Room 302]	10:00 - 17:00 OPIE '16 Exhibition	12:10 -
							13:00 -
							14:00 -
15:00 -							
16:00 -							
17:00 -							
18:00 - 20:00 OPIE 2016 Reception (ROOM 501+502)							18:00 -
LIC1 LIC plenary session LIC2 Fundamental ignition studies	LSSEp5 [Exhibition Hall A] Poster Session	OMC1 Optical Manipulation	PLD3 Plenary and coatings	SLPC7 Surface Structuring and Modification	Opening XOPT1 X-ray source XOPT2 X-ray optics for advanced light sources	10:00 - 17:00 OPIE '16 Exhibition OPIE '16 Exhibition OPIE 2016 Poster session	9:00 -
Coffee Break		Coffee Break	Coffee Break	Coffee Break			10:00 -
LIC2		OMC2 OptoMechanics	PLD4 Nonlinear materials	SLPC8 Cutting and Welding			11:00 -
Lunch		Lunch	Lunch	Lunch			12:00 -
LIC3 Giant micro-photonics	LSSE6 Maintenance of Social Infrastructure 1	OMC3 OptoMechanics & Plasmonics	PLD5 Short pulse phenomena	SLPC9 [Exhibition Hall A] Poster Session	XOPT3 X-ray microscopy & imaging	13:00 -	
LIC4 Advanced applications of giant-pulse microchip laser systems	LSSE7 Maintenance of Social Infrastructure 2	OMC4 Structured Light	PLD6 High power resistant coatings	SLPC10 Industrial Applications Closing	XOPT4 X-ray optics (I): refractive optics & applications XOPT5 X-ray detectors	14:00 -	
15:00 -							
16:00 -							
17:00 -							
18:00 -							
LIC6 Advanced ignition systems for vehicular applications	LSSE8 Maintenance of Social Infrastructure 3	OMC5 Structured Materials Fabrication	PLD7 [Exhibition Hall A] Poster session	ALPS15 Terahertz-wave sensing and devices	XOPT6 X-ray optics (II): reflective optics & applications	10:00 - 17:00 OPIE '16 Exhibition OPIE '16 Exhibition OPIE 2016 Poster session	9:00 -
LICp Poster Session		OMC6 Advanced Optical Manipulation	PLD8 Material Damage	ALPS16 Terahertz-wave imaging	XOPT7 X-ray optics (III): optics for various spectroscopic methods		10:00 -
Lunch		Lunch	Lunch	Lunch	Lunch		11:00 -
LIC7 Nonlinear optics	LSSE9 Maintenance of Social Infrastructure 4 Closing	OMCp [Exhibition Hall A] Poster session	PLD9 Defect, Contamination(1)	ALPS17 Intense lasers	XOPT8 [Exhibition Hall A] Poster Session	12:00 -	
LIC8 Advanced ignition systems for stationary power generation		OMC7 Photon Radiation Forces			Coffee Break	Coffee Break	13:00 -
LIC8		Coffee Break	PLD10 Defect, Contamination(2) Closing	ALPS18 New sources	XOPT9, XOPT10 XOPT11 X-ray diagnostics Closing	14:00 -	
LIC9 Micro solid state photonics Closing		OMC8 Hydrodynamics & Plasmonics Closing		Coffee Break	Closing	Closing	15:00 -
16:00 -							
17:00 -							
18:00 -							

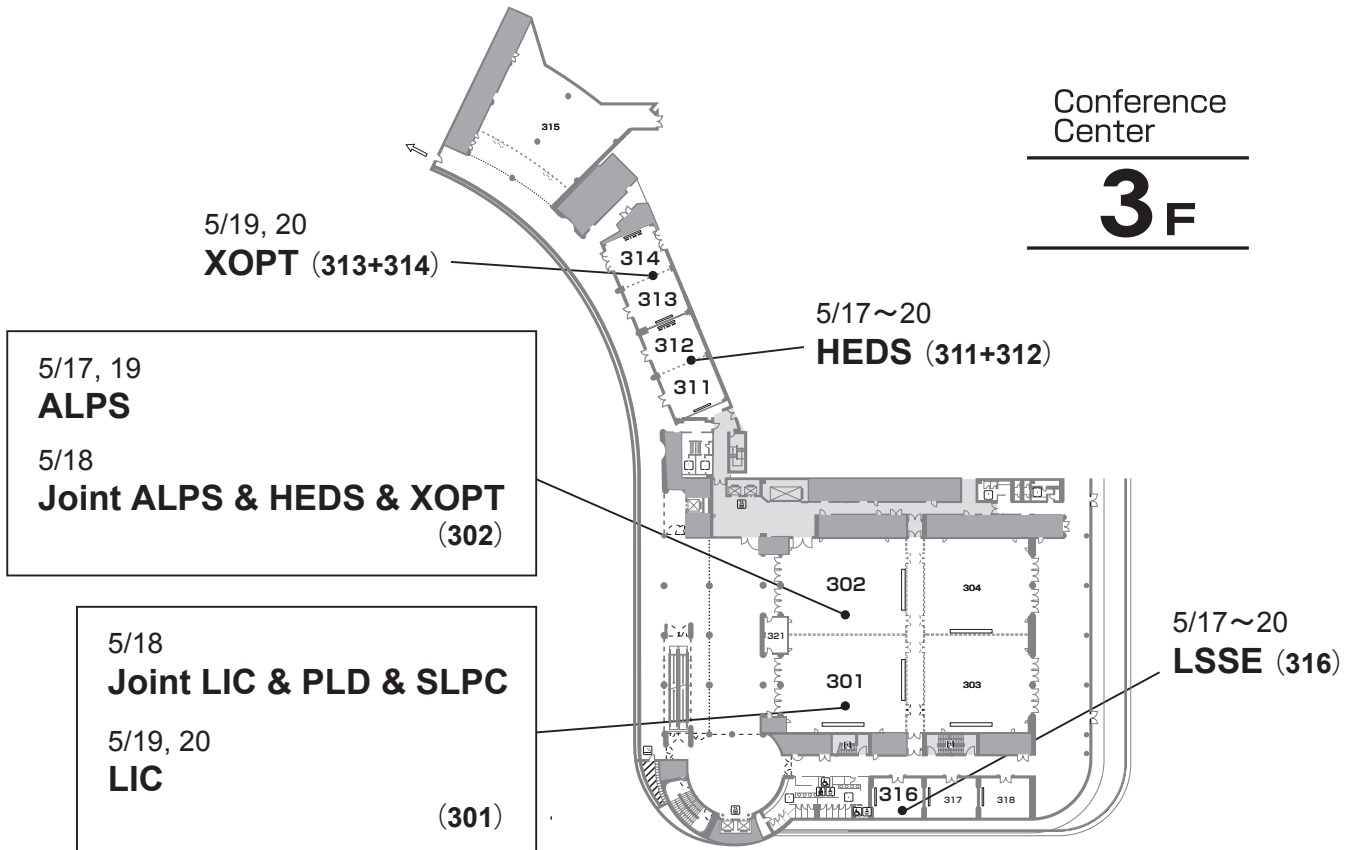
Floor Plan

Pacifico Yokohama



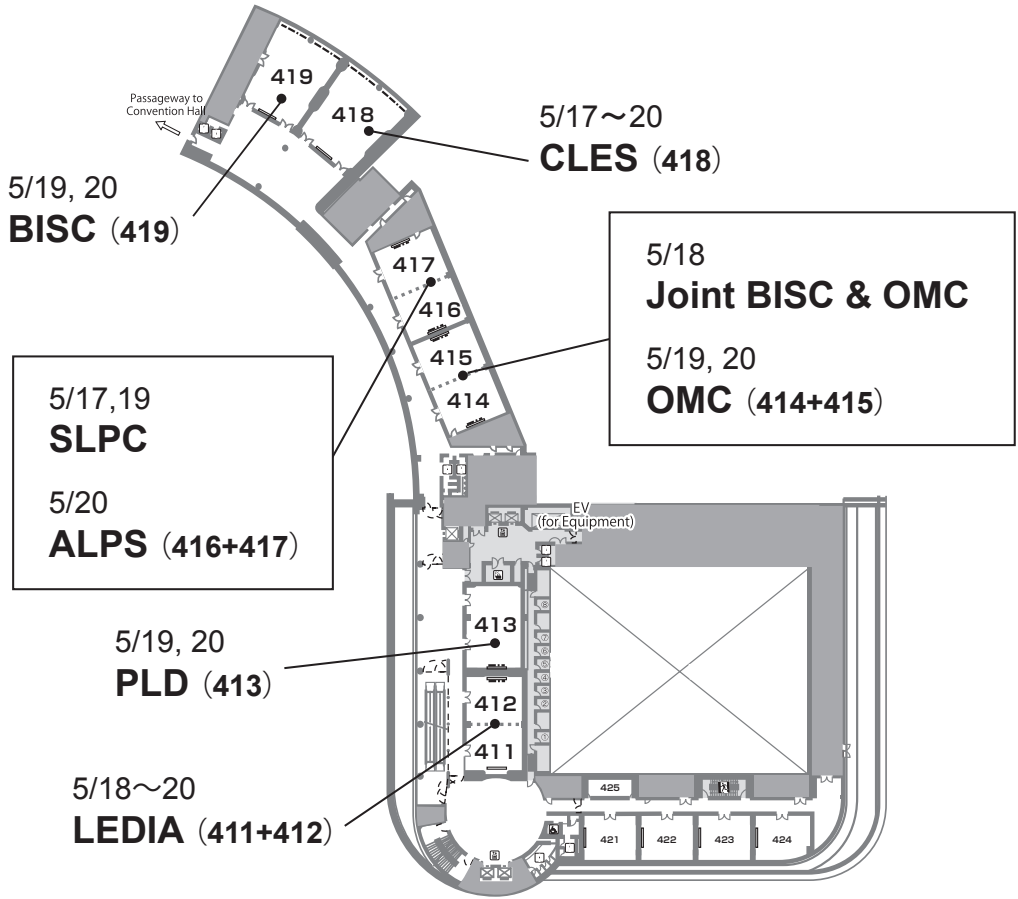
Conference Center

3F



Conference Center

4F



Conference
Center

5_F

5/18

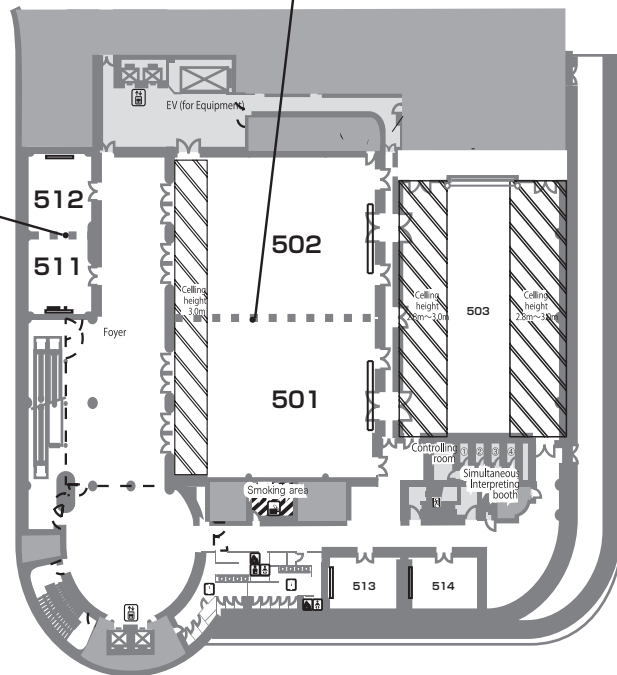
**Plenary Session
Reception**

(501+502)

5/17~19

**ALPS
Pararell Session**

(511+512)



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Konica Minolta Science and Technology Foundation



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Research Foundation for the Electrotechnology of Chubu.

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REFEC : Research Foundation for the Electrotechnology of Chubu.

Nippon Sheet Glass Foundation for Materials Science and Engineering

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Nippon Sheet Glass Foundation for Materials Science and Engineering

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OPTRONICS

General Information

Congress Services

Registration

Pacifico Yokohama, Conference Center 2F Lobby

Registration Hours

Tuesday, May 17 8:30 - 17:00

Wednesday, May 18 8:30 - 17:00

Thursday, May 19 8:30 - 17:00

Friday, May 20 8:30 - 12:00

Exhibition

Exhibition Hall A,B

The OPI Exhibition is open to all registered attendees. Schedule plenty of time to roam the halls, visit with the hundreds of companies represented and see the latest products and technologies. For more information about what's happening on the exhibit floor, see pages 106-107.

Exhibition Hours

Wednesday, May 18 10:00 - 17:00

Thursday, May 19 10:00 - 17:00

Friday, May 20 10:00 - 17:00

Congress Reception

Conference Room 501 + 502

Wednesday, May 18 18:00 - 20:00

Information Desk

Providing information on facilities, events, sight-seeing, etc.

Conference Center 2F

TEL: +81-45-221-2155 (9:00 to 18:00)

Lost/Found Items

Central Disaster Control Center

Report a lost/found item to the Central Disaster Control Center.

Exhibition Hall B1F

TEL: +81-45-221-2127 (24 hours open)

Business Center

Conference Center 1F and Exhibition Hall 2F

Open Hours 9:00 - 18:00

Services : Printing (Digital/Offset), book-binding, Large panels, PC services, Internet services, Fast business card printing, Copying machines, FAX machines, PC peripheral devices, Rental equipment, Cell-phone Rental, Laminating, Translation

First Aid Room

Providing bed rest

Conference Center 1F and Exhibition Hall 1F

Equipment: Wheelchairs, beds, AED, stretchers

Drugstore

Inter Continental YOKOHAMA GRAND 2F

Gift, Gallery & Drugstore

TEL: +81-45-223-2222 (8:30 to 21:00)

Hospital

Medical institutions are available in the Minato Mirai district.

AED (Automated External Defibrillator)

An AED is used to treat ventricular fibrillation.

AEDs are available in the following locations.

Conference Center: In front of First Aid Room (1F) and at Security Office (B1F)

National Convention Hall of Yokohama: Entrance (1F)

Exhibition Hall: In front of First Aid Room (1F) and at Security Office (B1F)

Cell-Phone Use

Cell phones are allowed to be used in the common spaces including the foyer, the lobby, the concourse and the shops.

Cell Phone Rental Service is available at Business Center

Barrier-Free Services

PACIFICO Yokohama is complete with elevators, slopes, toilets, seating spaces, vending machines, and parking lots accessible to wheelchairs.

Rental wheelchairs

You can rent a wheelchair at Security Office.

*Wheelchairs are limited in number. (No reservations)

“Wheelchair-users-only” parking spaces available

Minato Mirai Public Parking Lot has “wheelchair-users-only” parking spaces.

When entering the parking lot, call a staff person over the intercom.

The staff will take you to the parking space.

*There is no discount for the disabled.

Wheelchair-accessible toilets

Conference Center 1F, 2F, 3F, 4F, 5F

National Convention Hall of Yokohama 1F, 2F

Exhibition Hall 1F, 2F

Coin Lockers

Conference Center 1F, 2F

National Convention Hall of Yokohama 1F

Exhibition Hall 1F, 2F

ATMs and Banking Facilities

ATM

E-Net (ATM) at Daily YAMAZAKI (7:00 to 23:00)

Banks

Bank of Yokohama Head Office

<http://www.boy.co.jp/e/>

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OPIC 2016 Plenary Session

Wednesday, May 18, 2016

Pacifico Yokohama Congress Center, Fifth Floor (Room 501+502)

9:00 - 9:15

Greetings by Congress and IAB Chairs

Andreas Ostendorf, Congress Chair, Professor, Ruhr-University Bochum, Germany

Sadao Nakai, IAB Chair, Professor Emeritus, Osaka University

Reinhart Poprawe, IAB, Director, Fraunhofer Inst. for Laser Tech., Germany

Plenary Speech

9:15 - 10:35

< First session >

Chair, Kenichi Iga, Congress Chair, Professor Emeritus, Tokyo Institute of Technology

1) Retinal Imaging Laser Eyewear: From Low Vision Aids to Smart Glass

Mitsuru Sugawara, President of QD Laser Inc.

2) Cultivation of Electro-Active Functionality in Transparent Oxides

Hideo Hosono, Professor, Tokyo Institute of Technology. 2016 Japan Prize Laureates

----- 10:35-10:50 Break -----

10:50 - 12:10

< Second session >

Chair, Chris Barty, Congress Chair, CTO, Lawrence Livermore National Laboratory. USA

1) The Thirty Meter Telescope project

Masanori Iye, Professor Emeritus, National Astronomical Observatory of Japan

Vice Chair of the TMT International Observatory Governing Board

2) ELI: The CERN of laser research

Georg Korn, CSO, Extreme Light Infrastructure (ELI)

18:00 - 20:00

OPIC 2016 Reception

Pacifico Yokohama Congress Center, Fifth Floor (Room 501+502)

Plenary Session

Opening Remarks of OPIC 2016

9:00 - 9:15

Greetings



Sadao NAKAI

Chair International Advisory Board
Former President of Laser Society Japan

The world activities on the field of the Optics, Photonics, and Lasers are growing rapidly. It is changing the science and technology, industry, our daily life and future society.

The fundamental issues, which are essential for the human society, are ○supply of food, ○medicine and health care, ○manufacturing, ○information technology, ○supply of clean energy and keeping the clean environment. The Optics and Photonics Technologies have the key to open the new era of each field.

The purpose of the OPIC is to advance the science, technology, and industry which are related to the Light and Light-based Technologies, and also to visualize the future society which would be realized by the progress of Optics and Photonics, and Lasers.

The OPIC has been started in 2012 at the same place Yokohama. It has been grown up every year, and the 5th one, OPIC 2016, is successfully organized to have almost 1000 participants from all over the world. Your participations are very much appreciated, and the exchange of friendship and your expertise would open new world of your scientific activity.

Please enjoy the OPIC and the stay in Japan.

Greetings



Prof. Andreas Ostendorf

President, The German Academic Laser Society (WLT) and Professor of Applied Laser Technologies, Ruhr-University Bochum, Germany

OPIC together with OPIE has developed into the leading congress in optics, photonics and lasers in East Asia. The 2016 event represents an umbrella for 11 single conferences with quite different topics ranging from very basic physics to application-oriented research. Just this combination makes OPIC so successful although the bracket is large. Personally, I attend larger conferences because of this interdisciplinary character. Upcoming applications in one field are often initiated by developments in other topical areas. Also with respect to the regional aspects, research and development foci are mostly different which is the case for East Asia, Europe and North America, just to name three areas. Thus, the transfer of knowledge about regional boundaries is another important mission of OPIC 2016. These ideas stimulate cooperative research with an excellent example described by the recent detection of gravitational waves. A large-scale project where all three regions significantly contributed with specific results. By referring to this example I would like to encourage all attendees of OPIC to use this opportunity to think more outside the small boxes of own research. Here's the place!

Greetings



Reinhart Poprawe

Director, Fraunhofer Institute for Laser Technology
Chair for Laser Technology RWTH Aachen University

As Member of the International Advisory Board of OPIC Congress and Co-Chair of SLPC I would like to welcome you all here in beautiful Yokohama. In eleven individual conferences this event in the meantime is the most important summit on optical Technologies in Japan. Over the very few last years Optical Technologies and Photon Science have been boosted extremely in Japan and many regions are on their way to “Optical Valleys” in the sense of increased alignment of education, research and societal and industrial application. We observe a severe change in recognition of the relevance of this collaboration worldwide and I am very happy to see this on such a professional level here in Japan. Congratulations to all founders and organizers and a warm welcome to all colleagues from all over the world!

First Session

Plenary Speech

9:15 – 9:55

Retinal Imaging Laser Eyewear: From Low Vision Aids to Smart Glass



Mitsuru Sugawara

QDLaser, Inc.
sugawara@qdlaser.com

ABSTRACT

Retinal Imaging Laser Eyewear has a miniature laser projector inside the frame which provides the wearer with digital image information through the pupil using the retina as a screen. This compact universal-design eyewear features “focus-free” and “augmented reality” image independent of the wearers’ visual acuity and point of focus, providing wide range of applications from low vision aids to smart glass.

Content

“Retinal Imaging Laser Eyewear” is presented as a universal-design compact eyewear, which has a miniature laser projector inside the frame and provides the wearer with digital image information through the pupil using the retina as a screen. First, the principle of retinal laser imaging is described to realize focus-free. Then, the prototype device with the trademark of RETISSA® is introduced. Its impact is discussed regarding a variety of applications from low-vision aid, workplace support, entertainment, to a consumer-oriented smart glass.

1. Principle : Maxwellian View

The Maxwellian view is a method of observation in

which a converging lens forms an image of the light source in the plane of the eye's pupil of the observer, instead of looking at the source directly [1,2]. A method to see the image of the light source in the Maxwellian view is to project the pinhole image at the center of the pupil. Another method to see the image of the light source is to project the laser beam at the center of the pupil. The thin and parallel laser beam passes through the pupil and reaches the retina without using the focusing function of the eye lens, providing a sharp image of the light source. The clarity of the image is independent of the focusing function and the focal position of the eye lens, i.e., focus free is realized.

2. Retinal Imaging Laser Eyewear

We developed Retinal Imaging Laser Eyewear to realize the Maxwellian view with only one non-axisymmetric free-surface reflecting mirror as shown in Fig. 1. The free-surface mirror is designed to collimate the RGB semiconductor laser beam scanned by the MEMS mirror and to converge it in the center of the pupil, projecting an image through the pupil onto the human retina.

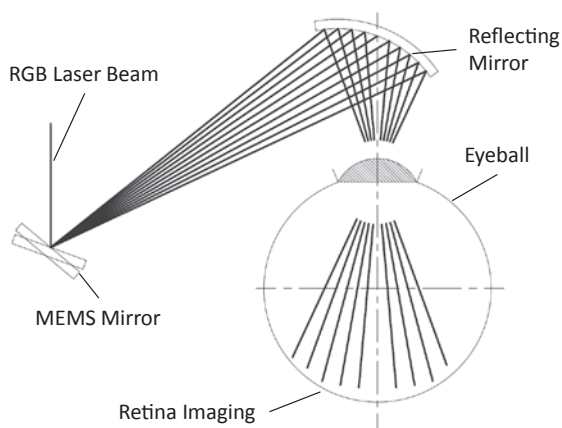


Figure 1 New compact optics of Retinal Imaging Laser Eyewear with only one non-axisymmetric free-surface reflecting mirror



Figure 2 RETISSA® : Eyewear and pocket-size controller.

Figure 2 shows the prototype device with the trademark of RETISSA® [3]. The eyewear is connected to the controller with a sealed line 4mm in diameter combining an optical fiber and electric lines. The controller includes an RGB laser combiner module, laser/MEMS controllers, an image processor, and a chargeable battery. The frame includes the projection unit consisting of the MEMS mirror package, the free-surface reflection mirror, and collimating optics. The free-surface reflection mirror and collimating optics form a parallel and narrow RGB laser beam with a diameter of 0.5 mm. The input to the controller is the HDMI signal of 1280×720×60 Hz (HD 720P). The laser beam modulated according to this signal is conveyed from the controller to the synchronized MEMS mirror via the optical fiber to scan the image. The ND filter attenuates each laser power to about 1 to 2 μW at the converging point. This laser power assures that Retissa belongs to class 1 laser product, which is safe under all conditions of normal use. This means the maximum permissible exposure (MPE) cannot be exceeded when viewing a laser with the naked eye or with the aid of typical magnifying optics [4,5].

The wearer can enjoy laser scanned full-color image from a digital camera installed in the center of the frame as well as from a digital device connected to the controller via the HDMI connector. The weight of eyewear is 59 g.

3. Impact

The features of Retissa is summarized as follows:

1. Focus free, i.e., image clarity is independent of individual focusing function and the focal position of the eye lens.
2. Universal design like normal correcting or sunglasses, owing to small optics inside the glasses frame,
3. Augmented reality, i.e., a digital image is augmented in the real-world environment, independent of the focal position of the wearer since the image is always clear on the retina.

To date, no other wearable devices have achieved these three features whether the devices are using VRDs or conventional liquid color displays. These characteristics will enable RETISSA® to be used in a variety of application segments from low-vision aids, workplace support, retinal testing medical equipment,

entertainment to the consumer-oriented smart glass.

A variety of activities and demonstrations will be provided in the symposium presentation, i.e., ongoing clinical study in Japan and Europe as low-vision aids using the focus-free feature [6], navigation surgery demonstration using augmented reality in the sense of not missing image while the surgeon concentrating on the operation field [7], the concept of novel retinal medical testing, and so on.

References

- [1] J. C. Maxwell, "On the Theory of Compound Colours, and the Relations of the Colours of the Spectrum", *Phil. Trans. R. Soc. Lond.* 150, pp57-84 (1860).
- [2] G. Westheimer, "The Maxwellian View", *Vision Res.* 6, pp.669-682 (1966).
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- [4] ICNIRP. Guidelines on limits of exposure to laser radiation of wavelengths between 180 nm and 1000 nm, *Health Phys.* 105(3) pp. 271-295 (2013).
- [5] IEC 60825-1:2014 Safety of laser products - Part 1: Equipment classification and requirements
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- [7] https://www.youtube.com/watch?v=-AsZBK_24wo

Short Biography

Dr. Mitsuru Sugawara is the President and CEO of QD Laser, Inc. He received the B.Eng., M. Eng., and Dr. Eng. degree in applied physics from the University of Tokyo, Japan, in 1982, 1984, and 1995, respectively. In 1984, he joined Fujitsu Laboratories, became a senior researcher of the optical semiconductor devices laboratory in 1995, and a manager of the photo novel technology laboratory in 2001. His research interest was quantum nanoelectronics including physics of semiconductor quantum dot optical devices. He also worked as the guest associate professor of the Tokyo Institute of Technology in 1999-2001, and the specially-

appointed professor of the University of Tokyo in 2001-2005. In 2005, he became the deputy manager of Nanotechnology Research Center of Fujitsu Laboratories. In April, 2006, he launched QD Laser, Inc., a spin-off venture company from Fujitsu Ltd. He is a Fellow of the Japan Society of Applied Physics.

He received following awards as

Oct. 2006, Technology Innovation Awards Runners-Up, "Quantum-dot lasers for optical communication using nano-size semiconductor particles as light emitters", *The Wall Street Journal*,

April 2008, JAPAN Minister's Commendation, Science and Technology Award, "Research of quantum-dot lasers for optical communication", Ministry of Education, Culture, Sports, Science and Technology, JAPAN,

June 2008, Industry-University Collaboration Contributor Awards, the JAPAN Prime Minister's Prize, "Development of Photonic Network Technology and Launch of Spin-Off Venture",

June 2009, IEEE Spectrum Special Technology Issue Winner Award,

Sep. 2010, Fellow of Japan Society of Applied Physics,

Oct. 2010, JAPAN Minister of Economy, Trade and Industry Prize, Green IT Award 2010,

April 2012, JAPAN Laser Society Industry Award Excellence Award, "Quantum-Dot Lasers for Optical Communication",

Oct. 2014, IEEE Photonic Society Aron Kressel Award, "For pioneering contributions to the development of temperature-insensitive quantum dot lasers, and their commercialization and mass-production for optical communication systems".

Plenary Speech

9:55 - 10:35

Cultivation of Electro-Active Functionality in Transparent Oxides



Prof. Dr. Hideo Hosono

Materials Research Center of Element Strategy,
Tokyo Institute of Technology, Yokohama, JAPAN
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Abstract

Transparent oxides are abundant materials in our territorial crust. However, electro-active functionality of these materials remained almost uncultivated because they are mainly used as the ingredient of traditional ceramics such as glass and cement. After I had studied photonic oxide glasses for 2 decades, exploration of semiconducting functionality in these materials became our main research subject in 1994. This talk reviews several highlights of our transparent oxide research

Content

We have been continuing exploration of new electro-active functions in transparent oxides since 1994. Fascinating optical transparency of glass is a motivation of my material research. Abundant oxides on the earth are optically transparent but electrically insulating. If electro-active function could be imparted to transparent oxides, one would have been able to expect to have new material frontier. This expectation made me start the explorative research on functional transparent oxides. In this talk I review our research trail to new material frontier (Fig.1), focusing on the 3 subjects, i.e., high performance transparent transistors (TFTs) from glass, conversion of a cement

constituent $12\text{CaO}\cdot 7\text{Al}_2\text{O}_3$ to an electronic conductors and a superconductor, and a novel class high T_c superconductor from iron.

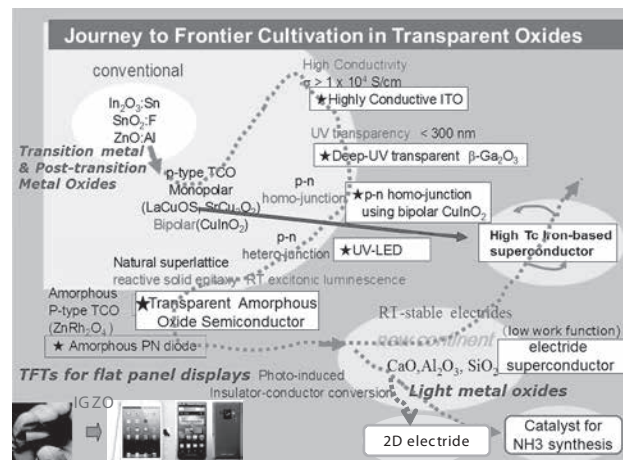


Fig.1 Research Trace of exploration of electro-active function

(1) Transparent amorphous oxide semiconductors and their TFT application: Flat panel displays (FPDs) such as LCDs and OLEDs are leading consumer electronic product and the market size has reached 100 billion US dollars. A thin film transistor (TFT), which works as a switching device for each pixel, is the heart to drive FPDs. Amorphous hydrogenated silicon (a-Si:H) has been exclusively used as the active semiconductor in TFTs for LCDs. However, a-Si:H TFT is insufficient to meet recent need for high performance FPDs such as retina displays because of its low mobility ($\sim 0.5\text{cm}^2/\text{Vs}$). I proposed a high mobility ($10\text{-}30\text{ cm}^2/\text{Vs}$) amorphous semiconductor for TFTs of FPD called transparent amorphous oxide semiconductors (TAOS) based on our material design concept in 1996. In 2004 our group reported in *Nature* a high performance TFTs fabricated on plastic substrate using amorphous InGaZnOx (IGZO), a TAOS material. IGZO-TFT exhibits an order higher mobility and easier processing than a-Si:H TFT. In 2012, an IGZO-TFTs were adopted to drive a retina display of tablet PCs such as new iPad and 55 inches OLED-TV. Amorphous oxide semiconductor is a new research field and is a hot subject for practical application to next generation FPDs

(2) Iron-based Superconductors: Discovery of novel superconductor which gives a large impact had not been reported in last 2 decades. We reported iron

pnictide superconductors, LaFePO ($T_c=6\text{K}$) and LaFeAsO $_{1-x}\text{Fx}$ ($T_c=26\text{K}\&43\text{K}$). This discovery gave a large impact on physics community; Iron was believed to the last constituent to emerge superconductivity because it was a consensus that the formation of Cooper pair competes with magnetic ordering. Thus, this discovery rekindled the vital research on superconductivity worldwide. More than 10,000 papers have been reported to date and iron-based superconductor is the major subject in condensed matter physics. As a consequence, the maximal T_c was raised to 56K, which is the next to the high T_c cuprates, and unique superconducting properties arising from multi-band nature and versatility of parent materials have been clarified.

(3) Electro-Active Function utilizing abundant elements:

Creating novel functionality utilizing abundant element is a major challenge in material research. $12\text{CaO}\cdot 7\text{Al}_2\text{O}_3(\text{C12A7})$ with a crystal structure composed of 3D-connected sub-nanometer-sized cages entrapping oxygen ions as the counter anion is an insulator with a band gap of $\sim 7\text{eV}$. We have attempted to realize novel functionalities by replacing these oxygen ions with unconventional anions such as O^- , H^- and electron. $\text{C12A7}:\text{O}^-$ and $\text{C12A7}:\text{H}^-$ exhibit high oxidation power enough to oxidize Pt and light-induced insulator-electronic conductor conversion, respectively. The striking results were obtained for $\text{C12A7}:\text{e}^-$, a first RT electride; the conductivity at RT is changed from $\sim 10^{-10}$ to 10^3Scm^{-1} and metal-superconductor transition occurs at low temperatures. The most unique property is its low work function of 2.4eV, comparable to metal potassium, but chemically stable. This property led to the finding of high performance catalyst for ammonia synthesis when Ru nanoparticles are loaded on the surface of $\text{C12A7}:\text{e}^-$. A series of finding on electro-active functionality in C12A7 demonstrated the power of nanostructure composed of abundant elements and may be regarded as a pioneering research of "Element Strategy Initiative", a Japan-original science and technology project. We expect the recent discovery of 2D-electride Ca_2N along with material design concept would open a new frontier.

OLEDs are the most promising display in near

future, especially for large-sized TVs. Oxide TFTs are regarded as the solution for the backplane for this application. The LTPS-TFTs, which are used to drive the small sized OLEDs, are bipolar, while the oxide TFT works only as n-channel. It is thus required to reverse the OLED stacking sequence from normal (top cathode) to inverted-type (bottom cathode). Inverted OLEDs with high performance is rather difficult due to the missing of appropriate electron injection materials from cathode to organic luminous layers. Recently, we found amorphous $\text{C12A7}:\text{e}^-$ thin film deposited by sputtering has a low function (3.0eV) and works well as the electron injection layer to reduce the injection voltage from cathode to luminous organic layers. Inverted type OLEDs structure with device performance comparable to normal type structure has been realized by adoption of this transparent oxide semiconductor.

Dr.Hideo Hosono is a professor at Laboratory for Frontier Materials and the founding director of Materials Research Center of Element Strategy, Tokyo Institute of Technology. He received his Ph.D at 1982 in Applied Chemistry from Tokyo Metropolitan University, and became a Professor at Materials and Structures Laboratory (MSL), Tokyo Institute of Technology in 1999. He has received various awards including a medal with purple ribbon (2008), Bernd.T.Matthias Prize, Jan Raychman Prize (SID), Thomson Reuters Citation Laureate in Physics (2013), APS McGroddy Prize for New Materials (2015), the Imperial Prize & the Japan Academy Prize (2015) and the Japan Prize (2016). He has published $\sim 1,000$ papers in SCI journals and total citation of his papers and the parents is $\sim 67,000$ (Google Scholar) and was chosen as a highly-cited researcher. His major concern is design and exploration of novel active oxide materials (optical materials, semiconductors, superconductors and catalysis).

Second Session

Plenary Speech

10:50 - 11:30

The Thirty Meter Telescope Project



Prof. Masanori Iye

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 National Astronomical Observatory, Japan
 m.iye@nao.ac.jp

Abstract

National Astronomical Observatory of Japan (NAOJ) built 8.2m Subaru Telescope on Mauna Kea in 1999. Its wide field camera enabled the observational study of galaxies in the early Universe. The vision of the telescope was improved by ten times upon the completion of the Laser Guide star Adaptive Optics in 2011. NAOJ is now working with international partners from USA, Canada, China and India to build even larger telescope, the Thirty Meter Telescope (TMT), also on Mauna Kea. The scientific objectives and the status of the project are reviewed.

Content

The 8.2m Subaru Telescope atop Mauna Kea, Hawaii Island, has been in operation since 1999. Its unique wide field camera enabled survey of distant universe to spot young galaxy population to study the early history of the universe. The author discovered a galaxy IOK-1 at 12.9 billion light years away in 2006 using the wide field camera, that remained the most distant galaxy ever spotted by human being until 2011. Through a study of such galaxy population, we identified the epoch of the cosmic dawn when many

galaxies were formed to reionize once cooled intergalactic medium by their stellar UV light.

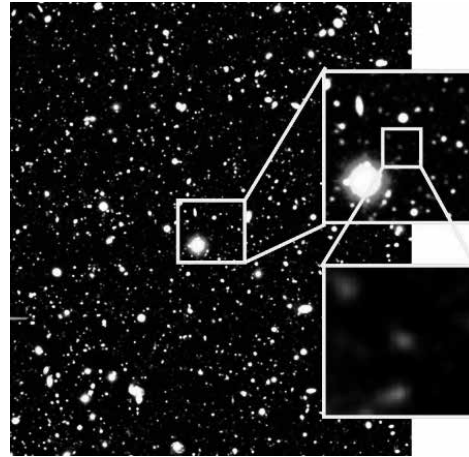


Figure 1. A galaxy IOK-1 at a distance of 12.9 billion light years was the most distant galaxy with measured redshift during 2006-2011

Laser guide star adaptive optics system is a key innovation to improve the vision of the modern large telescopes by reducing the optical wavefront disturbance due to the turbulent atmosphere in real time compensation. This is achieved by a wavefront sensor that measures the wavefront disturbance distribution of the incoming beam at about 1kHz and by a dynamic deformable mirror that compensate the disturbance in real time. Note that this is not a post processing of images.

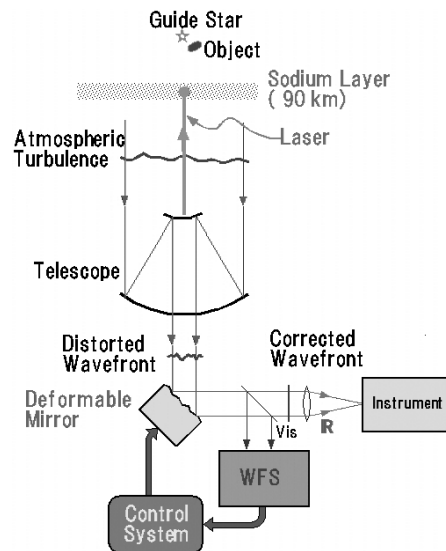


Figure 2. The system diagram to show the laser guide star adaptive optics system of Subaru Telescope.

Figure 3 shows a part of the sky in the Orion nebula taken with Subaru Telescope camera at its first light (left:1999) and 7 years later (right:2006) using the adaptive optics implemented. The spatial resolution is improved by a factor of ten providing a diffraction limited images.

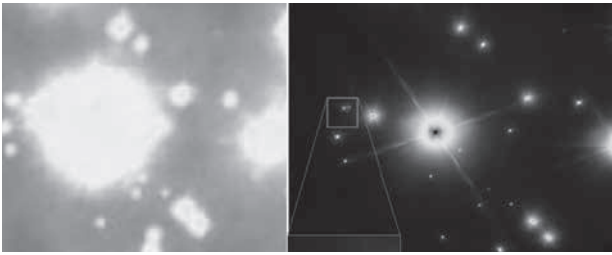


Figure 3. Images taken before (left) and after (right) the implementation of the adaptive optics by Subaru Telescope.

Enhanced vision enabled direct imaging of faint planets orbiting around nearby stars by masking the condensed bright image of the star.

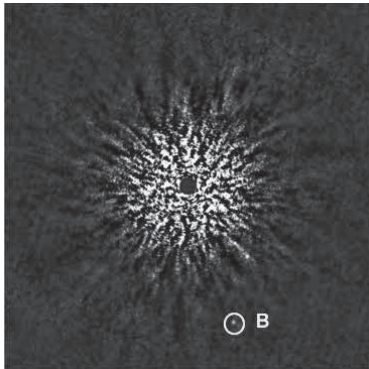


Figure 4. Subaru image of an extrasolar planet GJ758b. The bright mother star image was shrunk by adaptive optics and masked to reduce the scattered light.

Astronomers in the world are now starting to construct even larger telescopes. On Mauna Kea a 30m telescope TMT will be constructed by an international consortium of Japan, USA, Canada, China and India. The Thirty Meter Telescope International Observatory was founded as a limited liability company in USA in 2014. Japan is designing and building the main part of the telescope structure and provides 584 mirror blanks made of zero-expansion glass ceramics needed to form the segmented primary mirror of 30 m in diameter. Polishing the mirror segments will be carried out in parallel among the partners. Canada is building the unique enclosure and the adaptive optics system. Contribution from Caltech and University of California is made mainly in cash to run the project. China will develop the tertiary mirror system and the laser guide star facility. India provides mirror support systems and the control software.

The figure below shows the CG rendering of the TMT launching a laser beam for adaptive optics observations. TMT when completed will enable observations of e.g., (1) the early history of the Universe

when the first stars and galaxies were formed, (2) detailed studies of extrasolar planets and their formation process, (3) the nature of the dark matter and the dark energy, (4) active galactic nuclei where massive black hole plays a key role, and many other yet unconceived objects and phenomena in the Universe.



Figure 5. Telescope Structure under final design phase.

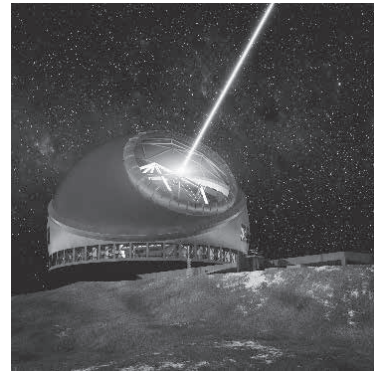


Figure 6. An artist's view of TMT upon completion.

Prof. Masanori Iye got his PhD from the University of Tokyo in 1977 and started his faculty position as a research associate, then associate professor in 1986 and professor in 1993 at the National Astronomical Observatory (NAOJ). He was the project scientist of 8.2m Subaru Telescope and promoted the TMT project as the project director at NAOJ. He serves as the Vice-chair and the Japan representative of the TMT International Observatory founded in 2014 to build and operate TMT on Mauna Kea. He got Japan Academy of Science prize (2013), Imperial Medal with Purple Ribbon (2011), Toray Science and Technology prize (2011), Nishina Memorial Prize (2008) for his research on the early history of the Universe discovering the most distant galaxy in 2006 and the contribution to develop Subaru Telescope and its Laser Guide Adaptive Optics system.

Plenary Speech

11:30-12:10

Extreme Light Infrastructure (ELI): The CERN of Laser Research



Dr. Georg Korn

Science and Technology Manager
Chief Scientist Research Programs
ELI Beamlines

Institute of Physics of the Academy of Science,
Czech Republic

In this talk we will be giving an overview on the development of the “ELI facilities” being built within the Extreme Light Infrastructure (ELI) project based on the European ESFRI (European Strategy Forum on Research Infrastructures) process.

The ELI project is constructing specialized branches (pillars) in several countries. ELI-Beamlines in the Czech Republic, which is a subject of this project, along with ELI-ALPS, the Attosecond Laboratory (Szeged, Hungary) and ELI-NP, the Photonuclear Laboratory (Magurele, Romania). The Ultra High Field Science Laboratory as the fourth pillar (host country not yet determined) will be built later on. Individual pillars will be constructed and operated independently. After launching the individual pillars, it is proposed that the multi-sited infrastructure ELI will be managed and operated within central governance framework according to the model of ERIC (European Research Infrastructure Consortium). It is expected that the ELI-ERIC Consortium shall be established in 2018.

ELI Beamlines

The main objectives of ELI-Beamlines include the construction of a modern, cutting-edge laser facility

and realization of many fundamental research and application projects based on interaction of light with matter at intensities that are about a magnitude greater than those achieved at present. The backbone instruments of ELI will be newly developed laser systems delivering ultrashort pulses lasting typically from 15 fs to 150fs with augmented repetition rates and peak-powers up to 10 PW. High repetition rate high intensity laser performance will be ensured by using diode pumped solid state pump lasers (DPSSL) driving broad band amplifiers or new cooling techniques.

The primary mission of ELI-Beamlines will consist of producing an entirely new generation of secondary sources driven by ultra-intense lasers. These secondary sources will produce pulses of radiation and particles such as flashes of XUV, X-rays and gamma-rays, bunches of accelerated electrons, protons and ions, etc., exploitable as qualitatively new tools for users in many research disciplines and in the development of new technologies.

ELI ALPS

The primary mission of the ELI-ALPS, Szeged research facility is to develop a wide range of ultrashort light sources accessible to international scientific community user groups. Laser driven secondary sources emitting coherent extreme-ultraviolet (XUV) and X-ray radiation confined in Attosecond pulses is a major research initiative of the infrastructure. The secondary purpose of the facility is to contribute to the necessary scientific and technological developments required for high peak intensity and high power lasers. The ELI-ALPS infrastructure will provide the users, in the fields of scientific research and industrial applications, primary laser pulses in conjunction with an impressive array of synchronized secondary light and particle pulses.

The outstanding characteristics of the source parameters include:

- Few-cycle pulses, from the terahertz/infrared up to the pet hertz/ultraviolet, with an impressive 10 Hz to 100 kHz repetition rate
- Attosecond extreme-ultraviolet, soft and hard x-ray mJ pulses with a 10 Hz - 100 kHz repetition rate
- Sub-femtosecond hard x-ray pulses up to 10 keV

photon energy and controlled ultra-relativistic pulse shapes with ultra-high contrast with 1Hz repetition rate.

- Controlled ultra-relativistic pulse shapes with ultra-high contrast at a few Hz repetition rate
- Precise synchronization of the above light sources.

ELI NP

The ELI-NP facility will generate laser and gamma beams with unique characteristics suited to perform frontier laser, nuclear and fundamental research. The core of the facility is a double multi-PW chain laser system. In order to perform cutting edge photo-nuclear physics experiments, a complementary high brilliance gamma beam, very low bandwidth, energies in the 15MeV range, will be generated via the laser interaction with a brilliant bunched electron beam. Thus ELI-NP will allow either combined experiments using the high power laser beams and they beam or stand-alone experiments. The design of the facility is modular, reserving the space for further extension of the laser system and allowing the extension later of the experimental area, according to the needs.

The basic objectives of the ELI-RO Nuclear Physics (NP) pillar are:

- precise diagnosis of the laser beam interaction with matter using nuclear methods and techniques.
- photonuclear reactions for nuclear structure studies and for applications
- exotic nuclear physics and astrophysics.
- frontier fundamental physics based on high intensity laser and very brilliant beams.

We will show and discuss the main developments and the status of the facilities.

Georg Korn earned a Ph.D. in physics from the Institute for Optics and Spectroscopy, Academy of Sciences, Berlin, in 1983. After a postdoc at the Lebedev Physical Institute of the Russian Academy of Sciences, he worked at institutions such as the Max-Born Institute for Nonlinear Optics and Short Pulse Spectroscopy (Berlin), the Center for Ultrafast Optical Sciences University of Michigan, the University of California, San Diego, the Laboratoire d'Optique Appliquée

(Palaiseau, France), the Max Planck Institute for Quantum Optics (Garching, Germany) as well as in the medical laser industry. He has carried out research on a wide range of topics in laser physics and technology, including lasers for fusion, laserplasma interaction, laser-driven short-pulse x-ray generation, ultrafast and high-power lasers and lasers for material processing and vision correction. Since 2007 he has been the deputy coordinator of ELI (Extreme Light Infrastructure), a European high-power laser-facility project, and later became the chief scientist (2001) and the science and technology manager (2014) of the ELI Beamlines in Prague, Czech Republic. Georg Korn is a Fellow of the OSA and visiting professor at Osaka University.

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Conference Chairs' Welcome Letters

The 5th Advanced Lasers and Photon Sources Conference (ALPS '16)



Hitoki Yoneda

Conference Chair

Institute for Laser Science, University of Electro-Communications

We are delighted to welcome you to the 5th Advanced Lasers and Photon Sources Conference (ALPS '16) in Yokohama, Japan.

The ALPS aims to provide a fruitful opportunity to exchange information and discuss recent progress in lasers and photon sources, and related basic research and industrial applications. The ALPS conference is organized as part of the OPTICS & PHOTONICS International Congress (OPIC 2016), which consists of eleven optics-related scientific conferences. In the ALPS '16, we will have 18 excellent invited talks and more than 100 contributed papers. The ALPS '16 will collaborate with the International Conference on X-ray optics, detectors, sources and their applications 2016 (XOPT '16), and the International Conference on High Energy Density Sciences (HEDS 2016) to hold a special joint session on higher photon energy coherent light and ultra-intense lasers and their applications.

In addition, the OPTICS & PHOTONICS International Exhibition (OPIE 2016) is held jointly at the congress site. We encourage you to actively participate in all aspects of the Congress and Exhibition and hope that you will find these interactions to be beneficial.

We hope that you enjoy your time at the conference, and that you will also take this opportunity to explore the rest of Yokohama.

The 2nd Biomedical Imaging and Sensing Conference (BISC '16)



Toyohiko Yatagai

Conference Chair

Center for Optical Research and Education, Utsunomiya University

We are delighted that the 2nd Biomedical Imaging and Sensing Conference in Yokohama is going to open successfully, within the framework of the OPTICS & PHOTONICS International Congress (OPIC 2016). In biomedical optics and photonics, optical tools are employed for the understanding and treatment of diseases, from the cellular level to macroscopic applications. At the cellular level, highly precise laser applications allows the manipulation, operation or stimulation of cells, even in living organisms or animals. Optical microscopy has been revolutionized by a thorough understanding of the different markers and their switching behavior. Maker-free microscopy, like CARS, SHG or THG-microscopy is spreading into multiple biological and clinical imaging applications. OCT is continuously broadening its clinical applicability by even higher resolution, higher speed and more compact and the use of Doppler and polarization sensitivity for functional imaging.

In the field of optics and photonics, biomedical imaging and sensing areas are most quickly progressing and expanding. Techniques developed in these areas could bring us great steps in advances of physical, engineering and biological knowledge as well as optics and photonics technology. This Conference aims at covering several aspects from the fundamental studies

at cellular level to clinical applications of various optical technologies.

Finally we hope the 2nd Biomedical Imaging and Sensing Conference contributes to the progress in this fields and we hope you enjoy fruitful discussions in the Conference.

Conference on Laser Energy Science (CLES 2016)



Hiroshi AZECHI

Chair, CLES 2016 Organizing Committee,
 Director, Professor, Institute of Laser Engineering
 (ILE), Osaka University

We are delighted that you have joined us in Yokohama to share your latest research results.

This is the Conference on Laser Energy Science (CLES 2016) within the framework of the OPTICS & PHOTONICS International Congress (OPIC 2016), which consists of eleven laser-, and photonics-related scientific conferences.

The title of this conference, “Laser Energy Science” stands for the high energy-density plasma physics and intrinsically the development of high power lasers. While the laser energy science is aiming at laser fusion, its research area covers high-field physics with high-power lasers. Based on the themes in the preceded conference (laser inertial fusion, laser and accelerator neutron sources and applications, laser and synchrotron radiation, and laser astrophysics), we set “Laser fusion, particularly on Fast Ignition” as the main theme this year. For this reason, CLES 2016 will be jointly held with “the 14th International Workshop on High-Field Physics with High-Power Lasers”, which has a long history for discussions on laser fusion by Fast Ignition scheme.

Recently there have been many activities related to laser fusion research. NIF (National Ignition Facility) in the US is working very well aiming to demonstrate the laser-driven fusion ignition and burn. Laser Mega Joule (LMJ) in France is under construction and a part of the system, PETAL, is being activated for experiments. Also in Rochester, US, OMEGA-EP is used for Fast Ignition. In Osaka, Japan, GEKKO-XII laser has long been used for laser fusion and many kinds of plasma experiments. Recently, a new ultra-intense short-pulse laser, LFEX, has been activated and performed 2 kJ output in a 1 ps pulse with a very high-pulse contrast of more than 10^{10} . The both lasers have been used for Fast Ignition experiment as the FIREX-1 project, as well as for high-intensity laser-plasma interaction experiments.

In this conference, we intend to discuss the recent topics of progress in laser fusion research. Particularly, we expect latest research works in the field of fast ignition and high field science with high power lasers.

We hope that you enjoy your time at the CLES 2016, and that you will also take this opportunity to explore the rest of Yokohama.

The 5th High Energy Density Science (HEDS 2016)



Ryosuke Kodama

Conference Chair
 Director, the Photon Pioneers Center,
 Deputy Director, Institute of Laser Engineering,
 Professor, Graduate School of Engineering,
 Osaka University

It is our pleasure to have an opportunity with you in Yokohama to share your latest research results in the fields of high energy density science with high power lasers in 2016.

This is the 5th International Conference on High Energy Density Sciences (HEDS 2016) within the framework of the OPTICS & PHOTONICS International Congress (OPIC 2016), which consists of seven optics-related scientific conferences. The HEDS15 will focus on the plasma photonics and laser plasma acceleration such as following topical fields; 1) Plasma photonics: Ultra-strong fields, Wake field plasma, THz radiation, X-rays, Vacuum polarization; 2) Quantum beam generation: Electron, positron, ion, meson and other exotic particle beams, Laser-based X-ray Free Electron Lasers (XFEL); 3) Imaging Technologies: Ultrafast imaging with novel particle and radiation sources.

In HEDS 2016, we will collaborate with the Conference on Advanced Lasers and Photon Sources (ALPS 2016) and the International Conference on X-ray optics, detectors, sources, and their applications (XOPT 2016) to hold a special joint session on high power lasers including XFEL and their applications.

We hope that you enjoy your time at the conference, and that you will also take this opportunity to explore the rest of Yokohama.

The 4th International Conference on Light-Emitting Devices and Their Industrial Applications (LEDIA '16)



Tohru Honda

Chair, Steering Committee

Dean, School of Advanced Engineering, Kogakuin University

On behalf of the organizing committee and program committee, it is great pleasure to welcome you to the 4th International Conference on Light-Emitting devices and Their Industrial Applications (LEDIA '16)

as a part of the 5th Optics and Photonics International Congress (OPIC 2016).

In this conference, we focus on light-emitting diodes (LEDs), laser diodes (LDs) and their related devices for the industrial applications. In 2014, Professors Isamu Akasaki, Hiroshi Amano (Conference chair, LEDIA 2016), and Shuji Nakamura received the 2014 Nobel Prize in Physics for “the invention of efficient blue light-emitting diodes, which has enabled bright and energy-saving white light sources.” Now, further developments of this field are expected. In order to rapid increase in the application fields, the discussion opportunities between the device developers and material scientists are required. This meeting will be a great chance to realize it. In particular, discussions concerning with medical, illumination and display applications will be included in the program. We encourage you to actively participate in all aspects of the Congress and Exhibition. We also hope that you can find your interests and enjoy fruitful discussions.

Apart from the conference activities, I would like to have a chance to enjoy some of the famous tourist attractions in Yokohama or relax and recharge you. Please enjoy a Japanese spring season.

Finally, I welcome you once again to LEDIA '16. I hope all of the participants gain successful achievement in the conference.

The 4th Laser Ignition Conference (LIC '16)



Takunori Taira

Conference Chair

Institute for Molecular Science

Welcome to the 4th Laser Ignition Conference 2016 (LIC '16). This is the international forum to

discuss all aspects of laser induced ignition: advances in novel giant pulse micro-lasers, new insights into the phenomena of laser induced breakdown, and advanced combustion systems enabled by laser ignition. Since the invention of lasers, many researchers attempted “laser ignition” toward the ideal combustion engine. Recently, several kinds of laser ignition, from gas cogeneration to gasoline engine vehicle, have been demonstrated to solve for future energy crisis. The purpose of this meeting is to share information on laser ignition and related sciences and technologies. The conference will be held at Pacifico Yokohama, Yokohama, Japan, on May 18- 20, 2016 with the sponsorship from *Micro Solid-Sate Photonics Group* of the Laser Society of Japan (LSJ) in cooperation with several academic societies and associations.

A total of 52 papers will be presented during the conference, consisting of 1 OPIC/LIC plenary talk, 6 LIC/PLD/SLPC joint session invited talks, 4 LIC plenary talks, 16 invited papers, and 19 contributed papers, 6 poster papers including the joint session of laser damages. After an introduction of LIC '17 in Europe, the Award Ceremony will be held at which several papers will be commended for their outstanding achievement. Laser ignition systems promise better fuel efficiency and lower pollution than conventional systems. The door of “Laser Ignitions for Future Energy and New Science” should be opened by “*Giant Micro-photonics*”. The future may herald new photonics.

We would like to extend our thanks to all the presenters and participants of LIC '16 for their contribution to the success of the conference. We also express our thanks to the endorsement and sponsor groups.

The 1st Laser Solutions for Space and the Earth (LSSE 2016)



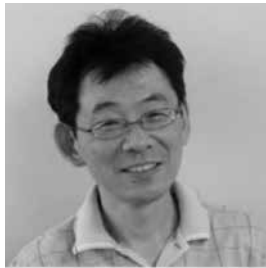
Toshikazu Ebisuzaki

Conference Chair
RIKEN

We are pleased that you have joined in Yokohama to attend to Laser Solutions for Space and the Earth (LSSE 2016)

This is the 1st meeting of LSSE organized as a part of the OPTICS & PHOTONICS International Congress (OPIC 2015). The aim of “Laser Solution for Space and the Earth” is to discuss the application of emerging laser technologies to solve various problems for sustainable developments of space and the Earth. Featured topics for the year 2016 are “laser detection and remediation of orbiting space debris” and “Society Infrastructure Maintenance with Laser Technology.” The most of the invited talks and half of ordinal presentations are devoted to a featured topic to explore it in deep enough, though presentations on other topics are also welcomed. The featured topic will be changed each year so that we can cover various fields that may need advanced laser technologies. We hope that you enjoy the conference, and of course Yokohama and Japan

The 3rd Optical Manipulation Conference (OMC '16)



Takashige Omatsu

Conference Chair
Chiba University

The 3rd Optical Manipulation Conference 2016 (OMC '16) aims to present and discuss up-to-date scientific subjects, new technologies, and applications related to the fields of optical manipulations and their surroundings. In particular, it also focuses on nano-optical technologies including nano-manipulation, nano-fabrication, and nano-imaging system by utilizing enhanced optical radiation forces in combination with structured materials.

Conventional optical tweezers based on optical radiation forces (scattering, absorption and gradient forces) produced by a tightly focused laser beam have been mostly adopted to particles with a dimension range from hundreds of nanometers to tens of micrometers. However, they do not always enable us to efficiently trap and manipulate particles on a nanoscale. A key issues for the above related nano-optical technologies will be how to manage structured lights, near-field optics and plasmonic fields, so as to reinforce significantly the optical radiation forces on a nanoscale.

This conference has been organized and sponsored by the Optical Society of Japan since 2014. The OMC '14 and OMC '15 were very successful to collect over 80 attendees. We hope that this conference will also facilitate scientific and professional networking as well as scientific inspiration through discussions.

The 5th Pacific-rim Laser Damage Conference (PLD '16)



Takahisa Jitsuno

Conference Chair
Institute of Laser Engineering, Osaka University

Pacific-rim Laser damage (PLD) was initiated by Prof. Jianda Shao of Shanghai Institute of Optics and Fine Mechanics in China at 2009. This conference was held as a satellite meeting of SPIE Laser Damage Symposium at Boulder. The purpose of this meeting is the communication between researchers especially in Pacific-rim area in the field of laser damage and related phenomena. Normally, PLD meeting was held biyearly at Shanghai in China, but due to request of Prof. Shao, PLD '14 meeting was held in Yokohama in 2014. At this year, PLD '16 will be held in Japan again as a part of OPIC conference. PLD '16 is a good opportunity to discuss about active topics in Laser Induced Damage phenomena.

PLD '16 includes following topics.

- 1) Joint session; PLD/LIC (Laser Ignition Conference)/SLPC (Smart Laser Processing Conference)
- 2) Plenary session
- 3) High Power Laser Damage
- 4) Poster session
- 5) Nonlinear crystals and laser
- 6) High laser damage resistant coating
- 7) Defect, contamination, polishing and surface damage

We expect 50 papers in PLD '16. We have chosen 10 invited papers from world-wide laser damage researches. I hope we will have useful discussions and mutual communications. Special contribution of SPIE, and SIOM should be mentioned. This conference is

supported by Chinese Academy of Science as Japan-China Bilateral Forum.

The 2nd Smart Laser Processing Conference (SLPC 2016)



Prof. Dr. Yasuhiro Okamoto

Chair of SLPC 2016
Okayama University



Prof. Dr. rer. nat. Reinhart Poprawe, M. A.

Chair of SLPC 2016
Fraunhofer Institute for Laser Technology

On behalf of the organizing committee, it's our great pleasure to welcome you to The Second Smart Laser Processing Conference (SLPC 2016), organized by Japan Laser Processing Society (JLPS). The SLPC 2014 (first SLPC) was launched with generous support from scientists and engineers in the fields of laser materials processing at Yokohama on April 22-24, 2014. It was a great success with some of the fine scientists and engineers attending, and the second SLPC conference is held at Yokohama to encourage rapid development of laser processing technologies.

SLPC 2016 deals with science and technology of smart laser materials processing including micro- and macro-processing. SLPC 2016 aims at providing a forum for discussion of fundamental aspects of laser-matter interaction, and the state-of-the-art of smart

laser processing, in addition to fostering next-generation concepts and innovation by collaboration among participants including scientists, end users and laser manufacturers.

The program for the 3-day event consists of a plenary session, joint sessions with The 5th Pacific-rim Laser Damage Conference (PLD '16) and The 4th Laser Ignition Conference 2016 (LIC '16), regular oral sessions, and poster session, collaborating with other 10 professional conferences in Optics & Photonics International Congress 2016 (OPIC 2016). 12 invited papers from SLPC 2016 and 47 contributed papers from 11 countries are included in the technical digest of SLPC 2016. We are convinced that SLPC 2016 will stimulate fruitful discussions and useful exchanges.

The conference site, Yokohama, is one of the famous port towns in Japan, and many technologies had been spread all countries in Japan through here. We wish smart laser processing technologies also spread all over the world through this conference.

We would like to express our sincere thanks to all the presenters, in particular the plenary and the invited speakers, cooperating societies, media partners, and our sponsors. We would also like to thank the chairs and the members of program committee, steering committee, international advisory committee, and the secretariat. Thank you very much for attending, and we sincerely hope you enjoy your time at the good season of fresh green leaves.

International Conference on X-ray Optics, Detectors, Sources, and their Applications 2016 (XOPT '16)



Tetsuya Ishikawa
Conference Co-Chair
RIKEN



Kazuto Yamauchi
Conference Co-Chair
Osaka University

We are pleased to announce the inauguration of the International Conference on X-ray Optics, Detectors, Sources, and their Applications (XOPT '16) as part of the Optics and Photonics International Congress 2016 (OPIC 2016) in Yokohama, Japan.

X-rays have facilitated a number of key scientific discoveries in recent years. Continuous technological breakthroughs in X-ray sources, optics, and detectors have laid the foundation for these achievements. For this conference, we are inviting leading experts in these fields from around the world to exchange the latest status of the developments, and to discuss the future. We believe it is appropriate to host this conference in Japan, as the Japanese scientific community has contributed significantly to the development of state-of-the-art X-ray optical technologies over the last fifty years.

We are happy to welcome you to participate in and enjoy the Conference.

OPIC 2016 Specialized International Conferences Committees

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Sponsored & Organized by
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The Laser Society of Japan
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The 4th Laser Ignition Conference 2016 LIC '16

Sponsored & Organized by
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OPIC 2016 Conferences Program

Oral Sessions

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Oral, Tuesday, May 17 AM

ALPS <Room 302>

[Opening Address] 8:55-9:00

H. Yoneda, Conference Chair
Inst. for Laser Sci., Univ. Electro-Comm., Japan

[ALPS1] 9:00-10:30

Frequency comb generation

Chair: M. Yan
Max-Planck-Inst. Quantenoptik, Germany

ALPS1-1 9:00 *Invited*

GHz fiber laser technology and 30 GHz astro-comb

Z. Zhang, Y. Ma, C. Li, and A. Wang
State Key Lab. of Adv. Optical Comm. System and Networks, School of Electronics Eng. and Computer Sci., Peking Univ., China

ALPS1-2 9:30

Fully Monolithic Mode-Locked Laser Frequency Comb

W. Xie¹, C.-C. Lee¹, T. Shoji¹, S. Todaro¹, K. L. Silverman², A. Feldman², T. Harvey², R. P. Mirin², and T. R. Schibli^{1,3,4}
¹Dept. of Phys., Univ. of Colorado at Boulder, USA, ²NIST, USA, ³Dept. of Electrical, Computer and Energy Eng. Univ. of Colorado, USA, ⁴JILA, NIST and Univ. of Colorado, USA

ALPS1-3 9:45

Effects with Kerr comb in silica toroid microcavity: Raman scattering and third harmonic generation

R. Suzuki, T. Kato, A. Chen-Jinnai, T. Kobatake, S. Fujii and T. Tanabe
Keio Univ., Japan

ALPS1-4 10:00

Tunable mid-infrared optical frequency comb based on supercontinuum at 1 μm wavelength range

L. Jin¹, M. Yamanaka¹, V. Sonnenschein¹, H. Tomita¹, T. Iguchi¹, A. Sato², A. Omori², A. Ideno², T. Oh-hara², N. Nishizawa¹
¹Nagoya Univ., Japan, ²Sekisui Medical Co. Ltd. Japan

ALPS1-5 10:15

Mode filtering of fiber-based optical frequency comb by use of Fabry-Perot cavities and its application

S. Yoshida^{1,2}, A. Nishiyama^{1,2,3}, A. Asahara^{1,2}, Y. Nakajima^{1,2}, K. Minoshima^{1,2}
¹Univ. Electro-Comm., Japan, ²JST, ERATO IOS Project, Japan, ³SPS, Japan

----- 10:30-10:45 Break -----

ALPS <Room 511+ 512>

CLES <Room 418>

[Opening] 9:00 – 9:15

Opening Remarks 9:00

H. Azechi
Conference Chair of CLES 2016,
Director, Institute of Laser Engineering, Osaka Univ., Japan
H. Shiraga
Co-Chair of FIWS 2016,
Institute of Laser Engineering, Osaka Univ., Japan

[CLES1] 9:15-10:30

Integrated Experiment (Electron)

Chair: P. Norreys
Univ. Oxford, UK

CLES1-1 9:15 *Invited*

Where Do the Fast Electrons Deposit Energy in Laser-Compressed High-Density Fast-Ignition Targets?

F. Beg¹, C. Jarrott¹, M. Wei², C. McGuffey¹, A. Solodov³, W. Theobald³, C. Stoeckl³, R. Betti³, H. C Chen⁴, H., Habara⁵, H. Mclean⁴, P. Patel⁴, J. Santos⁶, H. Sawada⁷, Rich, Stephens², and Toshi Yabuuchi⁵
¹Center for Energy Research, Univ. of California at San Diego, USA ²General Atomics, San Diego, USA ³Laboratory for Laser Energetics, Univ. of Rochester, USA ⁴Lawrence Livermore National Laboratory, USA ⁵Osaka Univ., Japan ⁶Centre Lasers Intenses et Applications, Univ. of Bordeaux, France ⁷Univ. of Nevada, USA

CLES1-2 9:45 *Invited*

Progress of FIREX Project in Japan.

S. Fujioka¹, and FIREX Project Team¹
¹Institute of Laser Engineering, Osaka Univ., Japan

CLES1-3 10:15

First Demonstration of Heating Effect in Indirect-Drive Integrated Fast Ignition Experiment

Y. Gu
Laser Fusion Research Center, CAEP, China

----- 10:30-11:00 Break -----

Oral, Tuesday, May 17 AM

HEDS <Room 311+312>

LSSE <Room 316>

SLPC <Room 416+417>

[Opening] 9:00-9:10
Opening Remarks 9:00
R. Kodama
 Conference Chair of HEDS 2016
 Osaka University, Japan

[HEDS1] 9:10-10:30
Plenary (ImPACT Session I)
Chair: T. Hosokai
 Osaka University, Japan

HEDS1-1 9:10 *Plenary I*

High intensity laser interaction studies at BELLA

Eric Esarey
 Lawrence Berkeley National Laboratory, USA

[Opening] 9:00-9:15
Opening Remark 9:00
Y. Okamoto
 Okayama Univ., Japan

[SLPC1] 9:15-10:15
Plenary
Chairs: R. Poprawe
 Fraunhofer Institute for Laser
 Technology, Germany
Y. Okamoto
 Okayama Univ., Japan

SLPC1-1 9:15 *Keynote*

Advanced Smart Laser Processing Technologies for Improving Quality of Life and Environment

L. Li
 The Univ. of Manchester, UK

HEDS1-2 9:50 *Plenary II*

Applications for electron beams generated by Laser Wakefield Accelerators

Karl Krushelnick
 the University of Michigan, USA

[Opening] 9:45-10:00
Opening Remarks 9:45
T. Ebisuzaki
 Conference Chair of LSSE 2016
 Chief Scientist, Computational Astrophysics
 Laboratory, RIKEN, Japan

[LSSE1] 10:00-12:00
Space Debris Detection Remediation 1
Chair: H. Yamakawa
 RISH, Kyoto University, Japan

LSSE1-1 10:00 *Invited*

Pulsed Lasers for Clearing Debris in LEO and GEO

C. Phipps
 Photonic Associates, LLC, USA

SLPC1-2 9:45 *Keynote*

The Current Status and Future Perspective of Metal Additive Manufacturing in Japan

H. Kyogoku
 Kindai Univ., Japan

----- 10:15-10:45 Break -----

----- 10:30-11:00 Group Photo & Break -----

Tue, 17 May, AM

Oral, Tuesday, May 17 AM

ALPS <Room 302>

[ALPS2] 10:45-12:00
Applications of optical frequency comb
 Chair: Z. Zhang
 Peking Univ., China

ALPS2-1 10:45 *Invited*

Laser frequency combs for new approaches to molecular spectroscopy

M. Yan^{1,2}, T. W. Hänsch^{1,2}, N. Picqué^{1,2}
¹Max-Planck-Institut für Quantenoptik, Germany,
²Ludwig-Maximilians-Universität München, Fakultät für Physik, Germany

ALPS2-2 11:15

Time-Domain Measurements for Characterization of Solids by Dual-Comb Spectroscopy and Asynchronous Optical Sampling

A. Asahara^{1,2}, A. Nishiyama^{1,2,3}, S. Yoshida^{1,2},
 K. Kondo¹, Y. Nakajima^{1,2}, and K. Minoshima^{1,2}
¹Univ. Electro-Comm., Japan, ²ERATO IOS Project, Japan, ³JSPS, Japan

ALPS2-3 11:30

Frequency comb two-color interferometry for self-correction of refractive index of air beyond accuracy of empirical equation

K. Miyano^{1,2}, G. Wu³, T. Makino¹, Y. Nakajima^{1,2},
 K. Minoshima^{1,2}
¹Univ. Electro-Comm., Japan, ²JST, ERATO IOS, Japan, ³Tsinghua Univ., China.

ALPS2-4 11:45

Spectral interferometric imaging with chirped frequency comb for non-scanning three-dimensional measurement

T. Kato^{1,2}, M. Uchida¹, K. Minoshima^{1,2}
¹Univ. Electro-Comm., Japan, ²JST, ERATO IOS project, Japan

----- 12:00-13:00 Lunch Break-----

ALPS <Room 511+ 512>

[ALPS3] 11:00-12:00
Ultrafast technologies

Chair: A. Pirozhkov
 Kansai Photon Sci. Inst., QST, Japan

ALPS3-1 11:00 *Invited*

Laser-Plasma-Based Secondary Sources: Accelerating Particles and Light

C. Spielmann^{1,2}
¹Inst. of Optics and Quantum Electronics, Abbe Center of Photonics, Jena Univ., Germany,
²Helmholtz Inst. Jena, Germany

ALPS3-2 11:30

Suppression of Gain Narrowing in Ti:Sapphire by Polarization Encoded Chirped Pulse Amplification

M. Kalashnikov^{1,2}, H. Cao², K. Osvay², V. Chvykov²,
 N. Khodakovskiy¹, R. S. Nagymihaly²
¹Max-Born-Inst. for Nonlinear Optics and Short Pulse Spectroscopy, Germany, ²ELI-Hu Nkft., Hungary

ALPS3-3 11:45

Ti:sapphire Laser Pumped by Wavelength Multiplexed 521/478-nm InGaN Diode Lasers

R. Sawada, H. Tanaka, F. Kannari
 Keio Univ., Japan

----- 12:00-13:00 Lunch Break-----

CLES <Room 418>

[CLES2] 11:00-12:30
Electron Transport and Generation

Chair: S. Fujioka
 Osaka Univ., Japan

CLES2-1 11:00

Study of Magnetic Instability on the Divergence of Ultraintense Laser-Driven Electrons

X. Yang, B. Xu, Z. Ge, H. Zhuo, and Y. Ma
 College of Science, National Univ. of Defense Technology, China

CLES2-2 11:15

Selectron Transport in The Background Plasma with Steep Density Gradient

Y. Hayashi¹, A. Das², H. Habara¹, P. Kaw²,
 K. A. Tanaka¹
¹Osaka Univ., Japan, ²Institute of Plasma Research, India

CLES2-3 11:30

High Current Electron Beam Transport in Fast Ignition

L. Cao^{1,2,3}
¹Institute of Applied Physics and Computational Mathematics, China ²HEDPS, Center for Applied Physics and Technology Peking Univ., China ³IFSA Collaborative Innovation Center, Shanghai Jiao Tong Univ., China

CLES2-4 11:45

Investigation of Resistive Guiding of Fast Electrons in Ultra Intense Laser-Solid Interactions

K. Lancaster¹, N. Booth², J. Green², C. Murphy¹,
 C. Ridgers¹, and A. Robinson²
¹York Plasma Institute, Department of Physics, Univ. of York, UK ²Central Laser Facility, STFC Rutherford Appleton Laboratory, UK

CLES2-5 12:00

Resistivity Gradient Based Guiding of Fast Electrons in the Inverse Conical Taper Configuration

A. Robinson¹, and H. Schmitz¹
¹Plasma Physics Group, Central Laser Facility, STFC Rutherford-Appleton Laboratory, UK

CLES2-6 12:15

Characteristics of Fast Electrons Generated by Multi Beam of LFEX Laser

M. Hata¹, H. Sakagami², T. Johzaki³, Y. Ssentoku⁴,
 and H. Nagatomo¹
¹Institute of Laser Engineering, Osaka Univ., Japan,
²National Institute for Fusion and Sciences, Japan,
³Hiroshima Univ., Japan ⁴Univ. of Nevada, USA

----- 12:30-13:30 Break -----

Oral, Tuesday, May 17 AM

HEDS <Room 311+312>

[HEDS2] 11:00-12:00
High-Field Physics I (ImPACT Session II)

Chair: S. V. Bulanov
 National Institutes for Quantum and
 Radiological Science and Technology
 (QST), Japan

HEDS2-1 11:00 *Invited*

**Evidences of new features in X-ray emission
of plasma, irradiated by relativistic laser
pulses**

Anatoly Faenov
 Osaka University, Japan

HEDS2-2 11:30 *Invited*

**Database on shock-wave experiments and
equations of state at high energy densities**

K V Khishchenko
 Joint Institute for High Temperatures RAS, Russia

----- 12:00-13:30 Lunch -----

LSSE <Room 316>

LSSE1-2 10:40 *Invited*

Legal Aspects of Laser in Space Activities

S. Aoki
 Keio University, Japan

LSSE1-3 11:20 *Invited*

**Concept of Space Debris Deorbitor Mission for
the 1-10 cm Size Space Debris**

Y. Takizawa, T Ebisuzaki
 RIKEN, Japan

----- 12:00-13:00 Lunch -----

SLPC <Room 416+417>

[SLPC2] 10:45-12:15
**Beam Sources and Components for Smart
Laser Processing**

Chairs: E. Mottay
 Amplitude Systemes, France
H. Nakano
 Kindai Univ., Japan

SLPC2-1 10:45 *Invited*

**Ultrashort Pulse Laser Sources and
Components for Precise Processing – Results
of a Recent German Research Initiative**

S. Nolte^{1,2}
¹Friedrich Schiller Univ., Germany, ²Fraunhofer
Institute for Applied Optics and Precision
Engineering IOF, Germany

SLPC2-2 11:15 *Invited*

**High Power CO Lasers: New Application
Potential for Smart Laser Processing**

A. Held, J. Franks
 Coherent, Inc., USA

SLPC2-3 11:45

**High Power, Air-Cooled, Nanosecond, Single
Mode SHG Green Laser Oscillator**

K. Inoue, M. Saito
 Laser Development Division, Amada Miyachi Co.,
 Ltd, Japan

SLPC2-4 12:00

**Copper Nanostructures Forming During Laser-
Induced Synthesis Exhibit Catalytic Activity**

D. I. Gordeychuk¹, L. S. Logunov¹, A. G. Kuzmin²,
 I. A. Balova¹, V. A. Kochemirovsky¹
¹Saint-Petersburg Univ., Russia, ²Russian Academy
of Sciences, Russia

----- 12:15-13:15 Lunch Break -----

Tue, 17 May, AM

Oral, Tuesday, May 17 PM

ALPS <Room 302>

[ALPS4] 13:00-15:00

Fiber-based novel sources

Chair: T. Schibli

Program Committee Member, Univ. of Colorado, USA

Chair: S. Matsushita

Program Committee Member, Furukawa Electric Co., Ltd., Japan

ALPS4-1 13:00

Invited

Higher-Order Mode Fiber Lasers

J. W. Nicholson, R. Ahmad, K. Abedin
A. DeSantolo, P. S. Westbrook, R.S. Windeler,
C. Headley, and D. J. DiGiovanni
OFS Laboratories, USA

ALPS4-2 13:30

Coherent, broadband supercontinuum Optical Frequency Comb Based on Er-doped Ultrashort Pulse Fiber Laser

T. Niinomi¹, Y. Nomura¹, L. Jin¹, Y. Ozeki², and
N. Nishizawa¹
¹Nagoya Univ., Japan, ²Univ. of Tokyo, Japan

ALPS4-3 13:45

Fully and high-quality phase stabilized high-repetition-rate optical frequency comb based on a mode-locked Yb: fiber laser

H. Yasui^{1,2}, B. Xu^{1,2}, Y. Nakajima^{1,2}, Y. Ma³,
Z. Zhang³, K. Minoshima^{1,2}
¹Univ. Electro-Comm., Japan, ²Univ. Electro-Comm.,
ERATO IOS Project, Japan, ³Peking Univ., China

ALPS4-4 14:00

Mid-infrared comb generation at 3 μm through DFG using high repetition rate Er-doped fiber laser with SWNT

M. Tsuzuki¹, Y. Nomura¹, L. Jin¹, M. Yamanaka¹,
V. Sonnenchein¹, H. Tomita¹, T. Iguchi¹, A. Sato²,
A. Omori², A. Ideno², T. Ohara², Y. Sakakibara³,
E. Omoda³, H. Kataura³, Y. Sakakibara³, and
N. Nishizawa¹
¹Dept. of Quantum Eng., Nagoya Univ., Japan,
²Sekisui Medical Co. Ltd, Japan, ³AIST, Japan

ALPS4-5 14:15

High power supercontinuum generation with Gaussian-like spectral shape in 2100 nm spectral band for optical coherence tomography

T. Sato, H. Kawagoe, M. Yamanaka, N. Nishizawa
Nagoya Univ., Japan

ALPS4-6 14:30

Tunable SESAM mode-locked Tm fiber laser at the wavelength range of two micron

Y. Mashiko, E. Fujita, M. Tokurakawa
Inst. for Laser Sci., Univ. Electro-Comm., Japan

ALPS4-7 14:45

Femtosecond Er-Doped Fiber Laser Mode-Locked by Hybrid Scheme of Nonlinear Polarization Rotation and Single-Wall Carbon Nanotube

L. Jin, K. Nonobe, N. Nishizawa
Dept. Quantum Eng., Nagoya Univ., Japan

----- 15:00-15:30 Break-----

ALPS <Room 511+ 512>

[ALPS5] 13:00-15:00

Petawatt and high power lasers

Chair: H. Yoneda

Conference Chair, Inst. for Laser Sci., Univ. Electro-Comm., Japan

Chair: C. Spielmann

Inst. of Optics and Quantum Electronics, Germany

ALPS5-1 13:00

Invited

Next generation Petawatt Laser Systems

C. L. Haefner, C.W. Siders, A. Bayramian, T. Spinka,
J. Atherton, S. Baxamusa, S. Betts, D.R. Bopp,
B. Demaret, B. Deri, J.M. Di Nicola,
R. Dylla-Spears, C. Gates, A. Erlandson, J. Jarboe,
B. Heidl, J. Horner, D. Kim, E. Koh, G. Korn, J. Lusk,
C. Marshall, D. Mason, J. Menapace, P. Miller,
B. Rus, K. Schaffers, L. Seppala, D.E. Smith,
J. Stanley, T. Suratwala, S. Telford, D. VanBlarcom
NIF Photon Science, Lawrence Livermore National
Laboratory, USA

ALPS5-2 13:30

PENELOPE laser system update - on the way to first light

D. Albach¹, M. Siebold¹, M. Loeser^{1,2}, F. Roeser¹,
P. Eiselt^{1,2} and U. Schramm^{1,2}
¹Helmholtz-Zentrum Dresden-Rossendorf,
Germany, ²Tech. Univ. Dresden, Germany

ALPS5-3 13:45

Meter-size Gratings for Multi-Petawatt Lasers

A. Cotel, and B. Villier
HORIBA Jobin Yvon SAS, France

ALPS5-4 14:00

The development of ozone grating for high energy lasers

Y. Michine, H. Yoneda
Inst. for Laser Sci., Univ. Electro-Comm., Japan

ALPS5-5 14:15

Spectral control of x-ray atomic laser pumped with intense XFEL pulses

T. Masutani¹, Y. Michine¹, T. Suzuki¹, Y. Inubushi²,
M. Yabashi², and H. Yoneda¹
¹Inst. for Laser Sci., Univ. Electro-Comm., Japan,
²RIKEN XFEL, Japan

ALPS5-6 14:30

Development of high rep. rate 100-J class diode-pumped solid-state laser system

Y. Takeuchi, T. Sekine, Y. Hatano, T. Kurita,
Y. Muramatsu, Y. Kato, N. Sato, and T. Kawashima
Industries Development Lab., Hamamatsu
Photonics K.K., Japan

ALPS5-7 14:45

Discharge-pumped Non-chain HF/DF Lasers with Joule Output

L. You, X. Fang, X. Liang, Q. Wang, G. Yin
Anhui Inst. of Optics and Fine Mechanics, Chinese
Academy of Sci., China

----- 15:00-15:30 Break-----

CLES <Room 418>

[CLES3] 13:30-15:30

Proton Fast Ignition

Chair: J. Fernandez

Los Alamos National Laboratory, USA

CLES3-1 13:30

Invited

Progress in Fundamental and Applied Proton Fast Ignition Research

C. McGuffey¹, J. Kim¹, M.-S. Wei, H. Habara³,
T. Yabuuchi^{3,8}, K. Tanaka³, W. Theobald⁴, B. Qiao¹,
F.-N. Beg¹, S.-N. Chen⁵, P.-M. Nilson⁴, R. Stephens²,
J. Fuchs², M. Foord⁶, H. Mclean⁶, H. Shiraga⁷
¹Univ. of California San Diego, USA, ²General
Atomics, USA, ³Osaka Univ., Japan ⁴Laboratory for
Laser Energetics, Rochester, USA, ⁵LULI, École
Polytechnique, CNRS, CEA, UPMC, France,
⁶Lawrence Livermore National Laboratory, USA,
⁷Institute of Laser Engineering, Osaka Univ., Japan,
⁸(currently) RIKEN, Spring-8 Center, Japan

CLES3-2 14:00

Invited

Proton Fast Ignition Scheme Revisited

J. Honrubia¹, A. Morace² and M. Murakami²
¹School of Aerospace Engineering, Polytechnic
Univ. of Madrid, Spain, ²Institute of Laser
Engineering, Osaka Univ., Japan

CLES3-3 14:30

Integrated Simulations of Core Heating for Ion Assisted Fast Ignition

H. Sakagami¹, T. Johzaki², A. Sunahara³, and
H. Nagatomo⁴
¹Fundamental Physics Simulation Division,
National Institute for Fusion Science, Japan,
²Graduate School of Engineering, Hiroshima Univ.,
Japan, ³Institute for Laser Technology, Japan,
⁴Institute of Laser Engineering, Osaka Univ., Japan

CLES3-4 14:45

Proton Fast Ignition: Limits of the Classic Method and Alternative Approaches.

A. Morace¹, J. Honrubia², T. Johzaki³, H. Sakagami⁴,
S. Fujioka¹, A. Yogo¹, M. Murakami¹, Y. Arikawa¹,
S. Kojima¹, S. Sakata¹, Y. Abe¹, N. Kamitsukasa¹,
S.-H. Lee¹, S. Tosaki¹, K. Matsuo¹, A. Sagisaka⁵,
K. Kondo⁵, A. Pirozhkov⁵, T. Norimatsu¹,
T. Jitsuno¹, N. Miyanaga¹, H. Shiraga¹, M. Nakai¹,
H. Nishimura¹ and H. Azechi¹
¹Institute of Laser Engineering, Osaka Univ., Japan,
²ETSIA, Univ. Politecnica de Madrid, Spain, ³Graduate
School of Engineering, Hiroshima Univ., Japan, ⁴National
Institute of Fusion Science, Japan, ⁵Kansai Photon
Science Institute, Japan Atomic Energy Agency, Japan

CLES3-5 15:00

Fast Ignition Using Shock Accelerated Ions in the Target Corona

E. Boella¹, R. Bingham², R. Cairns³, P. Norreys^{2,4},
R. Trines⁵, M. Vranic¹ and L. Silva¹
¹Centro de Fisicade Plasma, Instituto Superior Tecnico,
Portugal, ²STFC Rutherford Appleton Laboratory, UK,
³Univ. of St. Andrews, UK, ⁴Univ. of Oxford, UK

CLES3-5 15:15

Effect of Resistivity Gradient on Laser Driven Electron Transport and Ion Acceleration

H. Zhuo¹, X. Yang¹, and S. Zhang¹
¹College of Science, National Univ. of Defense
Technology, China

----- 15:30-16:00 Break-----

Oral, Tuesday, May 17 PM

HEDS <Room 311+312>

[HEDS3] 13:30-15:00
High-Field Physics II (ImPACT Session III)
 Chair: A. Zhidkov
 Osaka University, Japan

HEDS3-1 13:30 *Invited*

What can we learn from studying magnetic reconnection in laser plasmas?

S. V. Bulanov
 QST, Japan

HEDS3-2 14:00

Non-equilibrium extreme radiation plasmas produced by the interaction between high power laser and heavy element materials

Yasuaki Kishimoto
 Kyoto University, Japan

HEDS3-3 14:20

X-ray spectroscopy diagnostics on supersonic astrophysically-relevant recombining plasma jets collimated by poloidal magnetic field

Sergei Pikuz
 RAS, Russia

HEDS3-4 14:40

Nearly Isolated Measurement of the Vacuum Contribution to the Scattering of γ -rays off Nuclei

James K. Koga
 QST, Japan

LSSE <Room 316>

[LSSE2] 13:00-15:00
Space Debris Detection Remediation 2
 Chair: S. Wada
 RIKEN Center for Advanced Photonics,
 RIKEN

LSSE2-1 13:00 *Invited*

A Novel Laser System Based on a Massive Coherent Amplifying Network (CAN) to Mitigate Orbital Debris

G. Mourou
 IZEST, Ecole Polytechnique, France

LSSE2-2 14:00

Mandelstam-Brillouin Mirrors for Chirped Pulse Fiber Laser Networks

A. Y. Okulov
 Russian Academy of Sciences, Russia

LSSE2-3 14:20

Experimental Evaluation of Laser Ablation Impulse

A. Sasoh, B. Wang, H. Tsuruta, Y. Katagiri,
 A. Iwakawa
 Nagoya University, Japan

LSSE2-4 14:40

Impulse Generation by Multiple-Pulse Laser Ablation with Oblique Incidence

B. Wang, H. Tsuruta, A. Sasoh
 Nagoya University, Japan

SLPC <Room 416+417>

[SLPC3] 13:15-15:15
Additive Manufacturing
 Chairs: H. Kyogoku
 Kindai Univ., Japan
 M. Tsukamoto
 Osaka Univ., Japan

SLPC3-1 13:15 *Invited*

Development of a Hybrid Multi-Tasking Machine Tool: Integration of Laser Metal Deposition Technology with CNC Machining

T. Yamazaki,
 Yamazaki Mazak Corp., Japan

SLPC3-2 13:45

High Speed and High Accuracy LMD 3D Printer

N. Okada¹, Y. Shiomi¹, H. Ohno¹, S. Fujimaki²,
 Y. Fukase², S. Fukuyama²
¹Toshiba Corp., Japan, ²Toshiba Machine Co. Ltd.,
 Japan

SLPC3-3 14:00

Diode Lasers in New Applications High Speed Cladding and Tailored Blank Welding

T. Schopphoven¹, A. Gasser¹, K. Wissenbach¹,
 R. Poprawe², A. Eltze³, M. Ruetering³
¹Fraunhofer-Institute for Laser Technology,
 Germany, ²Chair for Laser Technology, RWTH
 Aachen Univ., Germany, ³Laserline GmbH, Germany

SLPC3-4 14:15

Development of Center Nozzle Laser Coating System and Its Coating Characteristics

D. Tanigawa¹, T. Nakaaze¹, N. Abe², M. Tsukamoto²,
 H. Yamazaki², Y. Hayashi², M. Sengoku³,
 M. Yoshida³, Y. Funada⁴, S. Muratani⁵
¹Graduate School of Engineering, Osaka Univ.,
 Japan, ²Joining and Welding Research Institute,
 Osaka Univ., Japan, ³Graduate School of Science
 and Engineering, Kindai Univ., Japan, ⁴Industrial
 Research Institute of Ishikawa, Japan, ⁵Muratani
 Machine Inc. Japan

SLPC3-5 14:30

Sensory Properties of Copper Microstructures Obtained by Laser-Induced Deposition from Water-Based Solution

M. S. Panov, A. V. Smikhovskaya, S. S. Ermakov,
 I. I. Tumkin
 Saint-Petersburg Univ., Russia

SLPC3-6 14:45

Spray-coating of CuO Nanoparticles for Femtosecond Laser Reduction Patterning on Nonplanar Substrates

Y. Ito, M. Mizoshiri, J. Sakurai, S. Hata
 Department of Micro-Nano Systems Engineering,
 Graduate School of Engineering, Nagoya Univ.,
 Japan

SLPC3-7 15:00

Cu Micropatterning on Poly (Dimethylsiloxane) Using Femtosecond Laser Reduction of CuO Nanoparticles

M. Mizoshiri, Y. Ito, J. Sakurai, S. Hata
 Graduate School of Engineering, Nagoya Univ.,
 Japan

----- 15:00-15:30 Break -----

----- 15:00-15:30 Break -----

----- 15:15-15:45 Break -----

Oral, Tuesday, May 17 PM

ALPS <Room 302>

[ALPS6] 15:30-17:30
Fiber lasers and laser diodes

Chair: J. W. Nicholson
Program Committee Member, OFS
Laboratories, USA

ALPS6-1 15:30 *Invited*

Scaling ultrafast fiber source performances: coherent combining of femtosecond pulses

F. Guichard¹, M. Hanna², Y. Zaouter¹, F. Druon², C. Hönninger¹, E. Mottay¹, and P. Georges²
¹Amplitude Systèmes, France, ²Lab. Charles Fabry, Inst. d'Optique, CNRS, Univ. Paris-Sud, France

ALPS6-2 16:00

Divided Pulse Amplification: Spectral Phase and Combining Efficiency

K. Iwata, H. Tünnermann, A. Shirakawa
Inst. for Laser Sci., Univ. Electro-Comm., Japan

ALPS6-3 16:15

Phase-locked 7-core multi-core photonic crystal fiber laser

Y. Kurosu¹, T. Kubouchi¹, H. Tünnermann¹, A. Shirapikawa¹, K. Saito²
¹Inst. for Laser Sci., Univ. Electro-Comm., Japan, ²Toyota Tech. Inst., Grad. School of Eng., Japan

ALPS6-4 16:30

Experimentally fabrication of a monolithic fiber end cap collimator with long collimation length for high power applications

X. Zhou, Z. Chen, Z. Wang, J. Hou, X. Xu
College of Optoelectric Sci. and Eng., National Univ. of Defense Tech., China

ALPS6-5 16:45

Generation of red Q-switch pulse laser in Pr-doped double-clad structured waterproof fluoride glass fiber with graphene thin film

S. Kajikawa^{1,2}, T. Terao^{1,2}, S. Motokoshi³, M. Yoshida¹, O. Ishii⁴, M. Yamazaki⁵, Y. Fujimoto²
¹Faculty of Sci. and Eng. Kindai Univ., Japan, ²ILE, Osaka Univ., Japan, ³Inst. of Laser Tech., ⁴Production Eng. Section, Optical Glass Production Dept. Sumita Optical Glass, Inc., Japan, ⁵Glass Res. Division, R&D Dept. Sumita Optical Glass, Inc., Japan

ALPS6-6 17:00

976nm 300W Fiber Coupled Laser Diode Module

E. Katayama, Y. Ishige, Y. Ohki, H. Mori, T. Kimura, T. Mukaiharu
Furukawa Electric Co., Ltd., Japan

ALPS6-7 17:15

Wavelength locking and bandwidth narrowing for spatial beam-combined high-power laser-diode stacks using single volume Bragg grating

T. Sekine, Y. Zheng, H. Kan, N. Satoh, and T. Kawashima
Hamamatsu Photonics K.K., Japan

ALPS <Room 511+ 512>

[ALPS7] 15:30-17:30
Ultrafast light sources

Chair: A. Suda
Tokyo Univ. of Sci., Japan
Chair: Bruno E. Schmidt
Few-cycle Inc., Canada

ALPS7-1 15:30 *Invited*

Concepts for scaling peak power and average power via Frequency domain OPA (FOPA)

M. Giguere¹, G. Ernotte², P. Lassonde², A. Stephanides³, T. Mans³, F. Légaré², B. E. Schmidt¹
¹Few-cycle Inc., Canada, ²NRS-EMT, Canada, ³AMPHOS GmbH, Germany

ALPS7-2 16:00

Sub-Two-Cycle, Millijoule IR Light Source for Attosecond Streaking of Extreme Ultraviolet High Harmonics

N. Ishii¹, N. Saito, T. Kanai¹, S. Watanabe², and J. Itatani
¹The Inst. for Solid State Phys., Japan, ²Tokyo Univ. of Sci., Japan

ALPS7-3 16:15

Retrieval of Vacuum-Ultraviolet Waveform and Plasma Mirror Reflectivity Using Frequency-Resolved Optical Gating

R. Itakura, T. Kumada, M. Nakano, H. Akagi
Kansai Photon Sci. Inst., JAEA, Japan

ALPS7-4 16:30

Chirped-Pulse Amplification Using Thulium-Doped Fluoride Fibers

Y. Nomura and T. Fuji
Inst. for Molecular Sci., Japan

ALPS7-5 16:45

Ultrashort 34 fs, 50 μJ fiber source through nonlinear compression in hypocycloid core Kagome fiber

F. Guichard¹, L. Lavenu^{1,2}, Y. Zaouter¹, M. Hanna², Q. Mocaer¹, G. Machinet¹, B. Debord³, F. Gerome^{3,4}, C. Hönninger¹, E. Mottay¹, F. Benabid^{3,4}, and P. Georges²
¹Amplitude Systèmes, France, ²Lab. Charles Fabry, France, ³GPPM group laboratoire XLIM, GLOphotonics, France

ALPS7-6 17:00

Synchronization of Two-Color Femtosecond Fiber Chirped-Pulse Amplifiers by Use of Dispersive-Wave Generation

D. Yoshitomi and K. Torizuka
AIST, Japan

ALPS7-7 17:15

Measurement of time-dependent plasma formation in noncollinear high harmonic generation

M. Kohga, K. Sato, T. Kuroda, M. Hata, and A. Suda
Dept. of Phys. Faculty of Sci. and Tech., Tokyo Univ. of Sci., Japan

CLES <Room 418>

[CLES4] 16:00-18:00
Ion Acceleration

Chair: M. Roth
Technische Univ., Darmstadt, Germany

CLES4-1 16:00 *Invited*

Towards Spectral Control of Laser-Driven Ion Beams Generated in the Relativistic Transparency Regime

J. Fernandez¹, S. Palaniyappan¹, C. Huang¹, D. Gautier¹, C. Hamilton¹, M. Santiago¹, C. Kreuzer², and R. Shah¹
¹Los Alamos National Laboratory, USA, ²Ludwig-Maximilian-Univ., Germany

CLES4-2 16:30 *Invited*

Anomalous Electron Heating and Ion Acceleration with High Contrast Laser Pulses on LFEX

A. Yogo¹, N. Iwata¹, K. Mima², A. Morace¹, S. Tosaki¹, S. Fujioka¹, Y. Arikawa¹, Y. Abe¹, S. Kojima¹, S. Sakata¹, S.-H. Lee¹, K.-F. Law¹, K. Matsuo¹, H. Nagatomo¹, A. Sunahara², T. Johzaki³, H. Sakagami⁵, T. Ozaki³, T. Sano¹, Y. Fujimoto¹, K. Yamanoi¹, T. Norimatsu¹, S. Tokita¹, Y. Nakata¹, J. Kawanaka¹, T. Jitsuno¹, N. Miyanaga⁴, M. Nakai¹, H. Nishimura¹, H. Shiraga¹, S. Bulanov⁶, A. Sagisaka⁵, K. Ogura⁵, K. Kondo⁶, and H. Azechi¹
¹Institute of Laser Engineering, Osaka Univ., Japan, ²The Graduate School for the Creation of New Photon Industries, Japan, ³Institute for Laser Technology, Japan, ⁴Graduate School of Engineering, Hiroshima Univ., Japan, ⁵National Institute for Fusion Science, Japan, ⁶Kansai Photon Science Institute, Japan Atomic Energy Agency, Japan

CLES4-3 17:00

Electron Heating and Ion Acceleration Mechanisms in Pico-Second Scale Interaction between Solid Foil and High Intensity Lasers

N. Iwata¹, A. Yogo¹, S. Tosaki¹, K. Koga¹, H. Nagatomo¹, Y. Kishimoto², H. Nishimura¹, K. Mima³ and H. Azechi¹
¹Institute of Laser Engineering, Osaka Univ., Japan, ²Graduate School of Energy Science, Kyoto Univ., Japan, ³The Graduate School for the Creation of New Photonics Industries, Japan

CLES4-4 17:15

Efficient Ion Acceleration by Collision-Less Shock for Fast Ignition

K. Mima¹, Q. Jia², H.-B. Cai², T. Taguchi³, T. Asahina⁴, N. Iwata¹, H. Nagatomo⁴, A. Yogo⁴
¹The Graduate School for the Creation of New Photonics Industries, Japan, ²HEDPS, Center for Applied Physics and Technology, Peking Univ. and Institute of Applied Physics and Computational Mathematics, China, ³Faculty of Engineering, Setsunan Univ., Japan, ⁴Institute of Laser Engineering, Osaka Univ., Japan

CLES4-5 17:30

Enhanced Laser-Driven Proton Acceleration from Relativistically Transparent Transversely Nano-striped Target

M. Murakami¹, J. Wang^{1,2}, H. Xu³, J. Ju² and W. Yu²
¹Institute of Laser Engineering, Osaka Univ., Japan, ²State Key Laboratory of High Field Laser Physics, SIOM, China, ³National Laboratory for Parallel and Distributed Processing, China,

CLES4-5 17:45

Quasi-Monoenergetic Laser-Driven Ion Acceleration by Coulomb Explosion of Optimized Two-Species Nanocluster

X. Zhou¹ and M. Murakami¹
¹Institute of Laser Engineering, Osaka University, Japan

Oral, Tuesday, May 17 PM

HEDS <Room 311+312>

[HEDS4] 15:30-17:50
Ultra-fast Imaging(ImPACT Session IV)
 Chair: M. Kando
 QST, Japan

HEDS4-1 15:30 *Invited*

Ultrafast electron diffraction and deflectometry with laser accelerated electrons

Shuji Sakabe
 Kyoto University, Japan

HEDS4-2 16:00 *Invited*

Laser-driven electron sources and their application to ultrafast electron diffraction

Jérôme Faure
 CNRS, France

HEDS4-3 16:30 *Invited*

Multi-Mode Ultrafast Electron Diffraction: Probe Structural Dynamics with Atomic-scale Resolution of Space and Time

Wenxi Liang
 Huazhong University of Science and Technology, China

HEDS4-4 17:00

Progress in all-optical ultra-fast single-shot electron microscopy in MeV range

Alexey Zhidkov
 Osaka University, Japan

HEDS4-5 17:20 *Invited*

Ultrafast Electron Microscopy using a relativistic-energy femtosecond electron beam

Jinfeng Yang
 Osaka University, Japan

LSSE <Room 316>

[LSSE3] 15:30-17:10
Space Debris Detection Remediation 3
 Chair: A. Sasoh
 Nagoya University, Japan

LSSE3-1 15:30

Space Debris Studies at Kyoto University

H. Yamakawa, K. Masunari, N. Iwanaga, N. Ikeda, T. Iwahori, T. Nishimura, Y. Kobayashi, T. Fukushima
 RISH, Kyoto University, Japan

LSSE3-2 15:50

Large Debris Removal in LEO and GEO with a Spacecraft Equipped with a High Power Laser System

N. Thiry, J. M. Romero Martin, M. Vasile
 University of Strathclyde, UK

LSSE3-3 16:10

Development of Observational Technologies for Space Debris in JAXA

T. Yanagisawa, H. Kurosaki
 Japan Aerospace Exploration Agency, Japan

LSSE3-4 16:30

Application and Spatially and Temporally Resolved OES Study of Polymers Ablated in Laser Propulsion

L. Jiao^{1,2,3}, J. Cai², B. Truscott³, H. Liu³, M. Ashford³
¹Univ. of Sci. and Tech. of China, China, ²Chinese Academy of Sciences, China, ³University of Bristol, UK

LSSE3-5 16:50

A PHD Filter for Tracking Mid-Course Group Targets via Space-Based Laser

H. Yu, W. An, W. Sheng, X. Wang
 National Univ. Defence Tech., China

SLPC <Room 416+417>

[SLPC4] 15:45-17:45
Micro & Nano Processing
 Chairs: B. Neuenschwander
 Bern Univ. of Applied Science, Switzerland
 M. Fujita
 Institute for Laser Technology, Japan

SLPC4-1 15:45 *Invited*

Ultrafast Lasers Interacting on Different Material Surfaces

E. L. Gurevich, A. Ostendorf
 Ruhr-Univ. Bochum, Germany

SLPC4-8 16:15

Direct Writing of Sub-100 nm Cr Particles by Laser Induced Forward Transfer (LIFT) Using an Annular fs-laser Beam

T. Nakamura, K. Omachi, S. Sato
 Institute of Multidisciplinary Research for Advanced Materials, Tohoku Univ., Japan

SLPC4-3 16:30

Find Out the Best Pulse Duration to Do Effective Micro Laser Process with Ultra Fast Pulse Lasers

Y. Nakamura¹, M. Koitzsch², B. Becker², C. Siebert², S. Russ³
¹TRUMPF Corp., Japan, ²TRUMPF Laser- und Systemtechnik GmbH, Germany, ³TRUMPF Laser GmbH + Co. KG, Germany

SLPC4-4 16:45

Industrial Femtosecond Lasers for Micromachining Applications with Highest Quality and Efficiency

D. Achenbach, F. Hendricks, V. Matylitsky
 Spectra-Physics, Austria

SLPC4-5 17:00

Structure Evolution of Metal Nanowire Gratings to Nanodots by Femtosecond Laser Irradiation

Y. Nakajima¹, N. N. Nedyalkov², A. Takami¹, M. Terakawa¹
¹Keio Univ., Japan, ²Bulgarian Academy of Sciences, Bulgaria

SLPC4-9 17:15

Femtosecond Laser Processing of Poly (Lactic-co-glycolic Acid) at 800, 400, and 266 nm Wavelengths

A. Shibata¹, S. Yada¹, M. Terakawa^{1,2}
¹School of Integrated Design Engineering, Keio Univ., Japan, ²Department of Electronics and Electrical Engineering, Keio Univ., Japan

SLPC4-7 17:30

Fabrication of Bi-anisotropic Optical Metamaterials for Infra-red Spectral Range by Direct Laser Write Technique

I. Faniayeu^{1,2}, V. Mizeikis¹
¹Research Institute of Electronics, Shizuoka Univ., Japan, ²Department of General Physics, Francisk Skorina Gomel State Univ., Belarus

[SLPC Reception] 18:15-20:15

@Room 419

Tue, 17 May, PM

Oral, Wednesday, May 18

Congress <Room 501+502>

Plenary Sessions 9:00-12:10

[Greetings] 9:00-9:15

Andreas Ostendorf
Congress Chair
Professor, Ruhr-University Bochum, Germany
Sadao Nakai
IAB Chair
Professor Emeritus, Osaka University, Japan
Reinhart Poprawe
IAB
Director, Fraunhofer Inst. for Laser Tech., Germany

----- 10:35-10:50 Break -----

[Second session OPIC2] 10:50 -12:15

Chair: Chris Barty
CTO, Lawrence Livermore National Laboratory, USA

OPIC2-1 10:50-11:30

The Thirty Meter Telescope project

Masanori Iye
Professor Emeritus, National Astronomical Observatory of Japan

OPIC2-2 11:30-12:10

ELI: The CERN of laser research

Georg Korn
CSO, Head of Department of Experimental Program, Extreme Light Infrastructure(ELI)

----- 12:10-13:30 Lunch Break -----

[First session OPIC1] 9:15-10:35

Chair: Kenichi Iga
Professor Emeritus, Tokyo Institute of Technology

OPIC1-1 9:15-9:55

Retinal Imaging Laser Eyewear : from Low-Vision Aids to Smart Glass

Mitsuru Sugawara
President, QD Laser Inc., Japan

OPIC1-2 9:55-10:35

Cultivation of Electro-Active Functionality in Transparent Oxides

Hideo Hosono, Professor
Tokyo Institute of Technology, Japan

Oral Program

ALPS & HEDS & XOPT <Room 302>

[ALPS, HEDS, XOPT Joint Session 1]

13:30-15:30
Chair: M. Yabashi
SPring-8/SACLA, Japan
T. Hosokai
Osaka Univ., Japan

LIC & PLD & SLPC <Room 301>

[LIC+PLD+SLPC Joint Session 1](PLD1)(SLPC5)

13:30-15:15
Chair: K. Washio
Paradigm Laser Research, Japan

BISC & OMC <Room 414+415>

[BISC & OMC Joint Session]

13:30-16:30
Chairs: T. Omatsu
Chiba Univ., Japan
O. Matoba
Kobe Univ., Japan

XOPTj-1 13:30 *Invited*

X-rays as a Subject for Optics Research

T. Ishikawa
RIKEN SPring-8 Center, Japan

Introduction 13:30

T. Taira¹, T. Jitsuno², and Y. Okamoto³
¹Inst. Mo. Sci., Japan, ²Osaka Univ., Japan, ³Okayama Univ., Japan

BISC & OMC-1 13:30 *Invited*

Direct Real Time En-face Optical Coherence Tomography

A. Podoleanu^{1,4}, A. Bradu¹, S. Rivet¹, K. Kapinchev², F. Barnes², M. Maria^{1,3}, T. Feuchter³, L. Leick³, T. Garway-Heath⁴, P. Keane⁴, R. Rajendram⁴
¹Appl. Opt. Univ. of Kent, UK, ²School of Comput. Univ. of Kent, UK, ³NKT Photonics A/S, Denmark, ⁴Univ. Col. London, UK

XOPTj-2 14:00 *Invited*

LCLS-II: A High Repetition Rate X-ray Laser Facility

D. M. Fritz
SLAC National Accelerator Laboratory, USA

SLPC5j-1 13:45 *Invited*

Optimized Design and Performance of Laser Ablation Systems for Paint and Coating Removal for Manufacturing and Maintenance of Vehicles and Airplanes

Y. Kwon
Powerlase Photonics, UK

BISC & OMC-2 14:00 *Invited*

Nanoscale Localization Sampling by Plasmonic Aperture Arrays for Imaging Molecular Events

D. Kim
Yonsei Univ., Republic of Korea

HEDSj-1 14:30 *Invited*

Exploration of New fields of High Energy Density Science

R. Kodama
Osaka Univ., Japan

PLDj-1 14:15 *Invited*

High Performance Interference Coatings for Near Infrared High Energy Lasers

C. Menoni
Colorado State Univ., USA

BISC & OMC-3 14:30 *Invited*

Advanced Light Shaping for Biomedical Applications

K. Dholakia
Univ. of St Andrews, UK

ALPSj-1 15:00 *Invited*

HiLASE100: a cryo-cooled 100 J, 10 Hz DPSSL System

A. Lucianetti, M. Divoky, J. Pilař, O. Slezák, M. Sawicka-Chyla, V. Jambunathan, P. Navrátil, M. Hanuš, M. Boehm, M. Lukaszewski, and T. Mocek
HiLASE Centre, Inst. of Phys., CAS, Czech Republic

PLDj-2 14:45 *Invited*

Modeling of Laser Induced Damage and Usage at National Ignition Facility

Z. Liao
Lawrence Livermore Nat. Laboratory, USA

----- 15:00-15:30 Break -----

----- 15:15-15:45 Break -----

----- 15:30-15:45 Break -----

Oral, Wednesday, May 18 PM

ALPS & HEDS & XOPT <Room 302>	LIC & PLD & SLPC <Room 301>	BISC & OMC <Room 414+415>
<p>[ALPS, HEDS, XOPT Joint Session 2] 15:45-16:45 Chair: J. Itatani Program Committee Member Univ. Tokyo, Japan</p> <p>ALPSj-2 15:45 <i>Invited</i> Current status of PW laser at CoReLS and applications S. K. Lee GIST, Korea</p> <p>HEDSj-2 16:15 <i>Invited</i> High-energy Density Science and plasma physics at ELI Beamlines G. Korn Director of ELI Beamlines, Czech Republic ----- 17:00-18:00 Break / Move -----</p>	<p>[LIC+PLD+SLPC Joint Session 2](PLD2)(SLPC6) 15:45-17:20 Chair: K. Washio Paradigm Laser Research, Japan</p> <p>SLPC6j-1 15:45 <i>Invited</i> Fiber Delivery of Ultrafast Lasers E. Mottay Amplitude Systems, France</p> <p>LICj-1 16:15 <i>Invited</i> The Latest Technology Demand of the Internal Processing Type Laser Dicing Technology T. Takahashi, N. Uchiyama Hamamatsu Photonics, Japan</p> <p>LICj-2 16:45 <i>Invited</i> From analytics to material processing: the versatile microlaser and its applications A. Kevorkian Team Photonics, France</p> <p>Closing 17:15 K. Washio Paradigm Laser Research, Japan</p>	<p>BISC & OMC-4 15:30 <i>Invited</i> Label-free Multimodal Imaging for Discrimination of Cell Type and Pathogen Response N. Smith IFRcC Osaka Univ., Japan</p> <p>BISC & OMC-5 16:00 Full-field Optical Coherence Tomography Using Ultrathin Forward-imaging Short Multimode Fiber M. Sato¹, D. Saito¹, K. Shouji¹, I. Nishidate² ¹Yamagata Univ., Japan, ²Tokyo Univ. of Agriculture and Technology, Japan</p> <p>BISC & OMC-6 16:15 Optical Trapping of Quantum-dot Conjugated Cell Surface Molecules of Neuronal Cell Cultured onto a Plasmonic Chip C. Hosokawa¹, K. Miyauchi^{1,2}, S. N. Kudoh², T. Taguchi³, K. Tawa² ¹AIST, Japan, ²Kwansei Gakuin Univ., Japan, ³NICT, Japan</p>
<p>[OPIC Reception] 18:00-20:00 <Room 501+502></p>		

ALPS <Room 511+ 512>	
<p>[ALPS8] 13:30-15:30 Novel structured lasers/nonlinear media Chair: S. Kurimura Program Committee Member National Inst. for Materials Sci., Japan</p> <p>ALPS8-1 13:30 <i>Invited</i> Optical parametric vortex lasers and their applications towards chiral materials science T. Omatsu Chiba Univ., Japan</p> <p>ALPS8-2 14:00 High-Power 355-nm UV Generation in Prism-Coupled CsLiB₆O₁₀ M. Yoshimura¹, K. Ueda¹, Y. Orii², Y. Takahashi¹, G. Okada², and Y. Mori¹ ¹Osaka Univ., Japan, ²Spectronix Corp., Japan</p> <p>ALPS8-3 14:15 Evaluation of the thermally induced birefringence in a Nd:YAG/diamond composite laser fabricated with the room-temperature bonding K. Yamaguchi, Y. Okuyama, H. Ichikawa, and I. Shoji Chuo Univ., Japan</p> <p>ALPS8-4 14:30 <i>Invited</i> Photonic quantum devices using single light emitters H. Takashima^{1,3}, A. W. Schell¹, A. Fukuda¹, S. Fujita¹, Y. Oe^{1,3}, S. Kamioka^{2,3}, M. Fujiwara^{2,3}, S. Takeuchi^{1,3} ¹Grad. School of Eng., Kyoto Univ., Japan, ²Res. Inst. for Electronic Sci., Hokkaido Univ., Japan, ³The Inst. of Scientific and Industrial Res., Osaka Univ., Japan</p> <p>ALPS8-5 15:00 750-nm LED-pumped Nd:YAG laser with 9% optical efficiency K.-Y. Huang, C.-K. Su, M.-W. Lin, Y.-C. Chiu, Y.-C. Huang National Tsing Hua Univ., Taiwan</p>	<p>ALPS8-6 15:15 Illusion Medium Mimicking Scattered Waves of a Bump on a Flat Surface Based on Transformation Electromagnetics T. Nagayama, A. Sanada Yamaguchi Univ., Japan</p> <p style="text-align: center;">----- 15:30-15:45 Break -----</p> <p>[ALPS9] 15:45-17:15 Metamaterials, Photon handling Chair: T. Tanabe Program Committee Member, Keio Univ., Japan</p> <p>ALPS9-1 15:45 <i>Invited</i> Spin-orbit interaction in optical metamaterials J. W. Wu Ewha Womans Univ., Korea</p> <p>ALPS9-2 16:15 <i>Invited</i> Terahertz Component Platforms Inspired by Metamaterials T. Suzuki Ibaraki Univ., Japan</p> <p>ALPS9-3 16:45 Bio-inspired, nanostructured anti-reflective surfaces for laser applications Z. Diao¹, J.-H. Dirks^{1,2}, J. P. Spatz^{1,3} ¹Dept. of New Mater. and Biosystems, Max Planck Inst. for Intelligent Systems, Germany, ²Dept. for Biomimetics, Hochschule Bremen-Univ. of Applied Sci., Germany, ³Dept. of Biophysical Chemistry, Univ. of Heidelberg, Germany</p> <p>ALPS9-4 17:00 Low Loss Asymmetrical Optical Power Splitter on SOI Platform with Various Influenced Parameters C. P. Vardhani, N. Pendam Osmania Univ., India</p> <p style="text-align: center;">----- 17:00-18:00 Break / Move -----</p> <p style="text-align: center;">[OPIC Reception] 18:00-20:00 <Room 501+502></p>

Wed, 18 May

Oral, Wednesday, May 18 PM

CLES <Room 418>

[CLE5] 13:30-15:30
Magnetic Field Assisted fast Ignition

Chair: H.-B. Cai
 Institute of Applied Physics &
 Computational Mathematics, China

CLES5-1 13:30 *Invited*

Collimation of Relativistic Electron Beams in Dense Matter by Externally Imposed Magnetic Field

M. Bailly-Grandvaux¹, D. Batani¹, C. Bellei¹, J.-L. Dubois¹, M. Ehret^{1,2}, P. Forestier-Colleoni¹, S. Fujioka³, L. Giuffrida¹, J. Honrubia⁴, S. Hulin¹, S. Kojima³, P. Korneev^{1,5}, J. Marquès⁶, A. Morace², P. Nicolai¹, O. Peyrusse¹, A. Poyé¹, M. Roth², S. Sakata³, G. Schaumann², J. Serval¹, V. Tikhonchuk¹, Z. Zhang³, and J. Santos¹
¹Univ. Bordeaux, CNRS, CEA, CELIA, UMR, France, ²Institut für Kernphysik, Tech. Univ., Germany, ³Institute of Laser Engineering, Osaka Univ., Japan, ⁴Univ. Politécnica de Madrid, Spain, ⁵National Research Nuclear Univ. MEPhI, Russian Federation, ⁶LULI, Ecole Polytechnique, CNRS, CEA, UMR, France ⁷CEA/DAM/CESTA, France

CLES5-2 14:00 *Invited*

Magnetically Assisted Fast Ignition

W.-M. Wang¹, P. Gibbon², Z. Sheng³, Y.-T. Li¹ and J. Zhang³
¹Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, CAS, China, ²Forschungszentrum Jülich GmbH, Institute for Advanced Simulation, Jülich Supercomputing Centre, Germany, ³Key Laboratory for Laser Plasmas (MoE) and Department of Physics and Astronomy, Shanghai JiaoTong Univ., China

CLES5-3 14:30 *Invited*

Optimum Solid Target Compression Under the Strong Magnetic Field for Fast Ignition

H. Nagatomo¹, T. Johzaki², K. Matsuo¹, T. Asahina¹, M. Hata¹, A. Sunahara³, H. Sakagami⁴, S.-H. Lee¹, S. Fujioka¹
¹Institute of Laser Engineering, Osaka Univ., Japan, ²Hiroshima Univ., Japan, ³Institute for Laser Technology, Japan, ⁴National Institute for Fusion Science, Japan

CLES5-4 15:00

Computational Study on Thermal Conduction in Magnetized Plasmas

T. Asahina¹, H. Nagatomo¹, A. Sunahara², T. Johzaki³, M. Hata¹ and Y. Sentoku⁴
¹Institute of Laser Engineering, Osaka Univ., Japan, ²Institute for Laser Technology, Japan, ³Graduate School of Engineering, Hiroshima Univ., Japan, ⁴Univ. of Nevada, USA

CLES5-5 15:15

Hydrodynamic Instability of High-Energy-Density-Plasma in Strong Magnetic Field

K. Matsuo¹, H. Nagatomo¹, T. Sano¹, Z. Zhang², P. Nicolai³, J. Breil³, Y. Sakawa¹, Y. Hara¹, H. Shimogawara¹, Y. Arikawa¹, S. Sakata¹, K.-F. Law¹, S.-H. Lee¹, S. Kojima¹, H. Kato¹, K. Shigemori¹, S. Fujioka¹ and H. Azechi¹
¹Institute of Laser Engineering, Osaka Univ., Japan, ²Institute of Physics Chinese Academy of Sciences, China, ³CELIA Univ. of Bordeaux, France

LEDIA <Room 411+412>

[Opening] 13:20-13:30
Opening Remarks 13:20

T. Honda
 Steering Committee Chair of LEDIA '16
 Kogakuin Univ., Japan

[LED1] 13:30-15:30
Special Session 1 (Industrial Applications)

Chair: G. Hatakoshi
 Program Committee Member of LEDIA '16
 Waseda Univ., Japan

LED1-1 13:30 *Invited*

Narrow-Band LEDs for Medical Applications

M. Ogasawara¹, T. Hirao², and S. Fujita²
¹Mignon Belle Clinic, Japan, ²Kyoto Univ., Japan

LED1-2 14:00 *Invited*

Current Status and Future Prospects of LED Lighting in Horticulture

N. Hasegawa and N. Kurata
 Inochio Holdings Inc., Japan

LED1-3 14:30 *Invited*

Laser Headlights

Y. Nakazato, T. Tokiwa, and M. Uchida
 Stanley Electric Co., Ltd., Japan

LED1-4 15:00 *Invited*

Beyond Illumination: Lighting Enabled System Applications

R. F. Karlicek, Jr.
 Rensselaer Polytechnic Inst., U.S.A.

LSSE <Room 316>

[LSSE4] 13:30-14:50
Remote Sensing

Chair: N. Saito
 RIKEN Center for Advanced Photonics,
 RIKEN

LSSE4-1 13:30

Precision and Relative Error Analysis of Spaceborne Multiple Wavelengths Vapor Water Range-Resolved DIAL

T. Li, Y. Zhang, S. Chen, P. Guo, H. Chen, Y. Ma
 Beijing Institute of Technology, China

LSSE4-2 13:50

Lidar Monitoring of Volcanic, Terroristic and Radiological Hazards

L. Fiorani¹, A. Aiuppa², G. Maio^{3,4}, A. Palucci¹, S. Parracino^{5,4}, A. Puiu¹, S. Santoro^{2,4}
¹ENEA, Italy, ²University of Palermo, Italy, ³ARES Consortium, Italy, ⁴ENEA guest, Italy, ⁵University of Rome "Tor Vergata", Italy

LSSE4-3 14:10

Four Generations of Sodium Guide Star Lasers for Adaptive Optics in Astronomy and Space Situational Awareness

C. d'Orgeville¹, G. Fetzter²
¹Australian National University, Australia, ²Arete Associates, Sensors, Sources and Systems Division, USA

LSSE4-4 14:30

Integrating Cavity Measurements: A New Paradigm in Spectroscopic Optical Environmental Characterization

J. N. Bixler, J. Mason, B. H. Hokr, E. S. Fry, V. V. Yakovlev
 Texas A&M University, USA

----- 15:30-16:00 Break -----

----- 15:30-16:00 Break -----

Oral, Wednesday, May 18 PM

CLES <Room 418>

[CLES6] 16:00-18:00
High Field Generation with Laser

Chair: E. Hill
Plasma Physics Group, Imperial College,
UK

CLES6-1 16:00 *Invited***THz Generation from Relativistic Laser
Produced Plasmas**

Y.-T. Li¹, G. Liao¹, C. Li¹, W.-M. Wang¹ and Z. Sheng²
¹Institute of Physics, Chinese Academy of Sciences,
China, ²Key Laboratory for Laser Plasmas (MoE)
and Department of Physics, Shanghai Jiao Tong
Univ., China

CLES6-2 16:30 *Invited***Taming of Laser Produced Spontaneous
Magnetic Fields**

P. Korneev¹, S. Fujioka², Y. Aabe², E. d'Humieres³,
J. Antos³ and V. Tikhonchuk³
¹National Research Nuclear Univ. "MEPh", Russian
Federation, ²Institute of Laser Engineering, Osaka
Univ., Japan, ³Univ. of Bordeaux, CNRS, CEA,
CELIA, France

CLES6-3 17:00**Temporal Evolution of External Magnetic
Fields Applied to the Cone Target**

A. Sunahara⁴, K.-F. Law¹, S. Sakata¹, S.-H. Lee¹,
Y. Aarikawa¹, S. Fujioka¹, T. Johzaki², H. Sakagami³,
H. Nagatomo¹, H. Shiraga¹, H. Azechi¹, and FIREX
Group¹
¹Institute of Laser Engineering, Osaka Univ., Japan,
²Hiroshima Univ., Japan, ³National Institute for Fusion
Science, Japan, ⁴Institute for Laser Technology, Japan

CLES6-4 17:15**High Magnetic Field Generation by Short
Pulse Lasers for FI**

Z. Zhang¹, S. Fujioka², B.-J. Zhu¹, F. Li¹ W.-M. Jiang¹,
Y.-H. Zhang¹, Y. Abe² and Y.-T. Li¹
¹Institute of Physics, Chinese Academy of Sciences,
China, ²Institute of Laser Engineering, Osaka Univ.
Japan

CLES6-5 17:30**Electron Acceleration by Laser Driven Beat
Wave Excited by Cross-Focused Cosh-Gaussian
Laser Beams in Thermal Quantum Plasma**

N. Gupta and A. Singh
National Institute of Technology, Jalandhar, India

CLES6-6 17:45 *Invited***New Regime of Magnetic Reconnection Laboratory
Experiment Realized by Kilo-Tesla Magnetic Field
Generated with a Snail Target and LFEX Laser**

Y. Abe¹, K.-F. Law¹, A. Morace¹, A. Yogo¹,
S. Kojima¹, S. Sakata¹, S.-H. Lee¹, K. Matsuo¹,
A. Oshima¹, Y. Arikawa¹, M. Nakai¹, Y. Sakawa¹,
K. Kondo², E. d'Humieres³, V. Tikhonchuk³,
J. J. Santos³, Z. Zhang⁴, Y.-Y. Li⁴, T. Norimatsu¹,
H. Azechi¹, P. Korneev⁵ and S. Fujioka¹
¹Institute of Laser Engineering, Osaka Univ., Japan,
²RLNR, Tokyo Institute of Technology, Japan,
³CELIA, Univ. of Bordeaux, France, ⁴Institute of
Physics, Chinese Academy of Science, China,
⁵NRNU MEPhI, Russian Federation

LEDIA <Room 411+412>

[LED2] 16:00-17:45
Special Session 2 (Industrial Applications)

Chair: T. Miyajima
Program Committee Vice-Chair of
LEDIA '16
Meijo Univ., Japan

LED2-1 16:00 *Invited***New Developments of LEDs for the Visible
Spectrum, from UV to Red**

B. Monemar^{1,3}
¹Linköping Univ., Sweden, ²Lund Univ., Sweden,
³Tokyo Univ. of Agri. & Tech., Japan

LED2-2 16:30**Optimization Analysis of the Arrangements of
LEDs for an Indoor Visible Light
Communication System**

M. Gao, T. Lan, Z. Shen, and X. Chen
Beijing Inst. of Tech., China

LED2-3 16:45**Design of Multi-Functional Integrated
Quantum Dot Sheet to Enhance Efficiency of
LED Backlight Unit**

S. -E. Kim, J. -Y. Lee, M. -H. Shin, and Y. -J. Kim
Yonsei Univ., Korea

LED2-4 17:00**GaN Light-Emitting Diode with Monolithically-
Integrated Photodetector**

H. T. Lu, K. H. Li, and H. W. Choi
The Univ. of Hong Kong, Hong Kong

LED2-5 17:15**Efficient Laser Beam Coupling with a
Waveguide-Type Red-Green-Blue Combiner**

A. Nakao¹, S. Hayashiguchi¹, S. Tanaka¹,
S. Yokokawa¹, and T. Katsuyama^{1,2}
¹Univ. of Fukui, Japan, ²UF-HISAC, Univ. of Fukui,
Japan

LED2-6 17:30**A High Efficiency Laser Spotlight Illuminator**

T. Miwa¹, A. Takamori², and K. Morimoto³
¹IDECC Corp., Japan, ²Osaka Univ., Japan, ³AISS
company, Panasonic Corp., Japan

[OPIC Reception] 18:00-20:00 <Room 501+502>

Oral, Thursday, May 19 AM

ALPS <Room 302>

[ALPS10] 9:00-10:30
High power lasers
 Chair: J. Kawanaka
 Program Committee Member
 Osaka Univ., Japan

ALPS10-1 9:00 *Invited*

Diode-pumped amplification of broad band pulses to more than 50 J

J. Hein^{1,2}, M. Hornung^{1,2}, S. Keppler¹, H. Liebetrau², M. Hellwing¹, A. Kessler², F. Schorcht², J. Körner¹, M. C. Kaluza^{1,2}

¹Inst. of Optics and Quantum Electronics, Friedrich-Schiller-Univ., Germany, ²Helmholtz-Institute Jena, Germany

ALPS10-2 9:30

High energy regenerative amplifier based on Yb:CaF₂

J.-G. Brisset^{1,2}, P. Sevillano³, A. Courjaud³
¹Max Born Inst., Germany, ²Univ. de Genève, GAP-Biophotonics, Switzerland, ³Amplitude Systèmes, France

ALPS10-3 9:45

Development of a High-Energy, Compact Power Laser System Using Diode-Pumped Solid-State Laser Technologies

Y. Kato^{1,3}, T. Kurita^{1,3}, T. Morita^{1,3}, T. Sekine^{1,3}, Y. Tamaoki^{1,3}, Y. Takeuchi^{1,3}, M. Miyamoto², T. Fujita², D. Hori², M. Takauji², T. Kokubo², T. Nagakura², H. Suzuki², and T. Kawashima^{1,3}
¹Hamamatsu Photonics K.K., Development Bureau, Industries Development Lab., Japan, ²Miyakoda Factory, Japan, ³ImPACT Program, Japan

ALPS10-4 10:00

Recent Progress of the Development of the Kumgang Laser - Coherent Beam Combination Laser using Self-controlled Stimulated Brillouin Scattering Phase Conjugate Mirrors (SBS-PCMs)

H. J. Kong¹, S. Park¹, S. Cha¹, S. Choi¹, H. Ahn¹, H. Lee¹, J. Oh¹, J. S. Kim²
¹KAIST, Korea, ²Laser Spectronix, Korea

ALPS10-5 10:15

Exploring the optimal temperature for the cryogenic 946-nm Nd:YAG laser

C.-Y. Cho, H. P. Cheng, and Y.-F. Chen, Dept. of Electrophysics, National Chiao Tung Univ., Taiwan

----- 10:30-11:00 Break -----

ALPS <Room 511+ 512>

[ALPS11] 9:00-10:30
Biomedical imaging and applications
 Chair: N. Nishizawa
 Program Committee Chair
 Nagoya Univ., Japan

ALPS11-1 9:00 *Invited*

Progress of high-speed optical coherence tomography

M. Ohmi
 Osaka Univ., Japan

ALPS11-2 9:30

Optical coherence microscopy in 1700 nm spectral band for deep and 3D high-resolution imaging of biological samples

T. Teranishi, M. Yamanaka, H. Kawagoe, N. Nishizawa
 Dept. quantum Eng. Nagoya Univ. Japan

ALPS11-3 9:45

Scaling in Frame Number of Single-shot Ultrafast 2D-burst Imaging by STAMP utilizing Spectral Filtering

T. Suzuki, R. Hida, R. Ueda, F. Isa, and F. Kannari
 Keio Univ., Japan

ALPS11-4 10:00

Single-Shot Multispectral Imaging by SF-STAMP System Using a Supercontinuum Pulse

R. Hida, T. Suzuki, R. Ueda, F. Isa, and F. Kannari
 Keio Univ., Japan

ALPS11-5 10:15

Ablation property of demineralized dentin by nanosecond pulsed laser irradiation at wavelengths around 3 μm

K. Shimizu¹, K. Ishii¹, K. Hashimura^{1,2}, K. Yoshikawa³, K. Yasuo³, K. Yamamoto³, K. Awazu^{1,4,5}
¹Grad. School of Eng., Osaka Univ., Japan, ²Res. Fellow of JSPS, Japan, ³Dept. of Operative Dentistry Dental Univ., Japan, ⁴Grad. School of Frontier Biosciences, Osaka Univ., Japan, ⁵Global Center for Medical Eng. and Informatics, Osaka Univ., Japan

----- 10:30-11:00 Break -----

BISC <Room 419>

[Opening] 9:00-9:15
Opening Remark 9:00
 T. Yatagai
 Chair of BISC '16
 Utsunomiya Univ., Japan

[BISC1] 9:15-10:45
OCT, Phase Imaging

Chairs: O. Matoba
 Kobe Univ., Japan
 B. Cense
 Utsunomiya Univ., Japan

BISC1-1 9:15 *Invited*

Towards Intraoperative Evaluation of Microvascular Anastomosis Based on Fourier Domain Optical Coherence Tomography

Y. Huang
 Beijing Institute of Technology, China

BISC1-2 9:45 *Invited*

Dispersion-Insensitive Optical Coherence Tomography Based on Spectral Intensity Interferometry

T. Shirai
 AIST, Japan

BISC1-3 10:15

Sensor-less Adaptive Optics Optical Coherence Tomography with a Liquid Crystal Wavefront Corrector and a 3.0 mm Beam

M. Reddikumar¹, A. Tanabe², N. Hashimoto², B. Cense¹
¹Center for Optical Research and Education, Utsunomiya Univ., Japan, ²Citizen Holding, Japan

BISC1-4 10:30

Compact and Optical Table Free Quantitative Phase Microscope for non-Invasive Live Cell Imaging

T. Yamauchi, H. Yamada, K. Goto, Y. Ueda
 Hamamatsu Photonics K.K., Japan

----- 10:45-11:15 Break -----

Oral, Thursday, May 19 AM

CLES <Room 418>

[CLES7] 9:00-10:30
Integrated Simulation and Modeling

Chair: P. Patel
Lawrence Livermore National Laboratory,
USA

CLES7-1 9:00 *Invited*

Physical Studies of Fast Ignition at the IAPCM
H.-B. Cai, S.-Z. Wu, H. Zhang, J.-F. Wu, G.-L. Ren,
L.-H. Cao, M.-Q. He, C.-T. Zhou, S.-P. Zhu and
X.-T. He
Institute of Applied Physics & Computational
Mathematics, China

CLES7-2 9:30 *Invited*

**Integrated Simulation of Imploded Core
Heating for the FIREX Project**
T. Johzaki¹, H. Nagatomo², Y. Sentoku³,
H. Sakagami⁴, A. Sunahara⁵, S. Fujioka², A. Yogo²,
H. Shiraga², H. Azechi², and FIREX Project Group²
¹Hiroshima Univ., Japan, ²Institute of Laser
Engineering, Osaka Univ., Japan, ³Univ. of Nevada,
USA, ⁴National Institute for Fusion Science, Japan
⁵Institute for Laser Technology, Japan

CLES7-3 10:00 *Invited*

**Converting High Laser Light Absorption into
Efficient Isochoric Heating of Dense Plasmas**
S. Wilks¹, M. Tabak¹, K. Akli², D. Higginson¹,
C. Jarrott¹, S. Jiang¹, R. Kirkwood¹, M. Levy³,
S. Libby¹, A. Link¹, P. Norreys³, D. Turnbull¹ and
D. Schumacher²
¹Lawrence Livermore National Laboratory, USA,
²Ohio State Univ., USA, ³Oxford Univ., UK

HEDS <Room 311+312>

[HEDS5] 9:00-10:30
Particle Acceleration I(ImPACT Session V)
Chair: TBD

HEDS5-1 9:00 *Invited*

**Beam diagnostics for staged laser electron
acceleration experiments**
Masaki Kando
QST, Japan

HEDS5-2 9:30 *Invited*

**Laser wakefield acceleration research under
the ImPACT-UPL program**
Tomonao Hosokai
Osaka University, Japan

HEDS5-3 10:00 *Invited*

**ImPACT: A Five-year National Program to
Realize Ultra-compact XFELs by LWFA**
Yuji Sano
ImPACT program, JST, Japan

LEDIA <Room 411+412>

[LED3] 9:00-12:00
Bulk & Epitaxy
Co-Chairs: H. Murakami
Program Committee Member of
LEDIA '16
Tokyo Univ. of Agri. & Tech., Japan
Y. Honda
Program Committee Member of
LEDIA '16
Nagoya Univ., Japan

LED3-1 9:00 *Invited*

**Improving Growth Rate and Transparency of
Basic Ammonothermal GaN Crystals**
S. Pimpitkar¹, S. Griffiths¹, T. Malkowski¹,
S. Suihkonen², J. S. Speck¹, and S. Nakamura¹
¹Univ. of California, Santa Barbara, U.S.A., ²Aalto
Univ., Finland

LED3-2 9:30

**Fabrication of Crack-Free Freestanding GaN
Substrates by Dissolution of Sapphire
Substrates using Li after the Na-Flux Growth**
T. Yamada, M. Imanishi, K. Nakamura,
K. Murakami, H. Imabayashi, D. Matsuo, M. Honjo,
M. Maruyama, M. Imade, M. Yoshimura, and Y. Mori
Osaka Univ., Japan

LED3-3 9:45

**Detailed Study of Homoepitaxial HVPE GaN
Growth in the c-Direction**
B. Lucznik^{1,2}
¹Inst. of High Pressure Physics PAS, Poland,
²TopGaN Sp z o.o., Poland

LED3-4 10:00

**Study of Homoepitaxial Non-polar and Semi-polar
Growth of GaN by HVPE. Influence of Lateral
Growth on HVPE-GaN Grown in the c-Direction.**
M. Amilusik^{1,2}, T. Sochacki^{1,2}, M. Iwinska¹,
M. Fijalkowski¹, B. Lucznik^{1,2}, I. Grzegory¹, and
M. Bockowski¹
¹Inst. of High Pressure Physics PAS, Poland,
²TopGaN Sp z o.o., Poland

LED3-5 10:15

**High Temperature Growth of Thick InGaN
Layers using Tri-Halide Vapor Phase Epitaxy**
M. Meguro¹, T. Hirasaki¹, T. Hasegawa¹, Q. T.
Thieu¹, H. Murakami¹, Y. Kumagai¹, B. Monemar^{1,2},
and A. Koukitu¹
¹Tokyo Univ. of Agri. & Tech., Japan, ²Linköping
Univ., Sweden

----- 10:30-11:00 Break -----

----- Break (10:30-11:00) -----

----- 10:30-11:00 Break -----

Thu, 19 May, AM

Oral, Thursday, May 19 AM

LIC <Room 301>

LSSE <Room 316>

OMC <Room 414+415>

[LIC1] 9:00-10:00
LIC plenary session
 Chair: T. Taira
 Inst. Mol. Sci., Japan

LIC1-1 9:00

Opening remarks for LIC

T. Taira
 Inst. Mol. Sci., Japan

LIC1-2 9:15

Message for LIC16 from OSA (tentative)

G. Quarles
 OSA (The Optical Society), USA

LIC1-3 9:30

Estimating the Size of the Photonics Market

P. F. Hallett
 SPIE (The International Society for Optics and Photonics), USA

LIC1-4 9:45

Message from SFO for LIC '16

B. Boulanger
 SFO (La Société Française d'Optique), France

[LIC2] 10:00-12:30
Fundamental ignition studies
 Chair: S. Gupta
 Argonne Nat. Lab, USA

LIC2-1 10:00

Invited

Laser Applications in Engine Combustion Research -Diagnostics and Ignition-

K. Akihama
 Nihon Univ., Japan

----- 10:30-10:45 Break -----

[OMC1] 9:00-10:30
Optical Manipulation
 Chair: Sile Nic Chormaic
 OIST Graduate University, Japan

OMC1-1 9:00

Invited

Optical micromanipulation in studies of motility

Halina Rubinsztein-Dunlop
 University of Queensland, Australia

OMC1-2 9:30

Submicron particle trapping and manipulation with plasmonic nanoring devices

Xue Han, Viet Giang Truong, Seyedeh Sahar Seyed Hejazi, and Sile Nic Chormaic
 Light-Matter Interactions Unit, Okinawa Institute of Science and Technology Graduate University, Japan

OMC1-3 9:45

A study of the metal particle manipulation in the glass by laser irradiation

Tatsuki Iwamoto, Jun Wada, Hirofumi Hidai, Souta Matsusaka, Akira Chiba, Noboru Morita
 Chiba University, Japan

OMC1-4 10:00

Rotational dynamics and heating of trapped nanovaterite particles

Yoshihiko Arita^{1,2}, Joseph M. Richards, Michael Mazilu¹, Gabriel C. Spalding³, Susan E. Skelton Spesytyeva¹, Derek Craig¹, Kishan Dholakia¹
¹SUPA, School of Physics and Astronomy, University of St Andrews, United Kingdom, ²MCRC, Molecular Chirality Research Centre, Graduate School of Advanced Integration Science, Chiba University, Japan, ³Illinois Wesleyan University, USA

OMC1-5 10:15

Hydrodynamics of micro-objects near curved surfaces

S. Zhang, D. M. Carberry, T. A. Nieminen, H. Rubinsztein-Dunlop
 Department of Mathematics and Physics, the University of Queensland, Australia

----- 10:30-11:00 Break -----

Oral, Thursday, May 19 AM

PLD <Room 413>

[PLD3] 9:00-10:15
Plenary and coatings
 Chair: T. Jitsuno
 Osaka Univ., Japan

PLD3-1 9:00 *Plenary*
Coatings for high power laser system in China
 J. Shao
 Shanghai Inst. of Opt. Fine Mech., China

PLD3-2 9:30
Laser-induced damage performance of high-reflectance coatings with co-evaporated interfaces at 1064nm
 H. Xing, J. Sun, Y. Chai, M. Zhu, J. Shao
 Shanghai Inst. of Opt. Fine Mech., China

PLD3-3 9:45
Non-destructive investigations to highlight first stages of fatigue effect under multiple laser irradiations
 J.Y. Natoli, F. R. Wagne, A. Beaudier, L. Gallais, K. Lliopoulos
 Institut Fresnel, France

PLD3-4 10:00
Ion-assisted coating for large-scale Bimorph deformable mirror
 T. Mikami, T. Okamoto, T. Jitsuno¹, S. Motokoshi², V. Samarkin³, A. Kudryashov³, J. Kawanaka¹, N. Miyanaga¹
 Okamoto Optics Works, Inc., ¹Osaka Univ. Japan, ²Japan, Inst. for Laser Tech., Japan, ³Active Optics NightN Ltd, Russia

SLPC <Room 416+417>

[SLPC7] 8:30-10:00
Surface Structuring and Modification
 Chairs: A. Ostendorf
 Ruhl-Univ. Bochum, Germany
 T. Nakamura
 Tohoku Univ., Japan

SLPC7-1 8:30 *Invited*
Process Parameter Optimization for High Speed and High Quality Surface Structuring of Metals with 100 W of Average Power and Ultra-short Pulses
 B. Jaeggi¹, M. Zimmermann¹, B. Neuenschwander¹, G. Hennig², R. Streubel², B. Goekce³, S. Barcikowski³
¹Institute for Applied Laser, Photonics and Surface Technology ALPS, Bern Univ. of Applied Sciences, Switzerland, ²Daetwyler Graphics AG, Switzerland, ³Technical Chemistry I and Center for Nanointegration, Duisburg-Essen (CENIDE), Univ. of Duisburg-Essen, Germany

SLPC7-2 9:00
Shape Change of Periodic Nanostructures Produced with Ultrashort Pulsed Laser on Titanium Surface
 T. Shinonaga, S. Kinoshita, Y. Okamoto, A. Okada
 Okayama Univ., Japan

SLPC7-3 9:15
Femtosecond Laser Peening of 2024 Aluminum Alloy Without Sacrificial Overlay under Atmospheric Conditions
 T. Sano¹, T. Eimura¹, R. Kashiwabara¹, T. Matsuda¹, A. Hirose¹, S. Tsutsumi², K. Arakawa³, K. Masaki⁴, Y. Sano⁵
¹Division of Materials and Manufacturing Science, Osaka Univ., Japan, ²Joining and Welding Research Institute, Osaka Univ., Japan, ³Shimane Univ., Japan, ⁴Okinawa National College of Technology, Japan, ⁵Toshiba Corp. (Japan Science and Technology Agency -ImPACT at present), Japan

SLPC7-6 9:30
Fabrication of Nano-periodic Structures with Holographic Line-shaped Vector Beams
 S. Hasegawa, Y. Hayasaki
 Center for Optical Research and Education (CORE), Utsunomiya Univ., Japan

SLPC7-7 9:45
In-process Debris Removal Based on Dual Polarizations with Optical Time Delay and Holographic Beam Shaping
 T. Abe¹, S. Hasegawa¹, H. Takahashi², Y. Hayasaki¹
¹Center for Optical Research and Education (CORE), Utsunomiya Univ., Japan, ²Aisin Seiki CO., LTD., Japan

----- 10:00-10:30 Break -----

----- 10:15-10:45 Break -----

XOPT <Room 313+314>

[Opening] 8:55-9:00
XOPT Opening Remarks 8:55
 Kazuto Yamauchi
 Osaka University, Japan

[XOPT1] 9:00-9:30
X-ray source
 Chair: M. Yabashi
 SPring-8/SACLA, Japan

XOPT1-1 9:00 *Invited*
Frontline and future perspectives in X-ray light source development
 H. Tanaka
 RIKEN SPring-8 Center, Japan

[XOPT2] 9:30-12:00
X-ray optics for advanced light sources
 Chair: M. Yabashi
 SPring-8/SACLA, Japan

XOPT2-1 9:30 *Invited*
Nanofocusing mirror optics developments for the ESRF ID-16 beamlines
 R. Barrett
 ESRF, France

XOPT2-2 10:00 *Invited*
X-ray mirrors at the European XFEL
 H. Sinn
 European XFEL, Germany

----- 10:30-11:00 Break -----

Oral, Thursday, May 19 AM

ALPS <Room 302>

[ALPS12] 11:00-12:00
Photonic lasers and applications

Chair: J. Hein
Friedrich schiller Univ. Jena, Germany

ALPS12-1 11:00 *Invited*

High-Light-Extraction Nanophotonic Structure for High-power DUV-LEDs

S.-I. Inoue
Adv. ICT Res. Inst., National Inst. of Information and Comm. Tech. (NICT), Japan

ALPS12-2 11:30

Nanosecond pulsed operation of a PCSEL for high peak powers

H. Nishida¹, X. Guo^{1,2}, S. Tokita¹, K. Ishizaki², S. Noda², K. Hirose³, T. Sugiyama³, A. Watanabe³, J. Kawanaka¹
¹ILE, Osaka Univ., Japan, ²Dept. of Electronic Sci. and Eng. Kyoto Univ., Japan, ³Industries Development Lab. Hamamatsu Photonics K.K., Japan

ALPS12-3 11:45

Photonic Crystal Surface Emitting Laser Direct-Pumped Cryogenically Cooled Yb:YAG Oscillator

X. Guo^{1,3}, S. Tokita¹, K. Hirose², T. Sugiyama², A. Watanabe², K. Ishizaki³, S. Noda³, J. Kawanaka¹
¹Osaka Univ., Japan, ²Hamamatsu Photonics K.K., Japan, ³Kyoto Univ., Japan

----- 12:00-13:00 Lunch Break -----

ALPS <Room 511+ 512>

[ALPS13] 11:00-12:00
Biomedical spectroscopy

Chair: M. Ohmi
Program Committee Member
Osaka Univ., Japan

ALPS13-1 11:00 *Invited*

Hollow optical fiber probe for Raman spectroscopy

T. Katagiri¹, Y. Matsuura²
¹Dept. of Eng., Tohoku Univ., Japan, ²Dept. of Biomedical Eng., Tohoku Univ., Japan

ALPS13-2 11:30

Temperature determination at the nanoscale via tip-enhanced THz-Raman spectroscopy

M. V. Balois¹, N. Hayazawa^{1,2}, F. C. Catalan², S. Kawata³, T. Tanaka¹, T. Yano⁴, T. Hayashi⁴
¹Innovative Photon Manipulation Res. Team-RIKEN, Japan, ²Surface and Interface Sci. Lab.-RIKEN, Japan, ³Osaka Univ., Japan, ⁴Tokyo Inst. of Tech., Japan

ALPS13-3 11:45

Femtosecond Mid-Infrared Spectrometer Using Chirped-Pulse Upconversion in a Wide-Bandgap Nonlinear Crystal

Y. Inagaki^{1,2}, H. Hata^{1,2}, T. Kamimura², N. Umemura³, N. Hamada¹, R. Nakamura¹
¹Osaka Univ., Japan, ²Osaka Inst. Tech., Japan, ³Chitose Inst. Sci. Tech., Japan

----- 12:00-13:00 Lunch Break -----

BISC <Room 419>

[BISC2] 11:15-12:15
Microscopy

Chairs: G. Nishimura
Hokkaido Univ., Japan
M. Sato
Yamagata Univ., Japan

BISC2-1 11:15 *Invited*

Emerging Endomicroscopy Technologies for Histological Imaging of Biological Tissues *in vivo*

Xingde Li
Johns Hopkins Univ., USA

BISC2-2 11:45

High Resolution Imaging of Biological Cell by EXA Microscope with Electron Irradiation Damage Suppression

M. Fukuta¹, Y. Nawa², W. Inami², Y. Kawata²
¹Shizuoka Univ., Japan, ²RIE Shizuoka Univ., Japan

BISC2-3 12:00

High Resolution Raman Imaging by Structured Line Illumination Microscopy

K. Watanabe¹, A. F. Palonpon¹, N. I. Smith², L. Chiu³, A. Kasai^{4,5}, H. Hashimoto^{4,6,7}, S. Kawata¹, K. Fujita¹
¹Osaka Univ., Japan, ²IFReC, Osaka Univ., Japan, ³Univ. of Tokyo, Japan, ⁴Graduate School of Pharmaceutical Sciences, Osaka Univ., Japan, ⁵Institute for Academic Initiatives, Osaka Univ., Japan, ⁶Graduate School of Pharmaceutical Sciences, Osaka Univ., Japan, ⁷Molecular Research Center for Children's Mental Development, United Graduate School of Child Development, Osaka Univ., Kanazawa Univ., Hamamatsu Univ. School of Medicine, Chiba Univ. and Univ. of Fukui, Japan.

----- 12:15-13:30 Lunch Break -----

Oral, Thursday, May 19 AM

CLES <Room 418>

[CLES8] 11:00-12:30

Novel Scheme of Fast Ignition

Chair: A. Robinson
STFC Rutherford-Appleton Laboratory,
UK

CLES8-1 11:00 *Invited*

Dense Plasma Heating using Crossed Relativistic Electron Beams

P. Norreys^{1,2,3}, N. Ratan¹, L. Ceurvorst¹, J. Sadler¹, M. Kasim¹, J. Holloway¹, R. Trines² and R. Bingham²
¹Clarendon Laboratory, Univ. of Oxford, UK,
²Central Laser Facility, STFC Rutherford Appleton Laboratory, UK, ³AWE, UK

CLES8-2 11:30 *Invited*

Counter-Beam Fast Ignition Experiments and the Related Studies

Y. Kitagawa¹, Y. Mori¹, Y. Nishimura^{1,2}, K. Ishii¹, R. Hanayama¹, S. Nakayama¹, T. Sekine³, N. Sato³, T. Kurita³, T. Kawashima³, H. Kan³, T. Nishi⁴, T. Hioki⁵, T. Motohiro⁵, H. Azuma⁶, A. Sunahara⁷, Y. Sentoku⁸, E. Miura⁹, Y. Arikawa¹⁰, Y. Abe¹⁰, and S. Ozaki¹¹
¹The Graduate School for the Creation of New Photonics Industries, Japan, ²TOYOTA Technical Development Corp., Japan, ³Hamamatsu Photonics, K. K., Japan, ⁴TOYOTA Central R&D Labs, Inc., Japan, ⁵Nagoya Univ., GREMO, Japan, ⁶Aichi SR Center, Japan, ⁷Institute for Laser Technology, Japan, ⁸Univ. of Nevada, USA, ⁹National Institute of Advanced Industrial Science and Technology, Japan, ¹⁰Institute of Laser Engineering, Osaka Univ., Japan, ¹¹National Institute for Fusion Science, Japan

CLES8-3 12:00

Physics of Fast Heating of an Imploded Core under Counter Beam Irradiation

Y. Mori¹, Y. Nishimura¹, K. Ishii¹, R. Hanayama¹, Y. Kitagawa¹, T. Sentoku², T. Kurita², N. Sato², T. Kawashima², H. Kan², T. Nishi³, T. Hioki⁴, T. Momohiro⁴, H. Azuma⁵, A. Sunahara⁶, Y. Sentoku⁷ and E. Miura⁸
¹The Graduate School for the Creation of New Photonics Industries, Japan, ²Hamamatsu Photonics, K. K., Japan, ³TOYOTA Central Research and Development Laboratories, Inc., Japan, ⁴Nagoya Univ., GREMO, Japan, ⁵Aichi Synchrotron Radiation Center In "Knowledge Hub Aichi", Japan, ⁶Institute for Laser Technology, Japan, ⁷Univ. of Nevada, USA, ⁸National Institute of Advanced Industrial Science and Technology, Japan

CLES8-4 12:15

Observation of Trace due to Laser-Driven Fast-Electron Currents in a CD Target

R. Hanayama¹, Y. Nishimura^{1,2}, Y. Mori¹, K. Ishii¹, Y. Kitagawa¹, T. Sekine³, T. Kurita³, N. Sato³, T. Kawashima³, H. Kan³, T. Nishi⁴, T. Hiroki⁵, T. Motohiro⁵, H. Azuma⁶, A. Sunahara⁷, Y. Sentoku⁸ and E. Miura⁹
¹The Graduate School for the Creation of New Photonics Industries, Japan, ²TOYOTA Technical Development Corporation, Japan, ³Hamamatsu Photonics, K. K., Japan, ⁴TOYOTA Central Research and Development Laboratories, Inc., Japan, ⁵Nagoya Univ., GREMO, Japan, ⁶Aichi Synchrotron Radiation Center In "Knowledge Hub Aichi", Japan, ⁷Institute for Laser Technology, Japan, ⁸Univ. of Nevada, Reno, USA, ⁹National Institute of Advanced Industrial Science and Technology, Japan

----- 12:30-13:30 Break -----

HEDS <Room 311+312>

[HEDS6] 11:00-12:00

Particle Acceleration II (ImPACT Session VI)

Chair: J. Faure
LOA, France

HEDS6-1 11:00 *Invited*

Multistage Coupling of Independent Laser Plasma Accelerators

Sven Steinke
Lawrence Berkeley National Laboratory, USA

HEDS6-2 11:30 *Invited*

Recent progress of high quality plasma based acceleration at Tsinghua University

Wei Lu
Tsinghua University, China

----- 12:00-13:00 Lunch Break -----

LEDIA <Room 411+412>

LED3-6 11:00

Influence of Growth Conditions on Transport Properties in Undoped N-polar GaN Grown by Metalorganic Vapor Phase Epitaxy

T. Tanikawa, K. Prasertsuk, A. Miura, S. Kuboya, R. Katayama, and T. Matsuoka
Tohoku Univ., Japan

LED3-7 11:15

The Growth of Semi-Polar GaN on (0001) C-Plane Nano-Sized Patterned-Sapphire Substrates

V. -C. Su¹, Z. -H. Hung¹, Y. -H. You^{1,2}, H. -S. Wu¹, P. -H. Chen^{1,2}, H. -A. Liu¹, and C. -H. Kuan¹
¹National Taiwan Univ., Taiwan, ²Kingwave Corp., Taiwan

LED3-8 11:30

Characterization of RF Plasma Nitridated α -(AlGa)₂O₃ for AlGaN Growth

T. Araki¹, A. Buma¹, N. Masuda¹, M. Oda², T. Hitora², and Y. Nanishi¹
¹Ritsumeikan Univ., Japan, ²FLOSFIA, Japan

LED3-9 11:45

Growth of In₂O₃ by Halide Vapor Phase Epitaxy

S. Numata¹, R. Togashi¹, K. Goto², H. Murakami¹, A. Kuramata², S. Yamakoshi², and Y. Kumagai¹
¹Tokyo Univ. of Agri. & Tech., Japan, ²Tamura Corp., Japan

----- 12:00-13:00 Lunch Break -----

Oral, Thursday, May 19 AM

LIC <Room 301>

LSSE <Room 316>

OMC <Room 414+415>

Oral Program

LIC2-2 10:45

Optimizing double-pulse strategy for spray ignition

N. Beheran¹, R. George^{1,2}, M. Orain², and L. Zimmer¹
¹Lab. EM2C, CNRS, CentraleSupélec, Univ. Paris-Saclay, France, ²ONERA - The French Aerospace Lab. (DMPH/SLM), France

LIC2-3 11:00

A comparative study of spark ignitions induced by high-power laser and by high-voltage electrodes

Y. Takenaka, Y. Sako, K. Mikami, T. Johzaki, S. Namba, D. Shimokuri, and T. Endo
 Depart. Mechanical Systems Eng., Hiroshima Univ, Japan

LIC2-4 11:15

Invited

Temporally and spectrally resolved measurement of spark discharge in a spark ignition engine

N. Kawahara
 Okayama Univ., Japan

LIC2-5 11:45

Laser breakdown assisted long discharge ignition (LBALDI) - Ignition behavior in lean mixture-

T. Ikemoto¹, Y. Fukumi¹, E. Takahashi³, H. Furutani⁴, O. Imamura², and K. Akihama²
¹Graduate School of Industrial Tech., Nihon Univ., Japan, ²College of Industrial Tech., Nihon Univ., ³Energy Technology Research Inst., AIST, Japan, ⁴Renewable Energy Res. Center, AIST, Japan

LIC2-6 12:00

Comparison of Laser and Spark Ignition: Laminar Burning Velocity Measurements in Natural Gas/Air Mixtures

B. Almansour, S. Alawadhi, and S. S. Vasu-CATER
 Mechanical and Aerospace Eng. Depart., Univ. Central Florida, USA

LIC2-7 12:15

Influence of maximum fluence and fluence volume on energy transfer and plasma evolution during laser ignition with passively Q-switched laser

M. Bärwinkel, S. Lorenz, R. Stäglich, and D. Brüggemann
 Univ. Bayreuth, Germany

----- 12:30-13:30 Lunch Break -----

[LSSEp5] 10:30-12:00

**Poster Session
 <Exhibition Hall A>**

Poster session program p.92

----- 12:00-13:00 Lunch -----

[OMC2] 11:00-12:00

OptoMechanics

Chair: Kishan Dholakia
 University of St Andrews, UK

OMC2-1 11:00

Invited

Nanoengineered angular optomechanics

Etinne Brasselet
 University of Bordeaux I, France

OMC2-2 11:30

Rotation of multiple trapped microparticles in vacuum: observation of optically mediated parametric resonances and optical binding

Yoshihiko Arita^{1,2}, Michael Mazilu¹, Tom Vettenburg¹, Ewan M. Wright^{1,3}, Kishan Dholakia^{1,3}
¹SUPA, School of Physics and Astronomy, University of St Andrews, United Kingdom, ²MCRC, Molecular Chirality Research Centre, Graduate School of Advanced Integration Science, Chiba University, Japan, ³College of Optical Sciences, The University of Arizona, USA

OMC2-3 11:45

Photon-induced Force Microscopy in Heterodyne AM Technique

Junsuke Yamanishi, Yoshitaka Naitoh, Yan Jun Li, and Yasuhiro Sugawara
 Department of Applied Physics, Graduate School of Engineering, Osaka University, Japan

----- 12:00-13:00 Lunch Break -----

Oral, Thursday, May 19 AM

PLD <Room 413>

[PLD4] 10:45-12:00
Nonlinear materials
 Chair: J. Shao
 SIOM, China

PLD4-1 10:45 *Invited*

Dielectric coatings as frequency converters - the Frequency Tripling Mirror (FTM)

W. Rudolph, C. Rodriguez, L. A. Emmert, D. Ristau¹, S. Günster¹, F. B. A. Aghbolagh, A. K. Oskouei
 Univ of New Mexico, USA, ¹Laser Zentrum Hannover, Germany

PLD4-2 11:15

Multilayer technology for terahertz pulse generation

Y. Ochi, K. Nagashima, M. Tsubouchi, F. Yoshida, M. Maruyama
 Japan Atomic Energy Agency, Japan

PLD4-3 11:30

Real-time analysis and mitigation of laser damage initiators on the surface of DKDP crystals

G. Hu, Y.Zhao, Y.Wang, D. Li, X. Liu, Z. Cao
 Shanghai Inst. of Opt. Fine Mech., China

PLD4-4 11:45

Laser conditioning mechanism in improving damage performance of KDP

F. Wang
 China Academy of Engineering Physics, China

----- 12:00-13:00 Lunch Break -----

SLPC <Room 416+417>

[SLPC8] 10:30-12:15
Cutting and Welding

Chairs: L. Li
 The Univ. of Manchester, UK
 Y. Sato
 Osaka Univ., Japan

SLPC8-1 10:30 *Invited*

High-quality Processing of CFRP with Kilowatt Average Power Short-pulse Lasers

R. Weber, C. Freitag, M. Wiedenmann, T. Graf
 IFSW, Univ. of Stuttgart, Germany

SLPC8-2 11:00

Wavelength and Pulsewidth Dependences of Laser Processing of CFRP

M. Fujita¹, H. Ohkawa², T. Somekawa¹, M. Otsuka², Y. Maeda², T. Matsutani³, N. Miyanaga³
¹Institute for Laser Technology, Japan, ²Kindai Univ., Japan, ³Institute of Laser Engineering, Osaka Univ., Japan

SLPC8-3 11:15

Examination of Structuring Patterns for Laser-based Polymer-metal-connections

K. V. D. Straeten, F. Haschke, A. Olowinsky, A. Gillner
 Fraunhofer Institute for Laser Technology ILT, Germany

SLPC8-4 11:30

Influence of Spatial Power Modulation on Pore and Crack Formation in Laser Beam Welding of Aluminum

P. Heinen¹, F. Eichler², A. Haeusler³, A. Olowinsky¹, A. Gillner¹, R. Poprawe³
¹Fraunhofer-Institut für Lasertechnik ILT Germany, ²Chair for Technology of Optical Systems TOS of RWTH Aachen Univ., Germany, ³Chair for Laser Technology LLT of RWTH Aachen Univ., Germany

SLPC8-5 11:45

Experimental Characterization of Energy Transfer from Large-diameter Kilowatt CW Laser Beams to Metal Samples

J. Osterholz, D. Heunoske, J. Horak, B. Lexow, M. Lueck, M. Wickert
 Fraunhofer EMI, Germany

SLPC8-6 12:00

An Interactive Real-time Simulation Tool for Laser Cutting and Laser Drilling of Metals

T. Hermanns¹, W. Schulz²
¹RWTH Aachen Univ., Germany, ²Fraunhofer Institute for Laser Technology ILT, Germany

----- 12:15-13:30 Lunch Break -----

XOPT <Room 313+314>

Chair: H. Sinn
 European XFEL, Germany

XOPT2-3 11:00 *Invited*

Status and Development of hard X-ray optics and diagnostics at the Linac Coherent Light Source

A. Robert
 SLAC National Accelerator Laboratory, USA

XOPT2-4 11:30 *Invited*

Optics for XFEL at SACLA

K. Tono
 SPring-8/SACLA, Japan

----- 12:00-13:00 Lunch Break -----

Thu, 19 May, AM

Oral, Thursday, May 19 PM

ALPS

BISC <Room 419>

[ALPSp14] 13:00-15:00
 Poster Session
 <Exhibition Hall A>

Poster session program p.92

[BISC3] 13:30-15:00

Holography

Chairs: O. Matoba

Kobe Univ., Japan

Y. Awatsuji

Kyoto Inst. Tech., Japan

BISC3-1 13:30

Invited

Spatial-spectral Biomedical Holographic Microscopy

Y. Luo

National Taiwan Univ., Taiwan

BISC3-2 14:00

Invited

Interferometric Generation of Vortex Beams from Gaussian Beam

D. N. Naik, N. K. Viswanathan

¹Univ. of Hyderabad, India

BISC3-3 14:30

4D Imaging of Zebrafish Microcirculation by Digital Holography

D. Donnarumma, A. Brodoline, D. Alexandre, M. Gross

Laboratoire Charles Coulomb - UMR 5221
 CNRS-Université de Montpellier, France

BISC3-4 14:45

Non-axial-scanning Multifocal Confocal System with Volume Holographic Gratings

P.-H. Wang^{1,2} K.-B. Sung^{2,3}, Y. Luo^{1,2}

¹Inst. of Medical Device and Imaging, National

Taiwan Univ., Taiwan, R.O.C, ²Molecular Imaging Center, National Taiwan Univ., Taiwan, R.O.C,

³National Taiwan Univ., Taiwan, R.O.C

----- 15:00-15:30 Break -----

Oral, Thursday, May 19 PM

CLES <Room 418>

[CLES9] 13:30-15:30
High Energy Density Physics with High Intensity Lasers
 Chair: Y.-T. Li
 Institute of Physics, Chinese Academy of Sciences, China

CLES9-1 13:30 *Invited*

Nuclear Physics with Laser-Accelerated Ion Beams and Progress in Proton Fast Ignition
 M. Roth, Technische Univ., Darmstadt, Germany

CLES9-2 14:00 *Invited*

Integrated Modeling of Short-Pulse Laser Interactions with Buried-Layer Targets
 M. Sherlock¹, E. Hill¹, S. Rose¹ and W. Rozmus²
¹Imperial College London, UK, ²Univ. of Alberta, Canada

CLES9-3 14:30 *Invited*

Electron-Positron Pair Production in HED Plasmas
 E. Hill¹, O. Pike¹ and S. Rose¹
¹Plasma Physics Group, Imperial College, UK

CLES9-4 15:00 *Invited*

New Approach to Experimental Observation of the Breit-Wheeler Pair Generation Process
 X. Ribeyre¹, E. d'Humieres¹, S. Jequier¹, O. Jansen¹ and V. Tikhonchuk¹
¹Univ. of Bordeaux-CNRS-CEA, Centre Lasers Intenses et Applications, France

----- 15:30-16:00 Break -----

HEDS <Room 311+312>

[HEDS7] 13:00-13:30
Commercial Products for HEDS (ImPACT Session VII)
 Chair: J. Sasaki
 Japan Laser Corp., Japan

HEDS7-1 13:00

Innovative Targetry for Laser Plasma Interaction
 Francois Sylla
 Sourse LAB, France

HEDS7-2 13:15

Towards high repetition rate ultra-intense lasers, latest developments at Amplitude Technologies
 Federico Canova
 Amplitude Technologies, France

[HEDS8] 13:30-15:00
Radiation Sources I (ImPACT Session VIII)
 Chair: J. V. Malka
 LOA, France

HEDS8-1 13:30 *Invited*

Initial steps towards Free Electron Laser Amplification with Laser Plasma Acceleration
 Marie-Emmanuelle Couprie
 Synchrotron SOLEIL, France

HEDS8-2 14:00 *Special*

Betatron x-rays from laser-wakefield accelerators: a novel probe for time-resolved HED science experiments
 Felicie Albert
 Lawrence Livermore National Laboratory, USA

HEDS8-3 14:30 *Invited*

ELI-ALPS: Advanced Laser Technologies for High Peak and Average Power Systems
 Mikhail Kalashnikov
 ELI-ALPS, Hungary

----- 15:00-15:30 Break -----

LEDIA <Room 411+412>

[LEDp4] 13:00-14:45
Short Presentations for Poster Session
 Co-Chairs: Y. Honda
 Program Committee Member of LEDIA '16
 Nagoya Univ., Japan
T. Yamaguchi
 Program Committee Member of LEDIA '16
 Kogakuin Univ., Japan
H. Murakami
 Program Committee Member of LEDIA '16
 Tokyo Univ. of Agri. & Tech., Japan
R. Togashi
 Program Committee Member of LEDIA '16
 Tokyo Univ. of Agri. & Tech., Japan

Short Presentation by LEDp4-(1-33)

Thu, 19 May, PM

Oral, Thursday, May 19 PM

LIC <Room 301>

[LIC3] 13:30-14:45
Giant micro-photonics
 Chair: Y. Oki
 Kyushu Univ., Japan

LIC3-1 13:30 *Invited*

Total design of high power VCSEL pumped passively Q-switched micro-lasers for laser ignition

T. Suzudo¹, K. Hagita¹, T. Ikeo¹, K. Izumiya¹, N. Jikutani¹, Y. Higashi¹, and T. Taira²
¹Ricoh Co. Ltd., Japan, ²Inst. Mol. Sci., Japan

LIC3-2 14:00

Multi-pulse oscillation of passively Q-switched micro-laser pumped by VCSEL module

K. Hagita¹, T. Ikeo¹, Y. Ishikawa¹, Y. Higashi¹, N. Jikutani¹, T. Taira², and T. Suzudo¹
¹Ricoh Co. Ltd., Japan, ²Inst. Mol. Sci., Japan

LIC3-3 14:15

Development of a 0.3 GW Microchip-seeded Amplifier

V. Yahia and T. Taira
 Inst. Mol. Sci., Japan

LIC3-4 14:30

808 nm range high power (QCW 200 W) fiber coupled VCSEL pump module for laser ignition

K. Izumiya, Y. Ohkura, M. Numata, N. Arai, K. Ikeda, Y. Sasaki, N. Jikutani, and T. Suzudo
 Ricoh Co. Ltd., Japan

[LIC4] 14:45-17:00
Advanced applications of giant-pulse microchip laser systems
 Chair: T. Suzudo
 Ricoh Co. Ltd., Japan

LIC4-1 14:45 *Invited*

Remote analysis technique under severe environments using LIBS

H. Ohba¹, M. Saeki¹, I. Wakaida¹, T. Sakka², and B. Thornton³
¹Collaborative Lab. Advanced Decommissioning Sci., JAEA, Japan, ²Graduate School of Eng., Kyoto Univ., Japan, ³Inst. Industrial Sci., Univ. Tokyo, Japan

LIC4-2 15:15 *Invited*

Development of UV Microchip Lasers for Compact MALDI Spectroscopy Systems

R. Bhandari¹, K. Tojo¹, and T. Taira²
¹Shimadzu Co., Japan, ²Inst. Mol. Sci., Japan

----- 15:45-16:00 Break -----

LSSE <Room 316>

[LSSE6] 13:00-15:00
Maintenance of Social Infrastructure 1
 Chair: A. Nishimura
 Japan Atomic Energy Agency, Japan

LSSE6-1 13:00 *Invited*

Laser-Induced Breakdown Spectroscopy for Detection and Analysis in the Environment

J. Yu
 Institut Lumière Matière, France

LSSE6-2 13:30 *Invited*

LIBS Applications to Thermal Power Plants and Iron and Steel Making Processes

Y. Deguchi¹, A. Ikutomo¹, S. Katsumori¹, T. Komatsubara¹, R. Liu^{1,2}, Z. Wang², J. Yan², J. Liu²
¹Tokushima University, Japan, ²Xi'an Jiaotong University, China

LSSE6-3 14:00

The Evaluation of Limit of Detection/Quantification for Minor/Major Elements in Low-Alloy Steels by Laser-Induced Breakdown Spectroscopy

S. Kashiwakura, K. Wagatsuma
 Inst. for Materials Res., Tohoku Univ., Japan

LSSE6-4 14:20

Monitoring of Gaseous Trace Antimony in Syngas by LIBS

R. Yoshiie¹, R. Ishikawa¹, Y. Ueki², I. Naruse²
¹Dept. of Mechanical Sci. & Eng., Nagoya Univ., Japan, ²Inst. of Materials and Systems for Sustainability, Nagoya Univ., Japan

LSSE6-5 14:40

Laser-Induced Breakdown Spectroscopy for Diagnosis of Concrete Infrastructure

T. Fujii, S. Eto
 Electric Power Engineering Research Laboratory, CRIEPI, Japan

----- 15:00-15:30 Break -----

OMC <Room 414+415>

[OMC3] 13:00-15:15
OptoMechnics & Plasmonics
 Chair: Tatsuya Shoji
 Osaka City University, Japan

OMC3-1 13:00 *Invited*

Angular momentum enabled opto-mechanical elements

Saulius Juodkazis
 Swinburne University, Australia

OMC3-2 13:30

Transfer of orbital angular momentum of light to trapped particles in vacuum: a platform for new quantum tests in optomechanics

Yoshihiko Arita^{1,2}, Michael Mazilu¹, Tom Vettenburg¹, Juan M. Aunon¹, Ewan M. Wright^{1,3}, Kishan Dholakia^{1,3}
¹SUPA, School of Physics & Astronomy, University of St Andrews, United Kingdom, ²MCRC, Molecular Chirality Research Centre, Graduate School of Advanced Integration Science, Chiba University, Japan, ³College of Optical Sciences, The University of Arizona, USA

OMC3-3 13:45

Potential analysis of nano-particle plasmonic trapping using a trimer nano-structure

Shutaro Ishida, Takashi Wada, and Keiji Sasaki
 Research Institute for Electronic Science, Hokkaido University, Japan

OMC3-4 14:00 *Invited*

Microscopic Thermodynamics with levitated Nanoparticles: Approaching the quantum regime

Jan Gieseler
 Harvard University, Department of Physics, Cambridge, MA, United States

OMC3-5 14:30

Near-field enhancements of mid-infrared femtosecond pulses upon collective plasmon excitations in metal nanorod arrays

Akinobu Takegami^{1,2}, Fumiya Kusa^{1,2}, Satoshi Ashihara¹
¹Dept. of Applied Physics, Tokyo Univ. of Agriculture and Technology, Japan, ²Institute of Industrial Science, The Univ. of Tokyo, Japan

OMC3-6 14:45

Generation and control of plasmonic wave packet in a single gold nanorod

Yoshio Nishiyama¹, Kohei Imura³, Hiromi Okamoto^{1,2}
¹Institute for Molecular Science, Japan, ²The Graduate Univ. for Advanced Studies (Sokendai), Japan, ³School of Advanced Science and Engineering, Waseda University, Japan

OMC3-7 15:00

Selective Trapping and Fixation of DNAs at Desired Positions Using Plasmonic Optical Tweezers

Kenta Itoh¹, Tatsuya Shoji¹, Kei Murakoshi², Takahiro Yoshii², Yasuyuki Tsuboi¹
¹Graduate School of Science, Osaka City University, Japan, ²Graduate School of Chemical Sciences and Engineering, Hokkaido University, Japan

----- 15:15-15:30 Break -----

Oral, Thursday, May 19 PM

PLD <Room 413>

[PLD5] 13:00-15:15
Short pulse phenomena
 Chair: TBD

PLD5-1 13:00 *Invited*

Femtosecond laser-induced damage: lessons learned from time-resolved measurements
 A. Melninkaitis
 Univ. Vilnius, Lithuania

PLD5-2 13:30 *Invited*

Ultrafast carrier dynamics related to fs lasers-induced damage in optical coatings
 J. Du, Z. Li, B. Xue¹, T. Kobayashi¹, F. Kong, Y. Jin, Y. Zhao, Y. Leng, J. Shao
 Shanghai Inst. of Opt. Fine Mech., China, ¹The Univ. of Electro-Communications, Japan

PLD5-3 14:00

In situ imaging and control of layer-by-layer femtosecond laser thinning of graphene
 Y. Lu, D. Li, Y. Zhou, X. Huang, L. Jiang¹, J. F. Silvain²
¹Beijing Institute of Technology, China, ²Institut de Chimie de la Matière Condensée de Bordeaux, France

PLD5-4 14:15

Confined ablation on the SiO₂/Si interface with embedded nanoparticles
 Z. U. Rehman, L. T. Na, C. L. Tan¹, K. A. Janulewicz
 Gwangju Inst. of Science and Tech., Korea, ¹Northwestern Univ., USA

PLD5-5 14:30

Interferometric analysis of optical breakdown dynamics in bulks of transparent dielectrics induced by sub-nanosecond laser pulse
 V. H. Nguyen, N. T. Le, Z. U. Rehman, K. A. Janulewicz
 Gwangju Inst. of Science and Tech., Korea

PLD5-6 14:45

Plasma dynamics and phase transitions in optical breakdown of transparent dielectrics
 K. A. Janulewicz, Z. U. Rehman, N. T. Le, V. H. Nguyen, K. A. Tran
 Gwangju Inst. of Science and Tech., Korea

PLD5-7 15:00

Spatial-temporal distortions and calibration of ultrashort pulses in complex optical systems
 J. Liu, Z. Zheng, L. Zhu, S. Chang, A. Chen, S. Liu, F. Yuan, H. Zhang
 Zhejiang Univ., China

----- 15:15-15:45 Break -----

SLPC <Room 416+417>

[SLPC9] 13:30-15:00

Poster Session
 <Exhibition Hall A>

Poster session program p.94

----- 15:00-15:30 Break -----

XOPT <Room 313+314>

[XOPT3] 13:00-15:00
X-ray microscopy & imaging
 Chair: H. Mimura
 The University of Tokyo, Japan

XOPT3-1 13:00 *Invited*

Ptychography for x-ray nano-optics characterization at synchrotron radiation sources and x-ray free-electron lasers
 C. G. Schroer^{1,2}
¹Deutsches Elektronen-Synchrotron DESY, Germany, ²Universität Hamburg, Germany

XOPT3-2 13:30 *Invited*

Recent Developments in X-ray Phase Imaging
 A. Momose^{1,2,3}
¹Tohoku University, Japan, ²ERATO, JST, Japan, ³JASRI/SPring-8, Japan

XOPT3-3 14:00

Achromatic and high-resolution full-field X-ray microscopy based on four total-reflection mirrors
 S. Matsuyama¹, S. Yasuda¹, H. Okada², Y. Kohmura³, Y. Sano¹, M. Yabashi², T. Ishikawa³, and K. Yamauchi¹
¹Osaka University, Japan, ²JTEC Corporation, Japan, ³RIKEN SPring-8 Center, Japan

XOPT3-4 14:15

Development of a compact x-ray imaging optical system using two pairs of concave and convex mirrors
 J. Yamada, S. Matsuyama and K. Yamauchi
 Osaka University, Japan

XOPT3-5 14:30

Grating-Based Ultra-Small-Angle X-ray Scattering Imaging and its Application to Grazing-Incidence Case
 W. Yashiro^{1,2} and A. Momose^{1,2}
¹Tohoku University, Japan, ²ERATO, JST, Japan

XOPT3-6 14:45

X-ray Laser Diffraction Imaging of Samples in Solution Using Micro-Liquid Enclosure Array
 T. Kimura¹, Y. Joti², Y. Bessho³, and Y. Nishino¹
¹Hokkaido University, Japan, ²JASRI, Japan, ³Academia Sinica, Taiwan

----- 15:00-15:30 Break -----

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ALPS

BISC <Room 419>

[BISC4] 15:30-18:00

Organized Session

Adaptive Optics: Pushing the boundaries of deep imaging in living cells and tissues

Chairs: Y. Tamada

Natl. Inst. Basic Biol., Japan

M. Hattori

Natl. Inst. Basic Biol., Japan

Opening remark 15:30

Y. Tamada

Natl. Inst. Basic Biol., Japan

BISC4-1 15:33

Invited

Adaptive Optics from Microscopy to Nanoscopy

Martin Booth

Univ. Oxford, UK

BISC4-2 16:08

Invited

A Test Bench of General Purpose Adaptive Optics and its Application to Microscopy

M. Hattori

Natl. Inst. Basic Biol., Japan

BISC4-3 16:33

Invited

Super-resolution and Chromatic Correction above the Cover Slip

A. Matsuda

Natl. Inst. Inform. Commun. Tech., Japan

BISC4-4 16:58

Invited

A Practical Way to Use Adaptive Optics in Optical Coherence Tomography for Retinal Imaging

B. Cense

Utsunomiya Univ., Japan

BISC4-5 17:23

Invited

Adaptive Optical Microscopy Using Direct Wavefront Sensing

J. Kubby

Univ. California, USA

Closing remark 17:58

Y. Tamada

Natl. Inst. Basic Biol., Japan

Oral, Thursday, May 19 PM

CLES <Room 418>

[CLES10] 16:00-17:45
Fuel Assembly Production

Chair: D. Batani
 CELIA, Univ. of Bordeaux, France

CLES10-1 16:00 *Invited*

Flash X-Ray Radiography of High Density Spherical Targets for Fast-Ignition

H. Sawada¹, S. Fujioka², S. Lee², Y. Arikawa², H. Nagatomo², K. Shigemori², H. Nishimura², A. Sunahara³, T. Shirotō⁴, N. Ohnishi⁴, W. Theobald⁵, F. Perez⁶, P. Patel⁷ and F. Beg⁸
¹Univ. of Nevada, USA, ²Institute of Laser Engineering, Osaka Univ., Japan, ³Institute for Laser Technology, Japan, ⁴Department of Aerospace Engineering, Tohoku Univ., Japan ⁵Laboratory for Laser Energetics, Univ. of Rochester, USA, ⁶LULI, Ecole Polytechnique, France, ⁷Lawrence Livermore National Laboratory, USA ⁸Univ. of California San Diego, USA

CLES10-2 16:30

Effect of High Energy X-Ray on the Indirect Drive Ablative RT Instability

B. Xu¹, Y. Ma¹, X. Yang¹, W. Tang¹, Z. Ge¹ and Y. Zhao¹
¹National Univ. of Defense Technology, China

CLES10-3 16:45

Double-Shell Target Design and Experiment on SGIII Facility

Z. Dai¹, J. Li¹, W. Zheng¹, J. Yan², W. Pei¹ and S. Zhu¹
¹Institute of applied physics and computational mathematics, China, ²Laser Fusion Research Center, China

CLES10-4 17:00

A New Turning Method of the Low-Model Asymmetry for Ignition Capsule Implosions

J. Gu¹, Z. Dai¹, S. Zou¹, P. Song¹, W. Ye¹, W. Zheng¹ and P. Gu¹
¹Institute of Applied Physics and Computational Mathematics, China

CLES10-5 17:15

Shock Velocity Measurement using Frequency Domain Interferometer with Chirped Pulse Laser

K. Ishii¹, Y. Nishimura^{1,2}, Y. Mori¹, R. Hanayama¹, Y. Kitagawa¹, T. Sekine³, T. Kurita³, N. Sato³, T. Kawashima³, H. Kan³, T. Nishi⁴, T. Hiroki⁵, T. Momohiro⁵, H. Azuma⁶, A. Sunahara⁷, Y. Sentoku⁸, and E. Miura⁹
¹The Graduate School for the Creation of New Photonics Industries, Japan, ²TOYOTA Technical Development Corporation, Japan, ³Hamamatsu Photonics, K. K., Japan, ⁴TOYOTA Central Research and Development Laboratories, Inc., Japan, ⁵Nagoya Univ., GREMO, Japan, ⁶Aichi Synchrotron Radiation Center In "Knowledge Hub Aichi", Japan ⁷Institute for Laser Technology, Japan, ⁸Univ. of Nevada, USA, ⁹National Institute of Advanced Industrial Science and Technology, Japan

CLES10-6 17:30

Phase Transition in Single Crystal Crystal Yttria-Stabilized Zirconia by Ultra-Intense Laser-Driven Compression

Y. Nishimura^{1,2}, K. Ishii¹, Y. Kitagawa¹, Y. Mori¹, R. Hanayama¹, H. Azuma³, T. Hioki⁴, T. Motohiro^{4,5}, T. Nishi⁵, T. Sekine⁵, N. Sato⁵, T. Kurita⁵, T. Kawashima⁵, H. Kan⁵, A. Sunahara⁷, Y. Sentoku⁸, and E. Miura⁹
¹The Graduate School for the Creation of New Photonics Industries, Japan, ²TOYOTA Technical Development Corp., Japan, ³Aichi SR Center, Japan, ⁴GREMO, Nagoya Univ., Japan, ⁵TOYOTA Central R&D Labs., Inc., Japan, ⁶Hamamatsu Photonics K.K., Japan, ⁷Institute of Laser Technology, Japan, ⁸Department of Physics, Univ., of Nevada, USA, ⁹National Institute of Advanced Industrial Science and Technology, Japan

HEDS <Room 311+312>

[HEDS9] 15:30-16:20
Radiation Sources II

Chair: K. Kondo
 QST, Japan

HEDS9-1 15:30 *Special*

Required Laser Properties for Efficient High-Order Harmonic Generation from Relativistic Electron Spikes

Alexander S. Pirozhkov
 QST, Japan

HEDS9-2 16:00

Current Design and Development of Gamma-ray Polarimeter for Probing Vacuum Birefringence at ELI-NP

Yoshihide Nakamiya
 Kyoto University, Japan

----- 16:20-16:30 Break -----

[HEDS10] 16:30-17:30
Student Session

Chair: A.S. Pirozhkov
 QST, Japan

HEDS10-1 16:30

Generation of strong surface waves on a metal wire using intense laser interaction with solid targets

Kensuke Teramoto
 Kyoto University, Japan

HEDS10-2 16:50

Structure and Dynamics of electric fields produced in the interaction between a single cluster and a background gas irradiated by a high power laser

Ryutaro Matsui
 Kyoto University, Japan

HEDS10-3 17:10

Probing Space-Time Distortion with Laser Wake Field Acceleration and X-ray Free Electron Lasers

Masahiro Yano
 Osaka University, Japan

LEDIA <Room 411+412>

[LEDp4] 15:30-17:00
Poster Session
 <Exhibition Hall A>

Poster session program p.95

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LIC <Room 301>

LIC4-3 16:00

Invited

A Flange-Mounted UV Microchip Laser for Imaging Mass Spectrometry

T. Sakamoto¹, K. Ohishi¹, Y. Furukawa², L. Zheng³ and T. Taira³
¹Depart. Appl. Phys., Kogakuin Univ., Japan, ²Oxide Co., Japan, ³Inst. Mol. Sci., Japan

LIC4-4 16:30

Invited

Development of Ultra-compact Pulse Lasers and Applications by Giant micro-photonics

Y. Sano
 ImpACT, Japan

[LIC5] 17:00-18:00

Laser ignition of energetic materials

Chair: Z. Zhngang
 Univ. Beijing, China

LIC5-1 17:00

Invited

Physical and Chemical Problems of Laser Ignition

R. Shen, L. Wu, S. Chen, W. Zhang, J. Xu, and Y. Ye
 Depart. Appl. Chem., Nanjing Univ. Sci. Tech., China

LIC5-2 17:30

Application of laser-ignition systems in liquid rocket engines

S. Soller¹, N. Rackemann¹, and A. Preuss²
¹Airbus Safran Launchers GmbH, Germany, ²Airbus Defense and Space, Germany

LIC5-3 17:45

Laser ignition experiment of HAN-based monopropellant

T. Katsumi, Y. Miyajima, and S. Kadowaki
 Nagaoka Univ. Tech., Japan

LSSE <Room 316>

[LSSE7] 15:30-16:30

Maintenance of Social Infrastructure 2

Chair: T. Fujii
 Electric Power Eng. Res. Lab., CRIEPI, Japan

LSSE7-1 15:30

Evaluation of Residual Strain in the Structural Materials of Nuclear Power Plants by Magnetic Incremental Permeability Method

T. Uchimoto¹, T. Takagi¹, T. Matsumoto¹, G. Dobmann²
¹Tohoku University, Japan, ²Saarland University, Germany

LSSE7-2 15:50

In-Service Monitoring of Distortion by a Heat Resistant FBG Sensor for a Sodium Circulation Loop

A. Nishimura, T. Shimomura, Y. Takenaka, T. Furuyama, M. Ueda, K. Saruta, H. Daido
 Japan Atomic Energy Agency, Japan

LSSE7-3 16:10

High Performance Hydrogen Storage Alloy Produced by Short Pulse Laser Surface Modification

H. Daido^{1,2}, H. Abe³, T. Shobu⁴, T. Shimomura¹, A. Nishimura^{1,2}, H. Uchida⁵
¹Applied Laser Technology Institute, Japan Atomic Energy Agency, Japan, ²Fukushima Research Infrastructural Creation Center, Japan Atomic Energy Agency, Japan, ³Quantum Beam Science Center at Takasaki, Japan Atomic Energy Agency, Japan, ⁴Quantum Beam Science Center at SPring-8, Japan Atomic Energy Agency, Japan, ⁵Faculty of Engineering, Tokai University, Japan

OMC <Room 414+415>

[OMC4] 15:30-17:45

Structured Light

Chair: Takashige Omatsu
 Chiba University, Japan

OMC4-1 15:30

Tuning of whispering gallery modes of microspheres during optical levitation

Yosuke Minowa, Yusuke Toyota, and Masaaki Ashida
 Osaka University, Japan

OMC4-2 15:45

Topological Transformations between Integer and Fractional Optical Vortex Beams

Maruthi M. Brundavanam, Satyajit Maji and Abhijit Roy
 Department of Physics, Indian Institute of Technology Kharagpur, India

OMC4-3 16:00

Plasmonic Archimedean Spiral Modes on Concentric Metal Ring Gratings

Yi-Chieh Lai and Yung-Chiang Lan
 Department of Photonics, National Cheng Kung University, Taiwan

OMC4-4 16:15

Rule of selection for geometric modes in broad-area vertical cavity surface emitting lasers

Yan-Ting Yu, Pi-Hui Tuan, Kai-Chi Chang, Kuan-Wei Su, and Yung-Fu Chen
 Department of Electrophysics, National Chiao Tung University, Taiwan

OMC4-5 16:30

Octave-band tunable optical vortex parametric laser

Roukuya Mamuti¹, Aizitiaili Abulikemu¹, Katsuhiko Miyamoto^{1,2}, Takashige Omatsu^{1,2}
¹Graduate School of Advanced Integration Science, Chiba University, Japan, ²Molecular chirality research center, Chiba University, Japan

OMC4-6 16:45

Study of Surface Processing onto Photonic-crystal Lasers for Generating Optical Vortex Beam

Kyoko Kitamura^{1,2}, Miki Kitazawa¹, and Susumu Noda^{2,3}
¹Kyoto Institute of Technology, Japan, ²Department of Electronic Science and Engineering, Graduate School of Engineering, Kyoto University, Japan, ³Photonics and Electronics Science and Engineering, Kyoto University, Japan

OMC4-7 17:00

Generation of third-harmonic vortex beams in air using nearinfrared femtosecond laser pulses

Yu-Chieh Lin, Yasuo Nabekawa, Katsumi Midorikawa
 RIKEN, Japan

OMC4-8 17:15

Single-Shot Measurements of Anisotropic Excitons via Four-Wave Mixing Spectroscopy with Radially Polarized Pulses

Kyohhei Shigematsu, Masato Suzuki, Keisaku Yamane, Ryuji Morita, and Yasunori Toda
 Department of Applied Physics, Hokkaido University, Japan

OMC4-9 17:30

Maxwell-Schrödinger equations for space-variant wave plates and Pancharatnam-Berry phase on the extended Poincaré sphere

Masato Suzuki, Keisaku Yamane, Kazuhiko Oka, Yasunori Toda, Ryuji Morita
 Department of Applied Physics, Hokkaido University, Japan

Oral, Thursday, May 19 PM

PLD <Room 413>

[PLD6] 15:45-17:15
High power resistant coatings
 Chair: S. Motokoshi
 Institute for Laser Technology, Japan

PLD6-1 15:45 *Invited*

Developments of high damage threshold meter-scale optical components for multi-PW lasers

A. Hervy, L. Gallais¹, G. Chériaux, D. Mouricaud, S. Djidel, A. Fréneaux, J. P. Chambaret², C. Leblanc², M. Somekh³, F. Mathieu², N. Bonod¹, A. Cotel³, F. Desserouer³, O. Utéza⁴, R. Clady⁴, M. Sentsis⁴
 REOSC, France, ¹Institut Fresnel, France, ²Laboratoire d'Utilisation des Lasers Intenses, Ecole Polytechnique, France, ³HORIBA Jobin Yvon S.A.S., France, ⁴Aix Marseille Université, CNRS, LP3 UMR 7341, France

PLD6-2 16:15

Revealing the nature of laser-induced damage from ultra-fast response of dielectric coatings

A. Melnikaitis, B. Momgaudis, L. Smalakys, R. Grigutis, J. Vaicenavičius, S. Guizard¹, L. Gallais², V. Sirutkaitis
 Vilnius Univ, Lithuania, ¹CEA-IRAMIS/CNRS/ Ecole Polytech, France, ²Institut Fresnel, France

PLD6-3 16:30

Study on the laser induced damage of low dispersion mirrors

J. Zhang, B. Ma, X. Cheng, Z. Wang
 Tongji Univ., China

PLD6-4 16:45

The Investigation of laser induced damage threshold of multilayer mirrors under the simultaneous irradiation of two wavelengths

M. Sugiura, K. Tamura, M. Kobiyama¹, S. Motokoshi², T. Jitsuno³
 Tokai Optical Co., LTD., ¹Tecwave Co., Ltd, ²Inst. Laser Tech., ³Osaka Univ., Japan

PLD6-5 17:00

The damage characteristics of the high-reflection coatings irradiated from the active gain medium

X. Liu
 Shanghai Inst. of Opt. Fine Mech., China

SLPC <Room 416+417>

[SLPC10] 15:30-17:15
Industrial Applications
 Chairs: C. Freitag
 IFSW, Univ. of Stuttgart, Germany
 K. Washio
 Paradigm Laser Research, Japan

SLPC10-1 15:30 *Invited*

Large Area Flexible Electronics Manufacture at High Speed Using an Integrated ps Fiber Laser and 3D Scanner

T. S. McComb, K. E. Gross, J. Small, T. L. Lowder, D. M. McCal, M. Atchley, J. Debartolo, R. J. Martinsen
 nLIGHT Corp., USA

SLPC10-2 16:00

Laser Cleaning Technique Using Laser-Induced Acoustic Streaming for Silicon Wafers

C. H. Tsai, W. S. Peng
 Department of Mechatronic Engineering, Huafan Univ., Taiwan

SLPC10-3 16:15

Inline Inspection of Micro and Macro Welds

M. Kogel-Hollacher¹, M. Schönleber¹, J. Schulze¹, T. Bautze²
¹Precitec Optronik GmbH, Germany, ²Precitec GmbH & Co. KG, Germany

SLPC10-4 16:30

Examples of Laser Applications in the Automotive Industry

A. Andreev¹, Y. Guertler², M. Beranek²
¹TRUMPF Corp., Japan, ²TRUMPF Laser-und Systemtechnik GmbH, Germany

SLPC10-5 16:45 *Invited*

Outlook of Advanced Industrial Laser Applications for Smart Factories

R. Poprawe¹, C. Hinke²
¹Fraunhofer-Institute for Laser Technology ILT, Germany, ²Chair for Lasertechnology LLT at RWTH Aachen Univ., Germany

[Closing] 17:15-17:30

Closing Remark 17:15

M. Tsukamoto
 Osaka Univ., Japan

XOPT <Room 313+314>

[XOPT4] 15:30-16:45
X-ray optics (I): refractive optics & applications
 Chair: H. Yumoto
 JASRI/SPring-8, Japan

XOPT4-1 15:30 *Invited*

20 years of X-ray refractive optics. New promising prospectives for diffraction limited X-ray sources.

A. Snigirev
 Immanuel Kant Baltic Federal University, Russia

XOPT4-2 16:00

Diamond refractive lenses as the breakthrough optic tool for high heat flux X-ray beams

M.V. Polikarpov¹, S.A. Terentiev², S.N. Polyakov², S.I. Zholudev², V.A. Yunkin³, I.Snigireva⁴, Y. Shvyd'ko⁵, V.D. Blank², and A. Snigirev¹
¹Immanuel Kant Baltic Federal University, Russia, ²FSBI TISNCM, Russia, ³Institute of Microelectronics Technology RAS, Russia, ⁴ESRF, France, ⁵Advanced Photon Source, Argonne National Laboratory, USA

XOPT4-3 16:15

Coherent hard X-ray microscopy for the characterization of mesoscopic materials

I. Snigireva¹, A. Snigirev²
¹ESRF, France, ²Immanuel Kant Baltic Federal University, Russian Federation

XOPT4-4 16:30

Design of quasicrystal structure for X-ray focusing

T. Hoshino¹, T. Fukamizu¹, W. Li¹, J. Sugisaka², N. Watanabe¹, S. Aoki¹, M. Itoh¹
¹University of Tsukuba, Japan, ²Kitami Institute of Technology, Japan

[XOPT5] 16:45-17:30

X-ray detectors

Chair: H. Yumoto
 JASRI/SPring-8, Japan

XOPT5-1 16:45 *Invited*

Requisites of X-ray Imaging Detectors for X-ray Free-electron lasers and future Synchrotron Radiation Sources

T. Hatsui
 RIKEN SPring-8 Center, Japan

XOPT5-2 17:15

Development of gallium nitride devices for X-ray detection

Q. Xu¹, W. Chuirazzi¹, P. Mulligan¹, J. Wang^{1,2}, and L. Cao¹
¹The Ohio State University, USA, ²Stanford University, USA

----- 17:30-18:30 Break / Move -----

[XOPT Banquet] 18:30-20:30

TBD (outside of conference center)

Oral, Friday, May 20 AM

ALPS <Room 416+417>

[ALPS15] 9:00-10:30
Terahertz-wave sensing and devices
 Chair: J.-H. Son
 Program Committee Member
 Univ. of Seoul, Korea

ALPS15-1 9:00 *Invited*

Noninvasive THz Sensing of Critical Components in Human Blood
 C.-K. Sun¹ and T.-D. Wang²
¹National Taiwan Univ., ²Taiwan, National Taiwan Univ. Hospital, Taiwan

ALPS15-2 9:30

Injection-Seeded Terahertz-Wave Parametric Generator at 77 K
 Y. Takida, K. Nawata, Y. Tokizane, Z. Han, M. Koyama, T. Notake, S. Hayashi, and H. Minamide
 RIKEN, Japan

ALPS15-3 9:45

Terahertz parametric amplification using KTiOPO₄
 M.-H. Wu¹, Y.-C. Chiu¹, T.-D. Wang², G. Zhao³, A. Zukauskas⁴, Y.-C. Huang¹, and F. Laurell⁴
¹National Tsing Hua Univ., Taiwan, ²CSIST Inc., Taiwan, ³Peking Univ., China, ⁴KTH Univ., Sweden

ALPS15-4 10:00

Terahertz wave generation from cluster plasma produced by double pulse-laser beams
 K. Mori^{1,2}, M. Hashida^{1,2}, T. Nagashima³, K. Teramoto^{1,2}, S. Inoue^{1,2}, and S. Sakabe^{1,2}
¹ICR, Kyoto Univ., Japan, ²GSS, Kyoto Univ., Japan, ³Setsunan Univ., Japan

ALPS15-5 10:15

Analysis of propagation modes in THz-hollow optical fibers by time-domain spectroscopy
 K. Ito¹, T. Katagiri², and Y. Matsuura¹
¹Grad. School of Biomedical Eng., Tohoku Univ., Japan, ²Grad. School of Eng., Tohoku Univ., Japan

----- 10:30-11:00 Break -----

BISC <Room 419>

[BISC5] 9:00-10:00
Multi-modal Imaging, Photo-acoustic Imaging
 Chair: K. Fujita
 Osaka Univ., Japan

BISC5-1 9:00 *Invited*

Improvements and Applications in "in vivo" Multi-photon Microscopy
 T. Nemoto, R. Kawakami, T. Hibi, K. Otomo, S. Ipponjima, K. Sawada, A. Tanabe
 Hokkaido Univ., Japan

BISC5-2 9:30 *Invited*

Improvement of Imaging Speed and Contrast in Two-photon Photoacoustic Microscopy (TP-PAM)
 Y. Yamaoka
 Saga Univ., Japan

----- 10:00-10:30 Break -----

Oral, Friday, May 20 AM

CLES <Room 418>	HEDS <Room 311+312>	LEDIA <Room 411+412>
<p>[CLES11] 9:00-10:30 Integrated experiment and simulation Chair: H. Nagatomo Institute of Laser Engineering, Osaka Univ., Japan</p>	<p>[HEDS11] 9:00-9:40 Plenary (ImPACT Session IX) Chair: TBD</p>	<p>[LED5] 9:00-10:30 LEDs Chair: J. Cho Program Committee Member of LEDIA '16 Chonbuk National Univ., Korea</p>
<p>CLES11-1 9:00 <i>Invited</i> Shock Ignition Studies at the Laboratory for Laser Energetics R. Betti¹, A. Bose¹, W. Shang^{1,2} and W. Theobald¹ ¹Fusion Science Center for Extreme States of Matter, Univ. of Rochester, USA, ²Research Center for Laser Fusion, Chinese Academy of Engineering, China</p>	<p>HEDS11-1 9:00 <i>Plenary III</i> Manipulating Electrons with Intense Laser Pulses Victor Malka Laboratoire d'Optique Appliquee, France</p>	<p>LED5-1 9:00 <i>Invited</i> Enhanced Red Photo/electroluminescence from Eu-doped GaN through Optimization of Defect Environment Y. Fujiwara¹, W. Zhu¹, B. Mitchell², D. Timmerman¹, A. Uedono³, and A. Koizumi¹ ¹Osaka Univ., Japan, ²Univ. of Mt. Union, U.S.A., ³Univ. of Tsukuba, Japan</p>
<p>CLES11-2 9:30 <i>Invited</i> Laser-Plasma Interaction and Shock Generation in the Shock-Ignition Intensity Regime D. Batani¹, L. Antonelli^{1,2}, G. Boutoux¹, A. Colaitis¹, P. Nicolai¹, S. Atzeni², G. Cristoforetti³, L. Gizzi³, E. Krousky⁴, O. Renner⁴ and M. Smid⁴ ¹CELI, Univ. of Bordeaux, France ²Univ. of Roma «La Sapienza», Italy ³Intense Laser Irradiation Laboratory, INO-CNR, Italy, ⁴Institute of Physics, Czech Republic</p>	<p>[HEDS12] 9:40-10:30 Particle Acceleration III (ImPACT Session X) Chair: K. Kurshelnick the University of Michigan, USA</p>	<p>LED5-2 9:30 8-inch GaN on Si MOCVD Growth of >80% WPE Blue LEDs J. Ramer, W. Fenwick, K. Knieriem, D. Lee, L. Ye, T. Shioda, and K. Tachibana Toshiba America Electronic Components, Inc., U.S.A.</p>
<p>CLES11-3 10:00 <i>Invited</i> Direct Drive Fast Ignition Experiments on SG-II Up Laser Facility W. Wang¹, C. Wang¹, Z. Fang¹, H. An¹, J. Xiong¹, R. Wang¹, A. Lei¹, W. Pei¹, and S. Fu¹ ¹Shanghai Institute of Laser Plasma, China</p>	<p>HEDS12-1 9:40 <i>Invited</i> High charge electron acceleration from solid target Liming Chen Chinese Academy of Sciences, China</p>	<p>LED5-3 9:45 Highly Uniform InGaN/GaN MQW Grown on 200 mm Si Substrate at 500 Torr by Fast Rotating Single-Wafer MOCVD Y. Iyechika, Y. Ishikawa, Y. Sato, and H. Takahashi NuFlare Technology, Inc., Japan</p>
<p>HEDS12-2 10:10 Quasi-monoenergetic proton beam generation from an ion-layer embedded metal foil irradiated by an intense laser pulse Kyung Nam Kim Korea Atomic Energy Research Institute, Korea</p>	<p>LED5-4 10:00 A InGaN-MQW Blue LED on (-2 0 1)β-Ga₂O₃ Substrate Y. P. Lan¹, Y. J. Shih², T. C. Chang³, and C. Y. Chang^{2,4} ¹Microelectronic and information system research center, National Chiao Tung Univ., Taiwan, ²Dept. of Electronics Eng., National Chiao Tung Univ., Taiwan, ³Dept of Photonics and Inst. of Electro-Optical Eng., National Chiao Tung Univ., Taiwan, ⁴Research Center for Applied Sciences, Academia Sinica, Taiwan</p>	<p>LED5-5 10:15 Low-Temperature Grown p-Side Structure with GaInN Tunnel Junction and n-GaNsb K. Suzuki¹, K. Takarabe¹, D. Komori¹, D. Takasuka¹, N. Koide¹, T. Takeuchi¹, M. Iwaya¹, S. Kamiyama¹, and I. Akasaki^{1,2} ¹Meijo Univ., Japan, ²Akasaki Research Center, Nagoya Univ., Japan</p>

----- 10:30-11:00 Break -----

----- 10:30-11:00 Break -----

----- 10:30-11:00 Break -----

Oral, Friday, May 20 AM

LIC <Room 301>

[LIC6] 9:00-10:45
Advanced ignition systems for vehicular applications

Chair: R. Bhandari
 Shimadzu Co., Japan

LIC6-1 9:00 *Invited*

Multi-point laser ignition for in-combustion event feedback control of an automobile engine

G. Dearden¹, Z. Kuang¹, E. Lyon¹, H. Cheng², V. Page², and T. Shenton²

¹Laser Group, School of Eng., Univ. Liverpool, UK,

²Powertrain Control Group, School of Eng., Univ. Liverpool, UK

LIC6-2 9:30

The effect of laser ignition on a homogenous lean mixture of an automotive gasoline engine

A. Birtas¹, G. Croitoru (Salamu)², M. Dinca³, T. Dascalu², N. Boicea¹, and N. Pavel²

¹Renault Technologie Roumanie, Romania, ²Nat. Inst. Laser, Plasma and Radiation Phys., Lab.

Solid-State Quant. Electron., Romania, ³Faculty of Physics, Univ. Bucharest, Romania

LIC6-3 9:45 *Invited*

Laser Ignition Systems for Space Propulsion Applications

C. Manfretti and M. Börner
 DLR, Inst. Space Propulsion, Germany

LIC6-4 10:15

Laser spark ignition of kerosene in Ma 2.52 supersonic flow

X. Li^{1,2}, L. Yang³, Y. Yu^{1,2}, J. Peng^{1,2}, X. Yu^{1,2}, and J. Liang³

¹Nat. Key Lab. Sci. Tech. Tunable Laser, Harbin Inst. Tech., China, ²Inst. Opto- electron., Harbin Inst. Tech., China, ³College of Aerospace Sci. Eng., Nat. Univ. Defense Tech., China

LIC6-5 10:30

Performance of an internal combustion engine using multi-point laser ignition under nitrogen dilution conditions

T. Saito¹, Y. Suzuta¹, E. Takahashi², and H. Furutani³

¹Depart. Mechanical Eng., Meisei Univ., Japan,

²Research Inst. Energy Conservation, AIST, Japan,

³Renewable Energy Research Center, AIST, Japan

----- 10:45-11:00 Break -----

LSSE <Room 316>

[LSSE8] 10:00-12:00

Maintenance of Social Infrastructure 3

Chair: Y. Shimada
 Institute of Laser Technology, Japan

LSSE8-1 10:00 *Invited*

Nondestructive Inspection of Infrastructures by Laser and Neutron Beam Technology

S. Wada¹, N. Saito¹, K. Kase¹, Y. Otake¹, Y. Ikeda¹, T. Kawachi², H. Daido³, Y. Shimada⁴, K. Midorikawa¹

¹RIKEN Center for Advanced Photonics, Japan,

²Quantum Beam Science Center, Japan Atomic Energy Agency, Japan, ³Applied Laser Technology

Institute, Japan Atomic Energy Agency, Japan,

⁴Institute for Laser Technology, Japan

----- 10:30-11:00 Break -----

OMC <Room 414+415>

[OMC5] 9:00-10:45
Structured Materials Fabrication

Chair: Masaaki Ashida
 Osaka University, Japan

OMC5-1 9:00 *Invited*

Ultrafast lasers: as tools for micro/nanofabrication and probing surface plasmons

Quan Sun¹, Takaya Tokiwa¹, Hidenori Asahi¹, Han Yu¹, Kosei Ueno¹, Atsushi Kubo², Yasutaka Matsuo¹, and Hiroaki Misawa¹

¹Research Institute for Electronic Science, Hokkaido University, ²Institute of Physics, University of Tsukuba

OMC5-2 9:30

Optical fabrication and manipulation of semiconductor nanoparticles in superfluid helium

Masaaki Ashida¹, Yosuke Minowa¹, and Hajime Ishihara²

¹Osaka University, Japan, ²Osaka Prefecture University, Japan

OMC5-3 9:45

How does the optical angular momentum of an optical vortex shape a monocrystalline silicon needle?

Honami Fujiwara¹, Fuyuto Takahashi¹, Kai Izumisawa¹, Katsuhiko Miyamoto^{1,2}, Ryuji Morita³, Takashige Omatsu^{1,2}

¹Graduate School of Advanced Integration Science, Chiba University, Japan, ²Molecular chirality research center, Chiba University, Japan, ³Department of Applied Physics, Hokkaido University, Japan

OMC5-4 10:00

Chiral bias on circularly polarized laser-induced chiral crystallization from NaClO₃ solution containing plasmonic Ag nanoparticles

Hiromasa Niinomi¹, Teruki Sugiyama², Miho Tagawa³, Kenta Murayama³, Shunta Harada³, Katsuhiko Miyamoto^{1,4}, Takashige Omatsu^{1,4} and Toru Ujihara³

¹Molecular Chirality Research Center, Chiba University, Japan, ²National Chiao Tung University, Taiwan, ³Nagoya University, Japan, ⁴Graduate School of Advanced Integration Science, Chiba University, Japan

OMC5-5 10:15

Imprinted single-armed chiral surface relief on soda-lime silica glass

Guzhaliayi Juman¹, Itsuki Yoshida¹, Keigo Masuda¹, Shogo Nakano¹, Daisuke Sakai², Kenji Harada³, Katsuhiko Miyamoto^{1,4}, Takashige Omatsu^{1,4}

¹Graduate School of Advanced Integration Science, Chiba University, Japan, ²Department of System Engineering, Kitami Institute of Technology, Japan, ³Department of Computer Science, Kitami Institute of Technology, Japan, ⁴Molecular Chirality Research Center, Chiba University, Japan

OMC5-6 10:30

Using optical vortex to form the droplets filament

Fukutaro Shiraishi¹, Yuri Nakamura¹, Kai Izumisawa¹, Katsuhiko Miyamoto^{1,2}, Kazumi Suzuki³, Masaki Yoshino³, Takashige Omatsu^{1,2}

¹Graduate School of Advanced Integration Science, Chiba University, Japan, ²Molecular chirality research center, Chiba University, Japan, ³Chemical Technology & Products Business Group, RICOH, Japan, ⁴Imaging Engine Development Division, RICOH, Japan

----- 10:45-11:00 Break -----

Oral, Friday, May 20 AM

PLD <Room 413>

[PLD7] 9:00-10:15
 Poster session
 <Exhibition Hall A>

Poster session program p.98

----- 10:15-10:30 Break -----

XOPT <Room 313+314>

[XOPT6] 9:00-10:30
X-ray optics (II): reflective optics & applications

Chair: R. Barrett
 ESRE, France

XOPT6-1 9:00 *Invited*

Progress of mirror-based optical system for X-ray nanofocusing and imaging

K. Yamauchi
 Osaka University, Japan

XOPT6-2 9:30

3D surface measurement of spherical mirror by nanop profiler using normal vector tracing method

H. Shiraji¹, Y. Tokuta², T. Kitayama¹, M. Nakano²,
 R. Kudo¹, K. Yamamura¹, K. Endo¹
¹Osaka University Research Center for Ultra-Precision Science and Technology, Japan, ²Graduate School of Osaka University, Japan

XOPT6-3 9:45

Current status of the development of two-staged focusing system for soft x-ray lasers

H. Motoyama¹, T. Sato¹, A. Iwasaki¹, Y. Takeo¹,
 Y. Senba², H. Ohashi², K. Yamanouchi¹ and
 H. Mimura¹
¹The University of Tokyo, Japan, ²JASRI/SPring-8, Japan

XOPT6-4 10:00 *Invited*

Ellipsoidal mirror for two-dimensional nanofocusing in the hard x-ray region

H. Yumoto
 JASRI/SPring-8, Japan

----- Break (10:30-11:00)-----

Oral, Friday, May 20 AM

ALPS <Room 416+417>

[ALPS16] 11:00-12:00

Terahertz-wave imaging

Chair: C.-K. Sun
 Program Committee Member
 National Taiwan Univ., Taiwan

ALPS16-1 11:00 *Invited*

Recent Advances in Terahertz Cancer Imaging

J.-H. Son
 Dept. of Phys., Univ. of Seoul, Korea

ALPS16-2 11:30

THz spectroscopic imaging of concealed chemicals using is-TPG

M. Kato¹, K. Murate¹, K. Imayama¹, S. R. Tripathi¹,
 K. Kawase^{1,2}
¹Nagoya Univ., Japan, ²RIKEN, Japan

ALPS16-3 11:45

THz Frequency Combs generated from Off-axis THz Parametric Oscillator at Room Temperature

Y.-C. Chiu¹, T.-D. Wang², P.-C. Wang¹, Y.-C. Huang¹
¹Inst. of Photonics Tech./Dept. of Electrical Eng.,
 National Tsinghua Univ., Taiwan, ²Chung-San Inst.
 of Sci. and Tech., Taiwan

----- 12:00-13:00 Lunch Break -----

BISC <Room 419>

[BISCp6] 10:30-12:00

Poster Session

<Exhibition Hall A>

Poster session program p.98

----- 12:00-13:00 Lunch Break -----

Oral, Friday, May 20 AM

CLES <Room 418>

[CLES12] 11:00-12:30

Electron Generation

Chair: F. Beg

Univ. of California at San Diego, USA

CLES12-1 11:00

Invited

Properties of Fast Electrons Emitted in Intense Laser-Solid Interaction Experiment

D. Neely^{1,2}

¹Central Laser Facility, STFC, Rutherford Appleton Laboratory, UK, ²SUPA, Department of Physics, Univ. of Strathclyde, UK

CLES12-2 11:30

Invited

Optimization of Electron Energy Distribution by Reducing Preformed Plasma Generation for Fast Ignition Scheme

Y. Arikawa¹, S. Kojima¹, A. Morace¹, M. Hata¹, S. Sakata¹, S. Fujioka¹, T. Kawashima¹, Y. Hironaka¹, K. Shigemori¹, Y. Abe¹, X. Vaisseau¹, S.-H. Lee¹, T. Gawa¹, K. Matsuo¹, K.-F. Law¹, Y. Kato¹, S. Matsubara¹, S. Tosaki¹, A. Yogo¹, H. Nagatomo¹, S. Tokita¹, Y. Nakata¹, T. Jitsuno¹, N. Miyanaga¹, J. Kawanaka¹, Y. Fujimoto¹, K. Yamanoi¹, T. Norimatsu¹, M. Nakai¹, H. Nishimura¹, H. Shiraga¹, FIREX Group¹, LFEX Group¹, H. Azechi¹, A. Sunahara², T. Johzaki³, T. Ozaki⁴, H. Sakagami⁴ and Z. Zhang⁵

¹Institute of Laser Engineering, Osaka Univ., Japan,

²Institute for Laser Technology, Japan ³Hiroshima Univ., Japan, ⁴National Institute for Fusion Science, Japan, ⁵Key Laboratory of Optic Physics, Institute of Physics, Chinese Academy of Sciences, China

CLES12-3 12:00

Energy Distribution of Fast Electrons Generated with Relativistic Intensity Laser Depending on Pulse Duration

S. Kojima¹, Y. Arikawa¹, A. Morace¹, S. Fujioka¹, A. Yogo¹, M. Hata¹, S. Sakata¹, S. Tosaki¹, T. Gawa¹, Y. Taguchi¹, S.-H. Lee¹, K. Matsuo¹, Y. Abe¹, H. Nagatomo¹, M. Nakai¹, H. Nishimura¹, H. Shiraga¹, A. Sunahara², T. Johzaki³, T. Ozaki⁴, H. Sakagami⁴, H. Azechi¹, FIREX Group¹ and LFEX Group¹

¹Institute of Laser Engineering, Osaka Univ., Japan,

²Institute of Laser Technology, Japan, ³Hiroshima Univ., Japan, ⁴National Institute for Fusion Science, Japan

CLES12-4 12:15

Hot Electron Behavior in Targets Observed by the Electron Spectral Meter on FIREX

T. Ozaki¹, Y. Aabe², M. Hata², K. Matsuo², S. Kojima², Y. Arikawa², S. Fujioka², S. Sakata², S.-H. Lee², H. Sakagami², A. Morace², A. Sunahara², H. Nagatomo², T. Johzaki³, A. Yogo², H. Sshiraga², H. Nishimura², H. Azechi², FIREX Group² and GXII-LFEX Group²

¹National Institute for Fusion Science, Japan,

²Institute of Laser Engineering, Osaka Univ., Suita, Japan, ³Hiroshima Univ., Japan

----- 12:30-13:30 Break -----

HEDS <Room 311+312>

[HEDS13] 11:00-12:00

Particle Acceleration IV

Chair: W. Lu

Tsinghua University, China

HEDS13-1 11:00

Recent progress on laser-plasma acceleration experiments at Shanghai Jiao Tong University

Nasr A. M. Hafz

Shanghai Jiao Tong University, China

HEDS13-2 11:20

Effect of halo-intensity distribution on the propagation of high power laser pulses in underdense plasmas

Naveen Pathak

Osaka University, Japan

HEDS13-1 11:40

Progress on Capillary Discharge Waveguide and its Pulsed-power Generator Development for Laser Wakefield Acceleration

Toru Sasaki

Nagaoka University of Technology, Japan

----- 12:00-13:00 Lunch Break -----

LEDIA <Room 411+412>

[LED6] 11:00-12:00

Nanostructures

Chair: Y. J. Kim

Program Committee Member of LEDIA '16
Yonsei Univ., Korea

LED6-1 11:00

Invited

Plasmonics toward High-Efficiency LEDs with Wide Wavelength Range

K. Okamoto

Kyushu Univ., Japan

LED6-2 11:30

Controlled Growth of Highly Elongated GaN Nanorod Arrays on AlN/Si Templates by Pulsed-Mode Metalorganic Vapor Deposition

S.-Y. Bae¹, K. Lekhal^{1,2}, B. O. Jung¹, D.-S. Lee³, M. Deki², Y. Honda², and H. Amano^{2,4}

¹Dept. of Electrical Eng. and Computer Sci., Nagoya Univ., Japan, ²Inst. of Materials and Systems for Sustainability, Nagoya Univ., Japan, ³Gwangju Inst. of Sci. and Tech., Korea, ⁴Akasaki Research Center, Nagoya Univ., Japan

LED6-3 11:45

Controlled Morphology of Regular GaN Microrod and Nanowire Arrays by Selective Area Growth with HVPE

K. Lekhal^{1,2,3}, S. Y. Bae¹, H. J. Lee¹, K. Nishi¹,

K. Saitoh¹, M. Deki², Y. Honda², and H. Amano^{2,3,4}

¹Dept. of Electrical Eng. and Computer Sci., Nagoya Univ., Japan, ²Inst. of Materials and Systems for Sustainability, Nagoya Univ., Japan, ³VBL, Nagoya Univ., Japan, ⁴Akasaki Research Center, Nagoya Univ., Japan

----- 12:00-13:15 Lunch Break -----

Oral, Friday, May 20 AM

LIC <Room 301>

LSSE <Room 316>

OMC <Room 414+415>

[LICp] 11:00-12:00
Poster Session
<Exhibition Hall A>

[OMC6] 11:00-12:00
Advanced Optical Manipulation
Chair: Saulius Juodkazis
Swinburne University, Australia

LSSE8-2 11:00 *Invited*

Development of Non-Destructive Inspection Method for Concrete Elements in Tunnel Linings Using Laser Remote Sensing

N. Misaki
West Japan Railway Company, Japan

OMC6-1 11:00 *Invited*

Laser Assembler - Fabrication, manipulation and assembly of microstructures with optical tools

Sarah Isabelle Ksouri, Christoph Böttinger, Cemal Esen, Andreas Ostendorf
Ruhr-Universitaet Bochum, Germany

Poster session program p.101

LSSE8-3 11:30 *Invited*

Development of the High Speed Inspection System of Defects Inside Concrete

K. Mikami¹, S. Kurahashi², T. Kitamura², N. Hasegawa¹, H. Okada¹, S. Kondo¹, K. Oleg², Y. Shimada², T. Kawachi¹
¹Japan Atomic Energy Agency, Japan, ²Institute for Laser Technology, Japan

OMC6-2 11:30 *Invited*

Nanostructured optical fibres for particle trapping

Sile Nic Chormaic
OIST Graduate University, Japan

----- 12:00-13:00 Lunch Break -----

----- 12:00-13:00 Lunch -----

----- 12:00-13:00 Lunch Break -----

Oral, Friday, May 20 AM

PLD <Room 413>

[PLD8] 10:30-12:15

Material Damage

Chair: TBD

PLD8-1 10:30 *Invited*

Laser damage measurement of thick silica plates using a new laser injection scheme

D. Penninckx, R. Diaz, O. Bonville, R. Courchinoux, L. Lamaignère, J. LuceçCommissariat à l'Énergie Atomique, France, Macquarie Univ., Australia

PLD8-2 11:00 *Invited*

Nanosecond laser damage of optical multimode fibers

J. Krueger
BAM, Berlin, Germany

PLD8-3 11:30 *Invited*

Adaptive Laser Beam Forming for Laser Shock Micro-Forming for 3D MEMS Devices Fabrication

K. Chen
Pittsburgh Univ. USA

PLD8-4 12:00

A PHD filter for tracking mid-course group targets via space-based laser

H. Yu, W. An, W. Sheng, X. Wang
National Univ. of Defense Technology, China

----- 12:15-13:15 Lunch Break -----

XOPT <Room 313+314>

[XOPT7] 11:00-12:00

X-ray optics (III): optics for various spectroscopic methods

Chair: A. Robert
SLAC National Accelerator Laboratory, USA

XOPT7-1 11:00

Wavelength-tunable hard X-ray split-and-delay optics at SACLA

T. Osaka¹, T. Hirano¹, Y. Sano¹, Y. Inubushi², S. Matsuyama¹, K. Tono², T. Ishikawa³, K. Yamauchi¹ and M. Yabashi³
¹Osaka University, Japan, ²JASRI, Japan, ³RIKEN SPring-8 Center, Japan

XOPT7-2 11:15

Progress on the High REsolution hard X-ray single shot spectrometer (HIREX spectrometer) for the European XFEL photon diagnostics

N. G Kujala, W. Freund, and J. Grünert
European XFEL, Germany

XOPT7-3 11:30

A Medium-resolution, non-resonant, IXS Spectrometer at BL43LXU of SPring-8

D. Ishikawa^{2,1}, H. Uchiyama^{2,1} and A.Q.R Baron¹
¹RIKEN SPring-8 Center, Japan, ²JASRI, Japan

XOPT7-4 11:45

An energy dispersive bent Laue monochromator for K-edge subtraction imaging

N. Samadi¹, M. Martinson¹, B. Basse¹, G. Belev², D. Chapman²
¹University of Saskatchewan, Canada, ²Canadian Light Source, Canada

----- 12:00-13:00 Lunch Break -----

Oral, Friday, May 20 PM

ALPS <Room 416+417>

[ALPS17] 13:00-15:00

Intense lasers

Chair: H. Minamide
 Program Committee Member
 RIKEN, Japan
 Chair: H. Nishioka
 Univ. Electro-Comm., Japan

ALPS17-1 13:00

KTA-Based Optical Parametric Amplifiers at 3.4- μm for Millijoule-Class Mid-Infrared Source

F. M. Lu, T. Kanai, Y. Matsumoto, N. Ishii, and J. Itatani
 The Inst. for Solid State Phys., The Univ. of Tokyo, Japan

ALPS17-2 13:15

0.6-3.2 μm broadband supercontinuum generation in step-index Germanium-core fiber

K. Yin, B. Zhang, L. Yang, J. Yao, Z. Chen, and J. Hou
 College of Optoelectronic Sci. and Eng., National Univ. of Defense Tech., China

ALPS17-3 13:30

Photoionization mechanisms and high-efficiency pulsed Lyman-alpha generation by resonant laser wave mixing in low pressure Kr-Ar gas

O. A. Louchev¹, N. Saito¹, Y. Oishi², K. Miyazaki¹, K. Okamura¹, J. Nakamura³, M. Iwasaki², S. Wada¹
¹RIKEN Center for Adv. Photonics, Japan, ²Adv. Meson Sci. Lab., RIKEN, Japan, ³Muon Sci. Lab., KEK-IMSS, Japan

ALPS17-4 13:45

High-efficiency LBO-based femtosecond optical parametric oscillator

W. Tian^{1,2}, X. Meng², N. Zhang^{1,2}, Z. Wang¹, J. Zhu², and Z. Wei¹
¹Beijing National Lab. for Condensed Matter Phys. Inst. of Phys., Chinese Academy of Sci., China, ²School of Phys. and Optoelectronic Eng., Xidian Univ., China

ALPS17-5 14:00

Towards an intra-cavity pulse energy of 100 μJ in an ultrafast Kerr lens mode-locked thin-disk ring oscillator

A. A. Eilanlou¹, Y. Nabekawa¹, M. K.-Gonokami^{2,3}, and K. Midorikawa^{1,2}
¹RIKEN Center for Adv. Photonics, Japan, ²Inst. for Photon Sci. and Tech., The Univ. of Tokyo, Japan, ³Grad. School of Sci., The Univ. of Tokyo, Japan

ALPS17-6 14:15

Invited

Toward compact and ultra-intense laser based soft x-ray lasers

S. Sebban¹, A. Depresseux¹, E. Oliva², J. Gautier¹, F. Tissandier¹, J. Nejdli³, M. Kozlova³, G. Maynard², J.P. Goddet¹, A. Tafzi¹, A. Lifschitz¹, H. T. Kim⁴, S. Jacquemot⁵, V. Malka¹, K. Ta Phuoc¹, C. Thaury¹, P. Rousseau¹, G. Iaquaniello¹, T. Lefrou¹, A. Flacco¹, B. Vodungbo¹, G. Lambert¹, P. Zeitoun¹ and A. Rousse¹
¹LOA, Univ. Paris-Saclay, France, ²LPGP, CNRS-Univ. France, ³ELI Beamlines Project, Czech Republic, ⁴APRI GIST, Korea, ⁵LULL, France

ALPS17-7 14:45

High Power Short Pulse CO₂ Laser for HVM EUV Lithography

H. Hamano, K. Nowak, T. Suganuma, Y. Kurosawa, Y. Kawasuji
 Gigaphoton Inc., Japan

----- 15:00-15:30 Break -----

BISC <Room 419>

[BISC7] 13:00-15:00

Nano, Fluorescence, Spectral Imaging, Biosensor

Chairs: Y. Matsuura
 Tohoku Univ., Japan
I. Ishimaru
 Kagawa Univ., Japan

BISC7-1 13:00

Invited

Application of Fluorescent Nanodiamonds to Bio-imaging

Y. Harada
 Kyoto Univ., Japan

BISC7-2 13:30

Invited

Integrated Differential Si-Ring Resonator Biosensors for Selective Detection of Antigen-Antibody Reaction

S. Yokoyama^{1,2}, T. Taniguchi^{2,1}, T. Ikeda^{3,1}, A. Kuroda^{3,1}
¹Res. Inst. Nanodevice and Bio Sys., Hiroshima Univ., Japan, ²Dept. Semicon. Electr. Integ. Sci., Hiroshima Univ., Japan, ³School of Advanced Sci. Matter, Hiroshima Univ., Japan

BISC7-3 14:00

Optical Far-field Nanoscopy with Local Probes

X. Chen, F. Sun
 Univ. of Science and Technology of China, China

BISC7-4 14:15

Enhanced Imaging of Lipid in Atherosclerotic Tissue-mimicking Phantom by Multispectral Angioscope at Wavelengths around 1200 nm

D. Matsui¹, K. Ishii¹, K. Awazu^{1,2,3}
¹Graduate School of Eng., Osaka Univ., Japan, ²Graduate School of Frontier Biosciences, Osaka Univ., Japan, ³Global Center for Med. Eng. Informat., Osaka Univ., Japan

BISC7-5 14:30

Bayesian-based Localization of Fluorescence-encoded Images for Single Shot Super-resolution Fluorescence Imaging

H. Kimura, T. Nishimura, Y. Ogura, J. Tanida
 Osaka Univ., Japan

----- 14:45-15:15 Break -----

Oral, Friday, May 20 PM

CLES <Room 418>

[CLES13] 13:30-14:30
Super Penetration and NIF Status and Prospects
 Chair: H. Shiraga
 Institute of Laser Engineering, Osaka Univ.

CLES13-1 13:30 *Invited*

Relativistic Laser Self-Focusing Approach toward Fast Ignition

K. Tanaka, Osaka Univ., Japan

CLES13-2 14:00 *Invited*

Status of the Ignition Program on the National Ignition Facility

P. Patel
 Lawrence Livermore National Laboratory, USA

[CLES14] 14:30-15:30
High Intensity Laser Development
 Chair: H. Shiraga

CLES14-1 14:30

The Challenge and Opportunity for High Power Laser Facility Development

J.-Q. Zhu, X. Li, B. Zhu, J. Zhu, D. Liu, C. Liu, G. Xu, X. Xie, Z. Liu, D. Zhao, X. Lu, Y. Zhang, Z. Jiao, W. Fan, J. Kang, X. Ouyang, J. Miao, Z. Lin and S. Wang
 Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China

CLES14-2 14:45

Diagnostics for High Power Laser in SG II Facility

X. Ouyang¹, L. Yang¹, D. Liu¹, B. Zhu¹, J. Zhu², J.-Q. Zhu¹, Z. Lin¹
¹Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China, ²Shanghai Institute of Laser Plasma, China Academy of Engineering Physics, China

HEDS <Room 311+312>

[HEDSp14] 13:00-15:00
Poster Session
<Exhibition Hall A>

Poster session program p.101

----- 15:00-15:30 Break -----

LEDIA <Room 411+412>

[LED7] 13:15-15:00
AlGaIn & Devices
 Chair: T. -C. Lu
 National Chiao Tung Univ., Taiwan

LED7-1 13:15 *Invited*

AlGaIn-based Deep UV LEDs - from Research to Real-World Applications

M. Kneissl^{1,2}, J. Enslin¹, M. Guttman¹, C. Kuhn¹, F. Mehnke¹, C. Reich¹, L. Sulmoni¹, T. Wernicke¹, J. Glaab², S. Hagedorn², A. Knauer², T. Kolbe², M. Lapeyrade², N. Lobo-Ploch², C. Netzel², J. Raß², C. Stölmacker², U. Zeimer², S. Einfeldt², and M. Weyers²
¹Technical Univ. Berlin, Germany, ²Leibniz-Institut für Höchstfrequenztechnik, Germany

LED7-2 13:45 *Invited*

Preferential Outcoupling of Strong in-Plane Emission from AlGaIn-based Deep-Ultraviolet Light-Emitting Diodes

J. W. Lee¹, D. Y. Kim¹, J. H. Park¹, E. F. Schubert², J. Kim³, J. Lee³, Y. Kim³, Y. Park³, and J. K. Kim¹
¹POSTECH, Korea, ²ECES Dept. Rensselaer Polytechnic Inst., U.S.A., ³Samsung Electronics, Korea

LED7-3 14:15

Strongly TE-Polarized Emission from Deep UV AlGaIn Quantum Well LEDs

C. Reich¹, M. Feneberg², M. Guttman¹, T. Wernicke¹, F. Mehnke¹, and M. Kneissl¹
¹Technical Univ. Berlin, Germany, ²Otto-von-Guericke-Univ. Magdeburg, Germany

LED7-4 14:30

Polarization Induced Hole Accumulations in Nitride Semiconductor Heterostructures

T. Yasuda¹, S. Yoshida¹, T. Takeuchi¹, M. Iwaya¹, S. Kamiyama¹, I. Akasaki^{1,2}, and H. Amano^{2,3}
¹Meijo Univ., Japan, ²Akasaki Research Center, Nagoya Univ., Japan, ³Inst. of Materials and Systems for Sustainability, Nagoya Univ., Japan

LED7-5 14:45

Current Transport Mechanism of Graphene/AlGaIn Schottky Barrier Diodes

B. Pandit¹, T. H. Seo², B. D. Ryu¹, and J. Cho¹
¹Chonbuk National Univ., Korea, ²Korea Inst. of Sci. and Tech., Korea

----- 15:00-15:30 Break -----

Fri, 20 May, PM

Oral, Friday, May 20 PM

LIC <Room 301>

[LIC7] 13:00-14:00
Nonlinear optics
 Chair: N. Pavel
 INFLPR, Romania

LIC7-1 13:00 *Invited*

Terahertz-wave technology based on nonlinear optical effect and sub-nanosecond pulse laser
 H. Minamide
 Teraphotonics Lab., RIKEN Center for Advanced Photonics, RIKEN, Japan

LIC7-2 13:30

Compact passive Q-switched planar-waveguide laser at 355 nm with intra-cavity frequency conversion
 K. Sakai¹, F. Shohda¹, H. Fukahori², and T. Yanagisawa¹
¹Information Technology R&D Center, Mitsubishi Electric Co., Japan, ²Nagoya Works, Mitsubishi Electric Co., Japan

LIC7-3 13:45

Temperature stable giant-pulse green micro-laser
 A. Kausas¹, P. Loiseau², G. Aka³, Y. Zheng³, and T. Taira¹
¹Inst. Mol. Sci., Japan, ²PSL Research Univ., IRCP, Chimie ParisTech., France, ³Shanghai Inst. Ceram., Chinese Acad. Sci., China

[LIC8] 14:00-16:15
Advanced ignition systems for stationary power generation
 Chair: T. Saito
 Meisei Univ., Japan

LIC8-1 14:00 *Invited*

Performance of SI and LI Spark Plugs and That of Spark Plugs Equipped With a Prechamber
 S. Gupta¹, B. Bihari¹, M. Biruduganti¹, N. Polcyn², J. U. Hwang², and K. Kanehara²
¹Argonne Nat. Lab., USA, ²DENSO International

LIC8-2 14:30

Performance Benefits of Laser Ignition in a Natural Gas 6-cylinder Engine
 S. Gupta¹, B. Bihari¹, and M. Biruduganti¹, Qing Wang², and R. V. Leeuwen²
¹Argonne Nat. Lab., USA, ²Princeton Optronics, USA

LIC8-3 14:45 *Invited*

Designing the Flame Kernel Structure -by the Laser Pulse Profile
 S. Lorenz and D. Brüggemann
 Univ. Bayreuth, Germany

----- 15:15-15:30 Break -----

LSSE <Room 316>

[LSSE9] 13:00-14:50
Maintenance of Social Infrastructure 4
 Chair: H. Daido
 Applied Laser Technology Institute, Japan
 Atomic Energy Agency, Japan

LSSE9-1 13:00

A Mobile Laser-Based System for Remote Inspection of Shinkansen Tunnels
 O. Kotyayev¹, Y. Shimada¹, N. Misaki²
¹Institute for Laser Technology, Japan, ²West Japan Railway Company, Japan

LSSE9-2 13:20

Performance of Material Removal in Pulsed Laser Irradiation on Concrete
 N. P. Long¹, H. Daido¹, Y. Matsunaga¹, T. Yamada¹, A. Nishimura², T. Kawach²
¹Applied Laser Technology Institute, Japan Atomic Energy Agency, Japan, ²Kansai Photon Institute, Japan Atomic Energy Agency, Japan

LSSE9-3 13:40 *Invited*

Development of Nuclear Emergency Response Robots at Naraha Remote Technology Center Relevant to the Laser Technology
 S. Kawatsuma, K. Kawabata
 Japan Atomic Energy Agency, Japan

LSSE9-4 14:10

Development of Laser Cutting for Thick Steels up to 300 mm for Nuclear Plant Decommissioning
 S. Toyama¹, R. Ishigami¹, K. Tamura²
¹The Wakasa Wan Energy Res. Center, Japan, ²Quantum Beam Science Center, Japan

LSSE9-5 14:30

Technologies of Laser Decontamination and Robotics for Nuclear Reactor Decommissioning
 E. J. Minehara^{1,2}, R. Yamagishi¹
¹The Wakasa Wan Energy Res. Center, Japan, ²LAND Corporation, Japan

[Closing] 14:50-15:00

Closing Remarks 14:50
 T. Ebisuzaki
Conference Chair of LSSE 2016
 Chief Scientist, Computational Astrophysics Laboratory, RIKEN, Japan

OMC <Room 414+415>

[OMCp] 13:00-14:30
Poster Session
<Exhibition Hall A>

Poster session program p.102

[OMC7] 14:45-15:45
Photon Radiation Forces
 Chair: Yoshihiko Arita
 University of St Andrews, U.K., MCRC
 Chiba University, Japan

OMC7-1 14:45

Effect of optical manipulation on the $\alpha\eta$ protocol
 Vladimir V. Nikulin¹, David H. Hughes², John Malowicki²
¹State University of New York, USA, ²Air Force Research Laboratory, USA

OMC7-2 15:00

Dependence of radiation forces on an ellipsoidal particle on the beam polarization state
 Kristine Faith J. Roque, Giovanni A. Tapang, Caesar A. Saloma
 University of the Philippines, Philippines

OMC7-3 15:15

Polarization-inverted modes in optically trapped metallic nanoparticles for the excitation of forbidden states
 Mamoru Tamura, Takuya Iida
 Department of Physical Science, Graduate School of Science, Osaka Prefecture University, Japan

OMC7-4 15:30

Raman Microspectroscopy for determining Polymer Concentration in an Optically Trapped Poly(N-isopropylacrylamide).
 Tatsuya Shoji, Kenta Ushiro, Mitsuhiro Matsumoto, Taka-aki Asoh, Yasuyuki Tsuboi
 Division of Molecular Materials Science, Graduate School of Science, Osaka City University, Japan

----- 15:45-16:15 Break -----

Oral, Friday, May 20 PM

PLD <Room 413>

[PLD9] 13:15-15:15
Defect, Contamination(1)
 Chair: TBD

PLD9-1 13:15 *Invited*

Refractive index change mechanisms in different glasses induced by femtosecond laser irradiation

A. Fürbach, S. Gross, D. J. Little, A. A. Martiarena, A. A. Martiarena, M. Ams, P. Dekker, M. J. Withford
 Macquarie Univ., Australia

PLD9-2 13:45

Research on nondestructive evaluation of fused silica UV damage performance

H. Liu, F. Wang, X. Jiang
 China Academy of Engineering Physics, China

PLD9-3 14:00

Laser-induced damage thresholds by double pulses with interval time

S. Motokoshi, Y. Takemura¹, T. Jitsuno², M. Yoshida¹, J. Kawanaka²
 Institute for Laser Technology, Japan, ¹Kinki Univ., Japan, ²Osaka Univ., Japan

PLD9-4 14:15

Enhanced internal reflection microscopy for sub-surface damage inspection

L. Xu, K. Ni¹, R. H. Zhu, S. Liu¹
¹Nanjing university of science and technology, China

PLD9-5 14:30

Influence of bulk defects on bulk damage performance of fused silica optics in 355nm pulse laser

J. Huang
 China Academy of Engineering Physics, China

PLD9-6 14:45

Laser damage mechanisms of different-sized substrate pits in high-reflective mirrors

Y. Chai^{1,2}, M. Zhu¹, K. Yi¹, H. Xing^{1,2}, J. Sun¹, J. Shao¹
¹Shanghai Inst. of Opt. Fine Mech., China, ²Graduate School of Chinese Academy of Sciences, Beijing, China

PLD9-7 15:00

Multi-modality laser scanning microscopy at 355nm for defect characterization of optical materials

J. Chen, B. Li, J. Dong, Z. Wu
 ZC Optoelectronic Technologies Ltd., China

PLD9-8 15:15

Optimization Design and laser damage threshold analysis of pulse compression gratings

S. Fan, L. Bai, S. Jia
 Xi'an Jiaotong Univ., China

----- 15:30-15:45 Break -----

XOPT <Room 313+314>

[XOPT8] 13:00-14:30
Poster Session
 <Exhibition Hall A>

Poster session program p.103

----- 14:30-15:30 Break -----

[XOPT9] 15:30-15:45
X-ray optics for advanced light sources
 Chair: K. Tono
 SPring-8/SACLA, Japan

XOPT9-1 15:30

Single crystal optics at the high repetition rate European XFEL

L. Samoylova and H. Sinn
 European XFEL Facility, Germany

[XOPT10] 15:45-16:00

X-ray sources
 Chair: K. Tono
 SPring-8/SACLA, Japan

XOPT10-1 15:45

Demonstration of Multibunch Operation from a Compact Laser-Compton x-ray Source

D. J. Gibson¹, G. G. Anderson¹, Y. Hwang², R. A. Marsh¹, and C. P. J. Barty¹
¹Lawrence Livermore National Laboratory, USA, ²UC Irvine, USA

Oral, Friday, May 20 PM

ALPS <Room 416+417>

[ALPS18] 15:30-16:30

New sources

Chair: F. Kannari
Steering Committee Chair
Keio Univ., Japan

ALPS18-1 15:30

High-energy picosecond source based on an hybrid architecture

J. Pouysegur¹, F. Guichard¹, Y. Zaouter¹, Q. Moeae¹, M. Hanna², F. Druon², C. Hönninger², E. Mottay², and P. Georges²

¹Amplitude Systèmes, France, ²Lab. Charles Fabry, France

ALPS18-2 15:45

A cryogenically cooled Nd:YLF laser with orthogonally polarized emission

T.-L. Huang, C.-Y. Cho, Y.-F. Chen
Dept. of Electrophysics, National Chiao Tung Univ., Taiwan

ALPS18-3 16:00

Development of a 1 J Yb:YAG TRAM amplifier cooled by a closed-cycle cryocooler

K. Iyama^{1,2}, S. Tokita¹, T. Kawashima², J. Kawanaka¹
¹IIE, Osaka Univ., Japan, ²Hamamatsu Photonics K.K., Japan

ALPS18-4 16:15

High-power coherent beam combining (CBC): Beam quality and coupling efficiency in CBC

H. Chosrowjan¹, T. Kitamura¹, S. Taniguchi¹, M. Fujita^{1,2}, K. Tsubakimoto², H. Yoshida², N. Miyanaga², and Y. Izawa¹
¹Inst. for Laser Tech., Japan, ²Inst. of Laser Eng., Japan

[Closing] 16:30

Award Ceremony 16:30-16:40

N. Nishizawa
Program Committee Chair
Nagoya Univ., Japan

Closing Remarks 16:40-16:50

F. Kannari
Steering Committee Chair
Keio Univ., Japan

BISC <Room 419>

[BISC8] 15:15-17:30

Brain imaging, spectral imaging, image processing

Chairs: E. Okada Keio Univ., Japan
Y. Otani Utsunomiya Univ., Japan

BISC8-1 15:15 *Invited*

Visible Brain-wide Networks at Single-neuron Resolution

Q. Luo
Huazhong Univ. of Science and Technology, China

BISC8-2 15:45

A New Strategy of the Time-domain Fluorescence Imaging for a Semi-infinite Turbid Media

K. Prieto, G. Nishimura
Hokkaido Univ., Japan

BISC8-3 16:00

Determination of Anisotropy Factor Spectrum for Biological Tissue Based on Spectroscopic Measurement of Scattering Angular Distributions

M. Iwamoto¹, K. Ishii¹, D. Fukutomi¹, D. Matsui¹, K. Awazu^{1,2,3}
¹Graduate School of Eng., Osaka Univ., Japan, ²Graduate School of Frontier Biosciences, Osaka Univ. Japan, ³Global Center for Med. Eng. Informat., Osaka Univ. Japan

BISC8-4 16:15

In vivo Imaging of Hemodynamics in Liver Tissue during Ischemia- Reperfusion Based on Spectrocolorimetry

S. Akter¹, S. Maejima², S. Kawauchi³, S. Sato³, A. Hinoki¹, S. Aosasa², J. Yamamoto², I. Nishidate¹
¹Graduate School of Bio-Appl. Sys. Eng., Tokyo Univ. of Agriculture and Technology, Japan, ²Dept. of Surgery, National Defense Medical College, Japan, ³Division of Biomedical Information Sciences, National Defense Medical College Research Institute, Japan

BISC8-5 16:30

Evaluation of Spontaneous Low-frequency Oscillations in Cerebral Intrinsic Optical Signals with a Digital Red-green-blue Camera

A. Mustari¹, Y. Aoki¹, I. Nishidate¹, S. Kawauchi², S. Sato², M. Sato³
¹Graduate School of Bio-Appl. Sys. Eng., Tokyo Univ. of Agriculture and Technology, Japan, ²Division of Biomedical Information Sciences, National Defense Medical College Research Institute, Japan, ³Graduate School of Science and Engineering, Yamagata Univ. Japan

BISC8-6 16:45

Noncontact Image Sensing of Pulse Wave Velocity Using Digital Red-Green-Blue Images

K. Nakano¹, Y. Aoki², R. Satoh², H. Suzuki³, I. Nishidate²
¹Faculty of Sci. Division, Tokyo Univ. of Science, Japan, ²Graduate School of Bio-appl. Sys. Eng., Tokyo Univ. of Agriculture and Technology, Japan, ³Imaging Science and Engineering Laboratory, Tokyo Institute of Technology, Japan

BISC8-7 17:00

Processing Dental X-ray Images by Shearlet Transform

L. Cadena¹, N. Espinosa¹, F. Cadena², D. Barkova³
¹Universidad de las Fuerzas Armadas ESPE, Ecuador, ²Colegio Fiscal Eloy Alfaro, Ecuador, ³Siberian Federal Univ., Russia

BISC8-8 17:15

Acousto-optic Enhancement of Image Contrast for Morphological Diagnostics Cancer

K. B. Yushkov¹, V. Y. Molchanov¹, S. I. Chizhikov¹, P. V. Belousov², A. Y. Abrosimov³
¹National Univ. of Science and Technology, MISIS, Russia, ²Faculty of Biology, Lomonosov Moscow State Univ., Russia, ³Endocrinology Research Center, Russia

[Closing] 17:30-17:40

Closing Remark 17:30

O. Matoba Kobe Univ., Japan

Oral, Friday, May 20 PM

CLES <Room 418>	HEDS <Room 311+312>	LEDIA <Room 411+412>
<p>CLES13-3 15:00 <i>Invited</i></p> <p>Ultrahigh, Efficiency Exawatt Technology for Full-Scale Fast Ignition</p> <p>C. Barty Lawrence Livermore National Laboratory, USA</p> <p>----- 15:30-16:00 Break -----</p>	<p>[HEDS15] 15:30-17:10</p> <p>Particle Acceleration V & Radiation Sources III</p> <p>Chair: K. Koyama KEK, University of Tokyo, Japan</p>	<p>[LED8] 15:30-17:00</p> <p>Lasers</p> <p>Chair: M. Kneissl Technical Univ. Berlin, Germany</p>
	<p>HEDS15-1 15:30</p> <p>On the mismatch in stimulated scattering processes in inhomogeneous plasmas</p> <p>Tao Gong Osaka University, Japan</p>	<p>LED8-1 15:30 <i>Invited</i></p> <p>Design and Characteristics of GaN-based VCSELs</p> <p>T. C. Lu, H. C. Kuo, and S. C. Wang National Chiao Tung Univ., Taiwan</p>
<p>[Summary]</p> <p>[Closing] 16:00-17:30</p> <p>Closing Remarks 16:00</p> <p>H. Azechi Conference Chair of CLES 2016 Director, Institute of Laser Engineering, Osaka Univ., Japan</p>	<p>HEDS15-2 15:50 <i>Invited</i></p> <p>Present status of the upgrade of the J-KAREN laser system and experimental results from the first light experiment</p> <p>Mamiko Nishiuchi QST, Japan</p>	<p>LED8-2 16:00</p> <p>GaN-based VCSELs using Periodic Gain Structures</p> <p>K. Matsui¹, K. Ikeyama¹, T. Furuta¹, Y. Kozuka¹, T. Akagi¹, T. Takeuchi¹, S. Kamiyama¹, M. Iwaya¹, and I. Akasaki^{1,2} ¹Meijo Univ., Japan, ²Akasaka Research Center, Nagoya Univ., Japan</p>
	<p>HEDS15-3 16:20</p> <p>Development of Experimental Platform for High Energy Density Sciences at SACLA X-ray Free Electron Laser Facility</p> <p>Toshinori Yabuuchi RIKEN, Japan</p>	<p>LED8-3 16:15</p> <p>Suppressing the Incorporation of Carbon Impurity in AlGaIn:Mg for Green LDs with Low Operation Voltage</p> <p>J. Liu^{1,2}, A. Tian^{1,2}, M. Ikeda^{1,2}, L. Zhang^{1,2}, S. Zhang^{1,2}, D. Li^{1,2}, and H. Yang^{1,2} ¹Suzhou Inst. of Nano-tech and Nano-bionics, Chinese Academy of Sciences, China, ²Key Lab. of Nanodevices and Applications, Chinese Academy of Sciences, China</p>
	<p>HEDS15-4 16:40 <i>Special</i></p> <p>Hot-Electron Refluxing in Thin Foils Irradiated by Ultraintense Laser Pulses and Highly Efficient Terahertz Radiation</p> <p>Zhan Jin Osaka University, Japan</p>	<p>LED8-4 16:30</p> <p>Opto-electrical Properties of Tapered (Al,In) GaN Laser Diodes</p> <p>S. Stanczyk¹, A. Kafar¹, A. Nowakowska-Siwinska², I. Makarowa², M. Sarzynski^{1,2}, J. Walczak³, R. Sarzala³, T. Suski¹, and P. Perlin^{1,2} ¹Inst. of High Pressure Physics PAS., Poland, ²TopGaN Ltd., Poland, ³Inst. of Physics, Lodz Univ. of Tech., Poland</p>
		<p>LED8-5 16:45</p> <p>Nitride Superluminescent Diodes with Broadband Emission Spectra Realized by Step-like Indium Content Profile</p> <p>A. Kafar¹, S. Stanczyk¹, M. Sarzynski^{1,2}, S. Grzanka^{1,2}, J. Goss¹, T. Suski¹, and P. Perlin^{1,2} ¹Inst. of High Pressure Physics PAS., Poland, ²TopGaN Ltd., Poland</p>
		<p>[LED9] 17:00-17:30</p> <p>Tutorial</p> <p>Chair: B. Monemar Advisory Member of LEDIA '16 Linköping Univ. & Lund Univ., Sweden</p>
		<p>LED9-1 17:00 <i>Invited</i></p> <p>Integrated GaN-based Light-Emitting Diodes for Micro Displays</p> <p>T. Honda, T. Yamaguchi, and T. Onuma Kogakuin Univ., Japan</p>
	<p>[Closing] 17:10-17:25</p> <p>Closing Remarks 17:10</p> <p>S.V. Bulanov QST, Japan</p>	<p>[Closing] 17:30-17:45</p> <p>Closing Remarks 17:30</p> <p>T. Takeuchi Program Committee Chair of LEDIA '16 Meijo Univ., Japan</p>

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LIC <Room 301>

LSSE <Room 316>

OMC <Room 414+415>

LIC8-4 15:30

Minimum Operating Requirements for Laser Ignition in Gas Turbines

J. Griffiths, A. Kirk, and C. Dowding
School of Eng., Univ. Lincoln, UK

LIC8-5 15:45

Invited

Characteristics of microwave- enhanced laser ignition

J. Hayashi¹, C. Liu¹, F. Akamatsu¹, A. Nishiyama²,
A. Moon², and Y. Ikeda²
¹Osaka Univ., Japan, ²Imaging Engineering, Japan

[LIC9] 16:15-17:45

Micro solid state photonics

Chair: Y. Oki
Kyushu Univ., Japan

LIC9-1 16:15

Invited

Magneto-optical Q-switching with magnetic garnet film

T. Goto¹, R. Morimoto¹, J. W. Pritchard¹,
T. Yoshimoto¹, H. Takagi¹, Y. Nakamura¹, P. B. Lim¹,
M. Mina¹, T. Taira², and M. Inoue¹
¹Toyohashi Inst. Tech., Japan, ²Inst. Mol. Sci., Japan

LIC9-2 16:45

An energy adjustable linearly polarized passively Q-switched bulk laser with a wedged diffusion bonded Nd:YAG/Cr⁴⁺:YAG crystal

H. P. Cheng, C. Y. Cho, P. H. Tuan, and Y. F. Chen
Depart. Electrophysics, Nat. Chiao Tung Univ.,
Taiwan

LIC9-3 17:00

Minimum air-breakdown energy using giant-pulse width tunable system based on microchip laser

H. H. Lim and T. Taira
Inst. Mol. Sci., Japan

LIC9-4 17:15

Invited

Laser Ceramics

H. -Yagi, K. Muramatsu, and T. Yanagitani
Konoshima Chemical Co., Ltd., Japan

[Closing] 17:45-18:00

Award and Closing remarks

T. Taira
Inst. Mol. Sci., Japan

[OMC8] 16:15-17:30

Hydrodynamics & Plasmonics

Chair: Ryuji Morita
Hokkaido University, Japan

OMC8-1 16:15

Invited

Collective motion of hydrodynamically coupled micro-objects driven by optical force

Shogo Okubo, Shuhei Shibata,
Yuriko Sassa Kawamura and Yasuyuki Kimura
Kyusyu University, Japan

OMC8-2 16:45

Phase tunable anisotropic metamaterials for nano-object detection and manipulation

Marios Sergides, Viet Giang Truong, and
Sile Nic Chormaic
Light-Matter Interactions Unit, OIST Graduate
University, Japan

OMC8-3 17:00

Evolution of Surface-Enhanced Raman Scattering Intensity at Metal Surface under Electrochemical Potential Control

Kei Murakoshi¹, Yumi Wakisaka¹, Mai Takase¹,
Hiro Minamimoto¹, Satoshi Yasuda¹, Syoji Ito²,
Hiroshi Miyasaka², Tatsuya Shoji³, Yasuyuki Tsuboi³
Department of Chemistry, Hokkaido University,
Japan, ¹Department of Chemistry, Faculty of
Science, Hokkaido University, Japan, ²Division of
Frontier Materials Science and Center for
Promotion of Advanced Interdisciplinary Research,
Graduate School of Engineering Science, Osaka
University, Japan, ³Division of Molecular Materials
Science, Graduate School of Science, Osaka City
University, Japan

OMC8-4 17:15

Plasmon-induced Photosensitization of Porous TiO₂ Electrodes with Au-Ag Alloy Nanoparticles Prepared by Ionic Liquid/Metal Sputter Deposition

Tatsuya Kameyama¹, Eisaku Kumazawa¹,
Susumu Kuwabata², Tsukasa Torimoto¹
¹Nagoya University, Japan, ²Osaka University, Japan

[Closing] 17:30-

Closing Remarks

Takashige Omatsu
OMC '16 Chair, Chiba Univ., Japan.

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PLD <Room 413>

[PLD10] 15:45-17:00
Defect, Contamination(2)
 Chair: TBD

PLD10-1 15:45

Effectiveness of substrate ion cleaning to improve the laser damage threshold of HfO₂/SiO₂ optical coatings for 527 nm and 1054 nm

E. S. Field, J. C. Bellum, D. E. Kletecka
 Sandia National Labs., USA

PLD10-2 16:00

LIC and LID considerations in the design and implementation of the MEMS laser pointing mechanism for the EUSO UV laser altimeter

E. Bozzo, T. Burch¹, A. Ciapponi², C. Heese², A. Hoogerwerf, N. Lan², A. Neronov, V. Revol¹
 ISDC Data Ctr. for Astrophysics, Switzerland, ¹Ctr. Suisse d'Electronique et de Microtechnique SA, Switzerland, ²European Space Research and Technology Ctr., Netherlands

PLD10-3 16:15

Source of contamination in damage-test sample and vacuum chamber

T. Jitsuno, H. Murakami, S. Motokoshi¹, T. Mikami², T. Kawasaki, J. Kawanaka, N. Miyanaga
 Osaka Univ., ¹Instit. Laser Tech., ²Okamoto Optical Works

PLD10-4 16:30

How much laser interferometry effective in the detection of gravitational waves used in LIGO at India and elsewhere

U. P. Verma
 Patna Science College, India

[Closing Remarks]

16:45

T. Jitsuno
Steering Committee Co-Chair
 ILE Osaka Univ., Japan

16:50

J. Shao
Organizing Committee Chair
 SIOM Shanghai, China

XOPT <Room 313+314>

[XOPT11] 16:00-17:15
X-ray diagnostics

Chair: K. Tono
 SPring-8/SACLA, Japan

XOPT11-1 16:00

Using high resolution LiF crystal X-ray detector for in situ characterization of XFEL beam intensity distribution and focusability

T. Pikuz^{1,4}, A. Faenov^{2,3}, T. Matsuoka³, B. Albertazzi⁴, N. Ozaki^{1,4}, N. Hartely⁴, O. Muray Ricardo Arturo^{1,4}, T. Yabuuchi⁴, H. Habara⁴, S. Matsuyama⁴, K. Yamauchi⁴, Y. Inubushi⁵, T. Togashi⁵, H. Yumoto⁵, Y. Tange⁵, K. Tono⁵, Y. Sato⁴, M. Yabashi^{5,6}, M. Nishikino⁷, T. Kawachi⁷, A. Mitrofanov², D. Bleiner⁸, A. Grum-Grzhimailo⁹, N.N. Rosanov¹⁰, N.V. Vysotina¹⁰, M. Harmand¹¹, M. Koenig^{4,12}, K. A. Tanaka^{1,4}, T. Ishikawa^{5,6}, R. Kodama^{1,3,4}
¹Photon Pioneers Center, Osaka University, Japan, ²Joint Institute for High Temperatures, Russian Academy of Sciences, Russia, ³Institute for Academic Initiatives, Osaka University, Japan, ⁴Graduate School of Engineering, Osaka University, Japan, ⁵JASRI/SPring-8, Japan, ⁶RIKEN Harima Institute, Japan, ⁷Quantum Beam Science Center, Japan Atomic Energy Agency, Japan, ⁸EMPA Materials Science and Technology, Switzerland, ⁹Skobel'syn Institute of Nuclear Physics, Lomonosov Moscow State University, Russia, ¹⁰Vavilov State Optical Institute, Russia, ¹¹IMPMC, Université Pierre et Marie Curie, France, ¹²LULI, Ecole Polytechnique, France

XOPT11-2 16:15

Two-dimensional Coherence Measurements of FEL Radiation: the Heterodyne Speckle Approach

M. Manfredda^{1,3}, M.D. Alaimo^{2,3}, M. Potenza³, M. Giglio³
¹Elettra, Italy, ²Politecnico di Milano, Italy, ³Università degli studi di Milano, Italy

XOPT11-3 16:30

Wavefront Sensor based diagnostic of FERMI FEL photon beam

L. Raimondi¹, N. Mahne¹, M. Manfredda¹, C. Svetina^{1,4}, D. Cocco², F. Capotondi¹, E. Pedersoli¹, M. Kiskinova¹, and M. Zangrando^{1,3}
¹Elettra-Sincrotrone Trieste ScpA, Italy, ²SLAC National Accelerator Laboratory, USA, ³CNR – Consiglio Nazionale delle Ricerche Istituto Officina dei Materiali, Italy, ⁴University of Trieste, Italy

XOPT11-4 16:45

Capturing ultrafast X-ray damage processes using an X-ray-X-ray pump-probe scheme

I. Inoue¹, Y. Inubushi^{1,2}, K. Tono^{1,2}, T. Hara¹, and M. Yabashi^{1,2}
¹RIKEN SPring-8 Center, Japan, ²JASRI, Japan

XOPT11-5 17:00

First result of PSI/SACLA collaborative campaign on temporal diagnostics

P. N. Juranić¹, G. Ishkhan^{1,2}, C. Erny¹, R. Ischebeck¹, L. Patthey¹, C. Pradervand¹, C. Milne¹, H. Lemke¹, A. Dax³, C. Hauri^{1,2}, S. Owada³, T. Togashi³, T. Katayama³, and Makina Yabashi³
¹Paul Scherrer Institut, Switzerland, ²Ecole Polytechnique Federale de Lausanne, Switzerland, ³RIKEN SPring-8 Center, Japan

[Closing] 17:15-17:20

XOPT Closing Remarks 17:15

T. Ishikawa
 RIKEN SPring-8 Center

Poster Session <Exhibition Hall A>

Thursday, May 19

LSSEp5 10:30-12:00

Chair: Y. Takizawa
Computational Astrophysics Laboratory,
RIKEN, Japan

LSSEp5-1

NMPC Tracking Guidance Strategy for Low Earth Orbit Based on the Laser Solutions

T. Jin, J. Cai
Institute of Microelectronics of Chinese Academy of Science, China

LSSEp5-2

Sodium Lidar Observations for Upper Atmospheric Research at Tromsø, Norway in Arctic

T. T. Tsuda¹, S. Nozawa², N. Saito³, T. D. Kawahara⁴, T. Kawabata², T. Takahashi⁵, C. M. Hall⁶, T. Tsukahara³, S. Wada³, S. Oyama², Y. Ogawa⁷, K. Hosokawa¹

¹Dept. of Comm. Eng. and Informatics, Univ. Electro-Comm., Japan, ²ISEE, Nagoya Univ., Japan, ³RIKEN Center for Adv. Photonics, Japan, ⁴Shinshu Univ., Japan, ⁵SSRE, Univ. Electro-Comm., Japan, ⁶The Arctic Univ. of Norway, Norway, ⁷National Inst. of Polar Research, Japan

LSSEp5-3

Study on the data Matching of Ground-Based Radar and Laser Point Cloud

Q. Zhiwei^{1,2}, Y. Jianping¹, Y. Shun¹, X. Ying¹
¹Hohai Univ., Earth Sci. and Eng., China, ²Henan Univ. Urban Construction, China

LSSEp5-4

Optimum Design and Experimental Verification of Bipod Flexures for a Remote Sensing Instrument Mirror

C. Y. Chan¹, B. K. Huang², Y. C. Chen², T. M. Huang¹
¹Inst. Tech. Res. Center, National Applied Res. Laboratories, Taiwan, ²Dept. of Mechanical Eng., National Central University, Taiwan

LSSEp5-5

Stand-off Detection of Energetic Materials by Laser-Induced Breakdown Spectroscopy

Y. Ueda, K. Sugiyama, Y. Yanagida
Ammunition and Energetics Res. Section, Ballistics Res. Division, Grand Systems Res. Center, Acquisition, Tech. and Logistics Agency, Japan

LSSEp5-6

Standoff Measurement of Salt Deposition on Insulator Using Laser-induced Breakdown Spectroscopy

K. Motoki¹, T. Fujii^{1,2}, K. Yaji², S. Eto², E. Hotta¹
¹Tokyo Institute of Technology, Japan, ²Central Res. Inst. of Electric Power, Japan

LSSEp5-7

Rapid Detection of Trace Elements Using Laser Breakdown Time-of-Flight Mass Spectrometry

A. Ikutomo¹, Y. Deguchi¹, S. Katsumori¹, T. Komatsubara¹, R. Liu^{1,2}, Z. Wang², J. Yan², J. Liu²
¹Tokushima University, Japan, ²Xi'an Jiaotong University, China

ALPSP14 13:00-15:00

ALPSP14-01

The Effects on the Microstructures and Photoluminescence Properties of the IGZO Films in Various Sputtering Angles

T-C Li, J.-F. Lin
National Cheng Kung Univ., Taiwan

ALPSP14-02

Mutual Influence of Silica Oxide and Calcium Oxide on Transparency of Cr³⁺:YAG Ceramics

M. Chaika, O. Vovk, N. Dulina, A. Doroshenko, S. Parkhomenko, A. Tolmachev
Inst. for Single Crystals of National Academy of Sci. of Ukraine, Ukraine

ALPSP14-03

p-i-n Integrated Photonic Crystal Nanocavity Optical Functional Device

N. Ashikin B. Daud¹, Y. Ooka², T. Tanabe³
Faculty of Sci. and Tech., Keio Univ., Japan

ALPSP14-04

Ultrafast Plasmon Source Combined with a Dual-probe Scanning Near-field Optical Microscopy for Ultrafast Spatiotemporal Nano-photonics

Y. Kojima, Y. Masaki, F. Kannari
Keio Univ., Japan

ALPSP14-05

Fabrication of Pr:ZBLAN Waveguides for Laser Using Refractive Index Change Induced by Ultra-fast Laser Pulses

T. Sato, Y. Yamanaka, and F. Kannari
Keio Univ., Japan

ALPSP14-06

Bismuth-Based Rational Harmonic Mode-Locked Short-Cavity Fiber Laser

Y. Fukuchi, T. Matsuura, A. Enda, H. Shirane, S. Takai
Tokyo Univ. of Sci., Japan

ALPSP14-07

Withdraw

ALPSP14-08

Optical Waveform Generation in a Figure-Eight SOA-Based Fiber Laser

L.-T. Gao, J.-Y. Wang, W.-H. Kuan, and K.-H. Lin
Univ. of Taipei, Taiwan

ALPSP14-09

Reflectivity of the Rotating Wedge Stimulated Brillouin Scattering Phase Conjugate Mirrors (SBS-PCMs) for High Power Laser

J. Oh, S. Cha, S. Park, and H. J. Kong
KAIST, Korea

ALPSP14-10

Development of a longitudinally excited CO₂ laser using fast high-voltage solid state switch

M. Tanaka¹, M. Tei¹, K. Uno², M. Tsuyama¹, H. Nakano¹
¹Kindai Univ., Japan, ²Univ. of Yamanashi, Japan

ALPSP14-11

Pr³⁺:YLF Visible Lasers Directly Pumped by InGaN Diode Lasers

K. Iijima, R. Kariyama, H. Tanaka, Y. Kiyota, F. Kannari
Keio Univ., Japan

ALPSP14-12

Analysis of fluorescence properties for exciting in Cr³⁺ ⁴T₁ level of Nd/Cr:YAG ceramics

T. Yamada¹, Y. Honda², S. Motokoshi³, T. Jitsuno², J. Kawanaka², K. Fujioka², M. Yoshida¹
¹Kinki Univ., Japan, ²ILE Osaka Univ., Japan, ³ILT, Japan

ALPSP14-13

Recyclable metal air cell using sintered Si pastes with reduced Si nanoparticles by pulse laser ablation in liquids

T. Saiki, K. Nakamura, S. Nakata, K. Nakamura, T. Uematsu, S. Masuda
Dept. of Electrical and Electronic Eng., Faculty of Eng. Sci., Kansai Univ., Japan

ALPSP14-14

Fabrication of Core Inductor Using Sintered Aluminum Nano-paste with Aluminum Nano-polycrystalline structure

T. Saiki, Y. Iida, S. Masuda
Dept. of Electrical and Electronic Eng. Faculty of Eng. Sci., Kansai Univ., Japan

ALPSP14-15

A monolithic 0.8 to 4.5 μm supercontinuum source with a low-loss fusion spliced joint between silica and fluoride fibers

K. Yin, B. Zhang, J. Yao, Z. Chen, S. Chen, and J. Hou
College of Optoelectronic Sci. and Eng., National Univ. of Defense Tech., China

ALPSP14-16

Influence of pulse delay time on material processing by double pulses of femtosecond lasers

T. Sugihara¹, S. Kubodera¹, M. Kaku¹, A. Yokotani¹, M. Katto^{1,2}
¹Grad. School of Eng., Univ. of Miyazaki, Japan, ²CRCC, Univ. of Miyazaki, Japan

ALPSP14-17

Development of Self-Q-switched and Mode-locked Nd/Cr:YAG Ceramic Pulse Laser Using Cr⁴⁺:YAG Crystal

S. Kanemori¹, N. Hirota, T. Saiki
Dept. of Electrical and Electronic Eng. Faculty of Eng. Sci., Kansai Univ., Japan

ALPSP14-18

Nanoablation on Si Induced by Surface Plasmon Polaritons with an Intense Femtosecond Laser Pulse

M. Hagiya and G. Miyaji
Dept. of Applied Phys., Tokyo Univ. of Agriculture and Tech., Japan

Poster Session <Exhibition Hall A>

Thursday, May 19

ALPSp14 13:00-15:00

- ALPSp14-19** *Withdraw*
ALPSp14-20
Characteristics of Laser Microphone using Self-coupling Effect of the Semiconductor Laser
D. Mizushima, N. Tsuda, and J. Yamada
Aichi Inst. of Tech., Japan
- ALPSp14-21**
Development of laser distance sensor by utilizing fluctuation of terminal voltage due to self-coupling effect
T. Yoshimatsu, K. Goshima, M. Aoki, N. Tsuda, and J. Yamada
Aichi Inst. of Tech., Japan
- ALPSp14-22**
Study on Simultaneous Measurement of Thickness and Speed of Object using Semiconductor Laser
T. Michihiro, N. Tsuda, and J. Yamada
Aichi Inst. of Tech., Japan
- ALPSp14-23** *Withdraw*
ALPSp14-24
High power narrow-linewidth linearly-polarized 1610 nm Er:Yb all-fiber MOPA
E. Fujita, Y. Mashiko, and M. Tokurakawa
Inst. for Laser Sci., Univ. of Electro-Comm., Japan
- ALPSp14-25** *Withdraw*
ALPSp14-26
Repetition-rate-tunable Yb-doped Fiber Chirped Pulse Amplifier Toward Waveguide Direct Writing in Transparent Materials
H. Tanaka, K. Hirose, F. Kannari
Dept. of Electronics and Electrical Eng., Keio Univ., Japan
- ALPSp14-27**
Electron Acceleration by Laser Driven Beat Wave Excited by Cross-Focused q-Gaussian Laser Beams in Thermal Quantum Plasma with Nonlinear Absorption
N. Gupta and A. Singh
National Inst. of Tech. Jalandhar, India
- ALPSp14-28**
Photon-stimulated desorption surface spectroscopy of polymers by VUV emissions from a laser-produced plasma
M. Kaku¹, M. Katto¹, W. Sasaki², S. Kubodera¹
¹Dept. of Electrical and Systems Eng. Univ. of Miyazaki, Japan, ²NTP Inc., Japan
- ALPSp14-29**
High-efficient, high-pulse-energy Cr:ZnSe master oscillator power amplifier pumped with Tm:YAG laser
M. Yumoto, N. Saito, and S. Wada
Photonics control tech. team, RIKEN, Japan
- ALPSp14-30**
Nonlinear Dynamics in Radially Polarized Laser Beam with Pump Modulation
C.-P. Chiu, X.-W. Jiang, K.-C. Chang, and M.-D. Wei
Dept. of Photonics, National Cheng Kung Univ., Taiwan
- ALPSp14-31**
High efficient MLD-THz-TDS with super focusing effects and laser chaos
Y. Akamine¹, K. Iwao¹, M. Oi¹, S. Goda¹, T. Shirasaki¹, N. Sakaue¹, T. Kishibata¹, F. Kuwashima¹, M. Tani², K. Yamamoto², K. Kurihara³, K. Ngashima⁴, M. Nakashima⁵, M. Hangyo⁵
¹Fukui Univ. of Tech., Japan, ²Res. Center for Development of Far-Infrared Region, Japan, ³Faculty of Education and Regional Studies, Univ. of Fukui, Japan, ⁴Setsunan Univ., Japan, ⁵ILE Osaka Univ., Japan
- ALPSp14-32**
All-waveguide Talbot Cavity Laser with Intra-cavity Second Harmonic Generation
K. Hirose¹, F. Shohda¹, T. Yanagisawa¹, and F. Kannari²
¹Mitsubishi Electric Co., Japan, ²Keio Univ., Japan
- ALPSp14-33**
Challenge to Excitation of the Low Frequency Collective Vibrational Mode in Proteins by using Intense Coherent Terahertz-Waves
T. Notake, K. Nawata, Y. Takida, Y. Tokizane, Z. Han, M. Koyama and H. Minamide
RIKEN, Japan
- ALPSp14-34**
Study on Parametric Gain of Nonlinear Wavelength Conversion in a LiNbO₃
S. Hayashi^{1,2}, K. Nawata¹, H. Ishizuki³, K. Murate², K. Imai², Y. Takida¹, Y. Tokizane¹, T. Taira³, K. Kawase^{2,1}, and H. Minamide¹
¹RIKEN Center for Adv. Photonics, Japan, ²Nagoya Univ., Japan, ³Inst. for Molecular Sci., Japan
- ALPSp14-35**
Generation of tunable sub-THz wave from DAST-DFG by multi-wavelength pump beam
T. Y. Tokizane, K. Nawata, Z. Han, M. Koyama, T. Notake, Y. Takida and H. Minamide
RIKEN, Japan
- ALPSp14-36**
Control of Two-photon Excited Fluorescence and Photobleaching with Two-dimensional LCOS-SLM
N. Kamiyama, S. Maesako, K. Toda, and A. Suda
Tokyo Univ. Sci., Japan
- ALPSp14-37**
Hollow optical-fiber probe for analysis of CO₂ gas
T. Iida¹, T. Katagiri², Y. Matsuura¹
¹Grad. School of Biomedical Eng., Tohoku Univ., Japan, ²Grad. School of Eng., Tohoku Univ., Japan
- ALPSp14-38**
Breath analysis by ultraviolet gas spectroscopy using hollow-optical fiber as gas cell
T. Iwata¹, T. Katagiri², Y. Matsuura¹
¹Grad. School of Biomedical Eng., Tohoku Univ., Japan, ²Grad. School of Eng., Tohoku Univ., Japan
- ALPSp14-39**
Spectroscopic gas analysis using hollow-optical fiber gas cell and infrared quantum cascade laser
K. Yaegashi², T. Katagiri¹, Y. Matsuura²
¹Grad. School of Eng., Tohoku Univ., Japan, ²Grad. School of Biomedical Eng., Tohoku Univ., Japan
- ALPSp14-40**
Ultrahigh speed time-domain en face optical coherence tomography using KTN optical beam deflector
Y. Shinya¹, T. Imai², S. Toyoda², J. Kobayashi², T. Sakamoto², and M. Ohmi¹
¹Osaka Univ., Japan, ²NTT Co., Japan
- ALPSp14-41**
Three dimensional imaging of diseased rat lung and liver using ultrahigh resolution optical coherence tomography
M. Nanbu¹, Y. Ando¹, H. Kawagoe¹, M. Yamanaka¹, M. Matsushima², K. Mori³, T. Kawabe², H. Shoji⁴, and N. Nishizawa¹
¹Dept. Quantum Eng., Nagoya Univ., Japan, ²Grad. School of Medicine, Nagoya Univ., Japan, ³Grad. School of Information Sci., Nagoya Univ., Japan, ⁴Dept. Medicine, Kyoto Prefectural Univ. of Medicine, Japan
- ALPSp14-42**
Engineering the Photonic Band Gap for Simultaneous Multi-parametric Sensing
R. Mudachathi¹, T. Tanaka^{1,3}, M. M. Varma^{4,5}
¹RIKEN Metamaterials Lab., Japan, ²RIES, Hokkaido Univ., Japan, ³Interdisciplinary Grad. School of Sci. and Eng., Tokyo inst. of Tech., Japan, ⁴Center for Nano Sci. and Eng. Indian. ⁵Inst. of Sci. Bangalore, India Dept. of ECE, Indian Inst. of Sci., India
- ALPSp14-43**
Monitoring Microsecond Conformational Dynamics of Biomolecules Based on Realtime Detection of Fluorescence Photon Sequence
K. Kitabayashi^{1,2}, T. Kamimura², N. Hamada¹, R. Nakamura¹
¹Osaka Univ., Japan, ²Osaka Inst. Tech., Japan
- ALPSp14-44**
High-power supercontinuum generation using 182-MHz soliton-similariton mode-locked fiber laser for ultrahigh-resolution optical coherence tomography in 1600 nm spectral band
M. Yamanaka, H. Kawagoe, and N. Nishizawa
Nagoya Univ., Japan

Poster Session <Exhibition Hall A>

Thursday, May 19

ALPSP14 13:00-15:00

ALPSP14-45

Frequency Comb Source Using a Bismuth-Based Actively Mode-Locked Laser

Y. Fukuchi, T. Matsuura, S. Takai, A. Enda, M. Yamamoto, H. Shirane
Tokyo Univ. of Sci., Japan

ALPSP14-46

Experiment on Optical Phase Locking of Two Longitudinal Modes of a Dual-Mode Microchip Laser for Millimeter-Wave Signal Generation

M. Hyodo¹, K. Sato¹, A. Kawakami², S. Saito², M. Watanabe³, and M. Adachi¹
¹Faculty of Mechanical Eng., Kanazawa Univ., Japan, ²Adv. ICT Res. Inst. National Inst. of Information and Comm. Tech., Japan, ³Dept. of Eng. Sci., Univ. Electro-Comm., Japan

ALPSP14-47

High-Precision Spectroscopy of Molecular Iodine Using an Ultra-Compact Laser at 561 nm

K. Yoshii^{1,2}, Y. Hisai¹, and F.-Lei Hong^{1,2}
¹Dep. Physics, YNU, Japan, ²JST-ERATO, Japan

ALPSP14-48

All polarization-maintaining, fiber laser-based optical frequency comb using single wall carbon nanotube

M. Togashi¹, G. Park¹, T. Nagaike¹, L. Jin¹, Y. Sakakibara², E. Omoda², H. Kataura², N. Nishizawa¹
¹Nagoya Univ., Japan, ²AIST, Japan

ALPSP14-49

Light generation enhancement by double resonance in metal-insulator-metal structure

Soon-Hong Kwon
Dept. of Physics, Chung-Ang University, Korea

SLPCp9 13:30-15:00

Chair: T. Shinonaga

Okayama Univ., Japan

SLPCp9-1

Effective Shielding Gas Supplying Method of Wide Area in Vertical-position Laser Welding of Pure Titanium

K. Yokohara¹, Y. Okamoto¹, A. Okada¹, H. Ochiai², R. Kimura², S. Ono², M. Akase²
¹Graduate school of Natural Science and Technology, Okayama Univ., Japan, ²Mitsui Engineering & Shipbuilding Co., Ltd., Japan

SLPCp9-2

Laser Drilling Assisted by a Coaxial Discharged Plasma Torch

J. C. Hsu¹, Y. R. Jheng¹, C. C. Ho^{1,2}, Y. J. Chang¹, C. L. Kuo¹
¹Department of Mechanical Engineering, National Yunlin Univ. of Science and Technology, Taiwan, ²Department of Mechanical Engineering, National Taipei Univ. of Technology, Taiwan

SLPCp9-3

Polymeric Materials Drilling by Longitudinally Excited CO₂ laser

K. Uno¹, M. Kato¹, T. Akitsu¹, T. Jitsuno²
¹Univ. of Yamanashi, Japan, ²Institute of Laser Engineering, Osaka Univ., Japan

SLPCp9-4

The Investigation of Aging in Writing Inks Using Raman Spectroscopy

K. O Gorshkova, L. A. Mund, I. I. Tumkin, V. A. Kochemirovsky
Saint-Petersburg Univ., Russia

SLPCp9-5

Sintering of Silver Nanoparticle Inks on a Polymer Substrate Using a Laser with Different Polarizations

C. W. Cheng¹, W. C. Chang¹, Y. H. Chen²
¹National Chiao Tung Univ., Taiwan, ²Industrial Technology Research Institute, Taiwan

SLPCp9-7

Picosecond Laser Texturing of Multi-crystalline Silicon Wafer for Solar Cells

S. H. Ha, H. S. Kim, J. H. Kim, S. J. Park
Department of Chemical & Biological Engineering, Gachon Univ., South Korea

SLPCp9-8

Diffusion Behaviour of Nitrogen Doping in 4H-SiC by Laser Ablation of a SiNx Film on the 4H-SiC Substrate

R. Kojima, H. Ikenoue, A. Suwa, A. Ikeda, D. Nakamura, T. Asano, T. Okada
Graduate School of Information Science and Electrical Engineering, Kyushu Univ., Japan

SLPCp9-9

UV Laser-assisted Micro-porous Patterning on the Polyimide Surface

J. Y. Oh¹, S. Z. Lee¹, K. H. Oh¹, M. S. Kang², Y. W. Ma², B. S. Shin¹
¹Laser Advanced System Industrialization Center, Jeonnam Technopark, South Korea, ²Department of Cogno-mechatronics Engineering, Pusan National Univ., South Korea

SLPCp9-10

A Laser-based Method for Facile Fabrication of High-quality Carbonized Polyimide Film with a Chamber

Y. W. Ma¹, J. H. Park², H. Kim², D. Yun³, B. S. Shin^{1,2,3}
¹Engineering Research Center for Net Shape and Die Manufacturing (ERC/NSDM), Pusan National Univ., Korea, ²Department of Cogno-Mechatronics Engineering, Pusan National Univ., Korea, ³Department of Optics and Mechatronics Engineering, Pusan National Univ., Korea

SLPCp9-13

Single Line Multi-layered Metal Microstructures Fabricated by Selective Laser Melting

C. W. Cheng¹, S. Y. Wu¹, Y. W. Liu¹, M. C. Tsai²
¹National Chiao Tung Univ., Taiwan, ²National Cheng Kung Univ., Taiwan

SLPCp9-14

Properties of Cobalt Base Alloy Coating by Laser Cladding with Center Nozzle Powder Feeding

K. Asano¹, D. Tanigawa¹, N. Abe², M. Tsukamoto²
¹Graduate School of Engineering, Osaka Univ., Japan, ²Joining and Welding Research Institute, Osaka Univ., Japan

SLPCp9-15

Pulsed Laser Irradiation Used to Change in Electrical Conductivity of Indium Gallium Zinc Oxide Thin Films

Y. Ogawa¹, T. Sameshima¹, M. Hasumi¹, Y. Ando², S. Kishida², Y. Setoguchi²
¹Tokyo Univ. of Agriculture and Technology, Japan, ²Nissin Electric Co., Ltd., Japan

SLPCp9-16

Accuracy Improvement of Microparts Bending by Femtosecond Laser Peen Forming

Y. Sagisaka, K. Yamashita, H. Ueta
Hamamatsu Technical Support Center, Industrial Research Institute of Shizuoka Prefecture, Japan

SLPCp9-17

Effect of Water Flow Layer for Plasma Confinement on Laser Peening

N. Ehara¹, D. Nishikawa¹, I. Kitawaki¹, M. Heya², M. Tsuyama¹, H. Nakano¹
¹Faculty of Science and Engineering, Kindai Univ., Japan, ²Faculty of Engineering, Osaka Sangyo Univ., Japan

Poster Session <Exhibition Hall A>

Thursday, May 19

SLPCp9 13:30-15:00

LEDp4 15:30-17:00

SLPCp9-19

Fundamental Study on Separation Method of Gallium Nitride with Internal Modified Layer by Ultrashort Pulsed Laser

M. Ota, Y. Okamoto, T. Shinonaga, A. Okada
Graduate School of Natural Science and Technology, Okayama Univ., Japan

SLPCp9-20

Insulation Characteristics and Visibility of Transparent Conductive Film Containing Silver Nanowires by Nanosecond Pulsed Laser

M. Oshita¹, N. Nishi², Y. Okamoto¹, T. Shinonaga¹, A. Okada¹
¹Graduate School of Natural Science and Technology, Okayama Univ., Japan, ²Kataoka Corp., Japan

SLPCp9-22

Cu-based Micropatterning Using Femtosecond Laser Reduction of Copper Nitrate in a Polymer

Y. Kondo, M. Mizoshiri, J. Sakurai, S. Hata
Department of Micro-Nano Systems Engineering, Graduate School of Engineering, Nagoya Univ., Japan

SLPCp9-23

Laser Micromachining of PEDOT:PSS / Graphene Thin Films by Using Beam Shaping Technology

S. F. Tseng¹, W. T. Hsiao¹, C. K. Chung¹, D. Chiang¹, J. A. Yeh^{2,3}
¹Instrument Technology Research Center, National Applied Research Laboratories, Taiwan, ²Institute of Nanoengineering and Microsystems, National Tsing Hua Univ., Taiwan, ³Department of Power Mechanical Engineering, National Tsing Hua Univ., Taiwan

SLPCp9-24

Properties of AgNW-ITO Hybrid Transparent Conductive Films Ablation Using Nanosecond Laser Pulses

W. T. Hsiao¹, C. C. Yang¹, S. F. Tseng¹, C. K. Chung¹, K. C. Huang¹, K. Lin², M. F. Chen³
¹Instrument Technology Research Center, National Applied Research Laboratories, Taiwan, R.O.C., Taiwan, ²Department of Mechanical Engineering, Southern Taiwan University of Science and Technology, Taiwan, R.O.C., Taiwan, ³Department of Mechatronics Engineering, National Changhua Univ. of Education, Taiwan, R.O.C., Taiwan

SLPCp9-27

Shape Evaluation of Microgrooves Fabricated with Laser-induced Etching Using the Optical Analysis

K. H. Oh¹, S. Z. Lee¹, S. H. Jeong²
¹Laser Center, Jeonnam Technopark, Stiftung, Republic of Korea, ²Department of Mechatronics, Gwangju Institute of Science and Technology, Republic of Korea

SLPCp9-28

Optical Emission Spectroscopy and Pulsed Laser Deposition of Amorphous Carbon Films in Air and Oxygen

C. H. Nee, S. S. Yap, T. Y. Tou
Multimedia Univ., Malaysia

Oxides & Electrodes

LEDp4-1

Enhanced Optoelectronic Properties on Ga-doped ZnO Thin Film by Intermittent Process

K.-T. Wang¹, Y.-S. Lin¹, and K.-M. Chang²
¹I-Shou Univ., Taiwan, ²Chiao Tung Univ., Taiwan

LEDp4-2

Study of Al-doped ZnO Layer Deposited on Flexible Substrate by Optimum Thermal Treatment on Buffer Layer

H.-J. Guo and Y.-S. Lin
I-Shou Univ., Taiwan

LEDp4-3

An Ni/Ga-Doped ZnO Electrode Deposited on p-GaN Layer using RF Magnetron Sputtering for UV-LEDs

S. Joeng¹, G.-J. Yohn¹, N.-W. Kang¹, D. Kim¹, S.-C. Shin¹, and K.-K. Kim^{1,2}
¹Dept. of Advanced convergence Tech., and Research Inst. of advanced Convergence Tech., Korea Polytechnic Univ., Korea, ²Dept. of Nano Optical Eng., Korea Polytechnic Univ., Korea

LEDp4-4

Study of Thermal Annealing Treatment on AZO/Au-NPs/AZO Transparent Conductive Electrode

Y.-R. Wang and Y.-S. Lin
I-Shou Univ., Taiwan

LEDp4-5

Optical Properties of ZnO Films Dispersed with Ag Nanocrystals Fabricated by Molecular Precursor Method

D. Taka¹, T. Onuma¹, T. Shibukawa¹, H. Nagai¹, T. Yamaguchi¹, J.-S. Jang², M. Sato¹, and T. Honda¹
¹Kogakuin Univ., Japan, ²Yeungnam Univ., Korea

LEDp4-6

Low Cost ZnO Wide Bandgap Semiconductors for Optoelectronic Devices

A. H. Ramelan and S. Wahyuningsih
Sebelas Maret Univ., Indonesia

LEDp4-7

Strain Relaxation of ZnO Grown on Various Silicon Substrates

J.-D. Lai¹, Y.-S. You¹, S.-W. Feng¹, C.-H. Chen², and L.-W. Tu³
¹National Univ. of Kaohsiung, Taiwan, ²Industrial Technology Research Inst., Taiwan, ³National Sun Yat-Sen Univ., Taiwan

LEDp4-8

Ag-based Reflective Electrode of High Reliability using ITO Nano Particle and Ni Alloy for High Efficiency LEDs

J.-S. Kwon¹, J.-Y. Beak¹, N.-W. Kang¹, S.-H. Kang¹, S.-C. Shin¹, and K.-K. Kim^{1,2}
¹Dept. of Advanced Convergence Tech., and Research Inst. of Advanced Convergence Tech., Korea Polytechnic Univ., Korea, ²Dept. of Nano Optical Eng., Korea Polytechnic Univ., Korea

Poster Session <Exhibition Hall A>

Thursday, May 19

LEDp4 15:30-17:00

LEDp4-9

Enhanced Output Power on GaN-based Light-Emitting Diodes by Annealing the ITO Transparent Conducting Layer

Y.-S. Lin¹, C.-L. Liu¹, K.-Y. Lin¹, C.-N. Li², C.-L. Tseng², C.-H. Shen²
¹I-Shou Univ., Taiwan, ²EPISTAR Corp., Taiwan

LEDp4-10

Wide Bandgap Transparent Electrode of FTO/Ag/FTO Multilayer Structure for UV-LEDs

G.-J. Yohn¹, J. Jeong¹, J.-S. Kwon¹, D. Kim¹, S. Jeong¹, and K.-K. Kim^{1,2}
¹Dept. of Advanced convergence Tech., and Research Inst. of advanced Convergence Tech., Korea Polytechnic Univ., Korea, ²Dept. of Nano Optical Eng., Korea Polytechnic Univ., Korea

LEDp4-11

ITO/Ga₂O₃ Multilayer Electrodes Towards Deep UV-LEDs

N. Kuwabara¹, T. Yasuda¹, S. Katsuno¹, N. Koide¹, T. Takeuchi¹, M. Iwaya¹, S. Kamiyama¹, and I. Akasaki^{1,2}
¹Meijo Univ., Japan, ²Akasaki Research Center, Nagoya Univ., Japan

Nanostructures

LEDp4-12

The Influence on Peak Emission Intensity Ratio between Free-Exciton Recombination and Deep Defect Recombination of ZnO Morphology Evolution from Nanorods to Nanotubes

W.-H. Tsai and S.-S. Lo
 Feng-Chia Univ., Taiwan,

LEDp4-13

The Effect of ZnO Seed Layer Prepared by Sputtering and Hydrothermal Method for Light Extraction Structure using ZnO Nanorods

S.-H. Kang¹, H. Cho¹, G.-J. Yohn¹, J.-S. Kwon¹, S. Kim¹, and K.-K. Kim^{1,2}
¹Dept. of Advanced convergence Tech., and Research Inst. of advanced Convergence Tech., Korea Polytechnic Univ., Korea, ²Dept. of Nano Optical Eng., Korea Polytechnic Univ., Korea

LEDp4-14

Etching to Lead the Uniform Distribution of CuO Nano-Wires on the Surface of ZnO Seed Layers

Y.-C. Chang and Y.-S. Lin
 I-Shou Univ., Taiwan

LEDp4-15

Microtube Light-Emitting Diode Arrays with Metal Cores

Y. Tchoe¹, C.-H. Lee², J. Park¹, H. Baek¹, K. Chung¹, J. Jo³, M. Kim³, and G.-C. Yi¹
¹Dept. of Physics and Astronomy, Inst. of Applied Physics, and Research Inst. of Advanced Materials, Seoul National Univ., Korea, ²Dept. of Nano-Bio-Information-Technology, KU-KIST Grad. School of Converging Sci. and Tech., Korea Univ., Korea, ³Dept. of Material Sci. and Eng. and Research Inst. of Advanced Materials, Seoul National Univ., Korea

LEDp4-16

Monitoring Thicknesses and Aggregation of Thin Layers during Fabrication of Plasmonic Devices using White LEDs

K. Murai¹, C. Heck¹, S. Mochizuki¹, K. Hattori², M. Shiraiishi², T. Nakashio², Y. Oshikane², and M. Nakano²
¹AIST, Japan, ²Osaka Univ., Japan

Bulk & Epitaxy

LEDp4-17

Transparent GaN Crystals Grown by Na-Flux Method with High Temperature

M. Hayashi, T. Sato, S. Ogawa, M. Imanishi, K. Murakami, M. Maruyama, M. Imade, M. Yoshimura, and Y. Mori
 Osaka Univ., Japan

LEDp4-18

Withdraw

LEDp4-19

Origin of Green Band in Photoluminescence Spectra of Heavily Doped Al_xGa_{1-x}N:Si Layers

I. Osinnykh^{1,3}, T. Malin¹, V. Plyusnin^{2,3}, A. Suranov¹, A. Gilinsky¹, and K. Zhuravlev^{1,3}
¹Rzhanov Inst. of Semiconductor Physics of the Siberian Branch of the Russian Academy of Sciences, Russia, ²Voevodsky Inst. of Chemical Kinetics and Combustion of the Siberian Branch of the Russian Academy of Sciences, Russia, ³Novosibirsk State Univ., Russia

LEDp4-20

Mist CVD Growth of In₂O₃ Films on (0001) α-Al₂O₃ Substrates and (0001)GaN Templates

T. Kobayashi¹, K. Tanuma¹, T. Yamaguchi^{1,2}, T. Onuma^{1,2}, and T. Honda^{1,2}
¹Electrical Eng. and Electronics, Grad. School of Eng., Kogakuin Univ., Japan, ²Dept. of Applied Physics, Kogakuin University, Japan

LEDs

LEDp4-21

Enhanced Light Efficiency of GaN-based High Voltage LEDs Fabricated by Muli-Chip Array with Double Electrode

N.-W. Kang¹, S.-H. Kang¹, S. Jeong¹, H. Cho¹, S. Kim¹, and K.-K. Kim^{1,2}
¹Dept. of Advanced convergence Tech., and Research Inst. of advanced Convergence Tech., Korea Polytechnic Univ., Korea, ²Dept. of Nano Optical Eng., Korea Polytechnic Univ., Korea

LEDp4-22

Enhanced Optoelectronic Properties on the High-Voltage Light-Emitting Diode by Reducing the Stacking Fault Density of GaN Surface

Y.-S. Lin¹, C.-L. Liu¹, S.-Y. Hsiao², C.-L. Tseng², C.-H. Shen²
¹I-Shou Univ., Taiwan, ²EPISTAR Corp., Taiwan

LEDp4-23

Mitigation of Quantum-Confined Stark Effect by Enlarging Post-Duty Cycle of Patterned-Sapphire Substrates

H.-A. Liu¹, V.-C. Su¹, P.-H. Chen^{1,2}, Y.-P. Chen¹, Y.-H. You^{1,2}, H.-S. Wu¹, and C.-H. Kuan¹
¹National Taiwan Univ., Taiwan, ²Kingwave Corp., Taiwan

LEDp4-24

Improved Internal-Quantum Efficiency of GaN-Based Light-Emitting Diodes by Patterned-Sapphire Substrates with Larger Post-Duty Cycles

H.-S. Wu¹, V.-C. Su¹, P.-H. Chen^{1,2}, Y.-P. Chen¹, Y.-H. You^{1,2}, H.-A. Liu¹, and C.-H. Kuan¹
¹National Taiwan Univ., Taiwan, ²Kingwave Corp., Taiwan

LEDp4-25

Patterned-Sapphire Substrates-Based Stress-Induced Bandgap Widening of GaN-Based Light-Emitting Diodes

Y.-C. Liu¹, V.-C. Su¹, Y.-P. Chen¹, P.-H. Chen^{1,2}, Y.-H. You^{1,2}, H.-S. Wu¹, H.-A. Liu¹, and C.-H. Kuan¹
¹National Taiwan Univ., Taiwan, ²Kingwave Corp., Taiwan

LEDp4-26

Temperature Dependence of the Nitride-based HFET Structure Photosensors

S. Ushida¹, A. Yoshikawa^{1,3}, M. Iwaya¹, T. Takeuchi¹, S. Kamiyama¹, and I. Akasaki^{1,2}
¹Meijo Univ., Japan, ²Akasaki Research Center, Nagoya Univ., Japan, ³Asahi-Kasei, Japan

Novel Materials

LEDp4-27

Effects of Dwell Durations and Inter-Dot Spacings on Deposited Nano-Silver Droplets on Glass Substrates

C. Y. Chan¹, K. C. Shih¹, and T. M. Huang²
¹Instrument Technology Research Center, National Applied Research Laboratories, Taiwan, ²Kingley Rubber Industrial Co., Ltd., Taiwan

LEDp4-28

Photophysical and Electroluminescence Properties of Polyfluorene Derivatives

D. J. Liaw¹, Q. Zhang¹, S. H. Tan², Z. W. Tan², Y. H. Hii², Y. L. Wong², K. S. Cheah², C. H. Nee², and S. S. Yap²
¹National Taiwan Univ. of Sci. and Tech., Taiwan, ²Multimedia Univ., Malaysia

LEDp4-29

Band-Engineering of the TiO₂ Wide Bandgap Semiconductor Using Organic Chromophore Dye

S. Wahyuningsih¹ and A. H. Ramelan²
¹Inorganic Material Research Group, Sebelas Maret Univ., Indonesia, ²Electronic Materials and Energy Research Group, Sebelas Maret Univ., Indonesia

Poster Session <Exhibition Hall A>

Thursday, May 19

LEDp4 15:30-17:00

Industrial Applications

LEDp4-30**High Power Blue Laser Based Ceramic Phosphor for Automotive Application**

E. K. Ji¹, Y. H. Song², C. W. Lee², and D. H. Yoon^{1,2}
¹SAINT, Sungkyunkwan Univ., Korea, ²School of Advanced Materials Sci. & Eng., Sungkyunkwan Univ., Korea

LEDp4-31**Optimization of Local Illumination in Indoor Visible Light Communication Based on Simulated Annealing Hybrid Genetic Algorithm**

M. Gao, T. Lan, X. Chen, and G. Ni
Beijing Inst. of Tech., China

LEDp4-32**LED Reliability Test Method Based on Precise Real-Time Junction Temperature Monitoring**

B. Ma and K. Lee
Korea Electronics Technology Inst., Korea

LEDp4-33**Ambient-Light Influenced Photometric Properties of a Curved AMOLED Display by Directional Imaging Luminance Measurements**

T.-Y. Chung and S.-W. Hsu
Industrial Technology Research Inst., Taiwan

Poster Session <Exhibition Hall A>

Friday, May 20

PLD7 9:00-10:15

BISC6 10:30-12:00

PLDp7-1

Improvement of resist stripping efficiency without causing laser-induced surface damage

K. Nuno, Y.Kuroki, S. Takagi¹, T. Yamashiro, S. Tuzimoto, R. Nakamura², T. Nishiyama¹, T. Kamimura, H. Horibe¹
Osaka Institute of Technology, Japan, ¹Osaka City Univ., Japan, ²Osaka Univ., Japan

PLDp7-2

Laser beam holographic patterning for thin film epitaxial growth monitoring with rheed for using as mev laser compound nuclear cavity material

M. M. Anwar
Asiatic Society of Bangladesh, Bangladesh

PLDp7-3

Effect of laser beam parameters on melt mobilization and LIBS analysis of a special Aluminum Alloy containing Zeolite

O. M. Khalil, A. Nakimana¹
Cairo Univ., Egypt, ¹Changchun Univ., China

PLDp7-4

Ultrashort pulse laser slicing of semiconductor crystal

E. Kim, Y. Shimotsu, M. Sakakura, K. Miura
Kyoto Univ., Japan

PLDp7-5

Synthesis of fluorescent nanocarbons by femtosecond laser induced plasma in liquid

N. Agatsuma, Y. Fujimatsu, Y. Shimotsu, M. Sakakura, K. Miura
Kyoto Univ., Japan

PLDp7-6

Mitigation of BSG damage caused by upstream flaw in the final optics assembly

Z. Jiao, M. Sun, D. Zhao, J. Zhu
Shanghai Inst. of Opt. Fine Mech., China

PLDp7-7

Design and fabrication of random antireflective nanostructures on fused silica in the ultraviolet

W.Zhang, J.Zhao, H.Wang, F.Tu, X.Liu, M. Zhu
Shanghai Inst. of Opt. Fine Mech., China

PLDp7-8

Damage analysis of CMOS electro-optical imaging system by a continuous wave laser

S. Yoon, K. Y. Jhang, W. S. Shin¹
Hanyang Univ., Korea, ¹Agency for Defense Development, Korea

PLDp7-9

Study on the data matching of Ground-based Radar and laser point cloud

Z. Qiu, C. Wang
Hohai Univ, China

PLDp7-10

Substrate material dependence of the thin film stress and its control

H. Omatsu, M. Akimoto, T. Murakami, S. Tuzimoto, T. Yasasiro, R. Nakamura¹, T. Kamimura
Osaka Institute of Technology, Japan, ¹Osaka University, Japan

Chair: Y. Awatsuji

Kyoto Inst. Tech., Japan

BISCp6-1

Unstained Biological Cell Imaging Using a Phase-Contrast Scanning Optical Microscope with Annular illumination

Y. Miyake¹, M. Hisaka², T. Ikuta³
¹Graduate School of Biomed. Eng., Osaka Electro-Communication Univ., Japan, ²Dept. of Biomed. Eng., Osaka Electro-Communication Univ., Japan, ³Dept. of Elect. and Electron. Eng., Osaka Electro-Communication Univ., Japan

BISCp6-2

Non-scanning *in-vivo* Three-dimensional Structured Illumination Microscopy

C.Y. Lin^{1,2}, W.-H. Lin^{2,3}, J.-H. Chien², Y. Luo^{2,4}
¹Dept. of Electr. Eng. and Graduate Institute of Photonics and Optoelectronics, National Taiwan Univ., Taiwan ROC, ²Institute of Medical Device and Imaging, National Taiwan Univ., Taiwan R.O.C, ³School of Medicine, National Taiwan University, Taiwan R.O.C, ⁴Molecular Imaging Center, National Taiwan Univ., Taiwan

BISCp6-3

Real-time Phase Analysis by Differential Interference Contrast Microscope Using Pixelated Polarization Camera

S. Shibata¹, H. Ishiwata², Y. Otani¹, T. Yatagai¹
¹Utsunomiya Univ., Japan, ²Olympus Corp., Japan

BISCp6-4

Object Recovery from Diffused Light

Vinu R. V, R.K. Singh
Department of Physics, Indian Institute of Space Science and Technology (IIST), India

BISCp6-5

Interference of Coherence Waves

R.K. Singh¹, S. Vyas², Y. Miyamoto²
¹Department of Physics, Indian Institute of Space Science and Technology (IIST), India, ²Department of Engineering Sciences, The Univ. of Electro-Communications, Japan.

BISCp6-6

Measuring Temporal Fluctuations of Optical Field Scattered from Cell-aggregate by Heterodyne Mach-Zehnder Interferometer

S. Wang^{1,2}, H. Yamada¹, T. Yamauchi¹, K. Goto¹, Y. Ueda¹, H. Zhang²
¹Hamamatsu Photonics K.K., Japan, ²State Key Laboratory of Modern Optical Instrumentation, Zhejiang Univ., China

BISCp6-7

Phase Sensitive CT Measurement Using a Pixelated Polarizing Shearing Interferometer

D. I. Serrano-Garcia¹, Y. Otani^{1,2}
¹Center of Optical Research and Education, Utsunomiya Univ., Japan, ²Department of Optical Engineering, Utsunomiya Univ., Japan

Poster Session <Exhibition Hall A>

Friday, May 20

BISC6 10:30-12:00

BISCp6-8

Holographic Fluorescence Mapping Using Space-division Matching

R. Abe¹, M. Iwanaga², H. Miyakawa³, Y. Hayasaki¹
¹Center for Optical Research & Education (CORE), Utsunomiya Univ., Japan, ²Faculty of Agriculture, Utsunomiya Univ., Japan, ³Center for Bioscience Research and Education (CBRE), Utsunomiya Univ., Japan

BISCp6-9

Algorithm for Removing the Limitation of Intensity Ratio in Four-step Dual-wavelength Digital Holography Based on Phase-division Multiplexing

T. Tahara¹, K. Omae¹, R. Otani², Y. Arai¹, Y. Takaki³
¹Faculty of Engineering Science, Kansai University, Japan, ²Sigmakoki Co., Ltd., Japan, ³Institute of Engineering, Tokyo Univ. of Agriculture and Technology, Japan

BISCp6-10

Color Digital Holographic Microscopy Using Speckle Illuminations for Removing Twin Image

H. Funamizu, T. Q. Chen, Y. Aizu
 Division of Mechanical Systems and Materials Engineering, Muroran Institute of Technology, Japan

BISCp6-11

Magnification and Wavelet Processing in Digital Inline Holographic Microscopy

J.C. Aguilar¹, M. Misawa¹, K. Matsuda¹, L. R. Berriel-Valdos²
¹Human Technology Research Institute, AIST, Japan, ²Instituto Nacional de Astrofísica, Óptica y Electrónica, México

BISCp6-12

Phase Measurement by Parallel Phase-Shifting Digital Holographic Microscopy

T. Fukuda¹, P. Xia², K. Nishio¹, Y. Awatsuji¹, O. Matoba²
¹Kyoto Institute of Technology, Japan, ²Kobe Univ., Japan

BISCp6-13

Quantitative Imaging of Refractive Index of Transparent Object by Parallel Phase-shifting Digital Holography

Y. Wang¹, P. Xia², Y. Awatsuji³, K. Nishio⁴, O. Matoba²
¹Graduate School of Science and Technology, Kyoto Institute of Technology, Japan, ²Graduate School of System Informatics, Kobe Univ., Japan, ³Faculty of Electrical Engineering and Electronics, Kyoto Institute of Technology, Japan, ⁴Advanced Technology Center, Kyoto Institute of Technology, Japan

BISCp6-14

Numerical Simulation of Parallel Phase-shifting Digital Holographic Tomography

M. Shinomura¹, P. Xia², Y. Awatsuji¹, K. Nishio¹, O. Matoba²
¹Kyoto Institute of Technology, Japan, ²Kobe Univ., Japan

BISCp6-15

Miniaturization of Low-cost Portable Digital Holographic Microscopy

S. Abiru, M. Sano, T. Shimobaba, T. Kakue, T. Ito
 Graduate School of Engineering, Chiba Univ. Japan

BISCp6-16

In vivo Swept Source Optical Coherence Tomography Monitoring of Plant Seeds Treated with Different NaCl Concentrations

N.K. Ravichandran¹, R.E. Wijesinghe¹, S.-Y. Lee², M.F. Shirazi¹, K. Park¹, H.-Y. Jung², M. Jeon¹, J. Kim¹
¹School of Electronics Engineering, College of IT Engineering, Kyungpook National Univ., Korea, ²School of Applied Biosciences, Kyungpook National Univ., Korea

BISCp6-17

Bio-optical Measurement for the Morphological Analysis of Anthracnose Infected *Diospyros Kaki*

R.E. Wijesinghe¹, S.-Y. Lee², R.N. Kumar¹, R.K. Jha¹, H.-Y. Jung², M. Jeon¹, J. Kim¹
¹School of Electronics Engineering, College of IT Engineering, Kyungpook National Univ., Korea, ²School of Applied Biosciences, Kyungpook National Univ., Korea

BISCp6-18

Spectral Domain Optical coherence tomography Using Wavelet Transform

T. Serizawa¹, T. Suzuki¹, S. Choi², O. Sasaki²
¹Niigata Univ., Graduate School of Science and Technology, Japan, ²Niigata University, Faculty of Engineering, Japan

BISCp6-19

Dual Path Handheld System for Cornea and Retina Imaging Using Optical Coherence Tomography

M.F. Shirazi, K. Kim, R.E. Wijesinghe, K. Park, M. Jeon, J. Kim
 School of Electronics Engineering, College of IT Engineering, Kyungpook National Univ., Korea

BISCp6-20

Monte Carlo Study for Traumatic Brain Edema Treatment Based on Near-infrared Spectrum

Z. Qian, Y. Liu, W. Li
 Department of Biomedical Engineering, Nanjing Univ. of Aeronautics and Astronautics, China

BISCp6-21

Real-Time Spectroscopic Monitoring of Thermal Damage in Laser Induced Thermotherapy of Porcine Liver

L. Dai, A. Qian, G. Hua
 Department of Mechanical Engineering, Nantong University, China

BISCp6-22

Experimental Estimation of Influence of Cosmetic Foundation on Optical Path Length in the Skin

R. Sato, M. Kato, E. Okada
 Department of Electronics and Electrical Engineering, Keio Univ., Japan

BISCp6-23

Theoretical and Numerical Analysis of Light Reflection from the Human Skin Based on Wave Optics

R. Sakai¹, T. Igarashi², M. Takabayashi¹, T. Okamoto¹
¹Graduate School of Computer Science and Systems Engineering, Kyushu Institute of Technology, Japan, ²Kao Corporation, Japan

BISCp6-24

Simulation of Spectral Reflectance Image in Human Skin Model Having a Measured Surface Texture by Ray Tracing

T. Yuasa¹, K. Mizunuma¹, R. Goto¹, T. Maeda², H. Funamizu¹, Y. Aizu¹
¹Muroran Institute of Technology, Japan, ²Kushiro National College of Technology, Japan

BISCp6-25

Near-Infrared Reflectance Spectroscopy System for Noninvasive Estimation of Skin Hydration

I. Saknite¹, A. Zavorins², J. Spigulis¹, J. Kisis²
¹Institute of Atomic Physics and Spectroscopy, University of Latvia, Latvia, ²Department of Infectology and Dermatology, Riga Stradins Univ., Latvia

BISCp6-26

Non-contact Measurement of Heart Rate Variability Using Time Series Color Images of Human Skin

Y. Aoki¹, A. Hoshi¹, K. Nakano², K. Niizeki³, Y. Aizu¹, I. Nishidate¹
¹Graduate School of Bio-Applications & Systems Engineering, Tokyo Univ. of Agriculture and Technology, Japan, ²Faculty of Science, Tokyo Univ. of Science, Japan, ³Graduate School of Science and Engineering Yamagata Univ., Japan, ⁴Graduate School of Mechanical Systems and Materials Engineering, Muroran Institute of Technology, Japan

BISCp6-27

Optical Spectroscopy of Ketone Bodies for Blood Screening of Diabetes

C.H. Lin¹, M. Iigo², M. Ogawa³, N. Anzai⁴, T. Yatagai¹
¹Center for Optical Research and Education, Utsunomiya Univ., Japan, ²Center for Bioscience Research and Education, Utsunomiya Univ., Japan, ³Faculty of Science and Engineering, Teikyo Univ., Japan, ⁴Department of Pharmacology and Toxicology, Dokkyo Medical Univ., Japan

BISCp6-28

Extensive Pelagic Spectroscopic Measurement Using an Ultrasonically Assisted Unit Based on a Traveling Wave

K. Mori¹, K. Nogo¹, M. Yoshida¹, P.K.W. Abeygunawardhana¹, S. Suzuki¹, A. Nishiyama², K. Wada², I. Ishimaru¹
¹Faculty of Engineering Kagawa Univ., Japan, ²Faculty of Medicine Kagawa Univ., Japan

Poster Session <Exhibition Hall A>

Friday, May 20

BISC6 10:30-12:00

BISCp6-29

***In vivo* Photoacoustic Imaging of Rehabilitation Process of Mouse after Traumatic Brain Injury**

W. Li¹, H. Wang^{1,2}, L. Nie², Z. Qian¹

¹Department of Biomedical Engineering, Nanjing Univ. of Aeronautics and Astronautics, China, ²School of Public Health, Xiamen Univ., China

BISCp6-30

High Sensitivity Terahertz Electron Paramagnetic Resonance Spectroscopy

M. Grosmann¹, A. Larkin²

¹Universite Louis Pasteur de Strasbourg, France, ²National Research Nuclear University MEPhI, Russia

BISCp6-31

Estimation of Stress Condition Based on Autonomic Nervous Function by Bio-Speckle Imaging

N. Yokoi¹, Y. Shimatani², M. Kyoso², H. Funamizu³, Y. Aizu³

¹Department of Mechanical Systems Engineering, Asahikawa National College of Technology, Japan, ²Biomedical Engineering Department, Tokyo City University, Japan, ³Division of Science for Composite Functions, Muroran Institute of Technology, Japan

BISCp6-32

Simultaneous Imaging of Blood Flow and Blood Concentration Change Using Laser Speckle in Fiber Illumination

T. Shinohara¹, N. Yokoi², H. Funamizu¹, T. Yuasa¹, Y. Aizu¹

¹Muroran Institute of Technology, Japan, ²Asahikawa National College of Technology, Japan

BISCp6-33

Visual Evoked Potential of Stereoscopic Vision in Brain Networks

L. Xing, X. Wang, Z. Qian, D. Fang

Department of Biomedical Engineering, Nanjing Univ. of Aeronautics and Astronautics, China

BISCp6-34

Imaging of Tissue Oxygen Saturation in Ocular Fundus of Rat Using a Digital RGB Camera

R. Hirofuji, I. Nishidate

Graduate School of Bio-Applications & Systems Engineering, Tokyo Univ. of Agriculture and Technology, Japan

BISCp6-35

Imaging of Regional Cerebral Oxygen Saturation of Rat with a Digital Red-green-blue Camera

Y. Harasaki¹, I. Nishidate¹, S. Kawauchi², S. Sato², M. Sato³, Y. Kokubo⁴

¹Graduate School of Bio-Applications & Systems Engineering, Tokyo Univ. of Agriculture and Technology, Japan, ²Division of Biomedical Information Sciences, National Defense Medical College Research Institute, Japan, ³Graduate School of Science and Engineering, ⁴Yamagata Univ., Japan

BISCp6-36

Improvement of Source-collector Geometries in Single Reflectance Fiber Probe System for *in vivo* Estimation of Optical Properties in Brain Tissue

T. Tanabe¹, I. Nishidate¹, S. Kawauchi², S. Sato², M. Sato³

¹Graduate School of Bio-Applications & Systems Engineering, Tokyo Univ. of Agriculture and Technology, Japan, ²Division of Biomedical Information Sciences, National Defense Medical College Research Institute, Japan, ³Graduate School of Science and Engineering, Yamagata Univ., Japan

BISCp6-37

Estimation of Scattering Characteristics of Artificial Scattering Medium by Lamination Technique with Shifted Structure

N. Nakatani^{1,2}, W. Yan¹, O. Matoba¹

¹Graduate school of System Informatics, Kobe Univ., Japan, ²SCREEN Holdings Co., Ltd., Japan

BISCp6-38

Experimental Verification of Optical Power Ratio Distribution to Extract Absorbers in Scattering Media

T. Yamaoki, Y. Hamada, O. Matoba

Graduate School of System Informatics, Kobe Univ. Japan

BISCp6-39

Infrared Thermal Imaging by Bundled Tube-leaky Hollow Optical Fibers

T. Kobayashi¹, T. Katagiri², Y. Matsuura¹

¹Graduate School of Biomedical Engineering, Tohoku Univ., Japan, ²Graduate School of Engineering, Tohoku Univ., Japan

BISCp6-40

Long-period Fiber Grating Biomedical Sensor Based on Dual-peak Resonance near PMTP

Z. Gu, Q. Ling

College of Science, Univ. of Shanghai for Sci. and Tech., China

BISCp6-41

Application of CVD-diamonds Films for Sensing Selected Blood Component

D. Milewska¹, M. Ficek¹, K. Karpienko¹, M. Wąsowicz², P. Niedziałkowski³, T. Ossowski³, M. Jędrzejewska-Szczerska¹

¹Department of Metrology and Optoelectronics, Faculty of Electronics, Telecommunications and Informatics, Gdańsk Univ. of Technology, Poland, ²Department of Morphological Sciences, Faculty of Veterinary Medicine, Warsaw Univ. of Life Sciences, Poland, ³Faculty of Chemistry, Univ. of Gdansk, Poland

BISCp6-42

Lipid Nanoparticles Encapsulating Near-infrared Dye as a Non-targeted Exogenous Contrast Agent to Improve the Resolution for Angiography

Jia-You Fang¹, C.-J. Wen², Y.-H. Huang¹

¹Pharmaceutics Laboratory, Graduate Institute of Natural Products, Chang Gung Univ., Taiwan, ²Center for Vascularized Composite Allotransplantation, Chang Gung Memorial Hospital, Taiwan

BISCp6-43

Choosing the Right Video Interface for Medical Imaging Systems

J. Phillips

Pleora Technologies, Canada

BISCp6-44

Compressive Sensing for an Imaging Method with One Dimensional Hadamard Patterns Illumination

K. Morimoto, S. Hayashi, K. Nitta, O. Matoba

Graduate of System Informatics, Kobe Univ. Japan

BISCp6-45

Experimental Verification for a Method for Computational Ghost Imaging with Laser Array Modulation

C. Kitada, K. Nitta, O. Matoba

Graduate of System Informatics, Kobe Univ. Japan

Poster Session <Exhibition Hall A>

Friday, May 20

LICp 11:00-12:00

Chair: S. Lorenz
Univ. Bayreuth, Germany

LICp-1

Passively Q-switched Nd:YAG/Cr⁴⁺:YAG laser with multiple-beam output

G. Croitoru (Salamu), O. V. Grigore, T. Dascalu, and N. Pavel
Nat. Inst. Laser, Plasma and Radiation Phys., Lab. Solid-State Quant. Electron., Romania

LICp-2

Cryo-cooled Ho:CaF₂ laser pumped by Tm: fiber laser

M. Jelínek¹, J. Cvrček¹, V. Kubeček¹, L. Su², D. Jiang², and W. Ma²

¹Faculty of Nuclear Sci. Phys. Eng., Czech Technical University in Prague, Czech, ²Key Lab. Transparent and Opto-functional Inorganic Materials, Shanghai Inst. Ceramics, Chinese Academy of Sci., China

LICp-3

Surface Morphology Study of Some Cu-Ni reference alloys using Laser Induced Breakdown Spectroscopy

S. A. Sheta¹, G. Di Carlo², G. M. Ingo², M. A. Harith¹

¹NILES, Cairo Univ., Egypt, ²ISMN-CNR, Italy

LICp-4

Suppression of amplitude modulation based on nonlinear absorption effect

K. Cheng, H. Dong, J. Shen, H. Yu, B. Xu, and M. Xin

Shandong Inst. Spacecraft Electrical Tech., China

LICp-5

1 kHz repetition rate, giant-UV-pulse generation in [100] Nd:YAG / [110] Cr:YAG micro-laser under intensive pulse pumping

L. Zheng and T. Taira
Inst. Mol. Sci., Japan

LICp-6

Polarization dependence of saturable absorption in Cr:YAG

Y. Sato and T. Taira
Inst. Mol. Sci.

HEDSp14 13:00-15:00

Chair: H. Nakamura
Osaka University, Japan

HEDSp14-1

High-quality electron beam generation by self-truncated ionization injection (STII)

Song Li
Shanghai Jiao Tong University, China

HEDSp14-2

Characteristics of radiation from the interaction between heavy element plasma and high intensity laser

Daiki Kawahito
Kyoto university, Japan

HEDSp14-3

Generating Surface Plasmon Resonance by interacting Laser with Ag Grating

Takafumi Otsuki
Osaka University, Japan

HEDSp14-4

Construction of 1D and 2D array detectors for high-energy X-ray measurement

Yukio Hayashi
QST Kansai Photon Science Institute, Japan

HEDSp14-5

Study of Betatron x-ray enhancement and quasi-monoenergetic electron beam generation from ionization injection based on LWFA

Huang Kai
QST Kansai Photon Science Institute, Japan

HEDSp14-6

Conical Forward THz Emission From Ultra-short Pulse Laser Created Plasma

Tadashi Shimizu
Utsunomiya University, Japan

HEDSp14-7

Terahertz Radiation from Laser-Induced Plasma by Applying a Transverse Static Electric Field

Takuya Fukuda
Utsunomiya University, Japan

HEDSp14-8

Development of Capillary Discharge Waveguide with Segmented Electrodes for Laser Wakefield Acceleration

Yuki Ohashi
Nagaoka University of Technology, Japan

HEDSp14-9

Development of an optically synchronized stable pump source for OPCPA

Yasuhiro Miyasaka
QST, Japan

HEDSp14-10

Neutron angular and energy distribution of Lithium Target Reaction with Laser Driven Protons

Koichi Ogura
QST, Japan

HEDSp14-11

Soliton Formation in Strongly Magnetized Plasmas

Wu Feng
Kyoto University, Japan

HEDSp14-12

Numerical Analysis for MHD Dynamics produced by Capillary Discharge for Plasma Wave Guide

Takashi Kikuchi
Nagaoka University of Technology, Japan

HEDSp14-13

Development of a high repetition rate proton transverse beam profile diagnostic for laser-plasma ion sources

Nicholas P. Dover
QST, Japan

HEDSp14-14

Coherent Cherenkov Terahertz Generation by Laser-plasma Accelerated Electron Beam

Satoshi Wakamatsu
Osaka University, Japan

HEDSp14-15

Development of a few-cycle laser system for efficient electron self-injection in laser-driven acceleration

Keiichi Sueda
Osaka University, Japan

HEDSp14-16

Development of a high temporal and spatial resolution plasma diagnostics system for laser wakefield acceleration

Junpei Ogino
Osaka University, Japan

HEDSp14-17

Transition of Molecular Mixture between Molecular Fluid and Ionic Fluid

Yohei Fujimoto
Osaka University, Japan

HEDSp14-18

Study and design of electron source based on laser wakefield acceleration and ultrashort electron beam transport for compact free electron laser

Shinichi Masuda
Osaka University, Japan

Poster Session <Exhibition Hall A>

Friday, May 20

HEDSp14 13:00-15:00

OMCp 13:00-14:30

HEDSp14-19

Recent progress on laser plasma accelerator and Platform laser system for multistage laser wakefield acceleration at Osaka university

Takamitsu Otsuka
Osaka University, Japan

HEDSp14-20

Higher order dispersion control by using assist pulse compression for the steepness laser pulse generation

Michiaki Mori
Kansai Photon Science Institute, Japan Atomic Energy Agency, Japan

HEDSp14-21

Laser-shock exploration of phase transformation of silicates system in the high-pressure melt

Toyohito Nishikawa
Osaka University, Japan

HEDSp14-22

Spectroscopic Observation of Molecular Mixture System under Laser-driven Shock Compression

Ryo Hazama
Osaka University, Japan

HEDSp14-23

Improvement of electron transport beamline with magnetic shield

Koki Osako
Osaka University, Japan

HEDSp14-24

Characterization of proton beams for medical applications

Dmitri Zhidkov
Institute for Theoretical and Experimental Physics, Russia

HEDSp14-25

Development of soft X-ray spectrometer in water window for LAPLACIAN project

Yuki Taguchi
Osaka University, Japan

HEDSp14-26

Upgrading of X-ray measurement system for P-cube laser experiment on LAPLACIAN project

Hiroataka Nakamura
Osaka University, Japan

HEDSp14-27

Staging laser wakefield acceleration with single gasjet target and two laser pulses

Nobuhiko Nakanii
QST Kansai Photon Science Institute, Japan

HEDSp14-28

Indirect monitoring shock waves generation stability during visible laser pump and XFEL probe in high energy density physics experiments

Tatiana Pikuz
Osaka University, Japan

HEDSp14-29

Experimental system developments for in situ observation of laser-shock compression dynamics using the high power laser and SACLA-XFEL

Kenjiro Takahashi
Osaka University, Japan

HEDSp14-30

Development of Fiber Laser for Dielectric Laser Accelerator

Hayato Okamoto
University of Tokyo, Japan

OMCp-1

Optical gradient force in photonic crystal dual beam

Chien-Chang Chiu, Fu-Li Hsiao
Institute of Photonics, National Changhua University of Education, Taiwan

OMCp-2

Holographic mapping of gold nanoparticles based on twilight-field holographic microscopy

Siti Nabilah Hassan, Kazufumi Goto, and Yoshio Hayasaki
Center for Optical Research & Education (CORE), Utsunomiya University, Japan

OMCp-3

Highly flexible plasmon-assisted manipulation based on optical nonlinearity

Masayuki Hoshina, Nobuhiko Yokoshi and Hajime Ishihara
Department of Physics and Electronics, Osaka Prefecture University, Japan

OMCp-4

LC microlens array without disclination lines by controlling pretilt angle

Che-Ju Hsu¹, Bao-Long Chen², and Chi-Yen Huang^{1,2}
¹Graduate Institute of Photonics, National Changhua University of Education, Taiwan, ²Department of physics, National Changhua University of Education, Taiwan

OMCp-5

Positive-negative switchable liquid crystal lens with dual hole-patterned electrode

Yung-Hsiang Hsu¹, Chia-Rong Sheu¹
¹Department of Photonics, National Cheng Kung University, Taiwan, ²Advanced Optoelectronic Technology Center, National Cheng Kung University, Taiwan

OMCp-6

Theoretical investigation of lateral resolution given by annular super-resolution phase plate

Yoshinori Iketaki^{1,2}, Hiroshi Kumagai², Kumei Nagai³ and Nandor Bokor⁴
¹Olympus Corporation, Japan, ²School of Allied Health Sciences Physics, Kitasato University, Japan, ³NTT-AT, Japan, ⁴Department of Physics, Budapest University of Technology and Economics, Hungary

OMCp-7

Low Voltage Liquid Crystal Lens with addition of a Ring Floating Electrode

Jyun-Jia Jhang¹, Che-Ju Hsu¹, Chi-Yen Huang^{1,2}
¹Graduate Institute of Photonics, National Changhua University of Education, Taiwan, ²Department of physics, National Changhua University of Education, Taiwan

OMCp-8

Selective excitation towards optical size-separation for CdSe quantum dots

Mitsutaka Kumakura, Asuka Kinan
University of Fukui, Japan

Poster Session <Exhibition Hall A>

Friday, May 20

OMCp 13:00-14:30

XOPTp8 13:00-14:30

OMCp-9

Prism Compressor for dispersion compensation

Hongying Liu, Tian Lan, Zhenmin Shen, Xiaomei Chen, Guoqiang Ni
Beijing Institute of Technology, China

OMCp-10

Monocycle THz vortex generation by using a Tsurupica spiral phase plate

Katsuhiko Miyamoto^{1,2}, Bong Joo Kang³, Yuta Sasaki¹, Won Tae Kim³, Takayoshi Yano¹, Kazuki Sano¹, Tomohito Yamasaki¹, Fabian Rotermund³ and Takashige Omatsu^{1,2}
¹Graduate School of Advanced Integration Science, Chiba University, Japan, ²Molecular chirality research center, Chiba University, Japan, ³Department of Physics and Division of Energy Systems Research, Ajou University, Korea

OMCp-11

Selective plasmonic optical trapping of nano sized fluorescence dye aggregates

Ayaka Mototsuji¹, Tatsuya Shoji¹, Hiroshi Yao², Takahiro Yoshii³, Kei Murakoshi³, Yasuyuki Tsuboi¹
¹Graduate School of Science, Osaka City University, Japan, ²Graduate School of Material Science, University of Hyogo, Japan, ³Graduate School of Chemical Sciences, and Engineering, Hokkaido University, Japan

OMCp-12

Kinetics simulation of nano-particle two-color trapping using resonant nonlinear optical effect

Tatsuya Nakai and Hajime Ishihara
Osaka Prefecture University, Japan

OMCp-13

Magnetic Trapping of Superconductor Micro-Particles Produced by Laser Ablation in Liquid Helium

Y. Takahashi¹, J. Suzuki¹, N. Yoneyama¹, Y. Tohkawa¹, N. Suzuki¹, M. Kumakura², M. Ashida³, F. Matsushima¹, and Y. Moriwaki¹
¹University of Toyama, Japan, ²University of Fukui, Japan, ³Osaka University, Japan

OMCp-14

High fidelity detection of single atoms trapped in holographic microtrap arrays

Hikaru Tamura¹, Tomoyuki Unakami¹, Jun He², Yoko Miyamoto³, and Ken'ichi Nakagawa¹
¹Institute for Laser Science, University of Electro-Communications, Japan, ²State Key Laboratory of Quantum Optics and Quantum Optics Devices, and Institute of Optoelectronics, Shanxi University, China, ³Department of Information and Communication Engineering, University of Electro-Communications, Japan

OMCp-15

Topological properties of superposition of two scalar Laguerre-Gaussian beams

Sunil Vyas, and Yoko Miyamoto
Department of Engineering Sciences, The University of Electro-Communications, Japan

OMCp-16

Ultrafast molecular dynamics by femtosecond CARS and hybrid FS/PS CARS spectroscopy

Yuanqin Xia¹, Zhibin Zhang¹, Yang Zhao¹, Sheng Zhang²
¹National Key Laboratory of Science and Technology on Tunable Laser, Harbin Institute of Technology, China, ²Department of Physics, Harbin Institute of Technology, China

OMCp-17

Numerical study on isotope separation of radioactive cesium by light-induced drift

Kenta Yuki, Leo Matsuoka, Shinichi Namba
Hiroshima University, Japan

XOPTp8-1

Multilayer-based X-ray optics for advanced light source applications

Q. Huang¹, Z. Zhang¹, Z. Wang¹, F. Bijkerk², E. Louis², R. Kruijts², F. Senf³, A. Erko³
¹Tongji University, Shanghai, China, ²University of Twente, Netherlands, ³Institut für Nanometeroptik und Technologie, Germany

XOPTp8-2

Metrology of the parabolic profile of X-ray refractive lens

A. Narikovich¹, I. Lyatun¹, D. Zverev¹, S. Savelyev¹, I. Snigireva², A. Snigirev^{1,2}
¹Immanuel Kant Baltic Federal University, Russia, ²ESRE, France

XOPTp8-3

Optimization of the optical performance of compound refractive X-ray lens

D.A. Serebrennikov¹, E.S. Clementyev^{1,2}, A. A. Snigirev¹
¹I. Kant Baltic Federal University, Russia, ²Institute for Nuclear Research RAS, Russia

XOPTp8-4

Wavefront measurement of sub-10-nm XFEL nanobeam produced by multilayer focusing mirrors

S. Kawai¹, S. Matsuyama¹, A. Nishihara¹, H. Yumoto², Y. Inubushi², T. Koyama², K. Tono², H. Ohashi², T. Katayama³, S. Goto², T. Ishikawa³, M. Yabashi³, K. Yamauchi¹
¹Osaka University, Japan, ²JASRI, Japan, ³RIKEN SPring-8 Center, Japan

XOPTp8-5

A variable-numerical-aperture x-ray focusing system using a two-stage adaptive Kirkpatrick-Baez mirrors based on piezo electric deformable mirrors

H. Hayashi¹, T. Goto¹, H. Nakamori^{1,2}, S. Matsuyama¹, T. Kimura³, K. P. Khakure¹, Y. Sano¹, Y. Kohmura⁴, M. Yabashi³, Y. Nishino³, T. Ishikawa⁴, K. Yamauchi¹
¹Osaka University, Japan, ²JTEC Corporation, Japan, ³Hokkaido University, Japan, ⁴RIKEN SPring-8 Center, Japan

XOPTp8-6

Size-controllable X-ray beam collimation using a two-stage adaptive Kirkpatrick-Baez mirror system based on piezoelectric deformable mirrors

T. Goto¹, H. Nakamori^{1,2}, S. Matsuyama¹, H. Hayashi¹, Y. Sano¹, Y. Kohmura³, M. Yabashi³, T. Ishikawa³, K. Yamauchi¹
¹Osaka University, Japan, ²JTEC Corporation, Japan, ³RIKEN Spring-8 Center, Japan

Poster Session <Exhibition Hall A>

Friday, May 20

XOPTp8 13:00-14:30

XOPTp8-7

High-resolution imaging XAFS using advanced Kirkpatrick-Baez mirror optics

S. Yasuda¹, S. Matsuyama¹, H. Okada², Y. Sano¹, Y. Kohmura³, M. Yabashi³, T. Ishikawa³, K. Yamauchi¹
¹Osaka University, Japan, ²JTEC Corporation, Japan, ³RIKEN SPring-8 Center, Japan

XOPTp8-8

Fabrication of Strain-Free Crystal Optics for a Hard X-ray Split-and-Delay Optical System

T. Hirano¹, T. Osaka¹, Y. Sano¹, Y. Inubushi², S. Matsuyama¹, K. Tono², T. Ishikawa³, M. Yabashi³, K. Yamauchi¹
¹Osaka University, Japan, ²JASRI, Japan, ³RIKEN SPring-8 Center, Japan

XOPTp8-9

Electroforming process specialized for fabrication of x-ray ellipsoidal mirror

T. Kume, S. Egawa, Y. Takeo, H. Mimura
 The University of Tokyo, Japan

XOPTp8-10

Development of figure correction system for master mandrel of ellipsoidal x-ray mirror

Y. Takei, T. Higashi and H. Mimura
 The University of Tokyo, Japan

XOPTp8-11

Development of differential deposition system with a spatial resolution better than 100µm

M. Nagayama, H. Motoyama, H. Mimura
 The University of Tokyo, Japan

XOPTp8-12

Current status of development of ultraprecise Wolter mirror for soft X-ray microscopy

S. Egawa, T. Kume, Y. Takei, Y. Takeo, H. Motoyama, H. Mimura
 The University of Tokyo, Japan

XOPTp8-13

Evaluation of degree of spatial coherence at a soft X-ray beamline of SPring-8

Y. Takeo¹, H. Motoyama¹, Y. Senba², H. Kishimoto², H. Ohashi², H. Mimura¹
¹The University of Tokyo, Japan, ²JASRI, Japan

XOPTp8-14

Wavefront measurement using ptychographic phase retrieval for evaluating figure and alignment errors of ellipsoidal mirror

Y. Takeo, T. Saito, H. Mimura
 The University of Tokyo, Japan

XOPTp8-15

X-ray Transmission Gratings Fabricated by Metallic Glass Imprinting Technique

W. Yashiro¹, K. Kato¹, S. Maryam¹, A. Momose^{1,2}, T. Shinohara³, H. Kato¹
¹Tohoku University, Japan, ²ERATO-JST, Japan, ³JAEA, Japan

XOPTp8-16

Measurement of the Modulation Transfer Function of X-ray scintillator via scattering from random-media

M. Manfreda¹, M.D. Alaimo², M. Potenza³, M. Giglio³
¹Elettra, Sincrotrone Trieste, Italy, ²Politecnico di Milano, Italy, ³Università degli studi di Milano, Italy

XOPTp8-17

X-ray high resolution diffractometry based on refractive optics

P. Ershov¹, S. Kuznetsov², I. Snigireva³, V. Yunkin², A. Snigirev¹
¹IKBFU, Russia, ²IMT RAS, Russia, ³ESRF, France

XOPTp8-18

Damage on EUV multilayer optics caused by irradiation of focused pico-second soft x-ray laser pulses

M. Ishino¹, S. Ichimaru², M. Nishikino¹, N. Hasegawa¹, M. Hatayama², T. Kawachi¹, S. Oku²
¹JAEA, Japan, ²NTT Advanced Technology Corporation, Japan

XOPTp8-19

Hard X-ray in-line interferometers fabricated by Si planar technologies

M. Lyubomirskiy¹, I. Snigireva¹, S. Kuznetsov², V. Yunkin², V. Kohn³, A. Snigirev⁴
¹ESRF, France, ²Institute of Microelectronics and High purity Materials RAS, Russia, ³National Research Centre "Kurchatov Institute", Russia, ⁴Baltic Federal University, Russia

XOPTp8-20

Ultra-fast single X-ray photon detector based on tungsten silicide

X. Zhang
 Universität Zürich, Switzerland

XOPTp8-21

Focus study measuring phase effects of a double bent Laue beam expanding monochromator

M. Martinson¹, N. Samadi¹, A. Gomez², D. Chapman²
¹University of Saskatchewan, Canada, ²Canadian Light Source, Canada

XOPTp8-22

A Phase Space Beam Position Monitor for Synchrotron Radiation

N. Samadi¹, B. Basse¹, M. Martinson¹, G. Belev², L. Dallin², M. Jong², D. Chapman²
¹University of Saskatchewan, Canada, ²Canadian Light Source, Canada

XOPTp8-23

A Bent Laue Energy Dispersive Monochromator: An Example Application of Speciation Imaging at the Selenium K-edge

P. Qi¹, N. Samadi¹, M. Martinson¹, B. Basse¹, D. Chapman²
¹University of Saskatchewan, Canada, ²Canadian Light Source, Canada

XOPTp8-24

Ultraviolet photodetector based on a-IGO thin film

C. Hsu¹, H. Lu¹, C. Yang¹, Y. Su^{1,2},
¹National Cheng Kung University, Taiwan, ²Kun-Shan University, Taiwan

XOPTp8-25

Ultraviolet photodetectors with Ag Nanoparticle-Decorated ZnO Nanorods

C. Yang¹, Z. Wang¹, and Y. Su^{1,2}
¹National Cheng Kung University, Taiwan, ²Kun-Shan University, Taiwan

XOPTp8-26

X-ray microscopy and microtomography at imaging beamline of SPring-8

A. Takeuchi, K. Uesugi
 JASRI, Japan

XOPTp8-27

Spatial Oscillations of High Harmonics Generated in Noble Gas Interacting with Two-Color Laser Field

S. Y. Stremoukhov^{1,2}, A. A. Pudov¹, A. V. Andreev¹
¹Moscow State University, Russia, ²National Research Centre "Kurchatov Institute", Russia

XOPTp8-28

The influence of beryllium microstructure on the compound refractive lenses optical properties in X-ray microscopy

I. Lyatun¹, P. Ershov¹, A. Goikhman¹, I. Snigireva², A. Snigirev¹
¹Immanuel Kant Baltic Federal University, Russia, ²ESRF, France

XOPTp8-29

Formation and interferometric measurements of X-ray vortices

Y. Kohmura¹, D. Takei¹, Y. Suzuki²
¹RIKEN SPring-8 Center, Japan, ²The University of Tokyo, Japan

XOPTp8-30

Development of high spatial resolution X-ray micro-tomography system at SPring-8

K. Uesugi, A. Takeuchi, M. Hoshino
 JASRI, Japan

XOPTp8-31

Development of a new method of analyzing molecular orientation by soft X-ray absorption spectroscopy (XAS)

E. Takahashi¹, K. Imanishi¹, S. Suehiro¹, Y. Suzuri², Y. Muramatsu³, E.M. Gullikson⁴
¹Sumika Chemical Analysis Service, Ltd., Japan, ²Yamagata University, Japan, ³University of Hyogo, Japan, ⁴Lawrence Berkeley National Laboratory, USA

Poster Session <Exhibition Hall A>

Friday, May 20

XOPTp8 13:00-14:30

XOPTp8-32**4D X-ray phase-tomography using spectrum tuned synchrotron radiation**

H. Takano^{1,2}, Y. Wu^{1,2}, T. Umemoto¹, M. Hoshino³,
W. Yashiro^{1,2}, A. Momose^{1,2,3}
¹Tohoku University, Japan, ²JST-ERATO, Japan,
³JASRI, Japan

XOPTp8-33**Coherent diffraction imaging of non-isolated objects with apodized illumination**

K. P. Khakurel¹, T. Kimura¹, H. Nakamori^{2,3},
T. Goto³, S. Matsuyama³, K. Yamauchi³, Y. Nishino¹
¹Hokkaido University, Japan, ²JTEC Corporation,
Japan, ³Osaka University, Japan

XOPTp8-34**Total-electron-yield measurements in the soft X-ray region of insulating organic films using conductive substrates**

Y. Muramatsu¹, T. Ouch¹, E. M. Gullikson²
¹University of Hyogo, Japan, ²Lawrence Berkeley,
National Laboratory, USA

XOPTp8-35**Ablation of Si and Cu with capillary discharged 46.9nm x-ray laser focused by a cylinder mirror and a toroidal mirror**

H. Cui, Y. Zhao, W. Zhang, W. Li, S. Jiang, L. Li
Harbin Institute of Technology, China

What's Happening in the Exhibition Hall?

OPTICS & PHOTONICS International Exhibition 2016 (OPIE '16)

In 1994, The Laser Society of Japan initiated Laser EXPO, which now consists of seven optics-related EXPOs; Lens Design & Manufacturing Expo, Optical Measurement & Positioning Expo, IR + UV EXPO, Medical & Imaging EXPO, Space & Astronomical Optics EXPO and Micro & Nano EXPO.

This is now the leading Asian event for advancing optical solutions.

Make time in your day to visit the exhibit hall, which features a diverse group of companies, representing every facet of the optics and photonics industries.

Learn about new products, find technical and business solutions and gain the most up-to-date perspective of the laser-related business environment. Review the extensive list of exhibitors below to see who you'll meet at OPIE '16.

There is no charge to attend the exhibit for conference registrants and exhibit-pass only visitors.

Highlights

May 18 10:15-11:25 at Stage B

Measuring the Size of the Global Optics and Photonics Market

Peter F. Hallett, Director, Marketing and Industry Relations, SPIE

May 18 14:00-15:30 at Stage A

Frontiers and Opportunities in Biophotonics

Dr. Thomas Baer, Executive Director, Stanford Photonics Research Center

May 18-20 at Booth No. G-25

BLUE DIODE LASER COATING SYSTEM

SIP Cross-ministerial Strategic Innovation Promotion Program

(Research and development of the laser coating technology to realize high value-added design and fabrication)

ALCTION D Advanced Laser Coating Technology for Innovation to Delight

Exhibitor List

3D Innovation Co., Ltd.
ABILITY OPTO-ELECTRONICS
TECHNOLOGY CO., LTD.
Actes Kyosan
AD Science Inc.
Advanced Communication Media Co., LTD.
Aerotech
AGC TECHNO GLASS Co., Ltd.
AIC, Inc.
AIM. CORPORATION
AISAY Corporation
Aiso Corp.
AkiTech LEO inc.
ALPHA-ONE ELECTRONICS LTD.
Altechna
AMAKUSA OPTICAL CO., LTD.
AMETEK Co., Ltd.
AMPLITUDE JAPAN G.K.
Angewandte Physik & Elektronik (APE)
GmbH
Archer OpTx, Inc.
ARTRAY CO., LTD.
Asahi Glass Co., Ltd.
ASAHI KASEI ENGINEERING
CORPORATION
ASAHI PRECISION Co., Ltd.
ASO Corporation
Autex, Inc.
AVAL DATA CORPORATION
AYASE Co., Ltd.
BASO Precision Optics Ltd.
BKtel Pacific Rim (Japan) Inc.
Buhler K.K.
Bunkoukeiki Co., Ltd.
BWT JAPAN Inc.
Canare Electric Co., Ltd.
Canon Marketing Japan Inc.
CBC Optics Co., LTD.
CCS Inc.
CDGM GLASS CO., LTD.
CERATECH JAPAN Co., Ltd.
Chroma Technology Japan
CHUO PRECISION INDUSTRIAL CO., LTD.
CIOE - China International Optoelectronic
Exposition

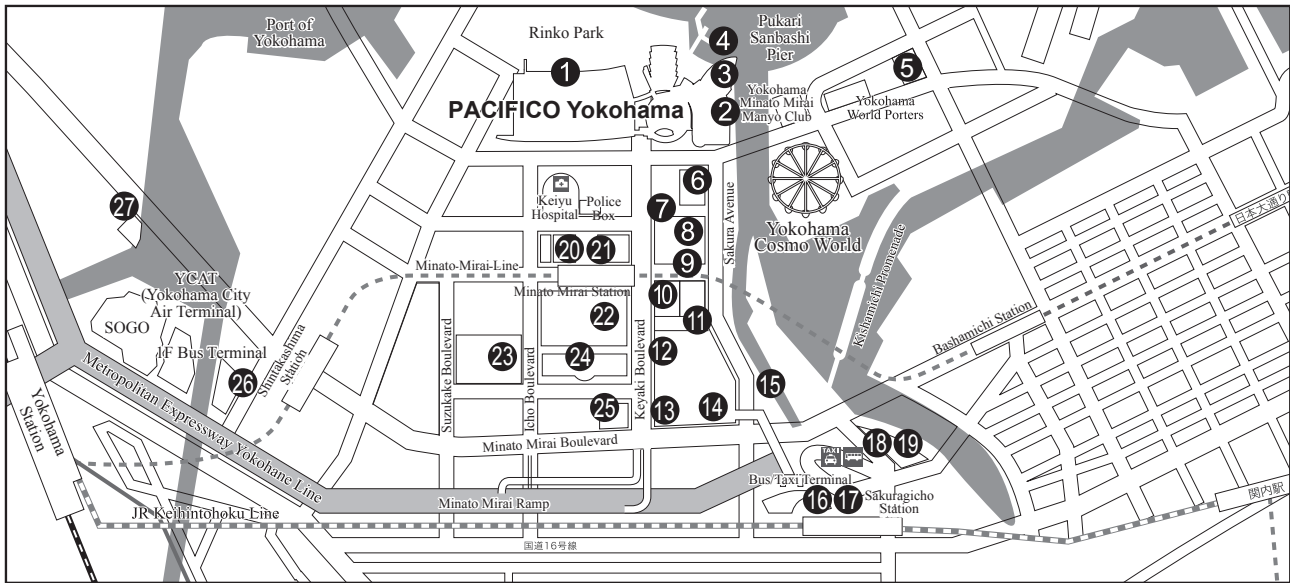
Circle&Square Co., Ltd.
CLEO:2016 The Conference on Lasers and
Electro-Optics
Coherent Japan, Inc.
COMMONWEALTH OF PENNSYLVANIA
JAPAN OFFICE
Consortium of Visible Laser Diode
Applications
Cornes Technologies Ltd.
Craft Center SAWAKI Inc.
DA Tec. Inc.
DAICO MFG CO., LTD.
Delta Optics Inc.
Dongguan Lambda Optics Technology Co.,
Ltd.
EBA JAPAN CO., LTD.
EDMUND OPTICS JAPAN CO., LTD.
Enable K.K.
Eterge Opto-Electronics Co., LTD.
EURESYS s.a.
FANUC CORPORATION
FEIRA Co., Ltd.
Finger Lakes Instrumentation
First Light, Inc.
FIT Corporation
FIT Leadintex, Inc.
Five Lab Co., Ltd.
FLIR Systems Japan K.K.
FM YOKOHAMA
Fuji High Frequency Co., Ltd.
FUJII OPTICAL CO., LTD.
FUJITOK CORPORATION
FURUKAWA ELECTRIC CO., LTD.
GEE
Go!Foton, Inc.
GRAVITON
GUANGZHOU SAT INFRARED
TECHNOLOGY CO., LTD.
HAMAMATSU PHOTONICS K.K.
Hanamura Optics Corp.
HAYASHI WATCH-WORKS CO., LTD.
Hellma Materials GmbH
HERZ CO., LTD.
HighFinesse Japan Co., Ltd.
HIGH-TECH CORPORATION
HIKARI GLASS CO., LTD.
HIKARI INC.

Hongjing Optical Technology Co., Ltd.
HORIBA, Ltd.
HOTTA LENS CO., LTD.
HOTTA Optical Co., Ltd.
IDIL Fibres Optiques
IEICE Technical Committee on System
NanoTechnology
IIDA LIGHTING CORPORATION
IIYAMA PRECISION GLASS CO., LTD.
Ikuta seimitsu Co., Ltd.
ImPACT
IMRA America, Inc.
Industrial Research Institute of Ishikawa
Infinitegra, Inc.
Innovation Research Corporation
Institute for Laser Technology
Institute of Laser Engineering, Osaka University
IR System co., ltd.
ISUZU GLASS LTD.
Itabashi Industrial Promotion Public
Corporation
Japan Aerospace Exploration Agency (JAXA)
Japan Atomic Energy Agency
Japan Cell Co., Ltd.
Japan DEVICE Ltd.
JAPAN IMPOTERS ASSOCIATION OF
LASERS & ELECTRO-OPTICS
Japan Industrial Imaging Association
Japan Intense Light Field Science Society
Japan Laser Corporation
Japan Optical Glass Manufacturers' Association
JAPAN OPTICAL MEASURING
INSTRUMENTS MANUFACTURERS
ASSOCIATION
JAPAN OPTOMECHATRONICS
ASSOCIATION
Japan Photonics Council
JAPAN PRECISION MEASURING
INSTRUMENTS MANUFACTURERS
ASSOCIATION
Jiangsu Yudi Optical Co., Ltd.
JobsOhio
Joining and Welding Research Institute Osaka
University
JTEC CORPORATION
KADOMI OPTICAL INDUSTRY CO., LTD.
Kanagawa Academy of Science and Technology
Kanagawa Industrial Technology Center

- Kanagawa Shimbun
 KANTUM ELECTRONICS
 KAPID
 Keysight Technologies Japan G.K.
 Keystone International Co., Ltd.
 KIMMON KOHA CO., LTD.
 Kinoshita Optical Research Institute Co., Ltd.
 Kiyohara Optics Inc.
 KLV Co., Ltd.
 KOA COMMERCIAL CO., LTD.
 KOA OPTEC CO., LTD.
 Kogakugiken Corp.
 KOJIMA ENGINEERING CO., LTD.
 KOKUSAI SHOJI CO., LTD.
 Kokyo, Inc.
 KSP, Inc.
 KYOCERA OPTEC Co., Ltd.
 Kyokko Trading Co., Ltd.
 KYOKUEI KENMAKAKOU Co., Ltd.
 Kyosei Factory Co., Ltd.
 Laser Concierge, Inc.
 Laser Focus World Japan
 LASER PLATFORM ASSOCIATION
 Laser Society of Japan
 LASER World of Photonics (Messe Muenchen)
 LEONI Fiber Optics GmbH
 LIDA OPTICAL AND ELECTRONIC CO., LTD.
 Light Conversion Ltd.
 Lighten Corp
 LikuanWill Co., LTD.
 Linkers Corporation
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 Micromachine Center
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 MicroVision, Inc.
 Mita Giken Co., Ltd.
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 Nantong Ruisen Optical Element Technology Co., LTD.
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 National Institute of Advanced Industrial Science and Technology
 Natsume Optical Corp.
 NEOARK Corporation
 NEOTRON CO., LTD.
 Next generation Space system Technology Research Association (Nestra)
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 NIHONMARUKO
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 NIPPON P-I CO., LTD.
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 NITTO JUSHI KOGYO CO., LTD.
 NITTO OPTICAL CO., LTD.
 Noughts And Crosses, Ltd.
 NPS, INC.
 NTKJ Co., Ltd.
 NTT Advanced Technology Corporation
 Ocean Photonics, Inc.
 OHARA
 OHARA INC.
 OHYO KOKEN KOGYO CO., LTD.(OKEN)
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 OMRON Corporation
 OPCell Co., Ltd.
 OPHIR JAPAN LTD.
 Optical Solutions Corporation
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 Opto Taiwan 2016 (PIDA)
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 Optoelectronics Industry and Technology Development Association
 OPTO-LINE, Inc.
 OPTOMECHATRONIX. INC.
 Optopia Co., Ltd.
 OptoSirius corporation
 Opto-Works Co., Ltd.
 ORSA Corporation
 OSA - The Optical Society
 Osada Photonics International
 OSAKA FUJI Corporation
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 OXIDE Corporation
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 PHOTOTECHNICA CORP.
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 Pi Photonics, Inc.
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 ProLight Opto
 Prolinx Corporation
 QD Laser, Inc.
 QED Technologies
 Rayture Systems Co., Ltd.
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 REOSC
 REVOX Inc.
 Ryokosha Co., Ltd.
 SAN-EI ELECTRIC CO., LTD.
 SANEI Precision Manufacturing Co., Ltd.
 Sanekeisha & Co., Ltd.
 SAN-ES TRADING CO., LTD.
 Sango Metal Industrial Co., Ltd.
 SANRITSU SEIKI
 santec
 SCANSOL Inc.
 SEA FORCE CO.
 Seiwa Optical Co., Ltd.
 Sensofar Japan LTD.
 SETSUYO ASTEC/HighPowerLighting
 Shibuya Optical Co., Ltd.
 SHIMADZU CORPORATION
 shinano seimitsu Co., Ltd.
 SHINKOH ELECTRONICS/FAULHABER
 SHONAN OPTICAL MACHINE CO., LTD.
 Showa Optronics Co., Ltd.
 SIGMA TECH. CO., LTD.
 Single-Nanometer Figuration and the Structure-Induced Property, The Japan Society of Applied Physics
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 Society for Chemistry and Micro-Nano Systems (CHEMINAS)
 Spectra Quest Lab. Inc.
 Spectral Application Research Laboratory Inc.
 Spectra-Physics K.K.
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 YOKOHAMA National Univ. Maruo Lab.
 Yucaly Optical Laboratory, Inc.
 Zeus

PACIFICO Yokohama RESTAURANT MAP

As of Apr. 2016
198 restaurants



① PACIFICO Yokohama Exhibition Hall		⑥ The Yokohama Bay Hotel Tokyu		2F Buffet Restaurant PREMIUM BUFFET 045-228-2706
2F Restaurant & Bar		3F French Cuisine		1F Hamburg & Steak
DANZERO	045-633-3563	Queen Alice	045-682-2216	American House
2F Italian Restaurant		3F Chinese Cuisine		1F Mexican fast food
Ristorante ATTIMO	045-640-1270	Turandot	045-682-0361	CARNITAS
2F Japanese Noodle "UDON"		2F Allday Dining		1F Fried Chicken
Inaniwaya Seibe	045-662-9565	Cafe Tosca	045-682-2218	KENTUCKY FRIED CHIKEN
2F Fast food		2F Lounge		045-650-1012
DONBURI Kitchen	045-221-1239	Somerhouse	045-682-2219	1F Sandwiches & Coffee
(Yokohama Milk Hall)		2F Bar		SUBWAY
2F Convenience Store		Jack's	045-682-2220	045-682-2813
7 - Eleven	045-227-5610	1F Japanese Traditional Cuisine		1F Hamburger
1F Convenience Store		Oshima	045-274-8080	McDonald's
Daily YAMAZAKI	045-662-4085			045-228-3158
② PACIFICO Yokohama Conference Center		⑦ Queen's Tower C		[3rd]
6F Cafeteria		6F Cafeteria		1F Bakery
BAYBRIDGE CAFETERIA	045-223-2222	Queen's Tower Cafeteria	045-682-4100	Pompadour
2F Tearoom		1F Cafe		045-682-2868
PACIFICO YOKOHAMA TEA ROOM	045-223-2222	Queen's Tower Cafe Fresca	045-682-4102	[STATION CORE]
③ InterContinental Yokohama Grand		⑧ Queen's Square Yokohama		B1F Indian Restaurant
31F Chinese Restaurant		1F Cafe		Khazana
Karyu	045-223-2267	CAFÉ de CRIÉ	045-640-5128	045-682-2873
4F Japanese Cuisine		⑨ Queen's Square Yokohama [at!]		B1F Barbecue Restaurant
Nadaman	045-223-3344	[1st]		Kangen
2F French Restaurant		2F a speciality store in SPAGHETTI		045-682-2882
Azur	045-223-2267	J PASTA	045-641-6336	B1F Garlic Cuisine
2F Italian Restaurant		2F Tea Salon & Restaurant		Garlic Jo's
La Vela	045-223-2267	LE SALON DE NINA'S	045-682-2740	045-682-2870
2F Lounge & Bar		2F Standing bar		B1F SUSHI
Marine Blue	045-223-2332	WINE STAND BASIL	045-263-8638	Shimotakaido Asahizushi Sohonten
1F Buffet Dining		1F Coffee Store		045-682-2877
Ocean Terrace	045-223-2267	Starbucks Coffee	045-682-2755	B1F Chinese Restaurant
④ Pukari-sanbashi Pier		[2nd]		CHENMAPODOUFU
2F Seafood Bistro		5F Korean Restaurant		045-682-2866
Pier 21	045-223-2267	Ifu	045-228-5037	B1F Pork cutlet speciality Restaurant
Cruising Bar (*Passenger cruiser)		4F Japanese Cuisine		Saboten
Cruising Bar Yokohama Paradise	045-263-9360	daidaiya	045-228-5035	045-683-6104
⑤ JICA Yokohama		3F Yakitori (Japanese Restaurant)		B1F Soba (Japanese Noodle Restaurant)
2F Cafe & Restaurant		Sakaeya	045-682-2700	Sarashina Ikkyu
Port Terrace Cafe	045-641-1498	3F Café Restaurant		045-682-2886
		Twenty four seven restaurant	045-222-6522	B3F Beer Dining
		2F Pasta & Grill		NEW YORK GRAND KITCHEN
		Grill, Dining Roselait	045-682-2801	045-226-0733
				⑩ QUEEN'S EAST
				2F Restaurant
				KIHACHI
				045-222-2861
				B1F Cafe
				KEYUCA CAFE
				045-640-1366
				B1F Korea pan Sundub
				TOKYO SUNDUB
				045-640-1077
				B1F Hakata Ramen Noodle
				HAKATA IPPUDŌ
				045-227-6305
				B1F Tantan noodles/Dim Sum/Hong Kong Sweets
				KO YA
				045-228-7358

⑩ QUEEN'S EAST

B1F Coffee and Pancake (*Take out)	
58 Cafe	045-664-5859
B1F Conveyor-belt sushi bar	
YOKOHAMA NUMAZU-Kou	045-232-4027
B1F Japanese Style Fried Chicken	
TORIMARU	045-651-9010
B1F Thai Casual Restaurant	
Keawjai	045-682-2679
B1F Dining / Cafe	
Kamakura Bowls	045-651-5450

⑪ Queen's Tower A Shops & Restaurants

2F Yougurteria	
ARROWS PALETTE	045-682-5501
2F Doughnuts Coffee	
Krispy Kreme Doughnuts	045-227-2330
1F Cafe	
CAFFE VELOCE	045-682-0550
1F Korean Home Cooked Food	
Korean Kitchen Shijan	045-682-5645
1F Italian restaurant	
Pesce d'oro	045-682-5635
1F American restaurant & bar	
Hard Rock CAFE YOKOHAMA	045-682-5626

⑫ CROSS PATIO

1F Cafe & Bar, Pasta	
PRONTO Minatomirai	045-223-2628

⑬ LANDMARK TOWER

[TOWER DINING]

5F Pasta & Deli	
Café Rdente	045-651-7757
5F Buffet restaurant	
KEKE	045-225-6311
5F Italian fresh restaurant	
Chef 's V	045-225-6188
5F Chinese Cuisine Taiwan Family Style	
A-li Mountain's City	045-228-9008
5F Italian restaurant	
MANGIA MANGIA	045-227-0369

[LANDMARK PLAZA]

5F Pizza · Pasta · Grill	
TRATTORIA VENTO	045-222-5570
5F Sushi	
Uogashi-zushi	045-222-5550
5F Restaurant BAR	
JO'S BAR	045-222-5616
5F Japanese restaurant	
Kissho	045-222-5522
5F Pork restaurant	
Yamato	045-225-6451
5F Meat bar	
DOURAKU CORRIDA	045-323-9029
4F Japanese restaurant	
Minokichi	045-222-5420
3F Italian gelato	
Gelato Firenze	045-222-5304
3F CAFE	
ANTICO CAFE AL AVIS	045-263-6969
3F Fresh Cake & Cafe	
HARBS	045-263-9027
3F Specialty Coffee store	
Tully's Coffee	045-226-1181

2F Hamburgers	
McDonald's	045-222-5318
2F Cafe	
Mauka Meadows	045-222-5225
1F Ma-po Dou-fu	
Ma-po Dou-fu Chen Kenichi	045-222-5111
1F Create bowl of rice and soup	
Komeraku	045-640-5088
1F Noodle	
noodle shop KOOKAI	045-222-5125
1F Cock food	
Tori Sanwa	045-263-8180
1F Noodle	
Tsukemen TETSU	045-670-7877
1F Beef tongue barbecue house	
KISUKE	045-228-7835
1F Udon noodle	
Konaya	045-228-6221
1F Deli	
Soup Stock Tokyo	045-224-6855
1F Ice cream shop	
COLD STONE CREAMERY	045-222-5126
1F Drink stand · character goods	
moomin stand	045-227-6326
1F Spaghetti	
Goemon	045-222-5197
1F American restaurant	
Sizzler	045-222-5316
1F Curry	
Olive House	045-222-5222
1F Pork outlet	
Wako	045-222-5124
1F Okonomiyaki	
Boteju	045-222-5122
1F Buckwheat noodles	
Nagasaka Sarashina	045-222-5120
1F Restaurant	
Aji sanpo Yokohama bunmei kaikan	045-222-5118
1F Bakery Cafe	
VIE DE FRANCE	045-222-5116
1F French Cafe & restaurant	
BRASSERIE LA CLASSE par AUX BACCHANALES	045-227-7585
1F Muffins	
Mrs.Elizabeth Muffin	045-222-5115
1F Cafe & restaurant	
La Maison ensoleillé table	045-226-5839
1F American cafe & restaurant	
Bubby's	045-681-0306
1F Coffee store	
Starbucks Coffee	045-225-0317
[DOCKYARD GARDEN (Mirai Yokocho)]	
B1F BBQ restaurant	
Dragon Kalbi	045-222-5529
B1F Beef organ meat hotpot	
Hakata Motsu-nabe Ooyama	045-228-8488
B2F Italian	
Bd26	045-222-5670
B2F Charcoal Flame Grill, Yakitori & Chicken Specialties	
Yakitori Aburi Sumiyaki Odori	045-650-1261
B2F udon izakaya	
Miyatake Udon	045-227-6200
B2F Meat dishes and Wine	
Yorozutei	045-319-4824
B2F robata	
Nakame no Teppen	045-319-6625

B2F Spanish People's Bar	
SPANISH ROCKY	045-319-4631
B2F KAISEN SHOKUDOU & YOSHOKU	
Seafood Market Marukami Dining	045-263-9303
B2F World Beer bar & restaurant	
World Beer Museum	045-664-2988
B2F Oyster & Wine	
Piatto Bianco	045-227-8577
B2F THAILAND FOODS	
TINUN	045-228-7407

⑭ Yokohama Royal Park Hotel

70F Sky Lounge	
SIRIUS	045-221-1155
68F Chinese Restaurant	
KOH-EN	045-221-1155
68F French Restaurant	
LE CIEL	045-221-1155
68F Japanese Restaurant	
SHIKITEI	045-221-1155
2F Main Bar	
ROYAL ASCOT	045-221-1155
B1F Cafe	
CAFÉ FLORA	045-221-1155
B1F Teppan-yaki	
YOKOHAMA	045-221-1155

⑮ Nippon Maru Memorial Park

Pizza & grill	
Yokohama Paradise	045-319-4555

⑯ New Otani Inn Yokohama

3F Dining & Cafe	
Shitamachi DINING & CAFE THE sea	045-210-0781

⑰ CIAL Sakuragicho

[MOMIJIZAKA GALLERY]

1F Deli	
Soup Stock Tokyo	045-232-4539
1F Korean Town Food	
Pocha	045-662-2577
1F Cafe	
CAFÉ LEXCEL	045-662-0677
1F Bakery Cafe	
ANDERSEN	045-228-9410
1F STEAK · PIZZA · WINE	
WINE HALL MOTOMACHI CLUB	045-263-6070
1F Beer Restaurant	
KIRIN CITY	045-227-5216

[TEISHABA BUFFET]

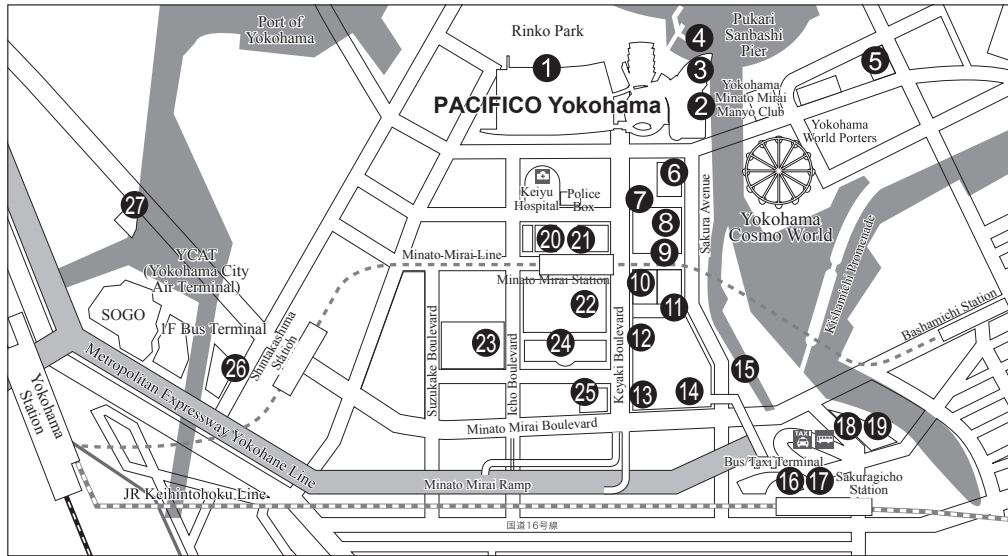
1F Conveyor belt sushi bar	
Nidaime-Gurumetei	045-228-7787
1F Chinese Restaurant	
CHUNGKING Szechwan Chinese Restaurant	045-228-9361
1F Restaurant	
KITCHEN JO'S	045-228-9925
1F Cafe & Bar, Pasta	
PRONTO	045-227-1305

[YOKOHAMA BAZAR]

1F FRESH FRUIT & VEGETABLE	
YOKOHAMA MIZUNOBU	045-228-9297
1F Coffee store	
Starbucks Coffee	045-227-9130

⑱ CROSS GATE

3F Yakitori, Kamameshi	
YOKOHAMA TORIGIN	045-210-0311
3F Italian Restaurant	
La Pausa Minatomirai	045-222-0785



19 Yokohama Sakuragicho Washington Hotel

- 24F Chinese
TOH-TEN-KOH 045-681-1015
- 5F DINING & BAR
BAYSIDE 045-683-3166

20 MM Park Building

- 1F Izakaya
Sangendo Minatomirai 045-228-3144
- 1F Taiwan Small Dish Cuisine & Dining BAR
A-LI-CASTLE 045-641-0178

21 MINATOMIRAI CENTER BUILDING

- 3F Chaina food
SEIREN Minatomirai ten 045-681-7334

22 MARK IS minatomirai

- 4F Cafe
Tully's Coffee 045-228-2050
- 4F Ramen
Hakata Daruma JAPAN 045-651-2422
- 4F Fresh fruit juice
karin 045-319-6200
- 4F Ice cream
Baskin Robbins 045-681-3120
- 4F Deep-fried skewer buffet
Kagura Shokudo "KUSHIYA" 045-641-5760
- 4F Seafood, Bar
Tsukiji Shokudo Genchan 045-319-6320
- 4F Chinese
CHAO 045-319-6755
- 4F Tonkatsu pork cutlet
Kamakura Katsu-tei Aratama 045-319-6711
- 4F Conveyor-belt sushi
Maguro-donya Megumi Suisan 045-319-6250
- 4F French
La Mere Poulard 045-319-6733
- 4F Hamburger steak specialty restaurant
ishigamaya 045-222-3767
- 4F Okonomiyaki
Yokohama Kotegaeshi 045-680-1180
- 4F SHABU SHABU KITCHEN
Shabukichi 045-228-8520

- 4F Fresh pasta specialty restaurant
Kamakura pasta 045-650-1781
- 4F Takoyaki
Negidako-Genten 045-319-6277
- 4F Okinawa cuisine
Nankurunaisa~ 045-319-6720
- 4F Chinese Cuisine
Yokohama Chinatown Fukumanen 045-319-6188
- 4F Deep-fried chicken plates
RANG MANG SHOKUDO 045-319-6717
- 4F Udon noodles
MARUGAME SEIMEN 045-681-2610
- 4F Ramen
KAMUKURA 045-319-6522
- 4F Set meals & Cafe
Obon de Gohan 045-319-6796
- 4F Cafe
HONOLULU COFFEE 045-641-5786
- 4F Western cuisine
Asakusa Kitchen Omiya 045-641-0888
- 4F Italian
Mano-e-Mano 045-319-6605
- 4F Asian ethnic
Asian Dining Kuu 045-319-6900
- 4F Soba noodles
Stone Mill Ground Soba Ishiraku 045-319-6101
- 3F Cafe
Cocktail-Do Coffee 045-319-6557
- 2F Cafe
Afternoon Tea TEAROOM 045-319-6270
- 1F Cafe & dining
AMALFI CAFFÉ 045-319-4711
- 1F Cafe
RH CAFE 045-319-6702
- 1F Cafe
j.s. pancake cafe 045-228-2105
- B1F Indian curry
Indian Restaurant Mumbai 045-650-8011
- B1F Dairy products, Ice cream
MACHIMURA FARM 045-640-5763
- B1F Korean deli
Hanbije DELI 045-681-8286

- B1F Bakery, Café
DONQ 045-323-9912
- B4F Pretzels & Café
Auntie Anne's 0120-600-159
- B4F Cafe
UESHIMA COFFEE SHOP 045-319-6377
- B4F Cafe & Bar, Pasta
PRONTO IL BAR 045-680-0166

23 M/M GRAND CENTRAL TERRACE

- 2F Tempura
TEMPURA FUKUNISHI 045-641-2924
- 2F Korean BBQ
YAKINIKU DOURAKU 045-232-4129
- 2F Wine dining
Rotisserie T's RAY 045-650-1450
- 2F Italian Restaurant
Ristorante UMIRIA 045-232-4919
- 2F Chinese Restaurant
Tenpujo 045-664-5888
- 1F Italian Bar & Dining
LEONE MARCIANO 045-232-4080
- 1F Thai Restaurant
mm THAI 045-228-8010

24 Yokohama Museum of Art

- 2F French
BRASSERIE T's Musée 045-664-5686

25 Mitsubishi Heavy Industries Yokohama Building

- 2F Izakaya
AMATARO Minatomirai 045-225-0903
- 2F Japanese Restaurant
GANKI MINATOMIRAI BLANCH 045-225-0943

26 Yokohama Mitsui Building

- 1F Cafe & Bar, Pasta
PRONTO Yokohama Mitsui Bld. 045-227-8707

27 BAY QUARTER YOKOHAMA

- 5F Izakaya
Sangendo BAY QUARTER YOKOHAMA 045-440-5768



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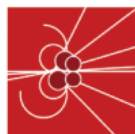
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AURORA (ウルトラファーストサイエンス用)



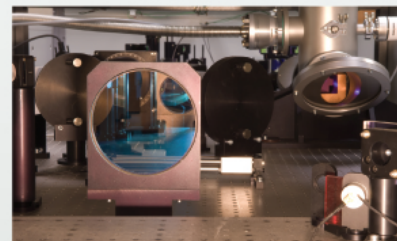
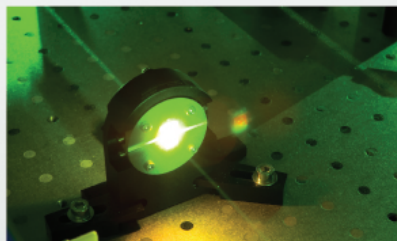
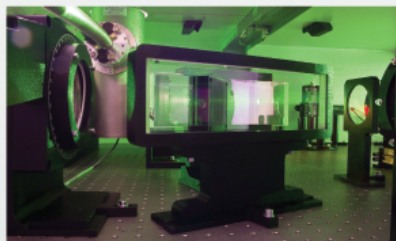
高出力CEP安定化レーザー >20 W at 1-10 kHz



超短パルス down to 15 fs



CEPシングルショット計測、制御



nothing but ultrafast