

ORGANIZERS



Renaissance Cloister by Sangallo  
Faculty of Civil and Industrial Engineering



SAPIENZA  
UNIVERSITÀ DI ROMA

SEPTEMBER 26-29 2017

# Nano 2017 Innovation

Rome, 26-29 September

## Conference & Exhibition



CO-ORGANIZERS



INSTITUTIONAL PARTNERS



IN COOPERATION WITH



www.nanoinnovation.eu

# index

**03**

welcome

**03**

committee

**10**

about us

**12**

Sapienza University of Rome

**15**

conference plan - September 26

**18**

conference plan - September 27

**22**

conference plan - September 28

**26**

conference plan - September 29

**30**

brokerage event

**32**

plenary speakers

**33**

keynote speakers

**39**

multi-tracks with parallel sessions

**62**

poster exhibition

**65**

Nanoinnovation's Got Talent

**67**

workshops

**76**

satellite events

**80**

meeting area

**82**

exhibitors

## Institutional Patronages



*Ministero degli Affari Esteri  
e della Cooperazione Internazionale*

*Ministero della Difesa*



REGIONE  
LAZIO

## Scientific Patronage



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# WELCOME

After the successful experience of the former events Nanoltaly and Nanotechitaly, their promoting Organizations, namely **Nanoltaly Association and AIRI - Italian Association for Industrial Research**, respectively, have agreed in 2016 to organize a new joined event: NanolInnovation.

The first edition of NanolInnovation has successfully finished with the following numbers: 1.034 participants, 21 co-organizers, 27 exhibitors, 12 industrial sponsors, 257 speakers, 2 plenary sessions, 2 tutorials, 12 international keynote lectures, 48 technical-scientific sessions, 9 workshops, 2 poster sessions, 1 art-nano show, 2 prizes for young researchers and 68 networking participants with 135 B2B meetings organized.

The second edition of NanolInnovation will be held from 26 to 29 September 2017, still hosted in the renaissance cloister by Sangallo at the Faculty of Civil and Industrial Engineering of "Sapienza" University of Rome.

The event was born with the purpose to become the reference national event for the wide and multidisciplinary community involved in the study and development of micro and nanotechnologies and in their integration with other enabling technologies (KETs) in all application fields.

## Main goals of NanolInnovation 2017 are:

- Providing a meeting forum among academy, research and companies.
- Displaying the State of the Art in applied research on nanotechnology.
- Acting as a showcase for the most important innovation deriving from nanotechnology and KETs
- Supporting the knowledge transfer among different application sectors.

The promotion of a Responsible Research and Innovation, toward a sustainable development in the social environment and economic frames is one of the driving themes of the event.

The programme of NanolInnovation 2017, strongly oriented toward the applicative and concrete aspects of nanotechnology and KETs, foresees the presence of highly qualified speakers and institutions, coming from academy and companies both national and international.

In such a context, NanolInnovation will offer to students, PhDs and young researchers an excellent and unique opportunity of updating on the latest developments of nanotechnology, meeting directly the protagonists. Several participation opportunities will be scheduled, ranging from the presentation of the research results on applicative technologies to the organization of technical-scientific sessions, workshops and satellite events, also with the purpose of presenting new instruments or disseminating projects results.

We would like to thank the Faculty of Civil and Industrial Engineering of Sapienza University of Rome for kindly hosting the conference, the Department of Basic and Applied Sciences for Engineering for logistic and scientific support, the Steering and Programme Committees for setting up the program structure, the Session Chairpersons and the Speakers who accepted our invitation to share their expertise. A particular thank is due to the companies and organizations providing sponsorship funds, making possible a free participation.

We extend our thanks to all the people that worked hardly to make NanolInnovation a valid informative experience.

*The NanolInnovation 2017 Organizing Committee*

## Organizing Committee



**Marco ROSSI** (*chair*)

- Sapienza University of Rome
- Nanoltaly Association

*marco.rossi@uniroma1.it*



**Giuseppe GIGLI**

- CNR - NANOTEC
- Nanoltaly Association

*giuseppe.gigli@unisalento.it*



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- Polytechnic University of Turin
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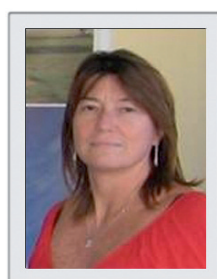
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- AIRI



**Pasquale SANFILIPPO**

- STMicroelectronics
- AIRI



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- Warrant Group
- AIRI



## Steering Committee



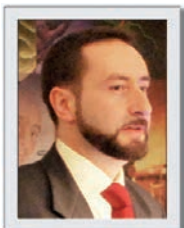
**Elvio MANTOVANI** (*chair*)

- AIRI



**Roberto FORNARO**

- ASI



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- NanItaly Association
- Italian National Institute of Health



**Narciso GAMBACORTI**

- CEA Leti / PAC-G



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- RinnovareNano Project



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- LFoundry



**Silvia LICOCCIA**

- University of Rome Tor Vergata



**Luciana DINI**

- University of Salento

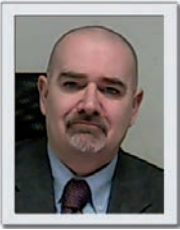


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- High Technology District for Cultural Heritage
- University of Palermo



## Steering Committee



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- University of Udine



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**Vittorio MORANDI**

- National Research Council, Institute for Microelectronics and Microsystems (CNR - IMM)



**Fulvio UGGERI**

- Bracco Imaging



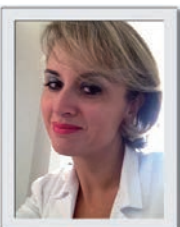
**Francesco NICOTRA**

- University of Milano-Bicocca



**Sergio VALERI**

- University of Modena and Reggio Emilia



**Donatella PAOLINO**

- University "Magna Graecia" of Catanzaro

## Programme Committee



**Maria Letizia TERRANOVA** (*Chair*)

- Nanotaly Association



**Onofrio Antonino CACIOPPO**

- LFoundry



**Sesto VITICOLI** (*Vice Chair*)

- AIRI



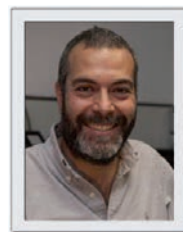
**Luisa CAMPAGNOLO**

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**Piero BAGLIONI**

- Center for Colloid and Surface Science (CSGI)



**Simone DE PANFILIS**

- IIT



**Giovanni BALDI**

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**Cristina GONNELLI**

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**Luca BUSINARO**

- CNR-IFN



**Paride MANTECCA**

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**Carlo MARIANI**

- Sapienza University of Rome



**Giancarlo SALVIATI**

- Nanoltaly Association



**Christian CELIA**

- University "G. D'Annunzio" of Chieti-Pescara



**Maria Sabrina SARTO**

- Sapienza University of Rome



**Luca ORTOLANI**

- CNR-IMM



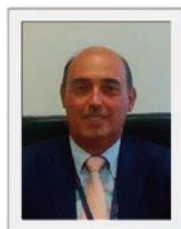
**Pietro SICILIANO**

- CNR
- Nanoltaly Association



**Daniele PASSERI**

- Sapienza University of Rome



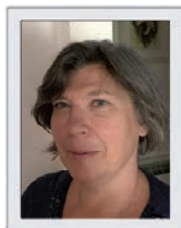
**Mario TEGLIA**

- Leonardo, SpA



**Giancarlo PEPPONI**

- FBK



**Livia VITTORI ANTISARI**

- University of Bologna



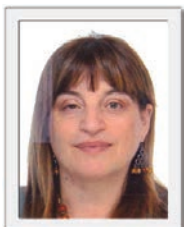
**Giuliano RANUZZI**

- ASI



**Marco VITTORI ANTISARI**

- Nanoltaly Association



**Sandra RISTORI**

- University of Florence



# Honorary Committee



**Eugenio GAUDIO**

- Rector of Sapienza University of Rome



**Luigi NICOLAIS**

- University of Naples "Federico II"



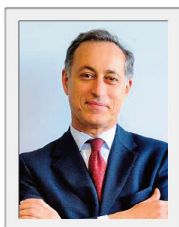
**Sergio GALBIATI**

- LFoundry



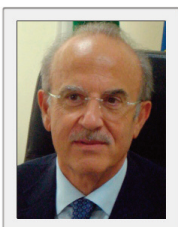
**Giuseppe NOVELLI**

- Rector of University of Rome Tor Vergata



**Alfonso MARRA**

- CEO of Klopman International Srl



**Aldo QUATTRONE**

- Rector of University Magna Graecia of Catanzaro



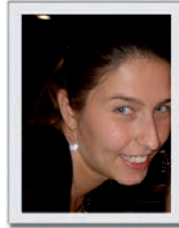


## Local Committee



**Emanuela TAMBURRI**  
*Coordinator*

- Nanoltaly Association



**Cristina GIPPA**  
*Co-coordinator*

- Nanoltaly Association

**Livia ANGELONI**, *Sapienza University of Rome,*  
**Adele DE NINNO**, *University of Tor Vergata,*  
**Marco NATALI**, *Sapienza University of Rome,*  
**Elisa PANZARINI**, *University of Salento,*  
**Francesca Romana BERTANI**, *CNR-IFN*





### **AIRI** Associazione Italiana per la Ricerca Industriale



**AIRI** is a private, not-for profit Association, funded in 1974 to promote industrial Research and Innovation in Italy and to enhance co-operation between the private and public sector.

The Association is the focal point for about 100 members, representing private industrial enterprises, large and SMEs, active in Research & Innovation, as well as public research organizations. Researchers of AIRI members constitute about the 45% of the researchers in the Country.

In 2003, **AIRI** has created AIRI/Nanotec IT, a division dedicated to promote nanotechnologies and their application. A large part of the Italian players in nanotechnology is member of AIRI/Nanotec IT, which, since 2014, has extended its attention to the integration of nanotechnologies with the other Key Enabling Technologies (KETs).

To pursue its mission, AIRI, monitors scientific R&D trends and their applications, disseminates information, facilitates technology transfer and promotes Responsible Research and Innovation (RRI). International contacts and cooperation are pivotal to its activity. AIRI has a long experience in participation in co-operative European projects (FP 6, FP 7, Horizon 2020). Often as co-ordinator.

Due to its broad representative base and experience, AIRI is a key opinion leader for the National decision-makers in addressing industrial research and innovation strategies aimed to sustain the technological development of the Country, strengthen its competitive position. AIRI, periodically publish a report "Priority Technologies for the Italian Industry", which has become a guide for National technology planning. In 2015, together with CNR, AIRI has published a report on Responsible Research and Innovation. MIUR has embodied its indications in the National Plan for Research 2015-2020.

The organization, by AIRI, of an International Conference dedicated to nanotechnologies (NanotechItaly) dates back several years. NanotechItaly 2015 was at the 8th Edition.

Web Site: [www.airi.it](http://www.airi.it) - [www.nanotec.it](http://www.nanotec.it)





## Associazione Nanoitaly



The Nanoitaly Association has been recently established with the aim of promoting, enhancing and supporting the role of bio-nano technologies in the Italian and European societies in all applicative, social and economic contexts, with particular reference to the development of technologies of industrial interest and to the social impact on the population of product innovations based on nano aspects.

Nanoitaly is a cultural no-profit, non-political association, organized on the sovereignty of the members' assembly and whose corporate offices are elective and held without charge.

The main purpose of the Association is to promote and support the integration of the scientific and industrial communities relating to the wide field of bio-nano technologies, composed of researchers, technologists and professionals from public research and industrial laboratories, in order to discuss innovative ideas, exchange knowledge and help transfer of know-how, allowing the integration of ideas and knowledge between different areas of application.

We are strongly convinced that meeting and integration of scientific and technological communities, traditionally separated from each other to build a new reality able to define new goals and influence the transfer of skills and knowledge from laboratories to businesses and markets, is an absolute need for a profitable development of nanotechnology in our country. The Association aims to support and encourage collaboration between research institutions and industry, in order to jointly contribute to the regional, national and European programs, to promote the creation of research networks and infrastructure for the needs of research in nano-bio-technology and nanoscience.

The association membership is open to both individuals and organizations interested in participating in the development of the variegated world of nano-bio-technology.

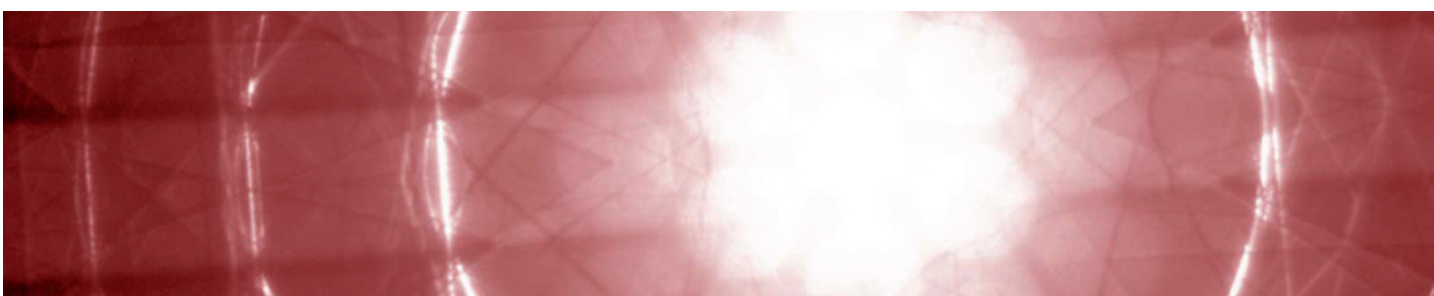
*The Association is managed by a Scientific Board which is presently composed by:*

**Marco Vittori Antisari** (President)  
**Fabrizio Pirri** (Scientific Secretary)  
**Pietro Siciliano** (Treasurer)  
**Luigi Ambrosio**  
**Luciana Dini**  
**Roberto Morabito**  
**Giancarlo Ruocco**  
**Giancarlo Salviati**  
**Corrado Spinella**  
**Maria Letizia Terranova**

### Associazione Nanoitaly

c/o Dip.to di Scienze di Base ed Applicate  
 Sapienza Università di Roma  
 Via Antonio Scarpa, 16 – 00161 Roma  
 Contact person: Marco Vittori Antisari (marco.vittori@nanoitaly.it)

Web Site: [www.associazione-nanoitaly.it](http://www.associazione-nanoitaly.it)



## SAPIENZA UNIVERSITY OF ROME

*The Largest University in Europe  
The Oldest University in Rome*

Sapienza University of Rome, founded in 1303 by Pope Boniface VIII, is one of the oldest universities in the world and a high performer among the largest universities in international rankings.

It is the first University in Rome and the largest University in Europe: a city within a city, with over 700 years of history. With over 125,000 students, 4,000 professors and nearly as many administrative and technical staff, Sapienza represents a vast knowledge community.

Since its founding over 700 years ago, Sapienza has played an important role in Italian history and has been directly involved in key changes and developments in society, economics and politics. It has contributed to the development of Italian and European science and culture in all areas of knowledge.

The University offers a vast array of courses including 290 degree programmes, over 74 PhD courses, 200 professional courses and 121 Specialization Schools in Medicine and Health, run by 63 Departments and 11 Faculties. There are 59 libraries and 21 museums, as well as comprehensive student services. The student body includes over 8,000 foreign students from all over the world. Ciao and Hello (the welcoming centre for foreign students), SoRT (Counselling and tutorship services) and assistance for disabled students.

Sapienza plans and carries out important scientific investigations in almost all disciplines, achieving high-standard results both on a national and on an international level, thanks to the work of its faculties, departments and centres devoted to scientific research. There are also more than 150 PhD programmes which include almost all major fields of knowledge.

The first University in Rome is proud to have had many famous scholars among his students. Dealing with the field of Physics' students, members of the so called 'Via Panisperna' group – including the scientists Enrico Fermi, Edoardo Amaldi and Emilio Segrè – gave a crucial contribute to Physics and left an important heritage in subjects like Quantum Physics, Physics of Disordered Systems and Astrophysics. Sapienza enhances research by offering opportunities also to international human resources. Thanks to a special programme for visiting professors, many foreign researchers and professors periodically come to Sapienza, consolidating the quality of its education and research programmes.

**Sapienza University of Rome is a public, autonomous and free university, involved in the development of society through research, higher level of education and international cooperation.**

The University has an annual budget of 1 billion euros, one of the most important in the region.

The future of Sapienza starts today thanks to its rich past and the contribution of the entire University community.

### Faculty of Civil and Industrial Engineering

The Faculty was founded in 1817 by Pope Pius VII, following the model of the most famous Parisian and Viennese School of Engineering of the time; in 1935, due to the Gentile's reform, the School became the Faculty of Engineering. The Faculty was founded with the aim of training professionals of high cultural background, qualified to meet the real needs of training and research company, possessing the ability to promote and to develop technological innovation processes in different cultural environments. The ancient Faculty of Engineering has a long educational tradition which is appreciated all over the world. This rich experience has allowed the Faculty to offer a very innovative syllabus today, including also a specific program on Nanotechnology Engineering. It aims particularly at satisfying local engineering needs, yet also at preparing graduates for employment in an increasingly globalised and international job market. Recently, a more general internal reorganization of Sapienza required a thematic splitting of the research and teaching activity, with the consequent born of the new Faculty of Civil and Industrial Engineering, the headquarter of which remained in the pristine site, and of the new Faculty of Information Engineering, Informatics and Statistics.

The Faculty of Civil and Industrial Engineering is spread among various buildings in the area of via Eudossiana, the most representative is the old monastery of the church of San Pietro in Vincoli (San Peter in Chains), also known as basilica Eudossiana, but educational and scientific activities are also held in other locations in Rome and Lazio, like Latin and Rieti.

### An ancient tale

An ancient tale connects the name of Eudossia and San Pietro in Vincoli: the empress Eudossia, wife of Teodosio II (408-550), emperor of the East, sent from Costantinopoles to her daughter Eudossia part of the chains ("vincoli") of San Peter which she found at Jerusalem.

These chains were donated to the Pope Leone Magno. He put them near the ones that hold San Peter during his roman captivity, and the miracle happened: The two chains melted together.



**CNIS**

**Research Centre for Nanotechnology applied to Engineering of Sapienza University of Rome**

*(Centro per le Nanotecnologie applicate all'Ingegneria di Sapienza Università di Roma)*

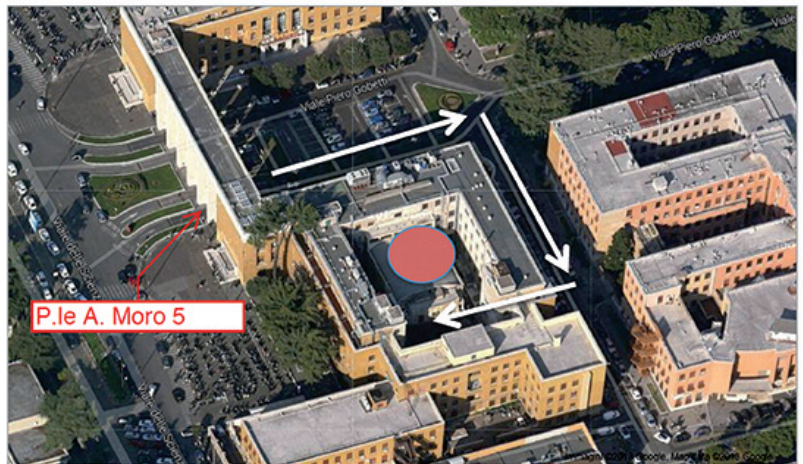


CNIS has been constituted in 2006, and now involves over 90 professors and researchers, coming from different Departments of the Faculties of Engineering, Sciences and Medicine. The vision and goal of CNIS is to embrace and support a multidisciplinary user base of researchers of Sapienza and co-workers of other universities or private laboratories. CNIS activities are now developed in the new (2012) Sapienza Nanotechnology & Nanoscience Laboratory (SNN Lab), which is the core-facility at Sapienza devoted to nanoscience and nanotech multidisciplinary applications in materials science, life sciences, engineering and solid state physics. It gathers state-of-art instrumentation for nanotechnology together with an experienced staff that will perform the structural and functional characterization of all the materials, devices and systems in the framework of the foreseen project activities.

In particular, a wide set of microscopy and nanoscopy techniques is available. The facility also offers our users a variety of sample preparation equipment, a light microscopy lab with image analysis, an X-ray lab, and a materials testing lab.

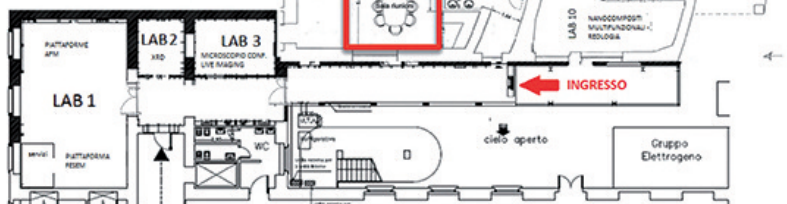
The SNN-Lab is finalized to:

- Integrate the multidisciplinary competencies available at Sapienza University in the fields of nanotechnology and nanosciences, with the aim of creating synergies among research groups operating in different areas of science, engineering, medicine.
- Constitute a research infrastructure at Sapienza to support to the design, realization and characterization of nanostructures and innovative micro/nano-devices for different fields of applications.
- Provide instrumentation and services to high quality research in the field of: micro/nano-fabrication, micro/nano-manipulation, advanced characterization (functional and structural microscopy) of the chemical-physical properties of micro/nanostructured materials, engineering of the designed micro/nanostructured devices and systems, nanomedicine and genomics.
- Create a reference structure for territory and enterprise, responding to the research and technological development needs of the research programs at regional, national and international levels.



**Total Area: 400 mq**  
**Installed power: 168 kW**

- **Microscopies and characterizations at nanoscale:** LAB1, 2, 3
- **Nanofabrication:** LAB5,10
- **Processing and chemistry:** LAB 6,7
- **Genomics and bioinformatics:** LAB 4,8,9
- **Meeting room**



The SNN-Lab has been realized also thanks to financing from Lazio Region aimed at promoting innovation and technological transfer. The Lab is located on an area of 400 mq, at Sapienza University main campus.

More information on: [web.uniroma1.it/cnis/](http://web.uniroma1.it/cnis/)

**SNN Lab - CNIS**

Sapienza University of Rome, P.le A. Moro n. 5 - 00185 Rome

Director: Ruggero Caminiti ([ruggero.caminiti@uniroma1.it](mailto:ruggero.caminiti@uniroma1.it)) - Contact person: Prof. Marco Rossi ([marcorossi@uniroma1.it](mailto:marcorossi@uniroma1.it))





## OVERVIEW

LF foundry, a SMIC company, is a leading specialized foundry. From the heart of ancient Europe, with the Headquarter in Avezzano (Italy), LF foundry is focused on providing access to most advanced analogue manufacturing service with a capacity of >40,000 wafers/month, innovative technology extensions, including volume 90nm and copper manufacturing, a strong emphasis on flexibility and customer partnership. LF foundry is supporting own technology IP for 150nm and 110nm with a large portfolio of process-proven libraries, IP, design tools and reference flows. LF foundry's key focus is primarily in automotive and industrial related applications including CIS, security, smart power, embedded memory, and others.

As a SMIC Company, LF foundry can leverage skills and capabilities of one of the leading semiconductor foundries in the world and the largest and most advanced foundry in mainland China.

## OUR PLACE

In Avezzano (AQ), LF foundry is enabling innovation worldwide. We have a continuous commitment to guaranteeing a secure environment in which our customers can realise their ideas to the highest standard, relying on LF foundry as an indispensable partner to unleash their full potential.

## DEDICATED FOUNDRY AT AVEZZANO

Since 2006, the 8" Avezzano site has been manufacturing imaging process technologies and products using 180nm to 90nm technologies, including a volume copper, Back End of Line (BEOL), Back Side Illumination processes (BSI) and extensive testing capabilities. The Fab provides automotive ISO-TS16949 certification as well as OHSAS 18001 and ISO 14001

## SERVICE MODEL

*Technology development and production partnership*

### CUSTOMER TECHNOLOGY

**Adopting customer technology and customizing foundry technology**

- ⊙ Special imaging technology know how and capabilities
- ⊙ Engineering know how & IP for non-CMOS technologies such as Optical Sensors, Power MOS, ...

QUALITY  
INNOVATIVE  
TECHNOLOGY  
COMMITMENT  
FLEXIBILITY

### JOINT TECHNOLOGY DEVELOPMENT

**Technology development and production partnership**

- ⊙ Excellent network to leading institutes
- ⊙ New integration e.g. for MEMS into CMOS
- ⊙ Technology IP generation
- ⊙ Setup of full solutions

### OPEN FOUNDRY

**Design environments and wafer fabrication based on advanced analogue/mixed signals technology**

- ⊙ Flexible PDK platform (i-PDK) with accurate models
- ⊙ Continuous mainstream technology enrichment with modules like Image Sensors/Pixel, Optical Sensors, High Voltage, RF devices, High density / low cost embedded memory, ...
- ⊙ Specific qualifications like **automotive** and **security**

## CONTACT

Via Antonio Pacinotti 7, Avezzano AQ 67051  
Home phone:+39 0863 4231  
Fax:+39 0863 412763  
Pec: lfoundry@pec.it  
[www.lfoundry.com](http://www.lfoundry.com)

Nanotechnology is largely based on the peculiar features of nanomaterials, which can be considered as an intermediate state between bulk materials and atoms. In the proper size range, in fact, the properties of a material become dependent on morphological parameters, like dimension, aspect ratio, surface structure and so on.

In order to master the peculiar features of a nanomaterial, the knowledge of the local structure and of the local functional properties are of mandatory importance, considering that the development of a material proceeds generally through the classical iteration among synthesis process, structural characterization and functionality under the supervision of structural and functional numerical simulations.

These short pre-conference tutorials want to introduce the audience to the basic principles underlying investigation methods able to provide multiscale information down to the atomic level.

The four lectures address an audience composed by young researchers, doctorate students and whichever person interested in a basic description of the investigation methods.

Chair: In definition

## TL.I - ADVANCED TECHNIQUES OF NANOCHARACTERIZATION

09:00 - 10:40

TL.I.1

Federico FERRARESE LUPI, *INRIM, Turin*  
**Metrology at the nanoscale**

TL.I.2

Corrado SPINELLA, *Director of DSFTM, CNR, Catania*  
**Why Transmission Electron Microscopy for Nanotechnology?**

10:40 - 11:00 *Coffee Break*

11:00 - 12:40

TL.I.3

Giuseppe ANTONACCI, *IIT, Rome*  
**Brillouin microscopy for subcellular 3D mechanical imaging**

TL.I.4

Giancarlo PEPPONI, *FBK, Trento*  
**Achieving nano-scale characterization with X-Ray Fluorescence Analysis**



**14:00 - 14:30**  
**WS - WELCOME SESSION**

Chair: Maria Sabrina SARTO - *Sapienza University of Rome*

<b>WS.1</b>	<b>Massimiliano SMERIGLIO</b> <i>Regione Lazio, Vice-President</i>
<b>WS.2</b>	<b>Bruno BOTTA</b> <i>Sapienza University of Rome, Deputy Rector for International Relations</i>
<b>WS.3</b>	<b>Antonio D'ANDREA</b> <i>Sapienza University of Rome, Faculty of Civil and Industrial Engineering, Dean</i>
<b>WS.4</b>	<b>Ferdinando PASTORE</b> <i>Energy and Environment Office, Italian Trade Agency, Rome</i>

**14:30 - 14:45**  
**OS - OPENING SESSION**

Chair: Maria Sabrina SARTO - *Sapienza University of Rome*

<b>OS.1</b>	<b>Marco VITTORI ANTISARI</b> <i>Nanoltaly Association, President</i>
<b>OS.2</b>	<b>Renato UGO</b> <i>AIRI, President</i>

**14:45 - 15:45**  
**PS.1 - PLENARY SESSION I**

**Advances on Nanotechnology and Nanosciences**

Chair: Bruno BOTTA, *Sapienza University of Rome, Deputy Rector for International Relations*

<b>PS.I.1</b>	Tomasz DIETL <i>Polish Academy of Sciences, Institute of Physics, Head of the Laboratory for Cryogenic and Spintronic Research, Poland</i> <b>Nanospintronics of topological materials</b>
<b>PS.I.2</b>	Luigi CALZOLAI <i>European Commission, DG-JRC, Ispra, Italy</i> <b>How to characterize nanomaterials in biological systems</b>



**15:45 - 16:45**  
**PS.II - PLENARY SESSION II**

**Innovation at the Nanoscale and Market Exploitation Strategies**

Chair: Lorenzo LO CASCIO, Assessorato Sviluppo Economico, Regione Lazio

<b>PS.II.1</b>	Fabrizio FAMA', LFoundry, VP of HR & Corporate Affairs, Avezzano (AQ) <b>Innovation in a semiconductor industry</b>
<b>PS.II.2</b>	Carlo REITA, CEA-Leti, Director of Nanoelectronics Technical Marketing and Strategy, Grenoble, France <b>Density and Efficiency: Technologies and Devices to Address Computing Challenges</b>
<b>PS.II.3</b>	Gianluigi CASSE, FBK, Director of Centre for Materials and Microsystems, Trento <b>Quantum Technology Program at FBK-CMM</b>
<b>PS.II.4</b>	Alessandro MAIOCCHI, Bracco Imaging <b>Nano/micro sized contrast agents for imaging applications: opportunities &amp; challenges</b>

16:45 - 17:00 Coffee Break

**17:00 - 18:30**  
**PS.III - PLENARY SESSION III**

**Funding opportunities**

Chair: Alessandro SCIOLARI, Director of Assoknowledge, Confindustria (to be confirmed)

<b>PS.III.1</b>	Donata MEDAGLINI, Italian Representative on the H2020 Programme Committee on "Nanotechnologies, Advanced Materials, Biotechnology, Advanced Manufacturing and Processing" <b>Italian Participation in the Nanotechnology Calls of Horizon 2020</b>
<b>PS.III.2</b>	Franco TERLIZZESE, Directorate General for Mineral and Energy Resources, Ministry of Economic Development <b>Innovation strategies for the security in the oil &amp; gas field</b>
<b>PS.III.3</b>	Marco FALZETTI, Director of APRE, Rome <b>The Materials Research - From H2020 to FP9</b>
<b>PS.III.4</b>	Furio GRAMATICA, IRCCS Don Gnocchi; Milan <b>The European effort for healthcare technology: the ESTHER initiative</b>
<b>PS.III.5</b>	Lorenzo LO CASCIO, Assessorato Sviluppo Economico, Regione Lazio <b>Funding strategies for innovation at regional level: the case of regione Lazio</b>

**18:30 - 19:00**  
**NEST Prize**

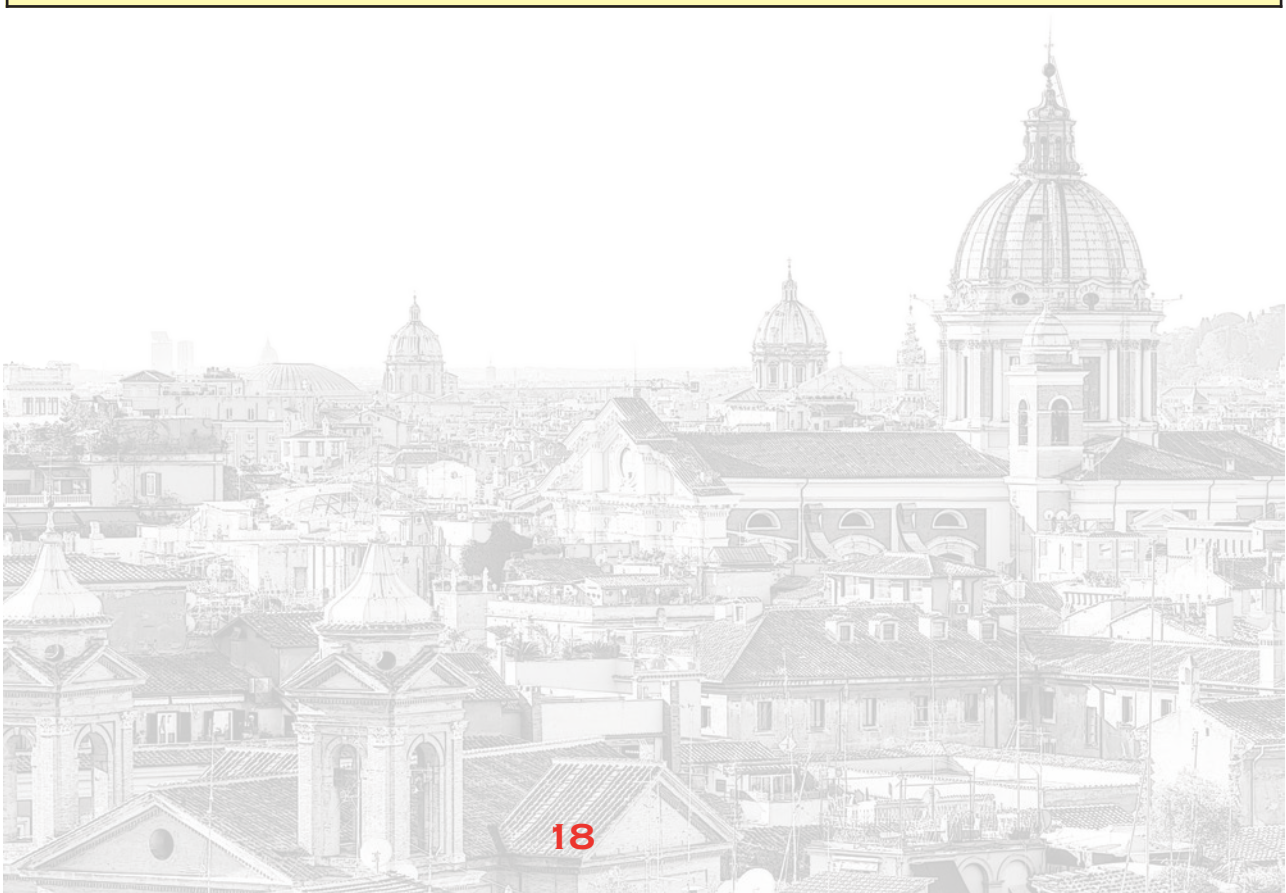
Announcement of the prizewinner edition 2016  
Presentation of the edition 2017

**19:00 - 20:00**  
**CE.I - DAILY CLOSING EVENTS**

In collaboration with: Warrant Group

<b>CE.I.1</b>	<b>Open Beer</b> - Let's talk about innovation by drinking a beer "As long as your life seems full there is always space for a couple of beers with a friend"
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<b>09:00 - 10:30</b> <b>HT.I - HIGHLIGHT MULTI-TRACK - PARALLEL COLLOQUIA</b>	
<b>HT.I.A</b>	Keynote Session: <b>Nanomaterials for managing the technological change</b> Chair: Maria Letizia TERRANOVA, <i>Nanoltaly Association, Rome</i>
<b>HT.I.B</b> <b>WS.I.A</b>	Keynote Session: <b>Advanced Characterization Techniques</b> Chair: Giulio LAMEDICA, <i>Carl Zeiss Italia</i>  <i>The symposium is part of the workshop WS.I on "Latest Advances in Multi-modal Microscopy"</i>  In collaboration with: ZEISS
<b>HT.I.C</b>	Special Session: <b>Nanotechnology in South Korea</b> Chair: Edith PETRUCCI DI VACONE E DI SIENA, <i>Energy and Environment Office, Italian Trade Agency, Rome</i> In collaboration with: Italian Trade Agency
<b>HT.I.D</b>	Special Session: <b>Reviewing the Knack: how a new generation of High Tech talents is developing in Italy</b> Chair: Andrea BAIRATI, <i>Moving Business Forward Digital Consulting, Turin</i> In collaboration with: Federchimica
10:30 - 11:00 Coffee Break	



<b>11:00 - 12:30</b> <b>TT.I - TECHNICAL MULTI-TRACK - PARALLEL SYMPOSIA</b>	
<b>TT.I.A</b> <b>WS.I.B</b>	<p><b>Microscopy methods for Material Science</b>                      Chair: Marco CANTONI, EPFL, Lausanne, Switzerland</p> <p><i>The symposium is part of the workshop WS.I on "<b>Latest Advances in Multi-modal Microscopy</b>"</i></p> <p>In collaboration with: ZEISS</p>
<b>TT.I.B</b>	<p><b>Nanotechnology applications for hydrocarbon detection and characterization</b>                      Chairs: Francesca VERGA, Polytechnic of Turin &amp; Franco TERLIZZESE, Ministry of Economic Development</p> <p>In collaboration with: Renishaw, Polytechnic of Turin &amp; Ministry of Economic Development</p>
<b>TT.I.C</b>	<p><b>Nanomedicine at UniMoRe</b>                      Chairs: Giovanni TOSI &amp; Fabio BISCARINI, University of Modena and Reggio Emilia</p> <p>In collaboration with: University of Modena and Reggio Emilia</p>
<b>TT.I.D</b>	<p><b>Cells on Chip: Boosting Cellular Measurements for advanced pharmacological and clinical applications</b>                      Chair: Luca BUSINARO, CNR-IFN, Rome</p> <p>In collaboration with: CNR-IFN</p>
<b>TT.I.E</b>	<p><b>Nanotechnology: Changing the Future of Medicine</b>                      Chair: Luciana DINI, University of Salento, Lecce</p> <p>In collaboration with: Fondazione Don Carlo Gnocchi</p>
<b>TT.I.F</b> <b>WS.IV.A</b>	<p><b>Regulating Nano innovation in the agri-food sector</b>                      Chair: Luca MARCHIOL, University of Udine                      Co-Chair: Francesco CUBADDA, National Institute of Health</p> <p><i>The symposium is part of the workshop WS.IV on "<b>AgriNanoTechniques: Nanomaterials for products and application in agriculture</b>"</i></p> <p>In collaboration with: University of Bologna, University of Florence, University of Udine</p>
12:30 - 14:00 Light Lunch	



<b>14:00 - 15:30</b> <b>TT.II - TECHNICAL MULTI-TRACK - PARALLEL SYMPOSIA</b>	
<b>TT.II.A</b> <b>WS.I.C</b>	<p><b>Microscopy methods for Nanotechnology and Nanofabrication</b>                      Chair: Luca ORTOLANI, CNR IMM, Bologna</p> <p><i>The symposium is part of the workshop WS.I on "<b>Latest Advances in Multi-modal Microscopy</b>"</i></p> <p>In collaboration with: ZEISS</p>
<b>TT.II.B</b>	<p><b>The RinnoVaReNano project: new insight into regulations and research of nanomaterials</b>                      Chairs: Alessandro ALIMONTI, National Institute of Health, Andrea PORCARI, AIRI &amp; Flavia BARONE, National Institute of Health, Rome</p> <p>In collaboration with: RinnoVaReNano</p>
<b>TT.II.C</b>	<p><b>Nanosafety and Nanobiotechnology I</b>                      Chairs: Silvana FIORITO, Sapienza University of Rome &amp; Rosalba GORNATI, University of Insubria</p> <p>In collaboration with: University of Milano Bicocca - Research Center POLARIS, University of Insubria, University of Rome Tor-Vergata, Tiesselab, Gilson</p>
<b>TT.II.D</b>	<p><b>Carbon-based Nanomaterials</b>                      Chair: Luca OTTAVIANO, University of L'Aquila</p> <p>In collaboration with: Sapienza University of Rome and Nanoshare Srl</p>
<b>TT.II.E</b>	<p><b>Imaging and spectroscopies for nanocharacterizations</b>                      Chair: Francesca FRASCELLA, Polytechnic of Turin</p> <p>In collaboration with: Renishaw, Nordtest, Nanolane, Polytechnic of Turin</p>
<b>TT.II.F</b> <b>WS.IV.B</b>	<p><b>Nanomaterials in Soil-Plant Environment: Perspectives and Concerns</b>                      Chair: Sandra RISTORI, University of Florence                      Co-Chair: Cristina GONNELLI, University of Florence</p> <p><i>The symposium is part of the workshop WS.IV on "<b>AgriNanoTechniques: Nanomaterials for products and application in agriculture</b>"</i></p> <p>In collaboration with: University of Bologna, University of Florence, University of Udine</p>
15:30 - 16:00 Coffee Break	

**16:00 - 17:30**  
**TT.III - TECHNICAL MULTI-TRACK - PARALLEL SYMPOSIA**

<b>TT.III.A</b>	<p><b>Blue Energy Harvesting</b>                  Chair: Andrea LAMBERTI, <i>Polytechnic of Turin</i>                  In collaboration with: Polytechnic of Turin</p>
<b>TT.III.B</b>	<p><b>Nanosafety and Nanobiotechnology II</b>                  Chairs: Paride MANTECCA, <i>University of Milano-Bicocca</i>                  &amp; Luisa CAMPAGNOLO, <i>University of Rome Tor Vergata</i>                  In collaboration with: University of Milano Bicocca - Research Center POLARIS,                  University of Insubria, University of Rome Tor-Vergata, Tiesselab, Gilson</p>
<b>TT.III.C</b>	<p><b>Nanoelectronics at UniMoRe</b>                  Chairs: Luca LARCHER, <i>University of Modena and Reggio Emilia</i>                  &amp; Paolo PAVAN, <i>University of Modena and Reggio Emilia</i>                  In collaboration with: University of Modena and Reggio Emilia</p>
<b>TT.III.D</b>	<p><b>Sensors and multifunctional devices</b>                  Chair: Pietro Aleardo SICILIANO, <i>CNR-IMM, Lecce</i>                  In collaboration with: CNR-IMM</p>
<b>TT.III.E</b> <b>WS.IV.C</b>	<p><b>AgriNanoTechniques Research Pathways</b>                  Chair: Livia VITTORI ANTISARI, <i>University of Bologna</i>                  Co-Chair: Luca MARCHIOL, <i>University of Udine</i></p> <p><i>The symposium is part of the workshop WS.IV on "AgriNanoTechniques: Nanomaterials for products and application in agriculture"</i></p> <p>In collaboration with: University of Bologna, University of Florence, University of Udine</p>
<b>TT.III.F</b>	<p><b>Safe Working with nanomaterials: practical approaches for R&amp;D laboratories</b>                  Chair: Elisabetta BORSELLA, <i>AIRI</i>                  In collaboration with: Nanolab</p>

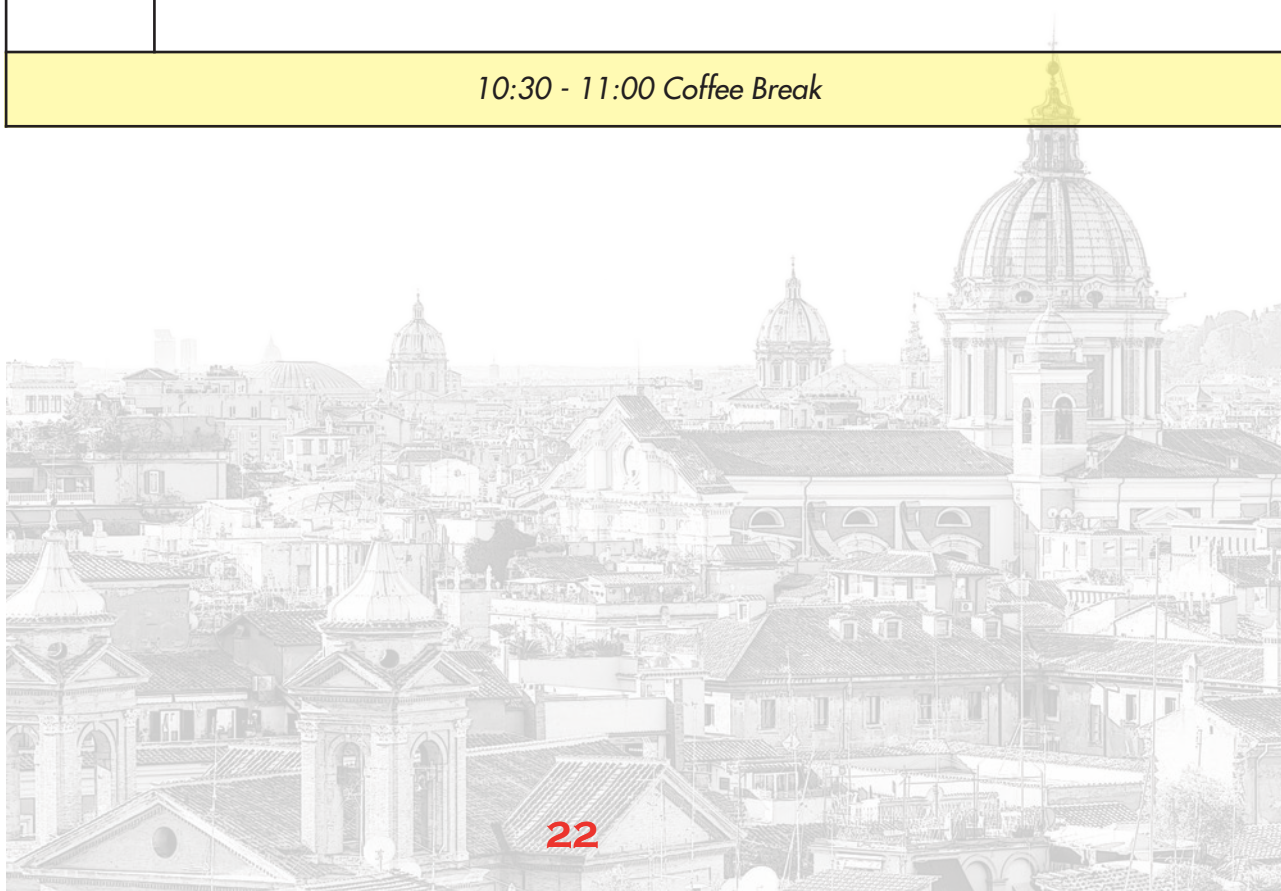
**17:30 - 19:00**  
**CE.II - DAILY CLOSING EVENTS**

In collaboration with: Warrant Group

<b>CE.II.1</b>	<p><b>Cocktail Tasting</b> - prepared with the technology developed by Nextis4us s.r.l, an innovative start up based in Bologna. You will be able to sample exclusive and original cocktails tailored to the theme of Nanoinnovation</p>
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<b>09:00 - 10:30</b> <b>HT.II - Highlight multi-Track - parallel COLLOQUIA</b>	
<b>HT.II.A</b>	Keynote Session: <b>Site selectivity for Nanomaterials</b> Chair: Eugenio AMENDOLA, <i>IPCB-CNR, Naples</i>
<b>HT.II.B</b>	Keynote Session: <b>The world of semiconductor nanostructures</b> Chair: Corrado SPINELLA, <i>Director of DSFTM, CNR, Catania</i>
<b>HT.II.C</b> <b>WS.II.A</b>	Special session: <b>An industrial view on ALM: current state, prospective and challenges</b> Chair: Francesca NANNI, <i>University of Rome Tor Vergata</i>  The symposium is part of the workshop WS.II on " <b>Smart Manufacturing in industry 4.0: where we stand?</b> "  In collaboration with: AIRI
<b>HT.II.D</b>	Special Session: <b>New Technologies and "work-based learning" at Research Institutes: Current Situation and Perspectives</b> Chair: Pierluigi BELLUTTI, <i>Fondazione Bruno Kessler FBK, Trento</i> In collaboration with: Fondazione Bruno Kessler FBK
<b>HT.II.E</b>	Special Session: <b>NanoInnovation's Got Talent</b> Chair: Fulvio UGGERI, <i>Bracco Imaging SpA</i> In collaboration with: Bracco Foundation
10:30 - 11:00 Coffee Break	



11:00 - 12:30

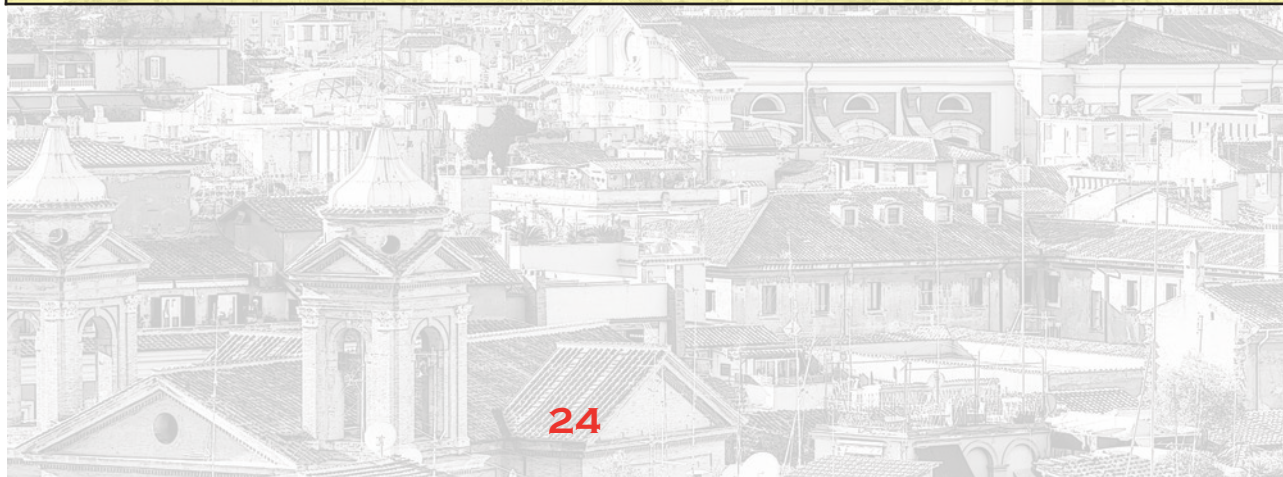
**TT.IV - Technical multi-Track - parallel SYMPOSIA**

<b>TT.IV.A</b>	<p><b>Advancement in material growth and device technology for GaN-based rf and power devices</b>                  Chair: Enrico ZANONI, <i>University of Padova</i>                  Co-Chair: Claudio LANZIERI, <i>Leonardo SpA, Rome</i>                  In collaboration with: Leonardo SpA</p>
<b>TT.IV.B</b>	<p><b>Nanomedicine research at CEN Foundation - part I</b>                  Chair: Francesco NICOTRA, <i>University of Milano-Bicocca</i>                  In collaboration with: European Centre of Nanomedicine</p>
<b>TT.IV.C WS.I.D</b>	<p><b>3D Correlative Microscopy in Life Science - part I</b>                  Chair: Francesco BIANCARDI, <i>Carl Zeiss Italia</i></p> <p><i>The symposium is part of the workshop WS.I on "Latest Advances in Multi-modal Microscopy"</i></p> <p>In collaboration with: ZEISS</p>
<b>TT.IV.D WS.II.B</b>	<p><b>The ALM matter in the context of the Public Research: an overview</b>                  Chair: Francesca NANNI, <i>University of Rome Tor Vergata</i></p> <p><i>The symposium is part of the workshop WS.II on "Smart Manufacturing in industry 4.0: where we stand?"</i></p> <p>In collaboration with: AIRI</p>
<b>TT.IV.E</b>	<p><b>Materials and technologies for flexible electronics</b>                  Chair: Leandro LORENZELLI, <i>Fondazione Bruno Kessler FBK, Trento</i>                  In collaboration with: Fondazione Bruno Kessler FBK</p>
<b>TT.IV.F</b>	<p><b>Nanoinnovation in Drug Delivery</b>                  Chairs: Donato COSCO &amp; Donatella PAOLINO, <i>University "Magna Græcia" of Catanzaro</i>                  In collaboration with: NUTRAMED</p>

12:30 - 14:00 Light Lunch



<b>14:00 - 15:30</b> <b>TT.V - Technical multi-Track - parallel SYMPOSIA</b>	
<b>TT.V.A</b>	<p><b>Towards graphene integration in electronic devices: potentials and challenges</b>                      Chair: Stefano BIANCO, <i>Polytechnic of Turin</i>                      In collaboration with: LPE, Vishay, Polytechnic of Turin</p>
<b>TT.V.B</b>	<p><b>Nanomedicine research at CEN Foundation - part II</b>                      Chair: Francesco NICOTRA, <i>University of Milano-Bicocca</i>                      In collaboration with: European Centre of Nanomedicine</p>
<b>TT.V.C</b> <b>WS.I.E</b>	<p><b>3D Correlative Microscopy in Life Science - part II</b>                      Chair: Giulia BOLASCO, <i>EMBL, Rome</i></p> <p><i>The symposium is part of the workshop WS.I on "Latest Advances in Multi-modal Microscopy"</i>                      In collaboration with: ZEISS</p>
<b>TT.V.D</b> <b>WS.II.C</b>	<p><b>General Aspects of ALM Technology</b>                      Chair: Francesca NANNI, <i>University of Rome Tor Vergata</i></p> <p><i>The symposium is part of the workshop WS.II on "Smart Manufacturing in industry 4.0: where we stand?"</i>                      In collaboration with: AIRI</p>
<b>TT.V.E</b>	<p><b>The exploitation of nanotechnology</b>                      Chairs: Francesco MATTEUCCI &amp; Roberto GIANNANTONIO, <i>DHITECH, Lecce</i>                      In collaboration with: DHITECH</p>
<b>TT.V.F</b>	<p><b>Innovative nanocarrier for drug delivery</b>                      Chairs: Christian CELIA, <i>University "G. D'Annunzio" of Chieti-Pescara</i>                      &amp; Donatella PAOLINO, <i>University "Magna Græcia" of Catanzaro</i>                      In collaboration with: NUTRAMED</p>
<p>15:30 - 16:00 Coffee Break</p>	



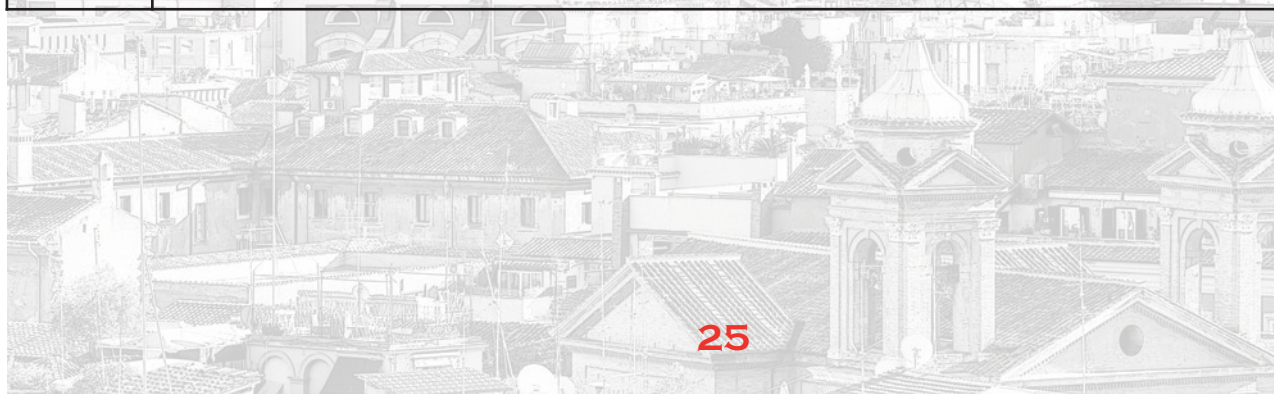
**16:00 - 17:30**  
**TT.VI - Technical multi-Track - parallel SYMPOSIA**

<b>TT.VI.A</b>	<b>Nano-characterizations in semiconductor's industry</b> Chair: Onofrio Antonino CACIOPPO, <i>LFoundry, Avezzano (AQ)</i> In collaboration with: LFoundry
<b>TT.VI.B</b>	<b>Tribology of carbon-based nanomaterials</b> Chair: Sergio VALERI, <i>University of Modena and Reggio Emilia</i> In collaboration with: University of Modena and Reggio Emilia
<b>TT.VI.C</b>	<b>Nanocatalysis</b> Chair: Angela AGOSTIANO, <i>University of Bari</i> In collaboration with: DHITECH
<b>TT.VI.D</b>	<b>Nanomaterials for the Cultural Heritage</b> Chair: Rodorico GIORGI, <i>CSGI, Florence</i> Co-Chair: David CHELAZZI, <i>CSGI, Florence</i> In collaboration with: CSGI - Center for Colloid and Surface Science
<b>TT.VI.E</b>	<b>Advanced nanomaterials and technologies for energy exploitation</b> Chair: Maurizio PERUZZINI, <i>CNR-DSCTM, Rome</i> ; Alessandra SANSON, <i>CNR-ISTEC, Faenza (RA)</i> & Maria Lucia CURRI, <i>CNR IPCF, Bari</i> In collaboration with: CNR-DSCTM
<b>TT.VI.F</b>	<b>New trends in nanomedicine</b> Chair: Massimo MASSERINI, <i>NANOMIB and International School of Nanomedicine - University of Milano Bicocca - Ettore MJORANA Center</i> In collaboration with: Nanomedicine Center University Milano-Bicocca NANOMIB

**17:30 - 19:00**  
**CE.III - DAILY CLOSING EVENTS**

In collaboration with: Warrant Group

<b>CE.III.1</b>	<b>Archeological aperitif</b> - Food and drinks in harmony with the area surrounding the buildings of the University and the Renaissance cloister hosting the event.
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<b>09:00 - 10:30</b> <b>HT.III - Highlight multi-Track - parallel COLLOQUIA</b>	
<b>HT.III.A</b>	Keynote Session: <b>Nano-manufacturing technologies for life and human health sciences</b> Chair: Luciana DINI, <i>University of Salento, Lecce</i>
<b>HT.III.B</b>	Special Session: <b>Synchrotron Radiation for Nanotechnology and Applications</b> Chair: Carlo MARIANI, <i>Sapienza University of Rome &amp; ESUO Executive Committee</i> In collaboration with: <i>Sapienza University of Rome &amp; ESRF</i>
<b>HT.III.C</b>	Special Session: <b>Advanced technologies and tools of diagnostics for conservation of cultural heritage</b> Chairs: Roberta FANTONI, <i>ENEA &amp; Maria Sabrina SARTO, Sapienza University of Rome</i>
<b>HT.III.D</b>	Round Table: <b>An italian ecosystem of innovation</b> Chair: Francesco MATTEUCCI, <i>DHITECH, Lecce</i> In collaboration with <i>Sapienza University of Rome and DHITECH</i>
<b>HT.III.E</b>	Special Session: <b>Nanotechnology in Poland</b> Chair: Tomasz DIETL, <i>Polish Academy of Sciences, Institute of Physics, Poland</i> In collaboration with: <i>NANONET, Nanoitaly Association &amp; Italian Trade Agency ITA</i>
<b>10:30 - 11:00 Coffee Break</b>	



11:00 - 12:30

**TT.VII - Technical multi-Track - parallel SYMPOSIA**

<b>TT.VII.A</b>	<p><b>Nanotechnologies for Space: Space Missions, Opportunities &amp; Challenges</b>                  Chair: Roberto FORMARO, <i>Italian Space Agency ASI, Rome</i>                  In collaboration with: Italian Space Agency ASI</p>
<b>TT.VII.B</b> <b>WS.III.A</b>	<p><b>Functional antibacterial and antifiame nano-textiles</b>                  Chair: Paride MANTECCA, <i>University of Milano Bicocca</i></p> <p>The symposium is part of the workshop WS.III on "<b>Smart Textiles</b>"                  Sponsored by PROTECT (EU project H2020-NMBP-PILOTS-2016).</p> <p>In collaboration with KLOPMAN International and with the participation of AICTC (Italian Association of Textile Chemistry and Coloristic)</p>
<b>TT.VII.C</b>	<p><b>Disordered systems: from Physics to Biology</b>                  Chair: Giancarlo RUOCCO, <i>Sapienza University of Rome &amp; IIT, Rome</i>                  In collaboration with: IIT</p>
<b>TT.VII.D</b>	<p><b>2D materials and low-dimensional systems (part I)</b>                  Chair: Luca ORTOLANI and Vittorio MORANDI, <i>CNR-IMM Bologna</i>                  In collaboration with: DSFTM-CNR and CNIS, Sapienza University of Roma</p>
<b>TT.VII.E</b>	<p><b>Nanotechnology and innovation for electronics</b>                  Chair: Patrizia LIVRERI, <i>University of Palermo</i>                  In collaboration with: University of Palermo</p>
<b>TT.VII.F</b>	<p><b>Nanomaterials and smart materials for conservation and preservation of cultural heritage</b>                  Chairs: Maria Laura SANTARELLI &amp; Maria Sabrina SARTO, <i>Sapienza University of Rome</i></p>

12:30 - 14:00 Light Lunch





<b>14:00 - 15:30</b> <b>TT.VIII - Technical multi-Track - parallel SYMPOSIA</b>	
<b>TT.VIII.A</b>	<p><b>Engineered Nanomaterials and nanodevices for bio application (part I)</b>                      Chair: Giancarlo SALVIATI, <i>Nanoltaly Association</i>                      In collaboration with: Nanoltaly Association</p>
<b>TT.VIII.B</b> <b>WS.III.B</b>	<p><b>Nano-Antibacterial textiles: improving efficacy and safety</b>                      Chair: Massimo PERUCCA, <i>Project HUB 360, Turin</i></p> <p>The symposium is part of the workshop WS.III on "<b>Smart Textiles</b>"                      Sponsored by PROTECT (EU project H2020-NMBP-PILOTS-2016).</p> <p>In collaboration with KLOPMAN International and with the participation of AICTC                      (Italian Association of Textile Chemistry and Coloristic)</p>
<b>TT.VIII.C</b>	<p><b>2D materials and low-dimensional systems (part II)</b>                      Chair: Antonio POLIMENI, <i>Sapienza University of Rome</i>                      In collaboration with: DSFTM-CNR and CNIS, Sapienza University of Rome</p>
<b>TT.VIII.D</b>	<p><b>Nanostructures for third-generation photovoltaic</b>                      Chair: Stefano OSSICINI, <i>University of Modena and Reggio Emilia</i>                      In collaboration with: University of Modena and Reggio Emilia</p>
<b>TT.VIII.E</b>	<p><b>Nanoelectronic devices: fabrication and characterization</b>                      Chair: Onofrio Antonino CACIOPPO, <i>LFoundry, Avezzano (AQ)</i>                      In collaboration with: Micron, CEA-Leti &amp; CNIS, Sapienza University of Rome</p>
<b>TT.VIII.F</b>	<p><b>Innovative approaches for medical applications</b>                      Chairs: Roberto MOLINARO, <i>Harvard Medical School, Boston, USA</i>                      &amp; Donatella PAOLINO, <i>University "Magna Græcia" of Catanzaro</i>                      In collaboration with: University "Magna Græcia" of Catanzaro</p>
<p>15:30 - 16:00 Coffee Break</p>	



16:00 - 17:30

**TT.IX - Technical multi-Track - parallel SYMPOSIA**

<p><b>TT.IX.A</b> <b>WS.III.C</b></p>	<p><b>Sensor-integrated textiles</b> Chair: Giuseppe ROSACE, <i>University of Bergamo</i></p> <p>The symposium is part of the workshop WS.III on "<b>Smart Textiles</b>" Sponsored by PROTECT (EU project H2020-NMBP-PILOTS-2016).</p> <p>In collaboration with KLOPMAN International and with the participation of AICTC (Italian Association of Textile Chemistry and Coloristic)</p>
<p><b>TT.IX.B</b></p>	<p><b>Advanced functional nanomaterials</b> Chair: Daniele PASSERI, <i>Sapienza University of Rome</i> In collaboration with: Sapienza University of Rome</p>
<p><b>TT.IX.C</b></p>	<p><b>Nanotechnologies for precision medicine</b> Chair: Cecilia PEDERZOLLI, <i>FBK, Trento</i> In collaboration with: Polytechnic of Turin</p>
<p><b>TT.IX.D</b></p>	<p><b>Nanoenergy</b> Chair: Thomas BROWN, <i>University of Rome Tor Vergata</i> In collaboration with: University of Rome Tor Vergata</p>
<p><b>TT.IX.E</b></p>	<p><b>Nanotechnology for new devices and systems</b> Chair: Ilaria FRATODDI, <i>Sapienza University of Rome</i> In collaboration with: Comsol, Nanoitaly Association</p>
<p><b>TT.IX.F</b></p>	<p><b>Engineered Nanomaterials and nanodevices for bio application (part II)</b> Chair: Eugenio AMENDOLA, <i>CNR, Naples</i> In collaboration with: University of Naples "Federico II"</p>

17:30 - 19:00

**CE.IV - NANONNOVATION 2017 CLOSING EVENTS**

<p><b>CE.IV.1</b></p>	<p><b>Salutation cocktail to the next III edition of NANONNOVATION 2018</b> <b>Rome, September 11-14. 2018</b></p>
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## **Would you like to discuss your business idea, your research and innovation projects, your technologies with other interested and very skilled people?**

The networking event is the best way to meet potential cooperation partners during the face-to-face meeting. People have the possibility to meet each other at high speed (around 20 minutes per every face-to-face) and to share ideas and experience, to build connection, to exchange information, to evaluate new opportunities of collaboration at every level.

At the network event will participate a wide spectrum of businessmen, entrepreneurs, researchers and innovators from Europe and beyond looking for new business and cooperation opportunities: do not miss this great chance!

The networking event is free for the conference participants. The event will take place on 28<sup>th</sup> September 2017 during NanoInnovation, in the Renaissance Cloister by Sangallo at the Faculty of Civil and Industrial Engineering, Sapienza University of Rome, from the 14.00 until 19.00: choosing from the 9 slots in which have meetings, participants can both attend to the conference and to the network event.

The whole event is managed by APRE – Agency for the Promotion of European Research

Contacts: Matteo Sabini (sabini@apre.it), Martina Desole (desole@apre.it)

### **TOPICS**

The network event will be focused on nanotechnologies in the following sectors:

- TRANSPORT, SPACE & AERONAUTICS
- FOOD AND AGRICULTURE
- ENERGY & ENVIRONMENT
- HEALTH AND LIFE SCIENCES/BIOTECH
- SUSTAINABILITY, HEALTH AND SAFETY AND SOCIAL IMPACTS
- ELECTRONICS, MICRO AND NANOSYSTEMS
- NANO-MATERIALS BASED INNOVATION
- NANOMETROLOGY AND NANOSCALE MEASUREMENTS
- ICT & NANOELECTRONICS
- NANO-MATERIALS BASED INNOVATION
- NANOMETROLOGY AND NANOSCALE MEASUREMENTS
- ADVANCED MANUFACTURING AND INDUSTRY 4.0
- CONSUMER AND PERSONAL CARE PRODUCTS



### **HOW IT WORKS**

Just few minutes and you will be able to participate to the network event

#### **FIRST STEP**

- Go to [www.b2match.eu/nanoinnovation2017](http://www.b2match.eu/nanoinnovation2017), click on “register”
- Insert your data, write a brief description of your organisation and your expertise
- Select the networking sessions where you are available for bilateral meeting
- Do not forget to choose the main areas of activity you are interested in

#### **SECOND STEP**

- You will be validated by APRE within 2-3 days after registration
- You will receive an invitation to select your potential partners available on the networking tool
- Go to [www.b2match.eu/nanoinnovation2017](http://www.b2match.eu/nanoinnovation2017) log-in and book meetings with other registered participants you would like to meet during the networking event in order to discuss collaborative partnerships

#### **THIRD STEP**

- Few days before the event, APRE will send your networking agenda with scheduled face to face meetings
- Attend the networking event!

## September 28<sup>th</sup> - 9.00 a.m. @ Boaga Library

The Elevator Pitch session is a unique opportunity for project leaders, academics or startups that have an innovative industrial oriented project to pitch their proposals to the full NanoInnovation audience, composed of both highly recognized academic researchers and industry leaders in the following fields addressed by the conference:

- TRANSPORT, SPACE & AERONAUTICS
- FOOD AND AGRICULTURE
- ENERGY & ENVIRONMENT
- HEALTH AND LIFE SCIENCES/BIOTECH
- SUSTAINABILITY, HEALTH AND SAFETY AND SOCIAL IMPACTS
- ELECTRONICS, MICRO AND NANOSYSTEMS
- NANO-MATERIALS BASED INNOVATION
- NANOMETROLOGY AND NANOSCALE MEASUREMENTS
- ADVANCED MANUFACTURING AND INDUSTRY 4.0
- CONSUMER AND PERSONAL CARE PRODUCTS

The purpose is to find both potential partners and/or investors.



### SELECTION CRITERIA:

The Scientific Committee, has selected 11 speakers assessing in each project:

- degree of innovation
- industrial relevance
- correspondence with conference topic areas

Organisation name	Organisation type	Contact
<b>Amyppharma Srl</b>	SME	<b>Massimo MASSERINI</b> <i>massimo.masserini@amyppharma.com</i>
<b>Bactory srl</b>	SME	<b>Emanuele ZONARO</b> <i>emanuele.zonaro@univr.it</i>
<b>Delta srl</b>	Large Company	<b>Maria Savina PIANESI</b> <i>savina.pianesi@telmacucina.it</i>
<b>ISTEC-CNR</b>	R&D Institution	<b>Anna COSTA</b> <i>anna.costa@istec.cnr.it</i>
<b>Italian Institute of Technology - IIT</b>	R&D Institution	<b>Raffaele VECCHIONE</b> <i>raffaele.vecchione@iit.it</i>
<b>Labs of Biophysics and Nanotechnology, University of Genoa</b>	University	<b>Evgeniya PESHKOVA</b> <i>eugenia.pechkova@gmail.com</i>
<b>Lab di Chimica Fisica Applicata - UniPa</b>	University	<b>Maria Grazia INSINGA</b> <i>mariagraziainsinga@gmail.com</i>
<b>NANOFABER</b>	SME	<b>Antonio RINALDI</b> <i>antonio.rinaldi@gmail.com</i>
<b>Sensichips</b>	SME	<b>Lucia COMNES</b> <i>lucia.comnes@sensichips.com</i>
<b>Tiberlab Srl</b>	SME	<b>Fabio SACCONI</b> <i>fabio.sacconi@tiberlab.com</i>
<b>University of Camerino</b>	University	<b>Anna Maria GIULIODORI</b> <i>annamaria.giuliodori@unicam.it</i>

### RULE:

- Each Elevator Pitch presentation will consist of a 5 minutes presentation; timing will be strictly enforced



## Nanospintronics of topological materials

**Tomasz DIETL**, Polish Academy of Sciences, Institute of Physics, Head of the Laboratory for Cryogenic and Spintronic Research, Poland

Presently commercialized nanospintronic devices make use of tunnel junctions consisting of ferromagnetic electrodes separated by a thin insulator layer. A dependence of the junction resistance on a relative magnetization orientation in the two electrodes serves for information reading, whereas sufficiently strong current is employed to reverse magnetization (magnetization writing) via a transfer of spin-momentum from spin-polarized current to spins in one of the magnetized electrodes. These junctions, when integrated with VLSI Si chips, form spin-transfer random access magnetic memories (ST-MRAMs) or in-built memory cells in the case of microprocessors.

It has been recently realized that a pallet of relativistic effects makes one possible to fabricate even more performant nanospintronic devices. In particular, a relativistic spin-orbit interaction generates a spin-orbit torque enabling reversing direction of macroscopic or staggered magnetization in ferromagnets and antiferromagnets, respectively with a relatively small energy dissipation per operation. Furthermore, spin-locking specific to topological materials -- primarily semiconductors with inverted band structures brought about by relativistic mass corrections -- results in highly polarized spin currents allowing to reduce energy consumption by nanoelectronic systems. These aspects of topological materials and their ferromagnetic variants will be reviewed emphasizing also their importance in sensing and metrology.

## How to characterize nanomaterials in biological systems

**Luigi CALZOLAI**, European Commission, DG-JRC, Ispra, Italy

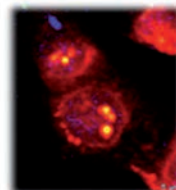
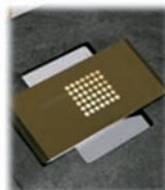
There is a considerable amount of activity in the development of nanomaterials (NM) for different industrial fields and especially in the case of nanomaterials for food and health-care applications. These new NM will need to be characterized in biological systems. Unfortunately, the proper characterization of NM in biological systems is inherently difficult due to the complexity of the systems to be analyzed. In this presentation I will introduce the basic concepts of characterization of NM and I will present some examples of our multi-techniques approach for the characterization of NM in biological systems. Finally, I will briefly present the assay cascade approach developed by the recently launched European Union Nanomedicine Characterization Laboratory (EU-NCL) for the characterization of nanomedicines that could be adapted to the more general characterization of NM in biological systems.



Laboratory of Nanomedicine and Clinical Biophotonics



**MISSION:** To enable a personalized and more effective rehabilitation, with powerful techniques based on nanotechnology and biophotonics. These two combined technologies allow a higher specificity and sensitivity to detect disease biomarkers and monitor the effects of treatments.



**28 Sept, 09:00 – 10:30****ManCreationCAT: a visionary approach in catalysis****Silvia BORDIGA**, *Chemistry Department and NIS Centre of Reference INSTM, University of Turin*

Mankind is able to design chemical processes that convert raw materials into desired products at high rates and yields. Unfortunately, these processes also come with major drawbacks, namely environmental pollution and by-products. Nature, on the other hand, has developed very precise catalytic processes via the evolution of enzymes, which are costly and fragile, and often have reaction rates too slow for industrial use.

The vision of MaNCreationCAT is to combine the best from Mankind with the best from Nature and create novel, man-made catalysts that convert chemicals at high yields and turn-over rates, yet with high specificity and selectivity. Ultimately, this will allow the chemical building blocks of our society to be produced in a cleaner and more sustainable manner.

It has been shown that the synthesis of the molecular unit identified in an enzyme as the active centre is not sufficient for mimicking its performance. This “performance gap” has been attributed to the lack of a proper local environment required to obtain high activity combined with selectivity. More recently, thanks to the development of well defined highly porous materials it is possible to bind active metal complexes to the interior walls of microporous solid supports, or as an integrated part of a hybrid nanoporous structure. These approaches can locate the active site inside molecular sieves, creating catalysts with high selectivity in addition to the activity. The MaNCreation strategy relies on the possibility of synthesising porous materials with pre-designed active sites, including their environment. An increasing number of examples demonstrating the pre-synthetic design of MOFs have been appearing in literature, demonstrating that this is becoming possible. The synthesis of metal doped UiO-67 are recent examples.

**27 Sept, 09:00 – 10:30****Focused Ion Beam Nano-Tomography and 3D EDX: What can you expect and where are the limits****Marco CANTONI**, *EPFL, Lausanne, Switzerland*

FIB Nanotomography offers a high resolution when the electron beam energy is in the range of 1-2 keV. At this energy the escape depth of electrons is in the range of a few nanometers. Tomography data with isometric voxels of a few nanometers in size can be acquired automatically. The EDX analysis however requires a beam energy typically in the range of 8-15keV and depends on the ionisation energy for the different elements present in the sample.

The large scattering range of electrons in a bulk sample has always been a limiting factor for the spatial resolution quantitative X-ray analysis (e.g. EDX) in SEM. However, in some special cases, a good understanding of the variation of the X-ray ionization yield with depth had led to procedures to get partially over this limitation. For example, in the case of multilayer (stratified) samples, it is possible to calculate both layer thicknesses and composition. In the general case, however, the structure below the surface is unknown which leads to an uncertainty on the quantified composition.

Recent progress in software development allows switching between the imaging conditions (HT, image pixels size, slice thickness) and EDX conditions (HT, mapping pixel size, intervals between EDX maps). The system will acquire a certain number of SE and BSE images at low kV, then it will switch to the higher voltage required for the EDX map and acquire an EDX elemental distribution map with a larger pixel size. After the acquisition of the EDX map the imaging conditions will be restored and the acquisition will continue with a sequence of images until the next EDX map will be due. This way complementary data sets can be acquired.

In this presentation new possibilities and also the limits of 3D EDX by FIB-SEM will be explained and illustrated.



**29 Sept, 09:00 – 10:30**

### **Toward large scale application of micro-nano-devices for cancer diagnosis and stem cell studies**

**Yong CHEN**, *École normale supérieure de Paris, France*

Tremendous progress has been made during the last decades to promote applications of nano-manufacturing technologies, and especially microfluidic devices, in life sciences but it is still challenging to identify large-scale killer applications. In this talk, I will discuss two examples of our on-going efforts along this direction.

Firstly, by mimicking the organization of the in-vivo extracellular matrix we fabricated gelatin monolayer nanofibers as cell culture substrate (cPatch) for human pluripotent stem cells (hPSCs) and succeeded efficient differentiation of hPSCs toward cardiac, neuronal and other tissue types. This method is applicable for large-scale manufacturing as well as plug-and-play electrophysiological measurements, microfluidic device integration, disease modeling, tissue repairing, etc.

Secondly, by investigating the flow dynamics and cell migration behavior, we developed a new method to isolate circulating tumor cells (CTCs) using a conical shape micro-hole array (cFilter). Comparing to other isolation methods, this method is advantage in term of selectivity and efficiency for CTC isolation. Cancer diagnosis and treatment could be conducted more intelligently.

Both cPatch and cFilter are currently under industrial development. Together with automated stem cell processing and CTC analyses, a broad range of applications is expected.

**29 Sept, 09:00 – 10:30**

### **Synchrotron radiation for advanced electronic chip metrology and manufacturing**

**Jens GOBRECHT**, *PSI-Paul Scherrer Institute, Laboratory for Micro- and Nanotechnology, Switzerland*

In microelectronic chip fabrication dimensions of features still continue to shrink in spite of the fact that Moore's law has been declared "dead" several times recently. Depending on the product, the "10 nanometer node" is about to be introduced in production. However, it seems that the chip industry now definitively will turn to much shorter wavelengths to be used for photolithography, one of the key technologies in chip fabrication. Extreme ultraviolet (EUV) is presently introduced in pilot production in several fabs, working at a wavelength of 13 nm. But brilliant and stable light sources for this wavelength are complex and expensive.

The paper will review the various R&D opportunities in this field which are offered by the monochromatic, highly brilliant and largely coherent radiation generated by modern synchrotron storage rings. These are:

- EUV interference lithography: This allows to study and optimize newly developed, EUV sensitive photoresists in terms of sensitivity, resolution and line-edge roughness.
- Actinic defect inspection in EUV photomasks.
- Non-destructive X-ray tomographic inspection and quality control of structures inside chips with a resolution down to 15 nm.

Examples will be given in the talk from our recent own research in all three areas. In most cases these results emerge from direct collaborations with world leading chip manufacturers and their suppliers.

**27 Sept, 09:00 – 10:30**

### **Nanomaterials for High-Performance 3D-Microbatteries**

**Diana GOLODNITSKY**, *Tel Aviv University, Israel*

Down scaling in the microelectronic industry has far outpaced advances in small-scale electrical power supplies. The absence of on-board power is a hinder to advances in many critical areas using microelectromechanical systems. Insufficient power from planar microbattery configurations inspires the search for the three-dimensional microbatteries using cheap and light micro-/nano-fabrication materials and techniques. Lithium and Li-ion batteries

exhibit very high energy-density values, which are generally based on the performance of large cells with capacities of up to several ampere-hours. For microbatteries, the achievable power and energy densities do not scale favorably because packaging and internal battery hardware determine the overall size and mass of the complete battery to a greater extent. In addition, the rate and energy performance of current commercial batteries is limited by the two-dimensional (2D) bulk architecture of electrode materials, which possess relatively small electrode/electrolyte interfacial areas. Therefore, further improvements in advanced microbatteries are closely linked to the development of novel battery designs and materials. One of the approaches to the achievement of significant cathode- and anode-volume gain and increased battery capacity by a factor of up to 25-40, is based on the use of a high-aspect-ratio perforated, rather than a continuous, substrates, thereby utilizing the dead volume of the substrate. This presentation will outline achievements of TAU research group in the development of 3D concentric microbatteries on perforated silicon and 3D printed polymer substrates. It then will give selected examples of recent progress in the development of new materials and techniques available for fabrication of 3D battery structures.

**27 Sept, 09:00 – 10:30**

### **Nanomaterials innovations at EMPA: From high thermal insulation plasters to atomically precise engineered electronic materials**

**Oliver GRÖNING**, *EMPA-Swiss Federal Laboratories for Materials Science and Technology, Switzerland*

Nanostructured materials are one of the five focus research areas of Empa and represent an enabling topic for the other four areas being: Energy, Natural Resources and Pollutants, Health and Performance and Sustainable Built Environment. Within its mission to promote innovation by bridging academia and industry, Empa is working on a large number of technologies involving nanomaterials at different levels of technological readiness. In my presentation I will outline different examples of nanomaterial related technologies in various stages of maturity, ranging from already commercialized applications to fundamental research at the limit of material science, i.e. the engineering of materials properties by atomically precise synthesis. In relation to the latter, I will particularly discuss the on-surface synthesis and characterization of graphene related nanostructures in particular graphene nanoribbons (GNR) as active elements for electronic applications. The electronic properties of GNR vary largely as a function of their atomic structure. This is a blessing and a curse at the same time, as it offers a great flexibility in engineering these properties on one hand. Yet, it also requires synthesis with atomic precision in order to achieve homogenous properties through the material. I will discuss how this precision can be achieved using bottom-up, on-surface chemical synthesis using rationally designed molecular precursors.

**29 Sept, 09:00 – 10:30**

### **Synchrotron Radiation and the European User Organization**

**Carlo MARIANI**, *Sapienza University of Rome & European Synchrotron and FEL User Organisation*

There are more than 60 sources of electromagnetic radiation sources generated by accelerated particles in the world, producing top-level science and advanced applications in a variety of fields. Among them, 14 synchrotron radiation (SR) and 8 free electron laser (FEL) european sources are part of a coordinating european project, together with the European Synchrotron and FEL User Organization (ESUO). In this work, we will show the organization of the SR european coordinating programmes and groups. The european projects (like CalipsoPlus) foster development of new techniques and coordinate the transnational access programme for users who are awarded beamtime for experiments at these sources, on a free competitive base. In particular, the European Synchrotron and FEL User Organization ESUO promotes an integrated approach to the use of SR throughout Europe, enabling all European scientists to access appropriate SR facilities based on scientific merit, facilitating open access to European national accelerator based radiation sources throughout programmes of the european union (EU), and playing an active role in stimulating both the European Commission and the facilities.



**27 Sept, 09:00 – 10:30**

### **Lithography and characterization of nanostructures by scanning electron microscopy based techniques**

**Pasqualantonio PINGUE**, *Scuola Normale Superiore, Pisa*

In this talk, some applications of a scanning electron microscope (SEM) in the fields of nanolithography, nanomanipulation and characterization of nanostructures at the NEST Laboratory of Scuola Normale Superiore in Pisa will be reviewed. More in details, some recent results obtained on nanodevices fabricated by e-beam lithography will be shown, employing a pattern generator attached to a standard "Gemini" column as nanolithographic tool. Moreover, will be presented some preliminary results on nanomanipulation of semiconductor nanowires by employing "nanobots" inside the SEM vacuum chamber, exploiting the high resolution imaging capability of the system. Finally, SEM characterization at the nanoscale on various kind of structures and materials will be shown, both by standard secondary electron imaging and by energy-dispersive X-ray spectroscopy (EDS) on semiconductors and metals and by "charge compensation mode" on insulators and biological samples.

**28 Sept, 09:00 – 10:30**

### **Silicon Nanostructures for Photonics, Photovoltaics and Sensing**

**Francesco PRIOLO**, *University of Catania*

Recent efforts on the fabrication of silicon nanostructures for applications in photonics, photovoltaics and sensing will be reviewed. Silicon nanophotonics is emerging as a new platform for the integration of photonic and electronic devices. Several examples of recent efforts on monolithic light sources based on silicon nanostructures will be presented and discussed. In particular it will be shown that silicon-on-insulator (SOI) is emerging as an interesting photonic material. The first electrically pumped silicon-on-insulator nano light source, tunable around 1300-1600nm range and operating at room temperature will be presented. Alternatively rare earth ions are introduced into a nanocavity showing an enhanced emission with potentials for a population inversion and laser action. Group-IV semiconductor nanowires (NWs) are also attracting interest among the scientific community as building blocks for a wide range of future nanoscaled devices. We show that metal-assisted chemical etching is a powerful technique to obtain nanometer-size high density and low-cost Si NWs with high and controllable aspect ratio. We will show that luminescence is very efficient (in the order of the percent) and tunable with NWs size according to quantum confinement. These structures show remarkable Raman properties and behave also as black absorbers. Their potentials for the fabrication of novel solar cell as well as for biosensing will be presented. The relevance and the perspectives of the reported results opening the route towards novel applications of Si nanostructures in photonics, photovoltaics and sensing will be discussed.

**29 Sept, 09:00 – 10:30**

### **The Bright Future of Nanoscience and Synchrotron Radiation**

**Tobias SCHULLI**, *ESRF, Grenoble, France*

The success of nanoscience and technology is mainly based on a comprehension, control and design of nanostructures and nanomaterials. These penetrate all fields of functional materials from biocompatible implants to new electronic devices. The rapid development of the availability of synchrotron radiation (SR) throughout Europe and in interaction with the very active user community, SR has become a key tool in materials science, chemistry and biology over the last decade. With the natural evolution that nanoscience and technology have brought to those fields the synchrotron beamlines and techniques have evolved in particular with adapted instruments put into operation during the first phase of the ESRF upgrade (2009-2015). The further improvement of X-ray technologies and in particular the boost in brilliance that the European Synchrotron will experience during its conversion to the Extremely Bright Source (EBS) will dramatically enhance the importance of this tool for the characterization and imaging of the nanoworld.

**29 Sept, 09:00 – 10:30**

## **Discovery of Protein-RNA Networks**

**Gian Gaetano TARTAGLIA**, *Centre for Genomic Regulation, ICREA, Barcelona, Spain*

In my talk I will present our research on ribonucleoprotein networks. Characterizing protein-RNA associations is key to unravel the complexity and functionality of mammalian genomes and could open up therapeutic avenues for the treatment of a broad range of neurodegenerative disorders. My laboratory works on associations of coding/non-coding RNAs with proteins involved in transcriptional and translational regulation as well as neurodegenerative diseases (examples include Parkinson's  $\alpha$ -synuclein, Alzheimer's disease amyloid protein APP, TDP-43 and FUS). We aim to discover the involvement of RNA molecules in regulatory networks controlling protein production. More specifically, we are interested in understanding mechanisms whose alteration leads to aberrant accumulation of proteins. We have observed that interaction between proteins and their cognate mRNAs induces feedback loops that are crucial in protein homeostasis. Recently, we started to work on ribonucleoprotein granules and their implication in cell toxicity.

**28 Sept, 09:00 – 10:30**

## **Metrology for nanoscale complex semiconductor systems**

**Wilfried VANDERVORST**, *IMEC, Belgium*

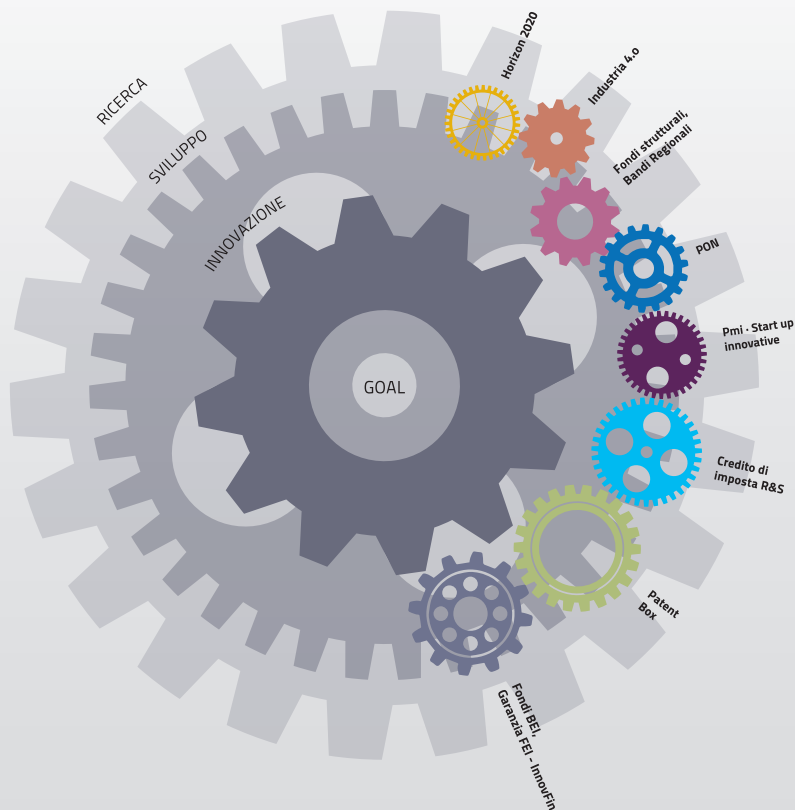
Pushing the limits in IC-technology towards the nanometer scale, led to the development of complex systems and 3D-devices (like Finfets, TFET, nanowires) whereby novel materials and in particular interfacial interactions and ultrathin layers play a crucial role. In many cases blanket experiments no longer reflect the fundamental processes operative in small volumes among others due to the influence of the dramatic changes in surface/bulk ratio's. This has emphasized the importance of metrology apt to deal with small 3D-volumes and atomic scale observations. Novel metrology concepts such as Atomprobe tomography, Scalpel SPM are emerging as a solution to these technological needs. Concurrently a parading shift is observed shifting metrology from high spatial resolution measurements on individual devices towards ensemble measurements on many devices simultaneously, in order to provide statistically relevant information. By exploiting some of their basic physics (cluster emission, photonic effects, detailed data algorithms) large area metrology concepts (SIMS, Raman, Four point probe) can be applied for ensemble measurements on small devices, despite their apparent lack of spatial resolution.

**28 Sept, 09:00 – 10:30**

## **Nanogap Sensor for Electric/Electrochemical Detection of Biomolecules and Microbes**

**Wan Soo YUN**, *SungKyunKwan University (SKKU), South Korea*

Nanogap device where two electrodes are separated or coupled in nanometer scale is an excellent platform for electric and electrochemical sensing of biomolecules and microbes. Conductance jump upon their selective immobilization on the device is quite conspicuous to let an unambiguous judgment of the existence of the targets. Detection probability, or the success rate of the detection can be greatly enhanced without a loss of device sensitivity by simply extending the effective gap distance. Although the conductance variation of a single device would not reflect the target concentration, the on device percentage in an integrated nanogap device exhibited a very nice concentration dependence whose dynamic range was tunable. Great enhancement of the sensitivity can be obtained by adopting the dielectrophoresis. Nanogap electrodes whose surface was intentionally roughened can efficiently trap Au nanoparticles of extremely low concentration. When integrated, it can be used in the quantification of the nanoparticles in a wide dynamic range. Based on this, a new strategy for active detection of target biomolecules can be proposed and tested: Trace amount of infectious disease biomarkers sandwiched between Au and magnetic nanoparticles were successfully detected with high sensitivity and selectivity and the results was compared with those obtained by the conventional passive approach. When the nanogap was adopted in electrochemical sensing, surprising enhancement of redox signal was observed due to the coupling of the two electrodes. When the electrodes for oxidation and reduction are brought into close proximity, one electrochemically-active molecule or ion can generate a large current shuttling between the two electrodes which can be just intact or functionalized. Adopting this method, with a moderate modification in each specific cases, selective detection of the extremely small amount of toxin, virus, and bacteria was successfully implemented.



# Passa al sistema Warrant Group

Gli strumenti di supporto alla ricerca e lo sviluppo e gli investimenti industriali nell'ottica di **Industria 4.0** possono essere cumulabili

	Horizon 2020	Industria 4.0	Fondi strutturali Bandi Regionali	PON	PMI - Start up innovative	Credito R&S	Patent Box	Fondi BEI Garanzie FEI - InnovFin
Oggetto sociale finalizzato all'innovazione								
Attività di R & S								
Investimenti Industria 4.0								
Personale altamente qualificato								
Personale tecnico								
Consulenze tecniche								
Consulenze infragruppo								
Strumentazione di laboratorio								
Titolarità di diritti sull'IP								
Reddito di sfruttamento di IP								



strumenti per l'innovazione di impresa  
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**I.A** Keynote Session: **Nanomaterials for managing the technological change**

**Chair:** Maria Letizia TERRANOVA, *Nanotaly Association*

- I.A.1 Oliver GRÖNING, *EMPA-Swiss Federal Laboratories for Materials Science and Technology, Switzerland*  
**Nanomaterials innovations at Empa: From high thermal insulation plasters to atomically precise engineered electronic materials**
- I.A.2 Diana GOLODNITSKY, *Tel Aviv University, Israel*  
**Nanomaterials for High-Performance 3D-Microbatteries**

**I.B** Keynote Session: **Advanced Characterization Techniques**

**Chair:** Giulio LAMEDICA, *Carl Zeiss Italia*  
**In collaboration with:** ZEISS

- I.B.1 Marco CANTONI, *EPFL, ENT-R-CIME, Lausanne, Switzerland*  
**Focused Ion Beam Nano-Tomography and 3D EDX: What can you expect and where are the limits**
- I.B.2 Pasqualantonio PINGUE, *NEST Scuola Normale Superiore, Pisa*  
**Lithography and characterization of nanostructures by scanning electron microscopy based techniques**

**I.C** Special Session: **Nanotechnology in South Korea**

**Chair:** Edith PETRUCCI DI VACONE E DI SIENA, *Energy and Environment Office, Italian Trade Agency*  
**In collaboration with:** Italian Trade Agency

- I.C.1 Ki-Bum KIM, *KoNTRS-Korea Nano Technology Research Society, President, South Korea*  
**Introduction of the Korea Nanotechnology Research Society and Recent Progress in Solid-State Nanopore**
- I.C.2 Yong-Sul SONG, *Amogreentech Co. Ltd, Vicepresident, South Korea*  
**Commercialization of Nano-fiber Materials in South Korea**

**I.D** Special Session: **Reviewing the Knack: how a new generation of High Tech talents is developing in Italy**

**Chair:** Andrea BAIKATI, *Moving Business Forward Digital Consulting*  
**In collaboration with:** Federchimica

Opening the debate: Ranieri VILLA, Deloitte

*programme in definition*

Panelists:

- Dania DELLA GIOVANNA, Federchimica
- Orsola JASELLI, B4LEX Avvocati Associati
- *Talk In definition*

Conclusions: Andrea BAIKATI, Moving Business Forward

## I.A Microscopy methods for Materials Science

Chairs: Marco CANTONI, *EPFL, Lausanne, Switzerland*  
In collaboration with: ZEISS

- I.A.1 Giulio LAMEDICA, *Carl Zeiss Italia, Germany*  
**Welcome and Introduction**
- I.A.2 Lars-Oliver KAUTSCHOR, *Carl Zeiss Microscopy GmbH*  
**X-Ray Microscopy - 3D and 4D Imaging for Materials Science**
- I.A.3 Andrea CAVALLO, *CERTEMA, Grosseto*  
**Nanostructuring of fault rocks during an earthquake: a micro - analytical FESEM based platform to disclose chemical composition and structural attributes**
- I.A.4 Alessandro DI NICOLA, *Carl Zeiss Italia*  
**Optical Microscopy for Geoscience**

## I.B Nanotechnology applications for hydrocarbon detection and characterization

Chairs: Francesca VERGA, *Polytechnic of Turin & Franco TERLIZZESE, Ministry of Economic Development*  
In collaboration with: Renishaw, Polytechnic of Turin & Ministry of Economic Development

- I.B.1 Laura BORROMEO, *University of Stavanger & The National IOR Centre of Norway, Stavanger, Norway*  
**Micro-Raman spectroscopy and TERS (Tip Enhanced Raman Spectroscopy) applied to Enhanced Oil Recovery**
- I.B.2 Felice CATANIA, *Microla Optoelectronics & Polytechnic of Turin*  
**Sensing platform for the offshore sites sea water environmental monitoring**
- I.B.3 Elena TRESSO, *Polytechnic of Turin*  
**Water purification by improved 2D membranes**
- I.B.4 Sergio BOCCHINI, *IIT, Turin*  
**New nanomaterials for CO2 trapping in oil&gas industry**

## I.C Nanomedicine at UniMoRe

Chairs: Chairs: Giovanni TOSI & Fabio BISCARINI, *University of Modena and Reggio Emilia*  
In collaboration with: University of Modena and Reggio Emilia

- I.C.1 Daniela BELLETTI, *University of Modena and Reggio Emilia*  
**Nanomedicine in Neurodegenerative Disorders**
- I.C.2 Jason Thomas DUSKEY, *University of Modena and Reggio Emilia*  
**Protein, enzyme and gene delivery in Nanomedicine**
- I.C.3 Carlo Augusto BORTOLOTTI, *University of Modena and Reggio Emilia*  
**Organic bioelectronics: ultrasensitive label free biosensors and implantable multifunctional devices**
- I.C.4 Lucia Maria CURRI, *CNR-IPCF, Bari*  
**Luminescent nanoparticles for imaging and diagnostics in vitro and in vivo**

## I.D Cells on Chip: Boosting Cellular Measurements for advanced pharmacological and clinical applications

Chair: Luca BUSINARO, *CNR-IFN, Rome*  
In collaboration with: CNR - IFN

- I.D.1 Cristina COLOSI, *Center for Life and Nanoscience – Italian Institute of Technology, Rome*  
**Microfluidic Bioprinting for the creation of human-derived in vitro 3D cellular models**
- I.D.2 Fabrizio MATTEI, *National Institute of Health, Rome*  
**Exploiting Microfluidic chips to investigate cancer and immune cells crosstalk**
- I.D.3 Federica CASELLI, *University of Rome Tor Vergata*  
**Single-cell impedance spectroscopy for label-free diagnostics**
- I.D.4 Alberto RAINER, *Tissue Engineering Lab - University Campus Bio-Medico, Rome*  
**Microscopy and hyperspectral imaging for cell-on-a-chip applications**

## I.E Nanotechnology: Changing the Future of Medicine

Chair: Luciana DINI, *University of Salento, Lecce*  
In collaboration with: *Fondazione Don Carlo Gnocchi*

- I.E.1 Raffaele PUGLIESE, *Institute for Stem-cell Biology, Regenerative Medicine and Innovative Therapies (ISBREMITE) - IRCCS Casa Sollievo della Sofferenza, San Giovanni Rotondo (FG)*  
**Cross-linked self-assembling peptide scaffolds: high performance biomimetic nanomaterials for regenerative medicine**
- I.E.2 Stefania MARIANO, *University of Salento, Lecce*  
**Improving proton therapy by gold nanoparticles: study of internalization and subcellular localization**
- I.E.3 Enza TORINO, *University of Naples "Federico II", IIT - Center for Advanced Biomaterials for Healthcare, Interdisciplinary Research Center on Biomaterials, Naples*  
**Design of nanoshuttles for theranostics**
- I.E.4 Carlo MORASSO, *Laboratory of Nanomedicine and Clinical Biophotonics (LABION) & Fondazione Don Carlo Gnocchi, Milan*  
**SPRi-based multiplex detection of unamplified circulating miRNAs related to multiple sclerosis**

## I.F Regulating Nano innovation in the agri-food sector

Chair: Chair: Luca MARCHIOL, *University of Udine*  
Co-Chair: Francesco CUBADDA, *National Institute of Health*  
In collaboration with: *Universities of Bologna, Florence & Udine*

- I.F.1 Francesco CUBADDA, *National Institute of Health, Rome*  
**Opportunities and challenges of nanotech applications in the agri-food sector: need of a comprehensive approach for assessing the risks for human health and the environment**
- I.F.2 Catia CONTADO, *University of Ferrara*  
**Combined analytical techniques for the physico-chemical characterization of hard and soft nanoparticles**
- I.F.3 Valeria SODANO, *University of Naples "Federico II"*  
**Regulating nanotechnologies in the agri-food sector: economic and political challenges**
- I.F.4 Paride MANTECCA, *University of Milano Bicocca*  
**Bio-interactions and effects of metal-based NPs: implications for a safe-by-design approach in the agri-food nanotech development**



## II.A Microscopy methods for Nanotechnology and Nanofabrication

Chair: Luca ORTOLANI, *CNR-MM, Bologna*

In collaboration with: ZEISS

- II.A.1 Giulio LAMEDICA, *Carl Zeiss Italia SpA*  
**Extending the Frontiers of Nanotechnology with ion and electron beam solutions  
 Technique and Applications**
- II.A.2 Massimo CUSCUNA', *CNR NANOTEC, Lecce*  
**Nanostructures for Photonics**
- II.A.3 Matthias VAUPEL, *Carl Zeiss Microscopy GmbH, Germany*  
**Comparing Confocal and Interference Contrast Microscopy in Topography,  
 Roughness, and Film Thickness Measurement**

## II.B The RInnovaReNano project: new insight into regulations and research of nanomaterials

Chairs: Alessandro ALIMONTI, *National Institute of Health, Rome*; Andrea

PORCARI, *AIRI & Flavia BARONE, National Institute of Health, Rome*

In collaboration with: RinnovareNano

- II.B.1 Maria ALESSANDRELLI, *Istituto Superiore di Sanità - National Institute of Health, Rome*  
**Nanomaterials: provisions and new perspectives in the framework of REACH&CLP  
 Regulations**
- II.B.2 Francesco CUBADDA, *Istituto Superiore di Sanità - National Institute of Health, Rome*  
**Risk assessment of nanotechnology applications in the agri-food sector: a view to  
 the future**
- II.B.3 Giuseppe D'AVENIO, *Istituto Superiore di Sanità - National Institute of Health, Rome*  
**Developments in the regulatory framework for nanostructured medical devices  
 and applications**
- II.B.4 Beatrice BOCCA, *Istituto Superiore di Sanità - National Institute of Health, Rome*  
**Analytical strategies to detect and quantify metal and metal oxide nanoparticles  
 for human exposure assessment**
- II.B.5 Mariantonia LOGOZZI, *Istituto Superiore di Sanità - National Institute of Health, Rome*  
**The role of natural nanovesicles in drug and nanomaterials delivery**

## II.C Nanosafety and Nanobiotechnology I

Chairs: Silvana FIORITO, *Sapienza University of Rome & Rosalba GORNATI,  
 University of Insubria*

In collaboration with: University of Milano Bicocca - Research Center POLARIS,  
 University of Insubria, University of Rome Tor Vergata, Tiesselab, Gilson

- II.C.1 Pier Paolo POMPA, *IIT, Genoa*  
**Nanobiosensors for food, healthcare, and sustainability**
- II.C.2 Elisa PANZARINI, *University of Salento, Lecce*  
**Extracellular vesicles as naturally-equipped nanoconstructs for cancer  
 management:the Glioblastoma Multiforme example**
- II.C.3 Giulio SANCINI, *University of Milano Bicocca*  
**The inhaled nanoparticles landing at the blood brain barrier**
- II.C.4 Giovanni BERNARDINI, *University of Insubria, Varese*  
**Magnetic nanoparticles functionalized with enzymes**

## II.D Carbon-based Nanomaterials

Chair: Luca OTTAVIANO, *University of L'Aquila*

In collaboration with: Sapienza University of Rome and Nanoshare Srl

- II.D.1 Emanuela TAMBURRI, *University of Tor Vergata and Nanoshare Srl, Roma*  
**Nanodiamond coupled with polymers: from the control of mutual organization to 3D manufacturing**
- II.D.2 Emmanuel FLAHAUT, *CIRIMAT - Université de Toulouse, France*  
**Nano-Carbons: Synthesis and Characterization**
- II.D.3 Byoung Hun LEE, *Center for Emerging Electronic Devices and Systems(CEEDS) - School of Materials Science & Engineering, GIST-Gwangju Institute of Science and Technology, South Korea*  
**Roll to plate graphene transfer in vacuum and its electronic applications**
- II.D.4 Seungmin CHO, *Hanwha Techwin Co. Ltd., Graphene R&D Center, South Korea*  
**Reproducible Large Area CVD Graphene**

## II.E Imaging and spectroscopies for nanocharacterizations

Chair: Francesca FRASCELLA, *Polytechnic of Turin*

In collaboration with: Renishaw, Nordtest, Nanolane, Polytechnic of Turin

- II.E.1 Riccardo TAGLIAPIETRA, *Renishaw, Turin*  
**Raman Spectroscopy Characterisation of Large Area 2D materials**
- II.E.2 Nicolas MEDARD, *Nanolane, France*  
**SEEC Microscopy: a live and label-free analysis technique in the fields of Materials and Life Sciences**
- II.E.3 Chiara NOVARA, *Polytechnic of Turin*  
**The potential of Raman spectroscopy as a powerful characterization tool: from materials science to Biointerfaces**
- II.E.4 Marco CAPITANIO, *LENS & University of Florence*  
**Dissecting fast dynamics of single biological molecules with high-speed laser tweezers**

## II.F Nanomaterials in Soil-Plant Environment: Perspectives and Concerns

Chair: Sandra RISTORI, *University of Florence*

Co-Chair: Cristina GONNELLI, *University of Florence*

In collaboration with: Universities of Bologna, Florence & Udine

- II.F.1 Livia VITTORI ANTISARI, *University of Bologna*  
**Interaction between engineered nanoparticle and soil system**
- II.F.2 Luca MARCHIOL, *University of Udine*  
**Phytonanotechnology: new opportunities and controversies**
- II.F.3 Giorgio Mariano BALESTRA, *University of Tuscia, Viterbo*  
**Innovative nanotechnological tools in plant and food protection**
- II.F.4 Giuseppe CICCARELLA, *University of Salento, Lecce*  
**Nanotechnology-based strategies for active containment of Xylella fastidiosa**

## III.A Blue Energy Harvesting

Chair: Andrea LAMBERTI, *Polytechnic of Turin*  
 In collaboration with: Polytechnic of Turin

- III.A.1 Aamer ALI, *University of Calabria*  
**Membrane Engineering for Energy Production from Salinity Gradient**
- III.A.2 Dorian BROGIOLI, *Bremen University, Germany*  
**Salinity gradient power**
- III.A.3 Alessandro TAMBURINI, *University of Palermo*  
**Blue Energy from highly saline waters in open and closed loop applications**
- III.A.4 Adriano SACCO, *IIT - Center for Sustainable Future Technologies @PoliTO, Turin*  
**Pre-colonization of anodic electrodes in seawater sediment for Single Chamber Floating**

## III.B Nanosafety and Nanobiotechnology II

Chairs: Paride MANTECCA, *University of Milano-Bicocca* & Luisa CAMPAGNOLO, *University of Rome Tor Vergata*  
 In collaboration with: University of Milano Bicocca - Research Center POLARIS, University of Insubria, University of Rome Tor-Vergata, Tiesselab, Gilson

- III.B.1 Flemming CASSEE, *National Institute for Public Health and the Environment - Institute for Risk Assessment Sciences, Utrecht University, The Netherland*  
**Metrics that affect the safety of nanomaterials: implications for design**
- III.B.2 Elisa MOSCHINI, *Luxembourg Institute of Science and Technology - University of Milano-Bicocca*  
**Advanced in vitro models for nanotoxicology**
- III.B.3 Silvana FIORITO, *CNR & Sapienza University of Rome*  
**Effects of Metallic Carbon Nanotubes in vitro and in vivo**
- III.B.4 Valentina LACCONI, *University of Rome Tor Vergata*  
**In vitro models for the study of reproductive toxicity of engineered nanomaterials**
- III.B.5 Francesco CUBADDA, *National Institute of Health, Rome*  
**Oral toxicity of nanomaterials and the effect of human gastrointestinal digestion on key hazard-related properties**

## III.C Nanoelectronics at UniMoRe

Chairs: Luca LARCHER, *University of Modena and Reggio Emilia* & Paolo PAVAN, *University of Modena and Reggio Emilia*  
 In collaboration with: University of Modena and Reggio Emilia

- III.C.1 Giovanni VERZELLESI, *University of Modena and Reggio Emilia*  
**New digital devices for more "More Moore"**
- III.C.2 Andrea PADOVANI, *University of Modena and Reggio Emilia*  
**Neuromorphic computing devices for artificial intelligence**
- III.FC.3 Paolo LA TORRACA, *University of Modena and Reggio Emilia*  
**Printed Technology Audio Transducers for Automotive Applications**
- III.C.4 Luca VINCETTI, *University of Modena and Reggio Emilia*  
**Hollow Core Photonic Crystal Fibers for Label Free DNA Detection**
- III.C.5 Luigi ROVATI, *University of Modena and Reggio Emilia*  
**Nanoparticles for biosensing applications**



### III.D Sensors and multifunctional devices

Chair: Pietro Alcardo SICILIANO, *CNR-IMM, Lecce*  
In collaboration with: CNR-IMM

- III.D.1 Mauro EPIFANI, *IMM-CNR, Lecce*  
**Enhanced Chemoresistive Gas-Sensors from Cross-Talk with Heterogeneous Catalysis. Principles, Synthesis and Applications**
- III.D.2 Pietro FERRARO, *ISASI-CNR, Napoli*  
**Multifunctional Sensors Platforms for Liquid Biopsy**
- III.D.3 Corrado DI NATALE, *University of Rome Tor Vergata*  
**Sensing properties of porphyrinoids functionalized nanostructures: from human screening to chiral selectivity**
- III.D.4 Luisa TORSI, *University of Bari*  
**Label-free protein electronic detection with an electrolyte-gated organic field-effect transistor-based immunosensor**
- III.D.5 Leandro LORENZELLI, *FBK, Trento*  
**A Micro-Nano-BioSystem for safety and security in milk**

### III.E AgriNanoTechniques Research Pathways

Chair: Livia VITTORI ANTISARI, *University of Bologna*  
Co-Chair: Luca MARCHIOL (CV), *University of Udine*  
In collaboration with: The Universities of Bologna, Florence, and Udine

- III.E.1 Ilaria COLZI, *University of Florence*  
**Gold nanoparticles from different plant extracts: a study on stability, shape and toxicity**
- III.E.2 Enrico BRAIDOT, *University of Udine*  
**Plants as NPs bioreactors: physiological bases of the process and possible technological applications**
- III.E.3 Laura CHIARANTINI, *University of Urbino*  
**Biogenerated ferric expolysaccharide as a new nanofertilizer to enhance *Tuber borchii* (Truffle) growth**
- III.E.4 Sandra RISTORI, *University of Florence*  
**Lipid nanovectors for carrying phytohormones to rooting recalcitrant plants**

### III.F Safe Working with nanomaterials: practical approaches for R&D laboratories

Chair: Elisabetta BORSELLA, *AIRI*  
In collaboration with: Nanolab

- III.F.1 Pasqualantonio PINGUE, *Scuola Normale Superiore, NEST Laboratory, Pisa*  
**Risk management of nanomaterials in R&D labs: the NANO-LAB decision-support methodology**
- III.F.2 Fabio BOCCUNI, *Italian Workers' Compensation Authority (INAIL), Rome*  
**Nanomaterials exposure assessment in the workplace: the NANOLAB multi-metric approach**
- III.F.3 Ana Sofia FONSECA, *National Research Centre for the Working Environment and caLIBRAte project, DK*  
**Risk governance framework for nanomaterials, and exposure assessment strategies: Case studies and lessons**
- III.F.4 Andrea PORCARI, *AIRI*  
**Priorities for the application of risk management strategies in industrial settings: the Italian landscape**

**II.A** Keynote Session: **Site selectivity for Nanomaterials**Chair: **Eugenio AMENDOLA, IPCB-CNR, Naples**

II.A.1 Silvia BORDIGA, *Chemistry Department and NIS Centre of Reference INSTM, Turin University*  
**ManCreationCAT: a visionary approach in catalysis**

II.A.2 Wan Soo YUN, *Department of Chemistry, SKKU-SungKyunKwan University, South Korea*  
**Nanogap Sensor for Electric/Electrochemical Detection of Biomolecules and Microbes**

**II.B** Keynote Session: **The world of semiconductor nanostructures**Chair: **Corrado SPINELLA, Director of DSFTM, CNR, Catania**

II.B.1 Wilfried VANDERVORST, *IMEC, Belgium*  
**Metrology for nanoscale complex semiconductor systems**

II.B.2 Francesco PRIOLO, *University of Catania*  
**Silicon Nanostructures for Photonics, Photovoltaics and Sensing**

**II.C** Special Session: **An industrial view on ALM: current state, prospective and challenges**Chair: **Francesca NANNI, University of Rome Tor Vergata**  
In collaboration with: **AIRI**

II.C.1 Daniele BASSAN, *CRF, Turin*  
**Additive Manufacturing (R)evolution: perspective: from prototype towards mass production**

II.C.2 Vito LAMBERTINI, *CRF, Turin*  
**New materials for additive manufacturing: the automotive perspective**

II.C.3 Luca BELTRAMETTI, *University of Genoa*  
**Economic aspects of Additive Manufacturing**

**II.D Special Session: New Technologies and “work-based learning” at Research Institutes: Current Situation and Perspectives**

**Chair: Pierluigi BELLUTTI, *Fondazione Bruno Kessler, Trento***  
**In collaboration with: Fondazione Bruno Kessler**

09.00	Apertura della sessione (P. Bellutti) e Introduzione dott. Oscar Pasquali: <b>l'importanza dell'Alternanza Scuola Lavoro. Le esperienze degli Enti di Ricerca</b>
09.05	CNR - dott.ssa Elisabetta Baldanzi
09.15	ENEA - dott.ssa Laura Di Pietro
09.25	ASI - dott. Alfonso Lamanna
09.35	INFN - dott.ssa Rossana Centioni
09.45	FBK - dott.ssa Claudia Dolci
09.55	L'esperienza di Confindustria – dott.ssa Nicoletta Amodio
10.05	L'esperienza di una grande Università - prof.ssa Tiziana Pascucci
10.15	tavola rotonda

**II.E Special Session: NanoInnovation's Got Talent**

**Chair: Fulvio UGGERI, *Bracco Imaging SpA***  
**In collaboration with: Bracco Foundation**

- II.E.1 Virgilio GENOVA, *Sapienza University of Rome*  
**Super hydrophobic nanostructured nickel coating obtained by electroless plating: synthesis and characterization**
- II.E.2 Giovanni LANDI, *University of Salerno*  
**New bio-nano-composites for transient electronics devices**
- II.E.3 Davide ORSI, *University of Parma*  
**CeF3 – ZnO nanostructures for the Self-lighted Photodynamic Therapy of deep tumors**
- II.E.4 Claudia TESTI, *Center for Life Nano Science@Sapienza, Istituto Italiano di Tecnologia, Rome*  
**Cryo-electron microscopy structure determination of Ferritin nanoparticles**
- II.E.5 Martina Bruna VIOLATTO, *IRCCS Istituto di Ricerche Farmacologiche Mario Negri, Milan*  
**Nanoparticle dependent administration of Dexamethasone prevents its systemic spread and reduces inflammation in mice with AIH**



#### IV.A Advancement in material growth and device technology for GaN-based rf and power devices

Chair: Enrico ZANONI, *University of Padova*

Co-Chair: Claudio LANZIERI, *Leonardo SpA*

In collaboration with: *Leonardo SpA*

- IV.A.1 Farid MEDJDOUB, *CNRS IEMN, Lille, France*  
**Towards robust and efficient millimeter-wave high power GaN transistors**
- IV.A.2 Alessandro CHINI, *University of Modena and Reggio Emilia*  
**Traps related current and RF-gain transients in GaN HEMTs**
- IV.A.3 Claudio LANZIERI, *Leonardo SpA, Rome*  
**Leonardo GaN Foundry: technological challenges for high performance and reliability device**
- IV.A.4 Enrico ZANONI, *University of Padova*  
**Reliability physics, failure modes and mechanisms of 0.25  $\mu\text{m}$  and 0.5  $\mu\text{m}$  AlGaIn/GaN HEMT, technologies for rf applications**

#### IV.B Nanomedicine research at CEN Foundation - part I

Chair: Francesco NICOTRA, *University of Milano-Bicocca*

In collaboration with: *European Centre of Nanomedicine*

- IV.B.1 Francesca BALDELLI BOMBELLI, *Polytechnic of Milan*  
**Theranostics over different length scales: From nanoparticles, to supraparticles, and beyond**
- IV.B.2 Nora BLOISE, *University of Pavia*  
**In vitro biological investigation of new advanced gold nanoparticles for breast cancer treatment**
- IV.B.3 Alessandro LASCIALFARI, *University of Milan*  
**Magnetic nanoparticles as MRI and theranostic agents**
- IV.B.4 Francesca RE, *University of Milano-Bicocca*  
**A nanomedicine approach for treatment of glioblastoma**

#### IV.C 3D Correlative Microscopy in Life Science - part I

Chair: Francesco BIANCARDI, *Carl Zeiss Italia*

In collaboration with: *ZEISS*

- IV.C.1 Giulio LAMEDICA, *Carl Zeiss Italia*  
**Welcome and Introduction**
- IV.C.2 Lars Oliver KAUTSCHOR, *Carl Zeiss Microscopy GmbH, Germany*  
**Applications for 3D characterization in the life sciences - Illumination correlative research using light, X-ray, and electron microscopy**
- IV.C.3 Giulia BOLASCO, *EMBL Rome*  
**Microglia-neurons interactions: a new nanoscale perspective**
- IV.C.4 Alessandro COMETTA, *Carl Zeiss Italia*  
**LSM Airyscan and Superresolution**

## IV.D The ALM matter in the context of the Public Research: an overview

Chair: Francesca NANNI, *University of Rome Tor Vergata*  
In collaboration with: AIRI

- IV.D.1 Davide MALACALZA, *JABIL Italy*  
**Accelerating Products to Marketing with Additive Manufacturing**
- IV.D.2 Alessandro GASBARRINI, *Istituto ortopedico Rizzoli di Bologna*  
**3D-printed titanium prosthesis at Rizzoli Orthopedic Institute: custom made reconstruction of the spine**
- IV.D.3 Roberto DE SANTIS, *IPCB-CNR, Naples*  
**Rapid prototyped nano composite magnetic scaffolds for osteochondral tissue regeneration**
- IV.D.4 Michele MUCCINI, *CNR, Bologna*  
**Diagnostic and analytical techniques for advanced materials and nanostructures**
- IV.D.5 Jacopo TIRILLO', *Sapienza University of Rome*  
**Prospective application of ALM in recently established FAB LAB Sapienza**
- IV.D.6 Marianna RINALDI, *University of Rome Tor Vergata*  
**The ALM of polymers, nanocomposites and ceramics in a prospective view**

## IV.E Materials and technologies for flexible electronics

Chair: Leandro LORENZELLI, *FBK, Trento*  
In collaboration with: FBK

- IV.E.1 Ravinder DAHIYA, *University of Glasgow, UK*  
**Energy-Autonomous Electronic Skin**
- IV.E.2 Piero COSSEDDU, *University of Cagliari*  
**Low Voltage Organic Thin Film Transistors: a flexible technology for sensing applications**
- IV.E.3 Dario GASTALDI, *Polytechnic of Milan*  
**In-situ electromechanical testing of stretchable metal/polymer interconnects**
- IV.E.4 Luca FRANCIOSO, *CNR-IMM, Lecce*  
**Flexible devices for energy harvesting and chemical sensing**

## IV.F Nanoinnovation in Drug Delivery

Chairs: Donato COSCO & Donatella PAOLINO,  
*University "Magna Græcia" of Catanzaro*  
In collaboration with: NUTRAMED

- IV.F.1 Fabiana QUAGLIA, *University of Naples, Federico II*  
**Targeting solid tumors with multifunctional polymeric nanoparticles**
- IV.F.2 Paolo BLASI, *University of Camerino*  
**Lipid nanoparticles for brain drug delivery**
- IV.F.3 Silvia FRANZÈ, *University of Milan*  
**Nanovectors for breaching the skin barrier**

**V.A Towards graphene integration in electronic devices: potentials and challenges**

Chair: Stefano BIANCO, *Polytechnic of Turin*  
 In collaboration with: LPE, Vishay, Polytechnic of Turin

- V.A.1 Filippo GIANNAZZO, *CNR-IMM, Catania*  
**Towards high frequency devices based on graphene integration with Nitride semiconductors**
- V.A.2 Rita RIZZOLI, *CNR-IMM, Bologna*  
**Effects of ageing tests on graphene structures**
- V.A.3 Leonardo VITI, *CNR-Nanoscience Institute, Pisa*  
**Terahertz saturable absorbers from liquid phase exfoliation of graphite**
- V.A.4 Sergio FERRERO, *Polytechnic of Turin*  
**Laser as a powerful tool in graphene based devices**

**V.B Nanomedicine research at CEN Foundation - part II**

Chair: Francesco NICOTRA, *University of Milano-Bicocca*  
 In collaboration with: European Centre of Nanomedicine

- V.B.1 Silke KROL, *Carlo Besta Neurological Institute, Milan*  
**Nanomaterials across the blood brain barrier for Neurodegenerative disease, glioma and as antiviral**
- V.B.2 Giulia BERTOLINI, *IRCCS National Cancer Institute, Milan*  
**Nanostructured glyco-ECM mimetics: glycosylated tools for modeling lung cancer stem cell niche**
- V.B.3 Andrea GIOVANNOZZI, *INRIM, Turin*  
**Shape engineered TiO<sub>2</sub> nanoparticles in Caenorhabditis elegans: A Raman imaging based approach to assist tissue-specific toxicological studies**
- V.B.4 Federico BERTOGLIO, *University of Pavia*  
**Silver nanoparticles with pectin: ideal green biomaterial for anti-bacterial and anti-biofilm applications**

**V.C 3D Correlative Microscopy in Life Science - part II**

Chair: Giulia BOLASCO, *EMBL, Rome*  
 In collaboration with: ZEISS

- V.C.1 Francesco BIANCARDI, *Carl Zeiss Italia*  
**Correlative Workflows in Life Science**
- V.C.2 Roman POLISHCHUK, *TIGEM, Pozzuoli, Naples*  
**CLEM: bridging the light and electron microscopy**
- V.C.3 Francesco MURA, *CNIS, Sapienza University of Rome*  
**Multiscale microscopy supporting the microbiological investigations on Bdellovibrio bacteriovorus**



## V.D General Aspects of ALM Technology

Chair: Francesca NANNI, *University of Rome Tor Vergata*  
In collaboration with: AIRI

- V.D.1 Tommaso GHIDINI, *ESA/ESTEC Noordwijk, The Netherlands*  
**ALM: our future in Space and in Earth**
- V.D.2 Francesco LUMACA, *Thales Alenia Space, Rome*  
**Problems Space Industry**
- V.D.3 Mario BRUTTINI, *Mecaer Aviation Group, Novara*  
**ALM: make it or buy?**

## V.E The exploitation of nanotechnology

Chairs: Francesco MATTEUCCI & Roberto GIANNANTONIO, *DHITECH, Lecce*  
In collaboration with: DHITECH

- V.E.1 Roberto GIANNANTONIO, *DHITECH, Lecce*  
**The economic impact of nanotechnology**
- V.E.2 Alessio BEVERINA, *Panakès Partners, Milan*  
**Venture Capital: an alternative way to finance innovation**
- V.E.3 Speaker to be confirmed, *APRE*  
**Nanotechnology and Horizon 2020** (*provisory title*)
- V.E.4 Alessandro BRAMANTI, *STMicroelectronics, Lecce*  
**Nanotechnology exploitation and exploration**
- V.E.5 Antonio ALESSANDRINO, *Silk Biomaterials, Lomazzo (CO)*  
**Silk Biomaterials: nanomedicine from lab to market**

## V.F Innovative nanocarrier for drug delivery

Chairs: Christian CELIA, *University "G. D'Annunzio" of Chieti-Pescara*  
& Donatella PAOLINO, *University "Magna Graecia" of Catanzaro*  
In collaboration with: NUTRAMED

- V.F.1 Delia MANDRACCHIA, *University of Bari*  
**Colloidal nanosystems from natural and renewable resources**
- V.F.2 Jason DUSKEY, *University of Modena and Reggio Emilia*  
**Challenges in the development of nanoparticle-based systems for enzyme loading and brain targeting**
- V.F.3 Sara ILARI, *University Magna Graecia of Catanzaro*  
**Newly Formulated Idebenone and Inflammatory Pain**
- V.F.4 Barbara PORSIO, *University of Palermo*  
**Smart nano and micro tools for pulmonary therapy of cystic fibrosis**

## VI.A Nano-characterizations in semiconductor's industry

Chair: Onofrio Antonino CACIOPPO, *LFoundry, Avezzano (AQ)*  
In collaboration with: LFoundry

- VI.A.1 Giacomo CALLORI, *Sapienza University of Rome & LFOUNDRY, Avezzano (AQ)*  
**SRAM fault modeling simulation**
- VI.A.2 Iuliana RACHITA, *Sapienza University of Rome & LFOUNDRY, Avezzano (AQ)*  
**Characterization of Implanted Si wafer by RAMAN spectroscopy**
- VI.A.3 Matteo ANGIOLILLO, *Sapienza University of Rome & LFOUNDRY, Avezzano (AQ)*  
**e-PDF capability evaluation for structural analysis of amorphous & nano-crystalline materials in semiconductor industry**
- VI.A.4 Mattia MUSOLINO, *LFOUNDRY, Avezzano (AQ)*  
**Mercury probe as a tool for prompt oxide characterization in semiconductor industry**
- VI.A.4 Narciso GAMBACORTI, *CEA Leti/PAC-G, Grenoble, France*  
**3D characterization of advanced nanoelectronic devices**

## VI.B Tribology of carbon-based nano materials

Chair: Sergio VALERI, *University of Modena and Reggio Emilia*  
In collaboration with: University of Modena and Reggio Emilia

- VI.B.1 Diego MARCHETTO, *University of Modena and Reggio Emilia*  
**Humidity effect on lubrication of iron by graphene**
- VI.B.2 Andrea VANOSSI, *CNR-IOM, Trieste*  
**Superlubricity at graphitic interfaces**
- VI.B.3 Renato BUZIO, *CNR-SPIN, Genoa*  
**Ultralow friction of ink-jet printed graphene flakes**
- VI.B.4 Denis ROMAGNOLI, *STS Srl, Rome*  
**Improving adhesion of diamond like carbon (DLC) and its tribological properties**

## VI.C Nanocatalysis

Chair: Angela AGOSTIANO, *University of Bari*  
In collaboration with: DHITECH

- VI.C.1 Lucia CURRI, *University of Bari*  
**Shedding light on nanocatalysis: nano materials for photocatalytic applications**
- VI.C.2 Ki Tae NAM, *Seoul National University, South Korea*  
**Bioinspired water oxidation and CO<sub>2</sub> reduction electrocatalysts**
- VI.C.3 Matteo GUIDOTTI, *CNR-ISTM, Milan*  
**Design and application of heterogeneous catalysts for selective oxidations: an approach at nanometre-scale level**
- VI.C.4 Marco RICCI, *ENI, Novara*  
**Greening industrial organic chemistry: A biorefinery based on guayule**
- VI.C.5 Siglinda PERATHONER, *University of Messina*  
**Nanotech design and engineering of electrodes and devices for solar fuel production**

## VI.D Nanomaterials for the Cultural Heritage

**CChair:** Rodorico GIORGI, *CSGI, Florence*

**Co-Chair:** David CHELAZZI, *CSGI, Florence*

**In collaboration with:** CSGI - Center for Colloid and Surface Science

- VI.D.1 Rodorico GIORGI, *CSGI, Florence*  
**Nanoscience and its contribution to the conservation of Cultural Heritage**
- VI.D.2 Marino LAVORGNA, *CNR, Naples*  
**Overview on Nanorestart project and results achieved**
- VI.D.3 Luciano PENSABENE & Maria Laura PETRUZZELLIS, *Peggy Guggenheim Collection Conservators*  
**The use of innovative nanosystems in the conservation**
- VI.D.4 Isella VICINI & Patrizia ZITELLI, *Warrant Group & CSGI, Bologna*  
**Overview of Echoes, the new Cluster on Cultural Heritage**

## VI.E Advanced nanomaterials and technologies for energy exploitation

**Chair:** Maurizio PERUZZINI, *CNR-DSCTM*, Alessandra SANSON, *CNR-ISTEC & Maria Lucia CURRI, CNR-IPCF*

**In collaboration with:** CNR-DSCTM

- VI.E.1 Filippo DE ANGELIS, *CNR-ISTM, Perugia*  
**Modeling Materials and Processes in Hybrid/Organic Photovoltaics: From Dye-sensitized to Perovskite Solar Cells**
- VI.E.2 Hamish MILLER, *CNR-ICCOM, Florence*  
**Platinum-free fuel cells: development of nanostructured electrocatalysts for anion exchange membrane fuel cells**
- VI.E.3 Silvia GROSS, *CNR-ICMATE, Padua*  
**Twice sustainable: low temperature, green wet-chemistry and colloidal routes towards the environmental friendly synthesis of inorganic nanostructures for energy applications and catalysis**
- VI.E.4 Alberto FIGOLI, *CNR-ITM, Rende (CS)*  
**Advances of Membrane Technology in Water Treatment**

## VI.F New trends in nanomedicine

**Chair:** Massimo MASSERINI, *NANOMIB and International School of Nanomedicine - University of Milano Bicocca - Ettore MJORANA Center*

**In collaboration with:** Nanomedicine Center University Milano-Bicocca NANOMIB

- VI.F.1 Miriam COLOMBO, *University of Milano-Bicocca*  
**How the number of antibodies attached to colloidal nanoparticles affect tumour targeting and therapeutic effect?**
- VI.F.2 Marzia BEDONI, *Laboratory of Nanomedicine and Clinical Biophotonics (LABION) & Fondazione Don Carlo Gnocchi, Milan*  
**Exosomes: naturally secreted nanoparticles characterized by biophotonic techniques**
- VI.F.3 Barbara LA FERLA, *University of Milano-Bicocca*  
**Glyco-Nanoparticles for biosensing and therapeutic-targeting**
- VI.F.4 Giulio SANCINI, *University of Milano Bicocca*  
**The inhaled nanoparticles landing at the blood brain barrier**
- VI.F.5 Roberto SIMONUTTI, *University of Milano Bicocca*  
**Synthesis of Amphiphilic Block Copolymers and their use for the Fabrication of Nanoparticles with potential application as Drug Delivery Systems**



### III.A Keynote Session: **Nano-manufacturing technologies for life and human health sciences**

Chair: **Luciana DINI**, *University of Salento, Lecce*

- III.A.1 **Gian Gaetano TARTAGLIA**, *Centre for Genomic Regulation, ICREA, Barcelona, Spain*  
**Discovery of Protein-RNA Networks**
- III.A.2 **Yong CHEN**, *École normale supérieure de Paris, France*  
**Toward large scale application of micro-nano-devices for cancer diagnosis and stem cell studies**

### III.B Special Session: **Synchrotron Radiation for Nanotechnology and Applications**

Chair: **Carlo MARIANI**, *Sapienza University of Rome & ESUO Executive Committee*  
 In collaboration with: **Sapienza University of Rome & ESRF**

- III.B.1 **Tobias SCHULLI**, *ESRF, Grenoble, France*  
**The Bright Future of Nanoscience and Synchrotron Radiation**
- III.B.2 **Carlo MARIANI**, *Sapienza University of Rome & ESUO Executive Committee*  
**Synchrotron Radiation and the European User Organization**
- III.B.3 **Jens GOBRECHT**, *PSI-Paul Scherrer Institute, Laboratory for Micro- and Nanotechnology, Switzerland*  
**Synchrotron radiation for advanced electronic chip metrology and manufacturing**

### III.C Special Session: **Advanced technologies and tools of diagnostics for conservation of cultural heritage**

Chairs: **Roberta FANTONI**, *ENEA*, & **Maria Sabrina SARTO**, *Sapienza University of Rome*

- III.C.1 **Maria Sabrina SARTO**, *Sapienza University of Rome*  
**Research Infrastructure for cultural heritage in Lazio Region: lab-nets oriented towards the use and development of advanced technologies and nanotechnology for analysis, diagnostics, conservation, restoration**
- III.C.2 **Roberta FANTONI**, *ENEA, Frascati (RM)*  
**COBRA research project: methods, technologies and advanced tools for the conservation of cultural heritage, based on the application of radiation and Enabling Technologies**
- III.C.3 **Eugenio DEL RE**, *Dept. of Physics, Sapienza University of Rome*  
**THz technologies for analysis and diagnostics in cultural heritage**
- III.C.4 **Caterina DE VITO**, *Dept. of Earth Science, Sapienza University of Rome*  
**A multi-analytical approach for the characterization of cultural heritage materials: a diagnostic tool for conservation**

**III.D Round Table: An Italian ecosystem of innovation****Chair:** Francesco MATTEUCCI, *DHITECH, Lecce***In collaboration with Sapienza University of Rome and DHITECH, Lecce***Some presentations regarding public/private collaboration:*Onofrio Antonino CACIOPPO  
*LFOUNDRY***Jointlab LFoundry & Sapienza University of Rome**Alessandro BRAMANTI  
*STMicroelectronics***Lecce Jointlab ST Microelectronics & CNR Nanotec**Giuseppe MARUCCIO  
*University of Salento***Contamination Lab (CLab) Salento University***will be followed by a Round Table with presentations from governative institutions and other public/private players:*

- Francesco MATTEUCCI, Roberto GIANNANTONIO - DHITECH
- Marco ROSSI – Sapienza University of Rome
- Onofrio Antonino CACIOPPO - LFoundry
- Maurizio PERUZZINI - CNR
- Riccardo BARBERI – University of Calabria
- Giuseppe MARUCCIO – University of Salento
- Sesto VITICOLI - AIRI
- Marco CASAGNI - ENEA

**III.E Special Session: Nanotechnology in Poland****Chair:** Chair: Tomasz DIETL, *Polish Academy of Sciences, Institute of Physics, Poland***Co-Chair:** Miroslaw MILLER, *Wrocław University of Environmental and Life Sciences, Poland***In collaboration with: NANONET, FBK, Nanoltaly Association & Italian Trade Agency - ITA**

- III.E.1 Monika GOSZCZ, *Foundation of Nanoscience and Nanotechnology Support NANONET, Silesian Nano Cluster, Poland*  
**Local Science-to-Business needs in the nanotechnology ecosystem**
- III.E.2 Stanisław MYSZOR, *Smart Nanotechnologies, Alwernia, Poland*  
**Industrial application of silver nanoparticle based antimicrobial surface**
- III.E.3 Mateusz WEIS, A. *Chelkowski Institute of Physics and Silesian Center for Education and Interdisciplinary Research, Chorzów, Poland & Université du Maine, Le Mans, France*  
**Ultrathin films of topological insulator  $\text{Bi}_2\text{Te}_3$  – new properties and limitations of technology**
- III.E.4 Piotr WYŻGA, *Centre for Materials Research and Sintering Technology, Institute of Advanced Manufacturing Technology, Krakow, Poland.*  
**Effect of different densification methods on microstructural and mechanical properties of superhard ceramic with addition of nanoparticles**

## VII.A Nanotechnologies for Space: Space Missions, Opportunities & Challenges

Chair: Roberto FORMARO, *Italian Space Agency ASI, Rome*  
In collaboration with: Italian Space Agency ASI

- VII.A.1 Roberto FORMARO, *Italian Space Agency ASI, Rome*  
**Nanotechnologies for space applications - Space Missions, Opportunities & Challenges**
- VII.A.2 Nicola P. BELFIORE, *Sapienza University of Rome & Pierluigi BELLUTTI, Fondazione Bruno Kessler, Trento*  
**Development of MEMS-Technology based pseudo-wheels for attitude control of nano- satellites**
- VII.A.3 Antonia SIMONE, *Thales Alenia Space, Rome*  
**Application of Nano-based materials in Space domain: Thales Alenia Space experience**
- VII.A.4 Ignazio MIRABELLA, *STMicroelectronics, Ragusa*  
**Single Event Transient and Design Rad Hard**
- VII.A.5 Franco BIGONGIARI, *SITAE S.p.A., Pisa*  
**Evaluation of 150nm CMOS process for Space Applications**

## VII.B Functional antibacterial and antifiame nano-textiles

Chair: Paride MANTECCA, *University of Milano Bicocca*  
In collaboration with KLOPMAN International and with the participation of AICTC (Italian Association of Textile Chemistry and Coloristic)

- VII.B.1 Antonio ANDRETTA, *KLOPMAN INTERNATIONAL, Frosinone*  
**Industrial innovation and market opportunities for nano-enabled textiles**
- VII.B.2 Giuseppe ROSACE, *University of Bergamo*  
**Applications of Nanosols for textile finishing: flame retardant and antibacterial properties improvement**
- VII.B.3 Alessio VARESANO, *CNR-ISMAL, Biella*  
**Natural and polypyrrole-based antibacterial finishing of textiles**
- VII.B.4 Massimo PERUCCA, *Project HUB 360, Reggio Emilia*  
**Economic and environmental sustainability of antimicrobial textiles**

## VII.C Disordered systems: from Physics to Biology

Chair: Giancarlo RUOCCO, *Sapienza University of Rome & IIT*  
In collaboration with: IIT

- VII.C.1 Leonetta BALDASSARRI, *Sapienza University of Rome*  
**Infrared nano-spectroscopy study of the heterogeneity of protein conformation in purple membranes**
- VII.C.2 Davide CAPRINI, *Sapienza University of Rome*  
**Diffraction-free and self-healing ultrasound Bessel beam**
- VII.C.3 Giorgio GOSTI, *Center for Life Nanoscience CLNS-IIT, Rome*  
**Live imaging of collective behavior in cell populations**
- VII.C.4 Silvia GHIRGA, *Center for Life Nanoscience CLNS-IIT, Rome*  
**Optically induced enhancement of activity in biological neuronal networks monitored with wide field calcium imaging**
- VII.C.5 Filippo SAGLIMBENI, *Sapienza University of Rome*  
**Holographic Imaging Reveals the Mechanism of Wall Entrapment in Swimming Bacteria**



## VII.D 2D materials and low-dimensional systems (part I)

Chair: Luca ORTOLANI and Vittorio MORANDI, *CNR-IMM Bologna*  
In collaboration with: DSFTM-CNR and CNIS, *Sapienza University of Roma*

- VII.D.1 Filippo GIANNAZZO, *CNR-IMM, Catania*  
**High resolution structural, chemical and electrical characterization of molybdenum disulfide for next generation field effect transistors**
- VII.D.2 Alessio LAMPERTI, *CNR-IMM, Agrate*  
**Revealing anisotropy in MoS<sub>2</sub> nanosheets grown on self-organized nanopatterned substrates**
- VII.D.3 Laura LAZZARINI, *CNR-IMEM, Parma*  
**The influence of crystallographic defects on the optical properties of MoS<sub>2</sub>**
- VII.D.4 Antonio POLIMENI, *Dept. of Physics, Sapienza University of Rome*  
**Nano-micro domes produced in bulk transition metal dichalcogenides by proton irradiation**

## VII.E Nanotechnology and innovation for electronics

Chair: Patrizia LIVRERI, *University of Palermo*  
In collaboration with: *University of Palermo*

- VII.E.1 Alfredo DI MATTEO, *3Sun S.r.l., Catania*  
**Effect of nanotechnologies and other activities to reduce the Silver Paste consumption on SHJ cells**
- VII.E.2 Cinzia CALIENDO, *Institute of Photonics and Nanotechnology, IFN-CNR, Rome*  
**Design and Fabrication of Lamb Wave Resonators by Direct EBL and Piezoelectric Film Deposition on Silicon Nitride Membrane**
- VII.E.3 Rosalinda INGUANTA, *University of Palermo*  
**From sensors to electrochemical energy conversion and storage with nanostructured materials**
- VII.E.4 Carmela Tania PRONTERA, *University of Naples Federico II*  
**Green and low-cost hydrophobic ZnO NPs as water-barrier layer encapsulating flexible electronic devices**
- VII.E.5 Alessandro MONTAGNA, *LFoundry, Avezzano (AQ)*  
**Increasing Breakdown Voltage of p-Channel LDMOS in BCD Technology with Novel Backside Process**

## VII.F Nanomaterials and smart materials for conservation and preservation of cultural heritage

Chairs: Maria Laura SANTARELLI & Maria Sabrina SARTO, *Sapienza Univ. of Rome*

- VII.F.1 Maria Laura SANTARELLI, *DICMA & CISTEC, Sapienza University of Rome*  
**Introduction to nanomaterials and smart materials for conservation and preservation of cultural heritage**
- VII.F.2 Gabriella DI CARLO, *CNR-ISMN, Rome*  
**Smart and sustainable approaches for the inhibition of degradation processes in Cultural Heritage artefacts**
- VII.F.3 Domenico CAVALLINI, *DAEE & CNIS, Sapienza University of Rome*  
**Synthesis and characterization of zinc-oxide nanostructures for application in cultural heritage**
- VII.F.4 Emily SCHIFANO, *Dept. Charles Darwin & CNIS, Sapienza University of Rome*  
**Antimicrobial and antibiofilm properties of nanomaterials for cultural heritage**
- VII.F.5 Armida SODO, *Dept. of Science, University of Rome "Roma Tre"*  
**An archaeometric investigation on two Archaic antefixes (VI-V century BC) recovered by Guardia di Finanza**

### VIII.A Engineered Nanomaterials and nanodevices for bio application (part I)

Chair: Giancarlo SALVIATI, *Nanoltaly Association*  
In collaboration with: *Nanoltaly Association*

- VIII.A.1 Salvatore IANNOTTA, *CNR-IMEM, Parma*  
**Neuromorphic systems based on memristive devices and bioelectronic**
- VIII.A.2 Rocco CARCIONE, *University of Rome Tor Vergata*  
**Nanocarbons for application in medicine**
- VIII.A.3 Franca ALBERTINI, *CNR-IMEM, Parma*  
**Smart magnetic materials for energy efficiency and biomedicine**
- VIII.A.4 Laura PAESANO, *University of Parma*  
**Genotoxicology of Engineered Nanomaterials (ENMs) in human cells**

### VIII.B Nano-Antibacterial textiles: improving efficacy and safety

Chair: Massimo PERUCCA, *Project HUB 360*  
In collaboration with *KLOPMAN International* and with the participation of *AICTC (Italian Association of Textile Chemistry and Coloristic)*

- VIII.B.1 Kristina IVANOVA, *Universitat Politècnica de Catalunya (UPC), Spain*  
**Sonochemical-enzymatic coating of medical textiles with antibacterial nanoparticles**
- VIII.B.2 Felice SIMEONE, *CNR-ISTEC, Faenza (RA)*  
**Safe by Design approach for the control of nano-manufacturing process**
- VIII.B.3 Paride MANTECCA, *University of Milano Bicocca*  
**Concepts and tools for determining and improving the bio-safety of nano-antibacterial coated textiles**
- VIII.B.4 Magda BLOSI, *CNR-ISTEC, Faenza (RA)*  
**Safe alternatives for the use of antibacterial nanoparticles**

### VIII.C 2D materials and low-dimensional systems (part II)

Chair: Antonio POLIMENI, *Sapienza University of Rome*  
In collaboration with: *DSFTM-CNR* and *CNIS, Sapienza University of Rome*

- VIII.C.1 Francesca TELESIO, *CNR-NANO & Scuola Normale Superiore, Pisa*  
**Dephasing in Strongly Anisotropic Black Phosphorus**
- VIII.C.2 Jacopo CAUTELA, *Dept. of Chemistry, Sapienza University of Rome*  
**Supracolloidal association of microgels and supramolecular tubules of bile salt derivatives**
- VIII.C.3 Giulio D'ACUNTO, *Dept. of Physics, Sapienza University of Rome*  
**Anisotropy effects on ion-bombarded highly aligned Carbon Nanotube**
- VIII.C.4 *in definition*

## VIII.D Nanostructures for third-generation photovoltaic

Chair: Stefano OSSICINI, *University of Modena and Reggio Emilia*  
In collaboration with: *University of Modena and Reggio Emilia*

- VIII.D.1 Stefano OSSICINI, *University of Modena and Reggio Emilia*  
**Semiconductor Nanostructures for Novel Photovoltaic Devices**
- VIII.D.2 Lorenzo PAVESI, *University of Trento*  
**Application of a Silicon Nanocrystal Down-Shifter to Solar Cell**
- VIII.D.3 Ivan MARRI, *University of Modena and Reggio Emilia*  
**Carrier Multiplication in Semiconductor Nanocrystals for fostering Photovoltaics**
- VIII.D.4 Antonio TERRASI, *CNR-IMM & University of Catania*  
**Colloidal Si and Ge Nanocrystals for Light Harvester**

## VIII.E Nanoelectronic devices: fabrication and characterization

Chair: Onofrio Antonino CACIOPPO, *LFoundry, Avezzano (AQ)*  
In collaboration with: *Micron, CEA-Leti & CNIS, Sapienza University of Rome*

- VIII.E.1 Tommaso VALI, *Micron, Avezzano (AQ)*  
**3D NAND: Memory Technology Trends**
- VIII.E.2 Kun-Ping HUANG, *ITRI-Industrial Technology Research Institute, Mechanical and Mechatronics Systems Research Laboratories, Taiwan*  
**Microwave Annealing for Dopant Activation in Semiconductor 7nm Process**
- VIII.E.3 Andrea ZAPPETTINI, *CNR-IMEM, Parma*  
**Fully-integrated nanosensors for the Internet of Things**
- VIII.E.4 Giovanni DE AMICIS, *LFoundry, Avezzano (AQ)*  
**Dark current impact of intentionally Cobalt contaminated Back Side Illuminated CMOS Image Sensors**

## VIII.F Innovative approaches for medical applications

Chair: Roberto MOLINARO, *Harvard Medical School, Boston, USA*  
& Donatella PAOLINO, *University "Magna Græcia" of Catanzaro*  
In collaboration with: *University "Magna Græcia" of Catanzaro*

- VIII.F.1 Gianfranco PASUT, *University of Padova*  
**Enzymatic protein conjugation by transglutaminases**
- VIII.F.2 Felisa CILURZO, *University "G.D'Annunzio" of Chieti*  
**Techniques used for Biophysical Characterization of Nanocarriers: from literature to applications**
- VIII.F.3 Giuseppe TRIPODO, *University of Pavia*  
**Functional materials with nano-micro sized internal structure for biomedical applications**
- VIII.F.4 Natalia CALIENNI, *National University of Quilmes, Buenos Aires, Argentina*  
**Nano-formulation for topical therapy of skin precancerous lesions. In vitro, ex vivo and in vivo evaluation**



## IX.A Sensor-integrated textiles

Chair: Giuseppe ROSACE, *University of Bergamo*

In collaboration with KLOPMAN International and with the participation of AICTC (Italian Association of Textile Chemistry and Coloristic)

- IX.A.1 Maria DIAZ, *Institut de Microelectrònica de Barcelona (CSIC), Spain*  
**Development of bioelectrochromic sensors for living bacteria sensing in textiles**
- IX.A.2 Maria Rosaria PLUTINO, *CNR-ISMN, Messina*  
**Development of wearable sensors based on hybrid functional coatings**
- IX.A.3 Sebania LIBERTINO, *CNR-IMM, Catania*  
**Miniaturized sensors for organic and inorganic contaminants detection**
- IX.A.4 Mariglen ANGJELLARI, *NanoShare Srl, Rome*  
**Integration of multifunctional carbon systems in textiles for flexible and wearable sensors**

## IX.B Advanced functional nanomaterials

Chair: Daniele PASSERI, *Sapienza University of Rome*

In collaboration with: Sapienza University of Rome

- IX.B.1 Chul-Jin CHOI, *KIMS-Korea Institute of Materials Science, South Korea*  
**Recent Progress in Rare Earth Element Free Magnet as Next Generation Permanent Nano Magnetic Materials**
- IX.B.2 Zbigniew BRYTAN, *Silesian University of Technology, Institute of Engineering Materials and Biomaterials, Poland*  
**Thin films – preparation, analysis of properties and novel application possibilities**
- IX.B.3 Ernesto DI MAIO, *University of Naples "Federico II"*  
**Concepts and tools for determining and improving the bio-safety of nano-antibacterial coated textiles**
- IX.B.4 Pier Giorgio SCHIAVI, *Sapienza University of Rome*  
**Two electrodeposition strategies for the morphology-controlled synthesis of cobalt nanostructures**
- IX.B.4 Gianluca FERRARO, *University of Birmingham, UK*  
**Bulk Nanobubbles: Their Existence and Longevity**

## IX.C Nanotechnologies for precision medicine

Chair: Cecilia PEDERZOLLI, *FBK*

In collaboration with: Polytechnic of Turin

- IX.C.1 Cristina POTRICH, *FBK Centre for Materials and Microsystems & LaBSSAH - Laboratory of Biomarker Studies and Structure Analysis for Health, Trento*  
**From biofunctional surfaces to Lab-on-a-chip: how nanotechnologies meet precision medicine**
- IX.C.2 Valentina MONICA, *Laboratory of Cell Migration, Candiolo Cancer Institute IRCCS & Univ. of Turin*  
**Cancer organoids: a precision approach to tumor treatment**
- IX.C.3 Salvatore IANNOTTA, *CNR-IMEM, Parma*  
**Biosensing and Bioelectronics based on organic electrochemical Transistors for Controlling and Monitoring drug processes and Bio-marker detection**
- IX.C.4 Valentina BERTANA, *Chilab - Materials and Microsystems Laboratory - Polytechnic of Turin*  
**Integration of additive manufacturing techniques for 3D printing of microfluidic chips with embedded micrometric features**

## IX.D Nanoenergy

Chair: Thomas BROWN, *University of Rome Tor Vergata*  
In collaboration with: *University of Rome Tor Vergata*

- IX.D.1 Barbara MECHERI, *University of Rome Tor Vergata*  
**Nanocatalysts based on graphene oxide for fuel cell application**
- IX.D.2 Luca SERENELLI, *ENEA Casaccia, Rome*  
**Oxides for selective contacts in amorphous/crystalline heterojunction solar cells**
- IX.D.3 Antonio AGRESTI, CHOSE & *University of Rome Tor Vergata*  
**Graphene and Perovskite: a new paradigm for photovoltaics**
- IX.D.4 Giuseppe Valerio BIANCO, *CNR NANOTEC, Bari*  
**Enhanced thermopower in multilayer CVD graphene**
- IX.D.5 Diego DI GIROLAMO, *Sapienza University of Rome*  
**Inverted perovskite solar cells with transparent cathodes based on semiconducting nickel oxide**

## IX.E Nanotechnology for new devices and systems

Chair: Ilaria FRATODDI, *Sapienza University of Rome*  
In collaboration with: *Cmsol, Nanoitaly Association*

- IX.E.1 Beatrice CARASI, *COMSOL, Brescia*  
**Simulations with COMSOL Multiphysics: from MEMS to Nanophysics**
- IX.E.2 Kun-Ping HUANG, *ITRI-Industrial Technology Research Institute, Mechanical and Mechatronics Systems Research Laboratories, Taiwan*  
**High-Voltage Supercapacitor**
- IX.E.3 Dario COMPAGNONE, *University of Teramo*  
**Nanostructured peptide based gas sensor arrays for food quality control**
- IX.E.4 Laura ASTOLFI, *University of Padua*  
**Development of piezoelectric nanocomposites for improvement of cochlear implant electrodes**
- IX.E.5 Paolo PAPA, *CNR-IIA, Montelibretti, Rome*  
**The applicative use of gold nanoparticles for the detection of environmental mercury vapour**

## IX.F Engineered Nanomaterials and nanodevices for bio application (part II)

Chair: Eugenio AMENDOLA, *CNR, Naples*  
In collaboration with: *University of Naples "Federico II"*

- IX.F.1 Mirosław MILLER, *Wrocław University of Environmental and Life Sciences, Poland*  
**TiO<sub>2</sub> and SiO<sub>2</sub> sol - gel coatings for medical implants**
- IX.F.2 Carlotta MARIANECCI, *Sapienza University of Rome*  
**Neem oil nanoemulsions: a new approach to drug delivery**
- IX.F.3 Maurizio VENTRE, *University of Naples "Federico II"*  
**Engineering cell instructive materials: providing cells with commands at the nanoscale**
- IX.F.4 Mahboubeh MALEKI, *Center for Nanomedicine and Tissue Engineering (CNTE) - ASST Niguarda Cà Grandà, Venice*  
**Nanofibers from Laboratory to Industry: How 'Electrospinning' Opens up New Avenues for Fabrication of Multifunctional Nanofibrous-based Biomaterials?**

Posters will be displayed in the Sangallo Cloister during the event:

**Tuesday 26, 14:00 - 20:00**

**Wednesday 27 - Friday 29, 08:30 - 20:00**

- 01** Alessio ADAMIANO, *Institute of Science and Technology for Ceramics ISTECCNR, Faenza (RA)*  
**Magnetic drug delivery by Fe-doped calcium phosphate nanoparticles**
- 02** Francesco ANTOLINI, *ENEA, Faenza (RA)*  
**Direct laser writing of CdS QDs within a polymeric matrix**
- 03** Sare ASLI, *The Galilee Society of Applied Research, Israel*  
**Environmental nanomaterials inhibit water-transport through plant roots**
- 04** Sara ATTANÀ, *Warrant Group - European Funding Division, Bologna*  
**Nanomaterials for conservation of European architectural heritage developed by research on characteristic lithotypes**
- 05** Valentina BERTANA, *Polytechnic of Turin*  
**Integration of additive manufacturing techniques for 3D printing of microfluidic chips with embedded micrometric features**
- 06** Sabina BOTTI, *ENEA, Frascati, Rome*  
**Investigation of CVD grown graphene topography**
- 07** Giulio BOVERI, *Institute for Science and Technology for Ceramics, ISTECCNR, Faenza (RA)*  
**Design and Fabrication of Superhydrophobic, Ice-phobic coatings for High-Voltage Power Lines Application**
- 08** Cristina CAIRONE, *Consorzio Hypatia, Rome*  
**Label-free ptamer-based sensors and SERS: a reliable approach to detect very low biomarker concentration for clinical purposes**
- 09** Rocco CITRONI, *University of Rome Tor Vergata*  
**Investigation on Low Loss Plasmonic metal: Looking Beyond Lossy Conventional Noble Metals at MID-IR Frequency**
- 10** Gianfranco COLETTI, *University of Genoa*  
**Use of graphene oxide to enhance the mechanical properties and bioactivity of 3D scaffold hydrogels**
- 11** Cristiano D'ANDREA, *IFAC-CNR, Florence*  
**SERS detection of neuropathogenic proteins with disposable silver supports**
- 12** Isabella DE ANGELIS, *Istituto Superiore di Sanità, Rome*  
**RinnovaReNano output: In vitro evaluation of Silver nanoparticles**
- 13** Adele DE NINNO, *University of Rome Tor Vergata & CNR-IFN, Rome*  
**Microfluidic assays in immuno-oncology for evaluating immune parameters associated to the efficacy of antitumor therapies**
- 14** Rana EDWARDS, *University of Milano-Bicocca*  
**Glyconanomaterials Assembled via Short Linkers for Cellular Targeting & Drug Delivery**
- 15** Andrea ERIGONI, *Instituto de Tecnología Química CSIC-UPV, Valencia, Spain*  
**Hybrid super-acid solid catalysts for anisole Friedel-Crafts acylation**
- 16** Gianluca FERRARO, *University of Birmingham, UK*  
**Bulk Nanobubbles: Their Existence and Longevity**
- 17** Anna Maria FRESEGNA, *INAIL-Settore Ricerca, Rome*  
**Biological effects of two kind of Silica Nanoparticles on human bronchial epithelial cells**
- 18** Narciso GAMBACORTI, *PAC-G/CEA Leti, Grenoble, France*  
**Xray Synchrotron and Neutrons serving for nano e micro electronics**
- 19** Alessia GENNARO, *KU LEUVEN, Belgium*  
**Imprinted polymer layer for cell detection – a study of the sensor surface by optical and dielectric relaxation spectroscopy**
- 20** Matteo GIGLI, *University of Rome Tor Vergata*  
**Highly selective hydrocarbon-based membranes loaded with sulfonated organic nanofillers for vanadium redox flow batteries**

- 21** Elisa GURIAN, *University of Trieste*  
**Sers For Bioanalytics: From Fundamental Research To Clinical Application**
- 22** Benjamin HOLMES, *JPK Instruments, Berlin, Germany*  
**High-Resolution and High-Speed Atomic Force Microscopy Simultaneous to Advanced Optical Microscopy**
- 23** Kun-Ping HUANG, *ITRI, South Korea*  
**Microwave Annealing for Dopant Activation in Semiconductor 5nm Process**
- 24** Odeta KALAJA, *University of Trieste*  
**Synthesis, Characterization And Bioevaluation Of Delphinidin Loaded Chitosan Nanoparticles**
- 25** Loris Angelo LABBATE, *Sapienza University of Roma*  
**Plasmonic Nanoapertures: Modelling, Fabrication, and Characterization**
- 26** Patrizia LAMBERTI, *University of Salerno*  
**Electrical properties of nanocarbon/poly (lactic) acid for 3D printing applications**
- 27** Stefano LEPORATTI, *CNR Nanotec, Lecce*  
**Halloysite caly nanotubes as nanobazookas for drug delivery**
- 28** Stefano LINARI, *Linari Engineering, Pisa*  
**Designing an Electrospinning Machine with a 3D Printing technology**
- 29** Sara LIPAROTI, *University of Salerno*  
**Micro and nano mechanical characterization of semi crystalline polymer samples**
- 30** Antonella MACAGNANO, *Istituto Inquinamento Atmosferico - CNR, Montelibretti, Rome*  
**A selective global elemental mercury passive sampler based on TiO<sub>2</sub>NPs photocatalytically decorated with AuNPs**
- 31** Babak MAZINANI, *Malayer University, Iran*  
**Synthesis and Characterization of TiO<sub>2</sub> supported on SBA-15 using a stable titania sol and evaluation its photocatalytic efficiency**
- 32** Elena MELOTTI, *Warrant Group S.r.l., IZADI-NANO2INDUSTRY*  
**Project to Impulse the Uptake of Nanotechnology based Solutions**
- 33** Roberta MERCORIO, *University of Milan*  
**Development of molecularly imprinted polymeric nanofibers by electrospinning and applications to pesticides adsorption**
- 34** Luca MEZI, *ENEA, Frascati, Rome*  
**The ENEA Discharge Produced Plasma EUV Source: Description and Patterning Applications**
- 35** Simonetta MUCCIFORA, *University of Siena*  
**Pattern of TiO<sub>2</sub> nanoparticles root uptake by a multidisciplinary approach**
- 36** Cristina NICA, *University of Bucharest, Romania*  
**Synthesis and safety evaluation of improved photocatalytic graphene oxide-TiO<sub>2</sub> nanocomposites**
- 37** Simona ORTELLI, *ISTEC-CNR, Faenza (RA)*  
**Water purification with active cotton membranes: photo- and photoelectrochemical treatments in semi-pilot plant**
- 38** Nicolò PAPI, *INO-CNR & University of Florence*  
**Carbon nanoparticle-based nanofluids for optical limiting applications**
- 39** Bernardo PATELLA, *University of Palermo*  
**Electrochemical Sensors Based On Nanostructures And Nanomaterials**
- 40** Alessandro PEDICO, *Polytechnic of Turin*  
**Fiber-based supercapacitors for wearable energy storage devices**
- 41** Sergei PISKUNOV, *University of Latvia, Riga*  
**Large scale computer modeling of nanostructured photocatalysts for efficient water splitting**
- 42** Antonio RINALDI, *Warrant Group*  
**Advanced materials solutions for next generation high efficiency concentrated solar power (CSP) tower systems**
- 43** Melissa SAIBENE, *University of Milano-Bicocca*  
**From cells to embryos: in vitro models for the safety assessment of nanomaterials**
- 44** Massimo RINALDI, *Warrant Group, Bologna*  
**Development of novel, high Performance hybrid TWC/GPF Automotive after treatment systems by rational design: PARTIAL-PGMs**



- 45** Massimo RINALDI, *Warrant Group, Bologna*  
**Driving up Reliability and Efficiency of Additive Manufacturing (Acronym: DREAM)**
- 46** Franco RUSTICHELLI, *Università Politecnica delle Marche, Ancona*  
**From Tissue Engineering In Orthopedy And Dentistry To Regenerative Cardiology And Neurology**
- 47** Elisa SANI, *CNR-INO, Florence*  
**Black nanofluids for new direct-absorption solar collectors**
- 48** Pasqualina Liana SCOGNAMIGLIO, *Istituto Italiano di Tecnologia - Center for Advanced Biomaterials for Health Care, Naples*  
**Fluorescence Protein Detection by Imprinted Hydrogels with Peptide Multifunctional Blocks**
- 49** Elisabetta SERPINI, *University of Modena and Reggio Emilia*  
**Thin MoS<sub>2</sub> films for microscale applications**
- 50** Giovanni SPINELLI, *University of Salerno*  
**Design and optimization of multilayer shielding device based on graphene**
- 51** Annarita STRINGARO, *ISS, Rome*  
**Design of new nanocarriers for biomedical applications**
- 52** Laura TALAMINI, *Istituto di Ricerche Farmacologiche Mario Negri, Milan*  
**Organ Dependent Effect of Naturally Occurring Intake of Food-Grade Titanium Dioxide Nps in Nematodes and Mice**
- 53** Khalil TAMERSIT, *University of Batna, Algeria*  
**A Quantum Simulation Study of a New Carbon Nanotube Field-Effect-Transistor-Based Biosensor**
- 54** Elisa TOTO, *Sapienza University of Rome*  
**Smart nanomaterial-based hybrid films for sensing UV radiation damage in space environment**
- 55** Viviana VERGARO, *University of Salento, Lecce*  
**Efficient intracellular delivery and improved biological activity of NVP-BEZ235 in lymphoma cell line**
- 56** Enrico VERONA, *CNR-IFN, Rome*  
**Biofuel Elements on the Basis of Carbon Nanomaterials for Microenergy**
- 57** Patrizia ZITELLI, *CSGI, Florence*  
**ECHOES "Enabling Cultural Heritage Oriented European Strategies"**
- 58** Patrizia ZITELLI, *CSGI, Florence*  
**Nanorestart - Nanomaterials for the Restoration of Works of Art**



## NANOINNOVATION'S GOT TALENT



Young researchers are a crucial resource in the quest for innovation and a timely and effective utilization of their talent is paramount.

NanoInnovation 2017 has renewed the call for young researchers "NanoInnovation's Got Talent" supported by "Bracco Foundation", in the framework of its Young People Project, a long-term programme to accompany youth in their journey towards professional development to further consolidate the link between academia and industry.

The Call has been reserved to young nanotechnology researchers (<35 years old), to give them the possibility to present, in an ad-hoc special session dedicated to them, their research activity related to nanotechnologies and their integration with KETs in the following area:

- Advanced Manufacturing & Industry 4.0
- Consumer and Personal Care Products
- Electronics, Micro and Nanosystems
- Energy & Environment
- Food and Agriculture
- Health and Life Science/Biotech
- Nano-Materials Based Innovation
- Nanophase Materials
- Nanometrology and Nanoscale Measurements
- Transport, Space & Aeronautics
- Sustainability, Health and Safety and Social Impacts

The submitted proposal have been reviewed by the Programme Committee of NanoInnovation and the most interesting have been selected as following:

- **5 young researchers** have been entitled for the *Special Session NanoInnovation's Got Talent*, scheduled on 28 September, with the opportunity to present their research activities in the nanotech field and introduce themselves to a audience of industry representatives, scientists, experts, investors, entrepreneurs.
- **7 young researchers** have been entitled for the *Poster Session NanoInnovation's Got Talent*.

## Nanoinnovation's Got Talent - Special Session - HT.II.E

Chair: Fulvio UGGERI, R&S Director Bracco Imaging

Thursday 28 Sep, 09:00 - 10:30

Virgilio GENOVA, *Sapienza University of Rome*

**Super hydrophobic nanostructured nickel coating obtained by electroless plating: synthesis and characterization**

Giovanni LANDI, *University of Salerno*

**New bio-nano-composites for transient electronics devices**

Davide ORSI, *University of Parma*

**CeF<sub>3</sub> – ZnO nanostructures for the Self-lighted Photodynamic Therapy of deep tumors**

Claudia TESTI, *Center for Life Nano Science@Sapienza, Istituto Italiano di Tecnologia, Rome*

**Cryo-electron microscopy structure determination of Ferritin nanoparticles**

Martina Bruna VIOLATTO, *IRCCS Istituto di Ricerche Farmacologiche Mario Negri, Milan*

**Nanoparticle dependent administration of Dexamethasone prevents its systemic spread and reduces inflammation in mice with AIH**

## Nanoinnovation's Got Talent - Special Poster Session

Elisabetta CARATA, *University of Salento, Lecce*

**Daphnia magna and Chlorella vulgaris: animal and plant species to explore aquatic nanotoxicology**

Miriam COLOMBO, *University of Milano-Bicocca*

**How the number of antibodies attached to colloidal nanoparticles affect tumour targeting and therapeutic effect?**

Shivaram KOTLA, *University of Camerino*

**Imaging Biomolecules using the AFM, and Biological interactions of Graphene Oxide studied by fluoremetric analysis**

Esra MALTAS CAGIL, *Selcuk University, Turkey*

**Production of Protein Nanoscaffold for Tissue Engineering Applications**

Aldo ROSSINI, *Sapienza University of Rome*

**Proof of Principles Study of Peptide-Bonds Detection via Graphene NanoGaps**

Alice TOGNONI, *Istituto Superiore per la Conservazione e il Restauro, ISCR, Monte Porzio Catone (RM)*

**Deacidification of canvas with calcium hydroxide nanoparticles. Study of the interactions with contemporary paint films**

Federico VERONESI, *CNR-ISTEC, Faenza (RA)*

**Nanostructured, water-repellent surfaces with frictional drag reduction & vibration control properties for marine transportation**



## Latest Advances in Multi-modal Microscopy

September 27-28, Sala degli Affreschi



Zeiss, as microscopy technology leader, provides the unique complete imaging solution ranging from light, confocal, electron, ion and Xray modalities with a complete and straightforward correlative workflow.

In these workshops ZEISS will present an overview of different technologies, with a special focus on the 3D Imaging techniques ranging from Light Microscopy to Electron Microscopy, Ion Beam and X-Ray.

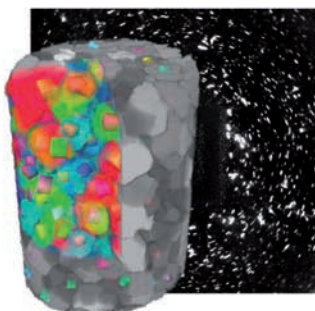
We will show through various applications from the fields of Biology and Materials how the different microscopy complements each other, adding further information to gain a deeper understanding of the scientific application.

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27 September

**Multi-scale challenges in Material Science and Nanotechnology**

How to bridge X-Ray, Light, Electron and other sources of information

09:00 - 10:30

WS.I.A - HT.I.B

**Keynote Session: Advanced Characterization Techniques**Chair: Giulio LAMEDICA, *Carl Zeiss Italia*WS.I.A.1  
HT.I.B.1Marco CANTONI, *EPFL, Lausanne, Switzerland***Focused Ion Beam Nano-Tomography and 3D EDX: What can you expect and where are the limits**WS.I.A.2  
HT.I.B.2Pasqualantonio PINGUE, *NEST Scuola Normale Superiore, Pisa***Lithography and characterization of nanostructures by scanning electron microscopy based techniques**

10:30 - 11:00 Coffee Break

11:00 - 12:30

WS.I.B - TT.I.A

**Microscopy methods for Material Science**Chair: Marco CANTONI, *EPFL, Lausanne, Switzerland*WS.I.B.1  
TT.I.A.1Giulio LAMEDICA, *Carl Zeiss Italia***Welcome and Introduction**WS.I.B.2  
TT.I.A.2Lars-Oliver KAUTSCHOR, *Carl Zeiss Microscopy GmbH, Germany***X-Ray Microscopy - 3D and 4D Imaging for Materials Science**WS.I.B.3  
TT.I.A.3Andrea CAVALLO, *CERTEMA, Grosseto***Nanostructuring of fault rocks during an earthquake: a micro - analytical FESEM based platform to disclose chemical composition and structural attributes**WS.I.B.4  
TT.I.A.4Alessandro DI NICOLA, *Carl Zeiss Italia***Optical Microscopy for Geoscience**

12:30 - 14:00 Light Lunch

14:00 - 15:30

WS.I.C - TT.II.A

**Microscopy methods for Nanotechnology and Nanofabrication**Chair: Luca ORTOLANI, *CNR-IMM, Bologna*WS.I.C.1  
TT.II.A.1Giulio LAMEDICA, *Carl Zeiss SpA***Extending the Frontiers of Nanotechnology with ion and electron beam solutions Technique and Applications**WS.I.C.2  
TT.II.A.2Massimo CUSCUNA', *CNR NANOTEC, Lecce***Nanostructures for Photonics**WS.I.C.3  
TT.II.A.3Matthias VAUPEL, *Carl Zeiss Microscopy GmbH, Germany***Comparing Confocal and Interference Contrast Microscopy in Topography, Roughness, and Film Thickness Measurement**

15:30 - 16:00 Coffee Break

16:00 - 17:30

WS.I.D

**Free Practical Session:  
3D Microscopy in Virtual Reality and Optical Microscopy**

## 28 September

## Life Science

From fluorescence to nanometer-scale tomography

11:00 - 12:30

WS.I.E - TT.IV.C

## 3D Correlative Microscopy in Life Science - part I

Chair: Francesco BIANCARDI, *Carl Zeiss Italia*WS.I.D.1  
TT.IV.C.1Giulio LAMEDICA, *Carl Zeiss Italia*  
**Welcome and Introduction**WS.I.D.2  
TT.IV.C.2Lars Oliver KAUTSCHOR, *Carl Zeiss Microscopy GmbH, Germany*  
**Applications for 3D characterization in the life sciences - Illumination correlative research using light, X-ray, and electron microscopy**WS.I.D.3  
TT.IV.C.3Giulia BOLASCO, *EMBL, Rome*  
**Microglia-neurons interactions: a new nanoscale perspective**WS.I.D.4  
TT.IV.C.4Alessandro COMETTA, *Carl Zeiss Italia*  
**LSM Airyscan and Superresolution**

12:30 - 14:00 Light Lunch

14:00 - 15:30

WS.I.E - TT.V.C

## 3D Correlative Microscopy in Life Science - part II

Chair: Giulia BOLASCO, *EMBL, Rome*WS.I.E.1  
TT.V.C.1Francesco BIANCARDI, *Carl Zeiss Italia*  
**Correlative Workflows in Life Science**WS.I.E.2  
TT.V.C.2Roman POLISHCHUK, *TIGEM, Pozzuoli, Naples*  
**CLEM: bridging the light and electron microscopy**WS.I.E.3  
TT.V.C.3Francesco MURA, *CNIS, Sapienza University of Rome*  
**Multiscale microscopy supporting the microbiological investigations on *Bdellovibrio bacteriovorus***

15:30 - 16:00 Coffe Break

16:00 - 17:30

WS.I.F

Free Practical Session:  
3D Microscopy in Virtual Reality and Optical Microscopy

## Smart Manufacturing in industry 4.0: where we stand?

September 28



ASSOCIAZIONE  
ITALIANA  
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INDUSTRIALE

This session is aimed to survey the state of the art of the Smart Manufacturing innovation in Italy, with a specific focus on Additive Layer Manufacturing. Overviews from both industry and public research institutions will be offered, covering and discussing hot topics in different industrial sectors (automotive, aeronautic, aerospace, microelectronics, biomedical, etc.)

28 September	
09:00 - 10:30	WS.II.A - HT.II.C
Special Session: <b>An Industrial view on ALM: current state, prospective and challenges</b>	
Chair: Francesca NANNI, <i>University of Rome Tor Vergata</i>	
WS.II.A.1 HT.II.C.1	Daniele BASSAN, <i>CRF, Turin</i> <b>Additive Manufacturing (R)evolution: perspective: from prototype towards mass production</b>
WS.II.A.2 HT.II.C.2	Vito LAMBERTINI, <i>CRF, Turin</i> <b>New materials for additive manufacturing: the automotive perspective</b>
WS.II.A.3 HT.II.C.3	Luca BELTRAMETTI, <i>University of Genoa</i> <b>Economic aspects of Additive Manufacturing</b>
10:30 - 11:00 Coffee Break	

## 28 September

11:00 - 12:30

WS.II.B - TT.IV.D

## The ALM matter in the context of the Public Research: an overview

Chair: Francesca NANNI, *University of Rome Tor Vergata*WS.II.B.1  
TT.IV.D.1Davide MALACALZA, *JABIL, Italy*  
**Accelerating Products to Marketing with Additive Manufacturing**WS.II.B.2  
TT.IV.D.2Alessandro GASBARRINI, *Istituto ortopedico Rizzoli di Bologna*  
**3D-printed titanium prosthesis at Rizzoli Orthopedic Institute: custom made reconstruction of the spine**WS.II.B.3  
TT.IV.D.3Roberto DE SANTIS, *IPCB-CNR, Naples*  
**Rapid prototyped nano composite magnetic scaffolds for osteochondral tissue regeneration**WS.II.B.4  
TT.IV.D.4Michele MUCCINI, *CNR-ISMN, Montelibretti (RM)*  
**Diagnostic and analytical techniques for advanced materials and nanostructures**WS.II.B.5  
TT.IV.D.5Jacopo TIRILLO', *Sapienza University of Rome*  
**Prospective application of ALM in recently established FAB LAB Sapienza**WS.II.B.6  
TT.IV.D.6Marianna RINALDI, *University of Rome Tor Vergata*  
**The ALM of polymers, nanocomposites and ceramics in a prospective view**

12:30 - 14:00 Light Lunch

14:00 - 15:30

WS.II.C - TT.V.D

## General Aspects of ALM Technology

Chair: Francesca NANNI, *University of Rome Tor Vergata*WS.II.C.1  
TT.V.D.1Tommaso GHIDINI, *ESA/ESTEC Noordwijk, The Netherlands*  
**ALM: our future in Space and in Earth**WS.II.C.2  
TT.V.D.2Francesco LUMACA, *Thales Alenia Space, Rome*  
**Problems Space Industry**WS.II.C.3  
TT.V.D.3Mario BRUTTINI, *Mecaer Aviation Group, Borgomanero, NO*  
**ALM: make it or buy?**



## Smart Textiles

September 29



The emergence of multidrug resistant pathogens is currently approaching an epidemic level. There is a pressing need for not only treating infected patients, but also for preventing hospital acquired (nosocomial) infections and community acquired transmission of infections to non-infected population. Such infections cause death, trauma, recurrent loss of work hours, and longer stay of patients after surgical procedures with a concomitant loss of billions of euros every year. Antibiotics or other antimicrobials, e.g. phenolic derivatives, or silver, have been used mainly for coating of textile based products, despite of the toxicity of some of these active agents and the risk or uncontrolled release of the coating during use. In addition to the enforcement of rigorous hygiene measures new approaches are required to restrict the spread of infections.

PROTECT will develop a precommercial technological platform integrating innovative pilots for one-step durable antimicrobial/anti-biofilm coating of a broad range of 2D and 3D surfaces, especially textiles. Novel biocompatible NPs with proven antimicrobial efficiency will be coated on textiles and novel smart sensing functionality will be incorporated in the finished products to indicate the status of their antimicrobial efficacy, shelf life and in-use lifetime. Safety by design approaches to control potential risks during NPs coating and product use will be also implemented. Transferring these technologies to the relevant industrial production settings will rapidly realise their commercialisation potential.

## 29 September

11:00 - 12:30

WS.III.A - TT.VII.B

## Functional antibacterial and antifiame nano-textiles

Chair: Paride MANTECCA, *University of Milano Bicocca*WS.III.A.1  
TT.VII.B.1Antonio ANDRETTA, *KLOPMAN INTERNATIONAL, Frosinone***Industrial innovation and market opportunities for nano-enabled textiles**WS.III.A.2  
TT.VII.B.2Giuseppe ROSACE, *University of Bergamo***Applications of Nanosols for textile finishing: flame retardant and antibacterial properties improvement**WS.III.A.3  
TT.VII.B.3Alessio VARESA, *CNR-ISMAL, Biella***Natural and polypyrrole-based antibacterial finishing of textiles**WS.III.A.4  
TT.VII.B.4Massimo PERUCCA, *Project HUB 360, Reggio Emilia***Economic and environmental sustainability of antimicrobial textiles**

12:30 - 14:00 Light Lunch

## 29 September

14:00 - 15:30

WS.III.B - TT.VIII.B

## Nano-Antibacterial textiles: improving efficacy and safety

Chair: Massimo PERUCCA, *Project HUB 360*

WS.III.B.1 TT.VIII.B.1	Kristina IVANOVA, <i>Universitat Politècnica de Catalunya (UPC), Spain</i> <b>Sonochemical-enzymatic coating of medical textiles with antibacterial nanoparticles</b>
WS.III.B.2 TT.VIII.B.2	Simeone DE FELICE, <i>CNR-ISTEC, Faenza (RA)</i> <b>Safe by Design approach for the control of nano-manufacturing process</b>
WS.III.B.3 TT.VIII.B.3	Paride MANTECCA, <i>University of Milano Bicocca</i> <b>Concepts and tools for determining and improving the bio-safety of nano-antibacterial coated textiles</b>
WS.III.B.4 TT.VIII.B.4	Magda BLOSI, <i>CNR-ISTEC, Faenza (RA)</i> <b>Safe alternatives for the use of antibacterial nanoparticles</b>

15:30 - 16:00 Coffee Break

16:00 - 17:30

WS.III.C - TT.IX.A

## Sensor-integrated textiles

Chair: Giuseppe ROSACE, *University of Bergamo*

WS.III.C.1 TT.IX.A.1	Maria DIAZ, <i>Institut de Microelectrònica de Barcelona (CSIC), Spain</i> <b>Development of bioelectrochromic sensors for living bacteria sensing in textiles</b>
WS.III.C.2 TT.IX.A.2	Maria Rosaria PLUTINO, <i>CNR-ISMN, Messina</i> <b>Development of wearable sensors based on hybrid functional coatings</b>
WS.III.C.3 TT.IX.A.3	Sebania LIBERTINO, <i>CNR-IMM, Catania</i> <b>Miniaturized sensors for organic and inorganic contaminants detection</b>
WS.III.C.4 TT.IX.A.4	Mariglen ANGJELLARI, <i>NanoShare Srl, Rome</i> <b>Integration of multifunctional carbon systems in textiles for flexible and wearable sensors</b>

In collaboration with:



## AgriNanoTechniques: Nanomaterials for products and application in agricultures

September 27



With the world's population expected to exceed nine billion by 2050, scientists are working to develop new ways to meet rising global demand for food, energy and water without increasing the strain on natural resources. Organizations including the World Bank and FAO are calling for more innovation to address these issues. Nanotechnology is emerging as a promising way to promote plant growth and development. This idea is part of the evolving science of precision agriculture, in which farmers use technology to target their use of water, fertilizer and other inputs.

Engineered nanomaterials (ENMs) have become the focus of research into their potential for plant protection and fertilizing, mainly owing to their greater specific surface area. Some ENMs have been already proved to stimulate plant growth and improve their biochemical parameters. However, a side from the benefits, we still lack a systematic investigation about the impacts of these materials on the agroecosystem and the specific relationships between nanomaterials and crops has not been properly investigated yet.

### 27 September

11:00 - 12:30

WS.IV.A - TT.I.F

#### Regulating Nano innovation in the agri-food sector

Chair: Luca MARCHIOL, *University of Udine*  
Co-Chair: Francesco CUBADDA, *National Institute of Health*

WS.IV.A.1 TT.I.F.1	Francesco CUBADDA, <i>National Institute of Health, Rome</i> <b>Opportunities and challenges of nanotech applications in the agri-food sector: need of a comprehensive approach for assessing the risks for human health and the environment</b>
WS.IV.A.2 TT.I.F.2	Catia CONTADO, <i>University of Ferrara</i> <b>Combined analytical techniques for the physico-chemical characterization of hard and soft nanoparticles</b>
WS.IV.A.3 TT.I.F.3	Valeria SODANO, <i>University of Naples "Federico II"</i> <b>Regulating nanotechnologies in the agri-food sector: economic and political challenges</b>
WS.IV.A.4 TT.I.F.4	Paride MANTECCA, <i>University of Milano Bicocca</i> <b>Bio-interactions and effects of metal-based NPs: implications for a safe-by-design approach in the agri-food nanotech development</b>
12:30 - 14:00 Light Lunch	

## 27 September

14:00 - 15:30

WS.IV.B - TT.II.F

### Nanomaterials in Soil-Plant Environment: Perspectives and Concerns

Chair: Sandra RISTORI, *University of Florence*  
Co-Chair: Cristina GONNELLI, *University of Florence*

WS.IV.B.1  
TT.II.F.1

Livia VITTORI ANTISARI, *University of Bologna*  
**Interaction between engineered nanoparticle and soil system**

WS.IV.B.2  
TT.II.F.2

Luca MARCHIOL, *University of Udine*  
**Phytonanotechnology: new opportunities and controversies**

WS.IV.B.3  
TT.II.F.3

Giorgio Mariano BALESTRA, *University of Tuscia, Viterbo*  
**Innovative nanotechnological tools in plant and food protection**

WS.IV.B.4  
TT.II.F.4

Giuseppe CICCARELLA, *University of Salento, Lecce*  
**Nanotechnology-based strategies for active containment of *Xylella fastidiosa***

15:30 - 16:00 Coffee Break

16:00 - 17:30

WS.IV.C - TT.III.E

### AgriNanoTechniques Research Pathways

Chair: Livia VITTORI ANTISARI, *University of Bologna*  
Co-Chair: Luca MARCHIOL, *University of Udine*

WS.IV.C.1  
TT.III.E.1

Ilaria COLZI, *University of Florence*  
**Gold nanoparticles from different plant extracts: a study on stability, shape and toxicity**

WS.IV.C.2  
TT.III.E.2

Enrico BRAIDOT, *University of Udine*  
**Plants as NPs bioreactors: physiological bases of the process and possible technological applications**

WS.IV.C.3  
TT.III.E.3

Laura CHIARANTINI, *University of Urbino*  
**Biogenerated ferric expolysaccharide as a new nanofertilizer to enhance *Tuber borchii* (Truffle) growth**

WS.IV.C.4  
TT.III.E.4

Sandra RISTORI, *University of Florence*  
**Lipid nanovectors for carrying phytohormones to rooting recalcitrant plants**



## Desktop Scanning Electron Microscopes by Phenom-World The serious alternative to floor model SEMs

28 September 2017, 09:00 - 12:30

### ABSTRACT

Scanning Electron Microscopy SEM is an essential tool to develop and study new materials or control their final properties and quality.

The workshop will get a deeper insight on desktop SEMs, nowadays able to reach the high quality standards of floor model SEMs providing unmatched ease-of-use and productivity.

A large part of the workshop will be dedicated to applicative examples both from Material science and Life science, to illustrate the ability of this technique to provide high quality images of sample structures and determine their elemental composition by Elemental Identification (EID).

Best-in-class imaging and analysis ProX Generation 5 Desktop SEM from Phenom-World will be presented on site during a live demonstration.

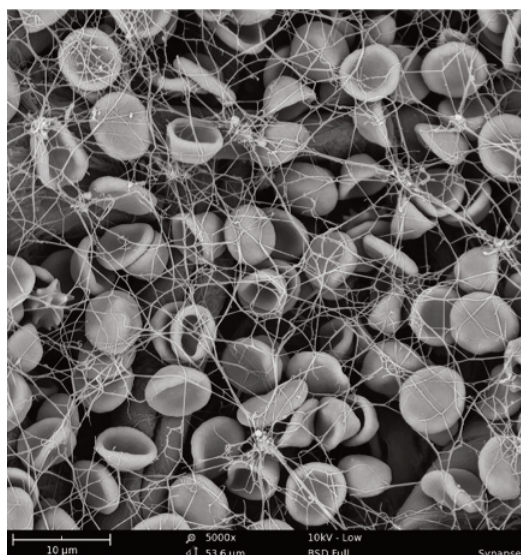
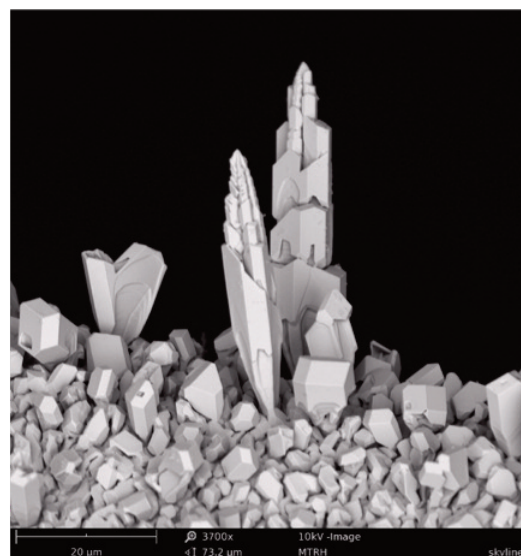
### PROGRAMME

- 09.00 *Registration*
- 09.30 **Phenom-World benchtop SEM as a serious alternative to floor model SEMs: unmatched ease-of-use, versatility and productivity**
- 09.45 **Overview of Phenom desktop SEM applications**, including nanomaterials (nanosensors, nanofabrication, nanofibers, nanocomposites) and life science (nanomedicine, etc.)
- 10.00 **Phenom ProX Generation 5 demo live**
- 10.30 *Coffee Break*
- 11:00 **Phenom-World benchtop SEM as a serious alternative to floor model SEMs: unmatched ease-of-use, versatility and productivity** (replicate)
- 11.15 **Overview of Phenom desktop SEM applications**, including nanomaterials (nanosensors, nanofabrication, nanofibers, nanocomposites) and life science (replicate)
- 11.30 **Phenom ProX Generation 5 demo live** (replicate)
- 12.00 **Discussion**

### SPEAKER INFORMATION:

Fabio De Simone - *Alfatest srl – Distributore esclusivo Phenom-World per l'Italia*

Dr. Fabio De Simone is graduated in Agro-Industrial Biotechnology at University of Verona. He works for Alfatest since 2010, focusing from the beginning on material characterization instrumentation. He's Product Manager for PhenomWorld tabletop SEM product line.





## Recent Trends in Scanning Electron Microscopy

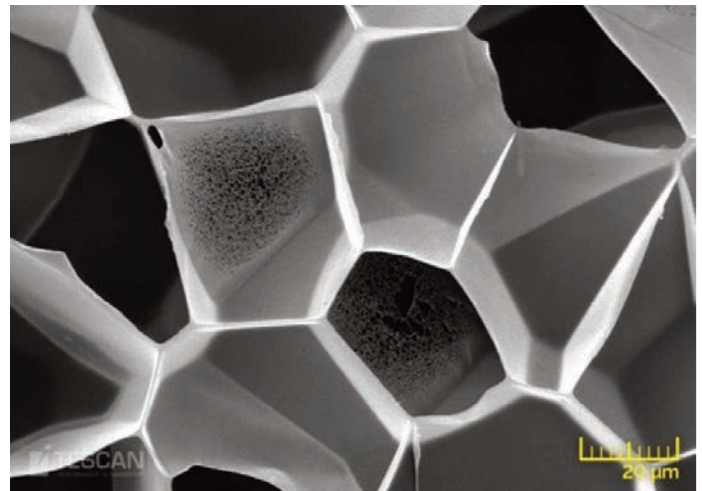
27 September 2017: 09.30 - 12.30

### ABSTRACT

TESCAN is one of the global suppliers of scientific instruments. The company is building its reputation in the field of designing and manufacturing scanning electron microscopes and system solutions for different applications. In the workshop, we will introduce TESCAN products and explain the key technologies that are behind the stunning success of TESCAN electron microscopes and focus ion beam systems and the rapid growth of the company. We will also present our Dual Beam technology: Types and unique solutions in FIB-SEMs; large and small TEM lamella preparation and 3D EDX and EBSD analysis; progress in applications with TESCAN integrated compact TOF-SIMS analyzer.

### PROGRAMME

- 09.30 **Welcome**
- 09.35 **Introduction of TESCAN and Product Line**  
*Massimo DEL MARRO, Sales Director and Vice President of Assing S.p.A, TESCAN representative in Italy*
- 10.30 *Coffee Break*
- 11.00 **Overview of Applications with TESCAN FIB-SEMs in Material, Semiconductors and Life Sciences**  
*Petr KLÍMEK, Application Scientist at TESCAN ORSAY HOLDING, a.s.*
- 12.00 **Discussion**
- 12.30 **Conclusion and Light Lunch**



### SPEAKERS INFORMATION:

**Dr Massimo Del Marro** He is graduated in Biology at La Sapienza University, Rome, in 1978. He has been working with Assing since 1980, where he currently holds the position of Sales Director. He held workshops and seminars on electron microscopy in the Italian Universities and published several scientific papers.

#### **Petr Klímek, Ph.D.**

#### **Working Experience:**

- Sep 2016 – current position [Sep 2017]: TESCAN ORSAY HOLDING, a.s Application Specialist, Material science Brno, Czech Republic
- Oct 2015 – Jun 2016 Oregon State University Visiting Scientist, Material science Corvallis, Oregon
- Jul 2013 – Oct 2015 Mendel University in Brno Junior Scientist, Material science Brno, Czech Republic

#### **Education:**

- Jul 2013 – [Sep 2016] Mendel University in Brno Doctoral's degree, Material science Brno, Czech Republic
- Jun 2011 – Jul 2013 Mendel University in Brno Master's degree, Wood engineering Brno, Czech Republic
- Aug 2010 – Feb 2011 Kaunas University of Technology Agreement, Wood engineering Kaunas, Lithuania
- Sep 2008 – Jun 2011 Mendel University in Brno Bachelor's degree, Wood technology Brno, Czech Republic



CONNECTING AMBITIONS



## Best practices on the use of EU funding for innovation on nanomaterials: the cases of MULTI2HYCAT and NanoMEMC<sup>2</sup>

**28 September 2017, 11:00 - 13:00**

*The event is free of charge prior registration on the website [www.nanoinnovation.eu](http://www.nanoinnovation.eu).*

*Pre-registration requested before 26 September 2017 (please let us know if you cannot attend after registering – Thank you).*

*For general enquiries and to book your one-to-one meeting, please contact: Marina Dora Tavano [md.tavano@ciaotech.com](mailto:md.tavano@ciaotech.com)*

The workshop is organised by CiaoTech / PNO Group, the largest grants and innovation consultancy firm in Europe, with the aim of illustrating how EU funding could be successfully exploited to implement your Research & Innovation projects. The case studies presented are **MULTY2HYCAT** and **NanoMEMC<sup>2</sup>**, two projects recently funded by the European Commission in the framework of the Horizon 2020 Programme.

**MULTY2HYCAT**'s goal is to design, obtain proof of concept, upscale and obtain industrial validation in a pre-pilot reactor of a new class of hierarchically-porous organic-inorganic hybrid materials to be used as active catalysts in multi-step asymmetric catalytic processes in specialty chemicals and pharma applications.

**NanoMEMC<sup>2</sup>** aims at developing new nanomaterials-based membranes to reduce the cost, energy and process limitations which currently make pre and post-combustion CO<sub>2</sub> capture processes non-viable in many industrial applications, such as petrol refining and cement plants.

At the end of presentations, CiaoTech / PNO Group consultants are at your disposal for one-to one meeting (10 minutes) to analyse your project idea to be financed by EU funding.

### PROGRAMME

- 11.00 - 11.20 **Welcome and introduction**  
Andrea Rausa, Senior Innovation Manager CiaoTech / PNO Group
- 11.20 - 11.40 **MULTI2HYCAT Project: MULTI-site organic-inorganic HYbrid CATalysts for MULTI-step chemical process**  
Prof. Enrica Gianotti, University of Eastern Piedmont - Amedeo Avogadro
- 11.40 - 12.00 **NanoMEMC<sup>2</sup> Project: NanoMaterials Enhanced Membranes for Carbon Capture**  
Prof. Marco Giacinti Baschetti, University of Bologna
- 12.00 - 12.20 **The valorization of results in NMBP projects**  
Ada della Pia, Junior Innovation Consultant CiaoTech / PNO Group
- 12.20 - 13.00 **Q&A and one-to-one meeting with CiaoTech / PNO Group consultants**



These projects have received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n° 720783 (MULTI2HYCAT) and under Grant Agreement n° 727734 (NanoMEMC<sup>2</sup>)





## Advances in Atomic Force Microscopy – Seminar and Life Demo

27 – 28 September 2017, 14:00 – 15:30

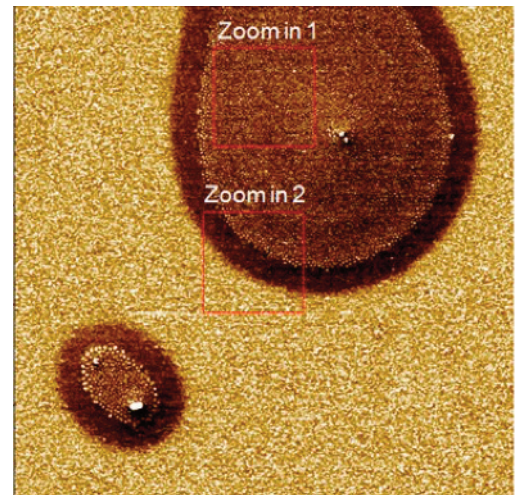
### ABSTRACT

SPM core & ancillary technology for advanced research

Atomic Force Microscopy (AFM) has been widely used to measure and characterize the surface of a sample in the nanometer scale. One of the latest advancements in AFM industry has been the elimination of this cross-talk in the XY scan. Here, the XY flexure scanner, driving a sample, is decoupled from the Z scanner to which a probe is attached. The new AFM platform has a highly orthogonal and ultra flat scan. These key attributes of the new AFM are central to the accurate and reproducible measurements for quantitative nanoscale metrology. Building upon the strength of the crosstalk eliminated platform, the new AFM adds the remarkable capability of non-contact AFM in ambient atmosphere by adopting a high speed Z scanner actuated by dedicated high force piezostacks. The non-contact mode preserves the sharp tip and, therefore, provides highly accurate and repeatable measurements of the sample geometry through tip de-convolution and quantitative measurement.

To improve the quantitative measurement, we developed self-optimizing algorithms for the scan parameters of the non-contact mode, such as servo gain, set-point, and scan speed by analyzing the tip-sample interaction force and the scan data of previous line. In the new Atomic Force Microscope (AFM) system, the user only needs to set the scan area and the z servo error limit that corresponds to the degree of image quality while minimizing human skill factors.

The new improved SPM not only produced accurate images faster, but also allowed various new industrial applications for HDD and semiconductor industry as well as basic research applications. Eventually, SPM will become as easy and widely adopted as optical microscope.

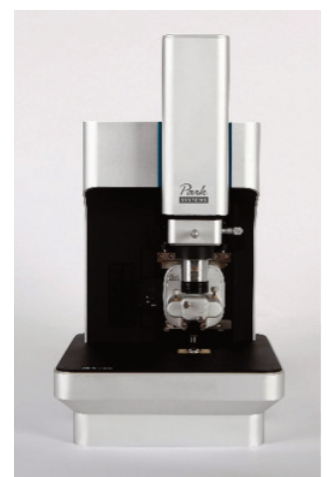


### PROGRAMME

- 14.00 **Welcome and Introduction**
- 14.10 **Talk: “SPM core & ancillary technology for advanced research”**
- 14.40 **Instrument Demonstration on Park NAX10 AFM**
- 15.10 **Discussion und Summary**

### SPEAKER INFORMATION:

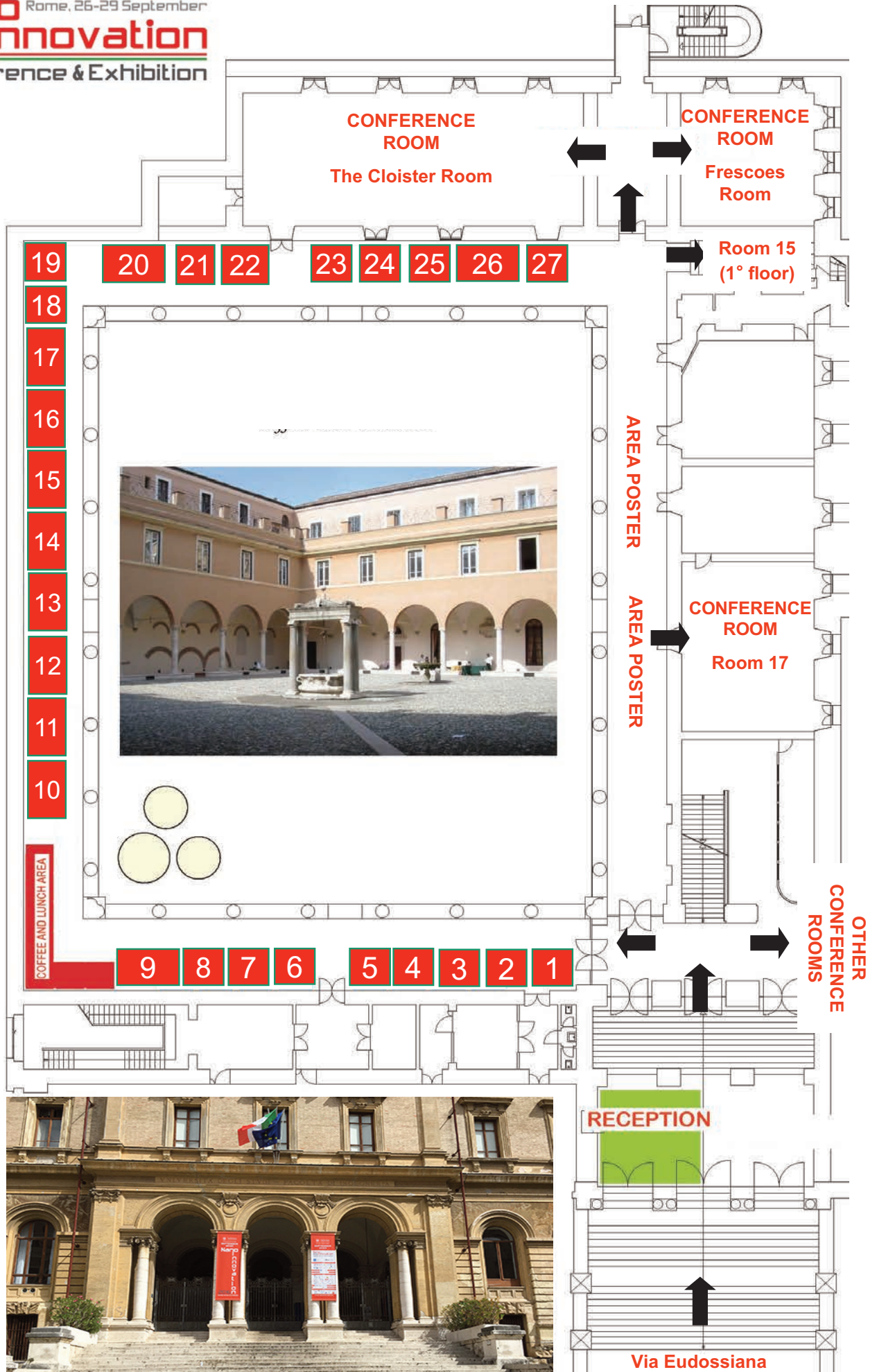
Victor Bergmann – *Application Scientist at Park Systems*





# Meeting Area

**Nano** Rome, 26-29 September  
**2017 Innovation**  
 Conference & Exhibition



<b>ALPHABETICAL ORDER</b>	
<b>6</b>	<b>2M STRUMENTI</b>
<b>24</b>	<b>AIRI</b>
<b>9</b>	<b>ALFATEST</b> PANALYTICAL
<b>15</b>	<b>ASSING</b> BRUKER CRESTEC CORPORATION PLASMA-THERM PVA TEPLA ANALYTICAL SYSTEMS RIGAKU TESCAN
<b>13</b>	<b>BIOAGE</b>
<b>1</b>	<b>BIOFOTONICA</b> JPK INSTRUMENTS
<b>25</b>	<b>CALIBRATE</b>
<b>2</b>	<b>COMSOL</b>
<b>7</b>	<b>EMME 3</b>
<b>16</b>	<b>FONDAZIONE BRUNO KESSLER</b>
<b>11</b>	<b>GAMBETTI KENOLOGIA</b> PARK SYSTEMS
<b>5</b>	<b>GOODFELLOW</b> PRODOTTI GIANNI
<b>17</b>	<b>INRIM</b>
<b>20</b>	<b>ITALIAN TRADE AGENCY</b>
<b>27</b>	<b>KILOMETRO ROSSO</b>
<b>23</b>	<b>LABTREK</b>
<b>14</b>	<b>LFOUNDRY</b>
<b>4</b>	<b>LOT-QUANTUMDEISGN</b>
<b>3</b>	<b>MICRON</b>
<b>12</b>	<b>NANO TECH 2018</b>
<b>18</b>	<b>NANOSHARE</b>
<b>21</b>	<b>NFFA</b>
<b>8</b>	<b>NORDTEST</b> NANOLANE
<b>19</b>	<b>PLATINUM</b>
<b>22</b>	<b>RENISHAW</b>
<b>10</b>	<b>ZEISS</b>
<b>26</b>	<b>WARRANT GROUP</b>

<b>BOOTHS ORDER</b>	
<b>1</b>	<b>BIOFOTONICA</b> JPK INSTRUMENTS
<b>2</b>	<b>COMSOL</b>
<b>3</b>	<b>MICRON</b>
<b>4</b>	<b>LOT-QUANTUMDESIGN</b>
<b>5</b>	<b>GOODFELLOW</b> PRODOTTI GIANNI
<b>6</b>	<b>2M STRUMENTI</b>
<b>7</b>	<b>EMME 3</b>
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<b>9</b>	<b>ALFATEST</b> PANALYTICAL
<b>10</b>	<b>ZEISS</b>
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<b>15</b>	<b>ASSING</b> BRUKER CRESTEC CORPORATION PLASMA-THERM PVA TEPLA ANALYTICAL SYSTEMS RIGAKU TESCAN
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<b>26</b>	<b>WARRANT GROUP</b>
<b>27</b>	<b>KILOMETRO ROSSO</b>

**2M STRUMENTI SRL**

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Fax: +39 06 868 95 241  
website: [www.2mstrumenti.com](http://www.2mstrumenti.com)  
contact person: **Matteo Fedele**  
email: [info@2mstrumenti.com](mailto:info@2mstrumenti.com)

**2M STRUMENTI** is active in the materials science, biophysics and nanotechnology fields, representing and producing scientific instruments and high quality components for the creation and characterization of inorganic, organic and biological, from micro to nano structure. The main activities of 2M STRUMENTI are the commercialization, installation and technical support of scientific instrumentation, exclusively on the national territory. The core areas of the company are:

**Nanoscopy:** AFM, STM, probes and several accessories

**Electron Microscopy:** Complete line of SEM and TEM Specimen Preparation Equipments. SEM and TEM Imaging. SEM and TEM Ancillary Equipments: CL, Cryo, Heating and Cooling Stages, Tensile Stages. Consumables for Electron Microscopy and Labs. Diamond and Glass Knives for Microtome and Ultramicrotome. Equipments and Consumables for Metallographic Sample Preparation

**Deposition:** Deposition systems by Metallorganic MO-CVD / LPE / PVD / VPE. Deposition systems Plasma and Reactive Etching Assisted PE-CVD / ICP-RIE

**Surface Physics:** ESCA - AUGER - SIMS System. Microscopes AFM, STM, SNOM, UHV. LEED/RHEED ELECTRONIC Bombardment Cell-TRICON Components: Ionic Sources, UV Lamps, X-ray Electronic Sources. Ellipsometers

**High Vacuum and Ultra High Vacuum Components:** Flanges (CF, KF, ISO), Windows, Gaskets, Seals, Valves, Feedthroughs, Materials, Deposition Equipment, Sample, Manipulation

The company can also provide the "design, construction, distribution, repair, transformation of scientific equipment." Some instruments have been made both in the industrial (process control) and science



ASSOCIAZIONE  
ITALIANA  
PER LA RICERCA  
INDUSTRIALE

**AIRI**

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Fax +39 068552949  
website: [www.airi.it](http://www.airi.it), [www.nanotec.it](http://www.nanotec.it)  
contact person: **Andrea Porcari**  
email: [info@airi.it](mailto:info@airi.it)

Airi is a private, not-for profit Association, funded in 1974 to promote industrial Research and Innovation in Italy and to enhance co-operation between the private and public sector. Airi is the focal point for about 100 members, representing private industrial enterprises, large and SMEs and public research organizations. Airi/Nanotec IT is a division dedicated to promote nanotechnologies and their integration with the other Key Enabling Technologies. Researchers of Airi members constitute about the 45% of the researchers in the Country.

Airi monitors scientific R&D trends and their applications, disseminates information, facilitates technology transfer and promotes Responsible Research and Innovation (RRI), and has a long experience in participation in co-operative European projects, often as co-ordinator.

Information on activities of Airi will be available at the stand, including:

- **Le innovazioni del prossimo futuro: tecnologie prioritarie per l'industria** (pubblicazione)
- **RinnovareNano:** Sviluppo Responsabile dei Nanomateriali ed opportunità per il sistema industriale regionale (progetto bandi Regione Lazio)
- **NanoRestArt project:** Nanomaterials for the Restoration of works of Art (H2020, NMPB)
- **Satori project:** Developing frameworks and tools for the ethics assessment of research and innovation (FP7, SiS)
- **Responsible Industry project:** Responsible Research and Innovation in the ICT for an ageing society field (FP7, SiS)
- **Prisma project:** Piloting RRI in Industry: a roadmap for transformative technologies (H2020, Swafs)

## BOOTH 9

**ALFATEST SRL**

Via Giulio Pittarelli, 97  
00166 Roma (RM), ITALIA  
Tel. +39 06 87465557  
Fax +39 06 87465555  
website: [www.alfatest.it](http://www.alfatest.it)  
contact person: **Alice Brun**  
email: [alfatest@alfatest.it](mailto:alfatest@alfatest.it)

Alfatest srl is the exclusive distributor for Italy of several leading instrumentation companies dedicated to Material characterization and Life sciences, including Malvern Instruments, world leader for particle size analysis, and Phenom-World, world leader for desktop Scanning Electron Microscopes.

Alfatest srl provides technical and application support to its Italian customers, thanks to highly qualified specialists and service engineers, and an application lab for demonstrations and method developments located in Cinisello Balsamo (MI).

Alfatest is also the exclusive distributor in Italy for: Formulation, Postnova Analytics, Haver & Boecker, Microfluidics, Freeman Technologies, Pall ForteBio, Alpha-MOS, Armfield.

## BOOTH 9



**PANalytical**

**PANALYTICAL SRL**

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20851 Lissone (MB), ITALIA  
Tel. +39 039 2434501  
Fax +39 039 2434520  
website: [www.panalytical.com](http://www.panalytical.com)  
contact person: **Vincenzo Di Marzio**  
email: [vincenzo.di-marzio@panalytical.com](mailto:vincenzo.di-marzio@panalytical.com)

PANalytical provides solutions for highly reliable and robust chemical and structural analysis of a wide variety of materials. The combination of our software and instrumentation, based on X-ray diffraction (XRD), X-ray scattering, X-ray fluorescence (XRF), near-infrared (NIR) and pulsed fast thermal neutron activation (PFTNA), provides our customers with elemental and structural information on their materials. With our global presence, expertise and unmatched support organization we help customers characterize materials in every industry segment, applications and materials research areas.

Our systems range from laboratory instruments and on-line analyzers to completely automated laboratories for the metals and mining industries. Currently we are the only analytical X-ray equipment supplier with own in-house development and manufacture of the X-ray tubes, basis of the best performance. We have over 1000 dedicated employees, are present in all countries of the world, hold more than 250 patents and have research centers in Almelo and Eindhoven, the Netherlands and on the campus of the University of Sussex (UK).

Our fully equipped application laboratories are established also in Japan, China, the United States, Brazil. Since 1 January 2017 PANalytical has merged its activities with Malvern Instruments. We continue to be committed to leadership and innovation, customer satisfaction, safety, environmental health, ethical standards, integrity, fairness, trust and mutual respect.



BOOTH 15



**ASSING SPA**

Via Edoardo Amaldi, 14  
00015 Monterotondo (RM), ITALIA  
Tel. +39 06 906701  
Fax +39 06 90670200  
website: [www.assing.it](http://www.assing.it)  
contact person: **Mariangela Malaspina**  
email: [sales@assing.it](mailto:sales@assing.it)

Assing S.p.A is a leader in Italy in delivering high technology solutions and products for Industry and Research. Competences range from design to high technology infrastructure; from the identification of the appropriate analytical techniques to the provision of related systems; from technical-scientific consulting to the organization of training courses.

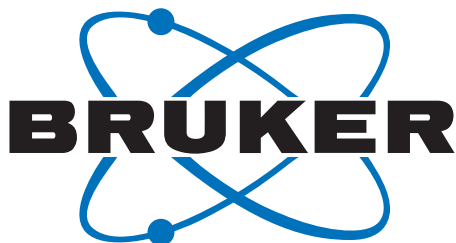
Special attention has always been given to the nanotechnology, Assing can propose observation, analysis and process instruments such as: electronic microscopes, dual beam systems, a wide range of diffraction and X-ray fluorescence instruments, Systems from Plasma Therm (RIE, PECVD, ICP), X-ray microscopes, Electronic lithography systems (EBL), atomic force microscopy, optical and stylus profilometers.

Assing, designs, realizes and validates clean rooms for research laboratories and production areas and cell-factories.

Thanks to its know-how, is able to offer a Global Solution to the various customer requests, as a partner, providing all means and services necessary to carry out its activities.

The Company also plays an active role in Research, participating in several projects, both nationally and internationally, aimed at developing new technologies.

BOOTH 15



**BRUKER SURFACE & DIMENSIONAL ANALYSIS**

7 rue de la Croix Martre  
91120 Palaiseau, France  
website: [www.bruker.com](http://www.bruker.com)  
email: [bruker.italy@bruker.com](mailto:bruker.italy@bruker.com)

Bruker Nano Surfaces provides industry-leading surface analysis instruments for the research and production environment.

Our broad range of products include 2D and 3D fast and accurate surface profiler solutions, research-grade AFMs tailored to the needs of material and biological scientists and tribometers producing practical data improving development of materials and applications.

## BOOTH 15


**CRESTEC CORPORATION**

9-2, Owada-machi, Hachioji-shi,  
Tokyo 192-0045, JAPAN  
website: [www.crestec8.co.jp](http://www.crestec8.co.jp)  
email: [sales@crestec8.co.jp](mailto:sales@crestec8.co.jp)

Crestec Corporation provides Dedicated electron beam lithography systems, tailored to deliver extremely high currents in a minimal diameter beam spot.

## BOOTH 15


**PLASMA-THERM**

10050 16th St. North  
Saint Petersburg, FL 33716,  
UNITED STATES  
Tel: (727) 577-4999  
website: [www.plasmatherm.com](http://www.plasmatherm.com)  
email: [information@plasmatherm.com](mailto:information@plasmatherm.com)

Plasma-Therm is, since 1974, an innovator in plasma-processing technologies and manufactures plasma etch, deposition, and advanced packaging equipment for specialty semiconductor and nanotechnology markets.

BOOTH 15



**PVA TEPLA ANALYTICAL SYSTEMS  
GMBH**

Deutschordenstrasse, 38  
D-73463 Westhausen, GERMANY  
website: [www.pva-analyticalsystems.com](http://www.pva-analyticalsystems.com)  
email: [saminfo@pvatepla.com](mailto:saminfo@pvatepla.com)

PVA TePla Analytical Systems develops, produces and delivers scanning acoustic microscopes (whose unique characteristic is the ability to non-destructively examine the interior of opaque materials with resolution comparable to optical light microscopy) providing innovative, advanced solutions for non-destructive imaging.

BOOTH 15



**RIGAKU CORPORATION**

4-14-4, Sendagaya, Shibuya-ku  
Tokyo 151-0051, JAPAN  
website: [www.rigaku.com/en](http://www.rigaku.com/en)  
email: [info@rigaku.com](mailto:info@rigaku.com)

Rigaku Corporation is an international leader in manufacturing and distribution of analytical instruments for X-ray diffraction (XRD), X-ray crystallography (SC-XRD) and X-ray fluorescence (XRF) for research and industrial applications.

Rigaku is based in Tokyo (Japan) with additional production and laboratory facilities in both Japan and the United States.

European facilities are located in United Kingdom, Germany, Czech Republic and Poland.

Rigaku products are worldwide well known for the top-level design, the high performance and the unequalled reliability.

## BOOTH 15

**TESCAN**

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623 00 Brno – Kohoutovice,  
ČESKÁ REPUBLIKA  
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Fax +420 530 353 415  
website: [www.tescan.com](http://www.tescan.com)  
email: [info@tescan.cz](mailto:info@tescan.cz)

TESCAN is a global suppliers of Scientific Instruments focused on research, development and manufacturing of:

- Scanning electron microscopes SEM
- Supplementary accessories for SEMs
- Special vacuum chambers and custom systems Scientific hardware and software development

## BOOTH 13

**BIOAGE****BIOAGE SRL**

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88046 Lamezia Terme (CZ)  
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contact person:  
**Umberto Emanuele**  
email: [umberto.emanuele@bioage-srl.com](mailto:umberto.emanuele@bioage-srl.com)  
**Stefano Sinopoli**  
email: [stefano@bioage-srl.com](mailto:stefano@bioage-srl.com)

BioAge ([www.bioage.it](http://www.bioage.it)) is an Italian private hi-tech SME company, established in 2003, our main activities are the: Scientific Instrument Production; Scientific Research; Designing Services.

The company designs and produces scientific instruments, in our portfolio we have very innovative EQCMs (Electrochemical Quartz Crystal Microbalances); systems for gas mixing to obtain a mixture of gases with a controlled and well know concentration; buoys for marine monitoring; systems for environmental monitoring; flame sensors; infrasonic system used to detect explosions; micro-sensors battery powered with wireless data transmission.

BioAge has skilled in the development of: sensors and biosensors; ultra low power electronics; battery powered electronics; energy harvesting; scientific instruments production; environmental and marine monitoring; wireless data transmission; RFID; measurement chambers for liquid and gases; electrical characterization.

The core competencies of the company are: electronics, printed electronics, flexible electronics, mechanical designing and software writing; BioAge is able to design and to realize a prototype or a final product.

The main equipments in our laboratories are: production line for the realization of rigid or flexible PCB, assembly line for electronic circuits, also for SMD components, CNC machines for mechanics, production lines for screen printing and pad printing, to realize graphic panels, laboratory for electronic testing and characterization.



**BIOFOTONICA**

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Cell. +39 3920301676  
Tel +39 0681175637 Fax +39 0689280737  
website: [www.biofotonica.it](http://www.biofotonica.it)  
contact person: **Paolo Antonucci**  
email: [antonucci@biofotonica.it](mailto:antonucci@biofotonica.it)

Biofotonica SRL is an Italian Distributor for high technology devices. We can propose several brand Manufacturers in the fields of Biology/Life Sciences, Optoelectronics and Infrared. Some examples are:

**Life Science JPK Instruments AG:** German Atomic Force Microscopy manufacturer specialized in both life science and science materials.

**Nikon Instruments:** Manufacturer of optical microscopies and confocal systems

**Jenoptik GMBH:** Manufacturer of CCD and CMOS cameras specialized in the biology applications

**Elbatech SRL:** Italian manufacturer of low cost Quartz Crystal Microbalance-based (QCM) instruments

**Lambert Instruments:** High speed and Intensified cameras for biology applications

**Optoelectronics Instrument Systems:** German manufacturer of spectrophotometers, integrating spheres and colorimeter systems

**Mightex Systems:** American manufacturer of small spectrometers and CCD to be interfaced with optical microscopies

**Accurion GMBH:** Antivibration active systems manufacturer

**Zolix Instruments LTD:** Spectrographs and monochromators, fluorescence spectrometers, modular raman systems, light sources

**Abet Technologies:** American manufacturer of Solar Simulators light sources

**Infrared Xenics nv:** based in Belgium this company is leader in the InGaAs/SWIR cameras manufacturing, high sensitivity and high speed sensors capability

Flir Systems: simply the most known brand for portable thermal cameras

Terasense Group: Unique worldwide manufacture of vision Terahertz cameras

**JPK INSTRUMENTS**

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website: [www.jpk.com](http://www.jpk.com)  
contact person: **Benjamin Holmes**  
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JPK Instruments AG is a Berlin-based German manufacturer of Atomic Force Microscopes, Optical Tweezers and Force Spectroscopes designed specifically for soft matter, life science and in-liquid measurements.

The NanoWizard Atomic Force Microscopes include designs for routine imaging, for materials science, for polymers, for biomaterials, biomolecules and live cell imaging with sub nanometre x/y/z-positioning resolution and force sensitivity into the 10-50 pN range. Liquid-safe imaging and correlative imaging with fluorescence, DIC or other high-resolution optical microscopies are guaranteed by the tip-scanning technology. Latest developments we will be presenting at NanoInnovation include our new ergonomic user interface, high-speed nanoscale mechanical mapping and high speed topographic imaging (on the order 1s per frame).

The JPK NanoTracker 2 Optical Tweezers offer highest force resolution, fastest detection speeds and most flexible design and is supplied in a small footprint, tidy and laser-safe housing, reducing interference with the fluorescence/confocal microscope operation. The turn-key instrument is compatible with advanced fluorescence microscopies including FRET, FCS etc. and has an easy to learn user-interface, bringing what was once a complex photonics laboratory test instrumentation into cell and molecular biology labs everywhere.

JPK instruments also supplies specific instrumentation for single cell and single molecule force spectroscopy. Single Cell Force Spectroscopy is used for instance to characterise cell-cell and cell-tissue adhesion, relevant in cancer propagation and diagnosis as well as in bacterial research, whilst Single Molecule Force Spectroscopy is used for instance for statistical analysis of molecular unfolding (structural information).

With over 80 employees world-wide, 10 sales offices and all manufacturing in our facilities in Berlin JPK is recognised as the world-leading manufacturer of AFM and force spectroscopes for soft and biological materials.

## BOOTH 25

**caLIBRAte PROJECT**

website: [www.nanocalibrate.eu](http://www.nanocalibrate.eu)  
 contact person: **Andrea Porcari**  
 email: [info@airi.it](mailto:info@airi.it)

The CaLIBRAte project will establish a state-of-the-art Risk Governance framework to guide stakeholders from research, industry, insurance and regulation in selecting the right data and procedures for assessment and management of human and environmental risks of nanomaterials and nano-enabled products (e.g. for REACH and other regulatory frameworks).

The project will develop a web-based "system-of-systems" linking different models and methods for:

1. Screening of apparent and perceived risks and trends in nanotechnology
2. Control banding, qualitative and fully integrated predictive quantitative risk assessment operational at different information levels
3. Safety-by-design and multi-criteria decision support methods
4. Risk surveillance, -management and -guidance documents.

In the current phase, the project is testing and refining existing human and environmental risk models for nanomaterials, in order to validate and integrate them in the "system-of-systems".

**At the caLIBRAte stand during NanoInnovation 2017 delegates will have the opportunity to have a demonstration of most advanced models used by caLIBRAte, such as the SUNDs Decision Support Systems for sustainable nanotechnologies (<http://sunds.dais.unive.it/>).**

*Project funded by the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement 686239*

To learn more about caLIBRAte and to sign-up for the project's newsletter, visit [www.nanocalibrate.eu](http://www.nanocalibrate.eu)

## BOOTH 2

**COMSOL SRL**

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 website: [www.comsol.it](http://www.comsol.it)  
 contact person: **Daniele Panfiglio**  
 email: [info@comsol.it](mailto:info@comsol.it)

COMSOL is a global provider of simulation software for product design and research to technical enterprises, research labs, and universities. Its COMSOL Multiphysics® product is an integrated software environment for creating physics-based models and simulation apps.

A particular strength is its ability to account for coupled or multiphysics phenomena. Add-on products expand the simulation platform for electrical, mechanical, fluid flow, and chemical applications. Interfacing tools enable the integration of COMSOL Multiphysics® simulations with all major technical computing and CAD tools on the CAE market.

Simulation experts rely on the COMSOL Server™ product to deploy apps to their design teams, manufacturing departments, test laboratories, and customers throughout the world.

Founded in 1986, COMSOL employs more than 480 people in 21 offices worldwide and extends its reach with a network of distributors.



**EMME 3 SRL**

Via Meraviglia, 31  
 20020 Lainate (MI), ITALIA  
 Tel. + 39 02 93466503  
 Fax +39 02 93466520  
 website: [www.emme3-srl.it](http://www.emme3-srl.it)  
 contact person: **Ilaria Zamproni**  
 email: [sales.emme3@labteam.com](mailto:sales.emme3@labteam.com)

Emme3 offers high technology scientific instruments and with its experience Emme3 is the ideal partner to establish a working relationship, from the early support in the selection of the suitable tool to the steady daily technical and scientific support.

Emme3 operates in the field of nano technologies offering tools for the samples preparation for analysis by electron microscope in particular with the ultramicrotomes of the american company RMC Boekeler.

The first commercial ultramicrotome with mechanical feed was produced in 1953 by Porter-Blum (Sorval-Dupont), which over time became RMC, with headquarters in Tucson, Arizona. Today RMC, through continuous research and development of new applications, is able to satisfy the needs of customers that apply in the field of materials science and nanotechnology.

Moreover, last year Emme3 established a partnership with the japanese company Jokoh Ltd., which since 2007 has opened a new division focused on R&D, producing high pressure homogenizers, based on wet jet milling technology applicable to homogenization, dispersion, reduction of particles. Such equipment line: Nano Jet Pal (JN line), have obtained considerable appreciations in the fast growing emerging field of nano-technologies.



**FONDAZIONE BRUNO KESSLER**

Via Santa Croce, 77  
 38122 Trento (TN), ITALIA  
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 website: [www.fbk.eu](http://www.fbk.eu)  
 contact person: **Massimo Bersani**  
 email: [bersani@fbk.eu](mailto:bersani@fbk.eu)

Fondazione Bruno Kessler was created on 1 March 2007. FBK inherits the activities of the Istituto Trentino di Cultura, which was based on the ideas of Bruno Kessler, a long-time member of the local government and founder of the University of Trento. Established by a law of the Autonomous Province of Trento, FBK operates as private entity. The Foundation is charged with keeping the province of Trento in the mainstream of European and international research. It does so by attracting women, men and resources at the forefront of technological development and humanities studies. The Foundation is also involved in bringing together natural and human sciences, a sign of recognition of the challenges faced by the knowledge society.

Fondazione Bruno Kessler promotes:

- cultural activities, scientific research, technological development, with the aim of both the advancement of knowledge and service to the local community
- the exploration of innovative frontiers of knowledge with particular emphasis on interdisciplinary approaches and on the applications area
- the opening of the Trentino Region to the international scene, through collaborations and exchange activities with national and international research organizations
- a widespread innovation ability, involving the community and the local economy
- the transfer of research results: support for new entrepreneurship, for the growth of brand-new professional skills and for the improvement of public administration structures.

The main FBK research fields are in the areas of Information Technology, Materials and microsystems. Centre Materials and Microsystems (CMM) is focused on key areas of Materials, Microdevices and Microsystems, employing more than 120 people. CMM combines scientific excellence with the ability to exploit research outcomes and results within national and international network, aiming at optimizing experience through open innovation.

BOOTH 11

**GAMBETTI KENOLOGIA SRL**

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Tel. +39 02 90093082  
Fax +39 02 952778  
website: [www.gambetti.it](http://www.gambetti.it)  
contact person: **Stefania Fabbri**  
email: [sales@gambetti.it](mailto:sales@gambetti.it)

**Gambetti Kenologia** has chosen Nanoinnovation to promote together with Park Systems the most innovative solutions in atomic force microscopy.

**Park Systems** is a world-leading manufacturer of atomic force microscopy (AFM) systems with a complete range of products for researchers and industry engineers in chemistry, materials, physics, life sciences, and semiconductor and data storage industries. Park's products are used by over a thousand of institutions and corporations worldwide. Our comprehensive line of AFMs, with revolutionary features like **True Non-Contact™** mode or **Park SmartScan OS**, offers users unparalleled accuracy and ease of use. With AFMs designed specifically to be used in materials and life science, electronics, nanotechnology, and other areas of research and industry, our tools are trusted to deliver ultra-high resolution with extremely precise measurements quickly and easily.

An NX10 will be available at our booth, and during satellite events with real demos.

**Gambetti Kenologia** since 1974 provides solutions for R&D and industrial companies in the following fields of activities:

Surface Characterization, Process Systems for Plasma Thin Films, Process control for Vacuum, UHV, Gas Analysis.

Our brand includes also bench top plasma systems fully developed and produced at GK

For more info: [www.gambetti.it](http://www.gambetti.it) [www.plasmi.eu](http://www.plasmi.eu)

BOOTH 11

**PARK SYSTEMS**

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email: [psc@parkAFM.com](mailto:psc@parkAFM.com)

**Gambetti Kenologia** has chosen Nanoinnovation to promote together with Park Systems the most innovative solutions in atomic force microscopy.

**Park Systems** is a world-leading manufacturer of atomic force microscopy (AFM) systems with a complete range of products for researchers and industry engineers in chemistry, materials, physics, life sciences, and semiconductor and data storage industries. Park's products are used by over a thousand of institutions and corporations worldwide. Our comprehensive line of AFMs, with revolutionary features like **True Non-Contact™** mode or **Park SmartScan OS**, offers users unparalleled accuracy and ease of use. With AFMs designed specifically to be used in materials and life science, electronics, nanotechnology, and other areas of research and industry, our tools are trusted to deliver ultra-high resolution with extremely precise measurements quickly and easily.

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Our brand includes also bench top plasma systems fully developed and produced at GK

For more info: [www.gambetti.it](http://www.gambetti.it) [www.plasmi.eu](http://www.plasmi.eu)



# Goodfellow

## GOODFELLOW CAMBRIDGE LIMITED

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website: [www.goodfellow.com](http://www.goodfellow.com)  
email: [info@goodfellow.com](mailto:info@goodfellow.com)

Goodfellow supplies small quantities of metals, alloys, ceramics & polymers to meet the research, development & specialist product requirements of science industry world –wide.

The company offers two distinct services:

The first meets the needs of customers who require small quantities of our standard catalogue products for immediate shipment. The second is for those who require larger quantities or further processing of the company's standard products, or who need products, which fall within our general supply capabilities.

Our web catalogue lists an extensive range of materials in many forms including rods & foils.

**Metals and Materials:** Goodfellow supplies virtually all of the pure metals from Aluminium to Zirconium as well as a comprehensive range of alloys.

**Ceramics:** The ceramic materials have been carefully chosen & include both the established as well as more recently developed products. All are available as either standard or custom-made products.

**Polymers:** The range of polymers is broad & includes both familiar as well as some of the more recently developed materials.

**Compounds and Intermetallics:** Goodfellow can supply aluminides, borides & silicides as well as other intermetallics & compounds; we also supply a range of Composites. The majority of these are made to order.



## PRODOTTI GIANNI SRL

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Fax: +39 02 5097276  
website: [www.ricerca.it](http://www.ricerca.it)  
contact person: **Claudia Albani**  
email: [ricerca@prodottigianni.com](mailto:ricerca@prodottigianni.com)

Prodotti Gianni Srl is an Italian Company that since 1948 distributes raw materials, reagents & products for research to the following fields:

Cosmetic, Farmaceutical/Nutritional, Food, Life and Materials Science.

"Our competence, your value" is our motto that summarizes our accuracy in choosing our Suppliers and care to our Customers enquiries.

Prodotti Gianni Srl is ISO 9001:2008 Certified ; our company procedures guarantee our excellent services to Customers.

Life and Materials Science line offers Antibodies, Elisa Kits, Accessories , Metals & Materials to academic and industrial researchers.

In particular **Prodotti Gianni is the representative of Goodfellow in Italy**; so Prodotti Gianni can supply over 500 materials like metals, alloys, ceramics, glasses, polymers and composites for scientific research, development, prototyping and specialized manufacturing.

These materials are available like catalogue products and custom made products.

Catalogue products are 70.000 items in an extensive range of forms including sheets, foils, films, lumps, powders, rods, wires, tubes, meshes, foams, spattering targets, single crystals. They are supplied in small quantities, from a few grams to a few kilos. Most are ready for immediate shipment with no extra shipping charge. No minimum order quantity is required.

Custom made products are larger quantities or further processing of the catalogue products or products to your individual specification, including composition, form and dimensions.

## BOOTH 17

**INRIM**

Strada delle Cacce, 91  
10135 Torino (TO), ITALIA  
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Fax: + 39 011 346384  
website: [www.inrim.it](http://www.inrim.it)  
contact person: **Luca Boarino**  
email: [inrim@inrim.it](mailto:inrim@inrim.it)

On the 1st January 2006, the Istituto Elettrotecnico Nazionale "Galileo Ferraris" (IEN) and the Istituto di Metrologia "Gustavo Colonnetti" (IMGC) merged to establish the **Istituto Nazionale di Ricerca Metrologica (I.N.RI.M.)**.

INRIM is the national public body with the task of carrying out and promoting scientific research in metrology. With the handover of the tasks of primary metrology institute previously assigned to IMGC and the IEN, INRIM has become the focus of most scientific metrology activities in Italy (except for the field of ionising radiation, where ENEA-INMRI maintains its role). Its research activities in measurement science, materials science and innovative technologies are recognized at worldwide level.

INRIM carries out studies and researches on the realization of primary standards for the basic and derived units of the International System of units (SI), assures the maintenance of such standards, their international comparison and in general provides measurements traceability to the SI.

In addition to physical and engineering metrology, its main R&D areas are in fundamental physical constants, materials, metrology for chemistry, nanotechnology, innovation, quantum information and artificial vision.

## BOOTH 20

**ITALIAN TRADE AGENCY**

ICE - Agenzia per la promozione all'estero e l'internazionalizzazione delle imprese italiane

**ITALIAN TRADE AGENCY**

Via Liszt, 21  
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Tel. 06 59921  
website: [www.ice.gov.it](http://www.ice.gov.it)  
contact person: **Edith Petrucci**  
Ufficio Tecnologia Industriale, Energia e Ambiente  
email: [partecno@ice.it](mailto:partecno@ice.it)

The Italian Trade Agency - ICE is the government organization which promotes the internationalisation of Italian companies. ICE provides information, support and advice to Italian and foreign companies.

ICE operates worldwide through a network of Trade Promotion Offices linked to Italian embassies and consulates and working closely with local authorities and businesses.

ICE provides tailored services to help Italian businesses expand overseas and connect with prospective partners: one-on-one business meetings, targeted partner searches, trade delegations to Italy, official participation in international trade events, forums and seminars with Italian experts.

[www.ice.gov.it](http://www.ice.gov.it) | [www.italtrade.com](http://www.italtrade.com) | [tecnologia.industriale@ice.it](mailto:tecnologia.industriale@ice.it)



**KILOMETRO ROSSO**

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 contact person: **Roberto Marelli**  
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Kilometro Rosso Science Park hosts 50 companies: amongst them there are research centres, laboratories, high-tech manufacturing facilities and providers of innovation services.

The Park's Mission is to promote the development of a hub of knowledge, innovation and high technology by creating a rendezvous point for innovation-driven companies and for scientific and R&D centres focusing on advanced technologies. It is a "node of an international network of relationships and connections", that boosts the share of skills, knowledge, information and know-how not only among its Partners, but also between them and the outside world.

About 1.600 R&D specialists work daily at Kilometro Rosso which is fast becoming one of the most successful Science Park of its type and one of the most important in Italy.

Kilometro Rosso is very active in widening its national and international relationship network. The Park has become a member of (amongst other associations) IASP (the International Association of Science Parks), APSTI (the Association of Italian Science & Technology Parks) and AIRI, and has also signed a number of international collaboration agreements.

Kilometro Rosso has also signed two important R&D partnership agreements with primary Italian scientific institutions as "Elettra" (the multidisciplinary Synchrotron Light Laboratory in AREA Science Park in Trieste) and the "IIT - Italian Institute of Technology", to promote industrial research, innovation and development of frontier technologies in enterprises.



**LABTREK**

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 contact person: **Giacomo Torzo**  
 email: [torzog@gmail.com](mailto:torzog@gmail.com)

LabTrek is a small firm, born as spin-off of Bologna ad Padova universities, to share the experience acquired in teaching courses of Physics Lab.

LabTrek has also been involved in SPM devices for educational market: it is exclusive European dealer of NanoTutor SPM, a low-cost Atomic Force Microscope, able to perform AFM & STM analysis and MicroLithography (produced by NT-SPb, Russia), and European dealer of AFM-1000, an high accuracy - low cost- device (produced by Suzhou Flyingman Precision, China).

Recently Labtrek developed a very low cost Dynamic Light Scattering device (DLS) using detection by optical beating technique in acoustical range, able to measure particles size in the range 10 -1000 nm in cheap plastic sample cells.

**LFOUNDRY**

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LFoundry, a SMIC company, is a leading specialized foundry. From the heart of ancient Europe, with the Headquarter in Avezzano (Italy), LFoundry is focused on providing access to most advanced analogue manufacturing service with a capacity of >40,000 wafers/month, innovative technology extensions, including volume 90nm and copper manufacturing, a strong emphasis on flexibility and customer partnership. LFoundry is supporting own technology IP for 150nm and 110nm with a large portfolio of process-proven libraries, IP, design tools and reference flows. LFoundry's key focus is primarily in automotive and industrial related applications including CIS, security, smart power, embedded memory, and others.

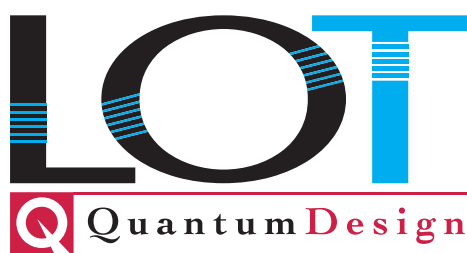
As a SMIC Company, LFoundry can leverage skills and capabilities of one of the leading semiconductor foundries in the world and the largest and most advanced foundry in mainland China.

**OUR PLACE**

In Avezzano (AQ - Italy), LFoundry is enabling innovation worldwide. We have a continuous commitment to guaranteeing a secure environment in which our customers can realise their ideas to the highest standard, relying on LFoundry as an indispensable partner to unleash their full potential.

**DEDICATED FOUNDRY AT AVEZZANO**

Since 2006, the 8" Avezzano site has been manufacturing imaging process technologies and products using 180nm to 90nm technologies, including a volume copper, Back End of Line (BEOL), Back Side Illumination processes (BSI) and extensive testing capabilities. The Fab provides automotive ISO-TS16949 certification as well as OHSAS 18001 and ISO 14001.

**LOT-QUANTUMDESIGN SRL**

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email: [info@lot-qd.it](mailto:info@lot-qd.it)

For over 45 years, we have been one of the leading European distributors of high-tech instrumentation and consumables for scientific, academic and industrial research.

Our product range comprises optics, components and systems for the life sciences, material characterization, cryotechnology, spectroscopy, imaging and electron microscopy.

We employ more than highly-qualified 140 staff across Europe. The headquarters are located in Darmstadt, Germany, further offices are in France, England, Italy, Scandinavia, Poland, Czech Republic, Hungary, Romania, Spain, Russia, Turkey, Switzerland and the BeNeLux.

Together with our parent company Quantum Design International, Inc. and affiliated companies in the U.S., Asia and South America, we form the only world-wide distribution network for high-technology instrumentation.





### MICRON SEMICONDUCTOR ITALIA SRL

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Today's demanding applications require not just more memory, but new memory innovations and architectures. Memory and storage solutions are becoming strategic differentiators for our customers and partners. These solutions enable breakthrough capabilities such as autonomous driving and virtual reality. At the same time, the value of data is undergoing explosive growth, driving new economic advantages and breakthroughs for humanity. Scalability, power efficiency, and very fast data access are critical to take advantage of this trend – factors that memory and storage are best positioned to address.

As the leader in innovative memory solutions, Micron is helping the world make sense of data by delivering the technology needed to unlock its vast potential. Through our global brands we offer the industry's broadest portfolio and are the only company manufacturing today's major memory and storage technologies: DRAM, NAND, NOR, and 3D XPoint™ memory. Our memory and storage is used to leverage the value of data: unlocking financial insights; accelerating scientific breakthroughs, and enhancing communication around the world.

In Italy, we create innovation in our advanced technology and product research and development centers in Vimercate, Avezzano, Padova, Arzano, and Catania.

From our roots in Boise Idaho, Micron has grown into an influential global presence and is committed to being the best memory company in the world.

We build and maintain sustainable operations, products and communities by focusing on the risks and opportunities most important to our stakeholders and business success, detailed in our 2017 Sustainability Report. Our history of giving back started in 1999 when we established the Micron Foundation and identified science, technology, engineering, and math (STEM) education as a priority for Idaho students. Today, the Micron Foundation's initiatives have grown into leading resources for educators and students in our communities around the world. We donate millions of dollars to organizations and events identified by our local teams around the world.

Endowed with gifts from Micron Technology, Inc., the Micron Technology Foundation's mission is to develop effective programs that promote math, science, and engineering education and to participate in activities that address the priorities and concerns of the communities where Micron employees live and work. Visit [micron.com/foundation](http://micron.com/foundation) for more information.



**nano tech 2018**  
International Nanotechnology Exhibition & Conference

### nano tech 2018

Celestine Shiba Mitsui Building, 3-23-1,  
Shiba, Minato-ku, Tokyo, Japan 105-8335  
Tel: +81-3-5657-0760  
Fax: +81-3-5657-0645  
website: [www.nanotechexpo.jp](http://www.nanotechexpo.jp)  
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email: [nanotech@jtbc.com.co.jp](mailto:nanotech@jtbc.com.co.jp)

nano tech Japan is the world's largest and one of the most comprehensive event for nanotechnologies. It will be held in Tokyo for the 17th time from February 14-16, 2018.

In the industry focused exhibition, 600 companies, research institutes and universities show the latest Materials, Fabrication and Measurement Technologies at the nano level.

The attendee list of more than 50,000 people reads like the Who-is-who of the Japanese and Asian Industry and includes Electronics manufacturers, as well as Chemical, Pharmaceutical, Automotive and Construction companies.

A joint Business Matching, which is shared by all co-located events, provides the opportunity for one-to-one business meetings with more than 1200 registered innovators and technology users and creates synergies between different fields.

An accompanying seminar and conference program covers a variety of nanotechnology related topics and provides information about latest research results and developments.

## BOOTH 8

**NANOLANE**

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email: [nanolane@eolane.com](mailto:nanolane@eolane.com)

NANOLANE, sister company of the Group Eolane, specialized in optical solutions at nanoscale, commercializes an innovative label-free quantitative imaging technique (SEEC Microscopy). This technique offers to researchers a new way to analyze organic, inorganic and biological samples in dry, in liquid or in gaseous environment with high accuracy (<0.1 nm). SEEC analyses enable live imaging, surface interaction studies and topographic analyses at the nanoscale.

Applications include:

- Life sciences (Biological films, Biochips, Phospholipids, Soft lithography, Cell adhesion, DNA molecules...),
- Thin films and surface treatment (Polymers films, Langmuir-Blodgett films, Liquid crystals, Plasma treatment, Self-assembled monolayers ...),
- Nanomaterials (Carbon nanotubes, Nanoparticles, Nanowires, Graphene...).

## BOOTH 8

**NORDTEST**

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Contact person: **Nadia Decarolis**  
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NORDTEST srl operates in the field of high tech scientific instruments and equipment since 1989 with growing success.

Supplying analyzers for either chemical or physical testing, rather than environmental control, or equipments for selected process applications, represent Nordtest core business.

Among the main applications there are Quality Control, R&D, Sterile Process Systems. Related activities provided include Tech Service, Pharmaceutical Validation, Training.

- A skilled team of Sales Engineers, professionals with strong technical background and constantly trained, will be at your side in each step of your project.
- Our Service Team, based at our Serravalle Scrivia headquarters but covering efficiently the whole Italian territory, provides prompt and qualified support.

Among the products we would like to introduce You there are:

- SURFACE ENHANCED ELLIPSOMETRIC CONTACT MICROSCOPY (SEEC)
- QUARTZ CRYSTAL MICROBALANCE (QCM-D)
- SURFACE PLASMON RESONANCE (MP-SPR)
- CONTACT ANGLE TENSIO METERS
- ELEMENTAL ANALYSIS INSTRUMENTS
- DIP COATERS
- DYNAMIC VAPOR SORPTION SYSTEMS (DVS)
- SURFACE ENERGY ANALYZERS (SEA)

We invite You to visit our stand to get more information about all the instruments and Brands we represent!

**NANOSHARE**

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00131 Roma (RM), ITALIA  
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NanoShare Srl is a SME company legally based on the Polo Tecnologico Tiburtino (Rome). NanoShare is an academic spin-off of Tor Vergata University: our laboratories, facilities, professors and researchers are spread out the Tor Vergata University, Sapienza University and in the Polo Tecnologico Tiburtino Invent plant. NanoShare mission is to create job & opportunities through innovation and technological transfer in the field of nanotechnology.

The starting date of our activity was in 2011, when MIUR, (through the Art 11 D.M. 08.08.2000) financially supported the implementation of the "STORAGE" project, devoted to the development innovative nanocomposites for Hydrogen storage at RT and at low pressure. Our revenue model is in the framework of the general category of the commerce. We prepare customized physical goods based on nanotechnology (nanomaterials, nanodevices, nanosensors and other nanosystems) and we offer R&D services on the large field of nanotechnology and nanocharacterizations.

For what concerns the manufacturing of nanoparticles, nanostructures and nanocomposites, contracts and R&D projects are mainly related to the following applications:

- Thermal management;
- Sensing (gas/vapour, stress/strain, electrochemical, bio- );
- Energy storage (H-storage, supercapacitors, electrodes for cells);
- Coatings (mechanical, conductive, antistatic, fluorescent) on rigid and flexible substrates (including textiles);
- Electron sources (cold cathodes, micro-propulsion systems, miniaturized X-sources);
- Biomedical applications (drug delivery, imaging, biocide, antifungal, bio-adhesives layers).

**NFFA EUROPE**

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NFFA-Europe sets out a platform to carry out comprehensive projects for multidisciplinary research at the nanoscale extending from synthesis to nano-characterisation to theory and numerical simulation.

NFFA-Europe is enhancing European industry competitiveness at two levels:

- Providing firms a simple, coordinated access to large scale facilities and instruments for proprietary work: this fee-based access is an ad-hoc approach, depending on the level of complexity of the expressed need.
- Giving industry opportunities to access for free the NFFA-Europe platform: this funded access requires the results of the project to be published.

Approved user projects will have access to the best suited instruments and support competences for performing the research, including access to analytical large scale facilities, theory and simulation and high-performance computing facilities.

The user access includes several "installations" and is coordinated through a single entry point portal allowing the user/client to build up a personalised access programme with an increasing return on science and innovation production.

NFFA-Europe is also doing its own research to address key bottlenecks of nanoscience research: nanostructure traceability, protocol reproducibility, in-operando nano-manipulation and analysis, and open data.

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**RENISHAW**

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Renishaw is one of the world's leading engineering and scientific technology companies, with expertise in precision measurement and healthcare. The company supplies products and services used in applications as diverse as jet engine and wind turbine manufacture, through to dentistry and brain surgery.

It is also a world leader in the field of additive manufacturing (also referred to as metal 3D printing), where it is the only UK business that designs and makes industrial machines which 'print' parts from metal powder.

The Renishaw Group currently has more than 70 offices in 35 countries, with around 4,000 employees worldwide. Around 2,600 people are employed within the UK where the company carries out the majority of its research and development and its manufacturing.





#### ZEISS GROUP

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ZEISS is divided up into the four segments Research & Quality Technology, Medical Technology, Vision Care/Consumer Products and Semiconductor Manufacturing Technology.

The ZEISS Group is represented in over 40 countries and has more than 50 sales and service locations, upwards of 30 manufacturing sites and about 25 research and development facilities around the globe. In fiscal year 2015/16, the company generated revenue approximating 4.9 billion euros with around 25,000 employees.

Founded in 1846 in Jena, the company is headquartered in Oberkochen, Germany. Carl Zeiss AG is the strategic management holding company that manages the ZEISS Group. The company is wholly owned by the Carl Zeiss Stiftung (Carl Zeiss Foundation).



#### WARRANT GROUP

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