Discovering hidden details.
ZEISS Xradia 610 and 620 Versa

Your 3D X-ray microscopes for faster sub-micron imaging of intact samples

Go beyond the limits of projection-based micro- and nano-CT systems: The Resolution at a Distance (RaDi) architecture enables high resolution 3D imaging of larger, denser objects including intact components and devices. Breakthrough innovations in source and optics technology provide higher X-ray flux to deliver faster tomography scans without compromising resolution and contrast. Use Xradia 610 and 620 Versa X-ray microscopes to non-destructively characterize the 3D microstructure of materials under controlled perturbations (in situ), and observe the evolution of structures over time (4D).

www.zeiss.com/620-versa
The printed version of NanoInnovation 2019 programme is updated at June 3rd.

All subsequent changes and updates will be available on the official website: www.nanoinnovation2019.eu

Please, refer to the website for the updated version of the official programme.
Welcome

NanolInnovation is promoted by NanolItaly Association and the Italian Association for Industrial Research (Airi), in cooperation with the organizing, steering and program committees and the contribution of all co-organizers, sponsors and partners of the event.

The previous three editions of NanolInnovation successfully finished with an average of more than 1100 participants from 10 different countries, and 300 speakers across about 60 thematic symposia and workshops and plenty of opportunities for cooperation. Most of the leading national public and private research players in nanotechnologies have contributed.

The fourth edition of NanolInnovation will be held from 11 to 14 June 2019, hosted again in the renaissance cloister by Sangallo at the Faculty of Civil and Industrial Engineering of “Sapienza” University of Rome. NanolInnovation is 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 fields of application.

The main goals of NanolInnovation 2019 are:
• Providing a meeting forum for academia, research, companies, and business operators
• Displaying state of the art developments in applied research on nanotechnologies
• Acting as showcase of the innovations in nanotechnologies and KETs
• Promoting knowledge transfer among different R&D players and sectors
• Offering capacity building and training opportunities for both scholars and professionals

The promotion of a Responsible Research and Innovation towards a sustainable development is one of the driving themes of the event. The programme of NanolInnovation 2019, strongly oriented toward application and market aspects of nanotechnology and KETs, foresees the presence of highly qualified speakers and organizations.

The 2019 program is enriched by training courses on the application of nano-related techniques and products in the engineering sector. NanolInnovation also offers to students, PhDs and young researchers an excellent and unique opportunity to follow the latest developments on nanotechnologies, and to meet leading players in the field.

A special thank to our institutional partners:
• ITA - Italian Trade Agency that made possible the participation of speakers coming from Iran, Israel, Poland, Russia, and South Korea, representatives of the main leading research, innovation and funding organizations of their countries;
• APRE - Agency for the Promotion of European Research that organized the networking event (B2B meetings and elevator pitch), open and free for all participants.

We would like also 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 appreciation goes to the companies and organizations sponsoring the event, and making possible to participate for free.

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

The NanolInnovation 2019 Organizing Committee
Steering Committee

Elvio MANTOVANI (chair)
• AIRI

Manuel CASALBONI
• Register of Engineers

Luciana DINI (vice chair)
• Nanolitaly Association

Sergio D’ALBERTO
• LFoundry

Piero BAGLIONI
• University of Florence

Massimo DEL MARRO
• Assing Spa

Luca BOARINO
• INRIM

Giuliana FAGGIO
• The “Mediterranean” University of Reggio Calabria

Andrea CANESCHI
• INSTM

Cristiana GABURRI
• Federchimica

Chiara CAPPELLI
• Scuola Normale Superiore

Sergio IAVICOLI
• INAIL

Maria Chiara CARROZZA
• Fondazione Don Gnocchi

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• Polytechnic of Turin
Giulio LAMEDICA
• Zeiss

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• University of Milano-Bicocca

Luca MARCHIOL
• University of Udine

Francesco MATTEUCCI
• Dhitech

Vittorio MORANDI
• CNR-IMM

Donatella PAOLINO
• University Magna Graecia of Catanzaro

Daniele PASSERI
• Sapienza University of Rome

Francesco PRIOLO
• Distretto Tecnologico Sicilia Micro e Nano Sistem

Georg PUCKER
• FBK

Maria Sabrina SARTO
• Sapienza University of Rome

Corrado SPINELLA
• CNR-DSFTM

Fulvio UGGERI
• Fondazione Bracco

Sergio VALERI
• University of Modena and Reggio Emilia
Programme Committee

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- Nanolitaly Association

Eugenio AMENDOLA
- CNR

Marzia BEDONI
- Fondazione Don Gnocchi

Francesco BIANCARDI
- ZEISS

Stefano BIANCO
- Polytechnic of Turin

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- INAIL

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- LFoundry

Sabrina CONOCI
- STMicroelectronics

Massimo CERRI
- Register of Engineers

Miriam COLOMBO
- University of Milano-Bicocca

Filippo D’ARPA
- Distretto Tecnologico Sicilia Micro e Nano Sistemi

Dario DELLA SALA
- ENEA

Roberta FANTONI
- ENEA

Luisa FIANDRA
- University of Milano-Bicocca
Honorary Committee

Vincenzo BARONE
• Scuola Normale Superiore di Pisa

Roberto BATTISTON
• University of Trento

Sergio GALBIATI
• LFoundry

Luigi NICOLAIS
• University of Naples "Federico II"

Emanuele RIMINI
• University of Catania
Open Infrastructure for Advanced TOmography and Microscopies (ATOM)


The aim of the project is the foundation of an open research infrastructure for materials and devices characterization, using advanced tomography and microscopy techniques.

The presence in the region of a cluster of scientific instrumentation operating at the nanoscale is one of the fundamental requirements for fast technological transfer in the field of nanotechnology. The ATOM project is jointly presented by the Department of Basic and Applied Sciences for Engineering of Rome Sapienza University, together with other institutions of the same University (CNIS - Research Center for Nanotechnologies applied to Engineering and the Department of Chemistry), and by the Rome Unit of the CNR Institute of Nanotechnology, carrying out cutting-edge research in the nanotechnology sector in the Lazio region, as well as in Italy and internationally.

The network that these research institutions intends to set up in order to develop the ATOM infrastructure will be joined, as strategic partners, by some of the most significant companies in the sector operating in the region, such as Leonardo Finmeccanica, ASSING, Rina-CSM, CRJSEL and ZEISS.

ATOM has been founded with the aim of investigating in detail the 3D structure of materials, devices, components and biological tissues, from the mesoscopic to the nanoscopic scale, through functional and dynamic nano-characterization.

The planned acquisition will provide users with innovative instrumental platforms with applications to the bio-medical, micro- and nano-electronics, cultural heritage and additive manufacturing sectors.

ATOM is conceived as a link between research and business, in virtuous synergy between public and private, to stimulate research and, at the same time, to develop the market linked to its technological applications.

The public sector, which will host the scientific instrumentation and will provide the staff for management and research development, aims to acquire state-of-the-art equipment to enhance nanotechnology skills and international competitiveness.

The private sector, which will guarantee the use of the equipment and, hence, the financial sustainability of ATOM, needs to position itself in the making of products in activity sectors of higher added value. It, thus, requires access to advanced characterization equipment, both to speed up production and to verify the quality of the products.

Regional, national and international companies and research institutions will have access to the services provided by ATOM through an online reservation platform, according to a specific Access Regulation for the Infrastructure.

AIRI
Associazione Italiana per la Ricerca Industriale

AIRI (Italian Association for Industrial Research) is a not-for-profit private organization, funded in 1974. Its mission is to promote industrial Research and Innovation and co-operation between the private and public sectors, to enhance the competitive position of the Country.

AIRI members are large industrial enterprises and SMEs, leading universities, public research institutions, technology clusters and financial organizations. The researchers of AIRI members represent about one third of those operating in the Country.

Strategic themes of AIRI activity include future industrial innovation, R&I policies and strategies, sustainability and social responsibility of technological innovation, dissemination and communication on R&I.

Key Enabling Technologies are amongst the main objectives of AIRI action. The AIRI/NanotecIT committee is a national focal point for promoting research and application of nanotechnologies and the other KETs in Italy.

Due to its broad representative base, AIRI has become a key opinion leader on R&I, advising national decision-makers for their initiatives to sustain industrial research and innovation.

During its lifetime, AIRI has built a long experience in monitoring scientific R&D trends and their applications, development of policies and tools for risk governance, analysis of ethical, legal and social impacts of R&I, organization of multi-stakeholder dialogues, exploitation & tech transfer, networking & dissemination of R&I outcomes.

Over the past 15 years AIRI has been very active in participating in European, national and regional cooperative projects, in particular in the NMBP and SWAFS areas of EU framework programmes, both as coordinator or partner.

AIRI has contributed to organize several workshops and dialogue events at national and EU level, showcasing situation and trends of technological innovation and its societal impact, that involved representatives of industry, research institutions and universities, research policy makers, civil society organizations.

www.airi.it - www.nanotec.it
The NanoItaly Association has been 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 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 enhance transfer of know-how, in order to allow the integration of ideas and knowledge between different areas of application.

We strongly believe that the encounter 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.

For more information and adhesion please refer to the Association website: www.associazione-nanoitaly.it.

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

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

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)

[www.associazione-nanoitaly.it](http://www.associazione-nanoitaly.it)
Sapienza University of Rome

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 Segré – 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 Costantinoples 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 competences 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 as 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/nanostuctured materials, engineerization 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.

The SNN-Lab has been realized also thanks to funds 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/

SNN Lab – CNIS
Sapienza University of Rome, P.le A. Moro n. 5 - 00185 Rome
Director: Antonio d’Alessandro (antonio.dalessandro@uniroma1.it) - Contact person: Prof. Marco Rossi (marco.rossi@uniroma1.it)
Laboratorio NEST of Scuola Normale Superiore is proud to present at NanoInnovation 2019 the NEST Prize for research in nanoscience, edition 2018. Sponsored by Rivoira, a company of Nippon Gas Group, the purpose of the NEST Prize is to promote and recognize the activity of young scientists (less than 35 years old) working in Italy on nanoscience field, represented by a submitted scientific publication in the last two years on a peer review international journal.

The prize is awarded by an evaluating committee composed by Directors and/or Coordinators of Laboratorio NEST of Scuola Normale Superiore (SNS), Istituto Nanoscienze of Consiglio Nazionale delle Ricerche (CNR) and Center for Nanotechnology Innovation of Istituto Italiano di Tecnologia (IIT) at the NEST Centre in Pisa.

The NEST Prize consists of € 5,000 Euros cash prize for the winner, a trophy and reimbursement of the fees, travel and living expenses to attend the conference in Rome. The winner will also receive the opportunity to present his/her research activity at the conference.

This year the prize will be dedicated in loving memory of Stefano Guiducci, a young and brilliant PhD student of the Scuola Normale Superiore at NEST, passed away prematurely in 2018. During the award ceremony, the edition 2019 of the NEST Prize will be finally presented.
Best Nano ex-Alumnus Sapienza

Thursday 13 June, 16:00 - 17:30

EX-ALUMNI Nanotechnology Engineering @ Sapienza

Nanolnovation 2019 is glad to announce the symposium “Ex-alumni Nanotechnology Engineering @ Sapienza”, supported by Sapienza University of Rome with the aim to promote and recognize the activity all around the world of ex-alumni of the Master Science program on Nanotechnology Engineering.

The symposium is part of the workshop “Nanotechnology @ Sapienza”, jointly organized with CNIS, that will be held on 13th June 2019 with the aim to create a forum and to gather scientific contributions on research activities on Nanotechnologies and Nanoscience in Sapienza University.

This oral session is reserved exclusively to the ex-alumni of the Master Science program in Nanotechnology Engineering of Sapienza University of Rome, regardless of age, degree year, professional profile and field of present activity.

All submissions will be evaluated by the Organizing Committee of Nanolnovation 2019 and selected for the oral or poster session. A partial financial support could be provided, on adequately motivated request, for travel and accommodation.

On the basis of submitted abstract and CV, the Organizing Committee will award the “Best Nano ex-Alumnus Sapienza Prize 2019. Sapienza will cover all the participation costs (travel and accommodation) of the winner.
Nanoinnovation 2019 is glad to renew the call for young researchers “NanoInnovation’s Got Talent” supported by “Bracco Foundation”.

The Call is reserved to young nanotechnology researchers who will have the possibility to present their research activity in an ad-hoc session dedicated to them. The Programme Committee of the conference will select the best proposals and the authors will illustrate their activity in front of a vast audience composed of industry representatives, scientists, experts, investors, entrepreneurs.

Research activities of interest:

- Industry 4.0, Additive, 3D Manufacturing
- Agri-Food
- Construction, Building & Restoration
- Electronics, micro and Nanosystems
- Energy & Environment
- Health & Nanomedicine
- Innovative and Smart Textiles
- Nano - Bio Related Products
- Nanofabrication
- Nano-Materials Based Innovation (including graphene and 2D materials beyond graphene)
- Nanoscale Characterization and Measurements
- Safety and Social Impacts (including nano-toxicology)
- Transport, Space & Aeronautics

NanoInnovation offers you the opportunity to present your work to a high-profiled audience.

The Fondazione Bracco will cover all the participation costs of selected contributions.
**Nanoinnovation’s Got Talent - Special Session - TT.VIII.E**

Chair: Fulvio UGGERI, R&S Director Bracco Imaging

**Thursday 13 June, 16:00 - 17:30**

1. Francesco BARBIERI, University of Siena
   *Effects of the food additive titanium dioxide on plant systems*

2. Tommaso CIVITARESE, Sapienza University of Rome
   *Analysis of peptide-chains and transport properties of polar amino-acids chains*

3. Francesca LIMOSANI, University of Rome Tor Vergata
   *Synthesis and Characterization of Novel Carbon Materials-Porphyrin Hybrid Architectures as Active Light Harvesting Systems*

4. Emanuele MAURI, Campus Bio-Medico
   *Smart functionalized nanogels as selective carriers for intracellular drug release*

5. Ilaria RAGAZZINI, University of Bologna
   *PANI/Au/Fe$_3$O$_4$ Nanocomposite Materials for High Performance Electrochemical Capacitors*

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**Nanoinnovation’s Got Talent - Special Poster Session - PO.II**

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

**Tuesday 11 – Friday 14 June, 09:00 - 18:00**

1. Gabriele MESSINA, Sapienza University of Rome & CNR-ISC
   *Novel Detectors for Terahertz Imaging based on High-Tc Superconductor Materials*

2. Alessandro TALONE, University of Roma Tre & CNR-ISIM
   *Ionic liquid dispersions of magnetic nanoparticles*

3. Eleonora MARETTI, University of Modena and Reggio Emilia
   *Novel engineered lipid-based nanoparticles for pulmonary tuberculosis inhalation therapy*

4. Clara GUIDO, University of Salento & CNR-NANOTECH
   *Non-viral gene delivery using polymeric NPs*

5. Maria Clara RIGHI, University of Modena and Reggio Emilia & CNR Institute of Nanoscience
   *2D Materials for friction reduction*
Thanks to the contribution of the Italian Trade Agency, an international delegation of experts from Israel, Poland, Russia, South Korea and Iran representatives of leading companies, research centers, funding organizations, networks and clusters active in research and innovation on nanotechnologies, will participate to the NanoInnovation Conference.

The list of experts and their profile is reported below. Anyone interested to have further information, get in contact or organize a meeting them, is invited to register to the networking event. During the conference, visit the ICE booth or ask to the registration desk.

### SOUTH KOREA

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<tbody>
<tr>
<td>1</td>
<td>Jin Young Kim</td>
<td>Assistant Professor</td>
<td>Seoul National University</td>
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<tr>
<td>2</td>
<td>Hyun Suk Jung</td>
<td>Professor</td>
<td>Sungkyunkwan University</td>
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<tr>
<td>TA</td>
<td>Jaehyang Lee</td>
<td>Trade Analyst</td>
<td>ICE SEOUL</td>
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### IRAN

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<td>1</td>
<td>Saeed Sima Sarkar Sarkar</td>
<td>Secretary General</td>
<td>Iran Nanotechnology Innovation Council (INIC)</td>
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<tr>
<td>2</td>
<td>Shahin Seyed Asan Saadat</td>
<td>CEO</td>
<td>NANO ARISA</td>
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<tr>
<td>3</td>
<td>Nader Naderi</td>
<td>CEO</td>
<td>Fannavarvan Nano Meghyas (FNFM)</td>
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<tr>
<td>4</td>
<td>Reza Saeidizadeh</td>
<td>Commercial Director</td>
<td>Nano Biofeedback (Padideh Zisti Nano)</td>
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<td>5</td>
<td>Amir Masoud Bozorgian</td>
<td>CEO</td>
<td>Zhinatex Co.</td>
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<tr>
<td>TA</td>
<td>Laleh Esfandiari</td>
<td>Trade Analyst</td>
<td>ICE TEHERAN</td>
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### RUSSIA

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<tr>
<td>1</td>
<td>Svyatoslav Amelin</td>
<td>Head of PR &amp; GR Department</td>
<td>Association for the development of clusters and technology parks of Russia</td>
</tr>
<tr>
<td>2</td>
<td>Peter Gorelkin</td>
<td>CEO</td>
<td>Medical Nanotechnology</td>
</tr>
<tr>
<td>3</td>
<td>Mikhail Mukhin</td>
<td>Deputy dean of the Faculty of Physics and Technology</td>
<td>ITMO University</td>
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<td>4</td>
<td>Denis Sidorov</td>
<td>Director</td>
<td>LLC “UNT-M”</td>
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<tr>
<td>5</td>
<td>Sergey Dubkov</td>
<td>PhD</td>
<td>National Research University of Electronic Technology (MIET),</td>
</tr>
<tr>
<td>6</td>
<td>Elizaveta Anastasova</td>
<td>Student, Engineer</td>
<td>SCAMT laboratory (Solution Chemistry of Advanced Materials and Technologies), ITMO University</td>
</tr>
<tr>
<td>7</td>
<td>Ivan Iorsh</td>
<td>Head of laboratory</td>
<td>ITMO University</td>
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<tr>
<td>TA</td>
<td>Alessandro Salacone</td>
<td>Trade Analyst</td>
<td>ICE MOSCOW</td>
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### POLAND

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<tr>
<td>1</td>
<td>Kinga KADZIOŁA-DRUGOŁĘDZCKA</td>
<td>PhD–Ricercatrice del Laboratorio di Biofisica Molecolare e Nanostruutturale</td>
<td>Bionanopark Ltd.</td>
</tr>
<tr>
<td>2</td>
<td>Wojciech Ratymirski</td>
<td>Partner/Board Member</td>
<td>VALUETECH SSEEED VC FUND</td>
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<tr>
<td>3</td>
<td>Michał Marchewka</td>
<td>Ricercatore presso Centro di Microelettronica e Nanotecnologie dell’Università di Rzeszow</td>
<td>The Podkarpackie Innovation Centre</td>
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### ISRAEL

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<td>1</td>
<td>Yovav</td>
<td>Technology and public funding</td>
<td>NOVA MEASURING INSTRUMENTS</td>
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<td>3</td>
<td>Avi</td>
<td>CTO</td>
<td>RACAH NANOFOUND</td>
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</table>
OPEN INFRASTRUCTURES FOR RESEARCH:
an innovative approach supported by Regione Lazio

Wednesday 12 June

co-organized with:

**TECHNICAL COMMITTEE**

Gian Paolo MANZELLA, Assessore alla Sviluppo Economico, Regione Lazio  
Paolo ORNELI, Lazio Innova, Presidente  
Corrado SPINELLA, Direttore CNR-DSFTM  
Andrea GHIGO, INFN  
Dario DELLA SALA, ENEA  
Maria Sabrina SARTO, Sapienza Università di Roma  
Maurizio CICOLANI, Leonardo

---

**09:00 - 10:30**

**JE.I.1**  
_NanoMicroFab - Infrastruttura aperta di ricerca per il supporto di aziende operanti nell’ambito della micro-nanoelettronica_

Chair: Guglielmo FORTUNATO, CNR-IMM

| **JE.I.1.1** | Alessandro PECORA, CNR-IMM  
**Overview del progetto NanoMicroFab** |
| **JE.I.1.2** | Claudio LANZIERI, Leonardo SPA  
**Technological solutions for GaN based Radars** |
| **JE.I.1.3** | Stefano COLONNA, CNR-ISM  
**Material characterization at NanoMicroFab** |
| **JE.I.1.4** | Ennio GIOVINE, CNR-IFN  
**Electron Beam Lithography a powerfull tool for research and industrial applications** |
| **JE.I.1.5** | Andrea REALE, University of Rome Tor Vergata  
**Printable electronis for energy, bioelectronics and sensing applications** |

*10:30 - 11:00 Coffee Break*
### JE.I.2

**MAIA – Materiali Avanzati in una Infrastruttura Aperta**

Chair: Dario DELLA SALA, ENEA

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<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Speaker(s)</th>
<th>Affiliation</th>
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</thead>
<tbody>
<tr>
<td>JE.I.2.1</td>
<td>Overview del progetto MAIA</td>
<td>Giuseppe BARBIERI</td>
<td>ENEA</td>
</tr>
<tr>
<td>JE.I.2.2</td>
<td>Design Alloy e Caratterizzazione Microstrutturale</td>
<td>Daniele MIRABILE GATTIA</td>
<td>ENEA</td>
</tr>
<tr>
<td>JE.I.2.3</td>
<td>Bio Materiali e stampa 3D di bioscaffolds</td>
<td>Antonio RINALDI</td>
<td>ENEA</td>
</tr>
<tr>
<td>JE.I.2.4</td>
<td>Indagini non distruttive in ambito aerospaziale, industriale e per il patrimonio artistico</td>
<td>Angelo TATI</td>
<td>ENEA</td>
</tr>
<tr>
<td>JE.I.2.5</td>
<td>Compositi particellari a matrice polimerica per applicazioni avanzate</td>
<td>Marzia PENTIMALLI</td>
<td>ENEA</td>
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**Monday 12 June**

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<td>11:00 - 12:30</td>
<td>JE.I.2</td>
<td>MAIA – Materiali Avanzati in una Infrastruttura Aperta</td>
<td>Giuseppe BARBIERI</td>
<td>ENEA</td>
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<td>12:30 - 14:00</td>
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<tr>
<td>14:00 - 15:30</td>
<td>JE.I.3</td>
<td>ATOM - Advanced Tomography and Microscopies</td>
<td>Luca LEUZZI</td>
<td>CNR NANOTEC, Roma</td>
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<td>15:30 - 16:00</td>
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**Wednesday 12 June**

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### Joint Events

**Wednesday 12 June**

<table>
<thead>
<tr>
<th>JE.I.4</th>
<th>16:00 - 17:30</th>
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<tbody>
<tr>
<td>LATINO – Laboratory in Advanced Technologies for INnOvation</td>
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<tr>
<td>Chair: Andrea GHIGO, Accelerator Division Head @ LNF-INFN</td>
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#### JE.I.4.1
Lucia SABBATINI, LNF-INFN  
*Technology transfer at INFN Frascati: Magnetic measurement Lab and Mechanical Integration Labs*

#### JE.I.4.2
Antonio FALONE, LNF-INFN  
*Radiofrequency and Vacuum Labs and LATINO management organization*

#### JE.I.4.3
in definition
ELECTRON MICROSCOPY School

Wednesday 12 June - Friday 14

Bridging organic and inorganic electron microscopy methods

The recent achievements of transmission electron microscopy, with particular attention to the cryo-microscopy aspects are illustrated by recognized experts in the field. The school, structured also for non-specialists, illustrates the basis of Transmission Electron Microscopy either in material science and in life sciences, describes the main methods providing information at atomic level both on hard and soft matter together with the main sample requirement and the relative preparation methods.

SCIENTIFIC COMMITTEE

Roberto BALBONI, CNR-IMM, Bologna
Elvio CARLINO, CNR-IMM, Lecce
Elisabetta FALCIERI, Università di Urbino
Giuseppe FAMILIARI, Sapienza, Università di Roma
Vittorio MORANDI, CNR-IMM, Bologna
Marco ROSSI, Sapienza, Università di Roma
Beatrice VALLONE, Sapienza, Università di Roma
Marco VITTORI ANTISARI, Associazione NanoItaly

Wednesday 12 June

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>09:00 - 10:30</td>
<td>Introduction to TEM in material science</td>
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<td>Laura LAZZARINI, CNR-IMEM, Parma</td>
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<tr>
<td>10:30 - 11:00</td>
<td>Coffee Break</td>
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<tr>
<td>11:00 - 12:30</td>
<td>TEM: A precious evergreen approach to Cell Biology and Pathology</td>
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<td></td>
<td>Elisabetta FALCIERI, University of Urbino Carlo Bo &amp; Italian Society of Microscopical Sciences</td>
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<tr>
<td>12:30 - 14:00</td>
<td>Light Lunch</td>
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<tr>
<td>14:00 - 15:30</td>
<td>Scanning Transmission Electron Microscopy imaging and spectroscopy</td>
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<td></td>
<td>Corrado SPINELLA, CNR, Catania</td>
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<tr>
<td>15:30 - 16:00</td>
<td>Coffee Break</td>
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<tr>
<td>16:00 - 17:30</td>
<td>Radiation Damage in Electron Microscopy and Low Dose Approaches</td>
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<td>Elvio CARLINO, CNR-IMM, Lecce</td>
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### Advanced TEM/STEM imaging methods

**Thursday 13 June**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker/Institution</th>
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<tbody>
<tr>
<td>09:00 - 10:30</td>
<td><strong>JE.II.B.1</strong> Phase contrast and high-resolution electron microscopy</td>
<td>Andrea PARISINI, CNR-IMM, Bologna</td>
</tr>
<tr>
<td>10:30 - 11:00</td>
<td>Coffee Break</td>
<td></td>
</tr>
<tr>
<td>11:00 - 12:30</td>
<td><strong>JE.II.B.2</strong> In line holography and Coherent Diffraction imaging in electron microscopy</td>
<td>Tatiana LATYCHEVSKAIA, Paul Scherrer Institute, Villigen, Switzerland</td>
</tr>
<tr>
<td>12:30 - 14:00</td>
<td>Light Lunch</td>
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<tr>
<td>14:00 - 15:30</td>
<td><strong>JE.II.B.3</strong> Correlative light-electron microscopy: From optical techniques to cryo-electron tomography</td>
<td>Roman POLISHCHUK, Telethon Institute of Genetics and Medicine (TIGEM)</td>
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<tr>
<td>15:30 - 16:00</td>
<td>Coffee Break</td>
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</tr>
<tr>
<td>16:00 - 17:30</td>
<td><strong>JE.II.B.4</strong> Electron Microscopy: from Qualitative to Quantitative</td>
<td>Gustaaf VAN TENDELOO, University of Antwerp, Belgium</td>
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### Sample preparation

**Friday, 14 June AM**

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<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker/Institution</th>
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<tbody>
<tr>
<td>09:00 - 10:30</td>
<td><strong>JE.II.C.1</strong> Sample preparation for TEM in Materials Science</td>
<td>Antonietta TAURINO, CNR-IMM, Lecce</td>
</tr>
<tr>
<td>10:30 - 11:00</td>
<td>Coffee Break</td>
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<tr>
<td>11:00 - 12:30</td>
<td><strong>JE.II.C.2</strong> TEM in LifeSciences: from sample preparation to data interpretation</td>
<td>Claudia TESTI, Sapienza University of Rome</td>
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<tr>
<td>12:30 - 14:00</td>
<td>Light Lunch</td>
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### Examples of Clinical Applications of TEM

**Friday, 14 June PM**

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<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>14:00 - 14:30</td>
<td><strong>JE.II.C.3</strong> Ultrastructure of human oocytes subjected to different protocols of assisted reproduction</td>
<td>Stefania Annarita NOTTOLA, Sapienza University of Rome</td>
</tr>
<tr>
<td>14:30 - 15:00</td>
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<tr>
<td>15:00 - 15:30</td>
<td><strong>JE.II.C.4</strong> Ultrastructure of human spermatozoa subjected to different protocols of assisted reproduction</td>
<td>Selenia MIGLIETTA, Sapienza University of Rome</td>
</tr>
<tr>
<td>15:30 - 16:00</td>
<td>Coffee Break</td>
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<tr>
<td>16:00 - 17:30</td>
<td><strong>JE.II.C.5</strong> Innovative TEM techniques for ultrastructural characterization of human colon cancer stem cell-derived spheroids and xenograft in a mouse model</td>
<td>Michela RELUCENTI, Sapienza University of Rome</td>
</tr>
</tbody>
</table>
Anche quest’anno, a seguire del successo del evento 2018, verrà proposta a NanoInnovation un workshop dedicato al tema del rapporto ricerca pubblica e privata, in un’ottica di valorizzazione della conoscenza.

La capacità di identificare e sfruttare competenze e conoscenze di rete, di gestire processi cooperativi rapidi e complessi, di promuovere processi inclusivi e multi-stakeholders per accrescere l’impatto sociale dell’innovazione, di aggregare competenze e conoscenze multidisciplinari, sono sempre più fattori determinanti per il successo della ricerca ed innovazione.

Con l’avvento della quarta rivoluzione industriale (modello 4.0), sono richiesti nuovi e più efficaci modelli per l’incontro tra domanda e offerta di tecnologia ed è necessario un cambiamento culturale che coinvolga il management della R&I, oltre a figure professionali dedicate, per sfruttare al meglio le opportunità offerte dallo sviluppo delle tecnologie abilitanti ed emergenti.

Durante le sessioni in cui si articolerà l’evento, alcuni tra i principali Enti di ricerca, Università e Grandi imprese nazionali, PMI, associazioni professionali nazionali e organismi territoriali si confronteranno su modelli ed esperienze relativi a:

- Formazione e competenze
- Trasferimento tecnologico
- Iniziative e approccio territoriali
- Creazione di spin off e start up
- Sostenibilità di processo e prodotto
- Principi e metodi per la open science
- Principi e metodi per la open innovation

### 09:00 - 10:30

#### JE.III.1

**Il Sistema della Ricerca Pubblica**

Chair: Sesto VITICOLI, Associazione Italiana per la Ricerca Industriale (Airi)

| JE.III.1.1 | Massimo TRONCI, President Team Quality, Sapienza University of Rome  
**Formazione e competenze nello scenario dell’Industria 4.0: il lavoro del futuro nel futuro del lavoro** |
| JE.III.1.2 | Cristina BATTAGLIA, Responsabile Valorizzazione della Ricerca, CNR  
**Il trasferimento di tecnologie e competenze alle imprese: l’esperienza CNR** |
| JE.III.1.3 | Oscar AMERIGHI, Technology Transfer Office, ENEA  
**La strategia di Knowledge Exchange ENEA: nuove iniziative per rafforzare i rapporti con il sistema industriale e il territorio** |
| JE.III.1.4 | Marta PETYX, INAIL  
**L’esperienza in INAIL dei bandi BRIC e dei Competence Centre** |
| JE.III.1.5 | Andrea CANESCHI, Direttore INSTM e Aniello CAMMARANO, Project Manager Materias srl  
**Un accordo pubblico/privato per sviluppare e sostenere il trasferimento tecnologico e la creazione di spin-off e start up, tramite Materias SrL, un acceleratore di idee e tecnologie** |
| JE.III.1.6 | Alessandro SOLURI, Co-Founder e Heber Raphael VERRI, General Manager Imagensys  
**Nuovo modello di trasferimento tecnologico: il caso Imagensys** |

10:30 - 11:00 Coffee Break
## Joint Events

### 11:00 - 12:30

**Il Sistema delle Imprese**

Chair: Sesto VITICOLI, Associazione Italiana per la Ricerca Industriale (Airi)

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<tr>
<th>Session</th>
<th>Title</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>JE.III.2.1</td>
<td>Trasferire le conoscenze: la normazione tecnica a supporto dell’innovazione</td>
<td>Elena MOCCHIO</td>
<td>Responsabile Divisione Innovazione, UNI, Ente Italiano di Normazione</td>
</tr>
<tr>
<td>JE.III.2.2</td>
<td>Open Innovation nel Gruppo Bracco: un Modello in Continua Evoluzione</td>
<td>Fulvio UGGERI</td>
<td>R&amp;D Director, Bracco IMAGING</td>
</tr>
<tr>
<td>JE.III.2.3</td>
<td>La ricerca industriale tra closed e open innovation: il caso di Cericol nello sviluppo di nuovi materiali e tecnologie</td>
<td>Giovanni BALDI</td>
<td>R&amp;D Director, Colorobbia Consulting</td>
</tr>
<tr>
<td>JE.III.2.4</td>
<td>Il processo di innovazione nelle PMI: casi di successo e best practices</td>
<td>Eleonora TANDOI</td>
<td>Innovation Specialist, Warrant Innovation Lab</td>
</tr>
<tr>
<td>JE.III.2.5</td>
<td>KET Infrastructure ed Open Innovation</td>
<td>Massimo BERSANI</td>
<td>Programme Manager, FBK</td>
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**12:30 - 14:00 Light Lunch**

### 14:00 - 15:30

**Ecosistemi e politica locale dell’innovazione - parte 1**

Moderatore & Opening: Guido FABIANI, Presidente del Comitato Direttivo del Centro Ricerche Economiche e Sociali Manlio Rossi-Doria (To be confirmed)

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<th>Session</th>
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<tbody>
<tr>
<td>JE.III.3.1</td>
<td>Innovazione e Trasferimento Tecnologico nella Regione Lazio</td>
<td>Lorenzo LO CASCIO</td>
<td>Regione Lazio, Sviluppo economico</td>
</tr>
<tr>
<td>JE.III.3.2</td>
<td>L’ecosistema territoriale di Grenoble</td>
<td>Narciso GAMBARCITI</td>
<td>Program Manager, Nanocharacterization Silicon Technology Department, CEA LETI, Grenoble, Francia</td>
</tr>
<tr>
<td>JE.III.3.3</td>
<td>Un modello di innovazione basata sulla ricerca</td>
<td>Michele MUCCINI</td>
<td>Presidente MIST E-R</td>
</tr>
<tr>
<td>JE.III.3.4</td>
<td>L’esperienza Open-Lab quale modello per l’open innovation dal punto di vista industriale</td>
<td>Onofrio Antonino CACIOPPO</td>
<td>R&amp;D Physical and Failure Analysis Lab Senior manager, Foundry a SMIC Company</td>
</tr>
<tr>
<td>JE.III.3.5</td>
<td>L’ecosistema di Catania e del territorio siciliano</td>
<td>Corrado SPINELLA</td>
<td>Director, CNR-DSFTM</td>
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**15:30 - 16:00 Coffee Break**
<table>
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<tr>
<th>Session</th>
<th>Title</th>
<th>Presenter(s)</th>
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</table>
| JE.III.4 | **Ecosistemi e politica locale dell’innovazione - parte 2**<br>**Moderatore & Opening:** Stefano FANTACONE, Direttore del CER - Centro Europa Ricerche (to be confirmed) | Maria Sabrina SARTO, Prorettore alle Infrastrutture e strumenti per la ricerca di eccellenza, Sapienza Università di Roma  
**L’infrastruttura di ricerca di Sapienza (IRS): politica di attuazione** (titolo da confermare) |
| JE.III.4.1 | **L’infrastruttura di ricerca di Sapienza (IRS): politica di attuazione** (titolo da confermare) | Francesco MATTEUCCI e Roberto DI GIANNANTONIO, Dhitech Scarl  
**Ecosistemi dell’innovazione regionale: il contesto della Regione Puglia ed Emilia Romagna** |
| JE.III.4.2 | **Ecosistemi dell’innovazione regionale: il contesto della Regione Puglia ed Emilia Romagna** | Roberto SABELLA, R&D Manager e VicePresidente Distretto Tecnologico Toscano Industria 4.0, ERICSSON  
**L’eco-sistema della ricerca di Ericsson in Toscana** |
| JE.III.4.3 | **L’eco-sistema della ricerca di Ericsson in Toscana** | Michela MICHELLI, Coordinatore Spazio Attivo Roma Casilina, Lazio Innova SpA  
**Open Innovation: L’esperienza del Lazio** |
| JE.III.4.4 | **Open Innovation: L’esperienza del Lazio** |                                                                                   |

**17:30 - 19:00 Salutation Cocktail**
NANOMATERIALI E NANOTECNOLOGIE
corsi per aggiornamento professionale

Tuesday 11 June - Friday 14 June

in collaborazione con

Il programma di aggiornamento sulle applicazioni dei nanomateriali e delle nanotecnologie in ambito ingegneristico si articola su 13 moduli di 4 ore per una durata totale di tre giorni e mezzo.

Il corso prevede una prima mezza giornata introduttiva (11 giugno, mattina), organizzata in collaborazione anche con INAIL, inclusiva di tematiche orizzontali quali terminologia e definizioni, caratterizzazione, certificazione e normazione, ed a seguire tre giornate dedicate ad applicazioni nei settori dell’ingegneria civile, industriale e dell’informazione.

Durante il corso verrà affrontato l’utilizzo delle nanotecnologie in molteplici settori applicativi, quali chimica & materiali, costruzioni & architettura, energia, tessili, ICT, elettronica, fotonica e opto-elettronica.

Ogni giornata, basata su lezioni frontali da 45 minuti, si articola su quattro moduli della durata di un’ora e mezza ciascuno.

La struttura generale del corso è così articolata:

- martedì 11 giugno 2019
  • Nanomateriali e nanotecnologie: opportunità e rischi
- mercoledì 12 giugno 2019
  • Nanotecnologie nell’ingegneria civile e nell’architettura
- giovedì 13 giugno 2019
  • Nanotecnologie nell’ingegneria industriale
- venerdì 14 giugno 2019
  • Nanotecnologie nell’ingegneria dell’Informazione

A seguire i dettagli giornalieri, pubblicati a breve anche sulla pagina dedicata del sito ufficiale dell’Ordine degli Ingegneri della provincia di Roma (www.ording.roma.it/formazione/seminari).

I singoli corsi saranno tenuti da esperti provenienti sia dal settore accademico sia da quello industriale e potranno accogliere una partecipazione massima di 70 partecipanti.

La partecipazione al corso è libera e gratuita, previa iscrizione al link http://www.nanoinnovation.it/CFP/application e varrà l’ordine di prenotazione fino al raggiungimento del numero massimo di partecipanti.

Per i soggetti interessati, il rilascio della certificazione della partecipazione quale riconoscimento di crediti formativi professionali (CFP) verrà gestito direttamente dalle strutture dell’Ordine degli Ingegneri della Provincia di Roma; in questo caso è obbligatoria la registrazione sul sito ufficiale dell’Ordine degli Ingegneri della provincia di Roma (www.ording.roma.it/formazione/seminari)

Comitato Organizzativo

Chairs: Manuel CASALBONI, Ordine degli Ingegneri, Vice-Presidente
Marco ROSSI, Sapienza Università di Roma, Presidente del Consiglio d’Area Didattica in Ingegneria delle Nanotecnologie

Fabio BOCCHUNI, INAIL
Massimo CERRI, Ordine degli Ingegneri
Francesco FULVI, Ordine degli Ingegneri
Francesco MARINUZZI, Ordine degli Ingegneri
Francesco MARRA, Sapienza Università di Roma
# Nanomateriali e nanotecnologie: opportunità e rischi

**08:45 - 09:00**

**Saluti Istituzionali**
Ing. Carla CAPPIELLO, Presidente dell’Ordine degli Ingegneri della Provincia di Roma  
Ing. Francesco MARINUZZI, Consigliere dell’Ordine degli Ingegneri della Provincia di Roma

**09:00 - 09:45**

**JE.IV.1**

**I nanomateriali: rischi e vantaggi**
Prof.ssa Luciana Dini, Sapienza Università di Roma

**09:45 - 10:30**

**JE.IV.2**

**La gestione dei nanomateriali nell’ambito dei regolamenti europei sui prodotti chimici**
Dott.ssa Maria ALESSANDRELLI, Istituto Superiore di Sanità - ISS

**10:30 - 11:00** Coffee Break

**11:00 - 11:45**

**JE.IV.3**

**Potenziali effetti sulla salute dei lavoratori nell’esposizione a nanoparticelle e relative metodologie di studio**
Dott.ssa Cinzia Lucia URSINI, Istituto nazionale Assicurazione Infortuni sul Lavoro - INAIL

**11:45 - 12:30**

**JE.IV.4**

**Metodologie di analisi, misura e caratterizzazione dell’esposizione a nanomateriali aerodispersi nei luoghi di lavoro**
Dott. Fabio BOCCHUNI, Dott. Riccardo FERRANTE, Istituto nazionale Assicurazione Infortuni sul Lavoro - INAIL

**12:30 - 14:00** Light Lunch
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<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Speaker/Institution</th>
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<tbody>
<tr>
<td>08:45 - 09:00</td>
<td>JE.IV.II.0</td>
<td>Saluti Istituzionali</td>
<td>Ing. Carla CAPPIELLO, Presidente dell’Ordine degli Ingegneri della Provincia di Roma, Ing. Francesco MARINUZZI, Consigliere dell’Ordine degli Ingegneri della Provincia di Roma</td>
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<tr>
<td>09:00 - 09:45</td>
<td>JE.IV.II.1</td>
<td>Introduzione alle nanotecnologie e ai nanomateriali nell’ ingegneria civile e nell’architettura - parte I</td>
<td>Prof. Marco CASINI, Sapienza Università di Roma</td>
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<td>09:45 - 10:30</td>
<td>JE.IV.II.2</td>
<td>Introduzione alle nanotecnologie e ai nanomateriali nell’ingegneria civile e nell’architettura - parte II</td>
<td>Prof. Marco CASINI, Sapienza Università di Roma</td>
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<td>10:30 - 10:45</td>
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<td>10:30 - 11:00 Coffe Break</td>
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<td>10:45 - 11:45</td>
<td>JE.IV.II.3</td>
<td>Nanomateriali per l’edilizia</td>
<td>Dott.ssa Francesca PETRONELLA, CNR-IPCF</td>
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<td>11:45 - 12:30</td>
<td>JE.IV.II.4</td>
<td>Compound polimerici a base grafenica per pavimentazioni stradali</td>
<td>Ing. Loretta VENTURINI, Ph.D., Iterchimica Srl, Suisio, Bergamo</td>
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<td>12:30 - 14:00</td>
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<td>12:30 - 14:00 Light Lunch</td>
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<td>14:00 - 14:45</td>
<td>JE.IV.II.5</td>
<td>Coating e vernici nanostrutturate</td>
<td>Prof. Marco CASINI, Sapienza Università di Roma</td>
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<td>14:45 - 15:30</td>
<td>JE.IV.II.6</td>
<td>Isolanti termici nanostrutturati</td>
<td>Dott. Alberto DONELLI, AMA Composites, Campogalliano, Modena</td>
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<td>15:30 - 16:00</td>
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<td>15:30 - 16:00 Coffee Break</td>
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<td>16:00 - 16:45</td>
<td>JE.IV.II.7</td>
<td>Self cleaning e altre applicazioni di superidrofonicità nell’ingegneria civile e architettura</td>
<td>Prof. Simone MELONI, Ph.D., Sapienza Università di Roma</td>
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<td>16:45 - 17:30</td>
<td>JE.IV.II.8</td>
<td>Nanodispositivi per il fotovoltaico integrato</td>
<td>Dott. Francesco MATTEUCCI, CNR NANOTEC, Lecce</td>
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<td>08:45 - 09:00</td>
<td><strong>Saluti Istituzionali</strong>&lt;br&gt;Ing. Carla CAPPIELLO, Presidente dell’Ordine degli Ingegneri della Provincia di Roma&lt;br&gt;Ing. Francesco MARINUZZI, Consigliere dell’Ordine degli Ingegneri della Provincia di Roma</td>
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<td>09:00 - 09:45</td>
<td><strong>Introduzione alle nanotecnologie e ai nanomateriali nell’ingegneria industriale - parte I</strong>&lt;br&gt;Prof. Francesco MARRA, Ph.D., Sapienza Università di Roma</td>
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<td><strong>Introduzione alle nanotecnologie e ai nanomateriali nell’ingegneria industriale - parte II</strong>&lt;br&gt;Prof. Giovanni PULCI, Ph.D., Sapienza Università di Roma</td>
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<td>10:30 - 11:00</td>
<td><strong>Coffe Break</strong></td>
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<td>11:00 - 11:45</td>
<td><strong>Nanotecnologie per l’efficientamento del Fotovoltaico</strong>&lt;br&gt;Ing. Renato NOBILI</td>
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<td>11:45 - 12:30</td>
<td><strong>Economia circolare verso le nanotecnologie: nuovi prodotti da batterie a fine vita</strong>&lt;br&gt;Prof.ssa Francesca PAGNANELLI, Sapienza Università di Roma</td>
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<td>12:30 - 14:00</td>
<td><strong>Light Lunch</strong></td>
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<td>14:00 - 14:45</td>
<td><strong>Nuovi materiali e nanotecnologie per la progettazione e realizzazione della prossima generazione di motori elettrici</strong>&lt;br&gt;Prof. Enzo CHIRICOZZI, Prof. Marco VILLANI, Università degli Studi dell’Aquila</td>
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<td>14:45 - 15:30</td>
<td><strong>Dispositivi magnetici per l’archiviazione dei dati</strong>&lt;br&gt;Dott. Gaspare VARVARO, ISM-CNR, Roma</td>
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<td>15:30 - 16:00</td>
<td><strong>Coffee Break</strong></td>
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<td>16:00 - 16:45</td>
<td><strong>Self cleaning e altre applicazioni di superidrofonicità nei settore dell’ingegneria Industriale</strong>&lt;br&gt;Prof. Carlo Masimo CASCIOLA, Ph.D., Sapienza Università di Roma</td>
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<td>16:45 - 17:30</td>
<td><strong>Materiali nanostrutturali ad elevate prestazioni meccaniche ottenuti per processi di lavorazione meccanica</strong>&lt;br&gt;Ing. Francesco SINTONI, Associazione dell’Arma Aeronautica, Sezione Roma2-Luigi Broglio</td>
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| 08:45 - 09:00 | **Saluti Istituzionali**  
Ing. Carla CAPPIELO, Presidente dell’Ordine degli Ingegneri della Provincia di Roma  
Ing. Francesco MARINUZZI, Consigliere dell’Ordine degli Ingegneri della Provincia di Roma |
| 09:00 - 09:45 | **L’impatto sui dispositivi e sugli utenti delle nanotecnologie in Microelettronica**  
Ing. Massimo PIZZARI, Responsabile Sistemi Informativi di DEKRA Italia |
| 09:45 - 10:30 | **Nanotecnologie per l’industria dei semiconduttori – parte I**  
Dott. Marco RENZELLI, LFoundry a SMIC Company, Avezzano |
| 10:30 - 11:00 | Coffe Break |
| 11:00 - 11:45 | **Nanotecnologie per l’industria dei semiconduttori – parte II**  
Dott. Marco RENZELLI, LFoundry a SMIC Company, Avezzano |
| 11:45 - 12:30 | **Nuove Molecole per l’Elettronica Organica**  
Prof. Leonardo MATTIELLO, Ph.D. Dip. SBAI & CNIS, Sapienza Università di Roma |
| 12:30 - 14:00 | Light Lunch |
| 14:00 - 14:45 | **Le nanotecnologie per i display monitor**  
Ing. Mario D’ETTORRE, Presidente della Commissione Data Center - Ordine degli Ingegneri della Provincia di Roma |
| 14:45 - 15:30 | **Nanostruutturazione di superfici di semiconduttore tramite fascio ionico**  
Dott.ssa Rossana DELL’ANNA, FBK – Fondazione Bruno Kessler, Trento |
| 15:30 - 16:00 | Coffe Break |
| 16:00 - 16:45 | **Nanomateriali per l'optoelettronica - parte I**  
Prof. Antonio d’ALESSANDRO, Direttore CNIS, Sapienza University of Rome |
| 16:45 - 17:30 | **Nanomateriali per l'optoelettronica - parte II**  
Prof. Antonio d’ALESSANDRO, Direttore CNIS, Sapienza Università di Roma |
In the “European Strategy for Key Enabling Technologies”, the EU has defined six Key Enabling Technologies (KET):

(1) micro- and nanoelectronics, (2) nanotechnology, (3) industrial biotechnology, (4) advanced materials, (5) photonics and (6) advanced manufacturing technologies, with a strong and well documented global impact. Most of these KETs require state-of-the-art facilities and competence on micro and nano-fabrication, a key area of science and technology that is radically changing our world. The aim of this one-day school is to give a high-level introduction and overview on the mandatory building blocks of the silicon-based micro- and nano-fabrication technologies. The course is dedicated to Master degree and Ph.D students, as well as to scientists working in the wide field of micro- and nano-technology. In the final part of the course examples of application of these technologies in global semiconductor companies will be presented.

The school is organized by It-fab (http://itfab.bo.imm.cnr.it/), the Italian network for Micro and Nano Fabrication research infrastructures, an initiative that aims to (i) establish harmonized rules, for clean room management and access policies, IP rules, external costs and reporting, (ii) harmonize and share design and simulation software, service contracts, management of professional services, (iii) define joint best practices for reciprocal support and backup, complementarities, standardization of clean room practices, interoperability and data exchange formats and (iv) define common information system for know-how, projects and equipment databases. Members of It-fab are CNR-DSFTM (IMM and Nanotec Institutes), PoliFAB from Politecnico di Milano, FBK-CMM and Fondazione Inphotec. It-fab is partner of the EuroNanoLab initiative (http://euronanolab.com)
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<tr>
<th>Time</th>
<th>Session</th>
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<th>Institution</th>
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<tbody>
<tr>
<td>09:00 - 10:30</td>
<td><strong>Introduction</strong></td>
<td>Lorenza FERRARIO</td>
<td>FBK</td>
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<td><strong>Deposition techniques</strong></td>
<td>Riccardo BERTACCO</td>
<td>PoliFAB</td>
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<td>10:30 - 11:00</td>
<td>10:30 - 11:00 Coffee Break</td>
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<tr>
<td>11:00 - 12:30</td>
<td><strong>Litography</strong></td>
<td>Alessandro NOTTOLA</td>
<td>INPHOTEC</td>
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<td><strong>Etching</strong></td>
<td>Fulvio MANCARELLA</td>
<td>CNR</td>
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<td>12:30 - 14:00</td>
<td>12:30 - 14:00 Light Lunch</td>
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<tr>
<td>14:00 - 15:30</td>
<td><strong>Nanoscale characterization and metrology</strong></td>
<td>Federico FERRARESE LUPI</td>
<td>INRIM</td>
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<td><strong>Test structures and electrical characterization</strong></td>
<td>Francesco FICORELLA</td>
<td>FBK</td>
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<td>15:30 - 16:00</td>
<td>15:30 - 16:00 Coffee Break</td>
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<td>16:00 - 17:30</td>
<td><strong>Basic concepts of packaging</strong></td>
<td>Giovan Battista PREVE</td>
<td>INPHOTEC</td>
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<td><strong>The MEMS Evolution: Materials, Sensors, and Actuators</strong></td>
<td>Luca ZANOTTI</td>
<td>STMicroelectronics</td>
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<td><strong>CMOS Image Sensors Technology</strong></td>
<td>Giovanni DE AMICIS</td>
<td>LFoundry</td>
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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 YOUR GREAT CHANCE!

The collaboration between NanoInnovation and APRE- Italian Agency for the Promotion of European Research - is renewed for the fourth consecutive year. On the 12th of June NanoInnovation 2019 conference will offer different chances for presenting your ideas and meet potential research and business partners.

The networking event is the best way to meet potential cooperation partners during face-to-face meetings. People have the possibility to meet each other with a pre-set schedule (around 20 minutes for each meeting) for sharing ideas and experience, building connection, exchanging information, and evaluating new opportunities of collaboration at all levels. A wide spectrum of businessmen, entrepreneurs, researchers and innovators from Europe and beyond the network event will participate at the event, looking for new business and cooperation opportunities: do not miss this great chance!

The networking event is free for the conference participants.

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

Contacts: Matteo Sabini (sabini@apre.it), Serena Borgna (borgna@apre.it) and staff@apre.it

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

- INDUSTRY 4.0, ADDITIVE & 3D MANUFACTURING
- AGRI-FOOD
- CONSTRUCTION, BUILDING & RESTORATION
- ELECTRONICS, MICRO AND NANOSYSTEMS
- ENERGY & ENVIRONMENT
- HEALTH & NANOMEDICINE
- INNOVATIVE AND SMART TEXTILES
- NANO-BIO RELATED PRODUCTS
- NANOFABRICATION
- NANO-MATERIALS BASED INNOVATION (including graphene and 2D materials beyond graphene)
- NANOSCALE CHARACTERIZATION AND MEASUREMENTS
- SAFETY AND SOCIAL IMPACTS (including nano-toxicology)
- TRANSPORT, SPACE & AERONAUTICS

Boaga Library Tuesday 12 June, 09:30 to 12:30 and from 14:30 - 17:30
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<tr>
<th>Time</th>
<th>Event Type</th>
<th>Session Title</th>
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<tr>
<td>09:00</td>
<td>Joint Event</td>
<td>Nanomateriali e nanotecnologie: rischi e opportunità (JE.IV.I.0-2)</td>
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<td>11:00</td>
<td>Joint Event</td>
<td>Nanomateriali e nanotecnologie: rischi e opportunità (JE.IV.I.3-4)</td>
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<td>11:00</td>
<td>Satellite Event</td>
<td>Tecnologie abilitanti fondamentali e Infrastrutture di Ricerca ad accesso aperto per il trasferimento tecnologico della Regione Lazio. Organizzazione, gestione e impatti territoriali.</td>
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<td>12:30</td>
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<td>14:00</td>
<td>Opening Sessions</td>
<td>Institutional and Organization Greetings</td>
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<td>14:40</td>
<td>Opening Sessions</td>
<td>Nanoevent and Nanoprize</td>
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<tr>
<td>15:00</td>
<td>Plenary Session I</td>
<td>Advances in Nanotechnology and Nanosciences</td>
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<td>17:00</td>
<td>Plenary Session II</td>
<td>Innovation at the Nanoscale: Funding Strategies and Opportunities for Industry and Research World</td>
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<td>19:00</td>
<td>Welcome Cocktail</td>
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<td>09:00 - 10:30</td>
<td>Joint Events</td>
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<td>JE.I Open Infrastructures for Research: an innovative approach supported by Regione Lazio Room 7</td>
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<td></td>
<td>JE.II.A Electron Microscopy School (JE.II.A.1) Frescoes Room</td>
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<td>JE.IV.II Nanotecnologie nell’ ingegneria civile e nell’architettura (JE.IV.II.0-2) Room 15</td>
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<td>JE.V School on Silicon Micro- and Nano-Technologies Room 6</td>
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<td>TS.I Thematic Symposia, also part of Workshop (Multitrack Session)</td>
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<td>TS.I.A 3D micro and nano fabrication and characterization Cloister Room</td>
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<td>TS.I.B Innovative Micro and Nanotechnologies for Advanced Driver Assistance Systems (ADAS) Room 1</td>
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<td>TS.I.C Innovation in Environmental Nanotechnology Room 5</td>
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<td>TS.I.D Round Table: Funding strategies and policies for technology parks and nanotechnology centres Room 8</td>
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<td>Satellite Events</td>
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<td>SE.II Advances in surface electrical characterization at the nanoscale, Sponsored by Park Systems Room 17</td>
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<td>Networking</td>
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<td>B2B Meetings Boaga Library</td>
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<td>10:30</td>
<td>Coffee Break                                                          Cloister Area</td>
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<td>JE.II.A Electron Microscopy School (JE.II.A.2) Frescoes Room</td>
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<td>JE.IV.II Nanotecnologie nell’ ingegneria civile e nell’architettura (JE.IV.II.3-4) Room 15</td>
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<td>JE.V School on Silicon Micro- and Nano-Technologies Room 6</td>
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<td>11:00 - 12:30</td>
<td>TS.II Thematic Symposia, also part of Workshop (Multitrack Session)</td>
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<td>TS.II.A Current Nano perspectives in the Agri-Food sector, part of the Workshop WS.I AgriNano Techniques Room 1</td>
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<td>TS.II.B Environmental Nanotechnology Room 5</td>
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<td>TS.II.C WinSiC4AP - A European project to compete in the SiC global market Cloister Room</td>
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<td>TS.II.D Towards Exascale Supercomputers for Nanotechnology Room 10</td>
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<td>TS.II.E Photonics and Quantum Optics - part I Room 9</td>
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<td>TS.II.F Additive Manufacturing: New processes in materials production and holistic quality inspection from powder to product Room 8</td>
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updates on: www.nanoinnovation2019.eu
 Joint Events

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<tr>
<td>14:00</td>
<td>Open Infrastructures for Research: an innovative approach supported by Regione Lazio</td>
<td>Room 7</td>
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<tr>
<td>14:00</td>
<td>Electron Microscopy School (JE.II.A.3)</td>
<td>Frescoes Room</td>
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<tr>
<td>14:00</td>
<td>Nanotecnologie nell’ ingegneria civile e nell’architettura (JE.IV.II.5-6)</td>
<td>Room 15</td>
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<tr>
<td>14:00</td>
<td>School on Silicon Micro- and Nano-Technologies</td>
<td>Room 6</td>
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TS.III
Thematic Symposia, also part of WorkShop (Multitrack Session)

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<tr>
<td>15:30</td>
<td>Nanomaterials and Plant Nutrition, part of the Workshop WS.I AgriNano Techniques</td>
<td>Room 1</td>
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<tr>
<td>15:30</td>
<td>Beyond the lithium-ion battery - part 1</td>
<td>Room 8</td>
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<tr>
<td>15:30</td>
<td>NANOMEDICINE: applications from bench to bedside - part 1</td>
<td>Cloister Room</td>
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<td>15:30</td>
<td>Tools for the 3D world</td>
<td>Room 5</td>
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<tr>
<td>15:30</td>
<td>Photonics and quantum optics - part 2</td>
<td>Room 10</td>
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<tr>
<td>15:30</td>
<td>Advances in surface electrical characterization at the nanoscale, Sponsored by Park Systems</td>
<td>Room 17</td>
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Networking

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
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<tbody>
<tr>
<td>15:30</td>
<td>B2B Meetings</td>
<td>Boaga Library</td>
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</tbody>
</table>

Joint Event

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:00</td>
<td>Open Infrastructures for Research: an innovative approach supported by Regione Lazio</td>
<td>Room 7</td>
</tr>
<tr>
<td>16:00</td>
<td>Electron Microscopy School (JE.II.A.4)</td>
<td>Frescoes Room</td>
</tr>
<tr>
<td>16:00</td>
<td>Nanotecnologie nell’ ingegneria civile e nell’architettura (JE.IV.II.7-8)</td>
<td>Room 15</td>
</tr>
<tr>
<td>16:00</td>
<td>School on Silicon Micro- and Nano-Technologies</td>
<td>Room 6</td>
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</tbody>
</table>

TS.IV
Thematic Symposia, also part of WorkShop (Multitrack Session)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
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</thead>
<tbody>
<tr>
<td>16:00</td>
<td>AgriNano Techniques Research Pathways, part of the Workshop WS.I AgriNano Techniques</td>
<td>Room 1</td>
</tr>
<tr>
<td>16:00</td>
<td>Beyond the lithium-ion battery - part 2</td>
<td>Room 8</td>
</tr>
<tr>
<td>16:00</td>
<td>NANOMEDICINE: applications from bench to bedside - part 2</td>
<td>Cloister Room</td>
</tr>
<tr>
<td>16:00</td>
<td>Industria 4.0 e nuovi materiali: strategie, training e opportunità di finanziamento</td>
<td>Room 5</td>
</tr>
<tr>
<td>16:00</td>
<td>Nanotecnologie in Cosmesi</td>
<td>Room 10</td>
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Networking

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<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>16:00</td>
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<td>Boaga Library</td>
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<tr>
<td>Time</td>
<td>Events</td>
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</table>
| 09:00 - 10:30 | **Joint Events**<br>JE.II.B Electron Microscopy School (JE.II.B.1)  <br>JE.IV.III Nanotecnologie nell’ingegneria industriale (JE.IV.III.0-2)  <br>**TS.V**<br>**Thematic Symposia, also part of Workshop (Multitrack Session)**<br>TS.V.A Nanomaterials Enhanced membranes and Processes for water and energy challenges  <br>TS.V.B Research on Nanotechnologies @ CNIS - part 1, part of the workshop WS.II on "Nanotechnology @Sapienza"
|          | **Satellite Events**<br>SE.III New perspectives in nano-analysis with correlative 3D Raman imaging – workshop and hands-on session, Supported by LOT-QD/WITEC |
|          | **Coffee Break**                                                                                                                       |
| 10:30    | **Joint Event**<br>JE.II.B Electron Microscopy School (JE.II.B.2)  <br>JE.IV.III Nanotecnologie nell’ingegneria industriale (JE.IV.III.3-4)  <br>**TS.VI**<br>**Thematic Symposia, also part of Workshop (Multitrack Session)**<br>TS.VI.A Advanced membranes nanomaterials for CO₂ separation  <br>TS.VI.B Risk governance and regulatory preparedness: managing risks and risk perception of nanomaterials - part 2, part of the workshop WS.V on "Solutions to address safety and regulatory aspects of nanomaterials"  <br>TS.VI.C Research on Nanotechnologies @ CNIS - part 2, part of the workshop WS.II on "Nanotechnology @Sapienza"  <br>TS.VI.D Multiscale dimensional approaches for multifunctional coatings fabrication on additive manufactured, metallic components  <br>TS.VI.E Synthesis and characterization of 2D nanomaterial, part of the workshop WS.III on "Graphene and 2D Materials, progresses and challenges"
|          | **Satellite Events**<br>SE.III New perspectives in nano-analysis with correlative 3D Raman imaging – workshop and hands-on session, Supported by LOT-QD/WITEC |
|          | **Lunch Break**                                                                                                                        |
| 12:30    | **Joint Event**<br>JE.II.B Electron Microscopy School (JE.II.B.3)  <br>JE.IV.III Nanotecnologie nell’ingegneria industriale (JE.IV.III.3-4)  <br>**TS.VI**<br>**Thematic Symposia, also part of Workshop (Multitrack Session)**<br>TS.VI.A Advanced membranes nanomaterials for CO₂ separation  <br>TS.VI.B Risk governance and regulatory preparedness: managing risks and risk perception of nanomaterials - part 2, part of the workshop WS.V on "Solutions to address safety and regulatory aspects of nanomaterials"  <br>TS.VI.C Research on Nanotechnologies @ CNIS - part 2, part of the workshop WS.II on "Nanotechnology @Sapienza"  <br>TS.VI.D Multiscale dimensional approaches for multifunctional coatings fabrication on additive manufactured, metallic components  <br>TS.VI.E Synthesis and characterization of 2D nanomaterial, part of the workshop WS.III on "Graphene and 2D Materials, progresses and challenges"
<p>|          | <strong>Satellite Events</strong>&lt;br&gt;SE.III New perspectives in nano-analysis with correlative 3D Raman imaging – workshop and hands-on session, Supported by LOT-QD/WITEC |
|          | <strong>Lunch Break</strong>                                                                                                                        |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>14:00 - 15:30</td>
<td>JE.II.B Electron Microscopy School (JE.II.B.3)</td>
<td>Frescoes Room</td>
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<tr>
<td></td>
<td>JE.IV.III Nanotecnologie nell’ingegneria industriale (JE.IV.III.5-6)</td>
<td>Room 15</td>
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<td></td>
<td>TS.VII.A Sustainable materials for CO₂ photo/electrocatalytic valorization</td>
<td>Room 6</td>
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<tr>
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<td>TS.VII.B Structural characterization techniques for nanomaterials and applications</td>
<td>Room 5</td>
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<td>TS.VII.C Nanotechnologies and Key Enabling Technologies in innovation processes: the NanoKey project for risk prevention in the workplace, part of the workshop WS.V on &quot;Solutions to address safety and regulatory aspects of nanomaterials&quot;</td>
<td>Room 7</td>
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<td>TS.VII.D Research on Nanotechnologies @ CNIS - part 3</td>
<td>Room 1</td>
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<tr>
<td></td>
<td>TS.VII.E New nanoscale drug delivery systems: recent advances in nanotheranostic</td>
<td>Room 8</td>
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<td>TS.VII.F 2D nanomaterial for energy harvesting and storage application, part of the workshop WS.III on &quot;Graphene and 2D Materials, progresses and challenges&quot;</td>
<td>Cloister Room</td>
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<td>15:30 - 16:00</td>
<td>Coffee Break</td>
<td>Cloister Area</td>
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<tr>
<td>16:00 - 17:30</td>
<td>JE.II.B Electron Microscopy School (JE.II.B.4)</td>
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<td>JE.IV.III Nanotecnologie nell’ingegneria civile e nell’architettura (JE.IV.III.7-8)</td>
<td>Room 15</td>
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<tr>
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<td>TS.VIII.A Technological integration and processing of 2D nanomaterials, part of the workshop WS.III on &quot;Graphene and 2D Materials, progresses and challenges&quot;</td>
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<td>TS.VIII.B Innovative nanomaterials for cultural heritage, part of the workshop WS.IV on &quot;Nanotechnologies and nanomaterials for cultural heritage&quot;</td>
<td>Room 7</td>
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<td>TS.VIII.C Biosafety of nanomaterials, part of the workshop WS.V on &quot;Solutions to address safety and regulatory aspects of nanomaterials&quot;</td>
<td>Room 8</td>
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<td>TS.VIII.D Ex-alumni Nanotechnology Engineering @ Sapienza</td>
<td>Room 1</td>
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<tr>
<td></td>
<td>TS.VIII.E Nanoinnovation’s Got Talent</td>
<td>Room 5</td>
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</table>
# PLAN overview 14 June

<table>
<thead>
<tr>
<th>Time</th>
<th>Joint Events</th>
<th>Satellite Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00 - 10:30</td>
<td>J.E.II.D Electron Microscopy School (J.E.II.D.1) in Room 7</td>
<td>J.E.III Open Innovation &amp; Open Science: la situazione italiana in Frescoes Room</td>
</tr>
<tr>
<td></td>
<td>J.E.IV Nanotecnologie nell’ingegneria dell’informazione (J.E.IV.0-2) in Room 15</td>
<td>J.E.IV Nanotecnologie nell’ingegneria dell’informazione (J.E.IV.3-4) in Room 15</td>
</tr>
<tr>
<td></td>
<td>TS.IX.A Diagnostics and nanotechnologies for cultural heritage, part of the workshop WS.IV on &quot;Nanotechnologies and nanomaterials for cultural heritage&quot; in Room 1</td>
<td>TS.IX.B Nanomaterials, device and tools for life sciences in Room 8</td>
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<td></td>
<td>TS.IX.B Advanced Optical Devices and Techniques in Room 8</td>
<td>TS.IX.C High efficiency solar cells and developing tandem concepts in Cloister Room</td>
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<tr>
<td></td>
<td>TS.IX.C Advanced Optical Devices and Techniques in Room 8</td>
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<td>TS.IX Thematic Symposia, also part of WorkShop</td>
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<td></td>
<td>(Multitrack Session)</td>
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<tr>
<td>10:30</td>
<td>Coffee Break in Cloister Area</td>
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<tr>
<td>11:00 - 12:30</td>
<td>J.E.II.D Electron Microscopy School (J.E.II.D.2) in Room 7</td>
<td>J.E.III Open Innovation &amp; Open Science: la situazione italiana in Frescoes Room</td>
</tr>
<tr>
<td></td>
<td>J.E.IV Nanotecnologie nell’ ingegneria dell’informazione (J.E.IV.3-4) in Room 15</td>
<td>J.E.IV Nanotecnologie nell’ ingegneria dell’informazione (J.E.IV.3-4) in Room 15</td>
</tr>
<tr>
<td></td>
<td>TS.X.A New Technologies for the safety and the reconstruction in seismic area(s), part of the workshop WS.IV on &quot;Nanotechnologies and nanomaterials for cultural heritage&quot; in Room 1</td>
<td>TS.X.B Advanced Optical Devices and Techniques in Room 8</td>
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<tr>
<td></td>
<td>TS.X.B Advanced Optical Devices and Techniques in Room 8</td>
<td>TS.X.C Novel Materials for Solar and Thermal Energy Harvesting in Cloister Room</td>
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<tr>
<td></td>
<td>TS.X.C Novel Materials for Solar and Thermal Energy Harvesting in Cloister Room</td>
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<tr>
<td>12:30</td>
<td>Lunch break in Cloister Area</td>
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<tr>
<td>14:00</td>
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<tr>
<td>Time</td>
<td>Joint Events</td>
<td>Location</td>
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<tr>
<td>14:00 - 15:30</td>
<td>JE.II.D: Electron Microscopy School (JE.II.D.3-5)</td>
<td>Room 7</td>
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<tr>
<td></td>
<td>JE.III: Open Innovation &amp; Open Science: la situazione italiana</td>
<td>Frescoes Room</td>
</tr>
<tr>
<td></td>
<td>JE.IV.IV: Nanotecnologie nell’ingegneria dell’informazione (JE.IV.IV.5-6)</td>
<td>Room 15</td>
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<td>Coffee Break</td>
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<tr>
<td>16:00 - 17:30</td>
<td>JE.III: Open Innovation &amp; Open Science: la situazione italiana</td>
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<tr>
<td></td>
<td>JE.IV.IV: Nanotecnologie nell’ingegneria dell’informazione (JE.IV.IV.7-8)</td>
<td>Room 15</td>
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</table>
OVERVIEW
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), 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.

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

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
Nell’ambito del convegno NanolInnovation 2019 è stata organizzata una Tavola Rotonda, con partecipazione ad invito, su:

**Tecnologie abilitanti fondamentali e Infrastrutture di Ricerca ad accesso aperto per il trasferimento tecnologico della Regione Lazio: organizzazione, gestione e impatti territoriali**

La Regione Lazio ha nel corso del 2018 finanziato quattro importanti progetti per la creazione di infrastrutture aperte di ricerca su quattro tecnologie abilitanti:

<table>
<thead>
<tr>
<th>Tecnologia</th>
<th>Progetto</th>
<th>Descrizione</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro e nano Elettronica</td>
<td>NanoMicroFab</td>
<td>Infrastruttura aperta di ricerca per il supporto di aziende operanti nell’ambito della micro-nanoelettronica, coordinato da CNR</td>
</tr>
<tr>
<td>Materiali avanzati</td>
<td>MAIA</td>
<td>Materiali Avanzati in una Infrastruttura Aperta, coordinato da ENEA</td>
</tr>
<tr>
<td>Nanotecnologie</td>
<td>ATOM</td>
<td>Advanced Tomography and Microscopies, coordinato da Sapienza Università di Roma</td>
</tr>
<tr>
<td>Sistemi di fabbricazione avanzati</td>
<td>LATINO</td>
<td>Laboratory in Advanced Technologies for INnOvation, coordinato da INFN</td>
</tr>
</tbody>
</table>

Negli ultimi anni si sono intensificati gli sforzi per razionalizzare e coordinare il sostegno alle infrastrutture di ricerca e consentirne l’uso e l’accesso agli operatori delle attività produttive. La Regione Lazio ha recentemente promosso la nascita e lo sviluppo di importanti Infrastrutture aperte di ricerca e trasferimento tecnologico, rivolte alla comunità scientifica e soprattutto alle imprese, sulle quattro tecnologie abilitanti fondamentali: Nanotecnologie, Micro e nano Elettronica, Materiali avanzati e Sistemi di fabbricazione avanzati. L’obiettivo della Tavola Rotonda è quello di aprire un dialogo con tutti i soggetti potenzialmente interessati all’utilizzo delle infrastrutture, fornendo innanzitutto informazioni sulle loro caratteristiche sia tecnologiche che organizzativo-gestionali, che consenta di:

- evidenziare ed aggiornare le effettive esigenze degli operatori, per individuare le eventuali azioni migliorative che dovessero risultare necessarie nella fase di gestione delle infrastrutture;
- stimolare ulteriori interessi degli operatori, grazie ad una maggiore consapevolezza delle potenzialità offerte dalle singole infrastrutture e dalla loro integrazione.
**OS.I - OPENING SESSION I**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00</td>
<td>Welcome</td>
<td>Chair: Maria Sabrina SARTO, Sapienza University of Rome (Deputy Rector for Research Tools and Infrastructure)</td>
</tr>
<tr>
<td>14:00</td>
<td>OS.I.1</td>
<td>Eugenio GAUDIO&lt;br&gt;Sapienza University of Rome (Rector)</td>
</tr>
<tr>
<td>14:00</td>
<td>OS.I.2</td>
<td>Antonio D’ANDREA&lt;br&gt;Sapienza University of Rome, Faculty of Civil and Industrial Engineering (Dean)</td>
</tr>
<tr>
<td>14:00</td>
<td>OS.I.3</td>
<td>Gian Paolo MANZELLA&lt;br&gt;Assessore Sviluppo Economico, Commercio e Artigianato, Start-Up, “Lazio Creativo” e Innovazione Regione Lazio</td>
</tr>
<tr>
<td>14:00</td>
<td>OS.I.4</td>
<td>Claudio PASQUALUCCI &amp; Salvatore ANGRISANO&lt;br&gt;ITA - Italian Trade Agency</td>
</tr>
<tr>
<td>14:00</td>
<td>OS.I.5</td>
<td>Marco FALZETTI&lt;br&gt;Director, APRE</td>
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**OS.II - OPENING SESSION II**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:40</td>
<td>Nanoevent and Nanoprize</td>
<td>Chair: Sesto VITICOLI, AIRI</td>
</tr>
<tr>
<td>14:40</td>
<td>OS.II.1</td>
<td>Announcement of the NEST PRIZE Winner</td>
</tr>
<tr>
<td>14:40</td>
<td>OS.II.2</td>
<td>Paola FERRARI&lt;br&gt;President, Accademia di Gagliato delle NanoScienze&lt;br&gt;NanoGagliato: An innovative platform of community engagement through nanotechnology</td>
</tr>
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</table>
**15:00 - 16:45**
**PS.I - PLENARY SESSION I**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker</th>
<th>Topic</th>
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<tbody>
<tr>
<td>15:00</td>
<td>Advances in Nanotechnology and</td>
<td>Giorgio ROSSI, Coordinator, NFFA-Europe</td>
<td>Research Infrastructures supporting Nano Science and Innovation</td>
</tr>
<tr>
<td>15:00</td>
<td>Nanosciences</td>
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<td></td>
<td>Gustaaf VAN TENDELOO, University of Antwerp, Belgium</td>
<td>Advanced Electron Microscopy for Advanced Materials</td>
</tr>
<tr>
<td>15:00</td>
<td></td>
<td>Beatrice VALLONE, Sapienza University of Rome</td>
<td>The resolution revolution in cryo-electron microscopy opens new avenues in nano-biotechnology and drug design</td>
</tr>
<tr>
<td>16:45</td>
<td>Coffee Break</td>
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**17:00 - 19:00**
**PS.II - PLENARY SESSION II**

<table>
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<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker</th>
<th>Topic</th>
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<tbody>
<tr>
<td>17:00</td>
<td>Innovation at the Nanoscale:</td>
<td>ANDREA BECCARI, Regione Lazio</td>
<td>The Research and Innovation Ecosystem of Regione Lazio</td>
</tr>
<tr>
<td>17:00</td>
<td>Research and innovation</td>
<td>Massimo BUSUOLI, Head of Norwegian University of Science and Technology (NTNU) Brussels Office</td>
<td>The NTNU approach to innovation in the Nanotechnology field and the perspectives towards Horizon Europe</td>
</tr>
<tr>
<td>17:00</td>
<td>strategies and opportunities</td>
<td>Antonello LAPALORCIA, Ministry of Economic Development, Department of Industrial policies, competitiveness and SMEs</td>
<td>A tool halfway between competition policy and industrial policy: the experience with the Project of Important Common European Interest (IPCEIs) on nano/microelectronics</td>
</tr>
<tr>
<td>17:00</td>
<td>for the Industry and Research</td>
<td>Amilcare COLLINA, MAPEI</td>
<td>Cooperation between Industry and Scientific Community: the MAPEI experience</td>
</tr>
<tr>
<td>17:00</td>
<td>world</td>
<td>Corrado SPINELLA, Director of Department of Physical Sciences and</td>
<td>The role of CNR in the research and innovation landscape</td>
</tr>
<tr>
<td>17:00</td>
<td></td>
<td>Technologies of Matter DSFTM - CNR</td>
<td></td>
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<tr>
<td>17:00</td>
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<td>Betty PACHUTHO UDONGO, Pincer Training and Research Institute/Albinism</td>
<td>The need of Africa: may nanotechnologies change the scenario?</td>
</tr>
<tr>
<td>17:00</td>
<td></td>
<td>Ennio CAPRIA, Deputy Head of Business Development European Synchrotron</td>
<td>GIANT innovation campus - The hearth of a unique technological ecosystem in (title to be defined)</td>
</tr>
<tr>
<td>17:00</td>
<td></td>
<td>Roberto BATTISTON, University of Trento</td>
<td>Space Economy: a window to the future</td>
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</tbody>
</table>

**19:00 - 19:30** Welcome Cocktail
### TT.I - TECHNICAL MULTI-TRACK - PARALLEL SYMPOSIA

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Chair</th>
<th>Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00 - 10:30</td>
<td>TT.I.A</td>
<td>3D micro and nano fabrication and characterization</td>
<td>Veronica SPARACINO, ZEISS</td>
<td>ZEISS</td>
</tr>
<tr>
<td></td>
<td>TT.I.C</td>
<td>Innovation in Environmental Nanotechnology</td>
<td>Francesco MATTEUCCI, DHITECH, Lecce</td>
<td>DHITECH, Lecce</td>
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<td></td>
<td>TT.I.D</td>
<td>Round Table: Funding strategies and policies for technology parks and nanotechnology centres</td>
<td>Prof. Maria Sabrina SARTO, Deputy Rector for Research Infrastructure and Tools, Sapienza University of Rome &amp; Dr. Salvatore ANGRISANO, Italian Trade Agency</td>
<td>Italian Trade Agency, NanolItaly Association, Airi - Italian Association for Industrial Research</td>
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10:30 - 11:00 Coffee Break
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<tr>
<th>Time</th>
<th>Session</th>
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<th>Chair/Institution</th>
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</thead>
</table>
| 11:00 - 12:30| TT.II - TECHNICAL MULTI-TRACK - PARALLEL SYMPOSIA | **Current Nano perspectives in the Agri-Food sector**  
Chair: Nelson MARMAPROLE, CINSA Consorzio Interuniversitario Nazionale per le Scienze Ambientali | The symposium is part of the workshop WS.I on "**AgriNanoTechniques**" |
|              | TT.II.B                                      | **Environmental Nanotechnology**  
Chair: Roberto GIANNANTONIO, DHITECH, Lecce | In collaboration with: DHITECH, Lecce |
|              | TT.II.C                                      | **WInSiC4AP - An European project to compete in the SiC global market**  
Chair: Leoluca LIGGIO, Distretto Tecnologico Sicilia Micro e Nano Sistemi | In collaboration with: STMicroelectronics & Distretto Tecnologico Sicilia Micro e Nano Sistemi |
|              | TT.II.D                                      | **Towards Exascale Supercomputers for Nanotechnology**  
Chair: Massimo CELINO, ENEA | In collaboration with: ENEA |
|              | TT.II.E                                      | **Photonics and quantum optics - part 1**  
Chair: Georg PUCKER, FBK | In collaboration with: FBK |
|              | TT.II.F                                      | **Additive Manufacturing: New processes in materials production and holistic quality inspection from powder to product**  
Chair: Francesco BIANCARDI, ZEISS | In collaboration with: ZEISS |

12:30 - 14:00 Light Lunch
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<td>14:00 - 15:30</td>
<td><strong>TT.III - TECHNICAL MULTI-TRACK - PARALLEL SYMPOSIA</strong></td>
<td>Nanomaterials and Plant Nutrition</td>
<td>Zeno VARANINI, University of Verona</td>
<td>The symposium is part of the workshop WS.I on &quot;AgriNanoTechniques&quot;</td>
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<td>Beyond the lithium-ion battery - part 1</td>
<td>Pierpaolo PROSINI, ENEA Casaccia</td>
<td>In collaboration with: ENEA</td>
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<td>NANOMEDICINE: applications from bench to bedside - part 1</td>
<td>Giovanni TOSI, Nanomedicine Platform of University of Modena and Reggio Emilia and Marzia BEDONI, Laboratory of Nanomedicine and Clinical Biophotonics (LABION), IRCCS Fondazione Don Gnocchi</td>
<td>In collaboration with: University of Modena and Reggio Emilia, IRCCS Fondazione Don Gnocchi</td>
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<td>Tools for the 3D world</td>
<td>Beatrice VALLONE, Sapienza University of Rome</td>
<td>In collaboration with: ASSING</td>
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<td>Photonics and quantum optics - part 2</td>
<td>Georg PUCKER, FBK</td>
<td>In collaboration with: FBK</td>
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<td>15:30 - 16:00</td>
<td>Coffee Break</td>
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</table>
| TT.IV.A | **AgriNano Techniques Research Pathways**  
Chair: Luca MARCHIOL, University of Udine  
The symposium is part of the workshop WS.I on "AgriNanoTechniques" |
| TT.IV.B | **Beyond the lithium-ion battery - part 2**  
Chair: Pierpaolo PROSINI, ENEA Casaccia  
In collaboration with: ENEA |
| TT.IV.C | **NANOMEDICINE: applications from bench to bedside - part 2**  
Chair: Giovanni TOSI, Nanomedicine Platform of University of Modena and Reggio Emilia and Marzia BEDONI, Laboratory of Nanomedicine and Clinical Biophotonics (LABION), IRCCS Fondazione Don Gnocchi  
In collaboration with: University of Modena and Reggio Emilia, IRCCS Fondazione Don Gnocchi |
| TT.IV.D | **Industria 4.0 e nuovi materiali: strategie, training e opportunità di finanziamento**  
Chair: Chiara CAPPELLI, Scuola Normale Superiore  
In collaboration with: Scuola Normale Superiore - Macro Nodo del Centro di Competenza MISE - ARTES 4.0 |
| TT.IV.E | **Nanotecnologie in Cosmesi**  
Chair: Donatella PAOLINO, University "Magna Graecia" of Catanzaro  
In collaboration with: University "Magna Graecia" of Catanzaro |
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<td>09:00 - 10:30</td>
<td>TT.V - Technical multi-Track - parallel SYMPOSIA</td>
<td>Nanomaterials Enhanced membranes and Processes for water and energy challenges Chair: Giancarlo CICERO, Polytechnic of Turin &amp; Elena TRESSO, Polytechnic of Turin In collaboration with: Polytechnic of Turin</td>
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<tr>
<td></td>
<td>TT.V.A</td>
<td>Research on Nanotechnologies @ CNIS - part 1 Chairs: Antonio d’ALESSANDRO, Sapienza University of Rome &amp; Carlo Massimo CASCIOLA, Sapienza University of Rome The symposium is part of the workshop WS.II on &quot;Nanotechnology @Sapienza&quot;</td>
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<td></td>
<td>TT.V.B</td>
<td>Risk governance and regulatory preparedness: managing risks and risk perception of nanomaterials - part 1 Chairs: Andrea PORCARI, Elvio MANTOVANI, AIRI In collaboration with: calIBRAt project, AIRI, Federchimica and INAIL The symposium is part of the workshop WS.V on “Solutions to address safety and regulatory aspects of nanomaterials”</td>
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<td></td>
<td>TT.V.C</td>
<td>Porous media mimicking and analysis through nanotechnology Chairs: Marzia QUAGLIO and Dario VIBERTI, Polytechnic of Turin In collaboration with: Polytechnic of Turin</td>
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<td>10:30 - 11:00</td>
<td>Coffee Break</td>
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<td>11:00 - 12:30</td>
<td><strong>TT.VI - Technical multi-Track - parallel SYMPOSIA</strong></td>
<td><strong>TT.VI.A</strong> Advanced Membranes nanomaterials for CO₂ separation</td>
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<td><strong>TT.VI.B</strong> Risk governance and regulatory preparedness: managing risks and risk perception of nanomaterials - part 2</td>
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<td><strong>TT.VI.C</strong> Research on Nanotechnologies @ CNIS - part 2</td>
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<td><strong>TT.VI.D</strong> Multiscale dimensional approaches for multifunctional coatings fabrication on additive manufactured, metallic components</td>
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<td><strong>TT.VI.E</strong> Synthesis and characterization of 2D nanomaterial</td>
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<td>12:30 - 14:00</td>
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<td>Light Lunch</td>
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### 14:00 - 15:30
#### TT.VII - Technical multi-Track - parallel SYMPOSIA

| TT.VII.A | Sustainable materials for CO₂ photo/electrocatalytic valorization  
Chairs: Angelica CHIODONI, IIT, Center for Sustainable Future Technologies - CSFT@POLITO and Francesca RISPLENDI, Polytechnic of Turin  
*In collaboration with: IIT, Center for Sustainable Future Technologies - CSFT@POLITO and Polytechnic of Turin* |
| --- | --- |
| TT.VII.B | Structural characterization techniques for nanomaterials and applications  
Chair: Giuliana FAGGIO, The “Mediterranean” University of Reggio Calabria  
*In collaboration with: The “Mediterranean” University of Reggio Calabria* |
| TT.VII.C  
WS.V.3 | Nanotechnologies and Key Enabling Technologies in innovation processes: the NanoKey project for risk prevention in the workplace  
Chair: Fabio BOCCUNI, INAIL  
*In collaboration with: INAIL, IIT*  
*The symposium is part of the workshop WS.V on "Solutions to address safety and regulatory aspects of nanomaterials"* |
| TT.VII.D  
WS.II.3 | Research on Nanotechnologies @ CNIS - part 3  
Chair: Antonio d’ALESSANDRO, Sapienza University of Rome  
*The symposium is part of the workshop WS.II on "Nanotechnology @Sapienza"* |
| TT.VII.E | New nanoscale drug delivery systems: recent advances in nanotheranostic  
Chairs: Miriam COLOMBO, NanoBioLab - University of Milano-Bicocca and Laura PANDOLFI, IRCCS Policlinico San Matteo, Pavia  
*In collaboration with: University of Milano-Bicocca* |
| TT.VII.F  
WS.III.2 | 2D nanomaterial for energy harvesting and storage application  
Chair: Andrea LAMBERTI, Polytechnic of Turin  
*In collaboration with: Polytechnic of Turin and CNR-IMM*  
*The symposium is part of the workshop WS.III on "Graphene and 2D Materials, progresses and challenges"* |

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15:30 - 16:00 Coffee Break
16:00 - 17:30  
**TT.VIII - Technical multi-Track - parallel SYMPOSIA**

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<td><strong>WS.III.3</strong></td>
<td><strong>WS.IV.1</strong></td>
<td><strong>WS.V.4</strong></td>
<td><strong>WS.II.4</strong></td>
<td><strong>WS</strong></td>
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| **Technological integration and processing of 2D nanomaterials**  
Chair: Vittorio MORANDI, CNR-IMM, Bologna & Andrea LAMBERTI, Polytechnic of Turin  
*In collaboration with: Polytechnic of Turin and CNR-IMM*  
The symposium is part of the workshop WS.III on "Graphene and 2D Materials, progresses and challenges" | **Innovative nanomaterials for cultural heritage**  
Chair: David CHELAZZI, CSGI  
*In collaboration with: CSGI*  
The symposium is part of the workshop WS.IV on "Nanotechnologies and nanomaterials for cultural heritage" | **Biosafety of nanomaterials**  
Chair: Luisa FIANDRA, POLARIS Research Center - University of Milano-Bicocca  
*In collaboration with: University of Milano-Bicocca*  
The symposium is part of the workshop WS.V on “Solutions to address safety and regulatory aspects of nanomaterials” | **Ex-alumni Nanotechnology Engineering @ Sapienza**  
Chair: Carlo Massimo CASCIOLA, Sapienza University of Rome  
The symposium is part of the workshop WS.II on "Nanotechnology @Sapienza" | **NanolInnovation's Got Talent**  
Chair: Fulvio UGGERI, Bracco Foundation  
*In collaboration with: Bracco Foundation* |
### 09:00 - 10:30
**TT.IX - Technical multi-Track - parallel SYMPOSIA**

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<th>TT.IX.A</th>
<th>Diagnostics and nanotechnologies for cultural heritage</th>
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<td><strong>WS.IV.2</strong></td>
<td>Chair: Roberta FANTONI, ENEA</td>
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<td>Co-Chair: Maria Sabrina SARTO, Sapienza University of Rome</td>
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<td>In collaboration with: Centre of Excellence DTC Lazio</td>
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<td>The symposium is part of the workshop WS.IV on &quot;Nanotechnologies and nanomaterials for cultural heritage&quot;</td>
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<tr>
<th>TT.IX.B</th>
<th>Nanomaterials, device and tools for life sciences</th>
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<td>Chair: to be defined</td>
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<tr>
<th>TT.IX.C</th>
<th>High efficiency solar cells and developing tandem concepts</th>
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<td>Chair: Mario TUCCI, ENEA Casaccia</td>
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10:30 - 11:00 Coffee Break

### 11:00 - 12:30
**TT.X - Technical multi-Track - parallel SYMPOSIA**

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<th>TT.X.A</th>
<th>New Technologies for the safety and the reconstruction in seismic area</th>
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<td><strong>WS.IV.3</strong></td>
<td>Chair: Maria Laura SANTARELLI, Sapienza University of Rome</td>
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<td>Co-Chair: Maria Sabrina SARTO, Sapienza University of Rome</td>
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<td>The symposium is part of the workshop WS.IV on &quot;Nanotechnologies and nanomaterials for cultural heritage&quot;</td>
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<tr>
<th>TT.X.B</th>
<th>Advanced Optical Devices and Techniques</th>
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<td>Chair: Onofrio Antonino CACIOPOPO, LFoundry</td>
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<td>In collaboration with: Sapienza University of Rome &amp; Italian Trade Agency</td>
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<tr>
<th>TT.X.C</th>
<th>Novel Materials for Solar and Thermal Energy Harvesting</th>
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<td>Chair: Mario TUCCI, ENEA Casaccia</td>
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<td>In collaboration with: Sapienza University of Rome &amp; Italian Trade Agency</td>
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12:30 - 14:00 Light Lunch
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### I.A  3D micro and nano fabrication and characterization

**Chair:** Veronica SPARACINO, ZEISS  
**In collaboration with:** ZEISS

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<tr>
<td>I.A.1</td>
<td>Correlative workflows from X-Ray to FIBSEM for advanced nanotomography characterization</td>
<td>Francesco BIANCARDI, ZEISS Microscopy</td>
<td>ZEISS Microscopy</td>
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<tr>
<td>I.A.2</td>
<td>Sub-10 nanometer Nanofabrication with Helium-Neon-Gallium Multi-Beam system</td>
<td>Giulio LAMEDICA, ZEISS Microscopy</td>
<td>ZEISS Microscopy</td>
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<td>I.A.3</td>
<td>Understanding the behavior of high performance Aluminium alloys: the importance of multiscale analyses</td>
<td>Paola BASSANI, CNR-ICMATE</td>
<td>CNR-ICMATE</td>
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<tr>
<td>I.A.4</td>
<td>Pushing the limits of micro/nano 3D fabrication</td>
<td>Rameez AHMAD, Nanoscribe</td>
<td>Nanoscribe</td>
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### I.B  Innovative Micro and Nanotechnologies for Advanced Driver Assistance Systems (ADAS)

**Chair:** Sabrina CONOCI, STMicroelectronics  
**In collaboration with:** STMicroelectronics & Distretto Tecnologico Sicilia Micro e Nano Sistemi

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<tr>
<td>I.B.1</td>
<td>Nanoinnovation in chemical sensors for the automotive field</td>
<td>Giovanni NERI, University of Messina</td>
<td>University of Messina</td>
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<tr>
<td>I.B.2</td>
<td>Optical Probes for Driver Drowsiness Monitoring</td>
<td>Giorgio FALLICA, STMicroelectronics</td>
<td>STMicroelectronics</td>
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<td>I.B.3</td>
<td>Air quality monitoring with a gas sensor array for automotive application</td>
<td>Roberto PAOLESSE, University of Rome Tor Vergata</td>
<td>University of Rome Tor Vergata</td>
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<tr>
<td>I.B.4</td>
<td>Nano-Sensors Integration and Fusion for driver assistance</td>
<td>Paolo PAVAN, University of Modena and Reggio Emilia</td>
<td>University of Modena and Reggio Emilia</td>
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### I.C  Innovation in Environmental Nanotechnology

**Chair:** Francesco MATTEUCCI, DHITECH, Lecce  
**In collaboration with:** DHITECH, Lecce

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<tr>
<td>I.C.1</td>
<td>Exponential Technologies and Innovation – A Focus on Nanotechnologies</td>
<td>Alessandro MARGHERITA, University of Salento</td>
<td>University of Salento</td>
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<td>I.C.2</td>
<td>Environmental Nanotechnology Innovation</td>
<td>Gianluca ELIA, University of Salento</td>
<td>University of Salento</td>
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<td>I.C.3</td>
<td>Innovative Membrane Applications in Water Treatment</td>
<td>Alberto FIGOLI, CNR-ITM, Rende</td>
<td>CNR-ITM</td>
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<tr>
<td>I.C.4</td>
<td>Health Transfer nanofluids and photocatalytic nanomaterials</td>
<td>Chiara LO PORTO, TCT Srl</td>
<td>TCT Srl</td>
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<tr>
<td>I.C.5</td>
<td>Nano-bio systems for water remediation</td>
<td>Magda BLOSI, CNR-ISTEC, Faenza</td>
<td>CNR-ISTEC</td>
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</table>
I.D  Round Table: Funding strategies and policies for technology parks and nanotechnology centres

Chairs: Prof. Maria Sabrina SARTO, Deputy Rector for Research Infrastructure and Tools, Sapienza University of Rome & Dr. Salvatore ANGRISANO, Italian Trade Agency
In collaboration with: Italian Trade Agency, Nanitaly Association, Airi - Italian Association for Industrial Research

I.D.1 Svyatoslav AMELIN, Head of PR & GR Department, Association for the development of clusters and technology parks of Russia
I.D.2 Saeed SARKAR, Secretary General, Iran Nanotechnology Innovation Council (INIC), Iran
I.D.3 Valeria PIGNEDOLI, General Manager, Bologna CNR Technopole, Italy
I.D.4 Antonio MASTINO, President, ARTOV: Tor Vergata CNR Research Area, Italy
I.D.5 Mikhail MUKHIN (to be confirmed), Deputy Dean of the Faculty of Physics and Technology, ITMO University, Moscow, Russia
I.D.6 Yovav KALIFON, Technology Partnership, CTO Group, NOVA Measuring Instruments, Israel
I.D.7 Avi VOLDMAN, CTO, Racah NANOFUND
II.A Current Nano perspectives in the Agri-Food sectors

Chair: Nelson MARIOLI, CINSA Consorzio Interuniversitario Nazionale per le Scienze Ambientali
The symposium is part of the workshop WS.I on "AgriNanoTechniques"

II.A.1 Alejandro PÉREZ-DE-LUGUE, Department of Plant Breeding and Biotechnology - IFAPA, Spain
When Nanotechnology meets Agriculture: will it help to improve farming?

II.A.2 Francesco CUBADDA, ISS
Nanotechnology agri-food applications: how to assess their safety?

II.A.3 Alessio ADAMIANO, CNR-ISTEC
Bones as a source of calcium phosphates nanoparticles: towards a circular economy of smart phosphorous fertilizer

II.A.4 Maria Adele PROSPERONI, Coldiretti, Roma
Nanotechnology in the Agrifood sector: The role of regulation

II.A.5 Francesco BIANCARDI, ZEISS Microscopy
Correlative and Analytical case studies for micro and nanoparticles detection in Agrifood research

II.B Environmental Nanotechnology

Chair: Roberto GIANNANTONIO, DHITECH, Lecce
In collaboration with: DHITECH, Lecce

II.B.1 Paola VERLICCHI, University of Ferrara
Environmental Nanotechnology

II.B.2 Lucia CURRI, University of Bari
Nanostructured materials for environmental photocatalysis

II.B.3 Anna COSTA, CNR-ISTEC
Engineered Nanomaterial: a risk, an opportunity

II.B.4 Giusppe MASCOLO, CNR-IRSA
Advanced Oxidation Processes for water remediation

II.B.5 Valeria ANCONA, CNR-IRSA
Nanotechnology for soil remediation

II.C WinSiC4AP - A European project to compete in the SiC global market

Chair: Leoluca LIGGIO, Distretto Tecnologico Sicilia Micro e Nano Sistemi
In collaboration with: STMicroelectronics & Distretto Tecnologico Sicilia Micro e Nano Sistemi

II.C.1 Leoluca LIGGIO, Distretto Tecnologico Sicilia Micro e Nano Sistemi
The WinSiC4AP European project and its outcomes for efficient and cost-effective applications in automotive, avionics, railway and defence

II.C.2 Antonio IMBRUGLIA, STMicroelectronics
WinSiC4AP and More than Moore

II.C.3 Giovanni COPPOLA, ENEL X
High efficiency SiC based converter and the nano/microgrid scenario

II.C.4 Patrick FIORENZA, CNR-IMM
Advanced characterization of gate oxides for 4H-SiC MOSFETs

II.C.5 Gennaro RUSSO, DAC - Distretto Aerospaziale della Campania
SiC Based Power Plant and Avionics
II.D Towards Exascale Supercomputers for Nanotechnology

Chair: Massimo CELINO, ENEA
In collaboration with: ENEA

II.D.1 Francesco BUONOCORE, ENEA
EOCOE: Materials for energy challenge

II.D.2 Mariella IPPOLITO, CINECA & MaX
Supporting material science at exascale with MAX centre of excellence

II.D.3 Giuseppe ZOLLO, Sapienza University of Rome
Vibration assisted electron tunneling processes through nano-gaps in graphene nano-ribbons for amino-acids recognition

II.D.4 Paolo PALAZZARI, ENEA
The Quickplay High Level Synthesis flow to target FPGA-based accelerators

II.D.5 Vincenzo FIORENTINI, University of Cagliari and CNR-IOM
Picking a Rolex out of a box of Swatches: high-throughput calculations with Pymatgen

II.E Photonics and quantum optics - part 1

Chair: Georg PUCKER, FBK
In collaboration with: FBK

II.E.1 Francesco MATTIOLI, IFN-CNR, Rome
Integrated superconducting nanowire single photon detectors for quantum optics and quantum communications

II.E.2 Matteo PERENZONI, Centre for Materials and Microsystems, Fondazione Bruno Kessler
SUPERTWIN: Quantum Imaging Challenging the Rayleigh Limit

II.E.3 Mher GHULINYAN, Centre for Materials and Microsystems, Fondazione Bruno Kessler
Development of Silicon integrated photonic platforms for probabilistic sources of quantum states of light

II.F Additive Manufacturing: New processes in materials production and holistic quality inspection from powder to product

Chair: Francesco BIANCARDI, ZEISS
In collaboration with: ZEISS

II.F.1 Edson COSTA SANTOS, ZEISS Additive Manufacturing Group
ZEISS 3D ManuFACT improving yield in additive manufacturing with holistic quality inspection and correlation

II.F.2 Nicoló MORGANTI, CERTEMA
Electron scanning (FESEM)/ laser scanning (SLM) in search of structural defects

II.F.3 Ekaterina MAKAROVA & Giorgia LETO, Pometon Spa
Pometon – 80 years of Metal Powder Production. Additive Manufacturing: a renaissance for Powder Metallurgy

II.F.4 Daniele DE CONSOLE, ZEISS Industrial Quality Solutions
X-Ray Technologies for non-destructive analysis of additive manufactured components
III.A Nanomaterials and Plant Nutrition

Chair: Zeno VARANINI, University of Verona

The symposium is part of the workshop WS.1 on "AgriNanoTechniques"

III.A.1 Marta MARMIROLI, University of Parma
Effects of multiple treatment with ENMs on zucchini plants

III.A.2 Andrea CIURLI, University of Verona
FePO₄ nanoparticles as a source of nutrients: effects on plant transcriptome and on soil microbial communities and functions

III.A.3 Giuseppe CIUFFREDA, Fabbrica Cooperativa Perfosfati Cerea
Smart fertilizer: first results of nano fertilizer application in open field (kiwi - Actinidia chinensis ssp Jintao)

III.A.4 Antonio FILIPPI, University of Udine
Hydroxyapatite Nanoparticles influence Germination and Plant Metabolism of Solanum lycopersicum

III.A.5 Davide ZANELLI, University of Trieste
Possible applications and critical aspects of carbon nanomaterials use in agriculture

III.B Beyond the lithium-ion battery - part 1

Chair: Pierpaolo PROSINI, ENEA Casaccia
In collaboration with: ENEA

III.B.1 Sergio BRUTTI, Sapienza University of Rome
Artificial Solid Electrolyte Interphases on metallic Lithium

III.B.2 Margherita MORENO, ENEA
Silicon nanowires as anodes for lithium-ion batteries: effect of different substrates on the electrochemical performance and energy densities

III.B.3 Francesco NOBILI, University of Camerino
Vanillin-Templated Fe₂O₃ Nanoparticles as Anode Material for Li-Ion Batteries

III.B.4 Francesca SCARAMUZZO, Sapienza University of Rome
Electrochemical properties of Si-NWs with different morphologies used as anodes for Li-ion batteries
III.C NANOMEDICINE: applications from bench to bedside - part 1
Chair: Giovanni TOSI, Nanomedicine Platform of University of Modena and Reggio Emilia and Marzia BEDONI, Laboratory of Nanomedicine and Clinical Biophotonics (LABION), IRCCS Fondazione Don Gnocchi
In collaboration with: University of Modena and Reggio Emilia, IRCCS Fondazione Don Gnocchi

III.C.1 Adriele PRINA MELLO, Trinity College Dublin, Ireland
Translational requirements for nanotechnology enable medical products: a converging model applied to the SPION case

III.C.2 Silke KROL, IRCCS "Saverio de Bellis"
DiaChemo- Chemotherapeutic Drug Selective Nanoparticles and their Application in a Point-of-care Therapeutic Drug Monitoring Device

III.C.3 Jason T DUSKEY, University of Modena and Reggio Emilia
Nanomedicine for Brain Diseases: preclinical application

III.C.4 Beatrice FORMICOLA, University of Milano-Bicocca
Anti-Tumor Activity of mApoE-Functionalized Drug-Loaded Liposomes through Glioblastoma Stem Cells Targeting

III.D Tools for the 3D world
Chair: Beatrice VALLONE, Sapienza University of Rome
In collaboration with: ASSING

III.D.1 Mathias MOSIG, Protochips
New Capabilities for in-situ Nanoscale Sample Characterization in Transmission Electron Microscopy

III.D.2 Ettore DI MASSO
Micro-CT: a solution for materials science

III.D.3 Martin SUCHANEK, Tescan Orsay Holding
Cryo-FIB-SEM: a powerful tool for imaging and structural analysis of sensitive biological samples

III.D.4 Giuliano CASATI
3D Microanalysis: powering the future of 3D materials characterization by high throughput Xe PlasmaFIB-SE

III.E Photonics and quantum optics - part 2
Chair: Georg PUCKER, FBK
In collaboration with: FBK

III.E.1 Giacomo CORRIELLI, IFN-CNR, Milano
Laser written waveguide circuits for quantum technology development

III.E.2 Georg PUCKER, Centre for Materials and Microsystems, Fondazione Bruno Kessler
Quantum random number generators based on SPADs and silicon LED’s

III.E.3 Matteo SECLI, SISSA, Trieste
Topological laser
IV.A AgriNano Techniques Research Pathways
Chair: Luca MARCHIOL, University of Udine

The symposium is part of the workshop WS.I on “AgriNanoTechniques”

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Dextrin-based nanosponges as carriers for natural herbicides in horticulture

IV.A.2 Elodie Genevieve VANDELLE, University of Verona
Plant disease biocontrol by means of biodegradable proteinaceous nanoparticles

IV.A.3 Monica RUFFINI CASTIGLIONE, University of Pisa
TiO₂ nanoparticles may lighten cadmium harmfulness in co-treatment experiments on the aquatic fern Azolla filiculoides

IV.A.4 Sara FALSINI, University of Florence
Encapsulating a germination adjuvant in lignin nanoparticles to reanimate quiescent seeds

IV.B Beyond the lithium-ion battery - part 2
Chair: Pierpaolo PROSINI, ENEA Casaccia
In collaboration with: ENEA

IV.B.1 Francesca COLÒ, Polytechnic of Turin
Safe polymer electrolytes and high performing anode materials for Na-based secondary batteries

IV.B.2 Maria Assunta NAVARRA, Sapienza University of Rome
Bis(oxalato)borate- and difluoro(oxalato)borate-based ionic liquids as electrolyte components for high voltage lithium batteries

IV.B.3 Michele PAVONE, University of Naples, Federico II
Nano-electrodes for Na-ion batteries: new insights from ab initio calculations

IV.B.4 Gabriele TARQUINI, Sapienza University of Rome
A sodium-ion battery based on reduced graphene oxide decorated with tin nanospheres

IV.B.5 in definition

IV.C NANOMEDICINE: applications from bench to bedside - part 2
Chair: Giovanni TOSI, Nanomedicine Platform of University of Modena and Reggio Emilia and Marzia BEDONI, Laboratory of Nanomedicine and Clinical Biophotonics (LABION), IRCCS Fondazione Don Gnocchi
In collaboration with: University of Modena and Reggio Emilia, IRCCS Fondazione Don Gnocchi

IV.C.1 Dora MEHN, JRC
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IV.C.2 Davide MALAGOLI, University of Modena and Reggio Emilia
In vivo testing of nanomedicines: Seeking New Animal models for Investigating Life

IV.C.3 Carlo A. BORTOLOTTI, University of Modena and Reggio Emilia
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IV.C.4 Leonardo ORAZI, University of Modena and Reggio Emilia
Osteoblast cell response to LIPSS-modified Ti-implants
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**Chair:** Chiara CAPPELLI, Scuola Normale Superiore  
*In collaboration with:* Scuola Normale Superiore - Macro Nodo del Centro di Competenza MISE - ARTES 4.0

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**Chair:** Donatella PAOLINO, University “Magna Graecia” of Catanzaro  
*In collaboration with:* University "Magna Graecia" of Catanzaro

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Chair: Giancarlo Cicero & Elena Tresso, Polytechnic of Turin  
In collaboration with: Polytechnic of Turin

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V.A.2 Marco Laurenti, Polytechnic of Turin  
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V.A.3 Enrica Fontananova, CNR-ITM, Rende  
Nanostructured membranes functionalized with graphene oxide

V.A.4 Maria Di Vincenzo, University of Montpellier, France  
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V.B Research on Nanotechnologies @ CNIS - part 1  
Chairs: Antonio d’Alessandro, Sapienza University of Rome  
& Carlo Massimo Casciola, Sapienza University of Rome

The symposium is part of the workshop WS.II on "Nanotechnology @Sapienza"

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V.B.2 Maria Sabrina Sarto, DIAAEE, Sapienza University of Rome  
Graphene & Zno-Based Multifunctional Nanomaterials

V.B.3 Carlo Massimo Casciola, Dept. DIMA, Sapienza University of Rome  
A blood-vessel-on-a-chip for cavitation enhanced endothelial permeability

V.B.4 Teresa Rinaldi, DBB “C. Darwin”, Sapienza University of Rome  
Calcite biomineralization in the Etruscan tombs of Tarquinia

V.B.5 Giuseppe Zollo, Dept. SBAI, Sapienza University of Rome  
Atomistically resolved peptide bonds and amino-acids by tunneling current in nano-gaps of graphene nano-ribbons
V.C Risk governance and regulatory preparedness: managing risks and risk perception of nanomaterials - part 1

Chairs: Andrea PORCARI, Elvio MANTOVANI, AIRI
In collaboration with: caLIBRAte project, AIRI, Federchimica and INAIL

The symposium is part of the workshop WS.V on “Solutions to address safety and regulatory aspects of nanomaterials”

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V.C.2 Fabio BOCCUNI, Italian Workers’ Compensation Authority (INAIL)
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V.C.4 Alex ZABEO, Green Decision Srl
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Chairs: Marzia QUAGLIO and Dario VIBERTI, Polytechnic of Turin
In collaboration with: Polytechnic of Turin

V.D.1 Dario VIBERTI, Polytechnic of Turin
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V.D.2 Simone MARASSO, Polytechnic of Turin & CNR-IMEM, Parma
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V.D.3 Valentina PREZIOSI, University of Naples Federico II
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V.D.4 Nicolò VASILE, IIT
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Chair: Sergio BOCCHINI, IIT, Center for Sustainable Future Technologies - CSFT@POLITO & Elena TOCCI, CNR-ITM

In collaboration with: IIT, Center for Sustainable Future Technologies - CSFT@POLITO

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VI.A.2 Maria Grazia DE ANGELIS, University of Bologna
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VI.A.3 Victor SANS SANGORRIN, University of Nottingham, UK
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VI.A.4 Annalisa CHIAPPONE, Polytechnic of Turin
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VI.B Risk governance and regulatory preparedness: managing risks and risk perception of nanomaterials - part 2

Chairs: Andrea PORCARI, Elvio MANTOVANI, Airi
In collaboration with: calIBRAt project, ARI, Federchimica and INAIL

The symposium is part of the workshop WS.V on "Solutions to address safety and regulatory aspects of nanomaterials"

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VI.B.2 Camila DEL PIVO, LEITAT, Spain
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VI.B.4 Dimiter PRODANOV, IMEC, Belgium
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The symposium is part of the workshop WS.II on "Nanotechnology @Sapienza"

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   Activities and nanocharacterization results at SNN-Lab: FESEM platform

VI.C.2 Paola PIEDIMONTE, Dept. DIET, SBAI and DFF, Sapienza University of Rome
   Low Temperature and CMOS Compatible Growth of Silicon Nanowires for Biosensing applications

VI.C.3 Virgilio GENOVA, Dept. DIITCA, Sapienza University of Rome
   Nanocomposite Coatings for Antifouling and Antiwear Applications in Turbomachinery Components

VI.C.4 Roberto LI VOTI, Dept. SBAI, Sapienza University of Rome
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VI.C.5 Olga RUSSINA, Dept. of Chemistry, Sapienza University of Rome
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VI.D Multiscale dimensional approaches for multifunctional coatings fabrication on additive manufactured, metallic components

Chair: Sergio VALERI, University of Modena and Reggio Emilia and CNR-NANO
   In collaboration with: University of Modena and Reggio Emilia

VI.D.1 Sergio VALERI, University of Modena and Reggio Emilia and CNR-Nano
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VI.D.2 Fabio CUOGHI BERTACCHINI, Beam.It S.p.A
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VI.D.3 Leonardo ORAZI, University of Modena and Reggio Emilia
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Chair: Vittorio MORANDI, CNR-IMM, Bologna
   In collaboration with: Polytechnic of Turin and CNR-IMM

The symposium is part of the workshop WS.III on "Graphene and 2D Materials, progresses and challenges"

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VI.E.2 Cristina AFRICH, CNR-IOM, Trieste
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VI.E.3 Giuseppe VALERIO BIANCO, CNR-NANOTEC
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VI.E.4 Marco FONTANA, IIT@Polito
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Chairs: Angelica CHIODONI, IIT, Center for Sustainable Future Technologies - CSFT@POLITO and Francesca RISPLENDI, Polytechnic of Turin
In collaboration with: IIT, Center for Sustainable Future Technologies - CSFT@POLITO and Polytechnic of Turin

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VII.A.2 Wenbo JU, Empa, Swiss Federal Laboratories for Materials Science and Technology, Zurich, (SWI)
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Chair: Giuliana FAGGIO, The “Mediterranean” University of Reggio Calabria
In collaboration with: The “Mediterranean” University of Reggio Calabria

VII.B.1 Simonpietro AGNELLO, University of Palermo, ATeN Center, CNR-IMM Catania
High-k substrate effect on the thermal doping of graphene by oxygen

VII.B.2 Andrea CAPASSO, International Iberian Nanotechnology Laboratory, Portugal
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VII.B.3 Carlo Maria CARBONARO, University of Cagliari
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VII.B.4 Nicola LISI, ENEA Casaccia
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VII.B.5 Maria DONATO, CNR-IPCF, Messina
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VII.B.6 Emanuela SCHILIRÒ, CNR-IMM, Catania
Structural and electrical properties of ultra-thin Al$_2$O$_3$ films grown by seed-layer-free atomic layer deposition on epitaxial graphene

VII.C Nanotechnologies and Key Enabling Technologies in innovation processes: the NanoKey project for risk prevention in the workplace

Chair: Fabio BOCCUNI, INAIL
In collaboration with: INAIL, IIT

The symposium is part of the workshop WS.V on “Solutions to address safety and regulatory aspects of nanomaterials”

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VII.C.2 Stefania SABELLA, IIT, Genova
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VII.C.3 Luisana DI CRISTO, IIT, Genova
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VII.C.4 Francesca TOMBOLINI, INAIL
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Chair: Antonio d’ALESSANDRO, Sapienza University of Rome
The symposium is part of the workshop WS.II on “Nanotechnology @Sapienza”

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Activities and nanocharacterization results at SNN-Lab: AFM platforms

VII.D.2 Daniele PASSERI, Dept. SBAI, University of Sapienza
AFM-based methods for Elastic Measurements

VII.D.3 Elena BLUNDO, Dept. of Physics, Sapienza University of Rome
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VII.D.4 Diego DI GIROLAMO, Dept. of Chemistry, Sapienza University of Rome
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VII.D.5 Laura PAGLIA, Dept. DITCA, Sapienza University of Rome
Ceramic nano-filler influence on a carbon-phenolic ablator

VII.E New nanoscale drug delivery systems: recent advances in nanotheranostic
Chairs: Miriam COLOMBO, NanoBioLab - University of Milano-Bicocca and Laura PANDOLFI, IRCCS Policlinico San Matteo, Pavia
In collaboration with: University of Milano-Bicocca

VII.E.1 Silvia BIOCCA, University of Rome “Tor Vergata
Folate-functionalized DNA nanocages for targeted drug delivery

VII.E.2 Valentina CAUDA, Polytechnic of Turin
In-vitro use of Trojan horses nanoconstructs as biomimetic and theranostic weapons against cancer cells

VII.E.3 Serena MAZZUCHELLI, University of Milan
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VII.E.4 Agnese MOLINARI, ISS
Liposomes as Drug delivery Systems to Cancer Cells

VII.E.5 Lucia SALVIONI, NanoBioLab - University of Milano-Bicocca
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VII.F 2D nanomaterial for energy harvesting and storage application
Chair: Andrea LAMBERTI, Polytechnic of Turin
In collaboration with: Polytechnic of Turin and CNR-IMM
The symposium is part of the workshop WS.III on “Graphene and 2D Materials, progresses and challenges”

VII.F.1 Antonio AGRESTI, CHOSE - University of Rome Tor Vergata
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VII.F.2 Sebastiano BELLANI, IIT, Genova
Design and large-scale production of 2D materials for energy conversion and storage applications

VII.F.3 Mara SERRAPEDE, IIT@Polito
Few-layer mixed 1T-2H phase MoS2 as electrode material in supercapacitor and catalyst for hydrogen evolution reaction

VII.F.4 Hui SHAO, Université Paul Sabatier, Toulouse, France
2D MXene materials for electrochemical energy storage
VIII.A Technological integration and processing of 2D nanomaterials

Chair: Vittorio MORANDI, CNR-IMM, Bologna & Andrea LAMBERTI, Polytechnic of Turin
In collaboration with: Polytechnic of Turin and CNR-IMM

The symposium is part of the workshop WS.III on "Graphene and 2D Materials, progresses and challenges"

VIII.A.1 Sergio PEZZINI, CNI@NEST, IIT Pisa
Toward wafer-scale integration of graphene single crystals arrays

VIII.A.2 Maurizio CASALINO, CNR-IMM Napoli
Near-infrared all-silicon Schottky photodetectors: New perspectives through graphene

VIII.A.3 Damiano MARIAN, University of Pisa
Simulations of devices based on two-dimensional materials

VIII.A.4 Stefano STASSI, Polytechnic of Turin
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VIII.B Innovative nanomaterials for cultural heritage

Chair: David CHELAZZI, CSGI
In collaboration with: CSGI

The symposium is part of the workshop WS.IV on "Nanotechnologies and nanomaterials for cultural heritage"

VIII.B.1 Gabriella DI CARLO, CNR-ISMN, Roma
Multifunctional materials based on chitosan for the chemisorption of degrading species in museum environments

VIII.B.2 Gianfranco SABELLA & Nello VITULIANO, IONFLY s.r.l.
Plasma & Cultural Heritage: new materials made by plasma technologies

VIII.B.3 Giovanna POGGI, CSGI
Strengthening and deacidification of paper: a single-step treatment based on nanoparticles and cellulose nanocrystals

VIII.B.4 Claudia MAZZUCA, University of Rome Tor Vergata
Cellulose nanocrystals and paper artworks: a fruitful association

VIII.C Biosafety of nanomaterials

Chair: Luisa FIANDRA, POLARIS Research Center - University of Milano-Bicocca
In collaboration with: University of Milano-Bicocca

The symposium is part of the workshop WS.V on "Solutions to address safety and regulatory aspects of nanomaterials"

VIII.C.1 Luciana DINI, Sapienza University of Rome
Aquatic animal models of increasing complexity for the assessment of nanomaterials effects

VIII.C.2 Rossella BENGALLI, University of Milano-Bicocca
Toxicity of metal oxide nanoparticles in vitro and in vivo: a safe-by-design approach

VIII.C.3 Carla DISTASI, University of Piemonte Orientale
SiO$_2$ nanoparticle-neuron interaction: activation of ionic channels and calcium influx

VIII.C.4 Maddalena COLLINI, University of Milano-Bicocca
Nanoparticles tracking and correlation for in vitro and in vivo systems
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Chair: Carlo Massimo CASCIOLA, Sapienza University of Rome

The symposium is part of the workshop WS.II on "Nanotechnology @Sapienza"

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### VIII.E NanoInnovation’s Got Talent

Chair: Fulvio UGGERI, Bracco Foundation

In collaboration with: Bracco Foundation

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<td>2D Materials for friction reduction</td>
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</tbody>
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IX.A Diagnostics and nanotechnologies for cultural heritage

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

In collaboration with: Centre of Excellence DTC Lazio

The symposium is part of the workshop WS.IV on "Nanotechnologies and nanomaterials for cultural heritage"

IX.A.1 Roberta FANTONI, ENEA
ADAMO project within DTC focused on analysis, diagnostics and monitoring cultural heritage

IX.A.2 Claudia PELOSI, University of Tuscia
Surface protection of the Sperone tuff of Villa Mondragone by nanostructured materials in the framework of ADAMO project

IX.A.3 Laura BERTANI, ENEA Fellow
Nanocomposites effect on laser ablation rate of treated marble samples

IX.A.4 Laura BRUNO, University of Rome Tor Vergata
Biodeterioration of stone monuments and remediation strategies

IX.A.5 Antonella MACAGNANO, Institute of Atmospheric Pollution Research (IIA), Rome
Hybrid devices based on nanostructured sensors for gas and VOCs monitoring

IX.A.6 Javier BECERRA & Pilar ORTIZ, Universidad Pablo de Olavide, Spain
New nanomaterials for the conservation of historic limestone buildings (in video-conference)

IX.B Nanomaterials, device and tools for life sciences

Chair: Eugenio AMENDOLA, CNR

In collaboration with: Sapienza University of Rome & Italian Trade Agency

IX.B.1 Peter GORELJKIN, Medical Nanotechnology LLC, Moscow, Russia
Scanning Ion Conductance Microscope as a New Tool for Bionanotechnology

IX.B.2 Miriam HASSAN, CNR-ISM & Università Politecnica delle Marche
Co/Pd-based synthetic antiferromagnetic multi-stacks for biomedical applications

IX.B.3 Elizaveta ANASTOVA, Information Technologies, Mechanics and Optics (ITMO) University, Saint Petersburg, Russia
Drug-loaded magnetite-based nanocontainers: new way of thrombosis treatment

IX.B.4 Emanuele MAURI, Campus Bio-Medico, Roma
Smart functionalized nanogels as selective carriers for intracellular drug release

IX.B.5 Matej BUZGO, InoCure s.r.o., Prague, Czech Republic
Importance of up-scaling in electrospinning and electrospraying
IX.C High efficiency solar cells and developing tandem concepts

Chair: Mario TUCCI, ENEA Casaccia
In collaboration with: ENEA

IX.C.1 Massimo IZZI, ENEA Casaccia, Rome
    AMPERE PROJECT: a new hope for solar cells in Italy and Europe

IX.C.2 Edmondo GILIOLI, CNR-IMEM, Parma
    Mechano-synthesis for PV applications

IX.C.3 Enrico LAMANNA, University of Rome Tor Vergata
    Perovskite/silicon tandem solar cell results and perspectives

IX.C.4 Claudia MALERBA, ENEA Casaccia, Roma
    Kesterite/silicon tandem solar cells
X.A  New Technologies for the safety and the reconstruction in seismic area

Chair: Maria Laura SANTARELLI & Maria Sabrina SARTO Sapienza University of Rome  
In collaboration with: Centre of Excellence DTC Lazio

The symposium is part of the workshop WS.IV on “Nanotechnologies and nanomaterials for cultural heritage”

X.A.1 Maria Laura SANTARELLI, Sapienza University of Rome  
SISMI Project – A multidisciplinary technology to improve the safety and the reconstruction in seismic areas

X.A.2 Federica ANTONELLI, Tuscia University  
Cellulose and lignin nano-based consolidant for waterlogged archaeological wood

X.A.3 Chiara GIULANI, CNR-ISMN, Roma  
Smart materials for the corrosion inhibition of metal artefacts

X.A.4 Barbara DE FILIPPO, IAC-CNR, Roma  
Corrosion behavior of Cu-Zn-Al shape memory alloy in controlled environments

X.A.5 Mohammad SHARBAF, Sapienza University of Rome  
Application of Nano particles for the consolidation of historical gypsum decoration and artworks

X.A.6 Chiara D’ERME, Sapienza University of Rome  
Nanofibrillated cellulose as nano-reinforcement for cementitious composites

X.B  Advanced Optical Devices and Techniques

Chair: Onofrio Antonino CACIOPPO, LFoundry  
In collaboration with: Sapienza University of Rome & Italian Trade Agency

X.B.1 Daniela IACOPINO, Tyndall National Institute, University College Cork, Ireland  
From food analysis to art conservation: Bottom up methods for the fabrication of Surface Enhanced Raman Scattering (SERS)

X.B.2 Sergey DUBKOV, National Research University of Electronic Technology (MIET), Moscow, Russia  
Prospects and application of plasmonic nanoparticles

X.B.3 Giuseppe MOCCIA, Lfoundry a SMIC Company, Avezzano (AQ)  
Raman Spectroscopy Profile for implant and anneal C-MOS image sensor photodiode characterization

X.B.4 Ivan IORSH, Information Technologies, Mechanics and Optics (ITMO) University, Saint Petersburg, Russia  
Active and nonlinear metasurfaces with transition metal dichalcogenides monolayers

X.B.5 Stefano PALLESCHI, Lfoundry a SMIC Company, Avezzano (AQ)  
Layer number and photo-luminescence engineering of Molybdenite
X.C  Novel Materials for Solar and Thermal Energy Harvesting

Chair: in definition
In collaboration with: Sapienza University of Rome & Italian Trade Agency

X.C.1 Jin Young KIM, Seoul National University, Korea
Halide Perovskite-based Tandem Solar Cells

X.C.2 Francesco ROSSELLA, Scuola Normale Superiore (SNS), Pisa
Advanced field effect control of semiconductor nanowire-based devices: electrolyte-gating for energy scavenging and harvesting

X.C.3 Hyun Suk JUNG, Sungkyunkwan University (SKKU), Suwon, Korea
Novel Materials and Process for Commercialization of Perovskite Solar Cells

X.C.4 Francesca LIMOSANI, University of Rome Tor Vergata
Synthesis and Characterization of Novel Carbon Materials-Porphyrin Hybrid Architectures as Active Light Harvesting Systems

X.C.5 Gloria ZANOTTI, ISM-CNR, Roma
Variously substituted metallophthalocyanines as hole transporting materials for perovskite solar cells
### Poster Sessions

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

Tuesday 11 - Friday 14, 09:00 - 18:00

#### General Poster Session - PO.I

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<td>Saeedeh BABAZADEH, Urmia University, Iran</td>
<td>Colorimetric and fluorimetric determination of pesticides residues in water using graphene quantum dots coupled with alizarin</td>
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<td>02</td>
<td>Ginevra BEGANI PROVINCIALI, Istituto di Nanotecnologia Laboratorio di Soft and Living Matter, CNR, Roma</td>
<td>X-rays phase contrast tomography for the 3D investigation of ALS disease</td>
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<td>03</td>
<td>Fabio BOCCUNI, INAIL</td>
<td>Risk management and communication approach in R&amp;D of nanomaterials</td>
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<td>Sabina BOTTI, ENEA</td>
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<td>05</td>
<td>Inna BUKREEVA, CNR-Institute of Nanotechnology</td>
<td>Phase contrast X-ray tomography as a tool of 3D visualization of spine and spinal cord of ex-vivo small animals</td>
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<td>06</td>
<td>Delia CAVALLO, INAIL</td>
<td>Induction of cytotoxic and inflammatory effects by two differently sized Silica Nanoparticles on human bronchial cells</td>
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<td>Cristiano CARLOMAGNO, Fondazione Don Carlo Gnocchi</td>
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<td>08</td>
<td>Alessandra COLANTUONI, University of Milano-Bicocca</td>
<td>Toxicological impact on 3D skin models of antibacterial metal oxide nanoparticles for medical textile coating</td>
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<td>09</td>
<td>Barbara CORTESE, CNR NANOTEC</td>
<td>Guided cell migration in a multi-cue environment</td>
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<td>Antonella D’ALESSANDRO, University of Perugia</td>
<td>Smart nanomodified cementitious materials for weigh-in-motion monitoring of roads and bridges</td>
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<td>Rosaria D’AMATO, ENEA</td>
<td>Quantum dots synthesis for the project Nanoscrla</td>
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<td>Simone DI MARE, FBK</td>
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<td>Giovanni DI MUCCIO, University of Rome Tor Vergata</td>
<td>Protein sequencing through α-Hemolysin nanopore: an atomistic simulations insights</td>
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<td>Gianluca DI PROFIO, ITM-CNR, Rende</td>
<td>AMECRYS – Project overview and main activities performed</td>
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<td>Marianna DIONISI, University of Piemonte Orientale “A. Avogadra”</td>
<td>The impact of SiO2 NPs on neuronal electrical activity and gene expression</td>
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<td>Gianluca FABI, Università Politecnica delle Marche</td>
<td>Nanoscale characterization of biological cells using inverted scanning microwave microscopy</td>
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<td>17</td>
<td>Lara FACCANI, CNR-ISTEC, Faenza</td>
<td>Dose properties characterization and redox potential of nanoparticles</td>
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<td>18</td>
<td>Emma FENUDE, CNR-DSCTM</td>
<td>Design and synthesis of peptide building blocks for tunable biopolymers</td>
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<td>19</td>
<td>Pamela FLORIS, University of Milano-Bicocca</td>
<td>Toxicological effects of nZn-CuO antibacterial coating on reverse osmosis membranes in the aquatic model zebrafish</td>
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<td>Alice GUALERZI, Fondazione Don Carlo Gnocchi</td>
<td>Nanovesicle characterization by raman spectroscopy: towards clinical application in diagnostics and treatment</td>
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<td>21</td>
<td>Erica GENTILIN, University of Padova</td>
<td>Cerium oxide nanoparticles prevent cisplatin ototoxicity in vitro</td>
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<td>22</td>
<td>Radenka KRSMANOVIC WHIFFEN, ENEA Casaccia</td>
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<td>23</td>
<td>Miriam HASSAN, ISM-CNR</td>
<td>Perpendicular magnetized GMR spin valves on large-area flexible substrates</td>
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<td>24</td>
<td>Alfonso MARTONE, IPCB-CNR, Naples</td>
<td>Insights on diels-alder coupling agent for the interfacial adhesion recovery in FRP and nanocomposites</td>
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<td>Ivania MARKOVA, University of Chemical Technology and Metallurgy, Bulgaria</td>
<td>Properties of intermetallic (Co-Sn, Ni-Sn, Co-Ni) nanoparticles depending on their elemental composition</td>
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<td>Laura MAUGERI, Istituto di Nanotecnologia Laboratorio di Soft and Living Matter, CNR, Roma</td>
<td>3D multimodal approach for the study of the CNS in healthy and diseased conditions</td>
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<td>Simona ORTELLI, CNR-ISTEC, Faenza</td>
<td>Monitoring occupational exposure scenarios during the production of nanostructured antibacterial textiles</td>
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<td>28</td>
<td>Gabriella PASQUA &amp; Luca DI PALMA, Sapienza University of Rome</td>
<td>Remediation of hexavalent chromium contaminated water by iron nanoparticles and impact of reused water on tomato plant growthformulations</td>
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<td>29</td>
<td>Valentina PICARDO, ISS</td>
<td>Nanopesticides: analytical techniques for chemical-physical characterization of different formulations</td>
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<td>Silvia PICCIOLINI, Fondazione Don Carlo Gnocchi</td>
<td>SPRi-based biosensor for the detection of circulating extracellular vesicles as biomarkers of neurological diseases</td>
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<td>Valentina PROTA, ISS</td>
<td>Towards a strategy for grouping nanomaterials: contribution of the italian national institute of health to the nanoreg2 project for cytotoxicity and genotoxicity</td>
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<td>Silvia SANTILOCCHI, Sapienza University of Rome</td>
<td>Carbon-based nanocomposites with epoxy and polyurethane matrix and applications in electrochemical biosensors</td>
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<td>Federico SCAGLIONE, University of Turin</td>
<td>Functionalized nanoporous gold as a new biosensor platform for ultra-low quantitative detection of human serum albumin</td>
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<td>Signal and power transfer from remote</td>
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<td>36</td>
<td>Ilaria ZANONI, CNR-ISTEC, Faenza</td>
<td>Silver nanoparticles 300K characterization in biological compartments for high and low exposure range</td>
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<td>37</td>
<td>Gloria ZANOTTI, ISM-CNR, Roma</td>
<td>Variously substituted metallophthalocyanines as hole transporting materials for perovskite solar cells</td>
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Nanoinnovation’s Got Talent - Special Poster Session - PO.II

Tuesday 11 – Friday 14 June, 09:00 - 18:00

01 Francesco BARBIERI, University of Siena
Effects of the food additive titanium dioxide on plant systems

02 Tommaso CIVITARESE, Sapienza University of Rome
Analysis of peptide-chains and transport properties of polar amino-acids chains

03 Francesca LIMOSANI, University of Rome Tor Vergata
Synthesis and characterization of novel Carbon materials-Porphyrin hybrid architectures as active light harvesting systems

04 Emanuele MAURI, Campus Bio-Medico
Smart functionalized nanogels as selective carriers for intracellular drug release

05 Ilaria RAGAZZINI, University of Bologna
PANI/Au/Fe₃O₄ nanocomposite materials for high performance electrochemical capacitors

Sapienza Poster Session - PO.III

Tuesday 11 – Friday 14 June, 09:00 - 18:00

01 Alessandro BELARDINI, Dept. SBAI, Sapienza University of Rome
Optical circular dichroism of chiral molecules in elliptical-holes array

02 Sara CERRI, Dept. SBAI and of Chemistry, Sapienza University of Rome
Functionalized Noble Metal Nanoparticles as a multifunctionals systems: from optoelectronics to nanomedicine

03 Cristina CICERO and Giovanni DE BELLIS, Dept. DIAEE, Sapienza University of Rome
Nanoscale evaluation of the effect of X-rays irradiation on parchment artefacts through AFM and SEM

04 Fabrizio FREZZA, Dept. DIET, Sapienza University of Rome
The detection of X@TiO₂ core-shell nanoparticles in coatings used for stone protection in Cultural Heritage field

05 Ivan MAZZETTA, Dept. DIET, Sapienza University of Rome
Microwave CVD Silicon Nanowires

06 Federica ZACCARDI, Dept. DIAEE, Sapienza University of Rome
Synergistic effects of hybrid carbon nanocomposites with aerospace-grade epoxy resin
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 the U.N. Food and Agriculture Organization, as well as the EAT–Lancet commission are calling for more innovation to address the challenges of the agri-food sector. NanoInnovation 2019 hosts the 3rd edition of the workshop “AgriNanoTechniques” co-organized by the Universities of Bologna, Parma, Verona and Udine. The workshop will be the forum for discussing the perspective of nanotechnologies in the primary sector among the stakeholders and scientific research. The development of AgriNanoTechniques has been started very recently; they will be implemented within the evolving science of precision agriculture, in which farmers use technology to target their use of water, fertilizer, plant protection products and other inputs. A second, broad potential application concerns the issues of reduction and valorization of agri-food wastes. The introduction of nanotechnologies in agriculture still need deepen basic and applied knowledge, however several promising results were achieved, so far. A huge development is taking place in this sector, therefore nanotech applications currently under development will soon be overtaken by other ideas that are expected to contribute to solve several issues in the field of sustainable agriculture.

### 11:00 - 12:30

**WS.I.1 - TT.II.A**

**Current Nano perspectives in the Agri-Food sectors**

Chair: Nelson MARMIOU, CINSA Consorzio Interuniversitario Nazionale per le Scienze Ambientali

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<tr>
<td>Alejandro PÉREZ-DE-LUQUE, Department of Plant Breeding and Biotechnology - IFAPA, Spain</td>
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<td><strong>When Nanotechnology meets Agriculture: will it help to improve farming?</strong></td>
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<tr>
<td>Francesco CUBADDA, ISS</td>
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<td><strong>Nanotechnology agri-food applications: how to assess their safety?</strong></td>
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<th>WS.I.1.3</th>
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<td>Alessio ADAMIANO, CNR-ISTEC</td>
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<td><strong>Bones as a source of calcium phosphates nanoparticles: towards a circular economy of smart phosphorous fertilizer</strong></td>
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<td>Maria Adele PROSPERONI, Coldiretti, Roma</td>
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<td><strong>Nanotechnology in the Agrifood sector: The role of regulation</strong></td>
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<tr>
<td>Francesco BIANCARDI, ZEISS Microscopy</td>
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<tr>
<td><strong>Correlative and Analytical case studies for micro and nanoparticles detection in Agrifood research</strong></td>
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**12:30 - 14:00 Light Lunch**
### 14:00 - 15:30

**WS.I.2 - TT.III.A**

**Nanomaterials and Plant Nutrition**

Chair: Zeno VARANINI, University of Verona

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<th>Marta MARMIROLI, University of Parma</th>
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<tr>
<td></td>
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<td><strong>Effects of multiple treatment with ENMs on zucchini plants</strong></td>
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<td><strong>FePO₄ nanoparticles as a source of nutrients: effects on plant transcriptome and on soil microbial communities and functions</strong></td>
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<th>Giuseppe CIUFFREDA, Fabbrica Cooperativa Perfosfati Cerea</th>
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<td><strong>Smart fertilizer: first results of nano fertilizer application in open field (kiwi - Actinidia chinensis ssp Jintao)</strong></td>
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<td></td>
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<td><strong>Hydroxyapatite Nanoparticles influence Germination and Plant Metabolism of Solanum lycopersicum</strong></td>
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<th>WS.I.2.5</th>
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<td></td>
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<td><strong>Possible applications and critical aspects of carbon nanomaterials use in agriculture</strong></td>
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#### 15:30 - 16:00 Coffee Break

### 16:00 - 17:30

**WS.I.3 - TT.IV.A**

**AgriNano Techniques Research Pathways**

Chair: Luca MARCHIOL, University of Udine

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<td><strong>Dextrin-based nanosponges as carriers for natural herbicides in horticulture</strong></td>
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<th>Elodie Genevieve VANDERLE, University of Verona</th>
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<td><strong>Plant disease biocontrol by means of biodegradable proteinaceous nanoparticles</strong></td>
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<td><strong>TiO₂ nanoparticles may lighten cadmium harmfulness in co-treatment experiments on the aquatic fern Azolla filiculoides</strong></td>
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<th>Sara FALSINI, University of Florence</th>
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<td><strong>Encapsulating a germination adjuvant in lignin nanoparticles to reactivate quiescent seeds</strong></td>
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The workshop is organized by CNIS, the interdepartmental research center of Sapienza on Nanotechnologies applied to Engineering, and Master Science Programme in Nanotechnology Engineering of Sapienza.

The workshop includes three oral sessions and a poster session on Research on Nanotechnologies @ CNIS, that are dedicated to illustrate the infrastructures and research activities in Sapienza on Nanotechnologies and Nanoscience with the aim of highlighting scientific expertises and more recent results.

The **first session (09:00 - 10:30)** is dedicated to the presentation of the current configuration of the CNIS which brings together 15 departments of Sapienza in the areas of basic sciences, engineering and medicine, confirming its purpose and vocation as a multidisciplinary propelling center and main reference point of nanotechnology research activities in Sapienza. The session is enriched by talks illustrating some of the leading research on Nanotechnologies in Sapienza in various application fields.

The **second (11:00 - 12:30)** and **third session (14:00 - 15:30)** illustrate other research activities at the Nanotechnology and Nanoscience Laboratory of Sapienza managed by the CNIS, with a particular focus on multiscale microscopies and characterization activities The most recent upgrades of the FESEM platform, of the X-ray diffractometer and of the atomic force microscopy platforms will be illustrated, in particular highlighting the most significant results obtained in recent activities in the framework of projects and scientific collaborations of researchers belonging to the CNIS. The sessions aim to evidence the role and relevance of connection and synergy at the level of skills and high-tech equipments, as necessary start-point to achieve scientific results of absolute importance in the state of art of nanotechnology in the international framework.

A **forth special session (16:00 - 17:30) Ex-alumni Nanotechnology Engineering @ Sapienza** will be dedicated to presentations showing significant results achieved by ex-alumni of the Sapienza Master Science programme in Nanotechnology Engineering. The aim is to promote and recognize the activity all around the world of ex-alumni of the Master Science program on Nanotechnology Engineering. On the basis of submitted abstract and CV, the Organizing Committee will award the "Best Nano ex-Alumnus Sapienza Prize 2019 and will cover all the participation costs (travel and accommodation) of the winner.
## Research on Nanotechnologies @ CNIS - part 1

**Chair:** Antonio d’ALESSANDRO, Sapienza University of Rome & Carlo Massimo CASCIOLA, Sapienza University of Rome

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<td>TT.V.B.1</td>
<td>Antonio d’ALESSANDRO, CNIS, Director</td>
<td><strong>CNIS: structure, overview, research lines and SNN-Lab</strong></td>
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<tr>
<td>WS.II.1.2</td>
<td>TT.V.B.2</td>
<td>Maria Sabrina SARTO, DIAAEE, Sapienza University of Rome</td>
<td><strong>Graphene &amp; Zno-Based Multifunctional Nanomaterials</strong></td>
</tr>
<tr>
<td>WS.II.1.3</td>
<td>TT.V.B.3</td>
<td>Carlo Massimo CASCIOLA, Dept. DIMA, Sapienza University of Rome</td>
<td><strong>A blood-vessel-on-a-chip for cavitation enhanced endothelial permeability</strong></td>
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<td>WS.II.1.4</td>
<td>TT.V.B.4</td>
<td>Teresa RINALDI, DBB ”C. Darwin”, Sapienza University of Rome</td>
<td><strong>Calcite biomineralization in the Etruscan tombs of Tarquinia</strong></td>
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<td>WS.II.1.5</td>
<td>TT.V.B.5</td>
<td>Giuseppe ZOLLO, Dept. SBAI, Sapienza University of Rome</td>
<td><strong>Atomistically resolved peptide bonds and amino-acids by tunneling current in nano-gaps of graphene nano-ribbons</strong></td>
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10.30-11.00 Coffee Break

## Research on Nanotechnologies @ CNIS - part 2

**Chair:** in definition

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<td>TT.VI.C.1</td>
<td>Francesco MURA, CNIS, Sapienza University of Rome</td>
<td><strong>Activities and nanocharacterization results at SNN-Lab: FESEM platform</strong></td>
</tr>
<tr>
<td>WS.II.2.2</td>
<td>TT.VI.C.2</td>
<td>Paola PIEDIMONTE, Dept. DIET, SBAI and DFF, Sapienza University of Rome</td>
<td><strong>Low Temperature and CMOS Compatible Growth of Silicon Nanowires for Biosensing applications</strong></td>
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<td>WS.II.2.3</td>
<td>TT.VI.C.3</td>
<td>Virgilio GENOVA, Dept. DITCA, Sapienza University of Rome</td>
<td><strong>Nanocomposite Coatings for Antifouling and Antiwear Applications in Turbomachinery Components</strong></td>
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<td>WS.II.2.4</td>
<td>TT.VI.C.4</td>
<td>Roberto LI VOTI, Dept. SBAI, Sapienza University of Rome</td>
<td><strong>Photoacoustic Spectroscopy of noble metal functionalized nanoparticles based networks</strong></td>
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<tr>
<td>WS.II.2.5</td>
<td>TT.VI.C.5</td>
<td>Olga RUSSINA, Dept. of Chemistry, Sapienza University od Rome</td>
<td><strong>Advanced X-ray analyses for nanomaterials (to be confirmed)</strong></td>
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12:30 - 14:00 Light Lunch
### Research on Nanotechnologies @ CNIS - part 3

**Chair:** Antonio d’Alessandro, Sapienza University of Rome

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<td>WS.II.3</td>
<td><strong>Francesca SCARAMUZZO</strong>, CNIS, Sapienza University of Rome</td>
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<tr>
<td>15:30</td>
<td>TT.VII.D</td>
<td><em>Activities and nanocharacterization results at SNN-Lab: AFM platforms</em></td>
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<td><strong>Daniele PASSERI</strong>, Dept. SBAI, University of Sapienza</td>
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<td><em>AFM-based methods for Elastic Measurements</em></td>
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<td><strong>Elena BLUNDO</strong>, Dept. of Physics, Sapienza University of Rome</td>
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<td><em>Controllable micro/nano-dome creation in proton-irradiated bulk transition-metal dichalcogenides</em></td>
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<td><strong>Diego DI GIROLAMO</strong>, Dept. of Chemistry, Sapienza University of Rome</td>
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<td><em>The effect of humidity on CsPbBr3 thin film: structure, morphology and optoelectronics</em></td>
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<td><strong>Laura PAGLIA</strong>, Dept. DITCA, Sapienza University of Rome</td>
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<td><em>Ceramic nano-filler influence on a carbon-phenolic ablator</em></td>
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**15:30 - 16:00 Coffee Break**

### Ex-alumni Nanotechnology Engineering @ Sapienza

**Chair:** Carlo Massimo CASCIOLA, Sapienza University of Rome

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<td>WS.II.4</td>
<td><strong>Umberto CELANO</strong>, IMEC, Belgium</td>
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<td>17:30</td>
<td>TT.VIII.D</td>
<td><em>Emerging Nanoelectronics Through Two- and Three-Dimensional Materials Analysis</em></td>
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<td><strong>Vittorio VERCILLO</strong>, AIRBUS, Germany</td>
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<td><em>Laser micro-/nano-structuring of surfaces for icephobic applications</em></td>
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<td><strong>Alessia GENNARO</strong>, KU Leuven, Belgium</td>
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<td><em>Real-time monitoring of the dehydration stress in multilamellar lipid vesicles by dielectric spectroscopy in combination with QCM</em></td>
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<td><strong>Livia ANGELONI</strong>, Delft University of Technology, The Netherlands</td>
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<td><em>Investigating cell mechanics on nanopatterned surfaces by Atomic Force Microscopy</em></td>
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<td><strong>Chiara SCOGNAMIGLIO</strong>, Istituto Italiano di Tecnologia</td>
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<td><em>In definition</em></td>
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<td><strong>Andrea MICANGELI</strong>, Sapienza University of Rome &amp; State University of New York - SUNY, USA</td>
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<td><em>Closing Remarks: Sapienza Scholars facing up the U.S. Grand Challenges through their Field Studies Abroad</em></td>
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</table>
In the last years graphene-based research has witnessed an incredible expansion, which, for example, in Europe has culminated with the launch of the Graphene Flagship. Moreover, not only graphene but a wide class of 2D materials beyond graphene (Silicene, Phosporene, BN, MoS2) were attracting the interest of both research institutions and private stakeholders. The aim of the symposium is to bring together scientists working on different technological uses not only of graphene, but also of 2D materials beyond graphene, in a multidisciplinary, academic and industrial environment, to disclose and discuss challenges and opportunities of this new class of materials. More in detail, the symposium will be focused on three different sessions. The first one will be focused on “Synthesis and characterization of 2D nanomaterial”, highlighting some keynote advancement in this field, namely emerging classes of 2D monoatomic lattice beyond graphene, advanced anisotropic synthesis strategies of graphene materials and 2D transition metal dichalcogenides as well as recent advancements in advanced characterization of 2D materials. The second one will be on “2D nanomaterial for energy harvesting and storage application”, and will provide an overview on the recent developments of in the application on 2D materials in energy harvesting and storage devices, with talks on third generation photovoltaics, mechanical nanogenerators, salinity gradient power and electrochemical energy storage technologies (rechargeable batteries and supercapacitor) covering several aspects of their fabrication and characterization toward their industrialization. The third one will focus on “Technological integration and processing of 2D nanomaterials” and will aim at discussing the technological exploitation and integration of graphene and 2D materials, from the development of a CMOS-compatible technological strategy for the wafer scale integration of these class of materials, up to the capabilities offered by the chemical approaches.

### Synthesis and characterization of 2D nanomaterial

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<tr>
<td>WS.III.1.1 TT.VI.E.1</td>
<td>Silicene and the X-enes for a new nanotechnology platform</td>
<td>Carlo GRAZIANETTI</td>
<td>CNR-IMM, Agrate</td>
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<tr>
<td>WS.III.1.2 TT.VI.E.2</td>
<td>In-operando atomic-scale study of graphene CVD growth on corrugated polycrystalline nickel</td>
<td>Cristina AFRICH</td>
<td>CNR-IOM, Trieste</td>
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<tr>
<td>WS.III.1.3 TT.VI.E.3</td>
<td>Chemical strategies to improve CVD graphene’s functionalities in technological applications</td>
<td>Giuseppe VALERIO BIANCO</td>
<td>CNR-NANOTEC</td>
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<tr>
<td>WS.III.1.4 TT.VI.E.4</td>
<td>An insight into Laser Induced Graphene and MoS2 as 2D active materials for nanotechnology applications</td>
<td>Marco FONTANA</td>
<td>IIT@Polito</td>
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10.30-11.00 Coffee Break
## Workshops

**14:00 - 15:30**

### WS.III.2 - TT.VII.F

**2D nanomaterial for energy harvesting and storage application**

**Chairs:** Vittorio MORANDI, CNR-IMM, Bologna & Andrea LAMBERTI, Polytechnic of Turin  
In collaboration with: Polytechnic of Turin and CNR-IMM

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<tr>
<td>WS.III.2.1 TT.VII.F.1</td>
<td>Emerging 2D materials for perovskite photovoltaics</td>
<td>Antonio AGRESTI, CHOSE - University of Rome Tor Vergata</td>
<td>Toward wafer-scale integration of graphene single crystals arrays</td>
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<tr>
<td>WS.III.2.2 TT.VII.F.2</td>
<td>Design and large-scale production of 2D materials for energy conversion and storage applications</td>
<td>Sebastiano BELLANI, IIT, Genova</td>
<td>Near-infrared all-silicon Schottky photodetectors: New perspectives through graphene</td>
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<td>WS.III.2.3 TT.VII.F.3</td>
<td>Few-layer mixed 1T-2H phase MoS2 as electrode material in supercapacitor and catalyst for hydrogen evolution reaction</td>
<td>Mara SERRAPEDE, IIT@Polito</td>
<td>Few-layer mixed 1T-2H phase MoS2 as electrode material in supercapacitor and catalyst for hydrogen evolution reaction</td>
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<tr>
<td>WS.III.2.4 TT.VII.F.4</td>
<td>2D MXene materials for electrochemical energy storage</td>
<td>Hui SHAO, Université Paul Sabatier, Toulouse, France</td>
<td>2D MXene materials for electrochemical energy storage</td>
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**15:30-16.00 Coffee Break**

**16:00 - 17:30**

### WS.III.3 - TT.VIII.A

**Technological integration and processing of 2D nanomaterials**

**Chairs:** Vittorio MORANDI, CNR-IMM, Bologna & Andrea LAMBERTI, Polytechnic of Turin  
In collaboration with: Polytechnic of Turin and CNR-IMM

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<tbody>
<tr>
<td>WS.III.3.1 TT.VIII.A.1</td>
<td>Toward wafer-scale integration of graphene single crystals arrays</td>
<td>Sergio PEZZINI, CNI@NEST, IIT Pisa</td>
<td>Toward wafer-scale integration of graphene single crystals arrays</td>
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<tr>
<td>WS.III.3.3 TT.VIII.A.3</td>
<td>Simulations of devices based on two-dimensional materials</td>
<td>Damiano MARIAN, University of Pisa</td>
<td>Simulations of devices based on two-dimensional materials</td>
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<tr>
<td>WS.III.3.4 TT.VIII.A.4</td>
<td>Fabrication and of graphene nanomechanical resonators and defects and residual stress analysis through non-invasive characterization approach</td>
<td>Stefano STASSI, Polytechnic of Turin</td>
<td>Fabrication and of graphene nanomechanical resonators and defects and residual stress analysis through non-invasive characterization approach</td>
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</table>
Il Distretto Tecnologico per i beni e le attività Culturali del Lazio è un centro di aggregazione e integrazione di competenze tecnologiche e tecnologie, applicabili alla conservazione, valorizzazione e promozione del patrimonio storico, artistico e culturale della regione Lazio. È una realtà di eccellenze, alla quale partecipano le università Sapienza, Tor Vergata, Roma Tre, Tuscia, Cassino e CNR, ENEA, INFN.

- Master, Corsi di alta formazione, Corsi di apprendimento permanente e Corsi online
- 12 Reti di laboratori di Alta Tecnologia
- Anagrafe delle competenze e Osservatorio regionale beni culturali

Vai su dtclazio.it
CoE DTC Lazio is the Centre of Excellence of DTC Lazio, the Technological District for the new technologies applied to cultural heritage of Regione Lazio (https://dtclazio.it/). The CoE DTC Lazio was founded in July 2018 by Sapienza University of Rome, Tor Vergata University, University of Roma Tre, University of Cassino and Lazio Meridionale, Tuscia University, CNR, ENEA, INFN. It is a centre of aggregation and integration of technological skills applied to the conservation, enhancement and promotion of the historical-artistic and cultural heritage of the Lazio Region. Objectives of the DTC Lazio are: to connect and enhance the existing research, training and technology transfer skills in the network set up by the founding partners (five state universities and three major research institutions); to create and support qualification and specialization initiatives for students and professionals in the sector, through training and advanced training; to allow a qualitative leap in the growth of the entire regional sector of technologies for cultural assets and activities and contribute to the establishment in Lazio of a competitive centre of excellence at European and international level; to support the processes of networking technical-scientific, entrepreneurial and institutional resources, improving the overall effectiveness of investments in the sector.

CGSI (Research Center for Colloid and Surface Science) is an Italian public research organization. The members of CGSI work in ten different Italian Universities on closely related scientific fields, concerning both fundamental and applied research. Fields of interest include: nanostructured and ultrafine materials, structure and dynamics of supramolecular assemblies, anophasic ternary oxides, structural analysis of biomolecules, formulation of nanophasic systems, innovative processes for the conservation and restoration of cultural heritage, bioelectronics and organic electronics. CGSI is a key international player in the realization of innovative systems and nanostructured formulations for the conservation and restoration of cultural heritage as highlighted by the international interest in CGSI methods by international scientific journals and reviews, as well as national and international press and media reports.
Preserving the unique European Cultural Heritage (CH) is a challenging task. In the last decades, environmental pollution in European cities has dramatically increased hindering the preservation and accessibility of both movable (e.g. archives and paintings collection) and immovable (e.g. buildings and monuments) CH. Lengthy and poorly effective restoration practice negatively affect the social and economic activities related to CH valorization. Nowadays, nanotechnology has become a popular tool to produce advanced materials, even in cultural heritage field. Examples include advanced conservation products, such as self-cleaning, deacidification, consolidation, depollutant or repellence; some of these products are already on the market. Among the produced nanomaterials both nanoparticles (TiO$_2$, SiO$_2$, carbonates, and others) and composite systems (organic/inorganic) have shown great effectiveness. The main problem of ‘classic’ materials regards the formation of thin surface coatings that poorly adhere to the substrate, resulting in a low durability. For this reason, the development of long-lasting solutions based on nanotechnology (i.e. functionalized nanoparticles integrated in a matrix capable of penetrating the pore structure of substrates and subsequently adhere to CH materials) is a promising approach to be investigated. Namely, in most cases the materials have the same (or very similar) composition and physico-chemical properties than those of the artifacts, in order to grant the full compatibility with the original art materials. In cases where full compatibility cannot be achieved, the goal is the development of materials whose application is, as much as possible, reversible. The session will illustrate state-of-the-art research achievements in the field.

Chair: David Chelazzi, CSGI
In collaboration with: CSGI

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<th>Session</th>
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| WS.IV.1.1 | Gabriella DI CARLO, CNR-ISMN, Roma  
Multifunctional materials based on chitosan for the chemisorption of degrading species in museum environments |
| WS.IV.1.2 | Gianfranco SABELLA & Nello VITULIANO, IONFLY s.r.l.  
Plasma & Cultural Heritage: new materials made by plasma technologies |
| WS.IV.1.3 | Giovanna POGGI, CSGI  
Strengthening and deacidification of paper: a single-step treatment based on nanoparticles and cellulose nanocrystals |
| WS.IV.1.4 | Claudia MAZZUCA, University of Rome Tor Vergata  
Cellulose nanocrystals and paper artworks: a fruitful association |

10.30-11.00 Coffee Break
Preserving the unique European Cultural Heritage (CH) is a challenging task. In the last decades, environmental pollution in European cities has dramatically increased hindering the preservation and accessibility of both movable (e.g. archives and paintings collection) and immovable (e.g. buildings and monuments) CH. Lengthy and poorly effective restoration practice negatively affect the social and economic activities related to CH valorization. Nowadays, nanotechnology has become a popular tool to produce advanced materials, even in cultural heritage field. Examples include advanced conservation products, such as self-cleaning, deacidification, consolidation, depollutant or repellence; some of these products are already on the market. Among the produced nanomaterials both nanoparticles (TiO₂, SiO₂, carbonates, and others) and composite systems (organic/inorganic) have shown great effectiveness. The main problem of ‘classic’ materials regards the formation of thin surface coatings that poorly adhere to the substrate, resulting in a low durability. For this reason, the development of long-lasting solutions based on nanotechnology (i.e. functionalized nanoparticles integrated in a matrix capable of penetrating the pore structure of substrates and subsequently adhere to CH materials) is a promising approach to be investigated. Namely, in most cases the materials have the same (or very similar) composition and physico-chemical properties than those of the artifacts, in order to grant the full compatibility with the original art materials. In cases where full compatibility cannot be achieved, the goal is the development of materials whose application is, as much as possible, reversible. The session will illustrate state-of-the-art research achievements in the field.
New Technologies for the safety and the reconstruction in seismic area

The SISMI project, according to the aims of the Centre of Excellence for the Latium DTC, promotes the use of innovative technologies, favouring their transfer and dissemination in favour of the multiple stakeholders involved in the improvement of the safety of Cultural Heritage. The reconstruction and seismic improvement are intended as a dynamic process of progressive reduction of risk. Physical structural and socio-economic elements collaborate to this purpose to guarantee the safety of Cultural Heritage, but also to promote innovative forms of development, enhancement and revitalization, and to increase the resilience of local communities. Especially, a specific topic of the project is for identifying innovative methodologies and new generation of materials for the restoration and recovery of historical materials and artifacts to improve the reconstruction and the performance after a earthquake or a catastrophic event.

Chair: Maria Laura SANTARELLI, Sapienza University of Rome
In collaboration with: Centre of Excellence DTC Lazio

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<td><strong>SISMI Project – A multidisciplinary technology to improve the safety and the reconstruction in seismic areas</strong></td>
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<th>Federica ANTONELLI, Tuscia University</th>
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<td><strong>Cellulose and lignin nano-based consolidant for waterlogged archaeological wood</strong></td>
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<th>TT.X.A.3</th>
<th>Chiara GIULIANI, CNR-ISMN, Roma</th>
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<td><strong>Smart materials for the corrosion inhibition of metal artefacts</strong></td>
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<th>Barbara DE FILIPPO, IAC-CNR, Roma</th>
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<td><strong>Corrosion behavior of Cu-Zn-Al shape memory alloy in controlled environments</strong></td>
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<th>Mohammad SHARBAF, Sapienza University of Rome</th>
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<td><strong>Application of Nano particles for the consolidation of historical gypsum decoration and artworks</strong></td>
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<th>Chiara D’ERME, Sapienza University of Rome</th>
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<td><strong>Nanofibrillated cellulose as nano-reinforcement for cementitious composites</strong></td>
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12:30 - 14:00 Light Lunch
The increasing regulatory requirements for characterization and testing of nanomaterials and nano-related products (e.g., recent updates of REACH, and occupational health and safety, biocidal, pharma, medical devices, food, cosmetics regulations), makes mandatory for all R&I players to consider state-of-the-art methodologies, procedures and data, for a safe use of nanomaterials during research, production, use and end-of-life of nano-related products.

Within four sessions on June 13th, speakers from research, companies and governmental bodies will provide an overview of most recent developments in approaches for risk governance of nanomaterials, including prevention, assessment, management and communication aspects.

### 09:00 - 10:30

#### WS.V.1 - TT.V.C

**Risk governance and regulatory preparedness: managing risks and risk perception of nanomaterials - part 1**

Chairs: Andrea PORCARI, Elvio MANTOVANI, Airi  
*In collaboration with: caLIBRAte project, Airi, Federchimica and INAIL*

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<td>Introduction: the caLIBRAte risk governance framework</td>
<td>Andrea PORCARI, AIRI</td>
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<td>WS.V.1.2</td>
<td>State of the art of methods and models for risk management of nanomaterials</td>
<td>Fabio BOCCUNI, Italian Workers’ Compensation Authority, INAIL</td>
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<td>WS.V.1.3</td>
<td>Risk governance of nanomaterials: state of the art and the role of the ISS multidisciplinary unit on nanotechnologies</td>
<td>Flavia BARONE, National Institute of Health (ISS)</td>
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<td>WS.V.1.4</td>
<td>Risk management models for nanomaterials: practical experiences and perspectives</td>
<td>Alex ZABEO, Green Decision Srl</td>
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10.30-11.00 Coffee Break
## Workshops

### 11:00 - 12:30

#### WS.V.2 - TT.VI.B

**Risk governance and regulatory preparedness: managing risks and risk perception of nanomaterials - part 2**

*Chairs: Andrea PORCARI, Elvio MANTOVANI, Airi*

*In collaboration with: calIBRAte project, Airi, Federchimica and INAIL*

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<th>Elisabetta BORSELLA, AIRI</th>
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<tr>
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<td><strong>Risk perception and risk management of nanomaterials: stakeholders views</strong></td>
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<td><strong>A comparative analysis of case studies on specific R&amp;I value chain: exposure scenarios on production of nanomaterials in selected sectors</strong></td>
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<td><strong>Managing occupational safety issues of nanomaterials in manufacturing processes: the PROTECT case studies</strong></td>
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<th>Dimiter PRODANOV, IMEC, Belgium</th>
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<td><strong>The risk profile of nanoelectronics concerning “nano”. Lessons from NanoStreeM project</strong></td>
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<th>WS.V.2.5</th>
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<th>Closing remarks: the future of NM risk governance: the Gov4Nano project</th>
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### 12:30 - 14:00 Light Lunch

### 14:00 - 15:30

#### WS.V.3 - TT.VII.C

**Nanotechnologies and Key Enabling Technologies in innovation processes: the NanoKey project for risk prevention in the workplace**

*Chair: Fabio BOCCUNI, INAIL*

*In collaboration with: INAIL, Italian Institute of Technology (IIT)*

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<td><strong>The NanoKey project for Prevention-through-Design approach to nanotechnologies and KETs</strong></td>
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<td><strong>3-D models and innovative in vitro test to evaluate potential toxic effects of nanomaterials</strong></td>
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<td><strong>Exposure measurements and samplings in the workplaces: study design and preliminary results</strong></td>
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<td><strong>Bio-monitoring of exposed workers</strong></td>
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### 15.30-16.00 Coffee Break
## Biosafety of nanomaterials

**Chairs:** Luisa FIANDRA, POLARIS Research Center - University of Milano-Bicocca  
*In collaboration with:* University of Milano-Bicocca

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<td>Luciana DINI, Sapienza University of Rome</td>
<td>Aquatic animal models of increasing complexity for the assessment of nanomaterials effects</td>
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<td>Toxicity of metal oxide nanoparticles in vitro and in vivo: a safe-by-design approach</td>
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<td>Carla DISTASI, University of Piemonte Orientale</td>
<td>SiO(_2) nanoparticle-neuron interaction: activation of ionic channels and calcium influx</td>
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<td>Maddalena COLLINI, University of Milano-Bicocca</td>
<td>Nanoparticles tracking and correlation for in vitro and in vivo systems</td>
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*10.30-11.00 Coffee Break*
New perspectives in nano-analysis with correlative 3D Raman imaging – workshop and hands-on session

Correlative microscopy combines the advantages of different techniques to facilitate an enhanced characterization of samples. Scanning electron microscopy and Atomic Force Microscopy are powerful methods for investigating surface structures on the nanometer scale. Confocal Raman imaging is a non-destructive, label-free approach that can chemically identify the molecules in a sample in 3D. The presentation will show the hybrid techniques which can be realized with the WITec confocal Raman imaging microscope platform with an accompanying theoretical introduction and examples of measurements.

**ABSTRACT**

Correlative microscopy combines the advantages of different techniques to facilitate an enhanced characterization of samples. Scanning electron microscopy and Atomic Force Microscopy are powerful methods for investigating surface structures on the nanometer scale. Confocal Raman imaging is a non-destructive, label-free approach that can chemically identify the molecules in a sample in 3D. The presentation will show the hybrid techniques which can be realized with the WITec confocal Raman imaging microscope platform with an accompanying theoretical introduction and examples of measurements.

**PROGRAMME**

09:00 Welcome
09:30 3D Raman Imaging & Correlative Microscopy techniques – An Introduction
10:30 Coffee Break
11:00 Principles of data evaluation for correlative Raman, SEM and AFM measurements
11:30 Hands-on session and measurement workflow demonstration at a confocal Raman Imaging system
12:00 Open discussion

**SPEAKER INFORMATION:**

Nour Hafi

WITec GmbH, Ulm, Germany

Nour Hafi is currently working as an Applications Scientist at WITec GmbH in Ulm, Germany. He obtained his Ph.D. at the Technical University of Braunschweig and continued in a postdoctoral position at the Technical University of Braunschweig and at the Max Planck Institute of Biophysical Chemistry in Goettingen, Germany simultaneously. His research was focused on super resolution light- and multi-photon- microscopy.
ABSTRACT

Synchrotron beamline X-ray techniques have several inherent advantages over their laboratory equivalent in terms of their massively higher source brilliance, energy coherence, tuneability and sub-micron resolution capabilities. Synchrotron x-ray techniques such as microXRF (X-ray fluorescence), XAS (X-ray Absorption Spectroscopy with XANES & EXAFS) and nano XRM (X-ray Microscopy) are becoming increasingly central to advanced research in alternative energy, catalysts, medicine, semiconductor materials to geology. This has led to oversubscription and immense competition in acquiring beamtime. In spite of the growth of these techniques at synchrotron facilities, efforts toward developing higher sensitivity and smaller X-ray spot size laboratory X-ray capabilities have progressed relatively slowly due to bottlenecks in X-ray optics and low brightness laboratory X-ray sources.

We have developed a breakthrough laboratory microfocus X-ray source with user selectable or tunable energy which has significantly higher brightness/flux than conventional micro focus &/or rotating anode sources. Coupling this patented source with our novel double-paraboloidal X-ray mirror lenses, we are introducing a suite of laboratory X-ray instrumentation with performances close to their synchrotron equivalent. These include microXRF, XAS, and nano-XRM.

Rapid non destructive trace level elemental compositional mapping at ambient by the Attomap (μXRF) will be illustrated with biological tissue, nanoparticles in drug delivery, geology and material science. The metrology of thin film thickness and dopants from atomic layer deposition (ALD) at sub A thickness sensitivity in semiconductor wafers will also be shown. The detection sensitivity of the Attomap is the the sub ppm level which is comparable to TOF-SIMS. The Lab Quantum Leaptm XAS system has sub-eV energy resolution for chemical/oxidation state analysis using XANES. Bond length or neighboring atoms are analyzed with EXAFS techniques. Scan times are in minutes to hours. This technique is crucial for our understanding of in operando of charge-discharge cycle of batteries; the aging of catalysts and processes in a variety of novel advanced materials. Results obtained are comparable to synchrotron XAS. The Trilambda nano-XRM is a tomography system for 3D volumetric representations of material microstructures with spatial resolutions down to 40 nm with a choice of three X-ray energies to analyze soft to hard materials. All these novel X-ray techniques are complementary. They form part of the essential components in the emerging field of correlative and functional microscopy, tying structural information from optical and electron microscopy with elemental, chemical states and 3D volumetric data in applied research.
PROGRAMME

09.00 Welcome & Introduction to High brightness, Multi anode X-ray Source & High Resolution X-ray optics technologies for next generation X-ray Techniques

09.30 Novel MicroXRF with sub 5 um spot size for rapid elemental composition to sub ppm mapping for geology, cultural heritage, drug delivery, energy research, material science and electronics

10.30 Coffee Break

11.00 Lab Based X-ray Absorption Spectrometry (XAS) for XANES & EXAFS. Applications in Energy research batteries, fuel cells, catalysts, nanomaterials for charge discharge, ageing & In situ characterization.

11.45 Multienergies X-ray Microscopy (XRM) with resolution < 40 nm for non invasive 3D characterization of hard to soft materials

12.00 Summary, Q & A

SPEAKER INFORMATION

S.H. Lau, has over 20 years’ experience in microscopy, material characterization and instrumentation in diverse applications from material science research, geoscience, tissue engineering and semiconductor failure analysis. He has published several papers in material characterization and imaging in the field of X-ray Microscopy. He existed from Xradia after it was acquired by Carl Zeiss in 2013. He is now the Vice President of Business Development in Sigray Inc, pioneering the development of ultra brightness, tunable x-ray sources and advanced x-ray optics for lab instrumentation and synchrotron applications.
MORNING PROGRAMME:

09:00 Welcome and Introduction
09:10 Talk: “Advances in surface electrical characterization at the nanoscale by using Scanning Kelvin probe microscopy (SKPM)”
09:30 Instrument Demonstration on Park NX10 AFM
10:30 Discussion and Summary

AFTERNOON PROGRAMME:

14:00 Welcome and Introduction
14:10 Talk: “Advances in surface electrical characterization at the nanoscale by using Scanning Kelvin probe microscopy (SKPM)”
14:30 Instrument Demonstration on Park NX10 AFM
15:30 Discussion and Summary

ABSTRACT

Scanning Kelvin Probe microscopy (SKPM) allows measuring work function and electrical potential distribution of various materials, to provide a better understanding of nanostructures and CMOS semiconductor devices to improve their performance. SKPM has also been used to determine quantitative information such as the charge distribution in polymer materials. Compared to other techniques, SKPM is nondestructive and compatible to ambient conditions. Conventional Amplitude Modulation (AM) SKPM has already allowed remarkable enhancements in the field of device reliability, but it is limited by its signal-to-noise detection ability. For this scope Park Systems recently developed Frequency Modulation FM-SKPM. The results show that FM-SKPM is significantly more sensitive than AM-SKPM in measuring surface potential distribution.

In this workshop we will demonstrate that FM-SKPM has better sensitivity in detecting surface potential variation of polymer material in comparison to AM-SKPM. In fact, FM-SKPM provided higher resolution with sharper edges of the domains and detected smaller potential variations than AM-SKPM on the same irregular surface.

SPEAKER INFORMATION

Dr. Andrea Cerreta – Application Scientist at Park Systems
pse@parksystems.com | www.parksystems.com
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**Airi** (Italian Association for Industrial Research) is a not-for-profit private organization. Its mission is to promote industrial Research and Innovation and co-operation between the private and public sectors, to enhance the competitive position of the Country.

Airi works with its members - large industrial enterprises and SMEs, leading universities, public research institutions, technology clusters and financial organizations - to analyse, promote and sustain future industrial innovation, development of R&I policies and strategies, sustainability and social responsibility aspects of technological innovation, and public-private partnerships.

Visit the stand to have updated information on activities and opportunities for cooperation with Airi and Airi/Nanotec IT, including the following publications, projects and initiatives:

- Analysis of Priority Technologies for the Italian Industry
- National Working Group on Responsible Research and Innovation
- NanoRestArt (H2020): Nanomaterials for the Restoration of works of Art
- Prisma (H2020): A roadmap to develop long-term industrial strategies to innovate responsibly
- GoNano (H2020): Societal engagement in nanotechnologies
- Nano-Lab (INAIL): Risk management of nanomaterials in occupational settings
- caLIBRAted (H2020): Risk governance tools to facilitate regulatory compliance and promote safe and sustainable use of nanomaterials
- Gov4Nano (H2020): Risk and Innovation governance of nanotech and enabling technologies
Alfatest is distributing scientific equipment dedicated to Materials science and Bio-sciences, providing its customers with leading technologies and high-level technical and applicative support based on a 30 years' experience. In addition, the contract analysis laboratory AlfatestLab is available to anyone for training, demonstrations, method development, and general scientific support on all our technologies.

Alfatest srl is the exclusive distributor in Italy for Malvern Panalytical products dedicated to particle size and shape analysis, rheology, GPC/SEC and microcalorimetry.

Alfatest is also distributor in Italy for: Thermo Fisher Scientific Desktop SEM, Micromeritics, Formulation, Postnova Analytics, Haver&Boecker, Microfluidics, Freeman Technologies, Sopat, Alpha-MOS, Armfield, Syrris, Dolomite Microfluidics, Applied Photophysics, ForteBio, Molecular Devices and ONI.

Malvern Panalytical technologies are used by scientists and engineers in a wide range of industries and organizations to solve the challenges associated with maximizing productivity, developing better quality products and getting them to market faster. Our focus is on creating innovative, customer-focused solutions and services to enhance efficiency and deliver tangible economic impact through chemical, physical and structural analysis of materials. Underpinned by extensive industry knowledge and technical and applications expertise, Malvern Panalytical instruments are designed to help users better understand a wide variety of materials, ranging from proteins and polymers, particle and nanoparticle suspensions and emulsions, through to sprays and aerosols, industrial bulk powders, minerals and high concentration slurries, and solids, such as metals and building materials, plastics and polymers. Our technologies enable the measurement of parameters including particle size, shape and concentration, chemical identity, zeta potential, protein charge, molecular weight, mass and conformation, biomolecular interactions and stability, rheological properties, elemental concentrations and crystallographic structures. Highly reliable and robust characterization of these properties is fundamental to predicting how a product will behave during use, to optimizing its performance and achieving manufacturing excellence. Malvern Panalytical was formed by the merger of the businesses Malvern Instruments and PANalytical, including the companies ASD and Claisse, on 1st January 2017, and employs over 2,000 people worldwide. The combined entity is a strong player and innovator in the materials characterization market and will leverage the strengths of the individual companies in their end markets, ranging from building materials to pharmaceuticals and from metals and mining to nanomaterials. Applications laboratories around the world and a global sales and service presence supported by a strong distributor network ensure unrivalled levels of customer support. Malvern Panalytical is part of Spectris plc, the productivity-enhancing instruments and controls company.
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Special attention has always been given to the nanotechnology. Assing can propose observation, analysis and process instruments such as: electronic microscopes, X-ray microscopes, dual beam systems (Tescan - Orsay), a wide range of diffraction and X-ray fluorescence equipment (Rigaku), Electronic lithography systems (Crestec), atomic force microscopies, optical and stylus profilometers (BRUKER Nano Surfaces), XPS, TOF SIMS, AUGER (PHi), in-situ characterization (Protochips), nanomanipulators (Imina).

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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.
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Crestec Corporation provides Dedicated electron beam lithography systems, tailored to deliver extremely high currents in a minimal diameter beam spot.
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e-mail: sales@assing.it

Imina Technologies is the maker of the miBot™, an extremely versatile and intuitive to use piezo-based sample manipulator. These innovative robotic solutions for positioning, handling and electrical sensing at micro and nano scales in combination with various third party instruments are used to position with precision probe tips on electronic devices, sensors, semiconductors, MEMS, etc or to handle and characterize electric properties of nanoparticles, nano wires & fibers in material science.

These techniques can be used in combination with the SEM, Optical Microscope, X-Ray, AFM, Raman, etc or at an electrical probing workbench.

PHYSICAL ELECTRONICS INC. (PHI)
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e-mail sales@assing.it

Physical Electronics (PHI) the world’s leading supplier of UHV surface analysis instrumentation used for research and development of advanced materials in a number of high technology fields including: nanotechnology, microelectronics, storage media, bio-medical, and basic materials such as metals, polymers, and coatings.

PHI’s innovative XPS, AES, and SIMS technologies provide our customers with unique tools to solve challenging materials problems and accelerate the development of new materials and products.
For over a decade, Protochips pioneered electron microscopy solutions to accelerate in situ research. Protochips innovation is accomplished by continuously focusing on your needs and constantly improving your experience through our products. Researchers can now better understand material behavior by analyzing samples in real-world gas or liquid environments, at high temperature and with ultra-low noise electrochemical and electrical biasing techniques, with high spatial resolution and without sacrificing the analytical capabilities of the TEM (such as EDS).

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.
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Riber is the world’s leading provider of molecular beam epitaxy (MBE) equipment, the most versatile and precise tool to deposit precise amounts of material onto substrates and which are used to design and create the newest semiconductor structures for manufacturing many novel devices. It is also a leading supplier of high-quality material evaporation sources.

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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.

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Rigaku products are worldwide well known for the top-level design, the high performance and the unequalled reliability.
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tel. +420 530 353 411
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**TESCAN** is a global suppliers of scientific instruments. The company is building its reputation and brand name in the field of designing and manufacturing scanning electron microscopes and system solutions for different applications.

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- dual beam
- supplementary accessories for SEMs
- light optical microscopy accessories and image processing
- special vacuum chambers and custom systems
- detection systems
- scientific hardware and software development

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**XWINSYS**

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**XwinSys** is dedicated to designing, manufacturing and marketing novel metrology solutions based on enhanced X-Ray technology combined with automated optical 3D and 2D technologies, for the semiconductor and related industries.


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**CNR NANOTEC**

c/o Campus Ecotekne – Università del Salento
Via Monteroni
73100 Lecce (LE), ITALIA
website: www.nanotec.cnr.it
Contact person: Luca LEUZZI
e-mail luca.leuzzi@cnr.it

The National Research Council Institute **CNR-NANOTEC** operates through its four research divisions located in Lecce, Bari, Roma and Rende (CS). CNR-NANOTEC mission is the development and prototyping of innovative materials and devices obtained using bottom-up approaches (self-assembling, molecular engineering of polymers, biological and organic molecules) as well as top-down approaches (nanotechnology/last generation lithographic techniques applied to semiconductor materials).

Further core activities are the study and the manipulation of soft matter and biomaterials and the study of the basics of plasma chemistry and physics and the development of new plasma methodologies for application in many fields such as environment, energy and life sciences, aerospace and cultural heritage.

Amongst the many research activities, we here cite:

1) design and synthesis of colloidal nanoparticles for many applications such as catalysis, drug-delivery, third generation solar chemical, next generation OLED lighting; 2) design and synthesis of 2D materials such as graphene and MoS for applications in electronics as well as optoelectronics; 3) development of new generation ultralast quantum computers and data transmission systems through spintronics and polaritronics; 4) fabrication of lab-on-a-chip systems (LOCs) for diagnostics and point-of-care therapies; 5) synthetic biology and bioreactors for the development of new biocompatible materials and systems with predetermined functions; 6) plasmas for energy and space applications (electric propulsion for microsatellites and plasma assisted combustion).

CNR-NANOTEC mission is to attract and involve the best Italian and foreign researchers working abroad through an open-access management of the facilities.
**Fondazione Bruno Kessler**

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 a 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.

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**Gambetti Kenologia SRL**

Gambetti Kenologia has chosen again NanoInnovation to promote together with Park Systems and KLA the newest technical solutions in Atomic Force Microscopy as well as in Nanoindentation, Stylus and Optical profilometry.

Gambetti Kenologia, on the Italian market since early 70s, provides solutions for Academia and Industries in the following fields of activities:

- Surface Characterization
- Process Systems for Plasma Thin Films
- Process control for Vacuum
- UHV
- Gas Analysis and few others

Our brand includes also bench top plasma systems fully developed and produced at Gambetti Kenologia.

For more info: www.gambetti.it – www.plasmi.eu
Exhibitors

**KLA-TENCOR**
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**Key Products:** Stylus and Optical profilers and Nanoindenters

At KLA-Tencor’s Instruments group, our market segments span semiconductor and data storage manufacturing, MEMS, optoelectronics, hard coating, thin film, material science and general scientific research—a range of industries that measure surface topography to control their process. Instruments Group’s products range from benchtop stylus and optical profilers and nanoindenters used in research and industrial environments to automated high resolution profilers and nanoindenters for advanced IC production fabs and QA/QC lab.

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**PARK SYSTEMS**
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**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.
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InoCure is bionanotechnological company focused on development of practically applicable solutions using electrosprinning and electrosraying. Strong RnD involvement of our company is powering technical and chemical development of industrially feasible solutions for life science, medical, cosmetic and material engineering applications.

We are offering InoSPIN - the first lab-to-industrial modular electrosprinning unit delivering unprecedented flexibility, reproducibility and industrial capabilities in compact package. Nevertheless, we are delivering InoMATRIX membranes for 3D cell culture applications.

InoMATRIX redefines the way how cells are cultured and delivers more efficient and ethical cell biology research.

Genano OY - Established in Finland 1999, we currently operate in over 30 countries worldwide. With our Headquarters located near Helsinki, we have other offices in Belgium, Sweden, Italy, China, Taiwan and Canada. Addition to our own offices, we have a global network of distributors. Genano-Italia (CSA srl) is the official importer for Genano units in Italy and together with its distributors aims to become leader in indoor air decontamination, same as the Group is doing worldwide with over 5000 Units installed. We operate in a wide range of business areas, ensuring that manufacturing processes are secured in laboratories, clinics, and cleanrooms and in other manufacturing facilities. We provide clean air as a service ensuring that the indoor air quality in public buildings, such as schools, nurseries and other public buildings is health and safe to breath. Our unique, patented cold-plasma technology is based on a powerful electronic filter less air purification. The main benefits of our technology are:

• Constant air flow, that does not get disrupted because of clogged filters;  
• Constantly high performance thanks to our automatic washing unit;  
• No use of any filtration media, our units don’t offer a substrate for microbes to grow;  
• Complete killing and removal of all living microbes; such as viruses and bacteria.

Our technology brings another remarkable benefit for users: the ability to remove airborne impurities of all sizes – down to nanometer size. It is not only the matter of how many percentages of all particles the purification technology filters, but the importance is also the size of the particles the system collects.

Co-operation with universities and research institutes. We work with different research institutes and universities worldwide, to constantly improve and develop our technologies, as well as to ensure our solutions are the best choice on the market, to fulfill the needs of our clients. We are willing to improve your air quality, please involve us for any difficult case where high performances are needed.

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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.R.I.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.

IT-FAB
website: http://itfab.bo.imm.cnr.it
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IT-fab (http://itfab.bo.imm.cnr.it/) is the Italian network for Micro and Nano Fabrication research
infrastructures, an initiative that aims to (i) establish harmonized rules, for clean room management and access
policies, IP rules, external costs and reporting, (ii) harmonize and share design and simulation software, service
contracts, management of professional services, (iii) define joint best practices for reciprocal support and
backup, complementarities, standardization of clean room practices, interoperability and data exchange
formats and (iv) define common information system for know-how, projects and equipment databases.

Members of IT-FAB are CNR-DSFTM (IMM and Nanotec Institutes), PoliFAB from Politecnico di Milano, FBK-
CMM and Fondazione Inphotec.

IT-fab is partner of the EuroNanoLab initiative (http://euronanolab.com)
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.

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JEOL is a leading global supplier of scientific instruments used for research and development in the fields of nanotechnology, life sciences, optical communication, forensics, and biotechnology.

Utilizing its unique technologies, products, services, and knowledge, JEOL helps its customers make significant breakthroughs in product development and scientific research.

JEOL products range from scientific instrumentation to industrial equipment including Scanning electron microscopes (SEM), Transmission electron microscopes (TEM), Auger micro probe analyzers (AES), Electron probe micro analyzers (EPMA), Photoelectron spectrometers (XPS), Mass spectrometers, NMR spectrometers, Electron spin resonance (EPR), and semiconductor tools.

JEOL (ITALIA) S.p.A. ensure both commercial and service assistance of JEOL instruments installed on the Italian territory thanks to highly organized and specialized structure.
**LOT-QUANTUMDESIGN SRL**
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LOT-QuantumDesign for over 45 years has been one of the leading distributors of high-tech instrumentation for scientific, academic and industrial research: our product range comprises optics, components, and high technology systems for many different sectors as nanotechnology, material characterization, cryotechnology, spectroscopy and imaging, and stand out for quality and reliability. Thanks to our technical expertise and knowledge of market needs, we select the best global suppliers for product quality and level of assistance.

Among our instruments there are probe scanning (STM, AFM) and correlative Confocal/Raman microscopes, cryostats, micro- and nanoparticle analyzers and many other characterization tools, which identify LOT-QD as a true scientific partner for the purchase of hi-tech equipment.

We can guarantee qualified assistance both before the sale, when thanks to the technical preparation of our team we help the customer to identify the best solution for its specific application, and in post-sales: we offer constant technical-scientific assistance over time and extremely fast answers, our goal is always full customer satisfaction.

We are part of the Quantum Design International (QDI) group, who manufacture and distribute scientific and industrial instrumentation through an international network with subsidiaries in every major technological centre around the world.

LOT-QuantumDesign have been part of the QDI group since more than ten years and we now feel it’s time to align our name closer to our parent company: the name change will take effect very soon and we will be called Quantum Design s.r.l., stay tuned!

**SIGRAY**
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Sigray is a 35 person company located in the San Francisco East Bay founded by Dr. Wenbing Yun with the mission of developing the next generation of X-ray analytical instruments based on its patented ultrahigh brightness x-ray source and high efficiency optics technologies. It has productized three major product lines that bring unprecedented synchrotron-like capabilities to laboratory systems in XRF microscopy, x-ray absorption spectroscopy, and 3D x-ray microscopy.

Sigray’s products have been installed globally and have been sold for a diverse range of applications, spanning from semiconductor metrology to 3D cellular imaging for biofuels.

The team is comprised of former synchrotron scientists and leaders, x-ray instrumentation and optics pioneers, the former CTO of a well-known x-ray source company, and Dr. Yun, who previously founded x-ray microscope company Xradia in 2000, prior to its successful acquisition by Carl Zeiss in 2013 as its x-ray microscope division.

The company holds 12 US and international patents and has received over $17M in government grants for the development of its breakthrough technology.
Mercury supplies materials and services for semiconductor and pharmaceutical industries. Our natural territory is the south of Europe. Mercury has been established in 2000 and offers several products by prestigious and selected companies. We offer materials and equipment with specific value and innovation. Some of our products are specifically related to microelectronics industry and some are dedicated to pharma application. We are focused on materials in the BEOL and FEOL areas. We have been working for many years with various prestigious suppliers, establishing first class contacts with major customers. Our principals are leaders in the process chemistry, Post CMP Cleaning, Heating of ultrapure chemicals and D.I. water, quartz, diffusion furnaces, pumps for liquid, particle counters, bonding and debonding equipment, cooling systems.

Our primary function is understanding the new technology frontier in this competitive scenario. We always work in this in direction, becoming a profitable resource for our valuable customers and principals. Here is a quick summary of some content of our principals: • LEVITRONIX is the worldwide leader in magnetically levitated Bearingless Motor technology, specializing in ultra-pure fluid handling devices for Microelectronics, Life Science and Industrial applications, • EV Group (EVG) targets advanced packaging, compound semiconductor and silicon-based power devices, MEMS, nanotechnology and SOI markets with its industry-leading wafer-bonding, lithography/nanoimprint lithography (NIL), metrology, photoresist coating, cleaning and inspection equipment, • EKC Technology products provide best-in-class process solutions for wafer cleaning, surface preparations, liquid and dry film resist removal, post CMP cleaning, selective etching and post-etch residue removal. DuPont’s specialized formulations allow you to achieve higher productivity and improved yields on designs with finer line width and spacing.
**MPI CORPORATION**

**AST Advanced Semiconductors Test Division**
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**Microlease** is the total solutions provider for electronic test equipment. We help customers deploy equipment when and where they need it, in the most cost-effective way.
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Rent | Buy New | Buy Used | Asset Optimisation | Financial Solutions

**Microlease** was founded in July, 1995 and it has four main products divisions: state of the art Probe Cards, Production LED Equipment, Advanced Semiconductor Test Equipment and Eco-minded Thermal Products.
The industries MPI serves include, but are not limited to Semiconductor, Materials Research, Aerospace, Automotive, Fiber Optic, Electronic Components, and more.
The AST division has 3 main targets: reduce cost of test offering highest value for the price without compromise on quality; keep a relentless innovation process with ability to understand customer and market requirements; became a valued partner for Device Modeling & WLR, RF and mmW and High Power applications.

MPI-AST Division portfolio include manual, semiautomatic and fully automatic probe stations with exclusive software, DC and RF probes, calibration substrates and software, state of the art thermo-chucks in cooperation with ERS, high end microscopes and cameras to fit any optical requirements, exclusive lasers for failure analysis.
Nanoscribe’s 3D printers are the world’s highest resolution systems for 3D nano- and microfabrication. They combine the technology of two-photon polymerization with a regular 3D printing workflow for additive manufacturing and maskless lithography. The Photonic Professional GT2 offers enormous 3D design freedom.

The 3D printers have been designed with solution-oriented processes that are based on the combination of tailor-made resins, objectives and software settings. With a powerful, user-friendly software, the systems are ideal for printing polymer objects directly from CAD models and offer highest degree of automation.

Nanoscribe systems are drivers of innovation for numerous key technologies. More than 1,000 users worldwide in top universities and pioneer companies benefit from the versatile and easy-to-use 3D printers. The award-winning systems set new standards in diverse applications, e.g., in the fields of micro-optics, integrated photonics, diffractive optical elements (DOE), plasmonics, photonics, optical interconnects or biomedical engineering.

The German company was founded in 2007 as a spin-off of the Karlsruhe Institute of Technology (KIT). Within a few years Nanoscribe has managed to turn to a medium-sized company and established itself as global market and technology leader in 3D microfabrication.
The goal of the PRISMA project is to help companies implement Responsible Research and Innovation (RRI) in their innovation and social responsibility strategies, in order to gain trust from society and build resilience, thus strengthening their position on the market.

In the PRISMA project we conducted pilot studies with 8 companies, active in the following domains:

- Nanotechnologies
  - Colorobbia Consulting (IT): Advanced theranostics therapies
  - Laboratori Archa (IT): Innovative organic-based dermo-cosmetics
- Synthetic and Industrial biotech
  - Evolva (CH): Sustainable formulations for healthcare and nutrition
  - Bisigodos (UK): Algae feedstocks production for consumer and industrial sectors
- Internet of Things and autonomous vehicles
  - Spectro (NL): Smart cleaning dispensers for public health and hygiene
  - Aeraltronic (NL): Drones for emergency and security applications
  - RDM (UK): Self-driving public cars for smart cities

Based on the experience with these pilots, PRISMA developed a practical guideline for companies aiming to strengthen consideration of ethical, legal and social impacts aspects in their technology and product development roadmaps.

At the PRISMA stand, delegates will have the opportunity to learn about the experience of the PRISMA company pilots and on the use of the RRI roadmap to innovate responsibility developed by the project.

Project funded by the European Union’s Horizon 2020 Research and Innovation Programme under Grant Agreement Nr. 710059.

Prodotti Gianni Srl is a well-established Italian Company that since 1948 distributes raw materials, reagents & products for research to the following fields: Cosmentic, Pharmaceutical/Nutritional, Food, Life and Materials Science.

"Our competence, your value" is our motto that summarizes our accuracy in choosing our Suppliers, some of the most important players from all over the world, all of great quality, and care to our Customers enquiries. Prodotti Gianni Srl is ISO 9001:2015 Certified; our company procedures, regularly and severely inspected, 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, compounds, composites for scientific research, development, prototyping and specialized manufacturing.

These materials are available as standard catalogue products and custom-made products. The catalogue offers over 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, which fall within Goodfellow's general supply capabilities.
Goodfellow is a leading global supplier of metals, alloys, ceramics, glasses, polymers, compounds, composites and other materials to meet the research, development and specialist production requirements of science and industry. The company has an extensive range of 70,000 catalogue products in multiple forms available off the shelf, most subject to free delivery within 48 hours and with no minimum order quantities.

With over 6000 customers supported by a worldwide network of offices, agents and distributors Goodfellow also offers a comprehensive range of bespoke processing services, effectively operating as an extension of the production team in order to develop custom fabricated components in any quantity required. Our in-house team is comprised of fellow scientists and engineers with extensive knowledge of materials and processing – through their technical expertise and a supporting range of specification tools the company has built an unrivalled reputation for helping to find solutions to even the most challenging of research problems. All our products are also underpinned by the ISO 9001 quality accreditation.

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.
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S3 Alliance provides the network, and product portfolio that brings leading edge solutions to our customers.

Our supply and service solutions are tailored to meet our customers ever changing requirements, enabling them to be competitive in what is now a truly global marketplace.

For the semiconductor/MEMS market we source and offer quality products at the right price.

Within this market we offer solutions in the following areas: Process Equipment, Metrology and Handling, Parts & Consumables, Services.

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Schaefer Italy is the Italian branch of Schaefer-Tec group, a pan-european network of companies. Schaefer offices represent a unique collection of highly innovative small global companies developing cutting edge technologies for nano-scale characterization.

With specific regards to our Italy registered company, our strengths are:
1. Experience. Which enable us selecting the most innovative technology suppliers globally.
2. Competence. Baked by our long term partnership established with the Institute of Biophysics @ the National Research Council in Genova, where we set up our life science characterization lab.
3. Independence. We pride ourselves on being privately owned; no financial investors nor venture capital own any of our shares

Nowadays our technologies offering comprises:
- SPM microscopes for operation in air, environments or vacuum, and related accessories.
- Optical profilers and optical 3D microscopes for tabletop operation or in-line integration.
- 3D label free microscopes and manipulation tools for cell-to-cell analysis, developed specifically for the life sciences.
- Microscopy-based cell counters, also with recognition capabilities.
- Nanoparticles characterization tools: TRPS and Enhanced Dark Field Microscopy.
- Process control instrumentation (vacuum, mass flow meters, magnetic fields)

For our Italy-based customers convenience most of the above technologies are available for demonstration or contract work at either of our two offices based in Rovigo (metrology) and Genova (life sciences). Please don’t hesitate to contact us for discussing your measurement needs!
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ZEISS is an internationally leading technology enterprise operating in the optics and optoelectronics industries. ZEISS develops, produces and distributes measuring technology, microscopes, medical technology, eyeglass lenses, camera and cine lenses, binoculars and semiconductor manufacturing equipment. With its solutions, the company constantly advances the world of optics and helps shape technological progress.

ZEISS is divided up into the four segments Research & Quality Technology, Medical Technology, Vision Care/Consumer Products and Semiconductor Manufacturing Technology. ZEISS 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 2017/18, the company generated revenue for 5.817 billion euros with 29,309 employees. Founded in 1846 in Jena, the company is headquartered in Oberkochen, Germany. Carl Zeiss AG is the strategic management holding company that manages ZEISS. The company is wholly owned by the Carl Zeiss Stiftung (Carl Zeiss Foundation).
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Zurich Instruments makes lock-in amplifiers, arbitrary waveform generators, impedance analyzers, quantum computing control systems, phase-locked loops and boxcar averagers. In combination with LabOne®, the Zurich Instruments control software, a new benchmark is set for instrumentation in the DC to Gigahertz range. This unique approach reduces the complexity of laboratory setups, removes sources of problems and supports new measurement strategies that enable the progress of research.

Scientists and engineers at advanced research laboratories and in leading hi-tech organizations require powerful measurement instrumentation and tools for dynamic signal analysis. Zurich Instruments equipment allows for robust and reliable setups with best-in-class performance thanks to the unique integration of the latest electronic components. This is backed up by scientific staff with detailed application know-how and a customer support organization that is also second to none.
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Got Talent

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Fondazione Bracco

The printed version of NanoInnovation 2019 programme is updated at June 3rd.

All subsequent changes and updates will be available on the official website:
www.nanoinnovation2019.eu

Please, refer to the website for the updated version of the official programme.

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www.nanoinnovation2019.eu

Please, refer to the website for the updated version of the official programme.
Discovering hidden details.
ZEISS Xradia 610 and 620 Versa

INNOVATION
MADE BY ZEISS

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