ORGANIZERS

Airi ASSOCIAZIONE ITALIANA PER LA RICERCA INDUSTRIALE

Nano Italy Associazione

Renaissance Cloister by Sangallo

Faculty of Civil and Industrial Engineering

SAPIENZA UNIVERSITÀ DI ROMA

SEPTEMBER 15-18 2020

Nano Innovation 2020

Rome, 15-18 September

Conference & Exhibition

CO-ORGANIZERS

ATOM@ · SNN Lab · CNIS · Politecnico di Torino · Università degli Studi di Reggio Calabria Mediterranea · UMG · Università degli Studi di Modena e Reggio Emilia UNIMORE · Istituto Superiore di Sanità · Scuola Normale Superiore · DIIES Dipartimento di Ingegneria dell'Informazione delle Infrastrutture e dell'Energia Sostenibile · Assing · JEOL · Distretto Tecnologico Sicilia Micro e Nano Sistemi S.C.A.R.L. · DTC Lazio Distretto Tecnologico Beni e Attività Culturali Centro di Eccellenza · Fondazione Bruno Kessler · INRiM Istituto Nazionale di Ricerca Metrologica · CSGI · IMM · Sense Risc · ENEA Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile · ZEISS · UNI Ente Italiano di Normazione · Fondazione Don Carlo Gnocchi Onlus · NanoShare 4.0

INSTITUTIONAL PARTNERS

APRE Agency for the Promotion of European Research · ITA Italian Trade Agency ICE - Agenzia per la promozione all'estero e l'internazionalizzazione delle imprese italiane · Ordine degli Ingegneri della Provincia di Roma

IN COOPERATION WITH

ART-ER Attractiveness Research Territory · Fondazione Ordine degli Ingegneri Provincia di Roma · PLATINUM Research & Innovation · NOOSPHERE Technology Knowledge Humanity · VANGUARD INITIATIVE New growth through smart specialisation

www.nanoinnovation2020.eu

index

01 welcome

01 committees

08 about us

10 Sapienza university of Rome

12 prizes

13 ITA Partnership

15 thematic symposia

20 masterplan

21 daily plan - September 15

26 daily plan - September 16

30 daily plan - September 17

34 daily plan - September 18

38 technical multi-tracks

62 poster sessions

66 wokshops

82 schools and courses

92 satellite events

98 meeting area

99 exhibitors list

PROGETTO GRAFICO E SITO WEB: AZIMUTH DI PATRIZIA DE CASTRO - WWW.AZIMUTH.IT - AZIMUTH@AZIMUTH.IT

Institutional Patronages

Ministero della Difesa

Ministero della Salute

Ministero dello Sviluppo Economico

mipaaft
ministero delle politiche agricole alimentari, forestali e del turismo

REGIONE LAZIO

Scientific Patronage

Società Chimica Italiana

SISM
Italian Society for Microscopical Sciences

WELCOME

NanoInnovation is promoted by **NanoItaly Association and the Italian Association for Industrial Research (Airi)**, with the contribution of all co-organizers, supporters and partners of the event.

The previous four editions of NanoInnovation successfully finished with an average of more than 1200 participants from 10 different countries and 60 thematic symposia and workshop with more than 400 speakers. Most of the leading national public and private research players in nanotechnologies have contributed.

Due to the Covid-19 outbreak, the V edition of NanoInnovation was initially postponed, then it has been rescheduled **from 15 to 18 September 2020**. In order to guarantee a wide participation and ensure health protection, some initiatives will take place only online, i.e. the networking event, while others, including thematic symposia, training courses and much more, will take place both online and in attendance. NanoInnovation will be hosted again in the renaissance cloister by Sangallo at the Faculty of Civil and Industrial Engineering of "Sapienza" University of Rome and extra health measures (i.e. the mandatory use of mask-wearing in enclosed spaces) will be adopted during the event.

NanoInnovation represents 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. For this reason, despite the continuing difficulties imposed by this social/health situation, the organization of the event has continued to proceed at full speed in these months. NanoInnovation has always been a unique and unmissable opportunity to connect academia, research and the entrepreneurial system with the aim of presenting and sharing innovative ideas, transferring know-how, allowing the integration of knowledge and experience between different fields of application of nano -biotechnologies. For this reason, the decision to confirm this year's conference also responds to a specific need of restarting in the world of technology and research, an opportunity to start again in an increasingly heartfelt moment to which we want to give an important signal.

The main goals of **NanoInnovation 2020** 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 NanoInnovation 2020, strongly oriented toward application and market aspects of nanotechnology and KETs, foresees the presence of highly qualified speakers and organizations.

NanoInnovation 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 Israel, Poland, Russia and Czech Republic, 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, 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 supporting the event and making possible to participate for free.
We extend our thanks to all the people that worked hardly to make NanoInnovation a valuable and informative experience.

The NanoInnovation 2020 Organizing Committee

Organizing Committee

Marco ROSSI *(chair)*

- Sapienza University of Rome
- NanoItaly Association

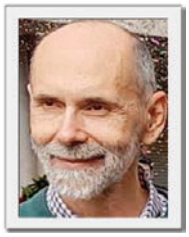
marco.rossi@uniroma1.it

Massimo BERSANI

- FBK

Carla CAPPIELLO

- Register of Engineers



Marco CRESCENZI

- ISS

Giuseppe GIGLI

- CNR - NANOTEC

Fabrizio PIRRI

- Polytechnic University of Turin

Andrea PORCARI

- AIRI

Pasquale SANFILIPPO

- STMicroelectronics

Steering Committee

Sesto VITICOLI *(chair)*

- AIRI

Piero BAGLIONI

- University of Florence

Flavia BARONE

- ISS

Luca BOARINO

- INRIM

Chiara CAPPELLI

- Scuola Normale Superiore

Maria Chiara CARROZZA

- Fondazione Don Gnocchi

Manuel CASALBONI

- Register of Engineers

Giuliano CASATI

- Assing

Sabrina CONOCI

- Distretto Tecnologico Sicilia Micro e Nano Sistemi

Filippo D'ARPA

- Distretto Tecnologico Sicilia Micro e Nano Sistemi

Giuliana FAGGIO

- The "Mediterranean" University of Reggio Calabria

Roberto GIANNANTONIO

- CNR IRSA

Paolo GRIANTI

- JEOL ITALIA

Andrea LAMBERTI

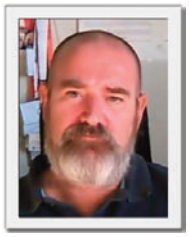
- Polytechnic of Turin

Giulio LAMEDICA

- Zeiss

Nicola LISI

- ENEA



Luca MARCHIOL

- University of Udine

Francesco MATTEUCCI

- CNR NANOTEC

Elena MOCCHIO

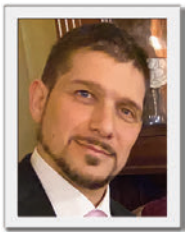
- UNI

Vittorio MORANDI

- CNR-IMM

Donatella PAOLINO

- University "Magna Graecia" of Catanzaro



Daniele PASSERI

- Sapienza University of Rome

Georg PUCKER

- FBK

Maria Sabrina SARTO

- Sapienza University of Rome

Giovanni TOSI

- University of Modena and Reggio Emilia

Programme Committee

Marco VITTORI ANTISARI
(chair)

- Nanoltaly Association

Cristina ANDREOLI

- ISS

Fabrizio BARBERIS

- Università di Genova & CEI

Marzia BEDONI

- Fondazione Don Gnocchi

Francesco BIANCARDI

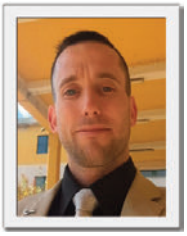
- ZEISS

Stefano BIANCO

- Polytechnic of Turin

Beatrice BOCCA

- ISS



Gabriele BULLA

- JEOL ITALIA

Giovanna CALABRESE

- University of Messina

Annarica CALCABRINI

- ISS

Luciano CASTIELLO

- ISS

Massimo CERRI

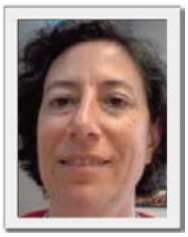
- Register of Engineers

Roberto COPPOLA

- ENEA

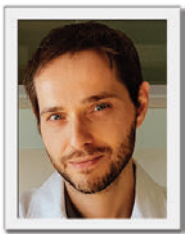
Luciana DINI

- Sapienza University of Rome



Lorenza FERRARIO

- FBK



Marco FIDALEO

- Sapienza University of Rome

Guglielmo FORTUNATO

- CNR-IMM

Francesco FULVI

- Register of Engineers

Ettore GAROFALO

- Assing

Rodorico GIORGI

- University of Florence/CSGI

Carlo MARIANI

- Sapienza University of Rome

Francesco MARINUZZI

- Register of Engineers

Leonardo MATTIELLO

- Sapienza University of Rome

Giacomo MESSINA

- The "Mediterranean" University of Reggio Calabria

Agnese MOLINARI

- ISS

Margherita MORENO

- ENEA

Giancarlo PEPPONI

- FBK

Programme Committee

Pasqualantonio PINGUE

- Scuola Normale Superiore

Maria Elena PISANU

- ISS

Annarita STRINGARO

- ISS

Francesco TRAINA

- University of Messina

Honorary Committee

Fabio BELTRAM

- Scuola Normale Superiore, Laboratorio NEST, Director

Giovambattista DE SARRO

- University Magna Graecia of Catanzaro, Rector

Eugenio GAUDIO

- Sapienza University of Rome, Rector

Luigi NICOLAIS

- Campania Digital Innovation Hub, President
- University of Naples Federico II, Emeritus Professor

ATOMCENTER

Open Infrastructure for Advanced TOmography and Microscopies (ATOM)

http://www.lazioinnova.it/news/premiati-i-vincitori-dei-bandi-kets-e-infrastrutture-per-la-ricerca/#

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 Sapienza University of Rome, 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, CRISEL 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 in the bio-medical, micro- and nano-electronics, cultural heritage and additive manufacturing sectors.

ATOM is conceived as a link connecting 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. Therefore, it 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.

https://www.uniroma1.it/it/notizia/il-progetto-atom-advanced-tomography-and-microscopies-vince-il-bando-della-regione-lazio

ENTE FINANZIATORE REGIONE LAZIO

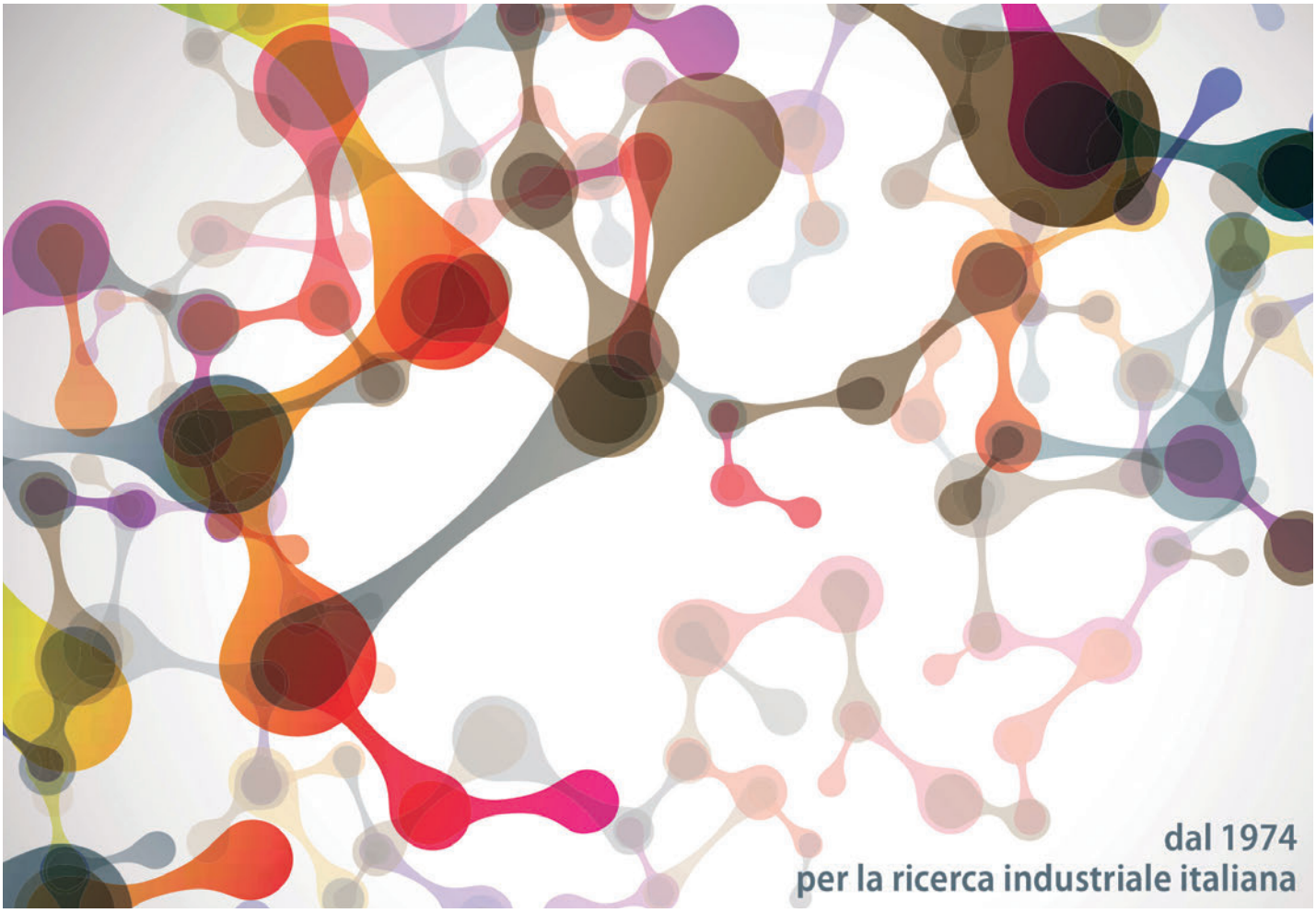
PARTNER di PROGETTO SBAI CNR NANOTEC INSTITUTE OF NANOTECHNOLOGY CNIS CENTER OF NANOTECHNOLOGY FOR ENGINEERING OF SAPIENZA DIPARTIMENTO DI CHIMICA

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



Associazione Nanoitaly

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
Luciana Dini
Roberto Morabito
Fabrizio Pirri (Scientific Secretary)
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

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 more than 125,000 students, 4,000 professors and nearly as many administrative and technical staff, Sapienza represents a vast knowledge community.

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

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

Sapienza plans and carries out important scientific investigations in almost all disciplines, achieving high-standard results both on a national and on an international level, thanks to the work of its faculties, departments and centres devoted to scientific research. There are also more than 150 PhD programmes which include almost all major fields of knowledge.
The first University in Rome is proud to have had many famous scholars among his students. Dealing with the field of Physics' students, members of the so called 'Via Panisperna' group – including the scientists Enrico Fermi, Edoardo Amaldi and Emilio Segrè – gave a crucial contribute to Physics and left an important heritage in subjects like Quantum Physics, Physics of Disordered Systems and Astrophysics. Sapienza enhances research by offering opportunities also to international human resources. Thanks to a special programme for visiting professors, many foreign researchers and professors periodically come to Sapienza, consolidating the quality of its education and research programmes.

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

The University has an annual budget of 1 billion euros, one of the most important in the region.
The future of Sapienza starts today thanks to its rich past and the contribution of the entire University community.

Faculty of Civil and Industrial Engineering

The Faculty was founded in 1817 by Pope Pius VII, following the model of the most famous Parisian and Viennese School of Engineering of the time; in 1935, due to the Gentile's reform, the School became the Faculty of Engineering. The Faculty was founded with the aim of training professionals of high cultural background, qualified to meet the real needs of training and research company, possessing the ability to promote and to develop technological innovation processes in different cultural environments. The ancient Faculty of Engineering has a long educational tradition which is appreciated all over the world. This rich experience has allowed the Faculty to offer a very innovative syllabus today, including also a specific program on Nanotechnology Engineering. It aims particularly at satisfying local engineering needs, yet also at preparing graduates for employment in an increasingly globalised and international job market. Recently, a more general internal reorganization of Sapienza required a thematic splitting of the research and teaching activity, with the consequent born of the new Faculty of Civil and Industrial Engineering, the headquarter of which remained in the pristine site, and of the new Faculty of Information Engineering, Informatics and Statistics.
The Faculty of Civil and Industrial Engineering is spread among various buildings in the area of via Eudossiana, the most representative is the old monastery of the church of San Pietro in Vincoli (San Peter in Chains), also known as basilica Eudossiana, but educational and scientific activities are also held in other locations in Rome and Lazio, like Latina 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 in 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)

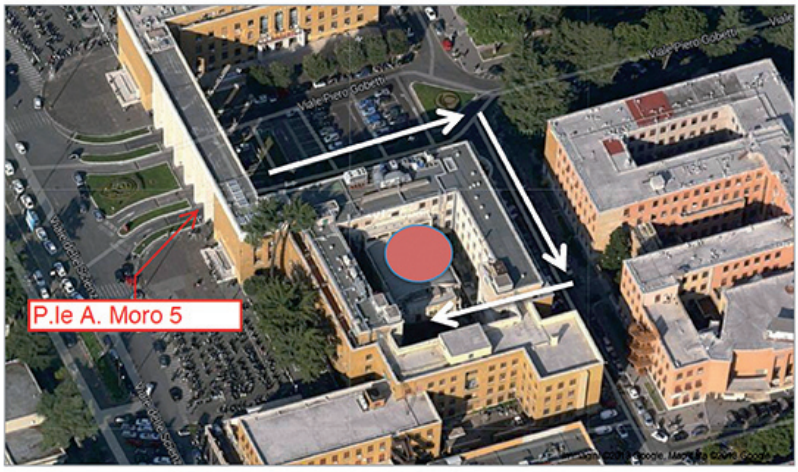
CNIS has been constituted in 2006, and now involves over 90 professors and researchers, coming from different Departments of the Faculties of Engineering, Sciences and Medicine. The vision and goal of CNIS is to embrace and support a multidisciplinary user base of researchers of Sapienza and co-workers 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.

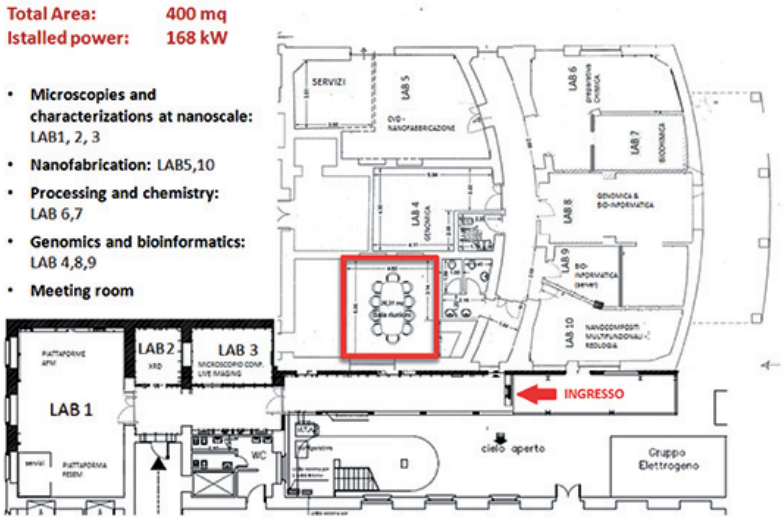
In particular, a wide set of microscopy and nanoscopy techniques is available. The facility also offers our users a variety of sample preparation equipment, a light microscopy lab with image analysis, an X-ray lab, and a materials testing lab.

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/nanostructured 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)

NEST PRIZE

In collaboration with

NEST

SCUOLA NORMALE SUPERIORE

Sponsored by

NIPPON GASES
The Gas Professionals

RIVOIRA

Laboratorio NEST of Scuola Normale Superiore is proud to present at **NanoInnovation 2020** the NEST Prize for research in nanoscience, edition 2019. Sponsorized 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 the opportunity to present his/her research activity at the conference.

During the award ceremony, the edition 2020 of the NEST Prize will be finally presented.

ITA - Italian Trade Agency is the Governmental agency that supports the business development of Italian companies abroad and promotes the attraction of foreign investment in Italy. With a widespread network of overseas offices, ITA provides information, assistance, consulting, promotion and training to Italian small and medium-sized businesses. Every year, ITA worldwide offices carry out hundreds of promotional projects and provide personalized services and assistance to thousands of Italian companies. The Italian Trade Agency also assists and supports foreign companies that want to establish or expand business and trade relations with Italian companies or to invest in Italy.

After the success of the previous editions, Italian Trade Agency has decided to renew its participation also for this edition of NanoInnovation 2020, participating in scientific symposia and in the Networking event. Moreover, thanks to its fundamental contribution, an international delegation of experts from Russia, Israel, Poland, Lithuania and Czech Republic representatives of leading companies, research centers, funding organizations, networks and clusters active in research and innovation on nanotechnologies, will participate remotely to the NanoInnovation Conference.

The list of experts is reported below. Anyone interested to have further information, get in contact or organize a virtual meeting with them, is invited to register to the networking event.

RUSSIA				
1	Mikhail	Mukhin	Educational specialist	ITMO University
2	Sergey	Dubkov	PhD	MIET University
3	Elizaveta	Anastasova	Research Engineer	SCAMT
4	Alexey	Dronov	Vice Director of the Institute of Advanced Materials and Technologies for Research activities	MIET University
5	Ivan	Mukhin	Head of laboratory	Alferov University
ISRAEL				
1	Avu	Voldman	General Manager	RACAH NANOTECH FUND
CZECH REPUBLIC				
1	Jiri	Kus	Ceo	nanoSPACE s.r.o.
2	Jaroslav	Klima	Ceo	TESCAN ORSAY HOLDING, a.s.
3	Jan	Neuman	Ceo and Co-founder	NenoVision s.r.o.
POLAND				
1	Miroslaw	Miller	Co-ordinator of R&D	Wrocław University of Environmental and Life Sciences (WUELS)
2	Piotr	Kowalczewski	PhD	XTPL S.A
3	Monika	Goszcz	Project Manager	NANONET Foundation
4	Aleksandra	Kucharska	Project Manager	NANONET Foundation
LITHUANIA				
1	Linas	Jonušauskas	CSO	FEMTIKA

Networking Event - Online

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 fifth consecutive year. On the 17th of September NanoInnovation 2020 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 of charge** for the conference participants and it will take place online on the **17th of September from 09.30 to 13.00 and from 14.30 to 17.30.**

The whole event is managed by APRE – Agency for the Promotion of European Research
Contacts: Matteo Sabini (sabini@apre.it)

TOPICS

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

- ADDITIVE & 3D MANUFACTURING
- AGRI-FOOD
- CONSTRUCTION & BUILDING & RESTORATION
- CULTURAL HERITAGE
- ELECTRONICS, MICRO AND NANOSYSTEMS
- ENERGY & ENVIRONMENT
- HEALTH & NANOMEDICINE
- INDUSTRY 4.0
- INNOVATIVE AND SMART TEXTILES
- NANO-BIO RELATED PRODUCTS
- NANOFABRICATION
- NANO-MATERIALS BASED INNOVATION
- NANOSCALE CHARACTERIZATION AND MEASUREMENTS
- SAFETY AND SOCIAL IMPACTS
- TRANSPORT, SPACE & AERONAUTICS

HOW IT WORKS

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

FIRST STEP

- Go to the brokerage event website https://nanoinnovation2020.b2match.io/ and click on "register"
- Insert your data, write a brief description of your organization and your expertise
- Select the networking sessions where you are available for bilateral meeting
- Do not forget to choose the main areas of activity you are interested in

SECOND STEP

- You will be validated by APRE within 2-3 days after registration
- You will receive an invitation to select your potential partners available on the networking tool
- Go to the brokerage event website https://nanoinnovation2020.b2match.io/, log-in and book meetings with other registered participants you would like to meet during the networking event in order to discuss collaborative partnerships

THIRD STEP

- Few days before the event, APRE will send your networking agenda with scheduled face to face meetings
- According to your schedule, log in on the brokerage event website https://nanoinnovation2020.b2match.io/, and join the virtual meeting room!

The technical-scientific programme of NanoInnovation 2020 will start on the afternoon of September 15 with the plenary sessions. Multi-track sessions with parallel thematic symposia are scheduled on September 16-18.

Each of the twelve Multi-track sessions will include at least 4 parallel thematic symposia, each of them of 90 minutes. Some thematic symposia are part of workshops or satellite events while others are organized independently.

THEMATIC SYMPOSIA IN ALPHABETICAL ORDER

3D Additive Nanomanufacturing
Co-organized with Sapienza University of Rome
Chair: Francesco MURA, *Sapienza University of Rome*

Advanced Functional Nanomaterials and Nanosystems
Co-organized with Sapienza University of Rome
Chairs: Francesca A. SCARAMUZZO, *Sapienza University of Rome*

Advanced Materials for Optical-based devices and methods
Co-organized with Sapienza University of Rome
Chairs: Danilo DINI, *Sapienza University of Rome*

Advanced Materials and Technologies for Sustainability - part 1 Industrial
Co-organized with Polytechnic of Turin
Chairs: Giancarlo CICERO & Andrea LAMBERTI, *Polytechnic of Turin* and Angelica CHIODONI, *IIT, Center for Sustainable Future Technologies - CSFT@POLITO*

Advanced Materials and Technologies for Sustainability - part 2 Academic
Co-organized with Polytechnic of Turin
Chairs: Giancarlo CICERO & Andrea LAMBERTI, *Polytechnic of Turin* and Angelica CHIODONI, *IIT, Center for Sustainable Future Technologies - CSFT@POLITO*

AgriNanotechniques: Nanomaterials for products and application in agriculture - Nanomaterials: Basic knowledge and tools
Co-organized with University of Udine, University of Firenze, University of Verona, University of Parma and University of Bologna

AgriNanotechniques: Nanomaterials for products and application in agriculture - Nanomaterials and Agro-Environment
Co-organized with University of Udine, University of Firenze, University of Verona, University of Parma and University of Bologna

AgriNanoTechniques: Nanomaterials for products and application in agriculture - Research and Regulations
Co-organized with University of Udine, University of Firenze, University of Verona, University of Parma and University of Bologna
Chair: Nelson MARMIROLI, *University of Parma*

ATOM - Advanced Tomography and Microscopies - Project
Co-organized with Sapienza University of Rome
Chair: Marco ROSSI, *Sapienza University of Rome*

Energy Storage Technologies: Batteries, Supercaps and Electrolyzers, part I
Co-organized with Enea "TERIN-PSU-ABI"
Chair: Alfonso POZIO, *ENEA*

Energy Storage Technologies: Batteries, Supercaps and Electrolyzers, part II
Co-organized with Enea "TERIN-PSU-ABI"
Chair: Pier Paolo PROSINI, *ENEA*

Energy Storage Technologies: Batteries, Supercaps and Electrolyzers, part III
Co-organized with Enea "TERIN-PSU-ABI"
Chair: Margherita MORENO, *ENEA*

Environmental Nanotechnologies: the issue of micro-nanoplastics - Impact and mitigation measures of micro and nanoplastics
Co-organized with CNR NANOTEC & CNR IRSA
Chairs: Roberto GIANNANTONIO, *CNR IRSA* & Francesco MATTEUCCI, *CNR NANOTEC*

Environmental Nanotechnologies: the issue of micro-nanoplastics - Micro-nanoplastics in different matrices
Co-organized with CNR NANOTEC & CNR IRSA
Chairs: Roberto GIANNANTONIO, *CNR IRSA* & Francesco MATTEUCCI, *CNR NANOTEC*

Exploiting technological solutions for the cultural heritage: collaborative models and practices to reach the market
Co-organized with Center for Colloids and Surface Science (CSGI) & Airi
Chair: Rodorico GIORGI, *Center for Colloids and Surface Science (CSGI)*

Fostering Nanomedicine into Industrial and Clinic Setting
Co-organized with University of Modena and Reggio Emilia and IRCCS Fondazione Don Gnocchi
Chair: Marzia BEDONI, *Laboratory of Nanomedicine and Clinical Biophotonics (LABION), IRCCS Fondazione Don Gnocchi*

From Facilities to Advances in labs & fabs
Co-organized with Sapienza University of Rome
Chair: Marco BALUCANI, *Sapienza University of Rome*

NanoMicroFab
Co-organized with CNR IMM
Chair: Guglielmo FORTUNATO, *CNR IMM*

HPC & BigData for Nanotechnology
Co-organized with ENEA
Chairs: Massimo CELINO & Francesco BUONOCORE, *ENEA*

Incentivi all'innovazione per la transizione Industria 4.0: esperienze e opportunità Artes 4.0
Co-organized with Scuola Normale Superiore (SNS), Ente Italiano di Normazione (UNI), & Airi
Chair: Pasqualantonio PINGUE, *Scuola Normale Superiore*

Innovation in Nanotherapeutics and Nanodiagnostics
Co-organized with University of Modena and Reggio Emilia and IRCCS Fondazione Don Gnocchi
Chair: Giovanni TOSI, *Nanomedicine Platform of University of Modena and Reggio Emilia*

Innovative Materials and Approaches for Tissue Engineering
Co-organized with Distretto Tecnologico Sicilia Micro e Nano Sistemi & University of Messina
Chair: Sabrina CONOCI, *University of Messina*

ISIS@Mach: Neutrons for science and technology
Co-organized with University of Rome Tor Vergata
Chair: Aldo DI CARLO, *University of Rome Tor Vergata*

Materials and Characterizations for Cultural Heritage
Co-organized with Sapienza university of Rome
Chair: Leonardo MATTIELLO, *Sapienza University of Rome*

Lipid-based nanocarriers as nanomedical devices
Co-organized with ISS
Chairs: Annarica CALCABRINI, Annarita STRINGARO, *Centro Nazionale Ricerca e Valutazione preclinica e clinica dei Farmaci - ISS*

MAIA – Materiali Avanzati in una Infrastruttura Aperta
LATINO – Laboratory in Advanced Technologies for INnOvation
Co-organized with ENEA & LNF-INFN
Chair: Giuseppe BARBIERI, *ENEA* & Lucia SABBATINI, *LNF-INFN*

Materials Challenges In Thermo-Nuclear Fusion Reactor Research
Co-organized with: ENEA
Chair: Marco VITTORI ANTISARI, *NanoItaly Association*

Materials for Energy Applications
Co-organized with Sapienza University of Rome
Chair: Giuseppe ZOLLO, *Sapienza University of Rome*

Nanocellulose applications
Co-organized with: Sapienza University of Sapienza
Chair: Marco FIDALEO & Luciana DINI, *Sapienza University of Rome*

Nanospectroscopy and Nanotechnology: Challenges and Innovations - Basic principles of Nanospectroscopy
Co-organized with The "Mediterranean" University of Reggio Calabria
Chairs: Giuliana FAGGIO & Giacomo MESSINA, *The "Mediterranean" University of Reggio Calabria*

Nanospectroscopy and Nanotechnology: Challenges and Innovations - Nanotechnology applications
Co-organized with The "Mediterranean" University of Reggio Calabria
Chairs: Giuliana FAGGIO & Giacomo MESSINA, *The "Mediterranean" University of Reggio Calabria*

Nanospectroscopy and Nanotechnology: Challenges and Innovations - Manufacturing of nanodevices
Co-organized with The "Mediterranean" University of Reggio Calabria
Chairs: Giuliana FAGGIO & Giacomo MESSINA, *The "Mediterranean" University of Reggio Calabria*

Nanospectroscopy and Nanotechnology: Challenges and Innovations - Advanced methods for imaging spectroscopy and metrology
Co-organized with The "Mediterranean" University of Reggio Calabria
Chairs: Giuliana FAGGIO & Giacomo MESSINA, *The "Mediterranean" University of Reggio Calabria*

Nanomaterials for magnetic, chemical and biological applications
Co-organized with: Sapienza University of Rome
Chair: Carlo MARIANI, *Sapienza University of Rome*

Nanomaterials for medical and biological applications
Co-organized with Sapienza University of Rome
Chair: Marta FEROCI, *Sapienza University of Rome*

Nanomaterials for sensoristic applications
Co-organized with Sapienza University of Rome
Chair: Gianluca FERRARIO, *University of Birmingham*

Natural, artificial and synthetic nanovesicles
Co-organized with Sapienza University of Rome
Chairs: Maria CARAFA, *Sapienza University of Rome*

New approaches for safety evaluation of nanomaterials
Co-organized with Istituto Superiore di Sanità (ISS), Ente Italiano di Normazione (UNI), Airi
Chairs: Cristina ANDREOLI, Beatrice BOCCA, *Environment and Health Department – ISS*

New materials for photovoltaic technologies and solar cells
Co-organized with Sapienza University of Rome
Chair: Isabella CHIAROTTO, *Sapienza University of Rome*

New materials for storage and conversion, part I
Co-organized with Enea "TERIN-PSU-ABI"
Chair: Sergio BRUTTI, *Sapienza University of Rome*

New materials for storage and conversion, part II
Co-organized with Enea "TERIN-PSU-ABI"
Chair: Nicola LISI, *ENEA*

New materials for storage and conversion, part III
Co-organized with Enea "TERIN-PSU-ABI"
Chair: Giovanni Battista APPETECCHI, *ENEA*

Organic and Biomecular chemistry for nanotechnology
Co-organized with Sapienza University of Rome
Chair: Francesca A. SCARAMUZZO, *Sapienza University of Rome*

Recent advances in 2D and 3D Microscopy – X-Ray, FIBSEM and Confocal in Nanotechnology and Life Sciences
Co-organized with ZEISS
Chair: Veronica SPARACINO, *ZEISS*

Technologies and advanced applications for the life sciences
Co-organized with: ISS
Chair: Marco CRESCENZI & Irene RUSPANTINI, *ISS*

SPECIAL SESSION: Sviluppo di abiti intelligENti Sensorizzati per prevenzione e mitigazione di RIschi per la SiCurezza dei lavoratori - SENSE RISC Project
Co-organized with Sapienza University of Rome & Project SENSE RISC
Chair: Maria Sabrina SARTO, *Sapienza University of Rome*

Special Session about Cultural Heritage
Co-organized with: Centre of Excellence DTC Lazio
Chair: Claudia PELOSI, *University of Tuscia*

YoungInnovation: the state of research communicated by young researchers - Pharmaceutical technology meets biomedical applications – Part I
Co-organized with: University Magna Graecia of Catanzaro & Sapienza University of Rome
Chairs: Donatella PAOLINO, *University Magna Graecia of Catanzaro* & Anna FADDA, *Adritelf*; Mattia TIBONI, *University of Urbino*

YoungInnovation: the state of research communicated by young researchers - Pharmaceutical technology meets biomedical applications – Part II
Co-organized with: University Magna Graecia of Catanzaro & Sapienza University of Rome
Chair: Michele CONTI, *University of Pavia* & Angela TARTAGLIA, *University of Chieti-Pescara*

YoungInnovation: the state of research communicated by young researchers - Preformulative Aspects
Co-organized with: University Magna Graecia of Catanzaro & Sapienza University of Rome
Chair: Carlotta MARIANECCI, *Sapienza University of Rome* & Giulia VANTI, *University of Firenze*

YoungInnovation: the state of research communicated by young researchers - 3D Printing Technologies
Co-organized with: University Magna Graecia of Catanzaro & Sapienza University of Rome
Chair: Maria Luisa TORRE, *University of Pavia* & Maria Chiara CRISTIANO, *University Magna Graecia of Catanzaro*

YoungInnovation: the state of research communicated by young researchers - Topical Delivery of actives Part I
Co-organized with: University Magna Graecia of Catanzaro & Sapienza University of Rome
Chair: Christian CELIA, *University of Chieti-Pescara* & Agnese GAGLIARDI, *University Magna Graecia of Catanzaro*

YoungInnovation: the state of research communicated by young researchers - Topical Delivery of actives Part II
Co-organized with: University Magna Graecia of Catanzaro & Sapienza University of Rome
Chair: Erwin Pavel LAMPARELLI, *University of Salerno* & Anna IMBRIANO, *Sapienza University of Rome*

YoungInnovation: the state of research communicated by young researchers - Nanotechnologies meet natural products
Co-organized with: University Magna Graecia of Catanzaro & Sapienza University of Rome
Chair: Maria CARAFA, *Sapienza University of Rome* & Elia BARI, *University of Pavia*

YoungInnovation: the state of research communicated by young researchers - Arising new manufacturing technologies
Co-organized with: University Magna Graecia of Catanzaro & Sapienza University of Rome
Chair: Luisa DI MARZIO, *University of Chieti-Pescara* & Nicola D'AVANZO, *University Magna Graecia of Catanzaro*

Tuesday September 15th		**11.00 - 12.30**	**14.00 - 16.45**	**17.00 - 19. 00**
		Round Table Tecnologie abilitanti fondamentali e Infrastrutture di Ricerca ad accesso aperto per il trasferimento tecnologico	Opening – Welcome session Plenary Scientific Session	Plenary Session focused on market exploitation strategies
Wednesday September 16th	**09.00 - 10.30**	**11.00 - 12.30**	**14.00 - 15.30**	**16.00 - 17. 30**
	Multi-track sessions	Multi-track sessions	Multi-track sessions	Multi-track sessions
	Update trainings and Schools	Update trainings and Schools	Update trainings and Schools	Update trainings and Schools
Thursday September 17th	**09.00 - 10.30**	**11.00 - 12.30**	**14.00 - 15.30**	**16.00 - 17. 30**
	Multi-track sessions	Multi-track sessions	Multi-track sessions	Multi-track sessions
	Update trainings and Schools	Update trainings and Schools	Update trainings and Schools	Update trainings and Schools
Friday September 18th	**09.00 - 10.30**	**11.00 - 12.30**	**14.00 - 15.30**	**16.00 - 17. 30**
	Technology transfer: challenges and opportunities	Technology transfer: challenges and opportunities	Technology transfer: challenges and opportunities	Technology transfer: challenges and opportunities
	Multi-track sessions	Multi-track sessions	Multi-track sessions	Multi-track sessions
	Update trainings and Schools	Update trainings and Schools	Update trainings and Schools	Update trainings and Schools

Break and visit of the Exhibition Area

10:30 - 12:30

TAVOLA ROTONDA

Area del Chiostro, Sala degli Affreschi

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

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 (MAIA, LATINO, ATOM, MicroNanoFab, ISIS@Mach), rivolte alla comunità scientifica e soprattutto alle imprese, su 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.

La tavola rotonda sarà coordinata da:

Maria Sabrina SARTO, Sapienza Università di Roma
Pro-rettore alle Infrastrutture e strumenti per la ricerca di eccellenza

Luigi PALUMBO, Sapienza Università di Roma
Pro-rettore alla pianificazione strategica

Introdurranno:

Eugenio GAUDIO, Sapienza Università di Roma
Rettore

Gian Paolo MANZELLA, Ministero dello sviluppo economico
Sottosegretario allo sviluppo economico

Luigi NICOLAIS, Campania Digital Innovation Hub
Presidente

Interverranno:

Andrea BECCARI, Regione Lazio
Assessorato allo Sviluppo Economico, Commercio e Artigianato, Start-Up, "Lazio Creativo" e Innovazione

Marco CRESCENZI, ISS
Direttore servizio Grandi strumentazioni e core facilities

Aldo DI CARLO, Università di Tor Vergata
Direttore ISM-CNR
Responsabile del progetto ISIS @ MACH (MAterials Characterization Hub)

Dario DELLA SALA, ENEA
Responsabile del progetto MAIA
Materiali Avanzati in una Infrastruttura Aperta

Antonio FALONE, INFN
Progetto LATINO
Laboratory in Advanced Technologies for INnOvation

Guglielmo FORTUNATO, CNR
Responsabile del progetto: NanoMicroFab
Infrastruttura aperta di ricerca per il supporto di aziende operanti nell'ambito della micro-nanoelettronica

Marco ROSSI, Sapienza Università di Roma
Responsabile del progetto ATOM
Open Infrastructure for Advanced Tomography and Microscopies

Saranno inoltre presenti e contribuiranno alla discussione:

Massimo BUSUOLI, Norwegian University of Science and Technology (NTNU)
Head of Brussels Office

Massimo BERSANI, FBK - Fondazione Bruno Kessler
Program Manager Centre for Materials and Microsystems (CMM)

Pierluigi CAMPANA, INFN
Membro giunta Nazionale

Ennio CAPRIA, ESRF
Deputy Head of Business Development

Mariangela CESTELLI GUIDI, INFN
Membro Comitato Nazionale Trasferimento Tecnologico

Sabrina CONOCI, Università di Messina
Delegata alla Terza Missione

Roberto COPPOLA, *ENEA*
Senior scientist active in technical materials characterization

Giuseppe GIGLI, CNR
Direttore Istituto NANOTEC

Claudio LANZIERI, LEONARDO
Head of GaAs/GaN Foundry

Ruggero LENSI, UNI
Direttore Generale

Nello LI PIRA, CRF-FCA
Global Materials R&I and Roadmap manager

updates on: www.nanoinnovation2020.eu

Leda BOLOGNI, ART-ER
Responsabile Unità Infrastrutture per l'Innovazione

Vittorio MORANDI, CNR
Coordinator of It-fab

Pasqualantonio PINGUE, Scuola Normale Superiore
Chief Operating Officer. Laboratorio NEST

Giancarlo RUOCCO, IIT
Direttore del Centro CLNS@SAPIENZA Roma

Sesto VITICOLI, AIRI - Associazione Italiana per la Ricerca Industriale
Vice-presidente

Marco VITTORI ANTISARI, Associazione NanoItaly
Presidente

Saranno inoltre presenti i rappresentanti di diverse PMI con interessi in settori ad alta tecnologia.

14:00 - 14:40 PS.I - WELCOME SESSION	
Chair: Maria Sabrina SARTO, *Sapienza University of Rome*	
PS.I.1	**Paolo ORNELI** *Regione Lazio, Assessore Sviluppo Economico, Commercio e Artigianato, Start-Up, "Lazio Creativo" e Innovazione*
PS.I.2	**Antonio D'ANDREA** *Sapienza University of Rome, Faculty of Civil and Industrial Engineering (Dean)*
PS.I.3	**Piero TORRETTA** *UNI (President)*
PS.I.4	**Marco FALZETTI** *APRE (Director)*
14:40 - 15:00 PS-II - NEST PRIZE WINNER	
Chair: Pasqualantonio PINGUE & Fabio BELTRAM, *Scuola Normale Superiore di Pisa*	
PS.II.1	**Announcement of the NEST PRIZE Winner**

15:00 - 16:45 PS.III - ADVANCES ON NANOTECHNOLOGY AND NANOSCIENCES	
Chair: Riccardo FACCINI, *Sapienza University of Rome*	
PS.III.1	Roland FLECK *Centre for Ultrastructural Imaging and JEOL Centre for Advanced Technology, King's College London, UK* **Electron Microscopy, a Key Enabling Technology for Nanoscience**
PS.III.2	Matthieu GERMAIN *CURADIGM & European Technology Platform for Nanomedicine* **Delivering the power of nanomedicine to patients today**
PS.III.3	Hélder A. SANTOS *University of Helsinki, Finland* **Dressing nanoparticles in cell's clothing: The new generation of nanomedicines for biomedical applications**

16:45 - 19:00 PS.IV - INNOVATION AT THE NANOSCALE: RESEARCH AND INNOVATION STRATEGIES AND OPPORTUNITIES FOR THE INDUSTRY AND RESEARCH WORLD	
Chair: Luigi NICOLAIS, *Campania Digital Innovation Hub*	
PS.IV.1	Massimo BERSANI *Program Manager Centre for Materials and Microsystems, Fondazione Bruno Kessler* **Nano Technologies for next Quantum Technology (QT) Revolution**
PS.IV.2	Ennio CAPRIA *Deputy Head of Business Development European Synchrotron (ESRF), Grenoble, France* **The evolving Role of Research Infrastructures at the core of the innovation ecosystem of Grenoble**
PS.IV.3	Massimo BUSUOLI *Head of Norwegian University of Science and Technology (NTNU), Brussels Office, Belgium* **The next EU programming period and related challenges and opportunities**
PS.IV.4	Andrea PICCALUGA *Vice President, Netval* **Netval activities for the technology transfer in Italy**
PS.IV.5	Vito MARRAFFA *Deloitte* **Tax incentives for investments in innovation and for the "Industry 4.0" transition**
PS.IV.6	Wim DE KINDEREN *Vanguard Initiative* **The Vanguard Initiative & interregional innovation : supported by policy, driven by industry**

09:00 - 10:30 TT.I - TECHNICAL MULTI-TRACK - PARALLEL SYMPOSIA	
TT.I.A **WS.VI.1**	**NanoMicroFab** *Co-organized with CNR IMM* Chair: Guglielmo FORTUNATO, *CNR IMM* *The symposium is part of the workshop WS.VI*
TT.I.B **WS.II.1**	**Nanospectroscopy and Nanotechnology: Challenges and Innovations - Basic principles of Nanospectroscopy** *Co-organized with The "Mediterranean" University of Reggio Calabria & Sapienza University of Rome* Chairs: Giuliana FAGGIO & Giacomo MESSINA, *The "Mediterranean" University of Reggio Calabria* *The symposium is part of the workshop WS.II*
TT.I.C	**Advanced materials for optical-based devices and methods** *Co-organized with Sapienza University of Rome* Chair: Danilo DINI, *Sapienza University of Rome*
TT.I.D	**Natural, artificial and synthetic nanovesicles** *Co-organized with Sapienza University of Rome* Chairs: Maria CARAFA, *Sapienza University of Rome*
TT.I.E	**Materials and Characterizations for Cultural Heritage** *Co-organized with Sapienza University of Rome* Chair: Leonardo MATTIELLO, *Sapienza University of Rome*
10:30 - 11:00 Break and visit of the exhibition area	

11:00 - 12:30 TT.II - TECHNICAL MULTI-TRACK - PARALLEL SYMPOSIA	
TT.II.A **WS.I.1**	**AgriNanotechniques: Nanomaterials for products and application in agriculture - Nanomaterials: Basic knowledge and tools** *Co-organized with University of Udine, University of Firenze, University of Verona, University of Parma and University of Bologna* *The symposium is part of the workshop WS.I*
TT.II.B	**Innovative Materials and Approaches for Tissue Engineering** *Co-organized with Distretto Tecnologico Sicilia Micro e Nano Sistemi & University of Messina* Chair: Sabrina CONOCI, *University of Messina*
TT.II.C	**Lipid-based nanocarriers as nanomedical devices** *Co-organized with ISS* Chairs: Annarica CALCABRINI, Annarita STRINGARO *Centro Nazionale Ricerca e Valutazione preclinica e clinica dei Farmaci - ISS*
TT.II.D **WS.II.2**	**Nanospectroscopy and Nanotechnology: Challenges and Innovations - Nanotechnology applications** *Co-organized with The "Mediterranean" University of Reggio Calabria* Chairs: Giuliana FAGGIO & Giacomo MESSINA, *The "Mediterranean" University of Reggio Calabria* *The symposium is part of the workshop WS.II*
TT.II.E	**HPC & BigData for Nanotechnology** *Co-organized with ENEA* Chair: Massimo CELINO & Francesco BUONOCORE, *ENEA*
12:30 - 14:00 Break and visit of the exhibition area	

14:00 - 15:30 TT.III - TECHNICAL MULTI-TRACK - PARALLEL SYMPOSIA	
TT.III.A	**Incentivi all'innovazione per la transizione Industria 4.0: esperienze e opportunità Artes 4.0** *Co-organized with Scuola Normale Superiore (SNS), Ente Italiano di Normazione (UNI), & Airi* Chair: Pasqualantonio PINGUE, *Scuola Normale Superiore*
TT.III.B	**Innovation in Nanotherapeutics and Nanodiagnostics** *Co-organized with University of Modena and Reggio Emilia and IRCCS Fondazione Don Gnocchi* Chair: Giovanni TOSI, *Nanomedicine Platform of University of Modena and Reggio Emilia*
TT.III.C **WS.II.3**	**Nanospectroscopy and Nanotechnology: Challenges and Innovations - Manufacturing of nanodevices** *Co-organized with The "Mediterranean" University of Reggio Calabria* Chairs: Giuliana FAGGIO & Giacomo MESSINA, *The "Mediterranean" University of Reggio Calabria* *The symposium is part of the workshop WS.II*
TT.III.D **WS.III.1**	**Environmental Nanotechnologies: the issue of micro-nanoplastics - Impact and mitigation measures of micro and nanoplastics** *Co-organized with CNR NANOTEC & CNR IRSA* Chairs: Roberto GIANNANTONIO, *CNR IRSA & Francesco MATTEUCCI, CNR NANOTEC* *The symposium is part of the workshop WS.III*
TT.III.E **WS.VI.2**	**ATOM - Advanced Tomography and Microscopies - Project** *Co-organized with Sapienza University of Rome* Chair: Marco ROSSI, *Sapienza University of Rome* *The symposium is part of the workshop WS.VI*
15:30 - 16:00 Break and visit of the exhibition area	

16:00 - 17:30 TT.IV - TECHNICAL MULTI-TRACK - PARALLEL SYMPOSIA	
TT.IV.A	**Fostering Nanomedicine into Industrial and Clinic Setting** *Co-organized with University of Modena and Reggio Emilia and IRCCS Fondazione Don Gnocchi* Chair: Marzia BEDONI, *Laboratory of Nanomedicine and Clinical Biophotonics (LABION), IRCCS Fondazione Don Gnocchi*
TT.IV.B **WS.II.4**	**Nanospectroscopy and Nanotechnology: Challenges and Innovations - Advanced methods for imaging spectroscopy and metrology** *Co-organized with The "Mediterranean" University of Reggio Calabria* Chairs: Giuliana FAGGIO & Giacomo MESSINA, *The "Mediterranean" University of Reggio Calabria* *The symposium is part of the workshop WS.II*
TT.IV.C	**Materials Challenges In Thermo-Nuclear Fusion Reactor Research** *Co-organized with ENEA* Chair: Marco VITTORI ANTISARI, *Associazione NanoItaly*
TT.IV.D **WS.III.2**	**Environmental Nanotechnologies: the issue of micro-nanoplastics - Micro-nanoplastics in different matrices** *Co-organized with CNR NANOTEC & CNR IRSA* Chairs: Roberto GIANNANTONIO, *CNR IRSA & Francesco MATTEUCCI, CNR NANOTEC* *The symposium is part of the workshop WS.III*
TT.IV.E **WS.VI.3**	**ISIS@Mach: Neutrons for science and technology** *Co-organized with University of Rome Tor Vergata* Chair: Aldo DI CARLO, *University of Rome Tor Vergata* *The symposium is part of the workshop WS.VI*

09:00 - 10:30 TT.V - Technical multi-Track - parallel SYMPOSIA	
TT.V.A	**Energy Storage Technologies: Batteries, Supercaps and Electrolyzers, part I** *Co-organized with Enea "TERIN-PSU-ABI"* Chair: Alfonso POZIO, *ENEA*
TT.V.B	**Nanocellulose applications** *Co-organized with: Sapienza University of Sapienza* Chair: Marco FIDALEO & Luciana DINI, *Sapienza University of Rome*
TT.V.C	**Technologies and advanced applications for the life sciences** *Co-organized with: ISS* Chairs: Marco CRESCENZI & Irene RUSPANTINI, *ISS*
TT.V.D **WS.IV.1**	**YoungInnovation: the state of research communicated by young researchers - Pharmaceutical technology meets biomedical applications - part 1** *Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome* Chairs: Donatella PAOLINO, *University Magna Graecia of Catanzaro* & Anna FADDA, *Adritelf;* Mattia TIBONI, *University of Urbino* *The symposium is part of the workshop WS.IV*
TT.V.E	**SPECIAL SESSION: Sviluppo di abiti intelligENti Sensorizzati per prevenzione e mitigazione di RIschi per la SiCurezza dei lavoratori - SENSE RISC Project** *Co-organized with Sapienza University of Rome & Project SENSE RISC* Chair: Maria Sabrina SARTO, *Sapienza University of Rome*
10:30 - 11:00 Break and visit of the exhibition area	

11:00 - 12:30 TT.VI - Technical multi-Track - parallel SYMPOSIA	
TT.VI.A **WS.I.2**	**AgriNanoTechniques: Nanomaterials for products and application in agriculture - Nanomaterials and Agro-Environment** *Co-organized with University of Udine, University of Firenze, University of Verona, University of Parma and University of Bologna* *The symposium is part of the workshop WS.I*
TT.VI.B	**Exploiting technological solutions for the cultural heritage: collaborative models and practices to reach the market** *Co-organized with Center for Colloids and Surface Science (CSGI) & Airi* Chair: Rodorico GIORGI, *Center for Colloids and Surface Science (CSGI)*
TT.VI.C	**Recent advances in 2D and 3D Microscopy – X-Ray, FIBSEM and Confocal in Nanotechnology and Life Sciences** *Co-organized with ZEISS* Chair: Veronica SPARACINO, *ZEISS*
TT.VI.D	**Energy Storage Technologies: Batteries, Supercaps and Electrolyzers, part II** *Co-organized with Enea "TERIN-PSU-ABI"* Chair: Pier Paolo PROSINI, *ENEA*
TT.VI.E **WS.IV.2**	**YoungInnovation: the state of research communicated by young researchers - Pharmaceutical technology meets biological applications - part 2** *Co-organized with University Magna Graecia of Catanzaro* Chairs: Michele CONTI, *University of Pavia* & Angela TARTAGLIA, *University of Chieti-Pescara* *The symposium is part of the workshop WS.IV*
12:30 - 14:00 Break and visit of the exhibition area	

14:00 - 15:30 TT.VII - Technical multi-Track - parallel SYMPOSIA	
TT.VII.A **WS.III.3**	**Advanced Materials and Technologies for Sustainability - part 1 Industrial** *Co-organized with Polytechnic of Turin* Chairs: Giancarlo CICERO & Andrea LAMBERTI, *Polytechnic of Turin* and Angelica CHIODONI, IIT, *Center for Sustainable Future Technologies - CSFT@POLITO* *The symposium is part of the workshop WS.III*
TT.VII.B	**New materials for storage and conversion, part I** *Co-organized with Enea "TERIN-PSU-ABI"* Chair: Sergio BRUTTI, *Sapienza University of Rome* (to be confirmed)
TT.VII.C **WS.IV.3**	**YoungInnovation: the state of research communicated by young researchers - Preformulative Aspects** *Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome* Chairs: Carlotta MARIANECCI, *Sapienza University of Rome* & Giulia VANTI, *University of Firenze* *The symposium is part of the workshop WS.IV*
TT.VII.D	**3D Additive Nanomanufacturing** *Co-organized with Sapienza University of Rome* Chair: Francesco MURA, *Sapienza University of Rome*
TT.VII.E	**Special Session on Cultural Heritage** *Co-organized with DTC LAZIO* Chair: Claudia PELOSI, *University of Tuscia*
15:30 - 16:00 Break and visit of the exhibition area	

16:00 - 17:30 TT.VIII - Technical multi-Track - parallel SYMPOSIA	
TT.VIII.A **WS.III.4**	**Advanced Materials and Technologies for Sustainability - part 2 Academic** *Co-organized with Polytechnic of Turin* Chairs: Giancarlo CICERO & Andrea LAMBERTI, *Polytechnic of Turin* and Angelica CHIODONI, *IIT, Center for Sustainable Future Technologies - CSFT@POLITO* *The symposium is part of the workshop WS.III*
TT.VIII.B	**New approaches for safety evaluation of nanomaterials** *Co-organized with Istituto Superiore di Sanità (ISS), Ente Italiano di Normazione (UNI), Airi* Chairs: Cristina ANDREOLI, Beatrice BOCCA, *Environment and Health Department – ISS*
TT.VIII.C	**New materials for storage and conversion, part II** *Co-organized with Enea "TERIN-PSU-ABI"* Chair: Nicola LISI, *ENEA*
TT.VIII.D **WS.IV.4**	**YoungInnovation: the state of research communicated by young researchers - 3D Printing Technologies** *Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome* Chairs: Maria Luisa TORRE, *University of Pavia* & Maria Chiara CRISTIANO, *University Magna Graecia of Catanzaro* *The symposium is part of the workshop WS.IV*
TT.VIII.E	**MAIA – Materiali Avanzati in una Infrastruttura Aperta** **LATINO – Laboratory in Advanced Technologies for INnOvation** *Co-organized with ENEA & LNF-INFN* Chair: Giuseppe BARBIERI, *ENEA* & Lucia SABBATINI, *LNF-INFN*

09:00 - 10:30 TT.IX - Technical multi-Track - parallel SYMPOSIA	
TT.IX.A **WS.IV.5**	**YoungInnovation: the state of research communicated by young researchers - Topical Delivery of actives Part I** *Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome* Chairs: Christian CELIA, *University of Chieti-Pescara* & Agnese GAGLIARDI, *University Magna Graecia of Catanzaro* *The symposium is part of the workshop WS.IV*
TT.IX.B	**Nanomaterials for sensoristic applications** *Co-organized with Sapienza University of Rome* Chair:Gianluca FERRARIO, *University of Birmingham*
TT.IX.C	**Advanced Functional Nanomaterials and Nanosystems** *Co-organized with Sapienza University of Rome* Chair: Francesca A. SCARAMUZZO, *Sapienza University of Rome*
TT.IX.D	**Nanomaterials for magnetic, chemical and biological applications** *Co-organized with: Sapienza University of Rome* Chair: Carlo MARIANI, *Sapienza University of Rome*
TT.IX.E	**Energy Storage Technologies: Batteries, Supercaps and Electrolyzers, part III** *Co-organized with Enea "TERIN-PSU-ABI"* Chair: Margherita MORENO, *ENEA*
10:30 - 11:00 Break and visit of the exhibition area	

11:00 - 12:30 TT.X - Technical multi-Track - parallel SYMPOSIA	
TT.X.A **WS.IV.6**	**YoungInnovation: the state of research communicated by young researchers - Topical Delivery of actives Part II** *Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome* Chairs: Erwin Pavel LAMPARELLI, *University of Salerno* & Anna IMBRIANO, *Sapienza University of Rome* *The symposium is part of the workshop WS.IV*
TT.X.B	**Nanomaterials for medical and biological applications** *Co-organized with Sapienza University of Rome* Chair: Marta FEROCI, *Sapienza University of Rome*
TT.X.C	**New materials for storage and conversion, part III** *Co-organized with Enea "TERIN-PSU-ABI"* Chair: Giovanni Battista APPETECCHI, *ENEA*
TT.X.D	**From Facilities to Advances in labs & fabs** *Co-organized with Sapienza University of Rome* Chair: Marco BALUCANI, *Sapienza University of Rome*
12:30 - 14:00 Break and visit of the exhibition area	

14:00 - 15:30 TT.XI - Technical multi-Track - parallel SYMPOSIA	
TT.XI.A **WS.IV.7**	**YoungInnovation: the state of research communicated by young researchers - Nanotechnologies meet natural products** *Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome* Chairs: Maria CARAFA, *Sapienza University of Rome* & Elia BARI, *University of Pavia* *The symposium is part of the workshop WS.IV*
TT.XI.B	**New materials for photovoltaic technologies and solar cells** *Co-organized with Sapienza University of Rome* Chair: Isabella CHIAROTTO, *Sapienza University of Rome*
TT.XI.C	**Organic and Biomolecular Chemistry for Nanotechnology** *Co-organized with Sapienza University of Rome* Chair: Francesca A. SCARAMUZZO, *Sapienza University of Rome*
15:30 - 16:00 Break and visit of the exhibition area	

16:00 - 17:30 TT.XII - Technical multi-Track - parallel SYMPOSIA	
TT.XII.A **WS.I.3**	**Agri-nanotechniques: Nanomaterials for products and application in agriculture - Research and Regulations** *Co-organized with University of Udine, University of Firenze, University of Verona, University of Parma and University of Bologna* Chair: Nelson MARMIROLI, *University of Parma* *The symposium is part of the workshop WS.I*
TT.XII.B **WS.IV.8**	**YoungInnovation: the state of research communicated by young researchers - Arising new manufacturing technologies** *Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome* Chairs: Luisa DI MARZIO, *University of Chieti-Pescara* & Nicola D'AVANZO, *University Magna Graecia of Catanzaro* *The symposium is part of the workshop WS.IV*
TT.XII.C	**Materials for Energy Applications** *Co-organized with Sapienza University of Rome* Chair: Giuseppe ZOLLO, *Sapienza University of Rome*

09:00 - 10:30 **SEPTEMBER 16**

I.A NanoMicroFab

Co-organized with CNR IMM
Chair: Guglielmo FORTUNATO, *CNR IMM*

The symposium is part of the workshop WS.VI

I.A.1 Luigi MARIUCCI, *IMM-CNR, Rome*
Organic electronics: Overview and opportunities

I.A.2 Valentina MUSSI, *IMM-CNR, Rome*
Raman imaging for spatially resolved thermal characterization of materials and operating devices

I.A.3 Annamaria GERARDINO, *IFN-CNR, Rome*
Electron Beam Lithography @NanoMicroFab: a powerful tool for research and industrial applications

I.A.4 Andrea NOTARGIACOMO, *IFN-CNR, Rome*
Advanced nanofabrication for innovative sensors and microsystems @NanoMicroFab

I.A.5 Roberto FLAMMINI, *ISM-CNR, Rome*
A New features of the Nanolab@ISM: the case of antimonene

I.A.6 Daniele TRUCCHI, *ISM-CNR, Rome*
Advanced analysis techniques for the development of innovative materials and devices

I.A.7 Andrea REALE, *Univ. of Rome Tor Vergata, Rome*
Advanced technologies and applications for GaN and printable electronics: two cases of excellence at El. Eng Dept of Rome Tor Vergata

I.B Nanospectroscopy and Nanotechnology: Challenges and Innovations - Basic principles of Nanospectroscopy

Co-organized with The "Mediterranean" University of Reggio Calabria & Sapienza University of Rome
Chairs: Giuliana FAGGIO & Giacomo MESSINA, *The "Mediterranean" University of Reggio Calabria*

The symposium is part of the workshop WS.II

I.B.1 Vincenzo AMENDOLA, *University of Padova*
Structure-properties relationship and applications of plasmonic alloy nanoparticles obtained by laser ablation in liquid

I.B.2 Pietro GUCCIARDI, *CNR-IPCF*
Surface-and Tip-Enhanced Raman Spectroscopy: basic principles and applications

I.B.3 Filippo GIANNAZZO, *CNR-IMM*
Nanoscale probing the electronic transport in transition metal dichalcogenides by conductive atomic force microscopy

I.B.4 Vittorio MORANDI, *CNR-IMM, Bologna*
Real-time nano-CHAracterization reLatEd techNoloGiEeS (CHALLENGES, H2020 Project)

I.C Advanced materials for optical-based devices and methods

Co-organized with Sapienza University of Rome
Chair: Danilo DINI, Sapienza University of Rome

I.C.1 Diego DI GIROLAMO, *Sapienza University of Rome*
Investigating anodic electrodeposition of NiOOH towards implementation of NiO in optoelectronic devices

I.C.2 Rocco CARCIONE, *FSN-TECFIS, ENEA Frascati*
Strategies to synthesize CdSe@CdS dots-in-rods (dirs) with tunable PL properties

I.C.3 Francesca LIMOSANI, *FSN-TECFIS, ENEA Frascati*
Investigation of photoluminescent semiconductor quantum dots synthesized by direct laser patterning

I.C.4 Daniele ROCCO, *Sapienza University of Rome*
New Organic Materials applied to Plastic Scintillators for Fast Timing Detectors

I.C.5 Emilija PETRONIJEVIC, *Sapienza University of Rome*
Chirality in Low cost Plasmonics asymmetric nanohole arrays

I.D Natural, artificial and synthetic nanovesicles

Co-organized with Sapienza University of Rome
Chairs: Maria CARAFA, *Sapienza University of Rome*

I.D.1 Stefano TACCONI, *University of Salento*
Macrophages extracellular vesicles and immune function: a new crosstalk in metabolic disease and related disorders

I.D.2 Carlotta MARIANECCI, *Sapienza University of Rome*
Amphiphilc vesicular nanocarriers: a versatile tool for brain delivery

I.D.3 Federica RINALDI, *Sapienza University of Rome*
Vesicular nanocarriers: an all-around approach to nanomedicine

I.D.4 Regina Maria CHIECHIO, *University of Catania*
Control of the luminescent gold nanoclusters interaction with lipidic membranes

I.E Materials and Characterizations for Cultural Heritage

Co-organized with Sapienza University of Rome
Chair: Leonardo MATTIELLO, *Sapienza University of Rome*

I.E.1 Emanuela PROIETTI, *CNR-IMM, Roma*
Scanning microwave microscopy to characterize, monitor and preserve cultural heritage monuments

I.E.2 Gabriele VARANI, *Biosensor srl*
Application of nanostructured sensors for Cultural Heritage monitoring and protection

I.E.3 Sawssen SLIMANI, *CNR-ISM, Roma*
Caput Mortuum pigment: a magnetic investigation

I.E.4 Francesco BIANCARDI, *ZEISS*
Building bridges between science, history and archaeology with ZEISS microscopes

11:00 - 12:30 **SEPTEMBER 16**

II.A AgriNanoTechniques: Nanomaterials for products and application in agriculture - Nanomaterials: Basic knowledge and tools

Co-organized with University of Udine, University of Firenze, University of Verona, University of Parma and University of Bologna

The symposium is part of the workshop WS.I

II.A.1 Marta MARMIROLI, *University of Parma*
Synthesis, characteristics, uses and detection of engineered nanostructured materials

II.A.2 Luca PAGANO, *University of Parma*
Nanomaterials in the Environment: from implications to applications

II.A.3 Francesco BIANCARDI, *Zeiss*
Correlative and Analytical case studies for micro and nanoparticles detection in Agrifood research

II.B Innovative Materials and Approaches for Tissue Engineering

Co-organized with Distretto Tecnologico Sicilia Micro e Nano Sistemi & University of Messina
Chair: Sabrina CONOCI, *University of Messina*

II.B.1 Luigi AMBROSIO, *CNR - Istituto per i Polimeri, Compositi e Biomateriali (IPCB)*
Nano-biocomposites: from tissue repair/regeneration to therapeutic behaviors

II.B.2 Angelo ACCARDO, *Delft University of Technology, Holland*
Two-photon polymerization of polymeric and hydrogel scaffolds for 3D neural cell culture

II.B.3 Andrea SERIO, *King's College London*
Engineering Connections: Combining stem cells, bioengineering, microfabrication and imaging technologies to model the nervous system in health and disease

II.B.4 Salvatore PETRALIA, *University of Catania*
Innovative chemical approaches for the nanofunctionalization of hydroxyapatite scaffold: antibacterial effect, osteo-inductive capabilities and cytotoxicity investigation

II.C Lipid-based nanocarriers as nanomedical devices

Co-organized with ISS
Chairs: Annarica CALCABRINI, Annarita STRINGARO *Centro Nazionale Ricerca e Valutazione preclinica e clinica dei Farmaci - ISS*

II.C.1 Francesca CECCACCI, *Istituto dei Sistemi Biologici - CNR - Sede Secondaria di Roma - Meccanismi di Reazione*
Development of liposome formulations for delivery across the blood brain barrier

II.C.2 Patrizia Nadia HANIEH, *Dipartimento di Tecnologia e Chimica del Farmaco, Università Sapienza di Roma*
Versatile oleic acid-based nanocarriers: characterization and applications

II.C.3 Giuseppina BOZZUTO, *Centro Nazionale Ricerca e Valutazione preclinica e clinica dei Farmaci - ISS*
Surface functionalization of liposomes for cellular and subcellular targeting

II.C.4 Paola MINOSI, *Centro Nazionale Ricerca e Valutazione preclinica e clinica dei Farmaci - ISS*
pH-sensitive niosomes and liposomes: Effects on inflammation and pain in murine models

II.C.5 Giuseppe D'AVENIO, *Centro nazionale Tecnologie Innovative in Sanità Pubblica - ISS*
Critical issues of the regulatory pathway for nanostructured medical devices

II.D Nanospectroscopy and Nanotechnology: Challenges and Innovations - Nanotechnology applications

Co-organized with The "Mediterranean" University of Reggio Calabria
Chairs: Giuliana FAGGIO & Giacomo MESSINA, *The "Mediterranean" University of Reggio Calabria*

The symposium is part of the workshop WS.II

II.D.1 Luciano DE SIO, *Center for Biophotonics and Department of Medico - surgical Sciences and Biotechnologies, Sapienza University*
Biomimetic keratin gold nanoparticles for photo-thermal cancer therapy

II.D.2 Paolo MATTEINI, *Institute of Applied Physics "Nello Carrara" - CNR*
Label-freeplasmon-enhanced Raman detection of biomarkers in neurodegenerative disorders

II.D.3 Francesca SBRANA, *Schaefer South-East Europe Srl*
Label free imaging of nanoparticles in cells with Enhanced Darkfield Hyperspectral Microscopy

II.D.4 Ivo RENDINA, *Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello"- ISASI*
Nanophotonic silicon-based biosensors and biochips

II.D.5 Sara CERRA, *Sapienza University of Rome*
Methotrexate-Loaded Hydrophilic Gold Nanoparticles for Transdermal Delivery

II.E HPC & BigData for Nanotechnology

Co-organized with ENEA
Chair: Massimo CELINO & Francesco BUONOCORE, *ENEA*

II.E.1 Francesco BUONOCORE, *ENEA*
The materials for energy scientific challenge in the EOCOE project

II.E.2 Matthew J. WOLF, *University of Bath*
Efficient computational tools for simulating novel semiconductor devices

II.E.3 Alessandro PECCHIA, *CNR-ISMN*
A library for Non Equilibrium Green's Functions

II.E.4 Mathieu SALANNE, *Sorbonne University*
Harvesting electricity from salinity gradients: molecular simulation studies

14:00 - 15:30 **SEPTEMBER 16**

III.A Incentivi all'innovazione per la transizione Industria 4.0: esperienze e opportunità Artes 4.0

Co-organized with Scuola Normale Superiore (SNS), Ente Italiano di Normazione (UNI), & Airi
Chair: Pasqualantonio PINGUE, *Scuola Normale Superiore*

III.A.1 Chiara CAPPELLI, *Scuola Normale Superiore*
Il macro-nodo SNS del centro di competenza ARTES4.0 sulla robotica avanzata e sulle tecnologie digitali abilitanti

III.A.2 Carlo ROLANDI, Vito MARAFFA, Silvia CESARINI, *Deloitte*
Incentivi all'innovazione per la transizione 4.0

III.A.3 Maria ROSSETTI, *Ente Italiano di Normazione (UNI)*
Normazione tecnica per supportare la transizione a Industria 4.0

III.B Innovation in Nanotherapeutics and Nanodiagnostics

Co-organized with University of Modena and Reggio Emilia and IRCCS Fondazione Don Gnocchi
Chair: Giovanni TOSI, *Nanomedicine Platform of University of Modena and Reggio Emilia*

III.B.1 Francesca RE, *University of Bicocca, Milan*
b-Amyloid-induced oxidative stress boosts CeO2 nanoparticles uptake by changing brain endothelium microvilli pattern

III.B.2 Raymond SCHIFFELERS, *UMC Utrecht, Holland*
Synthetic lipid nanoparticles or extracellular vesicles for RNA delivery

III.B.3 Frank BOURY, *University of Angers, France*
Bioimplant for the trapping of glioblastoma cells

III.B.4 Jason DUSKEY, *University of Modena and Reggio Emilia*
Brain Targeted Nanomedicine: More Than Just Crossing the BBB

III.C Nanospectroscopy and Nanotechnology: Challenges and Innovations - Manufacturing of nanodevices

Co-organized with The "Mediterranean" University of Reggio Calabria
Chairs: Giuliana FAGGIO & Giacomo MESSINA, *The "Mediterranean" University of Reggio Calabria*

The symposium is part of the workshop WS.II

III.C.1 Ivan MUKHIN, *Alferov University, Russia*
Large area free-standing membrane with embedded GaP NWs for flexible optoelectronic devices

III.C.2 Riccardo BARBERI, *Department of Physics, University of Calabria*
Smart unclonable tags for cyber physical security

III.C.3 Filiberto RICCIARDELLA, *Universitaet der Bundeswehr Munich, Institute of Physics, Germany*
Synthesis, investigation and sensing application of graphene grown by chemical vapor deposition

III.C.4 Nicola LISI, *ENEA*
Graphene based interfaces, application and characterization

III.D Environmental Nanotechnologies: the issue of micro-nanoplastics - Impact and mitigation measures of micro and nanoplastics

Co-organized with CNR NANOTEC & CNR IRSA
Chairs: Roberto GIANNANTONIO, *CNR IRSA* & Francesco MATTEUCCI, *CNR NANOTEC*

The symposium is part of the workshop WS.III

III.D.1 Francesca DE FALCO, *CNR-IPCB*
Micro-nanoplastics in the environment

III.D.2 Loreto GESUALDO, *University of Bari*
Impact of nanoplastics on health

III.D.3 Alberto FIGOLI, *CNR - ITM*
Mitigation measure: state of the art

III.E ATOM - Advanced Tomography and Microscopies - Project

Co-organized with Sapienza University of Rome
Chair: Marco ROSSI, *Sapienza University of Rome*

The symposium is part of the workshop WS.VI

III.E.1 Luciana DINI, *Sapienza University of Rome*
Cryoelectron microscopy: a dream for the microscopist and a primer for the non-microscopist

III.E.2 Alessandra DEL GIUDICE, *Sapienza University of Rome*
X-ray scattering based methods for industrial applications (in definition)

III.E.3 Athanassios GALANIS, *NANOMEGAS*
Advanced methods for the analysis of nanocrystals in nm-scale using Precession Electron Diffraction techniques in TEM

III.E.4 Francesco MURA, *Sapienza University of Rome*
Mixing the Microscopies: An Insight Over the Capabilities of the Correlative Microscopies

III.E.5 Alfredo MICCHELI, *Sapienza University of Rome*
NMR based techniques (in definition)

16:30 - 17:30 **SEPTEMBER 16**

IV.A Fostering Nanomedicine into Industrial and Clinic Setting

Co-organized with University of Modena and Reggio Emilia and IRCCS Fondazione Don Gnocchi
Chair: Marzia BEDONI, *Laboratory of Nanomedicine and Clinical Biophotonics (LABION), IRCCS Fondazione Don Gnocchi*

IV.A.1 Maria DE LA FUENTE, *Health Research Institute of Santiago de Compostela, Spain*
Personalized nanomedicine for improved anticancer therapeutics

IV.A.2 Adriele PRINA-MELLO, *Trinity College Dublin, Ireland*
Measuring particle concentration of multimodal materials with orthogonal techniques. Stepping up to the characterisaton complexity

IV.A.3 Davide MALAGOLI, *University of Modena and Reggio Emilia, Italy*
The apple snail Pomacea canaliculata: a new and alternative animal model for testing innovative nanomedicines

IV.A.4 Robert PROUD'HOMME, *Princeton University, USA*
Nanomedicine: from high tech to global health

IV.B Nanospectroscopy and Nanotechnology: Challenges and Innovations - Advanced methods for imaging spectroscopy and metrology

Co-organized with The "Mediterranean" University of Reggio Calabria
Chairs: Giuliana FAGGIO & Giacomo MESSINA, *The "Mediterranean" University of Reggio Calabria*

The symposium is part of the workshop WS.II

IV.B.1 Luca DE STEFANO, *Institute of Applied Sciences and Intelligent Systems, Unit of Naples - CNR*
Hybrid inorganic nanoparticles for optical imaging and sensing

IV.B.2 Raffaele Giuseppe AGOSTINO, *University of Calabria*
A spectro-microscopy lab at the STAR facility

IV.B.3 Paolo BARIANI, Schaefer South-East Europe srl
3D Optical Metrology Techniques: Fringe Projection, Confocal, Ai Focus Variation, Interferometry

IV.B.4 Marianne MARCHIONI, *Izon Science LTD*
Standardized Single Particle Measurement of Number, Size and Charge is required for Confidence in Nanomedicine Engineering and Development

IV.C Materials Challenges In Thermo-Nuclear Fusion Reactor Research

Co-organized with ENEA
Chair: Marco VITTORI ANTISARI, *Associazione NanoItaly*

IV.C.1 Pietro AGOSTINI, *ENEA-Brasimone*
Current status of fusion research and related materials needs

IV.C.2 Oriana TASSA, CSM, *Castel Romano, Roma*
Low activation steels reinforced by nano-oxides particles

IV.C.3 Stefano LIONETTI, CSM, *Castel Romano, Roma*
Coating technologies in high heat flux materials for plasma facing components

IV.C.4 Valentina CASALEGNO, *Polytechnic of Turin*
Ceramic Based Materials For Nuclear Applications: Joining Issues

IV.C.5 Massimo E. ANGIOLINI, *ENEA-Brasimone*
Liquid metal corrosion problems in blanket development

IV.D Environmental Nanotechnologies: the issue of micro-nanoplastics - Micro-nanoplastics in different matrices

Co-organized with CNR NANOTEC & CNR IRSA
Chairs: Roberto GIANNANTONIO, *CNR IRSA* & Francesco MATTEUCCI, *CNR NANOTEC*

The symposium is part of the workshop WS.III

IV.D.1 Fabiana CORAMI, *CNR-ISP* and Matteo RINALDI, *CNR-ISAC*
Atmospheric micro-nanoplastics

IV.D.2 Claudia CAMPANALE, CNR-IRSA
Micro-nanoplastics in fresh waters

IV.D.3 Gea OLIVERI CONTI, *University of Catania*
Micro-nanoplastics in food

IV.E ISIS@Mach: Neutrons for science and technology

Co-organized with University of Rome Tor Vergata
Chair: Aldo DI CARLO, *University of Rome Tor Vergata*

The symposium is part of the workshop WS.VI

IV.E.1 Aldo DI CARLO, *CNR - ISM & University of Tor Vergata*
Introduction to ISIS@MACH infrastructure

IV.E.2 Robert MCGREEVY, *ISIS, UK*
The ISIS pulsed neutron and muon source and ISISI@MACH

IV.E.3 Carla ANDREANI, *University of Tor Vergata*
Fast neutrons Irradiation tests of electronic devices in ISIS@MACH

IV.E.4 Maria Paula MARQUES, *Coimbra University*
Investigation of Edible Olive Oils by light and neutron probes

IV.E.5 Giulia FESTA, *Centor Fermi*
Cultural Heritage in ISIS@MACH

IV.E.6 Roberto SENESI, *University of Rome Tor Vergata*
ISIS@MACH and Composite Materials: Construction Materials

09:00 - 10:30 **SEPTEMBER 17**

V.A Energy Storage Technologies: Batteries, Supercaps and Electrolyzers, part I

Co-organized with Enea "TERIN-PSU-ABI"
Chair: Alfonso POZIO, *ENEA*

V.A.1 Pier Paolo PROSINI, *ENEA (TERIN-PSU-ABI)*
Italian National Collaborative Project (Ricerca di Sistema Elettrico) on electrochemical energy storage: an overview

V.A.2 Sergio BRUTTI, *Sapienza University of Rome*
GISEL – Italian group for the electrochemical energy storage

V.A.3 Omar PEREGO, *RSE*
Italian National Collaborative Project (Ricerca di Sistema Elettrico) on electrochemical energy storage: an overview of RSE activities

V.A.4 Claudia PAOLETTI & Annalisa AURORA, *ENEA CASACCIA*
Process scale-up for pilot scale production of lithium-ion electrode materials

V.A.5 Francesco BOZZA, *ENEA CASACCIA*
Co3O4 nanoparticles deposited on Stainless Steel anodes by Electrophoretic Deposition for an enhanced catalytic activity in AEM water electrolysis cells

V.B Nanocellulose applications

Co-organized with: Sapienza University of Sapienza
Chairs: Marco FIDALEO & Luciana DINI, *Sapienza University of Rome*

V.B.1 Daniela DE VITA, *Sapienza University of Rome*
Bioactive molecules from plants: extraction, nanoencapsulation and applications

V.B.2 Marco FIDALEO, *Sapienza University of Rome*
Nanocellulose based materials for the plant protection against Xilella fastidiosa

V.B.3 Anastasia FORNARI, *Sapienza University of Rome*
Nanocellulose based materials for Cultural Heritage: wood and textile applications

V.B.4 Giorgio Mariano BALESTRA, *University of Tuscia*
Organic nanoparticles from lignocellulosic agricultural residues for plant protection applications

V.C Technologies and advanced applications for the life sciences

Co-organized with: ISS
Chairs: Marco CRESCENZI & Irene RUSPANTINI, *ISS*

V.C.1 Valentina TIRELLI, *ISS*
The flow cytometry approach to the analysis and separation of nanovesicles

V.C.2 Paola FATTIBENE, *ISS*
Electron paramagnetic resonance (EPR): a versatile and little-known tool in life sciences and related applications

V.C.3 Rossella CANESE, *ISS*
MRI in preclinical models: a focus on nanomedicine

V.C.4 Serena CAMERINI, *ISS*
All round description of the human parasite Giardia by mass spectrometry

V.D YoungInnovation: the state of research communicated by young researchers - Pharmaceutical technology meets biomedical applications - part 1

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chairs: Donatella PAOLINO, *University Magna Graecia of Catanzaro* & Anna FADDA, *Adritelf;* Mattia TIBONI, *University of Urbino*

The symposium is part of the workshop WS.IV

V.D.1 Daniele TORELLA, *University "Magna Græcia" of Catanzaro*
Adult Endogenous Heart Regeneration: The Arabian phoenix or A Sisyphean task?

V.D.2 Giuseppe Francesco RACANIELLO, *University "A. Moro" of Bari*
Purified glycogen as a new nanocarriers for siRNA delivery on breast cancer cells

V.D.3 Eleonora CIANFLONE, *University "Magna Græcia" of Catanzaro*
Reassessment of Sca-1+ Progenitor Cells for Cardiomyocyte Contribution in the Adult Heart

V.E SPECIAL SESSION: Sviluppo di abiti intelligENti Sensorizzati per prevenzione e mitigazione di RIschi per la SiCurezza dei lavoratori - SENSE RISC Project

Co-organized with Sapienza University of Rome & Project SENSE RISC
Chair: Maria Sabrina SARTO, *Sapienza University of Rome*

V.E.1 Carla FANIZZA, *INAIL*
In vitro and in vivo toxicological studies on graphene-based fabric

V.E.2 Emiliano SCHENA, *University Campus Bio-Medico, Rome*
Respiratory monitoring using piezoresistive sensors based on graphene nanoplatelets: experiments during daily activities

V.E.2 Fabrizio MARRA, *Sapienza University of Rome*
Graphene-based polymeric coatings for smart textile strain sensors

V.E.2 Jorge Enrique PRADA ROJAS, *University of Pisa*
Multiphysics Modeling and Prototyping of a Wearable Sensor for Sweat Rate Measurements

V.E.2 Antonio LANATA, *University of Pisa*
A wearable system for worker risk detection

11:00 - 12:30 **SEPTEMBER 17**

VI.A AgriNanoTechniques: Nanomaterials for products and application in agriculture - Nanomaterials and Agro-Environment

Co-organized with University of Udine, University of Firenze, University of Verona, University of Parma and University of Bologna

The symposium is part of the workshop WS.I

VI.A.1 Luca MARCHIOL, *University of Udine*
Nanofertilizers for sustainable crop management

VI.A.2 Sara FALSINI, *University of Firenze*
Polymeric nanoparticles as carriers for bioactive compounds: the case of crop protection from pathogens

VI.B Exploiting technological solutions for the cultural heritage: collaborative models and practices to reach the market

Co-organized with Center for Colloids and Surface Science (CSGI) & Airi
Chair: Rodorico GIORGI, *Center for Colloids and Surface Science (CSGI)*

VI.B.1 Piero BAGLIONI, *University of Florence*
Innovative nanomaterials for preventive and remedial conservation: the APACHE and NANORESTART projects

VI.B.2 Bronwyn ORMSBY, *Tate, UK*
Nanorestart at Tate: collaborative solutions for the cleaning of modern and contemporary art

VI.B.3 Romain BORDES, *Chalmers University of Technology, Sweden*
Silica nanoparticles: a building block in Art Conservation

VI.C Recent advances in 2D and 3D Microscopy – X-Ray, FIBSEM and Confocal in Nanotechnology and Life Sciences

Co-organized with ZEISS
Chair: Veronica SPARACINO, *ZEISS*

VI.C.1 Nicolas GUENINCHAULT, *ZEISS*
3D X-ray microscopy for imaging in Material and Life sciences

VI.C.2 Francesco BIANCARDI, *ZEISS*
New perspectives in FIBSEM technology: laser cutting, analytics, tomography

VI.C.3 Alessandro COMETTA, *ZEISS*
Recent advances in Confocal, super-resolution and Multi-photon Microscopy

VI.D Energy Storage Technologies: Batteries, Supercaps and Electrolyzers, part II

Co-organized with Enea "TERIN-PSU-ABI"
Chair: Pier Paolo PROSINI, *ENEA*

VI.D.1 Maria Assunta NAVARRA, *Sapienza University of Rome*
Ca-batteries: an emerging storage technology

VI.D.2 Morteza RAHAMANIPOUR, *University of Bologna*
Modification of Lithium Metal Interphase for the Application in Lithium-Sulfur Batteries

VI.D.3 Francesca SOAVI, *Bologna University*
Water processable polymers for supercapacitors and Li-ion batteries

VI.D.4 Marco AGOSTINI, *Chalmers University of Technology, Sweden*
New routes towards high energy, low cost and fast charging Li/S batteries

VI.D.5 Gioele PAGOT, *Padova University*
Lithium- and Multivalent Metal-Based Systems for Advanced Rechargeable Batteries

VI.E YoungInnovation: the state of research communicated by young researchers - Pharmaceutical technology meets biological applications - part 2

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chairs: Michele CONTI, *University of Pavia* & Angela TARTAGLIA, *University of Chieti-Pescara*

The symposium is part of the workshop WS.IV

VI.E.1 Maria Luisa TORRE, *University of Pavia*
Mesenchymal Stem/Stromal Cells Seretome For Regenerative Medicine And Drug Delivery: Pharmaceutical Challenges For Clinical Use

VI.E.2 Maria Natalia CALIENNI, *University of Hurlingham, Argentina*
Vismodegib-loaded nanoformulation for topical skin cancer therapy: reducing drug amounts while reaching supra-therapeutic concentrations

VI.E.3 Elia BARI, *University of Pavia*
From mesenchymal stem cells to cell products: secretome pharmaceuticalization as a safe and effective biological medicinal product

VI.E.4 Nicola D'AVANZO, *University "Magna Græcia" of Catanzaro*
Exploiting the ability of LinTT1-functionalized liposomes to target cancer cells and TAMs to improve breast cancer therapy

14:00 - 15:30 **SEPTEMBER 17**

VII.A Advanced Materials and Technologies for Sustainability - part 1 Industrial

Co-organized with Polytechnic of Turin
Chairs: Giancarlo CICERO & Andrea LAMBERTI, *Polytechnic of Turin* and Angelica CHIODONI, *IIT, Center for Sustainable Future Technologies - CSFT@POLITO*

The symposium is part of the workshop WS.III

VII.A1 Peter E.M. AERTS, *Blue Foot Membranes*
In definition

VII.A.2 Massimiliano ANTONINI, *Hysythech*
CO2 conversion exploited in industry

VII.A.3 Boyan ILIEV, *Iolitech*
Ionic Liquids – innovative materials for CO2 capture and conversion

VII.A.4 Simon GRASMAN, *REDstack BV*
From Nano Innovation to Macro Application in Blue Energy

VII.B New materials for storage and conversion, part I

Co-organized with Enea "TERIN-PSU-ABI"
Chair: Sergio BRUTTI, *Sapienza University of Rome* (to be confirmed)

VII.B.1 Arcangelo CELESTE, *IIT & University of Genova*
Lithium Rich Transition Metal Oxides as high capacity positive electrode materials in Li-ion cells

VII.B.2 Gianni APPETECCHI, *ENEA (SSPT-MATPRO-PROMAS)*
Ionic liquid electrolytes for sodium battery systems

VII.B.3 Maria Rosaria TUCCILLO, *Sapienza University of Rome*
Ab initio study of Li-rich layered transition metal oxides for Li-ion battery applications

VII.B.4 Julia AMICI, *Polytechnic of Turin*
Enabling safe Lithium-metal anodes through composite polymer electrolytes

VII.C YoungInnovation: the state of research communicated by young researchers - Preformulative Aspects

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chairs: Carlotta MARIANECCI, *Sapienza University of Rome* & Giulia VANTI, *University of Firenze*

The symposium is part of the workshop WS.IV

VII.C.1 Agnese GAGLIARDI, *University "Magna Græcia" of Catanzaro*
Zein nanoparticles as versatile carriers for the delivery of bioactive compounds

VII.C.2 Dalila IANNOTTA, *University "G. D'Annunzio" of Chieti-Pescara*
Discoid Nanoparticles: reaction environment-dependent Size Response

VII.C.3 Anna IMBRIANO, *Sapienza University of Rome*
Design and Characterization of Hybrid-Multistratified Micro/Nanoemulsions for Wound Healing

VII.C.4 Teresa SILVESTRI, *University "Federico II" of Naples*
Molecular weight influence of superficially exposed hyaluronic acid on nanoparticles cell internalization kinetics

VII.D 3D Additive Nanomanufacturing

Co-organized with Sapienza University of Rome
Chair: Francesco MURA, *Sapienza University of Rome*

VII.D.1 Piotr KOWALCZEWSKI, *XTPL S.A, Poland*
Ultra-precise deposition technology for high-resolution printing of nanomaterials

VII.D.2 Linas JONUSAUSKAS, FEMTIKA, *Lithuania*
Femtosecond laser-based 3D micro- and nanomanufacturing

VII.D.3 Nikolina PAVLOVIC, *CRM Group, Vanguard Initiative - SHAPETRONICS democase*
Printed intelligence, from 2D to 3D printing processes on metallic objects, and under severe environment

VII.D.4 Flavio TONELLI & Fabrizio BARBERIS, *University of Genova*
Advanced manufacturing in the framework of I4.0

VII.E Special Session on Cultural Heritage

Co-organized with DTC LAZIO
Chair: Claudia PELOSI, *University of Tuscia*

VII.E.1 Mariangela CESTELLI GUIDI, *INFN- Laboratori Nazionali di Frascati*
Infrared synchrotron radiation for Cultural Heritage: perspectives and applications

VII.E.2 Martina ZUENA, *University of Roma Tre*
An innovative multifunctional coating with controlled antifouling properties based on the encapsulation of two different biocides

VII.E.3 Alessandro CICCOLA, *Sapienza University of Rome*
SERS on "tapa": detecting dyes and pigments on a Polynesian cloth through a multi-technical approach

16:00 - 17:30 **SEPTEMBER 17**

VIII.A Advanced Materials and Technologies for Sustainability - part 2 Academic

Co-organized with Polytechnic of Turin
Chairs: Giancarlo CICERO & Andrea LAMBERTI, *Polytechnic of Turin* and Angelica CHIODONI, *IIT, Center for Sustainable Future Technologies - CSFT@POLITO*

The symposium is part of the workshop WS.III

VIII.A.1 Damien VOIRY, *University of Montpellier, France*
Electrocatalysis from two-dimensional materials

VIII.A.2 Mikhael BECHELANY, *Institut Européen des Membranes, France*
Engineering of nanomaterials and interfaces for water treatment applications

VIII.A.3 Simelys HERNANDEZ, *Polytechnic of Turin*
Low-cost nanocatalysts for the electrochemical CO2reductionto valuable products

VIII.A.4 Evangelos ANGELOPOULOS, *Institute of Nanoscience and Nanotechnology, Greece*
Edge computing technologies in water management

VIII.B New approaches for safety evaluation of nanomaterials

Co-organized with Istituto Superiore di Sanità (ISS), Ente Italiano di Normazione (UNI), Airi
Chairs: Cristina ANDREOLI, Beatrice BOCCA, *Environment and Health Department – ISS*

VIII.B.1 Federico BENETTI, *ECSIN-European Center for the Sustainable Impact of Nanotechnology, ECAMRICERT SRL*
Analytical approach for nanomaterials characterization in the nanosafety context

VIII.B.2 Cecilia BOSSA, *Environment and Health Department - ISS*
Fair approach for nanomaterial databases

VIII.B.3 Patrick CRONIN, *Mica NanoTech Ltd & University of Limerick Campus, Limerick, Ireland*
Antimicrobial Textile Coatings as Industrial Case for implementing ASINA Safe-by-Design Methodology

VIII.B.4 Cristina Maria FAILLA, *Experimental Immunology Laboratory - IDI IRCCS*
In vitro and ex-vivo assessment of toxicity of tattoo ink nanoparticles

VIII.B.5 Francesca MARANGHI, *Centre for Gender Medicine - ISS*
Sex-specific approach in nanomaterial hazard identification

VIII.C New materials for storage and conversion, part II

Co-organized with Enea "TERIN-PSU-ABI"
Chair: Nicola LISI, *ENEA*

VIII.C.1 Andrea MARRANI, *Sapienza University of Rome*
Chemical reactions investigation at the electrode / electrolyte interface through photoemission and related surface techniques

VIII.C.2 Mariangela CURCIO, *Basilicata University*
Thin film electrodes for microbattery produced by Pulsed Laser Deposition

VIII.C.3 Annalisa PAOLONE, *CNR, Rome*
Physico-chemical properties of innovative ionic liquids for electrochemical applications

VIII.C.4 Michela OTTAVIANI, *Sapienza University of Rome*
Fast and Scalable Synthesis of Carbon Coated SiNWs by Solvent Free Vapour Growth

VIII.C.5 Rosa CHIERCHIA, *ENEA (TERIN-PSU-ABI)*
3-D structured Graphene for battery electrodes

VIII.D YoungInnovation: the state of research communicated by young researchers - 3D Printing Technologies

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chairs: Maria Luisa TORRE, *University of Pavia* & Maria Chiara CRISTIANO, *University Magna Graecia of Catanzaro*

The symposium is part of the workshop WS.IV

VIII.D.1 Michele CONTI, *University of Pavia*
Bioprinting. From technical set-up to biological applications

VIII.D.2 Giovanni FALCONE, *University of Salerno*
Development and characterization of gastroretentive drug delivery formulations produced via FDM 3D-printed coaxial semi-solid extrusion systems

VIII.D.3 Mattia TIBONI, *University of Urbino*
3D printing of microfluidic device for the preparation of lipidic nanoparticles

VIII.D.4 Francesca SCOCOZZA, *University of Pavia*
Geometrical features and sterility assessment of 3d printed PCL-HA scaffold

VIII.E MAIA – Materiali Avanzati in una Infrastruttura Aperta LATINO – Laboratory in Advanced Technologies for INnOvation

Co-organized with ENEA & LNF-INFN
Chair: Giuseppe BARBIERI, *ENEA* & Lucia SABBATINI, *LNF-INFN*

The symposium is part of the workshop WS.VI

VIII.E.1 Lucia SABBATINI, LNF-INFN
Overview LATINO Project

VIII.E.2 Giuseppe BARBIERI, SSPT-PROMAS-MATPRO, ENEA
Overview MAIA Project

VIII.E.3 Daniele MIRABILE GATTIA, ENEA
Materials for AM in the Programme Agreement with the Italian Ministry of Economic Development: project 1.3 "Advanced Materials for Energy

VIII.E.4 Antonio FALONE, *INFN*
LATINO - Laboratory in Advanced Technologies for Innovation, state of art and future perspectives in INFN

09:00 - 10:30 **SEPTEMBER 18**

IX.A YoungInnovation: the state of research communicated by young researchers - Topical Delivery of actives Part I

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chairs: Christian CELIA, *University of Chieti-Pescara* & Agnese GAGLIARDI, *University Magna Graecia of Catanzaro*

The symposium is part of the workshop WS.IV

IX.A.1 Fabio SONVICO, *University of Parma*
Delivery of nano medicines to the upper and lower airways

IX.A.2 Angela BONACCORSO, *University of Catania*
Nanocrystals for intranasal administration to achieve brain targeting

IX.A.3 Eleonora CASULA, *University of Cagliari*
Evaluation of feasibility of modified phospholipid vesicles loading Cardiospermum halicacabum extract for nasal delivery

IX.A.4 Federica DE GAETANO, *University of Messina*
Chitosan nanoparticles for nose-to-brain targeting

IX.B Nanomaterials for sensoristic applications

Co-organized with Sapienza University of Rome
Chair: Gianluca FERRARIO, *University of Birmingham*

IX.B.1 Sergey DUBKOV, *MIET University, Russia*
Mono and bimetallic nanoparticles in sensor and catalysis devices

IX.B.2 Simona FIORAVANTI, *CNR-IMM, Roma*
Design Elements and Prototypes of Metal Oxide Based Gas Sensors

IX.B.3 Erica CIOTTA, *CNR-IMM, Roma*
Synthesis of substrates for SERS sensors with DE-LIL (Double Exposition Laser Interference Lithography) technique

IXI.B.4 Valentina PAOLUCCI, *University of L'Aquila*
Near-room temperature NO2 and H2 gas sensors based on self-assembled 2D - SnO2/SnSe2 few-layered heterostructure

IXI.B.5 Mariam HASSAN, *CNR-ISM, Roma*
Large-area perpendicularly magnetized magneto-resistive structures on flexible substrates

IX.C Advanced Functional Nanomaterials and Nanosystems

Co-organized with Sapienza University of Rome
Chair: Francesca A. SCARAMUZZO, *Sapienza University of Rome*

IX.C.1 Elia ROMA, *University of Roma Tre*
Thermoresponsive Block Copolymer Grafted on Core-Shell Nanoparticles

IX.C.2 Maryam ABDOLRAHIMI, *CNR-ISM, Roma*
Effect of Molecular Coating on Magnetic Properties of Spinel Ferrite Nanoparticles:XANES study

IX.C.3 Enrico CATALANO, *University of Oslo, Norway*
Multifunctional iron oxide nanoparticles for targeting metastatic breast cancer cells

IX.C.4 Lisa BREGOLI, *Warrant Hub SpA*
GIOTTO project: Active aGeIng and Osteoporosis, the next challenge for smarT nanobiOmaterials and 3D technologies

IX.C.5 Diego CORONA, *Consorzio di Ricerca Hypatia*
Additive manufacturing of copper-based nanocomposites

IX.D Nanomaterials for magnetic, chemical and biological applications

Co-organized with Sapienza University of Rome
Chair: Carlo MARIANI, *Sapienza University of Rome*

IX.D.1 Maria Grazia BETTI, *Sapienza University of Rome*
Tuning the magnetic response of molecular spin interfaces (Keynote Lecture)

IX.D.2 Francesco PANDOLFI, *Sapienza University of Rome*
Vertically-aligned carbon nanotubes for novel detectors

IX.D.3 Akiko TSURUMAKI, *Sapienza University of Rome*
Improved performance of liquid- and gel-state electrolytes by using borate-based salts and ionic liquids

IX.D.4 Luca DI GIACOMO, *Sapienza University of Rome*
The protein corona of nanoparticles as a tool for early detection of pancreatic cancer

IX.E Energy Storage Technologies: Batteries, Supercaps and Electrolyzers, part III

Co-organized with Enea "TERIN-PSU-ABI"
Chair: Margherita MORENO, *ENEA*

IX.E.1 Daniele CALLEGARI, *University of Pavia*
Recycling and recovery of Critical Raw Materials from spent Li-ion batteries

IX.E.2 Michele PAVONE, *University of Napoli, Federico II*
Quantum chemical design of multi-component transition metal perovskite oxides for energy conversion devices

IX.E.3 Leonardo GIORGI & Roberto SIMMARANO, *SENSICHIP*
Cell Management Unit (CMU) for energy storage devices

IX.E.4 Enrica MICOLANO, *RSE*
General methodology for lithium-ion batteries aging analysis

IX.E.5 Alessandro AGOSTINI, *ENEA CASACCIA*
The role of LCA in the technological innovation. -Why is it mandatory in most European project calls. How to plan it properly

11:00 - 12:30 **SEPTEMBER 18**

X.A YoungInnovation: the state of research communicated by young researchers - Topical Delivery of actives Part II

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chairs: Erwin Pavel LAMPARELLI, *University of Salerno* & Anna IMBRIANO, *Sapienza University of Rome*

The symposium is part of the workshop WS.IV

X.A.1 Luca CASULA, *University of Cagliari*
Delivery of nanosuspensions into the skin using needle-free jet injector

X.A.2 Maria Chiara CRISTIANO, *University "Magna Græcia" of Catanzaro*
Topical drug delivery systems included in poloxamer 407 gel: rheological characterization and release studies of model drug

X.A.3 Antonia MANCUSO, *University "Magna Græcia" of Catanzaro*
Monitoring of skin response following the topical administration of vesicular drug delivery systems

X.A.4 Hiba NATSHEH, *University of Jerusalem, Israel*
Peptides Delivery to Brain by Nasal Administration

X.A.5 Giulia VANTI, *University of Florence*
Hydroxypropyl methylcellulose hydrogel of berberine chloride-loaded escinosomes: dermal absorption and biocompatibility

X.B Nanomaterials for medical and biological applications

Co-organized with Sapienza University of Rome
Chair: Marta FEROCI, Sapienza University of Rome

X.B.1 Wolfgang EBERLE, *Imec, Vanguard Initiative - NeMs4Bio Democase*
Nano-Enabled Microsystems for Bio-analysis

X.B.2 Tommaso PILERI, *Sapienza University of Rome*
High-sensitivity screening of cancer biomarkers in cell lysates using one dimensional photonic crystal based biosensors

X.B.3 Serena DE SANTIS, *University of Roma Tre*
Surface modifications of titanium and titanium alloys to improve their properties for biomedical applications

X.B.4 Tommaso CIVITARESE, *Sapienza University of Rome*
Gap Size Dependence of Atomistic-Resolved Peptide Bond Signals by Tunneling Current Across Nano-Gaps of Graphene Nano-Ribbons

X.C New materials for storage and conversion, part III

Co-organized with Enea "TERIN-PSU-ABI"
Chair: Giovanni Battista APPETECCHI, *ENEA*

X.C.1 Enrico NEGRO, *University of Padova*
Recent Advances in Functional Materials for Ion-Exchange Membrane Fuel Cells (IEMFC)s: Proton- and Anion-Conducting Electrolytes, and Electrocatalysts for the Oxygen Reduction Reaction

X.C.2 Cataldo SIMARI, *Calabria University*
Performance evaluation of sulfonated polysulfone/graphene oxide nanocomposite membranes as cost-effective PEMs for fuel cell application

X.C.3 Hamideh DARJAZY, *University of Camerino*
Olive leave-derived hard carbon materials for Li/Na-ion battery and supercapacitor applications

X.C.4 Vincenzo BAGLIO, *CNR-ITAE, Messina*
Oxygen electrodes based on electro-spun spinel-type oxides supported on carbon nanofibers for alkaline metal-air batteries

X.D From Facilities to Advances in labs & fabs

Co-organized with Sapienza University of Rome
Chair: Marco BALUCANI, *Sapienza University of Rome*

X.D.1 Mikhail MUKHIN, *ITMO University, Russia*
High school Laboratory for nanotechnology: the complex project from equipment development to creation of educational programs

X.D.2 Gianluca FERRARO, *University of Birmingham, UK*
Henry's law method for generating bulk nanobubbles

X.D.3 Simone DINARELLI, *Sapienza University of Rome*
The nanomotion sensor: real-time characterization in biomedicine

X.D.4 Rocco CRESCENZI, *Sapienza University of Rome*
Design of a Tri-Axial Surface Micromachined MEMS Vibrating Gyroscope

14:00 - 15:30 **SEPTEMBER 18**

XI.A YoungInnovation: the state of research communicated by young researchers - Nanotechnologies meet natural products

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chairs: Maria CARAFA, *Sapienza University of Rome* & Elia BARI, *University of Pavia*

The symposium is part of the workshop WS.IV

XI.A.1 Annarita BILIA, *University of Florence*
Nanocarriers: successful tools to increase solubility, stability and bioefficacy of natural products

XI.A.2 Chiara AMANTE, *University of Salerno*
Influence of chitosan on powders in situ gelling as a wound dressing

XI.A.3 Matteo PERRA, *University of Cagliari*
Encapsulation of grape marc extract into novel phospholipid vesicles to protect skin against oxidative stress

XI.A.4 Giulia PITZANTI, *University of Cagliari*
Combination of SLNs and Transcutol® P for Improving 8-MOP Skin Delivery

XI.B New materials for photovoltaic technologies and solar cells

Co-organized with Sapienza University of Rome
Chair: Isabella CHIAROTTO, *Sapienza University of Rome*

XI.B.1 Giulia LUCARELLI, *University of Roma Tre*
Photovoltaics for indoor light harvesting: progress, challenges and perspectives

XI.B.2 Francesca DE ROSSI, *University of Rome Tor Vergata*
Perovskite solar cells on flexible substrates: up-scaling and applications

XI.B.3 Giuseppina POLINO, *University of Rome Tor Vergata*
Energy storage and harvesting for Smart Wearable Electronics

XI.C Organic and Biomolecular Chemistry for Nanotechnology

Co-organized with Sapienza University of Rome
Chair: Francesca A. SCARAMUZZO, *Sapienza University of Rome*

XI.C.1 Martina BORTOLAMI, *Sapienza University of Rome*
Dicationic imidazolium ionic liquids: synthesis, electrochemical behaviour, catalytic activity and biological applications

XI.C.2 Marta GUERINI, *University of Pavia*
Activity evaluation of supramolecular compound based on N-acetylcysteine for the treatment of P. aeruginosa biofilm

XI.C.3 Antonella MESSORE, *Sapienza University of Rome*
Design and synthesis of Quinolinonyl DKA derivatives as HIV-1 integrase inhibitors and nanotubes conjugation to improve their cell permeability

XII.A AgriNanoTechniques: Nanomaterials for products and application in agriculture - Research and Regulations

Co-organized with University of Udine, University of Firenze, University of Verona, University of Parma and University of Bologna
Chair: Nelson MARMIROLI, *University of Parma*

The symposium is part of the workshop WS.I

XII.A.1 Nelson MARMIROLI, *University of Parma*
Nanofertilizers: a new production for the industry or a new opportunity for agriculture?

XII.A.2 Jason C. WHITE, *CAES, USA*
Nanoscale nutrients to suppress plant desease and increase crop production

XII.A.3 Isabella DE ANGELIS
From scientific knowledge to regulatory application: The nanomaterial intestinal fate case study

XII.A.4 Davide SEGA, *University of Verona*
FePO4 nanoparticles as an effective tool for plant nutrition: from the lab to the field

XII.A.5 Nelson MARMIROLI, *University of Parma*
Conclusions

XII.B YoungInnovation: the state of research communicated by young researchers - Arising new manufacturing technologies

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chairs: Luisa DI MARZIO, *University of Chieti-Pescara* & Nicola D'AVANZO, *University Magna Graecia of Catanzaro*

The symposium is part of the workshop WS.IV

XII.B.1 Giorgia AILUNO, *University of Genoa*
Development of a theranostic system for the treatment of inflammatory-based diseases

XII.B.2 Ilaria ARDUINO, *University "A. Moro" of Bari*
Preparation of Cetyl Palmitate based-PEGylated Solid Lipid Nanoparticles by Microfluidic technique

XII.B.3 Margherita BONETTI, *University of Pavia*
Development of standardized procedures to evaluate morphological, mechanical and physical properties of nails and their alterations: pharmaceutical and cosmetics applications

XII.B.4 Erwin Pavel LAMPARELLI, *University of Salerno*
PLA/PLGA carriers designed for tissue engineering application and fabricated by Supercritical Emulsion Extraction

XII.C Materials for Energy Applications

Co-organized with Sapienza University of Rome
Chair: Giuseppe ZOLLO, *Sapienza University of Rome*

XII.C.1 Miriam GALBIATI, *Technical University of Denmark*
The electronic properties of Graphene/Ge(110)

XII.C.2 Alexey DRONOV, *Institute of Advanced Materials and Technologies, National Research University of Electronic Technology - MIET University, Russia*
New nanomaterials and heterostructures for energy applications.

XII.C.3 Michael SALTER, *RI.SE Research Institutes of Sweden, Vanguard Initiative - NANOWIRES democase*
ProNano, A Demo Case of the Vanguard Initiative Nano Enabled Products Pilot

01 Giorgia AILUNO, *University of Genova*
Development of a theranostic system for the treatment of inflammatory-based diseases

02 Sergio AMMENDOLA, *Ambiotec sas*
Top-down synthesis of nanoparticles from Boswellia serrata and their characterization

03 Fabrizio BARBERIS, *University of Genova*
AMiCE - Advanced Manufacturing in Central Europe

04 Beatrice BATTISTINI, *ISS*
Occupational exposure to metal nanoparticles: a pilot biomonitoring study

05 Beatrice BOCCA, *ISS*
Detection and sizing of nanoplastics by AF4-FFF-MALS-UV: the case of polystyrene nanoparticles

06 Lisa BREGOLI, *Warrant Hub SpA*
GIOTTO project: Active aGeIng and Osteoporosis, the next challenge for smarT nanobiOmaterials and 3D technologies

07 Maria Chiara BRUNO, *University of Catanzaro*
A comparative study between ufasomes or unsaturated fatty acid vesicles and other nanocarrier on the deformability index

08 Onofrio Antonino CACIOPPO, LFoundry
Real-time nano-CHAracterization reLatEd techNoloGiEeS (CHALLENGES, H2020 Project)

09 Mariarita CANDITO, *Consorzio Futuro in Ricerca*
Piezoelectric nanoparticles' biocompatibility on neuron-like cell line

10 Enrico CATALANO, *University of Oslo, Norway*
Multifunctional iron oxide nanoparticles for targeting metastatic breast cancer cells

11 Sara CERRA, *University of Rome La Sapienza*
Methotrexate-Loaded Hydrophilic Gold Nanoparticles for Transdermal Delivery

12 Tommaso CIVITARESE, *University of Rome La Sapienza*
Gap Size Dependence of Atomistic-Resolved Peptide Bond Signals by Tunneling Current Across Nano-Gaps of Graphene Nano-Ribbons

13 Maria Chiara CRISTIANO, *University of Catanzaro*
Topical drug delivery systems included in poloxamer 407 gel: rheological characterization and release studies of model drug

14 Federica CURCIO, *University of Calabria*
Chitosan membranes filled with Cyclosporine A as devices for local administration of drugs in the treatment of breast cancer

15 Nicola D'AVANZO, *University of Catanzaro*
Exploiting the ability of LinTT1-functionalized liposomes to target cancer cells and TAMs to improve breast cancer therapy

16 Chiara D'ERME, *University of Rome La Sapienza*
Preliminary study of the mechanical and hygrothermal performance of concrete reinforced with nanofibrillated cellulose

17 Federica DA ROS, *University of Modena and Reggio Emilia*
Ibuprofen and T3 polymeric NPs optimized for spinal injury treatment

18 Valeria DANIELE, *University of L'Aquila*
Cost-effective and sustainable synthetic procedure for aqueous hydroxide/oxide nanoparticles dispersions

19 Federica DE CASTRO, *University of Salento*
Stable aqueous nanocolloids of Platicur:photocytotoxicity in visible light and metabolomics studies in cancer cells

20 Fabrizio DE CESARE, *University of Tuscia*
A soil-like 3D polymer nanostructured scaffold to develop biofilm-based products for applications in agriculture and environment

21 Enea DE MEO, *University of Torino*
Laser Induced Selective Activation (LISA) Improves Electrical and Piezoresistive behaviour of Polymer Nanocomposites

22 Jessica DE SANTIS, *University of L'Aquila*
Light-Activated WS2-Decorated rGO as NO2 for environmental gas sensing applications

23 Serena DE SANTIS, *University of Roma Tre*
Surface modifications of titanium and titanium alloys to improve their properties for biomedical applications

24 Stefania DELLO IACONO, *ENEA*
Light-emitting Nanoparticle Materials: CdS based Quantum Dots by Direct Laser Patterning and Si Nanocrystals by Laser Pyrolysis

25 Giuseppina DI IORIO, *University of L'Aquila*
Graphene Oxide Coatings of Metal Surfaces for enhanced corrosion resistance

26 Giovanni DI MUCCIO, *University of Roma Tor Vergata*
Nanopores for Sensing and Sequencing

27 Sibilla Renata DOLCI, *University of Milano*
Seafood-borne diseases between engineered nanoparticles and algal blooms

28 Jason Thomas DUSKEY, *University of Modena and Reggio Emilia*
Protein Corona of functionalized targeted nanoparticle. A comparative study

29 Simona FIORAVANTI, *IMM- CNR*
Design Elements and Prototypes of Metal Oxide Based Gas Sensors

30 Anastasia FORNARI, *University of Rome La Sapienza*
Nanocellulose based materials for Cultural Heritage: wood and textile applications

31 Miriam GALBIATI, *Technical University of Denmark*
The electronic properties of Graphene/Ge(110)

32 Maria Teresa GIARDI, *Biosensor srl*
Application of nanostructured sensors for Cultural Heritage monitoring and protection

33 Lucia GIORGETTI, *IBBA - CNR*
Toxicity induction by nano-polystyrene in Allium cepa L. seedlings

34 Elena GIULIANO, *University of Catanzaro*
Rheological features of poloxamine 908-based gelling systems

35 Marta GUERINI, *University of Pavia*
Activity evaluation of supramolecular compound based on N-acetylcysteine for the treatment of P. aeruginosa biofilm

36 Dalila IANNOTTA, *University of Teramo*
Discoid Nanoparticles: reaction environment-dependent Size Response

37 Radenka KRSMANOVIC WHIFFEN, *ENEA*
Approaches to maximizing the production yield of ZnS wurtzite nanopowder: Co-precipitation synthesis using a pilot-plant reactor

38 Erwin Pavel LAMPARELLI, *University of Salerno*
PLA/PLGA carriers designed for tissue engineering application and fabricated by Supercritical Emulsion Extraction

39 Eliana LEO, *University of Modena and Reggio Emilia*
Characterization of SLN/Liposomes hybrid nanoparticles for the co-delivery of two anti-tubercular drugs: focus on SANS analysis

40 Francesca LIMOSANI, *ENEA*
Investigation of photoluminescent semiconductor quantum dots synthesized by direct laser patterning

41 Giacomo LUCCHESI, *University of Florence*
Microwave-assisted synthesis of anisotropic silver nanoparticles

42 Antonella MACAGNANO, *CNR*
A model of electrospun polymer system for sustainable agriculture

43 Davide MALAGOLI, *University of Modena and Reggio Emilia*
Organ-specific accumulation of Superparamagnetic Iron Oxide Nanoparticles (SPIONs) in the apple snail Pomacea canaliculata

44 Antonia MANCUSO, *University of Catanzaro*
Monitoring of skin response following the topical administration of vesicular drug delivery systems

45 Martina MARSOTTO, *University of Roma Tre*
SR-XPS and NEXAFS Investigation of Colloidal Networks of Gold Nanoparticles Interconnected by Organometallic Rod-like Oligomers

46 Linda MAURIZI, *University of Rome La Sapienza*
Evaluation of the antimicrobial efficacy of Satureja montana essential oil nanoemulsions

47 Marco MILIUCCI, *Istituto Nazionale di Fisica Nucleare - Laboratori Nazionali di Frascati*
Silicon Drift Detectors technology for high precision spectroscopic measurement at DAFNE collider: the SIDDHARTA-2 experiment

48 Marina MINOLI, *National Biologists Order, Royal Society of Biology*
History and Evolution of Multidisciplinary NANOSCIENCE in Innovative High School Didactics: elements of safety and researches

49 Daniele MIRABILE GATTIA, *ENEA*
Design of a superferritic alloy for AM fabrication of heat exchangers in severe liquid alkaline environment

50 Daniele MIRABILE GATTIA, *ENEA*
Feasibility study for the realization by AM of an heat exchanger for absorption machines

51 Ilaria OTTONELLI, *University of Modena and Reggio Emilia*
Cholesterol nanoparticles to rescue huntington's disease phenotype

52 Luca PAGANO, *University of Parma*
Organelle genomes exposed to different ENMs in Arabidopsis thaliana: structural maintenance, function and abundance

53 Giulia PANZARELLA, *University of Catanzaro*
Identification of novel ID3 potential ligands through a Computer-Aided Drug Design approach

54 Valentina PAOLUCCI, *University of L'Aquila*
Sustainable liquid-phase exfoliation of layered materials with non-toxic solvents

55 Valentina PAOLUCCI, *University of L'Aquila*
Near-room temperature NO2 and H2 gas sensors based on self-assembled 2D - SnO2/SnSe2 few-layered heterostructures

56 Guido PEGNA, *Labtrek srl*
Developing a small portable DLS apparatus for field analysis

57 Emilija PETRONIJEVIC, *University of Rome La Sapienza*
Chirality in low-cost plasmonics

58 Tommaso PILERI, *University of Rome La Sapienza*
High-sensitivity screening of cancer biomarkers in cell lysates using one dimensional photonic crystal based biosensor

59 Giulia PITZANTI, *University of Cagliari*
Combination of SLNs and Transcutol® P for improving 8-mop skin delivery

60 Emanuela PROIETTI, *CNR-IMM*
Scanning microwave microscopy to characterize, monitor and preserve cultural heritage monuments

61 Sofia RANIOLO, *University of Rome Tor Vergata*
Allosteric responsive DNA nanocages for specific miR21 sequestering in cancer cells

62 Tiziana RITACCO, *University of Calabria*
Physical phenomena ruling the optical creation of gold nanoparticles, by multi-photon photoreduction

63 Daniele ROCCO, *University of Rome La Sapienza*
Plastic Scintillators for Fast Timing Detectors based on new organic materials

64 Elia ROMA, *University of Roma Tre*
Thermoresponsive Block Copolymer Grafted on Core-Shell Nanoparticles

65 Marco RUGGERI, *University of Rome La Sapienza*
Agri Food 4.0: NP-based sensor application

66 Abdelaziz SAAFANE, *Institut Armand-Frappier Santé biotechnologie*
Iron oxide nanoparticles: Question of nanosafety for nanomedicine applications

67 Debora SANTONOCITO, *University of Catania*
Mangiferin-loaded nanostructured lipid carriers (NLC) with antioxidant activity

68 Teresa SILVESTRI, *University of Napoli*
Molecular weight influence of superficially exposed hyaluronic acid on nanoparticles cell internalization kinetics

69 Angela TARTAGLIA, *University of Chieti*
Asphodeline taxa: potential sources of natural-functional ingredients for bioactive formulations

70 Jordan TRILLI, *University of Rome La Sapienza*
Encapsulation of pomegranate peel extracts in egg phosphatidylcholine liposomes

71 Giulia VANTI, *University of Firenze*
Hydroxypropyl methylcellulose hydrogel of berberine chloride-loaded escinosomes: dermal absorption and biocompatibility

72 Chiara VECCHI, *University of Trento*
Second order nonlinearities in silicon waveguide by interdigitated poling

73 Iole VENDITTI, *University of Roma Tre*
Hydrophilic gold nanorods for biotechnological applications

74 Silvia VOCI, *University of Catanzaro*
Rheological characterization of zein gels containing probes

75 Gianluca ZANELLATO, *University of Rome La Sapienza*
Synthesis of nanostructured electrodes for the catalytic reduction of CO2

76 Davide ZANELLI, *University of Roma Trieste*
Effects of graphene-related materials on the extracellular environment of the stigmatic surface of seed plants

WS.I

AgriNano Techniques

Co-organizers:

UNIVERSITÀ DEGLI STUDI DI UDINE

UNIVERSITÀ DEGLI STUDI FIRENZE

UNIVERSITÀ di VERONA

UNIVERSITÀ DI PARMA

ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA
DIPARTIMENTO DI SCIENZE AGRARIE

Under the patronage of the Italian Society of Agronomy

With the world's population expected to exceed nine billion by 2050, scientists are working to develop new ways to meet the rising global demand for food, energy and water without increasing the pressure on natural resources. The development of Agri-NanoTechniques has started very recently. Agri-NanoTechniques will be implemented within the evolving science of precision agriculture that aims at using new technologies to increase the use efficiency of water, fertilizer, plant protection products and other inputs. A second, broad potential application concerns the issues of agri-food wastes reduction and valorization in accordance with the principles of the circular economy. The introduction of nanotechnologies in agriculture still needs deepening in basic and applied knowledge. However, several promising results have been 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. NanoInnovation 2020 hosts the 4th edition of the workshop "AgriNanoTechniques: Nanomaterials for products and application in agriculture". Because of the restrictions due to COVID-19, the 4th Workshop Agri-NanoTechiques is organized in the form of webinars co-organized by the Universities of Bologna, Firenze, Parma, Verona and Udine. The workshop, organized under the patronage of the Italian Society of Agronomy, will be the forum for discussing the perspectives of nanotechnologies in the primary sector among the stakeholders and scientists. The virtual workshop offers the possibility of inserting educational contents. The first session is specifically aimed at master degree and PhD students in agriculture and biology. The second session encompass an overview of nanotechnology applications in plant nutrition and protection. The third session hosts recent research advances in these fields.

16 SEPTEMBER

11:00 - 12:30	WS.I.1 - TT.II.A
Nanomaterials for products and application in agriculture Nanomaterials: Basic knowledge and tools	
WS.I.1.1 TT.II.A.1	Marta MARMIROLI, *University of Parma* **Synthesis, characteristics, uses and detection of engineered nanostructured materials**
WS.I.1.2 TT.II.A.2	Luca PAGANO, *University of Parma* **Nanomaterials in the environment** (to be defined)
WS.I.1.3 TT.II.A.3	Francesco BIANCARDI, Zeiss **Correlative and Analytical case studies for micro and nanoparticles detection in Agrifood research**

17 SEPTEMBER

11:00 - 12:30	WS.I.2 - TT.VI.A
Nanomaterials for products and application in agriculture - Nanomaterials and Agro-Environment	
WS.I.2.1 TT.VI.A.1	Luca MARCHIOL, *University of Udine* **Nanofertilizers for sustainable crop management**
WS.I.2.2 TT.VI.A.2	Sara FALSINI, *University of Firenze* **Polymeric nanoparticles as carriers for bioactive compounds: the case of crop protection from pathogens**

18 SEPTEMBER

16:00 - 17:30	WS.I.3 - TT.XII.A
Nanomaterials for products and application in agriculture - Research and Regulations	
Chair: Nelson MARMIROLI, *University of Parma*	
WS.I.3.1 TT.XII.A.1	Nelson MARMIROLI, *University of Parma* **Nanofertilizers: a new production for the industry or a new opportunity for agriculture?**
WS.I.3.2 TT.XII..A.2	Jason C. WHITE, *CAES, USA* **Nanoscale nutrients to suppress plant desease and increase crop production**
WS.I.3.3 TT.XII..A.3	Isabella DE ANGELIS, *ISS, Rome* **From scientific knowledge to regulatory application: The nanomaterial intestinal fate case study**
WS.I.3.4 TT.XII..A.4	Davide SEGA, *University of Verona* **FePO4 nanoparticles as an effective tool for plant nutrition: from the lab to the field**
WS.I.3.5 TT.XII..A.5	Nelson MARMIROLI, *University of Parma* **Conclusions**

Nanospectroscopy and Nanotechnology

Co-organized with:

The exponential growth of nanotechnologies in recent years has required rapid development of nanoscience and in particular of nanospectroscopy techniques. Understanding, controlling and manipulating the interaction of electromagnetic radiation with matter, on the nanometer scale, has become a fascinating field of research in continuous evolution. Moreover, a remarkable feature of the nanospectroscopy lies in its multidisciplinary nature as it find application in physics, chemistry and biology. The aim of the workshop is to bring together scientists working on nanospectroscopy and nanotechnologies, including theory, experimental demonstration of novel concept, progress and applications to any field of science. The workshop will be organized on four different sessions. The first one will be focused on "Basic principles of Nanospectroscopy", deepening techniques such as SERS and TERS, showing the potential of conductive AFM as well as the latest results on nanoalloys with plasmonic properties obtained by laser ablation in solution. The second one will be on "Nanotechnology applications", and will provide an overview of the most recent applications in the fields of biomedicine and biosensors from a therapeutic and diagnostic point of view. The third one will focus on "Manufacturing of nanodevices" for applications ranging from photovoltaic and optoelectronic devices to sensors. Finally, the fourth session will concern "Advanced methods for imaging spectroscopy and metrology", showing recent results in the field of bio-imaging and nanomedicine engineering, and presenting recent developments of new techniques for the spectroscopic and microscopic characterization of surfaces as well as for 3D optical metrology.

16 SEPTEMBER

09:00 - 10:30	WS.II.1 - TT.I.B
Challenges and Innovations Basic principles of Nanospectroscopy	
Chairs: Giuliana FAGGIO & Giacomo MESSINA, *The "Mediterranean" University of Reggio Calabria*	
WS.II.1.1 TT.I.B.1	Vincenzo AMENDOLA, *University of Padova* **Structure-properties relationship and applications of plasmonic alloy nanoparticles obtained by laser ablation in liquid**
WS.II.1.2 TT.I.B.2	Pietro GUCCIARDI, *CNR-IPCF* **Surface-and Tip-Enhanced Raman Spectroscopy: basic principles and applications**
WS.II.1.3 TT.I.B.3	Filippo GIANNAZZO, *CNR-IMM* **Nanoscale probing the electronic transport in transition metal dichalcogenides by conductive atomic force microscopy**
WS.II.1.4 TT.I.B.4	Vittorio MORANDI, *CNR-IMM, Bologna* **Real-time nano-CHAracterization reLatEd techNoloGiEeS (CHALLENGES, H2020 Project)**

11:00 - 12:30	WS.II.2 - TT.II.D
Challenges and Innovations Nanotechnology applications	
Chairs: Giuliana FAGGIO & Giacomo MESSINA, *The "Mediterranean" University of Reggio Calabria*	
WS.II.2.1 TT.II.D.1	Luciano DE SIO, *Center for Biophotonics and Department of Medico - surgical Sciences and Biotechnologies, Sapienza University* **Biomimetic keratin gold nanoparticles for photo-thermal cancer therapy**
WS.II.2.2 TT.II.D.2	Paolo MATTEINI, *Institute of Applied Physics "Nello carrara" - CNR* **Label-freeplasmon-enhanced Ramandetection of biomarkers in neurodegenerative disorders**
WS.II.2.3 TT.II.D.3	Francesca SBRANA, Schaefer South-East Europe Srl **Label free imaging of nanoparticles in cells with Enhanced Darkfield Hyperspectral Microscopy**
WS.II.2.4 TT.II.D.4	Ivo RENDINA, *Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello"- ISASI* **Nanophotonic silicon-based biosensors and biochips**
WS.II.2.5 TT.II.D.5	Sara CERRA, *Sapienza University of Rome* **Methotrexate-Loaded Hydrophilic Gold Nanoparticles for Transdermal Delivery**

16 SEPTEMBER

14:00 - 15:30	WS.II.3 - TT.III.C
Challenges and Innovations Manufacturing of nanodevices	
Chairs: Giuliana FAGGIO & Giacomo MESSINA, *The "Mediterranean" University of Reggio Calabria*	
WS.II.3.1 TT.III.C.1	Ivan MUKHIN, *Alferov University* **Large area free-standing membrane with embedded GaP NWs for flexible optoelectronic devices**
WS.II.3.2 TT.III.C.2	Riccardo BARBERI, *Department of Physics, University of Calabria* **Smart unclonable tags for cyber physical security**
WS.II.3.3 TT.III.C.3	Filiberto RICCIARDELLA, *Universitaet der Bundeswehr Munich, Institute of Physics, Germany* **Synthesis, investigation and sensing application of graphene grown by chemical vapor deposition**
WS.II.3.4 TT.III.C.4	Nicola LISI, *ENEA* **Graphene based interfaces, application and characterization**

16:00 - 17:30	WS.II.4 - TT.IV.B
Challenges and Innovations Advanced methods for imaging spectroscopy and metrology	
Chairs: Giuliana FAGGIO & Giacomo MESSINA, *The "Mediterranean" University of Reggio Calabria*	
WS.II.4.1 TT.IV.B.1	Luca DE STEFANO, *Institute of Applied Sciences and Intelligent Systems, Unit of Naples - CNR* **Hybrid inorganic nanoparticles for optical imaging and sensing**
WS.II.4.2 TT.IV.B.2	Raffaele Giuseppe AGOSTINO, *Department of Physics, University of Calabria* **A spectro-microscopy lab at the STAR facility**
WS.II.4.3 TT.IV.B.3	Paolo BARIANI, *Schaefer South-East Europe srl* **3D Optical Metrology Techniques: Fringe Projection, Confocal, Ai Focus Variation, Interferometry**
WS.II.4.4 TT.IV.B.4	Marianne MARCHIONI, *Izon Science LTD* **Standardized Single Particle Measurement of Number, Size and Charge is required for Confidence in Nanomedicine Engineering and Development**

Nanotechnology and Sustainability

Micro and nanoplastics are an emerging concern worldwide. Nanoplastics, usually categorized as plastic particles smaller than 1 micron, are of particular concern because they are expected to be as ubiquitous as their bulk counterparts. Nanoplastics are an important priority regarding fresh water quality as well as pollution transport in the environment and potential impact on human health. Recently, several studies on nanoplastics quantification and impact were undertaken and some of them are still ongoing. The first two symposia, organized within the PON TARANTO Research and Innovation Project, will discuss the most advanced results of such undergoing studies managed by public research centers in collaboration with private companies. The workshop talks will present, in particular, studies on the detection and characterization of nanoplastics in different matrices (water, air and food) and on some technology able to mitigate their impact on the environment and health.In recent years, several studies highlighted that advanced nanomaterials have the potential to achieve a breakthrough in the development of novel applications for a sustainable future. The third and fourth sessions gather contributions from both the academic and industrial world to strengthen their synergistic contribution to technological growth for sustainability. In this framework, water treatment processes, as well as CO2 capturing and valorization, are topic of great and actual relevance, and the development of innovative and efficient materials is the key to be successful. Membranes, as applicative example, are fundamental elements for water purification and CO2 separation plants, but their usage is also widespread in fuel cells, batteries and "blue energy" harvesting systems. Notwithstanding their large technological relevance, currently employed membranes suffer from many drawbacks and a further breakthrough in this field might require a complete membrane redesign. Several studies highlighted that advanced materials, and nanomaterials in particular, have the potential to achieve a breakthrough in membranes performances, increasing membrane resistance (mechanical, thermal and chemical resistance) and lifetime, and enhance membrane selectivity. On the other hand, to efficient reuse of carbon dioxide as a raw material to obtain value-added products requires both the development of novel materials able to fast capture and release the CO2, and highly selective, stable, efficient, environmental-friendly and inexpensive catalysts for its electro/photoelectron/thermo catalytic reduction. Planned talks will be on recent results in the topics mentioned above, with a special focus on the fundamental aspects as well as on the technological challenges tackled by the academy and the industry. The workshop is organized by Polytechnic of Turin and Istituto Italiano di Tecnologia, in cooperation with the Italian Association for Industrial Research (Airi). The session will be held online (webinar) in two parts, the first (Sep 17th, 14.00-15.30) with a focus on industrial application and the second (Sep 17th, 16.00-17.30) on basic and applied research activities.

16 SEPTEMBER

14:00 - 15:30	WS.III.1 - TT.III.D
Environmental Nanotechnologies: the issue of micro-nanoplastics - Impact and mitigation measures of micro and nanoplastics	
Co-organized with CNR NANOTEC & CNR IRSA Chairs: Roberto GIANNANTONIO, *CNR IRSA* & Francesco MATTEUCCI, *CNR NANOTEC*	
WS.III.1.1 TT.III.D.1	Francesca DE FALCO, *CNR-IPCB* **Micro-nanoplastics in the environment**
WS.III.1.2 TT.III.D.2	Loreto GESUALDO, *University of Bari* **Impact of nanoplastics on health**
WS.III.1.3 TT.III.D.3	Alberto FIGOLI, *CNR - ITM* **Mitigation measure: state of the art**

16:00 - 17:30	WS.III.2 - TT.IV.D
Environmental Nanotechnologies: the issue of micro-nanoplastics - Micro-nanoplastics in different matrices	
Co-organized with CNR NANOTEC & CNR IRSA Chairs: Roberto GIANNANTONIO, *CNR IRSA* & Francesco MATTEUCCI, *CNR NANOTEC*	
WS.III.2.1 TT.IV.D.1	Fabiana CORAMI, *CNR-ISP* and Matteo RINALDI, *CNR-ISAC* **Atmospheric micro-nanoplastics**
WS.III.2.2 TT.IV.D.2	Claudia CAMPANALE, *CNR-IRSA* **Micro-nanoplastics in fresh waters**
WS.III.2.3 TT.IV.D.3	Gea OLIVERI CONTI, *University of Catania* **Micro-nanoplastics in food**

Co-organized with:

CNR NANOTEC INSTITUTE OF NANOTECHNOLOGY
IRSA CNR Istituto di Ricerca sulle Acque CONSIGLIO NAZIONALE DELLE RICERCHE
POLITECNICO DI TORINO

17 SEPTEMBER

14:00 - 15:30	WS.III.3 - TT.VII.A
Advanced Materials and Technologies for Sustainability - part 1 Industrial	
Co-organized with Polytechnic of Turin Chairs: Giancarlo CICERO & Andrea LAMBERTI, *Polytechnic of Turin* and Angelica CHIODONI, *IIT, Center for Sustainable Future Technologies - CSFT@POLITO*	
WS.III.3.1 TT.VII.A.1	Peter E.M. AERTS, *Blue Foot Membranes* **In definition**
WS.III.3.2 TT.VII.A.2	Massimiliano ANTONINI, *Hysythech* **CO2 conversion exploited in industry**
WS.III.3.3 TT.VII.A.3	Boyan ILIEV, *Iolitech* **Ionic Liquids – innovative materials for CO2 capture and conversion**
WS.III.3.4 TT.VII.A.4	Simon GRASMAN, *REDstack BV* **From Nano Innovation to Macro Application in Blue Energy**

16:00 - 17:30	WS.III.4 - TT.VIII.A
Advanced Materials and Technologies for Sustainability - part 2 Academic	
Co-organized with Polytechnic of Turin Chairs: Giancarlo CICERO & Andrea LAMBERTI, *Polytechnic of Turin* and Angelica CHIODONI, *IIT, Center for Sustainable Future Technologies - CSFT@POLITO*	
WS.III.4.1 TT.VIII.A.1	Damien VOIRY, *University of Montpellier, France* **Electrocatalysis from two-dimensional materials**
WS.III.4.2 TT.VIII.A.2	Mikhael BECHELANY, *Institut Européen des Membranes, France* **Engineering of nanomaterials and interfaces for water treatment applications**
WS.III.4.3 TT.VIII.A.3	Simelys HERNANDEZ, *Polytechnic of Turin* **Low-cost nanocatalysts for the electrochemical CO2reductionto valuable products**
WS.III.4.4 TT.VIII.A.4	Evangelos ANGELOPOULOS, *Institute of Nanoscience and Nanotechnology, Greece* **Edge computing technologies in water management**

YoungInnovation The state of research communicated by young researchers

Co-organized with:

Innovative technologies, including nanotechnologies, represent, in recent decades, an important opportunity to improve human living conditions especially in healthy fields (pharmaceutical, cosmetic and food). The focus of this workshop is to evaluate the current status of the research. In particular, we'll analyze both very innovative aspects, i.e. regenerative medicine by means of steam cells and 3D Print Technologies, and traditional routes of administration revaluated thanks to the most modern approaches. An interesting aspect of the workshop "YoungInnovation the state of research presented by those who daily works in laboratory to produce innovation.

17 SEPTEMBER

09:00 - 10:30	WS.IV.1 - TT.V.D
Pharmaceutical technology meets biomedical applications - part 1	
Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome Chairs: Donatella PAOLINO, *University Magna Graecia of Catanzaro* & Anna FADDA, *Adritelf;* Mattia TIBONI, *University of Urbino*	
WS.IV.1.1 TT.V.D.1	Daniele TORELLA, *University "Magna Græcia" of Catanzaro* **Adult Endogenous Heart Regeneration: The Arabian phoenix or A Sisyphean task?**
WS.IV.1.2 TT.V.D.2	Giuseppe Francesco RACANIELLO, *University "A. Moro" of Bari* **Purified glycogen as a new nanocarriers for siRNA delivery on breast cancer cells**
WS.IV.1.3 TT.V.D.3	Eleonora CIANFLONE, *University "Magna Græcia" of Catanzaro* **Reassessment of Sca-1+ Progenitor Cells for Cardiomyocyte Contribution in the Adult Heart**

11:00 - 12:30	WS.IV.2 - TT.VI.E
Pharmaceutical technology meets biological applications - part 2	
Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome Chairs: Michele CONTI, *University of Pavia* & Angela TARTAGLIA, *University of Chieti-Pescara*	
WS.IV.2.1 TT.VI.D.1	Maria Luisa TORRE, *University of Pavia* **Mesenchymal Stem/Stromal Cells Seretome For Regenerative Medicine And Drug Delivery: Pharmaceutical Challenges For Clinical Use**
WS.IV.2.2 TT.VI.D.2	Maria Natalia CALIENNI, *University of Hurlingham, Argentina* **Vismodegib-loaded nanoformulation for topical skin cancer therapy: reducing drug amounts while reaching supra-therapeutic concentrations**
WS.IV.2.3 TT.VI.D.3	Elia BARI, *University of Pavia* **From mesenchymal stem cells to cell products: secretome pharmaceuticalization as a safe and effective biological medicinal product**
WS.IV.2.4 TT.VI.D.4	Nicola D'AVANZO, *University "Magna Græcia" of Catanzaro* **Exploiting the ability of LinTT1-functionalized liposomes to target cancer cells and TAMs to improve breast cancer therapy**

17 SEPTEMBER

14:00 - 15:30	WS.IV.3 - TT.VII.C

Preformulative Aspects

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chairs: Carlotta MARIANECCI, *Sapienza University of Rome* & Giulia VANTI, *University of Firenze*

WS.IV.3.1 TT.VII.C.1	Agnese GAGLIARDI, *University "Magna Græcia" of Catanzaro* **Zein nanoparticles as versatile carriers for the delivery of bioactive compounds**
WS.IV.3.2 TT.VII.C.2	Dalila IANNOTTA, *University "G. D'Annunzio" of Chieti-Pescara* **Discoid Nanoparticles: reaction environment-dependent Size Response**
WS.IV.3.3 TT.VII.C.3	Anna IMBRIANO, *University "La Sapienza" of Rome* **Design and Characterization of Hybrid-Multistratified Micro/Nanoemulsions for Wound Healing**
WS.IV.3.4 TT.VII.C.4	Teresa SILVESTRI, *University "Federico II" of Naples* **Molecular weight influence of superficially exposed hyaluronic acid on nanoparticles cell internalization kinetics**

16:00 - 17:30	WS.IV.4 - TT.VIII.D

3D Printing Technologies

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chairs: Maria Luisa TORRE, *University of Pavia* & Maria Chiara CRISTIANO, *University Magna Graecia of Catanzaro*

WS.IV.4.1 TT.VIII.D.1	Michele CONTI, *University of Pavia* **Bioprinting. From technical set-up to biological applications**
WS.IV.4.2 TT.VIII.D.2	Giovanni FALCONE, *University of Salerno* **Development and characterization of gastroretentive drug delivery formulations produced via FDM 3D-printed coaxial semi-solid extrusion systems**
WS.IV.4.3 TT.VIII.D.3	Mattia TIBONI, *University of Urbino* **3D printing of microfluidic device for the preparation of lipidic nanoparticles**
WS.IV.4.4 TT.VIII.D.4	Francesca SCOCOZZA, *University of Pavia* **Geometrical features and sterility assessment of 3d printed PCL-HA scaffold**

YoungInnovation The state of research communicated by young researchers

18 SEPTEMBER

09:00 - 10:30	WS.IV.5 - TT.IX.A
Topical Delivery of actives Part I	
Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome Chairs: Christian CELIA, *University of Chieti-Pescara* & Agnese GAGLIARDI, *University Magna Graecia of Catanzaro*	
WS.IV.5.1 TT.IX.A.1	Fabio SONVICO, *University of Parma* **Delivery of nano medicines to the upper and lower airways**
WS.IV.5.2 TT.IX.A.2	Angela BONACCORSO, *University of Catania* **Nanocrystals for intranasal administration to achieve brain targeting**
WS.IV.5.3 TT.IX.A.3	Eleonora CASULA, *University of Cagliari* **Evaluation of feasibility of modified phospholipid vesicles loading Cardiospermum halicacabum extract for nasal delivery**
WS.IV.5.4 TT.IX.A.4	Federica DE GAETANO, *University of Messina* **Chitosan nanoparticles for nose-to-brain targeting**

11:00 - 12:30	WS.IV.6 - TT.X.A
Topical Delivery of actives Part II	
Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome *Chairs:* Erwin Pavel LAMPARELLI, *University of Salerno* & Anna IMBRIANO, *Sapienza University of Rome*	
WS.IV.6.1 TT.X.A.1	Luca CASULA, *University of Cagliari* **Delivery of nanosuspensions into the skin using needle-free jet injector**
WS.IV.6.2 TT.X.A.2	Maria Chiara CRISTIANO, *University "Magna Græcia" of Catanzaro* **Topical drug delivery systems included in poloxamer 407 gel: rheological characterization and release studies of model drug**
WS.IV.6.3 TT.X.A.3	Antonia MANCUSO, *University "Magna Græcia" of Catanzaro* **Monitoring of skin response following the topical administration of vesicular drug delivery systems**
WS.IV.6.4 TT.X.A.4	Hiba NATSHEH, *University of Jerusalem, Israel* **Peptides Delivery to Brain by Nasal Administration**
WS.IV.6.5 TT.X.A.5	Giulia VANTI, *University of Florence* **Hydroxypropyl methylcellulose hydrogel of berberine chloride-loaded escinosomes: dermal absorption and biocompatibility**

18 SEPTEMBER

14:00 - 15:30	WS.IV.7 - TT.XI.A
Nanotechnologies meet natural products	
Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome Chairs: Maria CARAFA, *Sapienza University of Rome* & Elia BARI, *University of Pavia*	
WS.IV.7.1 TT.XI.A.1	Annarita BILIA, *University of Florence* **Nanocarriers: successful tools to increase solubility, stability and bioefficacy of natural products**
WS.IV.7.2 TT.XI.A.2	Chiara AMANTE, *University of Salerno* **Influence of chitosan on powders in situ gelling as a wound dressing**
WS.IV.7.3 TT.XI.A.3	Matteo PERRA, *University of Cagliari* **Encapsulation of grape marc extract into novel phospholipid vesicles to protect skin against oxidative stress**
WS.IV.7.4 TT.XI.A.4	Giulia PITZANTI, *University of Cagliari* **Combination of SLNs and Transcutol® P for Improving 8-MOP Skin Delivery**

16:00 - 17:30	WS.IV.8 - TT.XII.B
Arising new manufacturing technologies	
Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome *Chairs:* Luisa DI MARZIO, *University of Chieti-Pescara* & Nicola D'AVANZO, *University Magna Graecia of Catanzaro*	
WS.IV.8.1 TT.XII.B.1	Giorgia AILUNO, *University of Genoa* **Development of a theranostic system for the treatment of inflammatory-based diseases**
WS.IV.8.2 TT.XII.B.2	Ilaria ARDUINO, *University "A. Moro" of Bari* **Preparation of Cetyl Palmitate based-PEGylated Solid Lipid Nanoparticles by Microfluidic technique**
WS.IV.8.3 TT.XII.B.3	Margherita BONETTI, *University of Pavia* **Development of standardized procedures to evaluate morphological, mechanical and physical properties of nails and their alterations: pharmaceutical and cosmetics applications**
WS.IV.8.4 TT.XII.B.4	Erwin Pavel LAMPARELLI, *University of Salerno* **PLA/PLGA carriers designed for tissue engineering application and fabricated by Supercritical Emulsion Extraction**

Open Innovation & Open Science
III Edizione

In collaborazione con

REGIONE LAZIO

organizzato da:

Airi ASSOCIAZIONE ITALIANA PER LA RICERCA INDUSTRIALE

Nano Italy Associazione

SAPIENZA UNIVERSITÀ DI ROMA

Anche quest'anno, a seguito del successo delle due precedenti edizioni, verrà proposta a NanoInnovation il workshop "Open Innovation e Open Science" che così giunge alla sua terza edizione. Si è deciso, per continuità, di mantenere il titolo, ma i contenuti e le finalità dell'edizione 2020 sono stati rivisti e riconfigurati per tenere nella dovuta attenzione gli scenari del dopo Covid-19, in termini di sostenibilità, re-industrializzazione 'locale', ripensamento delle politiche di globalizzazione e nuove esigenze dei percorsi di formazione universitari e post-universitari. Le politiche di utilizzo delle risorse derivanti dall'uso dei Recovery Funds renderà ancora più cruciale e strategico il rapporto tra ricerca pubblica e privata, in un'ottica di valorizzazione della conoscenza la cui creazione rappresenterà un fattore chiave per una concreta e stabile ripresa economica. 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. Una parte del workshop sarà costituito da una tavola rotonda dedicata alla progettazione di possibili nuovi percorsi universitari che siano in grado di affrontare la sfida di figure professionali in campo tecnologico che richiedono sempre più competenze trasversali oggi difficilmente acquisibili con i percorsi di studio tradizionali. 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, Politiche di creazione di infrastrutture di ricerca, 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.

18 SEPTEMBER

09:00 - 10:30	WS.V.1
Il Sistema della Ricerca Pubblica	
Moderatore: Francesco MATTEUCCI, *CNR NANOTEC*	
WS.V.1.1	Massimo TRONCI, *ANVUR, Sapienza University of Rome* **Alta Formazione & Ricerca con riferimento al PNR 2021-2027: alcuni spunti di riflessione**
WS.V.1.2	Rosario Corrado SPINELLA, CNR-DSFTM, Director **L'importanza degli investimenti in infrastrutture di ricerca nel campo della Fisica della Materia in Cnr**
WS.V.1.3	Antonio CARCATERRA, *Sapienza Innovazione, Presidente* **Innovation, industrial products and university research**
WS.V.1.4	Edoardo LAMPIS, Lazio Innova, Area: Internazionalizzazione, Cluster e Studi, Responsabile Cultura e Turismo; tutor del Centro di Eccellenza DTC LAZIO **Il Distretto Tecnologico per le nuove tecnologie applicate ai beni e alle attività culturali DTC. Stato dell'arte e opportunità future.**
WS.V.1.5	Massimo BERSANI, *FBK, Program Manager, Centre for Materials and Microsystems (CMM)* **Research Infrastructure: the FBK case**

18 SEPTEMBER

11:00 - 12:30	WS.V.2
Il Sistema delle Imprese e Politiche Regolatorie	
Moderatore: Roberto GIANNANTONIO, *CNR-IRSA*	
WS.V.2.1	Sesto VITICOLI, *AIRI, Vice President* **Innovazione responsabile, sostenibilità e formazione continua**
WS.V.2.2	Nello LI PIRA, CRF-FCA, *Global Materials R&I and Roadmap manager* **The novel frontiers for materials in automotives: intelligent, eco-sustainable, electrical and autonomous vehicles**
WS.V.2.3	Giuseppe SALONIA, Responsabile Servizi Innovazione Unioncamere **Title in definition**
WS.V.2.4	Ivano VISINTAINER, *Comitato Elettrotecnico Italiano, Technical Director* Fabrizio BARBERIS, *Vice Coordinator, Commissione Ricerca e Technology Transfer Unige, President CT 113 Comitato Elettrotecnico Italiano and Member TC 113 International Electrotechnical Commission – IEC* **Comitato Elettrotecnico Italiano e la normativa Tecnica nello sviluppo del Trasferimento Tecnologico**
WS.V.2.5	Elena MOCCHIO, *UNI, Responsabile Divisione Innovazione* **Normazione tecnica e innovazione: opportunità, sfide e nuove professionalità**
WS.V.2.6	Edoardo MOLA, PRAXI, *Intellectual Property, CEO* **Il processo del TT dal concetto al contratto**

14:00 - 15:30	WS.V.3
Politiche dell'Innovazione ed Ecosistemi	
Moderatore: Lorenzo LO CASCIO *Regione Lazio, Assessorato allo Sviluppo Economico, Commercio e Artigianato, Ricerca, Start-Up e Innovazione*	
WS.V.3.1	Alberto DI MININ, *Scuola Superiore S. Anna di Pisa, Director of Master MIND – Management of Innovation & Design* Cristina MARULLO, *Scuola Superiore S. Anna di Pisa* **Open EU Champions: Innovation in the times of Covid**
WS.V.3.2	Daniela BAGLIERI, *Università di Messina, Pro-Rettore Ricerca, Innovazione e Trasferimento Tecnologico* **Connecting National Nanotech Clusters To Global Networks**
WS.V.3.3	Marco CRESCENZI, *ISS, Director servizio Grandi strumentazioni e core facilities* **La leva tecnologica per innalzare la ricerca scientifica**
WS.V.3.4	Marco CONTE, *Vice Segretario Generale Unioncamere* **Economia circolare: innovazione necessaria**
WS.V.3.5	Ennio CAPRIA, *ESRF, Grenoble, France* **Bridging industry with academia in the dynamic domain of nanoscience and nanotechnology: lesson learned and future perspectives from NFFA-Europe**

18 SEPTEMBER

16:00 - 17:30	WS.V.4

Tavola Rotonda
Alta Formazione per l'innovazione e la sostenibilità –

Moderatore: Marco ROSSI, Sapienza Università di Roma

La tavola rotonda vedrà la partecipazione dei relatori delle precedenti sessioni e di rappresentanti dei Co-organizzatori di NanoInnovation. Sarà aperta ai contributi di tutti i partecipanti, in particolare saranno presenti:

Massimo BUSUOLI, *Norwegian University of Science and Technology (NTNU)*

Pierluigi CAMPANA, *INFN*

Mariangela CESTELLI GUIDI, *INFN*

Claudio GOLETTI, *Università di Roma Tor Vergata*

Sabrina CONOCI, *University of Messina*

Dario DELLA SALA, *ENEA*

Aldo DI CARLO, *University of Tor Vergata*

Guglielmo FORTUNATO, *CNR-IMM*

Vittorio MORANDI, *CNR-IMM*

Luigi NICOLAIS, *Campania Digital Innovation Hub*

Luigi PALUMBO, *Sapienza University of Rome*

Pasqualantonio PINGUE, *SNS*

Marco ROSSI, *Sapienza University of Rome*

Maria Sabrina SARTO, *Sapienza University of Rome*

Marco VITTORI ANTISARI, *Associazione NanoItaly*

Highlights from Open Infrastructures for Research Supported by Regione Lazio

Co-organized with:

IMM · ENEA – Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile · INFN – Istituto Nazionale di Fisica Nucleare · Università di Roma Tor Vergata

16 SEPTEMBER

09:00 - 10:30	WS.VI.1 - TT.I.A
NanoMicroFab	
Co-organized with CNR IMM Chair: Guglielmo FORTUNATO, *CNR IMM*	
WS.VI.1.1 TT.I.A.1	Luigi MARIUCCI, *IMM-CNR, Rome* **Organic electronics: Overview and opportunities**
WS.VI.1.2 TT.I.A.2	Valentina MUSSI, *IMM-CNR, Rome* **Raman imaging for spatially resolved thermal characterization of materials and operating devices**
WS.VI.1.3 TT.I.A.3	Annamaria GERARDINO, *IFN-CNR, Rome* **Electron Beam Lithography @NanoMicroFab: a powerful tool for research and industrial applications**
WS.VI.1.4 TT.I.A.4	Andrea NOTARGIACOMO, *IFN-CNR, Rome* **Advanced nanofabrication for innovative sensors and microsystems @NanoMicroFab**
WS.VI.1.5 TT.I.A.5	Roberto FLAMMINI, *ISM-CNR, Rome* **A New features of the Nanolab@ISM: the case of antimonene**
WS.VI.1.6 TT.I.A.6	Daniele TRUCCHI, *ISM-CNR, Rome* **Advanced analysis techniques for the development of innovative materials and devices**
WS.VI.1.7 TT.I.A.7	Andrea REALE, *Univ. of Rome Tor Vergata, Rome* **Advanced technologies and applications for GaN and printable electronics: two cases of excellence at El. Eng Dept of Rome Tor Vergata**

16 SEPTEMBER

14:00 - 15:30	WS.VI.2 - TT.III.E
ATOM - Advanced Tomography and Microscopies - Project	
Co-organized with Sapienza University of Rome Chair: Marco ROSSI, *Sapienza University of Rome*	
WS.VI.2.1 TT.III.E.1	Luciana DINI, *Sapienza University of Rome* **Cryoelectron microscopy: a dream for the microscopist and a primer for the non-microscopist**
WS.VI.2.2 TT.III.E.2	Alessandra DEL GIUDICE, *Sapienza University of Rome* **X-ray scattering based methods for industrial applications** (in definition)
WS.VI.2.3 TT.III.E.3	Athanassios GALANIS, *NANOMEGAS* **Advanced methods for the analysis of nanocrystals in nm-scale using Precession Electron Diffraction techniques in TEM**
WS.VI.2.4 TT.III.E.4	Francesco MURA, *Sapienza University of Rome* **Mixing the Microscopies: An Insight Over the Capabilities of the Correlative Microscopies**
WS.VI.2.5 TT.III.E.5	Alfredo MICCHELI, *Sapienza University of Rome* **NMR based techniques** (in definition)

16:00 - 17:30	WS.VI.3 - TT.IV.E
ISIS@Mach: Neutrons for science and technology	
Co-organized with University of Rome Tor Vergata Chair: Aldo DI CARLO, *University of Rome Tor Vergata*	
WS.VI.3.1 TT.IV.E.1	Aldo DI CARLO, *CNR - ISM & University of Tor Vergata* **Introduction to ISIS@MACH infrastructure**
WS.VI.3.2 TT.IV.E.2	Robert MCGREEVY, *ISIS, UK* **The ISIS pulsed neutron and muon source and ISISI@MACH**
WS.VI.3.3 TT.IV.E.3	Carla ANDREANI, *University of Tor Vergata* **Fast neutrons Irradiation tests of electronic devices in ISIS@MACH**
WS.VI.3.4 TT.IV.E.4	Maria Paula MARQUES, *Coimbra University* **Investigation of Edible Olive Oils by light and neutron probes**
WS.VI.3.5 TT.IV.E.5	Giulia FESTA, *Centor Fermi* **Cultural Heritage in ISIS@MACH**
WS.VI.3.6 TT.IV.E.6	Roberto SENESI, *University of Rome Tor Vergata* **ISIS@MACH and Composite Materials: Construction Materials**

17 SEPTEMBER

16:00 - 17:30	WS.VI.4 - TT.VIII.E
MAIA – Materiali Avanzati in una Infrastruttura Aperta LATINO – Laboratory in Advanced Technologies for INnOvation	
Co-organized with ENEA & LNF-INFN Chairs: Giuseppe BARBIERI, *ENEA* & Lucia SABBATINI, *LNF-INFN*	
WS.VI.4.1 TT.VIII.E.1	Lucia SABBATINI, *LNF-INFN* **Overview LATINO Project**
WS.VI.4.2 TT.VIII.E.2	Giuseppe BARBIERI, *SSPT-PROMAS-MATPRO, ENEA* **Overview MAIA Project**
WS.VI.4.3 TT.VIII.E.3	Daniele MIRABILE GATTIA, *ENEA* **Materials for AM in the Programme Agreement with the Italian Ministry of Economic Development: project 1.3 "Advanced Materials for Energy**
WS.VI.4.4 TT.VIII.E.4	Antonio FALONE, *INFN* **LATINO - Laboratory in Advanced Technologies for Innovation, state of art and future perspectives in INFN**

SCHOOL ON NANOTECHNOLOGIES: PROCESSES AND APPLICATIONS TO SENSORS AND ACTUATORS

September 16 - 17 - 18

The School will be held REMOTELY

Chairs: Lorenza FERRARIO, *FBK* & Vittorio MORANDI, *CNR-IMM*

Co-organized with

It-fab
Italian Network for Micro and Nano Fabrication

life.augmented

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, offering the opportunity to learn about sensors and actuator fabrication and characterization processes, with attention to both planar and 3D technologies. Besides the lectures dedicated to single technology steps, building blocks of the silicon-based micro- and nano-fabrication technologies, there will be sessions dedicated to devices application areas, like sensors for Quantum Technologies, piezo actuators and other. The workshop will be completed with a live lesson from the FBK cleanroom CR D, to practically show some of the fundamental silicon processing steps. The school is organized by It-fab (http://itfab.bo.imm.cnr.it/), the Italian network for Micro and Nano Fabrication research infrastructures, in collaboration with STMicroelectronics Italy.

16 SEPTEMBER

14:00 - 14:05	**Welcome and Introduction** Vittorio MORANDI, *CNR-IMM, Bologna*
14:05 - 14:20	**Introduction to micro- and nano-fabrication** Lorenza FERRARIO, *FBK*
14:20 - 15:05	**Deposition techniques** Riccardo BERTACCO, *PoliFAB*
15:05 - 15:50	**Litography** Stefano SORESI, *Inphotec*
15:50 - 16:35	**Etching** Fulvio MANCARELLA, *CNR-IMM, Bologna*
16:35 - 17:20	**Direct Laser Writing** Sara NOCENTINI, *INRIM*

17 SEPTEMBER

11:00 - 11:45	**3D printing and two photon polymerization: toward the rapid prototyping of micro- nano- devices** Valentina BERTANA, *Chilab & Polytechnic of Turin*
11:45 - 12:30	**Micro- Nano- devices for bio: How to develop a Lab on a chip and a biosensor** Simone Luigi MARASSO, *Chilab & Polytechnic of Turin*
Break time	
14:30 - 15:15	**Photonics packaging: laser hybrid integration towards space applications** Aina SERRANO RODRIGO, *Inphotec*
15:15 - 16:00	**High-density W-filled TSVs for advanced 3D-Integration** Josef WEBER, *FHG*
16:00 - 16:45	**System level 3D integration and system-in-package for chemical sensing microsystems** Stefano ZAMPOLLI, *CNR-IMM, Bologna*
16:45 - 17:30	**Metrological approach to 3D SERS platform characterisation** Eleonora CARA, *INRIM*

18 SEPTEMBER

10:00 - 10:30	**Ion-induced nanopatterning of semiconductor surfaces: a short link between basic research and applications** Rossana DELL'ANNA, *FBK*
10:30 - 11:00	**QT/photonics devices; FET project with 3D integration for QT** Mher GHULINYAN, *FBK*
11:00 - 11:30	**Materials, Sensors and Actuators in MEMS technology evolution** Andrea PICCO, *STMicroelectronics*
11:30 - 12:00	**UV Sensor Technology Integrated on Unmanned Aerial Vehicle for Air Pollution Monitoring** Massimo CUSCUNA' e Marco CASELLA, *CNR Lecce*
12:00 - 12:30	**Superconducting Metamaterials for Microwave Photonics at the Single Photon Level** Emanuele ENRICO, *INRIM*
12:30 - 13:00	**Flexible and large area electronics** Alessandro PECORA, *CNR Roma*

SCHOOL ON SCANNING PROBE MICROSCOPY

September 16 - 17 - 18

The NanoInnovation 2020 SPM School is mainly intended for graduate and PhD students as well as young scientists interested in deepening their knowledge about advanced SPM methods, but it is also open to all researchers and scientists who are involved in the different fields characterizations methods for nanotechnology and nanosciences.
As for all the NanoInnovation events, the attendance to the NanoInnovation 2020 SPM School is free and the interested attendees are requested to register using the NanoInnovation website selecting the option "SPM School" in the online form.

Organizing Committee of the School:
Daniele PASSERI, *Sapienza University (coordinator)*
Umberto CELANO, *IMEC*
Francesco MARINELLO, *University of Padua*
Andrzej SIKORA, *Wroclaw University of Science and Technology*

with the patronage of

Società italiana di istochimica

16 SEPTEMBER

I. Nanomechanical mapping Chair: Daniele PASSERI	
10:45 - 11:00	**Welcome and Introduction** Daniele PASSERI, *Sapienza University*
11:20 - 11:45	**Nanomechanical mapping of soft materials with the atomic force microscope: methods, theory and applications** Ricardo GARCIA, *CSIC*
11:45 - 12:30	**The utilization of fast AFM's tip-sample interaction for the surface morphology imaging and mechanical properties mapping** Andrzej SIKORA, *Wroclaw University of Science and Technology*
II. Electric and thermal phenomena in 2D materials Chair: Andrzej SIKORA	
14:00 - 14:45	**Exploration of nanoscale thermal transport and thermoelectric phenomena in 2D materials via scanning probes** Oleg KOLOSOV, *Lancaster University*
14:45 - 15:30	**Electrical SPM for 2D materials** Umberto CELANO, *IMEC*
III. From atoms to molecules Chair: Francesco MARINELLO	
16:00 - 16:45	**Atomically Precise Molecular Design: Insights From Sub-molecular Resolution Scanning Probe Microscopy** Samuel JARVIS, *Lancaster University*
16:45 - 17:30	**Self-organization of complete organic monolayers via sequential post-deposition annealing: an investigation by Scanning Probe Microscopy** Cristiano ALBONETTI, *CNR*

17 SEPTEMBER

IV. Toward tomography Chair: Andrzej SIKORA	
11:00 - 11:45	**3D tomographic AFM using Scalpel SPM** Umberto CELANO, *IMEC*
11:45 - 12:30	**Nanoscale 3D imaging of physical properties of materials** Oleg KOLOSOV, *Lancaster University*

V. Pre- and post-eperiment issues Chair: Daniele PASSERI	
14:00 - 14:45	**Correlative microscopy – the issue of precise positioning of the sample and its impact on the experiment outcome** Andrzej SIKORA, *Wroclaw University of Science and Technology*
14:45 - 15:30	**Data processing in SPM** Francesco MARINELLO, *University of Padua*

VI. Nanomagnetic characterizations Chair: Umberto CELANO	
16:00 - 16:45	**Characterization of nanomagnets by Advanced Magnetic Force Microcopy** Agustina ASENJO, *CSIC*
16:45 - 17:30	**Direct and Indirect Magnetic Force Microscopy in Histology** Gunjan AGARWAL, *The Ohio State University*

SCHOOL ON SCANNING PROBE MICROSCOPY

18 SEPTEMBER

VII. Nanoelectric characterizations Chair: Francesco MARINELLO	
11:00 - 11:45	**Carrier profiling with SPM application in Nanoelectronics** Umberto CELANO, *IMEC*
11:45 - 12:30	**Electrical nano-characterization of wide band gap semiconductors (silicon carbide) devices by scanning probe microscopy** Patrick FIORENZA, *CNR*

VIII. Tunneling and spectroscopies Chair: Umberto CELANO	
14:00 - 14:45	**Basic principles of STM/S and applications to condensed matter physics** Fabrizio BOBBA, *University of Salerno*
14:45 - 15:30	**AFM-assisted infrared nanospectroscopy** Leonetta BALDASSARRE, *Sapienza University*

IX. Multiferroics Chair: Daniele PASSERI	
16:00 - 16:45	**Ferromagnetic, ferroelectric and multiferroic nanostructures. AFM characterisation** Bernard NYSTEN, *UCLouvain*
16:45 - 17:30	**SPM techniques for ferroelectric materials characterization** Francisco FLORES RUIZ, *Benemérita Universidad Autónoma de Puebla*

NANOMATERIALI E NANOTECNOLOGIE

corsi per aggiornamento professionale

15-18 settembre

in collaborazione con

Ordine degli Ingegneri della Provincia di Roma

Fondazione Ordine degli Ingegneri Provincia di Roma

Il programma di aggiornamento sulle applicazioni dei nanomateriali e delle nanotecnologie in ambito ingegneristico ha una durata totale di quattro giorni. Le lezioni si svolgeranno in presenza presso la Facoltà di Ingegneria Civile e Industriale dell'Università Sapienza di Roma, ma sarà possibile seguirle anche in modalità telematica.
Il corso prevede una prima mezza giornata introduttiva, 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.
Durate 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 15 settembre 2020
Nanomateriali e nanotecnologie: opportunità e rischi

mercoledì 16 settembre 2020
Nanotecnologie nell' ingegneria civile e nell'architettura

giovedì 17 settembre 2020
Nanotecnologie nell' ingegneria industriale

venerdì 18 settembre 2020
Nanotecnologie nell' ingegneria dell'Informazione

I singoli corsi saranno tenuti da esperti provenienti sia dal settore accademico sia da quello industriale e potranno accogliere, in presenza, fino ad un massimo di 35 partecipanti.
La partecipazione al corso è libera e gratuita, previa iscrizione al link https://www.nanoinnovation.it/2020/ 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 (il link sarà presto disponibile sul sito dell'ordine degli Ingegneri: https://www.ording.roma.it/).
Il rilascio dei CFP avverrà solo in caso di partecipazione in presenza. Le varie sessioni potranno essere seguite anche in modalità telematica, ma non consentiranno di ottenere la certificazione di partecipazione e il conseguente rilascio dei CFP.

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)

Massimo CERRI (Ordine degli Ingegneri)
Francesco FULVI (Ordine degli Ingegneri)
Francesco MARINUZZI (Ordine degli Ingegneri)

15 SEPTEMBER

NANOMATERIALI E NANOTECNOLOGIE: OPPORTUNITÀ E RISCHI	
08:45 - 09:00	**Saluti Istituzionali** Carla CAPPIELLO, Presidente dell'Ordine degli Ingegneria della Provincia di Roma Luigi Carlo CHIARENZA, Consigliere Fondazione Ordine degli Ingegneri di Roma
09:00 - 09:45	**I nanomateriali: rischi e vantaggi** Luciana DINI, Sapienza Università di Roma
09:45 - 10:30	**Nanomateriali e Riproduzione Umana: vizi e virtù** Luisa CAMPAGNOLO, *Università degli Studi di Roma Tor Vergata*
Break time	
11:00 - 11:45	**Differenza tra Dispositivi Medici (mascherine chirurgiche) e DPI (FFP2): diversità metodologiche di validazione e ricadute sulla sicurezza aziendale** Paolo GIRAUDI, *Università di Genova - CEI*
11:45 - 12:30	**Metodologie di analisi, misura e caratterizzazione dell'esposizione a nanomateriali aerodispersi nei luoghi di lavoro** Fabio BOCCUNI, Riccardo FERRANTE, *Istituto nazionale Assicurazione Infortuni sul Lavoro - INAIL*

16 SEPTEMBER

NANOTECNOLOGIE NELL'INGEGNERIA CIVILE E NELL'ARCHITETTURA	
08:45 - 09:00	**Saluti Istituzionali** Carla CAPPIELLO, *Presidente dell'Ordine degli Ingegneria della Provincia di Roma* Stefano GIOVENALI, *Vice Presidente Fondazione Ordine degli Ingegneri di Roma*
09:00 - 09:45	**Compound Polimerici a base grafenica per conglomerati bituminosi: dalla ricerca alla realizzazione di pavimentazioni - parte I** Loretta VENTURINI, *Iterchimica Srl, Suisio, Bergamo*
09:45 - 10:30	**Compound Polimerici a base grafenica per conglomerati bituminosi: dalla ricerca alla realizzazione di pavimentazioni - parte II** Loretta VENTURINI, *Iterchimica Srl, Suisio, Bergamo*
Break time	
11:00 - 11:45	**Nanomateriali e nanotecnologie in architettura e in edilizia** Francesca PETRONELLA, *CNR-IPCF*
11:45 - 12:30	**Nanotecnologie per lo sviluppo sostenibile** Francesco MATTEUCCI, *CNR-Nanotec, Lecce*
Break time	
14:00 - 14:45	**Nanomateriali per smart buildings - parte I** Danilo DINI, *Sapienza Università di Roma*
14:45 - 15:30	**Nanomateriali per smart buildings - parte II** Danilo DINI, *Sapienza Università di Roma*
Break time	
16:00 - 16:45	**I nanomateriali per la conservazione di edifici storici e monumentali: pregi e difetti della loro applicazione (parte I)** Maria Laura SANTARELLI, *Sapienza Università di Roma*
16:45 - 17:30	**I nanomateriali per la conservazione di edifici storici e monumentali: pregi e difetti della loro applicazione (parte II)** Maria Laura SANTARELLI, *Sapienza Università di Roma*

17 SEPTEMBER

NANOTECNOLOGIE NELL'INGEGNERIA INDUSTRIALE	
08:45 - 09:00	**Saluti Istituzionali** Carla CAPPIELLO, *Presidente dell'Ordine degli Ingegneria della Provincia di Roma* Filippo CASCONE, *Vice Presidente Vicario Ordine degli Ingegneri di Roma*
09:00 - 09:45	**Le nanotecnologie nell'industria tessile: dagli smart wearables alla sensoristica integrata** Francesca Anna SCARAMUZZO, *Sapienza Università di Roma*
09:45 - 10:30	**Hard disk drive e memorie magnetiche** Gaspare VARVARO, *CNR-ISM, Roma*
Break time	
11:00 - 11:45	**Nanosistemi per il rilascio intelligente di farmaci** Francesca APOLLONIO, *Sapienza Università di Roma*
11:45 - 12:30	**Economia circolare verso le nanotecnologie: nuovi prodotti da batterie a fine vita** Francesca PAGNANELLI, *Sapienza Università di Roma*
Break time	
14:00 - 14:45	**Microdosimetria per elettroporazione** Micaela LIBERTI, *Sapienza Università di Roma*
14:45 - 15:30	**Introduzione alle nanotecnologie e ai nanomateriali nell' ingegneria industriale - parte I** Francesco MARRA, *Ph.D. Sapienza Università di Roma*
Break time	
16:00 - 16:45	**Introduzione alle nanotecnologie e ai nanomateriali nell' ingegneria industriale - parte II** Giovanni PULCI, *Ph.D Sapienza Università di Roma*
16:45 - 17:30	**Materiali nanostrutturali ad elevate prestazioni meccaniche ottenuti per processi di lavorazione meccanica** Francesco SINTONI, *Associazione dell'Arma Aeronautica, Sezione Roma2-Luigi Broglio*

18 SEPTEMBER

NANOTECNOLOGIE NELL'INGEGNERIA DELL'INFORMAZIONE	
08:45 - 09:00	**Saluti Istituzionali** Carla CAPPIELLO, *Presidente dell'Ordine degli Ingegneria della Provincia di Roma* Francesco MARINUZZI, *Consigliere dell'Ordine degli Ingegneri della Provincia di Roma*
09:00 - 09:45	**Gli effetti sulla vita quotidiana delle evoluzioni della microelettronica: il lavoro (anche smart), il tempo libero e la vita domestica** Massimo PIZZARI, *Responsabile Sistemi Informativi di DEKRA Italia*
09:45 - 10:30	**Valorizzazione delle Nanotecnologie** Roberto GIANNANTONIO, *CNR-IRSA*
Break time	
11:00 - 11:45	**Nanomateriali per l'optoelettronica - parte I** Antonio D'ALESSANDRO, *Direttore CNIS, Sapienza University of Rome*
11:45 - 12:30	**Nanomateriali per l'optoelettronica - parte II** Antonio D'ALESSANDRO, *Direttore CNIS, Sapienza Università di Roma*
Break time	
14:00 - 14:45	**Le nanotecnologie per i display monitor** Mario D'ETTORRE, *Presidente della Commissione Data Center Ordine degli Ingegneri della Provincia di Roma*
14:45 - 15:30	**Nanostrutturazione di superfici di semiconduttore tramite fascio ionico: teoria, esperimenti ed applicazioni** Rossana DELL'ANNA, *FBK – Fondazione Bruno Kessler, Trento*
Break time	
16:00 - 16:45	**Dispositivi MEMS/NEMS: cenni sullo scaling, progettazione e realizzazione - parte I** Rocco CRESCENZI, *Sapienza Università di Roma*
16:45 - 17:30	**Dispositivi MEMS/NEMS: cenni sullo scaling, progettazione e realizzazione - parte II** Rocco CRESCENZI, *Sapienza Università di Roma*

ADVANCED CHARACTERIZATION TECHINQUES

September 17th, 2020
09.00-12.30

Faculty of Civil and Industrial Engineering - Sapienza University of Rome

09:00 - 09:15
Introduction
Martin SUCHANEK
Area Sales Manager – Europe
TESCAN ORSAY HOLDING

09:15 - 10:00
Taking multimodal materials characterization further with plasma FIB-SEM
Dean MILLER
Senior Scientist
TESCAN ORSAY HOLDING

ABSTRACT

Plasma FIB-SEM technology is continously advancing and expanding the opportunities we have to caracterize materials in unique and powerful ways overcoming the challenges of materials characterisation faced using the traditional GaFIB-SEM solutions. Althoug these are very powerful instruments the Plasma FIB mitigates or eliminates some of the GaFIB tipical limitations expanding even further the opportunities to use these powerful instruments for materials characterisation.

The plasma FIB-SEM allows to explore large cross-sections and large volumes, which is important and sometimes essential, in order to obtain statistically reliable measurements of materials. Moreover the sample damage is minimized and gallium contamination is eliminated and, because there are great integrating capabilities into the current FIB-SEM platform, it is really possible to make the FIB-SEM a versatile nanoscale laboratory for multimodal/multiscale characterization.

10:15 - 11:00
TESCAN Dynamic micro-CT imaging in the laboratory
Jan DEWANCKELE
TESCAN XRE

ABSTRACT

Time-resolved 3D imaging with X-rays has rapidly emerged as an essential technique to understand materials evolution, facilitating in situ investigations ranging from mechanical deformation to fluid flow in porous materials and beyond. Imaging of dynamic processes is one of the key applications at synchrotron facilities, pushing the time resolution more and more down with quite some success. However, access to those facilities is often limited and operational cost are quite high.

In the laboratory, image quality and spatial resolution have been significantly improved, often at a cost of temporal resolution, however. TESCAN XRE have made it possible to visualize and inspect dynamic processes in the laboratory with a temporal resolution below 10 seconds. Challenges and possibilities in dynamic micro-CT imaging will be demonstrated here across materials science, life science/pharmaceuticals, and geo/building materials applications.

NenoVision

11:00 - 11:45
Next level of correlative imaging using AFM-in-SEM for comprehensive sample analyses
Jan NEUMAN
CEO and Co-founder
Nenovision

ABSTRACT

LiteScope™ produced by the NenoVision company represents a compact AFM, which is directly integrable into a large variety of SEMs in a plug-and-play manner. In general, the strength of the AFM-in-SEM hybrid system lies in combining the AFM modes (3D topography, electrical, mechanical and magnetic measurements) with SEM capabilities (fast imaging with wide resolution range, chemical analysis, surface modification, etc.). Further benefits include precise AFM tip navigation by SEM, roughness evaluation and in-situ measurement, which is essential for sensitive samples prone to oxidation. Uniquely, LiteScope design enables simultaneous acquisition and correlation of AFM and SEM data by a technique called Correlative Probe and Electron Microscopy (CPEM).

BRUKER
Surface Analysis

11:45 - 12:30
New AFM Nanoelectrical Capability
Mickael FEBVRE
EMEA-LAM application manager
Bruker Surface Analysis

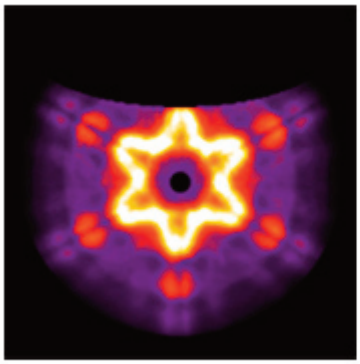
ABSTRACT

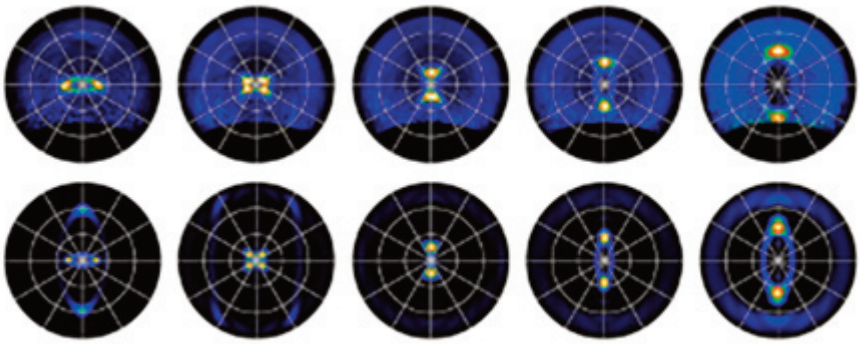
Functional Imaging with Higher-Dimensional Electrical Data Sets
AFM-based nanoelectrical modes have numerous applications in fields ranging from semiconductors to biology. The data produced have traditionally been in the form of a 2D map, generated in contact mode, with a single electrical data point per XY location. Electrical ramps or spectra would be generated at a few, carefully selected locations. A new approach to nanoelectrical imaging that creates an electrical data cube and a correlated nanomechanical data cube while operating at normal imaging speeds will be discussed: it avoids contact mode imaging, thus extending electrical measurements to soft and fragile samples and improving measurement consistency. Moreover, this is a general approach that is applicable to most nanoelectrical modes and applications.

CATHODOLUMINESCENCE IMAGING FOR NANOPHOTONICS AND MATERIALS SCIENCE

September 16th, 2020
11.00-12.30

Faculty of Civil and Industrial Engineering - Sapienza University of Rome





ABSTRACT

Cathodoluminescence (CL) is a versatile technique for the study of optical properties with deep sub-wavelength resolution. CL spectroscopy, angle-resolved imaging and polarimetry are powerful imaging tools to probe and understand the many interesting properties of plasmonic and nanophotonic structures which confine and emit light in unique ways. CL imaging is also a great technique for investigating the properties of many other materials such as rocks, semiconductors and photovoltaic materials both in bulk and micro/nanostructured form. We will present the hardware and imaging methods used to perform CL imaging in a Scanning Electron Microscope, and discuss recent results from a variety of these applications.

Note: A link to the recording of this event will be provided to all registrants, even if they are unable to attend at the time of broadcast.

SPEAKERS:

Dr. Sangeetha Hari, PhD – *Applications Specialist, Delmic*
https://www.delmic.com/en/

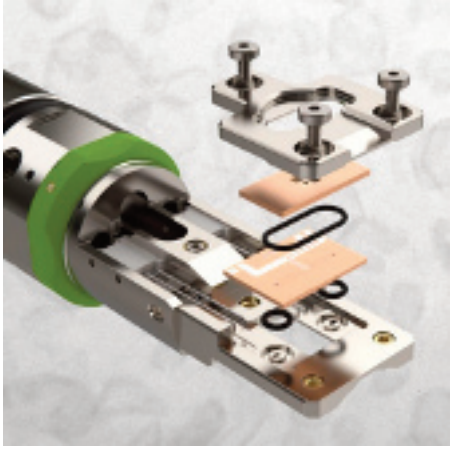
Quantum Design ITALY

DENS solutions

LIQUID PHASE ELECTRON MICROSCOPY: A POWERFUL ROUTE FOR MATERIAL SCIENCE, ENERGY STORAGE AND LIFE SCIENCE APPLICATIONS

September 18th, 2020
11.00-12.30

Faculty of Civil and Industrial Engineering - Sapienza University of Rome



ABSTRACT

Having the capability to enable electron microscopy imaging in liquid environments has been attracting much interest from the scientific community. The possibility to visualize, in real time, the dynamic mechanisms of different samples in their native liquid nature, as a function of stimuli such as heating or biasing, opens up a wide variety of opportunities in fields like energy storage, electrocatalysis, corrosion, materials synthesis, pharmaceutical and structural biology. In particular, liquid phase electron microscopy (LPEM) can provide a comprehensive framework on the functional understanding and the structural characterization of various embodiments in liquid phase. Here, an introduction will be given to our recent solutions to empower LPEM research. The technical developments made so far, which are based on Micro-Electromechanical Systems (MEMS) technology, bring a huge significance and added value as we have focused on addressing the key challenges that the LPEM community has long tried to fight: (a) ensuring a controlled and reproducible liquid flow through the region of interest (i.e. window, sample, electrodes), (b) controlling the liquid thickness to achieve high imaging resolution and to enable meaningful electron diffraction, EELS and elemental mapping in liquid, (c) prevent clogging and cross-contamination, (d) flush away unwanted beam-induced species and (e) mitigate bubble formation. After discussing the architecture of our system and explaining the main features and benefits, a group of selected application examples will be shown.

Note: A link to the recording of this event will be provided to all registrants, even if they are unable to attend at the time of broadcast.

SPEAKERS:

Dr. Hugo Pérez, PhD - *Chief Technology Officer, DENSsolutions*
https://denssolutions.com/

A NEW WAY FOR IN-SITU CORRELATIVE ANALYSIS OF MAGNETIC AND CONDUCTIVE NANOSTRUCTURES BY COMBINATION OF AFM & SEM

September 18th, 2020
16.00-17.30

Faculty of Civil and Industrial Engineering - Sapienza University of Rome

ABSTRACT

The combination of different analytical methods into one instrument is of great importance for the simultaneous acquisition of complementary information. Especially highly localized probing of mechanical, electrical, magnetic, chemical and crystallographic properties on the nanoscale represents a key success factor for gaining new insights in the micro and nano world. Here, we present a unique AFM – the AFSEM nano – designed for seamless integration into scanning electron microscopes (SEM) or dual beam systems. It allows direct in-situ combination of these complementary techniques due to the simultaneous operation of SEM and AFM inside the vacuum chamber. We will highlight the advantages of correlative in-situ analysis by showing exciting results for variety of different magnetic and conductive nanostructures.

Note: A link to the recording of this event will be provided to all registrants, even if they are unable to attend at the time of broadcast.

SPEAKERS:

Dr. Pinar Frank – *Head of Applications, GETec Microscopy*
https://www.getec-afm.com/

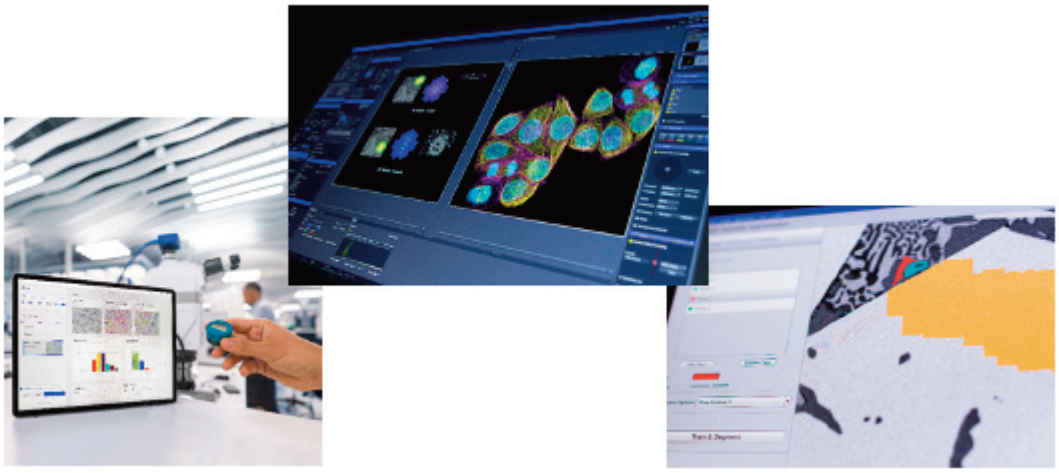
Seeing beyond

PRATICAL SESSION: IMAGE ANALYSIS USING MACHINE LEARNING

September 17th, 2020
14.00-15.30 e 16.00-17.30

Faculty of Civil and Industrial Engineering - Sapienza University of Rome

The event will be held ONLY in attendance



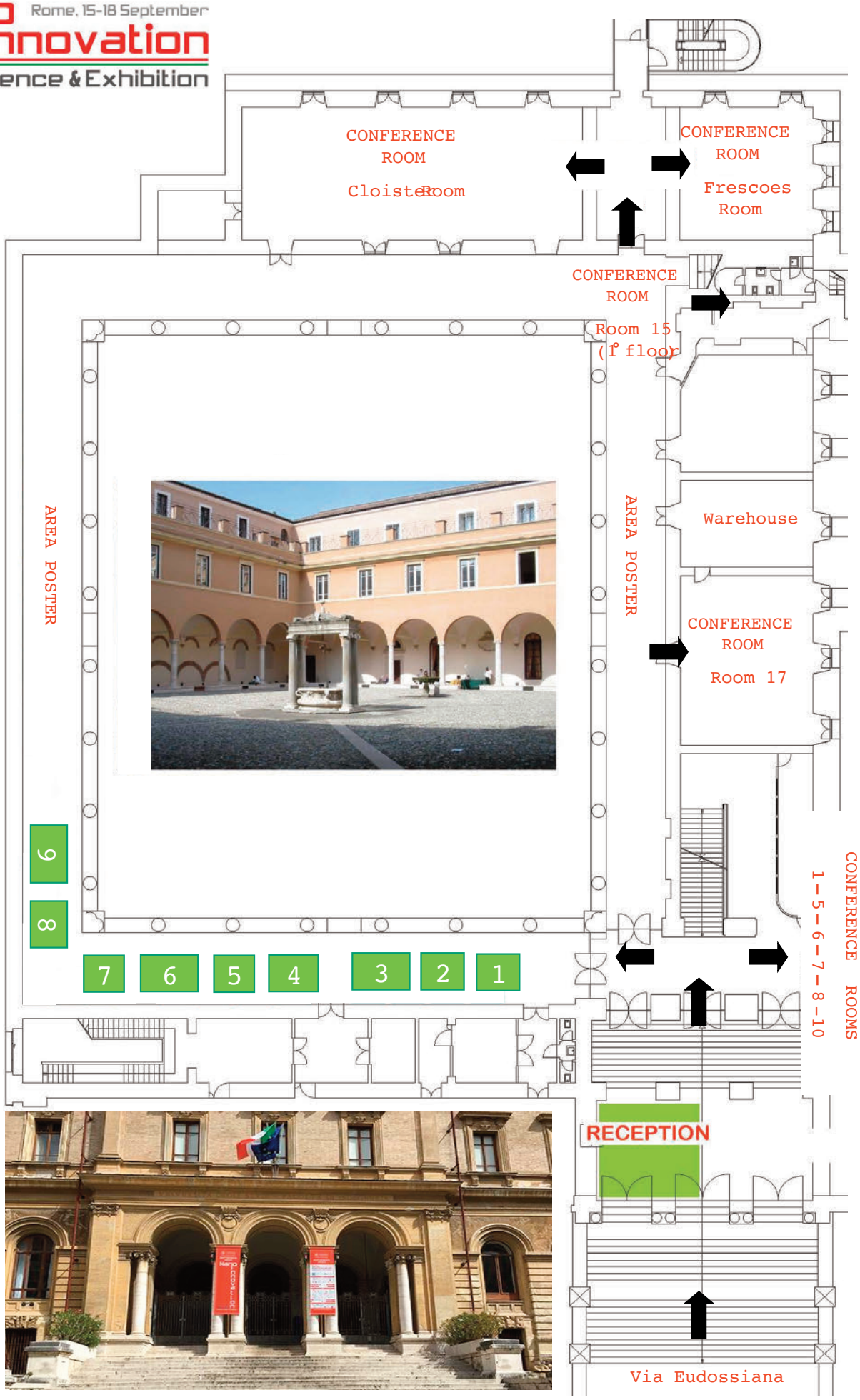
PROGRAMME

- Brief introduction to Machine Learning: training the program, learning from examples and experiences, finding relationships
- The ZEN Platform: the microscope software permitting to unleash all features of an imaging station
- From Acquisition to Processing of an Image: how to set up a correct workflow
- Case studies:
  - one standard image analysis vs. Machine learning-based analysis: different approaches and tools
  - one complex case (impossible with standard image analysis): how machine learning permits to overcome hard tasks without tedious manual measurements

SPEAKER:

Dr. Silvia Contessi – *silvia.contessi@zeiss.com*
In the last four years I made research in the field of soil contamination and environmental restoration, in the framework of a doctoral course in Earth Sciences at Padua University, which will be completed this year. My scientific interests also deal with the development of low CO2 alternative binders and the re-utilization and valorization of industrial wastes. Since mid-2019 I joined Zeiss as an Application specialist for Material Science Microscopy.

Nano Innovation 2020 Rome, 15-18 September
Conference & Exhibition



ALPHABETICAL ORDER

3	**ASSING** AGAR SCIENTIFIC BRUKER SURFACE ANALYSIS CRESTEC CORPORATION IMINA TECHNOLOGIES NENOVISION PHYSICAL ELECTRONICS PROTOCHIPS RIBER RIGAKU TESCAN XWINSYS
2	**DTC LAZIO**
4	**JEOL**
8	**INRIM**
9	**LABTREK** FSM PRECISION
7	**PLATINUM**
5	**NANOSCRIBE**
1	**PROJECT SENSE-RISC** SMART-EMA
6	**SCHAEFER SOUTH-EAST EUROPE** ASYLUM AFM OXFORD CYTOVIVA IZON SENSOFAR TOMOCUBE

BOOTHS ORDER

1	**PROJECT SENSE-RISC** SMART-EMA
2	**DTC LAZIO**
3	**ASSING** AGAR SCIENTIFIC BRUKER SURFACE ANALYSIS CRESTEC CORPORATION IMINA TECHNOLOGIES NENOVISION PHYSICAL ELECTRONICS PROTOCHIPS RIBER RIGAKU TESCAN XWINSYS
4	**JEOL**
5	**NANOSCRIBE**
6	**SCHAEFER SOUTH-EAST EUROPE** ASYLUM AFM OXFORD CYTOVIVA IZON SENSOFAR TOMOCUBE
7	**PLATINUM**
8	**INRIM**
9	**LABTREK** FSM PRECISION

BOOTH 3

ASSING SPA

Via Edoardo Amaldi, 14
00015 Monterotondo (RM), ITALIA
Tel. +39 06 906701
Fax +39 06 90670200
Sito Web: www.assing.it
E-mail: sales@assing.it

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

Special attention has always been given to the nanotechnology. **Assing** can propose observation, analysis and process instruments such as: electronic microscopes, 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**).

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

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

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

BOOTH 3

AGAR SCIENTIFIC

Unit 7, M11 Business Link
Parsonage Lane
Stansted, Essex
CM24 8GF, UNITED KINGDOM
Sito web: www.agarscientific.com
E-mail: sales@assing.it

A leading international supplier of scientific instruments and accessories for over 40 years, Agar Scientific specialises in consumables and equipment supporting all forms of microscopy.

BOOTH 3

BRUKER SURFACE & DIMENSIONAL ANALYSIS

7, rue de la Croix Martre
91120 Palaiseau, FRANCE
Sito web: www.bruker.com/products/surface-and-dimensional-analysis.html
E-mail: sales@assing.it

Bruker Nano Surfaces provides industry-leading surface analysis instruments for the research and production environment. Our broad range of 2D and 3D surface profiler solutions supply the specific information needed to answer R&D, QA/QC, and surface measurement questions with speed, accuracy, and ease. Bruker's AFMs are enabling scientists around the world to make discoveries and advance their understanding of materials and biological systems. Our tribometers and mechanical testers deliver practical data used to help improve development of materials and tribological systems.

BOOTH 3

CRESTEC CORPORATION

9-2, Owada-machi, Hachioji-shi,
Tokyo 192-0045, JAPAN
Sito web: www.crestec8.co.jp
E-mail: sales@assing.it

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

BOOTH 3

IMINA TECHNOLOGIES SA

EPFL Innovation Park, Bâtiment E
CH-1015 Lausanne, SWITZERLAND
Sito Web: www.imina.ch
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.

BOOTH 3

NENOVISION

Purkyňova 649/127
612 00 Brno – Kohoutovice, ČESKÁ REPUBLIKA
Tel. +420 605 287 732
Sito Web www.nenovision.com
E-mail sales@assing.it

NenoVision is a technology company based in Brno, in the Czech Republic. We were the first spin-off from the Brno University of Technology and Central European Institute of Technology.
NenoVision develops, manufactures, and sells a revolutionary type of atomic force microscope (AFM) LiteScope™ which was designed for fast and easy integration into scanning electron microscopes (SEMs).

BOOTH 3

PHYSICAL ELECTRONICS INC. (PHI)

18725 Lake Drive East
Chanhassen, MN 55317
Tel. +952 8286100
Sito web www.phi.com
Email 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.

BOOTH 3

PROTOCHIPS EMEA GmbH

IPW Manfred Von Ardenne
Kopenicker Str. 325
12555 Berlin, GERMANY
Tel. +49 172 5833288
Sito web: www.protochips.com
Email: sales@assing.it

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).

BOOTH 3

RIBER

31 Rue Casimir Périer
95870 Bezons, FRANCE
Sito web: www.riber.com
E-mail: sales@assing.it

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.

BOOTH 3

RIGAKU CORPORATION

4-14-4, Sendagaya, Shibuya-ku
Tokyo 151-0051, JAPAN
Sito web: www.rigaku.com/en
Email: sales@assing.it

Rigaku Corporation is an international leader in manufacturing and distribution of analytical instruments for X-ray diffraction (XRD), X-ray crystallography (SC-XRD) and X-ray fluorescence (XRF) for research and industrial applications. Rigaku is based in Tokyo (Japan) with additional production and laboratory facilities in both Japan and the United States. European facilities are located in United Kingdoom, Germany, Czech Republic and Poland. Rigaku products are worldwide well known for the top.level design, the high performance and the unequaled reliability.

BOOTH 3

TESCAN

Libušina tř. 21
623 00 Brno – Kohoutovice, ČESKÁ REPUBLIKA
Tel. +420 530 353 411
Fax +420 530 353 415
Sito Web www.tescan.com
E-mail sales@assing.it

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.
The company is focused on research, development and manufacturing of scientific instruments and laboratory equipment such as:

- scanning electron microscopes
- 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

BOOTH 3

XWINSYS

Ramat Gabriel Industrial Zone, 6
Hatikshoret St. Migdal Haemek 2307049, ISRAEL
Sito web: www.xwinsys.com
Email: sales@assing.it

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.

BOOTH 2

DTC LAZIO

Technological District of Cultural Heritage Lazio
Centre of Excellence
c/o Area Servizi di Supporto alla Ricerca e al
Trasferimento Tecnologico, Palazzo del Rettorato
Sapienza Università di Roma
Piazzale Aldo Moro, 5
00185 Roma, ITALIA
Tel: +39 06 49910566
Sito Web: www.dtclazio.it - E-mail dtc@uniroma1.it

The Center of Excellence of the DTC Lazio was founded in July 2018 by five public universities (Sapienza University of Rome, University of Tor Vergata, University of Roma Tre, University of Viterbo, University of Cassino and Southern Lazio) and by the three main national research bodies CNR, ENEA, INFN, with the support of the Lazio Region and MIUR, and in collaboration with MIBACT. DTC Lazio is a center for the aggregation and integration of technological skills applied to the conservation, enhancement and promotion of the historical, artistic and cultural heritage of the Lazio Region. The goal of the Center of Excellence is the implementation of strategic actions in terms of training, research, innovation and technology transfer, in order to strengthen, elevate and internationalize the Lazio business system in the field of technologies applied to cultural heritage. Today the DTC Lazio Community includes more than 700 researchers and teachers engaged in research projects and human capital; 350 learners of the advanced training courses offered by the Center; 20,000 users of "massive open online courses" published on the Coursera platform; 100 members of the Stakeholder Board; 250 highly qualified laboratories equipped with advanced scientific instrumentation. The DTC is also strongly committed to the qualification and specialization of human capital through innovative training and higher education projects, such as Masters, Advanced Training Courses (CAF), Permanent in-depth courses (CAP), Massive Online Open Courses (MOOC), aimed at to young graduates, entrepreneurs, employees of companies, organizations and service companies operating in the cultural heritage sector. For more information, take a look at our website: dtclazio.it

BOOTH 4

JEOL ITALIA

Palazzo Pacinotti - Milano 3 City
Via Ludovico il Moro, 6/A
20080 Basiglio (MI), ITALIA
Tel. +39 02 9041431
Fax +39 02 90414343
Sito Web: www.jeol.it
Contact person: Paolo GRIANTI
E-mail: info@jeol.it

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.

BOOTH 8

INRIM

Strada delle Cacce, 91
10135 Torino (TO), ITALIA
Tel. + 39 011 39191
Fax + 39 011 346384
Web: www.inrim.it
Contact person: Luca BOARINO
Email: inrim@inrim.it

On the 1st January 2006, the Istituto Elettrotecnico Nazionale "Galileo Ferraris" (IEN) and the Istituto di Metrologia "Gustavo Colonnetti" (IMGC) merged to establish the Istituto Nazionale di Ricerca Metrologica (I.N.RI.M.). INRIM is the national public body with the task of carrying out and promoting scientific research in metrology. With the handover of the tasks of primary metrology institute previously assigned to IMGC and the IEN, INRIM has become the focus of most scientific metrology activities in Italy (except for the field of ionising radiation, where ENEA-INMRI maintains its role). Its research activities in measurement science, materials science and innovative technologies are recognized at worldwide level.
INRIM carries out studies and researches on the realization of primary standards for the basic and derived units of the International System of units (SI), assures the maintenance of such standards, their international comparison and in general provides measurements traceability to the SI. In addition to physical and engineering metrology, its main R&D areas are in fundamental physical constants, materials, metrology for chemistry, nanotechnology, innovation, quantum information and artificial vision.

BOOTH 9

LABTREK

Via B. Cristofori, 31
35137 Padova (PD), ITALIA
Cell. +39 3333379944
Sito web: www.labtrek.it
Contact person: Giacomo TORZO
E-mail: torzog@gmail.com

LabTrek is a small company, born in 2004 as spin-off of Bologna ad Padova universities, to share the experience acquired in teaching courses of Physics Lab.

LabTrek develops, manufactures, and sells experimental apparatuses for advanced Physics educational laboratory, and on-demand, develops and produces exhibits for Science Centers, and custom devices for industrial applications.

LabTrek is also the european dealer of the high-quality and low-cost Atomic Force Microscopes made by FSM (Suzhou-China).

LabTrek has two offices: one in Padova and one in San Sperate (CA)

BOOTH 9

SUZHOU FLYINGMAN PRECISION INSTRUMENTS CO., LTD

No.12, Huatuo Rd, SND, Suzhou City
Jiangsu Province, CHINA
Tel. (86)0512-66076021-8016
Fax (86)0512-66076020
Optical Website: www.fsmprecision.com
AFM Website: www.fsm-microscope.com
Contact person: Anita LIU
Email: anital@fsmprecision.com

FSM (Suzhou Flyman Precision Instrument) is a company, with years of R&D experience, devoted to design and production of high-quality Optical Fluorescence Microscopes, of LED Illuminators and of Atomic Force Microscopes with very high performance/cost ratio.

FSM produces the cheapest High-Resolution AFM-STM for education, as well as models designed for research and industry (RA-AFM, LS-AFM, FM-OP).

FSM is based in Suzhou (China) and has distributors in Europe, North America, Russia

BOOTH 7

PLATINUM "Aziende&Protagonisti"

Publiscoop Più Srl
Piazza della Serenissima, 40/A
31033 Castelfranco Veneto (TV), ITALIA
Tel. +39 0423 425411
Fax +39 0423 425402
Sito web: www.platinum-online.com
Contact person: Gaetano FERRETTI
Email: gaetano.ferretti@platinum-online.com

PLATINUM "Aziende&Protagonisti" è la rivista a colori diretta da “Gruppo 24 ORE” che illustra il panorama economico italiano, con un target imprenditoriale (grandi imprese e PMI), istituzionale ed economico-finanziario nonché dei liberi professionisti. PLATINUM “Aziende & Protagonisti” è distribuita in Italia in edicola e direct mailing con “Il Sole 24 ORE”, in Europa, in lingua inglese, in sei paesi della CE a maggior capitalizzazione, tramite le C.C.I.E. La tiratura è di circa 140.000 copie senza reso distribuite in Italia ed in EUROPA. Distribuzione mirata in tutte le Università Italiane, nei maggiori Centri di Ricerca Nazionali, Commissione Europea – D.G.Ricerca&Innovazione, Parlamento Europeo – Presidenza, C.E. Centro Comune di Ricerca (JRC), Commissione Europea in Italia Roma e Milano, fiere e convegni nazionali ed internazionali. Inoltre, è interamente fruibile al sito www.platinum-online.com, in modalità "Open Access", in italiano ed in inglese, con condivisione dei contenuti nei maggiori social network (galleria fotografica, video-intervista e link al sito progetto) con possibilità di effettuare il download della pubblicazione in formato pdf. Rubrica RICERCA&INNOVAZIONE, importante appuntamento editoriale su PLATINUM completamente dedicato alla divulgazione scientifica di grandi progetti Nazionali ed Europei, con contributi redazionali a cura delle maggiori Istituzioni Nazionali ed Europee, nonchè,una presenza costante della Commissione Europea CCR-Ispra (Joint Research Centre, JRC) http://www.platinum-online.com/rubrica-ricerca-innovazione/ La rubrica RICERCA&INNOVAZIONE è costruita intorno alle Istituzioni Nazionali ed Estere, Università, Centri di Ricerca, Piattaforme e Distretti Tecnologici e alle Imprese che si distinguono per eccellenza ed innovazione, in un connubio perfetto e unico che evidenzia un quadro globale nazionale ed internazionale.

BOOTH 5

NANOSCRIBE GmbH

Hermann-von-Helmholtz-Platz, 6
76344 Eggenstein-Leopoldshafen, GERMANY
Tel. +49 721 981 980 0
Fax +49 721 981 980 130
Sito Web: www.nanoscribe.com
Contact person: Alexander LEGANT
Email info@nanoscribe.com

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 devices offer enormous 3D design freedom, submicron feature sizes, and optical-quality surface finishes.

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.

BOOTH 1

PROJECT SENSE-RISC

Sito Web: https://web.uniroma1.it/senseriscproject/
Contact person: Maria Sabrina SARTO
E-mail: mariasabrina.sarto@uniroma1.it

The SENSE RISC project is developing an innovative multi-sensory wearable system integrated with sensors (looking as a simple a T-shirt) which allows the assessment of the risk of injury to the workers.

The system - based on nanotechnologies and nanomaterials (graphene, ZnO nanostructures, nanoparticles and highly biocompatible polymeric films, fiber Bragg grating -FBG- functionalized) - communicates via wireless with mobile devices (smartphones) and works through innovative bio-operational algorithms. The project sees the collaboration of 8 highly qualified partners:

1. Sapienza Università di Roma, Dipartimento di Ingegneria Astronautica, Elettrica, Energetica (Coordinatore)
2. Università di Pisa, Dipartimento di Chimica e Chimica Industriale
3. Università Campus Bio-Medico di Roma
4. Scuola Universitaria Superiore Sant'Anna di Pisa, Istituto di Biorobotica
5. Sapienza Università di Roma, Dipartimento Biologia e Biotecnologie "Charles Darwin"
6. Fondazione Don Carlo Gnocchi Onlus, Polo Tecnologico "IRCCS"
7. Università di Pisa, Centro di Ricerca E. Piaggio
8. INAIL, Dipartimento innovazioni tecnologiche e sicurezza degli impianti, prodotti e insediamenti antropici

BOOTH 1

SMART-EMA

Sito Web: https://sites.google.com/uniroma1.it/smartema
Contact person: Maria Sabrina SARTO
E-mail: mariasabrina.sarto@uniroma1.it

Importo del Progetto: 143,656.00 Euro
Ente finanziatore: Regione Lazio, Avviso Gruppi di Ricerca (2016)

Il progetto SMART-EMA si inquadra nell'area di specializzazione Aerospazio della "Smart Specialisation Strategy" (S3) della Regione Lazio ed è focalizzato sulla KET "Nanotecnologie e Materiali avanzati". Le competenze disciplinari attivate, con riferimento alla classificazione ERC, sono principalmente pertinenti il settore PE7_2 (Ingegneria Elettrica ed Elettronica), e nello specifico i settori della compatibilità elettromagnetica e dello sviluppo e caratterizzazione di nanomateriali piezoresistivi con proprietà elettriche ed elettromagnetiche desiderate. Obiettivo di SMART-EMA è lo sviluppo e il trasferimento tecnologico verso azienda aeronautica di una tecnologia innovativa per rivestimenti protettivi di laminati in materiale composito per uso aeronautico, con proprietà combinate di sensing e di schermatura elettromagnetica, da utilizzare per il monitoraggio strutturale distribuito e la riduzione delle interferenze elettromagnetiche legate a fenomeni naturali, come la fulminazione diretta, o artificiali, come l'interazione dell'aeromobile con sistemi d'antenna.
Tali rivestimenti sono prodotti per spruzzatura di vernice aeronautica a matrice polimerica, contenente nanostrutture a base grafene. Il processo di produzione di vernici conduttive a base grafene che si intende sviluppare nell'ambito di SMART-EMA è basato sull'invenzione descritta nella domanda di brevetto PCT/IB2016/0699 di Sapienza Università di Roma dal titolo "Water-based piezoresistive conductive polymeric paint containing graphene for electromagnetic and sensor applications", con autori M.S. Sarto et al.. La messa a punto ed il trasferimento di tale tecnologia in ambito aeronautico e la sua applicazione in scala reale su aeromobile richiede una consistente attività di modellistica, progettazione, produzione e caratterizzazione dello smart coating, in stretta collaborazione con l'azienda produttrice di aeromobili, al fine di ottimizzarne prestazioni e proprietà sulla base di specifici requisiti aeronautici.

BOOTH 6

SCHAEFER ITALY

Via Luigi Einaudi, 23/2
45100 Rovigo (RO), ITALIA
Tel. +39.0425.073130
Fax +39.0425.27228
Sito Web: www.schaefer-tec.it
Contact person: Paolo BARIANI
E-mail: info@schaefer-tec.it

Schaefer Italy is the Italian branch of Schaefer-Tec group, a pan-european network of companies. Schaefer offices locally 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. Which enable us selecting the most innovative technology suppliers globally. Our partners are often academic spin-off companies founded based on innovations/patents pushing ahead the limits of what can be measured and thus known.
2. 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. We pride ourselves on being privately owned; no financial investors nor venture capital own any of our shares, which makes us able to focus on customers satisfaction rather than financial performance.

Nowadays our technologies portfolio 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; Vacuum and control instrumentation (vacuum control, mass flow meters, HV and UHV parts)
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. Whether you wish to purchase a microscope, or to perform measurements on contract, or in case you need help for integrating one of the sensors we market into your process, we will be happy to work with you!

BOOTH 6

ASYLUM AFM OXFORD

Sito Web: https://afm.oxinst.com/
Contact person: Paolo BARIANI
E-mail: info@schaefer-tec.it

Asylum Research is specialized in making the best atomic force microscopes for academic research and industrial R&D. Asylum was founded in 1999. Since then, they have continuously worked to develop higher performance AFMs (e.g. resolution, speed), more useful AFMs (e.g. going beyond topography, extending to mechanical, electrical, and functional properties), and easier to use AFMs (e.g. eliminating artifacts, automating setup, making operation more consistent and predictable).

A quick look at the Asylum AFM line:

- Jupiter XR AFM - Large-Sample AFM with Superior Resolution, Speed, Ease of Use, and Flexibility
- Cypher AFMs - Higher resolution, video rate, faster, easier, more versatile
- MFP-3D AFMs - The widest range of AFM microscopes for the widest range of budgets

BOOTH 6

CYTOVIVA

570 Devall Drive
Suite 301
Auburn, AL 36832, USA

Sito Web: https://cytoviva.com/
Contact person: Paolo BARIANI
E-mail: info@schaefer-tec.it

The CytoViva Hyperspectral Imaging System evolved from technology originally developed for aerial based imaging applications within Department of Defense and NASA. CytoViva has adapted this technology to operate as a proprietary, integrated system with its patented microscopy technology, enabling spectral quantification of materials and live biologicals at the nanoscale.

Introduced in 2005, CytoViva technology has been installed in hundreds of research laboratories: leading national research laboratories, academic institutes and private industrial labs all over the world.

Co-developed by Auburn University and Aetos Technologies, Inc., CytoViva's optical microscopy technology is a 2006 and 2007 recipient of the prestigious R&D 100 award, granted annually to the market's most innovative new technologies. In 2007, CytoViva also received a Nano50TM award, for its contribution to the fast growing world of nanotechnology research. In 2009, US patents No. 7,542,203 and 7,564,623 were issued for CytoViva's advanced microscopy illumination optics.

BOOTH 6

SENSOFAR

Sito Web www.sensofar.com
Contact person: Paolo BARIANI
E-mail: info@schaefer-tec.it

Sensofar Metrology is a multi-national company whose mission is to develop, manufacture and market high-end 3D surface metrology instruments. Sensofar also provides consultancy within the field of metrology, and pursue a philosophy of guaranteeing advanced techniques, high quality and customer services.

BOOTH 6

IZON

The Oxford Science Park
Magdalen Centre
1 Robert Robinson Avenue, Oxford OX4 4GA, United Kingdom
Sito Web https://izon.com/

Contact person: Paolo BARIANI
E-mail: info@schaefer-tec.it

Izon Science is the world leading manufacturer of nano-biological separation and characterisation tools. Its qEV SEC columns have rapidly become the EV separation method favoured by experts. Izon's TRPS measurement system is the only accurate, standardisable and practical method of measuring complex nano-bio particles, particularly EVs and nanomedicine products.

Transform your research with world-leading tools for particle measurement and isolation. Use TRPS to analyse individual particle size, concentration and surface charge at the highest resolution possible and be assured of the reliability and validity of your results. Prepare your samples with qEV isolation in just 15-minutes, removing more than 99% of contaminating proteins.

BOOTH 6

TOMOCUBE

4th Floor, 155, Sinseong-ro,
Yuseong-gu, Daejeon, Republic of Korea
Sito Web: www.tomocube.com/
Contact person: Paolo BARIANI
E-mail: info@schaefer-tec.it

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.

The company is focused on research, development and manufacturing of scientific instruments and laboratory equipment such as:

- scanning electron microscopes
- 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

SEPT 15 TUESDAY

SEPT 16 WEDNESDAY

SEPT 17 THURSDAY

SEPT 18 FRIDAY

AMERICAN ELEMENTS
THE ADVANCED MATERIALS MANUFACTURER®

nanomaterials
an Open Access Journal by MDPI

applied sciences
applied nano

NanoMEGAS
Advanced Tools for electron diffraction

delmic

Park SYSTEMS

DENS solutions

Quantum Design ITALY

Gambetti
Vacuum Technology and Related Solutions

RENISHAW

GETec
A QUANTUM DESIGN COMPANY

schaefer

IZON

ZEISS

KLA

applied sciences

IMPACT FACTOR 2.474

an Open Access Journal by MDPI

Editor-in-Chief:
Prof. Dr. Takayoshi Kobayashi

Section Editor-in-Chief:
Prof. Dr. Philippe Lambin

ISSN 2076-3417
▸ mdpi.com/journal/applsci
@Applsci

As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal *Applied Sciences* has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

- Nanoparticles
- Quantum dots
- Nanowires and nanorods
- Nanotubes
- Nanofibers
- Nanoplatelets
- Nanospheres

applied nano

an Open Access Journal by MDPI

Editor-in-Chief:
Prof. Dr. Angelo Maria Taglietti

ISSN 2673-3501
▸ mdpi.com/journal/applnano
@Applnano

Applied Nano is an international and interdisciplinary open access journal devoted to publish original works (reviews, regular research papers and communications) in any field of study involving the application of nanoscience and nanotechnology. Submissions are expeditiously and rigorously reviewed by peers, in order to insure the highest scholarly standards. It will thus include papers owing to a wide range of areas, covering chemistry, physics, materials science, biosciences, medicine, environmental and water sciences, energy storage and conversion, electronics, to make a few relevant examples.

- Environment
- Food
- Energy
- Sensing
- Photonics and electronics
- Medicine and Biology
- Cultural Heritage