ORGANIZERS

Airi ASSOCIAZIONE ITALIANA PER LA RICERCA INDUSTRIALE

Nano Italy Associazione

SAPIENZA UNIVERSITÀ DI ROMA

Renaissance Cloister by Sangallo

Faculty of Civil and Industrial Engineering

SEPTEMBER 19-23 2022

Nano Innovation 2022

Rome, 19-23 September

Conference & Exhibition







CO-ORGANIZERS

SAPIENZA UNIVERSITÀ DI ROMA

Politecnico di Torino

Università Mediterranea di Reggio Calabria

DIIES Dipartimento di Ingegneria dell'Informazione delle Infrastrutture e dell'Energia Sostenibile

UMG dubium sapientiae initium

Università degli Studi di Messina

UNIMORE Università degli Studi di Modena e Reggio Emilia

UNIVERSITÀ DEGLI STUDI DI UDINE

SCUOLA NORMALE SUPERIORE

Assing

JEOL

ZEISS Seeing beyond

IMM Istituto per la Microelettronica e Microsistemi Consiglio Nazionale delle Ricerche

CSGI

DISTRETTO TECNOLOGICO SICILIA MICRO E NANO SISTEMI S.C.A.R.L.

FONDAZIONE BRUNO KESSLER

Fondazione Don Carlo Gnocchi Onlus

ENEA Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile

INAIL Istituto Nazionale per l'Assicurazione contro gli Infortuni sul Lavoro

Istituto Superiore di Sanità

INRiM Istituto Nazionale di Ricerca Metrologica

INSTITUTIONAL PARTNERS

APRE Agenzia per la Promozione della Ricerca Europea

Fondazione Ordine degli Ingegneri Provincia di Roma

Ordine degli Ingegneri della Provincia di Roma

IN COOPERATION WITH

PLATINUM research&innovation

www.nanoinnovation2022.eu

index

STAMPA: TIPOGRAFIA PALOMBI & LANCI S.R.L.

PROGETTO GRAFICO E SITO WEB: AZIMUTH DI PATRIZIA DE CASTRO

Institutional Patronages

Ministero degli Affari Esteri e della Cooperazione Internazionale

MINISTERO DELLA CULTURA

MINISTERO DELLA DIFESA

MINISTRO PER L'INNOVAZIONE TECNOLOGICA E LA TRANSIZIONE DIGITALE

mipaaf ministero delle politiche agricole alimentari e forestali

MINISTERO DELLA TRANSIZIONE ECOLOGICA

REGIONE LAZIO

Scientific Patronages

PER CONTINUARE... BIOLOGI IL RINNOVAMENTO...

IUPAP Centenary YEARS 1922 - 2022

IYBSSD2022 International Year of Basic Sciences for Sustainable Development

SISM Italian Society for Microscopical Sciences

Società Chimica Italiana

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

Due to the persistence of Covid-19 pandemic, also the VII edition of NanoInnovation, scheduled **from 19 to 23 September 2022**, will be held in a hybrid way. In order to guarantee a wide participation and ensure health protection, most of the initiatives 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. 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.

In this VII edition of NanoInnovation, the role of PNRR actions and their effects on the research, innovation and industrial ecosystems will be put in evidence and discussed. NanoInnovation 2022 will:

- Provide a **meeting forum** for academia, research, companies and business operators;
- Display **state of the art** developments in applied research on nanotechnologies;
- Act as **showcase** of the innovations in nanotechnologies and KETs;
- Promote **knowledge transfer** among different R&D players and sectors;
- Offer **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 2022, strongly oriented toward application and market aspects of nanotechnology, KETs and innovation in all its aspects, 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.

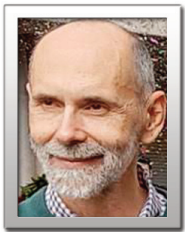
Organizing Committee

Marco ROSSI *(chair)*

- Sapienza University of Rome

Massimo BERSANI

- FBK



Marco CRESCENZI

- ISS

Vittorio MORANDI

- CNR-IMM

Candido Fabrizio PIRRI

- Polytechnic University of Turin

Andrea PORCARI

- AIRI

A special thank to our institutional partners:

- **Ordine degli Ingegneri della Provincia di Roma** and **Fondazione Ordine degli Ingegneri della Provincia di Roma**, that organized the update training course for engineers;
- **APRE - Agency for the Promotion of European Research** that organized the networking event, open and free for all participants.

We would also like to thank the Faculty of Civil and Industrial Engineering of Sapienza University of Rome for kindly hosting the conference, the Department of Basic and Applied Sciences for Engineering for logistic and scientific support, the Steering and Programme Committees for setting up the program structure, the Session Chairpersons and the Speakers who accepted our invitation to share their expertise. A particular 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 2022 Organizing Committee

Steering Committee

Sesto VITICOLI *(chair)*

- AIRI

Piero BAGLIONI

- University of Florence & CSGI

Giorgio Mariano BALESTRA

- University of Tuscia

Marzia BEDONI

- Don Gnocchi Foundation

Luca BOARINO

- INRIM

Fabio BOCCUNI

- INAIL

Chiara CAPPELLI

- Scuola Normale Superiore

Ennio CAPRIA

- European Synchrotron (ESRF)

Giuliano CASATI

- Assing

Sabrina CONOCI

- University of Messina
- CNR-IMM
- Distretto Tecnologico Sicilia Micro e Nano Sistemi

Filippo D'ARPA

- Distretto Tecnologico Sicilia Micro e Nano Sistemi

Isabella DE ANGELIS

- ISS

Marco DI CLEMENTE

- ASI

Giuliana FAGGIO

- The "Mediterranean" University of Reggio Calabria

Lorenza FERRARIO

- FBK

Guglielmo FORTUNATO

- CNR-IMM

Steering Committee

Narciso GAMBACORTI

- CEA - Leti

Roberto GIANNANTONIO

- CNR NANOTEC

Paolo GRIANTI

- JEOL ITALIA

Andrea LAMBERTI

- Polytechnic University of Turin

Giulio LAMEDICA

- ZEISS

Nicola LISI

- ENEA

Luca MARCHIOL

- University of Udine

Francesco MATTEUCCI

- European Innovation Council (EISMEA)

Donatella PAOLINO

- University "Magna Graecia" of Catanzaro

Giuseppe ROSACE

- University of Bergamo

Maria Sabrina SARTO

- Sapienza University of Rome

Giovanni TOSI

- University of Modena and Reggio Emilia

Programme Committee

Marco VITTORI ANTISARI
(chair)

• NanoItaly Association

Cristina ANDREOLI

• ISS

Chiara BATTISTELLI

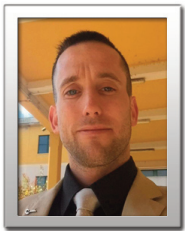
• ISS

Francesco BIANCARDI

• ZEISS

Stefano BIANCO

• Polytechnic University of Turin



Gabriele BULLA

• JEOL ITALIA

Annarica CALCABRINI

• ISS

Giancarlo CICERO

• Polytechnic University of Turin

Luciana DINI

• Sapienza University of Rome

Marta FEROCI

• Sapienza University of Rome

Ettore GAROFALO

• Assing

Rodorico GIORGI

• University of Florence & CSGI

Francesco MARRA

• Sapienza University of Rome

Leonardo MATTIELLO

• Sapienza University of Rome

Giacomo MESSINA

• The "Mediterranean" University of Reggio Calabria

Donatella PIETRAFORTE

• ISS

Pasqualantonio PINGUE

• Scuola Normale Superiore

Maria Elena PISANU

• ISS

Irene RUSPANTINI

• ISS

Daniele SCHIAVI

• University of Tuscia

Annarita STRINGARO

• ISS

NANOINNOVATION IS...

NANOTECHNOLOGY

ATOM

QUANTUM

NANOPARTICLES

MACHINE

DNA

ROTAXANE

ENGINEERING

TEM

NANOELECTRONICS

CHEMICAL

NANOSCALE

APPLICATIONS

NANOBIOTECHNOLOGY

MOLECULAR

TECHNOLOGY

DEVICES

WIKIVERSITY

TRANSPORTS

INITIATIVE

MICROSCOPY

NANOMATERIALS

SILICON

NANOMEDICINE

DRUG DELIVERY

NANOHUB

... MORE & BEYOND

Honorary Committee

Luigi AMBROSIO

Scuola Normale Superiore
Director

Don Vincenzo BARBANTE

Don Gnocchi Foundation
President

Franco BETTONI

INAIL
President

Silvio BRUSAFERRO

ISS
President

Maria Chiara CARROZZA

CNR
President

Salvatore CUZZOCREA

University of Messina
Rector

Giovambattista DE SARRO

University "Magna Graecia"
of Catanzaro
Rector

Gabriele GALATERI DI GENOLA

IIT
President

Luigi NICOLAIS

Ministry of University and Research,
Research Policy Advisor
& Campania Digital Innovation Hub
President

Francesco PRIOLO

University of Catania
Rector

Francesco PROFUMO

FBK
President

Francesco SETTE

ESRF
General Director

Diederik Sybolt WIERSMA

INRIM
President

AIRI
Associazione Italiana per la Ricerca Industriale

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, universities, public research institutions, technology clusters and financial organizations. Due to its broad representative base, Airi is acknowledged as a key opinion leader in Technology forecasting and Research-policy design.

Airi publishes since 1995 the report "Key Technologies for the Italian Industry", on the basis of the work of more than two hundred R&D Managers, providing an analysis of the impacts of future innovations on key economical industrial sectors.

During its lifetime, Airi has built competences in Key Enabling Technologies and Nanotechnologies, Research and Innovation policies and strategies, sustainability and social responsibility, co-creation and open innovation practices, and the exploitation and dissemination of scientific knowledge.

Over the past 15 years Airi has been very active in participating in European, national and regional initiatives and cooperative projects on these themes, and organizing events on Key Enabling Technologies and their applications.

www.airi.it - www.nanotec.it

NanoItaly Association

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.

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 115,000 students, more than 3,300 professors and nearly as many administrative and technical staff, Sapienza represents a vast knowledge community, with more than 18,000 graduates per year.

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 80 PhD courses, over 200 professional courses and 120 Specialization Schools in Medicine and Health, run by 58 Departments, 2 Hospitals and 11 Faculties. There are 59 libraries and 21 museums, as well as comprehensive student services. The student body includes over 10,000 enrolled international 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. Sapienza has active partnerships with other universities in 86 countries and 1422 international cooperation agreements. 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. 21 disciplines ranked in the last Top 100 QS World University Ranking.

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 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 - SNN Lab

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

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

Sapienza Nanotechnology & Nanoscience LAB

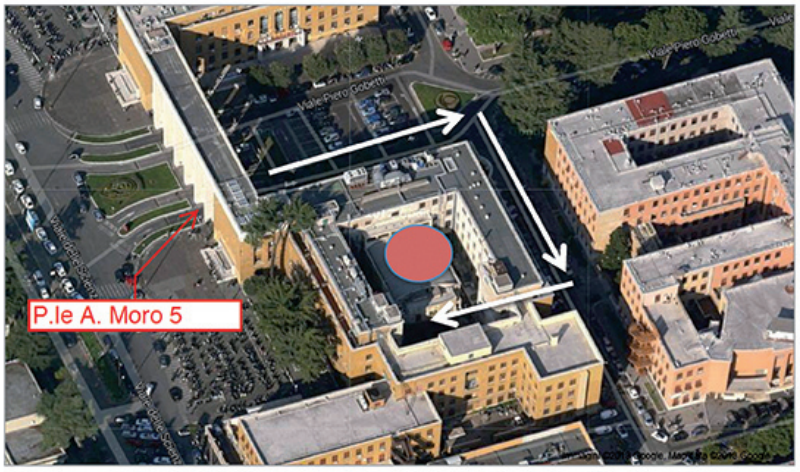
Center of Nanotechnology for Engineering of Sapienza

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.

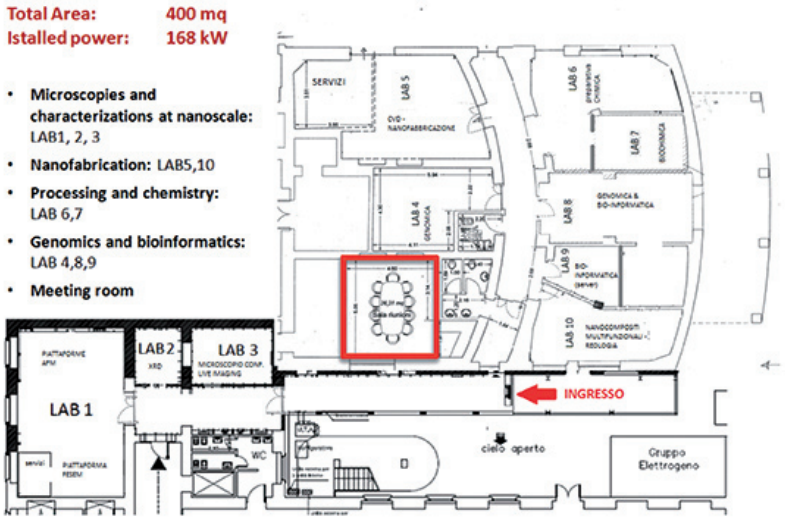
The SNN-Lab is finalized to:

- 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.



Total Area: 400 mq
Istalled power: 168 kW

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



The SNN-Lab has been realized also thanks to 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: Prof. Antonio d'Alessandro (antonio.dalessandro@uniroma1.it)
Contact person: Prof. Marco Rossi (marco.rossi@uniroma1.it)

Sapienza University of Rome

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/#

https://www.atomcenter.org

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

FUNDING INSTITUTIONS REGIONE LAZIO SAPIENZA UNIVERSITÀ DI ROMA

PROJECT PARTNERS SBAI CNR NANOTEC INSTITUTE OF NANOTECHNOLOGY CNIS CENTER OF NANOTECHNOLOGY FOR ENGINEERING OF SAPIENZA DIPARTIMENTO DI CHIMICA

NEST PRIZE

In collaboration with

NEST

SCUOLA NORMALE SUPERIORE

Sponsored by

NIPPON GASES
The Gas Professionals

Scuola Normale Superiore and Laboratorio NEST are proud to present at **NanoInnovation 2022** the NEST Prize for research in nanoscience, edition 2021. Sponsored by Nippon Gases, the purpose of the NEST Prize is to promote and recognize the activity of young scientists (less than 35 years old) working in Italy (not at NEST) 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 support (fees, travel and sojourn expenses) to attend the conference NanoInnovation where the prize is awarded and, finally, the opportunity to present the research activity of the winner.

During the award ceremony, the edition 2022 of the NEST Prize will be finally presented.

Networking Event

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 meaningful collaboration between NanoInnovation and APRE- Italian Agency for the Promotion of European Research - is renewed for the seventh consecutive year. On the 21st of September NanoInnovation 2022 conference will offer different chances for presenting your ideas and meeting 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 connections, exchanging information, and evaluating new opportunities of collaboration at all levels. A wide spectrum of businessmen, entrepreneurs, professors, researchers and innovators from all over the world 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 IN ATTENDANCE at the Faculty of Civil and Industrial Engineering, Sapienza University of Rome on the **21st 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: Serena Cheren (cheren@apre.it) and Serena Borgna (borgna@apre.it)

TOPICS

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

- INDUSTRY 4.0, ADDITIVE and 3D MANUFACTURING
- AGRI-FOOD
- CULTURAL HERITAGE and RESTORATION
- ELECTRONICS, MICRO and NANOSYSTEMS
- ENERGY & ENVIRONMENT
- HEALTH & NANOMEDICINE
- INNOVATIVE and SMART TEXTILES
- MICROSCOPY
- NANOSCALE CHARACTERIZATION, IMAGE ANALYSIS and MEASUREMENTS
- QUANTUM TECHNOLOGIES
- SOCIAL IMPACTS & ETHICS
- TRANSPORT, SPACE and 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 on https://nanoinnovation-2022.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 on https://nanoinnovation-2022.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
- Attend the Networking Event!

Break and visit of the exhibition area

Monday 19	Tuesday 20	Wednesday 21	Thursday 22	Friday 23
09:00 - 18:00	**09:00 - 11:00**	**09:00 - 10:30**	**09:00 - 10:30**	**09:00 - 10:30**
Guest Event **PHYSICS FOR SUSTAINABLE DEVELOPMENT** connected to the celebrations of the Centenary of the International Union of Pure and Applied Physics (IUPAP) and of the International Year of Basic Sciences for Sustainable Development (IYBSSD), proclaimed by UNESCO for the 2022.	Welcome Session & Opening Session on "PNRR Policies & Funding for an Italian system of Research Infrastructures"	Multi-track sessions Update trainings, Joint Events and Schools	Multi-track sessions Update trainings, Joint Events and Schools	Open innovation and Open science Multi-track sessions Update trainings, Joint Events and Schools
		10:30 - 10:50		
	11:00 - 11:30	**10:50 - 11:30** Parallel Lectures	**10:50 - 11:30** Parallel Lectures	**10:50 - 11:30** Parallel Lectures
	11:30 - 13:00	**11:30 - 13:00**	**11:30 - 13:00**	**11:30 - 13:00**
	Round table on "Open access Research Infrastructures for the Technology Transfer"	Multi-track sessions Update trainings, Joint Events and Schools	Multi-track sessions Update trainings, Joint Events and Schools	Open innovation and Open science Multi-track sessions Update trainings, Joint Events and Schools
	13:00 - 14:00			
	14:00 - 16:00	**14:00 - 15:30**	**14:00 - 15:30**	**14:00 - 15:30**
	Scientific Plenary Session "Advances in Technologies at the Nanoscale" NEST PRIZE Winner	Multi-track sessions Update trainings, Joint Events and Schools	Multi-track sessions Update trainings, Joint Events and Schools	Open innovation and Open science Multi-track sessions Update trainings, Joint Events and Schools
	16:00 - 16:20	**15:30 - 16:00**		
	16:20 - 18:00	**16:00 - 17:30**	**16:00 - 17:30**	**16:00 - 17:30**
	Scientific Plenary Session "Nanomaterials and Advanced systems for Health"	Multi-track sessions Update trainings, Joint Events and Schools	Multi-track sessions Update trainings, Joint Events and Schools	Open innovation and Open science Multi-track sessions Update trainings, Joint Events and Schools
	18:30 - 20:00	**18:30 - 20:00**	**18:30 - 20:00**	
	Social and Joint Events			
	09:30 - 18:00	**08:30 - 17:50**	**08:30 - 17:50**	**08:30 - 13:00**
	Guest Event ^{3}NANO 2022			

For the latest updates, please check the QRcode on the side

GUEST EVENT I

PHYSICS FOR SUSTAINABLE DEVELOPMENT

Chair: Guglielmo FORTUNATO, *CNR-IMM*

Co-organized with

Physics for Sustainable Development is a guest event connected to the celebrations of the Centenary of the International Union of Pure and Applied Physics (IUPAP) and of the International Year of Basic Sciences for Sustainable Development (IYBSSD), proclaimed by UNESCO for the 2022. Sustainability is getting mandatory for the continuing human development, where living conditions and resources are used to meet human needs without undermining the integrity and stability of the natural system. Sustainable Development is an interdisciplinary concept, including the Environmental, Health, Energy, Economic, and Socio-Cultural areas. In 2015 by the United Nations General Assembly (UN-GA) set up the Sustainable Development Goals (SDGs) or Global Goals, a collection of 17 interlinked global goals designed to be a "blueprint to achieve a better and more sustainable future for all" and intended to be achieved by the year 2030. Physics plays a key role in the achievement of the SGDs, in particular regarding the sustainability in the Environmental, Health and Energy areas. Among the specific themes that will be addressed by the speakers during the workshop are: biomedical technologies, green technologies, information technologies, smart cities, water conservation and wastewater, urban planning and transportation, renewable resources (solar, wind, geothermal), nuclear (fusion) energy.

09:00 - 09:30	Guglielmo FORTUNATO *Italian delegate, IUPAP & CNR-IMM* Michel SPIRO *President IUPAP* Stefano FANTONI *General Secretary for Administrative Affairs, IUPAP* Fabio SCIARRINO *Deputy Rector for Competitive Strategies for International Research, Sapienza University of Rome* **Welcome Greetings**
ENERGY	
Chair: Guglielmo FORTUNATO, *Italian delegate, IUPAP & CNR-IMM, Rome*	
09:30 - 10:00	Aldo DI CARLO, *CNR-ISM & University of Rome "Tor Vergata", Italy* **Halide Perovskite Photovoltaics**
10:00 - 10:30	Stefania PRIVITERA, *CNR-IMM, Italy* **Green Solar Fuels: Hydrogen and Ammonia**
10:30 - 11:00	Daniela FARINA, *CNR-ISTP, Italy* **Status and perspectives of controlled thermonuclear fusion research**

For the latest updates, please check the QRcode on the side

GUEST EVENT I

PHYSICS FOR SUSTAINABLE DEVELOPMENT

CLIMATE CHANGE AND NATURAL HAZARDS	
Chair: Pietro UBERTINI, *INAF, Rome*	
11:30 - 12:00	Angelo VULPIANI, *Sapienza University of Rome, Italy* **The Climate as Problem in Theoretical Physics**
12:00 - 12:30	Simona BORDONI, *University of Trento, Italy* **Future projections of regional climate change: challenges and perspectives**
12:30 - 13:00	Roberto BATTISTON, *University of Trento, Italy* **Satellite constellations observatories for geohazards monitoring and early warning applications**

MICROELECTRONICS, PHOTONICS AND INFORMATION TECHNOLOGIES	
Chairs: Raffaella CALARCO, *CNR-IMM, Rome* & Matteo CIRILLO, *Univ. of Rome Tor Vergata, Rome*	
14:00 - 14:30	Fabrizio ROCCAFORTE, *CNR-IMM, Italy* **Sustainability with energy efficient wide band gap semiconductors power devices**
14:30 - 15:00	Valeria BRAGAGLIA, *IBM Research Europe-Zurich, Switzerland* **Brain Inspired Computing for the post Von-Neumann Era**
15:00 - 15:30	Oleg MUKHANOV, *SEEQC, USA* **Highly Energy-Efficient Superconducting Quantum and Classical Information Processing**
15:30 - 16:00	Hugo THIENPONT, *Vrije University Brussel, Belgium* **Photonics as a Sustainable technology and the Innovation Perspectives Offered by PhotonHub and ACTPHAST4R for Researchers and Enterprises**

NEW MATERIALS FOR SUSTAINABLE DEVELOPMENT	
Chair: Elisabetta AGOSTINELLI, *CNR-ISM, Rome*	
16:30 - 17:00	Oliver GUTFLEISCH, *TU Darmstadt, Germany* **The Energy transition is a material transition**
17:00 - 17:30	Federico ROSEI, *INRS, Canada* **Sustainable Development: A contradiction in terms?**
17:30 - 18:00	Giuliana IMPELLIZZERI, *CNR-IMM, Italy* **Selective removal of pharmaceuticals from water by nanomaterials for a sustainable development**

20 SEPT MORNING

For the latest updates, please check the QRcode on the side

09:00 - 11:30

WELCOME SESSION

Chair: **Maria Sabrina SARTO**, *Sapienza University of Rome, Deputy Rectress for Research*

Greetings

PS.I.1	**Antonella POLIMENI**, *Sapienza University of Rome, Rectress*
PS.I.2	**Paolo ORNELI**, *Lazio Region, Councilor for Economic Development, Commerce and Handicraft, University, Research, Start-Up and Innovation*
PS.I.3	**Silvio BRUSAFERRO**, *ISS President*
PS.I.4	**Gilberto DIALUCE,** *ENEA, President*
PS.I.5	**Antonio D'ANDREA**, *Sapienza University of Rome, Faculty of Civil and Industrial Engineering, Dean*

OPENING SESSION
PNRR Funding, Infrastructures and Innovation policies: an opportunity for an advanced Italian system of Research

Chair: **Maria Sabrina SARTO**, *Sapienza University of Rome, Deputy Rectress for Research*

PS.II.1	**Luigi NICOLAIS,** *University of Naples Federico II, Professor Emeritus* PNRR Policies and Funding for an Italian System of Research
PS.II.2	**Maria Chiara CARROZZA**, *CNR, President*
PS.II.3	**Gianmarco MONTANARI**, *IIT, General Director*
PS.II.4	**Pierluigi CAMPANA,** *INFN, Member of the Executive Board, INFN and PNRR Projects for research Infrastructures*
PS.II.5	**Giorgio GRADITI,** *ENEA, Dept. Energy Technologies and Renewable Energy Sources, Director* ENEA projects, initiatives and activities within PNRR
PS.II.6	**Giorgio ROSSI**, *University of Milan, Coordinator of NFFA-Europe/NEP* Open Science at the Research Infrastructures: supplying FAIR data for the EOSC
PS.II.7	**Corrado PERNA,** *INAF, Chief Policy Officer* PNRR and research: an opportunity to structure a national engagement policy towards a global ecosystem of research
PS.II.8	**Luca MEINI,** *ENEL, Head of Sustainability Initiatives and Circular Economy* Energy transition and circular economy in the perspective of innovation
PS.II.9	**Davide DAMOSSO,** *Environment Park Turin, Chief Operating Officer* The role of the Technology Park in the energy and ecological transition
PS.II.10	**Francesco MATTEUCCI,** *European Innovation Council and SMEs Executive Agency (EISMEA), Programme Manager* European Innovation Council experiences in facilitating deeptech innovation through promoting know-how transfer

For the latest updates, please check the QRcode on the side

11:45 - 13:00

ROUND TABLE

OPEN ACCESS RESEARCH INFRASTRUCTURES FOR THE TECHNOLOGY TRANSFER

Coordinators:
Vittorio MORANDI, *IMM-CNR* and Marco ROSSI, *Sapienza University of Rome*

Moderators:
Francesco MATTEUCCI, *European Innovation Council and SMEs Executive Agency (EISMEA)*

In recent years, the role of research infrastructures as providers of high-level instrumentation and highly specialized skill has strongly increased owing to the need of optimum management of extremely expensive instrumentation of high complexity. The corresponding modification in the management of the research activity where the laboratory results have to be integrated with experiments carried out in large research infrastructures of public access poses, besides new opportunities, also new and often unexplored problems.

The interaction among different structures has to be optimized as well as the interaction among different research teams, the intellectual property has to be managed as well as the time and access modes. Even more complex is the building up of delocalized research infrastructures organized as a network of independent laboratories. Moreover, the recently funded initiatives, both in the framework of Research Infrastructures and of Technological Infrastructures for Innovation, within the Next Generation EU Plan (PNRR) have strongly boosted the investments in Italy in this field. It is mandatory to frame these new initiatives within the broader framework of all national initiatives in a coordinated and inclusive scheme of synergy, management, best-practices sharing and governance.

The Round Table has the aim of opening a dialogue among all the players involved in setting up, management and operation of research infrastructures and potentially interested in the use of infrastructures, providing them with information on both technological and organizational-managerial characteristics for the realization of a network of research infrastructures, while collecting opinions and suggestions on the optimum management approach.

The themes on the table span from the needs in terms of operative structure, operator skills, to the instrument characteristics and their evolution strategy.

We expect to stimulate in this way, further interests of operators thanks to a greater awareness of the potential offered by individual infrastructures and their integration.

The Round Table starts with the panelists listed below, being participation open and free upon online registration. For those interested to be included in the list of panelists, please, send the request to the chairs Vittorio Morandi (morandi@bo.imm.cnr.it) and Marco Rossi (marco.rossi@uniroma1.it)

Panelists	
Marco ALVISI	**CETMA,** *Director*
Pietro ASINARI	**INRIM,** *Scientific Director*
Andrea BECCARI	**Lazio Region,** *Dept. for Economic Development, Commerce and Handicraft, University, Research, Start-Up and Innovation*
Roberto BEZ	**Micron Technology,** *Italy Country Manager*
Pierluigi CAMPANA	**INFN,** *Member of the Executive Board*
Ennio CAPRIA	**ESRF, Grenoble,** *Director of the Platform for Advanced Characterisation of Grenoble*
Alberto CREDI	**University of Bologna,** *Deputy Rector for Research*
Marco CRESCENZI	**ISS,** *Director of the Technical Scientific Service Large Instrumentation and Core Facilities*
Davide DAMOSSO	**Environment Park Turin**, *DS*
Marziale FEUDALE	**Thales Alenia Space Italy (TASI),** *Technology Responsible*
Pierpaolo GAMBINI	**Leonardo Company,** *SVP Innovation and IP*
Pietro GIMONDO	**BU INDUSTRY – RINA,** *Head of Directorate R&I and Tenders*
Giorgio GRADITI	**ENEA,** *Dept. Energy Technologies and Renewable Energy Sources, Director*
Vito LAMBERTINI	**STELLANTIS,** *Materials Sustainability Engineering – South Europe Material Manager*
Giulio LAMEDICA	**ZEISS,** *Head of Research Microscopy Solutions*
Nello LI PIRA	**STELLANTIS,** *Materials Sustainability Engineering - Global Materials R&I*
Francesco MATTEUCCI	**European Innovation Council and SMEs Executive Agency (EISMEA),** *Programme Manager*
Luca MEINI	**ENEL,** *Head of Sustainability Initiatives and Circular Economy*
Edoardo MOLA	**PRAXI Intellectual Property,** *CEO*
Gianmarco MONTANARI	**IIT,** *General Director*
Luigi NICOLAIS	**University of Naples Federico II,** *Professor Emeritus*
Corrado PERNA	**INAF,** *Institutional and Industrial Policies and Relations Responsible*
Maria Sabrina SARTO	**Sapienza University of Rome,** *Deputy Rectress for Research*
Corrado SPINELLA	**CNR CNR-DSFTM,** *Director*
Francesca VERGA	**Polytechnic University of Turin,** *Director of Competence Center SEASTAR*
Sabrina ZUCCALA'	**4ward360°** *President*

14:00 - 15:40

SCIENTIFIC PLENARY SESSION Advances in Technologies at the Nanoscale	
Chair: Willa APPEL, *New York Structural Biology Center, Executive Director*	
PS.III.1	Mauro FERRARI, *BrYet Pharma & University of Washington, USA* **Transport OncoPhysics-based Cancer Therapeutics**
PS.III.2	Gianluigi CASSE, *University of Liverpool, UK* **Nano-fab for Quantum Technology**
PS.III.3	Beatrice VALLONE, *Sapienza University of Rome* **The power of seeing: how CryoEM is bringing a revolution in engineering biological matter at the molecular level**

15:40 - 16:00

Announcement of the NEST PRIZE Winner	
Chair: Pasqualantonio PINGUE, *Scuola Normale Superiore*	
PS.IV	Pasqualantonio PINGUE, *Scuola Normale Superiore* **Introduction**
	Proclamation
	Scientific contribution of the winner
	Conclusion and 'arrivederci' to the next NanoInnovation 2023

16:20 - 18:00

SCIENTIFIC PLENARY SESSION Nanomaterials and Advanced systems for Health	
Chair:Andrzej SIKORA, *Wrocław University of Science and Technology, Poland*	
PS.V.1	Pietro Aleardo SICILIANO, *CNR-IMM, Lecce* **Digital Solution for Active, Healthy and Smart Life**
PS.V.2	Diego MANTOVANI, *Laval University, Québec, Canada* **Nano-Structured Coatings for the Next Generation of Health Therapies**
PS.V.3	Sabrina CONOCI, *University of Messina* **Nano and Bio-structured Systems as a New Frontier of Diagnostic Devices**
WELCOME COCKTAIL	

For the latest updates, please check the QRcode on the side

TT.I

09:00 - 10:30

TT.I.A **WS.I.1**	**Hydrogen as an energy vector for the future mobility** *Co-organized with Polytechnic University of Turin, IIT Center for Sustainable Future Technologies - CSFT@POLITO and ENEA* Chair: Marzia QUAGLIO, *Polytechnic University of Turin* *The symposium is part of the workshop WS.I*
TT.I.B **WS.II.1**	**Extracellular vesicles: The new era of the intercellular communication - Isolation and characterization of EVs** *Co-organized with Sapienza University of Rome* Chairs: Luciana DINI, *Sapienza University of Rome* & Stefano TACCONI, *Sapienza University of Rome & NanoShare Srl* *The symposium is part of the workshop WS.II*
TT.I.C	**The contribution of GaN4AP project for power conversion in smart mobility and energy consumption** *Co-organized with Distretto Tecnologico Sicilia Micro e Nano Sistemi* Chair: Leoluca LIGGIO, *GaN4AP & Distretto Tecnologico Sicilia Micro e Nano Sistemi*
TT.I.D **SE.I.1**	**Targeted therapy: the importance of specificity- based therapy** *Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome* Chair: Mauro FERRARI, *BrYet Pharma & University of Washington, USA* *The symposium is part of the special event SE.I*
TT.I.E **WS.III.1**	**Innovative approaches in UNMET clinical needs for maximum health care impact - Part 1** *Co-organized with Don Gnocchi Foundation, University of Modena and Reggio Emilia and University Magna Graecia of Catanzaro* Chairs: Marzia BEDONI, *Don Gnocchi Foundation*, Giovanni TOSI, *University of Modena and Reggio Emilia* & Donatella PAOLINO, *University Magna Graecia of Catanzaro* *The symposium is part of the workshop WS.III*

For the latest updates, please check the QRcode on the side

11:30 - 13:00

TT.II

TT.II.A **WS.I.2**	**The role of Hydrogen for the future energy system** *Co-organized with Polytechnic University of Turin, IIT Center for Sustainable Future Technologies - CSFT@POLITO and ENEA* Chair: Elena TRESSO, *Polytechnic University of Turin* *The symposium is part of the workshop WS.I*
TT.II.B **WS.II.2**	**Extracellular vesicles: The new era of the intercellular communication - EVs in diseases** *Co-organized with Sapienza University of Rome* Chairs: Anna Maria GIUDETTI, *University of Salento* & Stefania MESCHINI, *ISS* *The symposium is part of the workshop WS.II*
TT.II.C	**Towards accelerated design of materials for energy** *Co-organized with ENEA* Chairs: Francesco BUONOCORE & Massimo CELINO, *ENEA*
TT.II.D **SE.I.2**	**OMIC technologies: a useful tool in advanced medicine** *Co-organized with University Magna Graecia of Catanzaro and Sapienza University of Rome* Chair: Gianni CUDA, *University Magna Graecia of Catanzaro* *The symposium is part of the special event SE.I*
TT.II.E **WS.III.2**	**Innovative approaches in UNMET clinical needs for maximum health care impact - Part 2** *Co-organized with Don Gnocchi Foundation, University of Modena and Reggio Emilia and University Magna Graecia of Catanzaro* Chairs: Marzia BEDONI, *Don Gnocchi Foundation,* Giovanni TOSI, *University of Modena and Reggio Emilia* & Donatella PAOLINO, *University Magna Graecia of Catanzaro* *The symposium is part of the workshop WS.III*

For the latest updates, please check the QRcode on the side

TT.III

14:00 - 15:30

TT.III.A **WS.I.3**	**Batteries of the future: new generation of scientists sharing innovative ideas - Part 1** *Co-organized with ENEA and Polytechnic University of Turin* Chair: Margherita MORENO, *ENEA* *The symposium is part of the workshop WS.I*
TT.III.B **WS.II.3**	**Extracellular vesicles: The new era of the intercellular communication - PhD- derived EVs: implementing communication** *Co-organized with EVIta & Sapienza University of Rome* Chairs: Annalisa RADEGHIERI, *University of Brescia* & Massimo BOTTINI, *University of Rome Tor Vergata* *The symposium is part of the workshop WS.II*
TT.III.C **WS.IV.1**	**Beyond state of the art, through Safe and Sustainable Development approaches for materials development - Practical implementation of Safe and Sustainable by Design approaches in applied and industrial research** *Co-organized with AIRI, ISS, FBK, INAIL and Gov4Nano project* Chairs: Andrea PORCARI, *AIRI & Gov4Nano* and Lorenzo CALABRI, *Art-er & Sbd4Nano* *The symposium is part of the workshop WS.IV*
TT.III.D **SE.I.3**	**3D bioprinting for translational and personalized medicine** *Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome* Chair: Francesco PUOCI, *University of Calabria* *The symposium is part of the special event SE.I*
TT.III.E **WS.III.3**	**Innovative approaches in UNMET clinical needs for maximum health care impact - Part 3** *Co-organized with Don Gnocchi Foundation, University of Modena and Reggio Emilia and University Magna Graecia of Catanzaro* Chairs: Marzia BEDONI, *Don Gnocchi Foundation*, Giovanni TOSI, *University of Modena and Reggio Emilia* & Donatella PAOLINO, *University Magna Graecia of Catanzaro* *The symposium is part of the workshop WS.III*

For the latest updates, please check the QRcode on the side

16:00 - 17:30

TT.IV

TT.IV.A **WS.I.4**	**Batteries of the future: new generation of scientists sharing innovative ideas - Part 2** *Co-organized with ENEA and Polytechnic University of Turin* Chair: Margherita MORENO, *ENEA* *The symposium is part of the workshop WS.I*
TT.IV.B	**Wearable Devices: The New Frontier of Medical Care** *Co-organized with Distretto Tecnologico Sicilia Micro e Nano Sistemi* Chairs: Sabrina CONOCI, *University of Messina* & Pietro Aleardo SICILIANO, *CNR-IMM, Lecce*
TT.IV.C **WS.IV.2**	**Beyond state of the art, through Safe and Sustainable Development approaches for materials development - Strategies, frameworks and criteria for Safe and Sustainable Development** *Co-organized with AIRI, ISS, FBK, INAIL and Gov4Nano project* Chair: Isabella DE ANGELIS, *ISS* *The symposium is part of the workshop WS.IV*
TT.IV.D **SE.I.4**	**The many ways to myocardial regeneration** *Co-organized with University Magna Graecia of Catanzaro and Sapienza University of Rome* Chair: Konrad URBANEK, *University Magna Graecia of Catanzaro* *The symposium is part of the special event SE.I*
TT.IV.E	**Infrared microscopy with nanometric spatial resolution** *Co-organized with Sapienza University of Rome* Chair: Stefano LUPI, *Sapienza University of Rome*

For the latest updates, please check the QRcode on the side

TT.V

09:00 - 10:30

TT.V.A **WS.I.5**	**Nanomaterials and Nanotechnology for the virtuous CO_2 circle - Part 1** *Co-organized with Polytechnic University of Turin, IIT Center for Sustainable Future Technologies - CSFT@POLITO and ENEA* Chair: Adriano SACCO, *IIT Center for Sustainable Future Technologies - CSFT@POLITO* *The symposium is part of the workshop WS.I*
TT.V.B	**ARTES4.0@SNS: the competences of the Macronode Scuola Normale Superiore in the field I4.0** *Co-organized with Scuola Normale Superiore* Chair: Pasqualantonio PINGUE, *Scuola Normale Superiore*
TT.V.C **WS.V.1**	**Organic transistors-based biosensors** *Co-organized with Polytechnic University of Turin and CNR-IMEM* Chairs: Matteo COCUZZA, *Polytechnic University of Turin* & Simone MARASSO, *CNR-IMEM* *The symposium is part of the workshop WS.V*
TT.V.D **SE.I.6**	**Extracellular vesicles: a new tool in personalized medicine** *Co-organized with University Magna Graecia of Catanzaro and Sapienza University of Rome* Chair: Christian CELIA, *The 'Gabriele d'Annunzio' University, Chieti-Pescara* *The symposium is part of the special event SE.I*
TT.V.E	**Organoid Experiment Analysis: From Image to Numerical Results** *Co-organized with ZEISS* Chair: Francesco BIANCARDI, *ZEISS*
TT.V.F **WS.VI.1**	**New products or manufacturing process development** *Co-organized with University for Innovation Foundation (U4I)* Chair: Hermes GIBERTI, *University of Pavia* *The symposium is part of the workshop WS.VI*
TT.V.G **SE.II.1**	**Emerging and advanced techologies in Electronics - Part 1** *Co-organized with Sapienza University of Rome and CNR-IMM* Chair: Roberto BEZ, *Micron* *The symposium is part of the special event SE.II*

For the latest updates, please check the QRcode on the side

11:30 - 13:00

TT.VI

TT.VI.A **WS.I.6**	**Nanomaterials and Nanotechnology for the virtuous CO_2 circle - Part 2** *Co-organized with Polytechnic University of Turin, IIT Center for Sustainable Future Technologies - CSFT@POLITO and ENEA* Chair: Michele RE FIORENTIN, *IIT Center for Sustainable Future Technologies - CSFT@POLITO* *The symposium is part of the workshop WS.I*
TT.VI.B	**Nano-based drug delivery systems: recent developments and preclinical studies for biomedical applications** *Co-organized with ISS* Chairs: Marisa COLONE & Maria CONDELLO, *ISS*
TT.VI.C **WS.V.2**	**SERS and Nanophotonics** *Co-organized with Polytechnic University of Turin* Chairs: Laura FABRIS & Enzo DI FABRIZIO, *Polytechnic University of Turin* *The symposium is part of the workshop WS.V*
TT.VI.D **SE.I.7**	**Theranostic nanomedicine: current challenges and future perspectives** *Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome* Chair: Emanuela CRAPARO, *University of Palermo* *The symposium is part of the special event SE.I*
TT.VI.E	**Novel nanomaterials for restoration of artworks: from the lab to the bench** *Co-organized with CSGI* Chair: Rodorico GIORGI, *CSGI & University of Florence*
TT.VI.F **SE.II.2**	**IPCEI Microelectronics initiative: Tech solutions for the digital transformation, IoT and Industry 4.0** *Co-organized with AIRI, FBK and STMicroelectronics* Chairs: Andrea PORCARI, *AIRI* & Cosimo MUSCA, *STMicroelectronics* *The symposium is part of the special event SE.II*

For the latest updates, please check the QRcode on the side

TT.VII

14:00 - 15:30

TT.VII.A **WS.I.7**	**Advances in the field of carbon capture and storage technologies** *Co-organized with Polytechnic University of Turin, IIT Center for Sustainable Future Technologies - CSFT@POLITO and ENEA* Chair: Stefano STENDARDO, *ENEA* *The symposium is part of the workshop WS.I*
TT.VII.B	**A SWOT approach to Green Energy Innovation - Part 1** *Co-organized with the European Innovation Council* Chairs: Roberto GIANNANTONIO, *Klopman International Srl* & Francesco MATTEUCCI, *European Innovation Council (EISMEA)*
TT.VII.C	**Energy and charge transfer on surfaces and nanostructures - Part 1** *Co-organized with University of Reggio Calabria & ENEA* Chairs: Giuliana FAGGIO & Giacomo MESSINA, *University of Reggio Calabria* and Nicola LISI, *ENEA*
TT.VII.D **SE.I.8**	**Synthesis of heterogeneous materials** *Co-organized with University Magna Graecia of Catanzaro and Sapienza University of Rome* Chair: Marta FEROCI, *Sapienza University of Rome* *The symposium is part of the special event SE.I*
TT.VII.E	**From artificial intelligence research to new scientific discoveries in biomedicine and vice versa** *Co-organized with ISS* Chairs: Marco CRESCENZI & Irene RUSPANTINI, *ISS*
TT.VII.F **WS.VI.2**	**New technological applications** *Co-organized with University for Innovation Foundation (U4I)* Chair: Francesco PERI, *University of Milano Bicocca* *The symposium is part of the workshop WS.VI*
TT.VII.G **SE.II.3**	**Industrial strategies and research policies toward Electronics Technology** *Co-organized with Sapienza University of Rome and CNR-IMM* Chair: Marco Balucani, *Sapienza University of Rome* *The symposium is part of the special event SE.II*
TT.VII.H	**Key Enabling Technologies for the protection of cultural heritage: from earthquakes to big data - Part 1** *Co-organized with CdE DTC Lazio* Chair: Mariangela CESTELLI GUIDI, *INFN*

For the latest updates, please check the QRcode on the side

16:00 - 17:30

TT.VIII

TT.VIII.A **WS.I.8**	**The role of circular carbon for the future energy system** *Co-organized with Polytechnic University of Turin, IIT Center for Sustainable Future Technologies - CSFT @ POLITO and ENEA* Chair: Stefano STENDARDO, *ENEA* *The symposium is part of the workshop WS.I*
TT.VIII.B	**A SWOT approach to Green Energy Innovation - Part 2** *Co-organized with the European Innovation Council* Chairs: Roberto GIANNANTONIO, *Klopman International Srl* & Francesco MATTEUCCI, *European Innovation Council (EISMEA)*
TT.VIII.C	**Energy and charge transfer on surfaces and nanostructures - Part 2** *Co-organized with University of Reggio Calabria & ENEA* Chairs: Giuliana FAGGIO, Giacomo MESSINA, *University of Reggio Calabria and Nicola LISI, ENEA*
TT.VIII.D **SE.I.9**	**Polymers & Nanosystems** *Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome* Chair: Daniela DE VITA, *Sapienza University of Rome* *The symposium is part of the special event SE.I*
TT.VIII.E **WS.VI.3**	**Development of new monitoring service** *Co-organized with University for Innovation Foundation (U4I)* Chair: Giuseppe ROSACE, *University of Bergamo* *The symposium is part of the workshop WS.VI*
TT.VIII.F	**Key Enabling Technologies for the protection of cultural heritage: from earthquakes to big data - Part 2** *Co-organized with CdE DTC Lazio* Chair: Mariangela CESTELLI GUIDI, *INFN*
TT.VIII.G **SE.II.4**	**Emerging and advanced techologies in Electronics - Part 2** *Co-organized with Sapienza University of Rome* Chair: Fabrizio FAMÀ, *YOURgroup* *The symposium is part of the special event SE.II*

For the latest updates, please check the QRcode on the side

TT.IX

09:00 - 10:30

TT.IX.A **WS.VII.1**	**Nanotechnology-based Innovative Approaches in Agriculture - Part 1** *Co-organized with University of Tuscia, Udine and ISS* Chair: Guido FELLET, *University of Udine* *The symposium is part of the workshop WS.VII*
TT.IX.B	**3D printing for advanced healthcare: from life sciences to innovative materials - Part 1** *Co-organized with Polytechnic University of Turin* Chairs: Francesca FRASCELLA, Lucia NAPIONE & Ignazio ROPPOLO, *Polytechnic University of Turin*
TT.IX.C **WS.VIII.1**	**Advances in electronic components: Unconventional radiation hardness characterisation and novel detectors** *Co-organized with ASI & ESRF* Chair: Marco DI CLEMENTE, *ASI* *The symposium is part of the workshop WS.VIII*
TT.IX.D **SE.I.11**	**Carbon based nanomaterials** *Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome* Chair: Antonella MESSORE, *Sapienza University of Rome* *The symposium is part of the special event SE.I*
TT.IX.E	**Quantum Metrology and Technologies - Part 1** *Co-organized with INRIM* Chairs: Luca BOARINO & Natascia DE LEO, *INRIM*
TT.IX.F	**Nanomedicine: what can European initiatives do to accelerate your clinical development?** *Co-organized with the European Technology Platform on Nanomedicine (ETPN)* Chair: Alexandre CECCALDI, *ETPN*

For the latest updates, please check the QRcode on the side

11:30 - 13:00

TT.X

TT.X.A **WS.VII.2**	**Nanotechnology-based Innovative Approaches in Agriculture - Part 2** *Co-organized with University of Tuscia, Udine and ISS* Chair: Guido FELLET, *University of Udine* *The symposium is part of the workshop WS.VII*
TT.X.B	**EELISA@SNS** *Co-organized with Scuola Normale Superiore* Chair: Pasqualantonio PINGUE, *Scuola Normale Superiore*
TT.X.C **WS.VIII.2**	**Advances in manufacturing, materials and characterisation** *Co-organized with ASI & ESRF* Chair: Marco SEBASTIANI, *Roma Tre University* *The symposium is part of the workshop WS.VIII*
TT.X.D **SE.I.12**	**Multiscale & multitechniques for Characterization** *Co-organized with Univ. Magna Graecia of Catanzaro & Sapienza Univ. of Rome* Chair: Francesca Anna SCARAMUZZO, *Sapienza University of Rome* *The symposium is part of the special event SE.I*
TT.X.E	**Quantum Metrology and Technologies - Part 2** *Co-organized with INRIM* Chairs: Luca BOARINO & Natascia DE LEO, *INRIM*
TT.X.F	**3D printing for advanced healthcare: from life sciences to innovative materials - Part 2** *Co-organized with Polytechnic University of Turin* Chairs: Francesca FRASCELLA, Lucia NAPIONE & Ignazio ROPPOLO, *Polytechnic University of Turin*

14:00 - 15:30

TT.XI

TT.XI.A **SE.I.13**	**Energy production & storage** *Co-organized with Univ. Magna Graecia of Catanzaro & Sapienza Univ. of Rome* Chair: Leonardo MATTIELLO, *Sapienza University of Rome* *The symposium is part of the special event SE.I*

I.A Hydrogen as an energy vector for the future mobility

Co-organized with Polytechnic University of Turin, IIT Center for Sustainable Future Technologies - CSFT@POLITO and ENEA
Chair: Marzia QUAGLIO, *Polytechnic University of Turin*

The symposium is part of the workshop WS.I

I.A.1 Mauro SGROI, *(currently at Stellantis)*
Integrating hydrogen and batteries for future transport: an industrial point of view

I.A.2 Romualdo RUOTOLO, *PUNCH Hydrocells*
The Hydrogen Engine as Enabler to Decarbonize Mobility

I.A.3 Alessandro IANNOTTA, *API Group*
Development of hydrogen infrastructures in Italy: IP point of view on transport mobility

I.A.4 Carlo SANTORO, *University of Milano Bicocca*
Platinum group metal-free electrocatalysts derived from wastes for fuel cells and electrolyzers

I.B Extracellular vesicles: The new era of the intercellular communication - Isolation and characterization of EVs

Co-organized with Sapienza University of Rome
Chairs: Luciana DINI, *Sapienza University of Rome* & Stefano TACCONI, *Sapienza University of Rome & NanoShare Srl*

The symposium is part of the workshop WS.II

I.B.1 Rienk NIEUWLAND, *Amsterdam UMC - University Medical Center, The Netherland*
A roadmap to improve the reproducibility of extracellular vesicle research

I.B.2 Simone DINARELLI, *CNR-ISM*
High resolution atomic force microscopy as a tool for topographical mapping of surface budding

I.B.3 Piero DEL BOCCIO, *The 'Gabriele d'Annunzio' University, Chieti-Pescara*
Proteomics characterization of FACS-sorted Extracellular Vesicles sub-types as liquid biopsy: new challenges in biomarkers discovery

I.B.4 Stefano TACCONI, *Sapienza University of Rome & NanoShare Srl*
Bovine milk-derived Extracellular Vesicles as new drug delivery system for bioactive compounds

I.C The contribution of GaN4AP project for power conversion in smart mobility and energy consumption

Co-organized with Distretto Tecnologico Sicilia Micro e Nano Sistemi
Chair: Leoluca LIGGIO, *GaN4AP & Distretto Tecnologico Sicilia Micro e Nano Sistemi*

I.C.1 Leoluca LIGGIO, *Coordinator of the European Project "GaN4AP" & Distretto Tecnologico Sicilia Micro e Nano Sistemi*
Introduction to the GaN4AP project: a broad partnership for an European leadership in components and systems based on gallium nitride (GaN)

I.C.2 Gaudenzio MENEGHESSO, *University of Padova & IUNET*
GaN_4AP: a project that looks at the energy efficiency and energy saving

I.C.3 Radoslava MITOVA, *Schneider Electric, France*
GAN4AP project: Schneider electric involvement

I.C.4 Gregorio IUZZOLINO, *Advanced Techno Solutions Srl*
GaN based devices in the electric vehicle world

I.D Targeted therapy: the importance of specificity- based therapy

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chair: Mauro FERRARI, *BrYet Pharma & University of Washington, USA*

The symposium is part of the special event SE.I

I.D.1 ***Introductive Keynote***
Tambet TEESALU, *University of Tartu. Estonia*
Precision systemic targeting of nanoparticles with homing peptides

I.D.2 Nicola D'AVANZO, *The 'Gabriele d'Annunzio' University, Chieti-Pescara*
RPAR-conjugated nanovesicles for the potential targeting of prostate cancer

I.D.3 Ilaria OTTONELLI, *University of Modena & Reggio Emilia*
Hybrid nanomedicines for the central nervous system: optimization, targeting, and scale up

I.D.4 Luca CERRI, *University of Siena*
Camouflaged SEDDS for the active targeting of Inula Viscosa extract for the treatment of metastatic melanoma

I.D.5 Francesco PATITUCCI, *University of Calabria*
Molecularly Imprinted Polymers as carriers for Mannose-targeting of anticancer-drug

I.E Innovative approaches in UNMET clinical needs for maximum health care impact - Part 1

Co-organized with Don Gnocchi Foundation, University of Modena and Reggio Emilia and University Magna Graecia of Catanzaro
Chairs: Marzia BEDONI, *Don Gnocchi Foundation,* Giovanni TOSI, *University of Modena and Reggio Emilia* & Donatella PAOLINO, *University Magna Graecia of Catanzaro*

The symposium is part of the workshop WS.III

I.E.1 Jason Thomas DUSKEY, *University of Modena & Reggio Emilia*
Targeted Nanomedicines for Cancer Therapy: More than Just Crossing the BBB

I.E.2 Fabio BISCARINI, *IIT & University of Modena & Reggio Emilia*
Organic Bioelectronics Multiscale Sensing: state-of—the-art and issues

I.E.3 Francesca RE, *University of Milano Bicocca*
Implantable hydrogel design for nanoparticles release useful for glioblastoma treatment

I.E.4 Matteo SANTIN, *Director of the Centre for Regenerative Medicine and Devices, School of Applied Sciences, University of Brighton, UK*
Technological and regulatory pathways to accelerate the adoption of nano-diagnostics and nano-medicines in clinics

II.A The role of Hydrogen for the future energy system

Co-organized with Polytechnic University of Turin, IIT Center for Sustainable Future Technologies - CSFT@POLITO and ENEA
Chair: Elena TRESSO, *Polytechnic University of Turin*

The symposium is part of the workshop WS.I

II.A.1 Cristina MAGGI, *H2IT*
Ambitions, scenarios and opportunities of using hydrogen for the energy transition

II.A.2 Giorgio GIGLIO, *Polytechnic University of Turin*
Underground Hydrogen Storage (UHS): A new opportunity for Energy Transition

II.A.3 Patrick SCILABRA, *De Nora Group*
Role of Water Electrolysis in the Energy Transition

II.A.4 Stefano CAON, *Piedmont Region*
The Piemonte hydrogen strategy: building a regional path for decarbonization and innovation

II.B Extracellular vesicles: The new era of the intercellular communication - EVs in diseases

Co-organized with Sapienza University of Rome
Chairs: Anna Maria GIUDETTI, *University of Salento* & Stefania MESCHINI, *ISS*

The symposium is part of the workshop WS.II

II.B.1 Maria FIANI, *ISS*
Metabolically labeled exosomes for biogenesis and functional studies

II.B.2 Anna Maria GIUDETTI, *University of Salento*
Insulin-resistant M2-CD163⁺ macrophages release extracellular vesicles affecting lipid metabolism in muscle cells

II.B.3 Flora GUERRA, *University of Salento*
Extracellular vesicle secretion promotes cisplatin chemoresistance in a context of late endocytic impairment

II.B.4 Alberto DIASPRO, *University of Genoa*
The era of the intelligent optical microscope towards extracellular vesicles visualization

II.C Towards accelerated design of materials for energy

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

II.C.1 Aldo DI CARLO, *CNR-ISM, Rome & CHOSE - Centre for Hybrid and Organic Solar Energy, University of Rome Tor Vergata*
The impact of two-dimensional materials in perovskite photovoltaics: from lab cells to solar farm

II.C.2 Francesco BUONOCORE, *ENEA Centro Ricerche Casaccia Roma*
Atomistic design of layered cathode materials for Na-Ion Batteries

II.C.3 Claudio RONCHETTI, *ENEA Centro Ricerche Casaccia Roma*
Artificial Intelligence for materials

II.C.4 Giovanni ABAGNALE, *RSE*
Application for Estimating Photovoltaic Material Parameters

II.D OMIC technologies: a useful tool in advanced medicine

Co-organized with University Magna Graecia of Catanzaro and Sapienza University of Rome
Chair: Gianni CUDA, *University Magna Graecia of Catanzaro*

The symposium is part of the special event SE.I

II.D.1 ***Introductive Keynote***
Luana LICATA, *Human Technopole Foundation & Univ. of Rome Tor Vergata*
Omics Technologies, Data and Bioinformatics Resources

II.D.2 Licia E. PRESTAGIACOMO, *University Magna Graecia of Catanzaro*
Data- Independent Analysis of EPS-urine coupled to Machine Learning: a predictive model for prostate cancer

II.D.3 Maria Stella MURFUNI, *University Magna Graecia of Catanzaro*
Interactome Analysis of Lin28a by Proteomics approach

II.D.4 Miriam GAGGIANESI, *University of Palermo*
Cancer stem cells (CSCs) in the -Omics era

II.D.5 Gabriele VELLA, *TRINITY College Dublin, Ireland*
ExtraCellular Vesicles applications: inherently -omics based

II.E Innovative approaches in UNMET clinical needs for maximum health care impact - Part 2

Co-organized with Don Gnocchi Foundation, University of Modena and Reggio Emilia and University Magna Graecia of Catanzaro
Chairs: Marzia BEDONI, *Don Gnocchi Foundation*, Giovanni TOSI, *University of Modena and Reggio Emilia* & Donatella PAOLINO, *University Magna Graecia of Catanzaro*

The symposium is part of the workshop WS.III

II.E.1 Lorena DIÉGUEZ, *International Iberian Nanotechnology Laboratory, Braga, Portugal*
Innovative technologies for in vitro diagnosis and monitoring in cancer: towards personalized care

II.E.2 Yuliya SHAKALISAVA, *Leiden University, Exit 071 (spin off), The Netherlands*
Innovative microfluidic technology for the analysis of exosomes in therapeutic and diagnostic applications

II.E.3 Marco MONOPOLI, *Royal College of Surgeons, Ireland*
Use of nanoparticles for biomolecular diagnostics in chronic disease

II.E.4 Francesca RODÀ, *LABION Laboratory, Don Gnocchi Foundation*
Biophotonics-based characterization of liposomes for the treatment of neurological disorders

III.A Batteries of the future: new generation of scientists sharing innovative ideas - Part 1

Co-organized with ENEA and Polytechnic University of Turin
Chair: Margherita MORENO, *ENEA*

The symposium is part of the workshop WS.I

III.A.1 Pier Paolo PROSINI, *ENEA*
Il Progetto di Ricerca Triennale 2019-2021 dell'ENEA sullo stoccaggio elettrochimico dell'energia. The 2019-2021 ENEA project on electrochemical energy storage

III.A.2 Kristina EDSTRÖM, *Uppsala University, Sweden*
Battery 2030+ long term research initiative

III.A.3 Silvia BODOARDO, *Polytechnic University of Turin*
Education and Young Scientists engagement in Battery2030+ initiative

III.A.4 Leiting ZHANG, *Uppsala University, Sweden*
Towards a sustainable future powered by batteries

III.B Extracellular vesicles: The new era of the intercellular communication - PhD- derived EVs: implementing communication

Co-organized with EVIta & Sapienza Univ. of Rome
Chairs: Annalisa RADEGHIERI, *Univ. of Brescia* & Massimo BOTTINI, *Tor Vergata Univ.*

The symposium is part of the workshop WS.II

III.B.1 Massimo BOTTINI, *University of Rome Tor Vergata*
Matrix vesicles: biochemical, biophysical, and biological properties

III.B.2 Emanuela FRUSTACI, *University of Rome Tor Vergata*
Biophysical and biochemical characterization of matrix vesicles

III.B.3 Lucas NOGUEIRA, *University of Rome Tor Vergata*
Matrix vesicle-embedded biopolymeric scaffolds: a model for in vivo bone mineralization studies

III.B.4 Rossella ZENATELLI, *University of Brescia*
EV-protein corona and EV surface engineering, a first study

III.B.5 Diana VARDANYAN, *University of Salento*
A step toward precision medicine using extracellular vesicles derived from different temozolomide-treated glioblastoma cells

III.C Beyond state of the art, through Safe and Sustainable Development approaches for materials development - Practical implementation of Safe and Sustainable by Design approaches in applied and industrial research

Co-organized with AIRI, ISS, FBK, INAIL and Gov4Nano project
Chairs: Andrea PORCARI, *AIRI & Gov4Nano* and Lorenzo CALABRI, *Art-er & Sbd4Nano*

The symposium is part of the Workshop WS.IV

III.C.1 Lorenzo CALABRI, *ART-ER & SbD4Nano* & Andrea PORCARI, *AIRI & Gov4Nano*
Introduction on Safe and Sustainable Development projects

III.C.2 Ana SERRANO-LOTINA, *Instituto de Catálisis y Petroleoquímica, CSIC, Spain*
Safe by Design multi-component nanomaterials for food, automotive and construction sectors

III.C.3 Francesca BRACA, *Archa Srl*
Safety, LCA and certification practices toward green chemicals and biodegradable new products. Experiences from the (BBI-JU) Mandala project

III.C.4 Chiara BARATTINI, *Aczon*
Silica Nanoparticles for Diagnostic Applications

III.C.5 Iluminada RODRÍGUEZ-PASTOR, *ApplyNano, Spain*
Functionalization of graphene oxide for higher chemical activity, compatibility and selectivity

III.C.6 Daniele MAGNI, *LATI Industria Termoplastici S.p.A.*
Assess the development of Safe-by-design nano-enabled polymeric compounds for the Additive Manufacturing sector: the SAbyNa user friendly guidance platform

III.D 3D bioprinting for translational and personalized medicine

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chair: Francesco PUOCI, *University of Calabria*

The symposium is part of the special event SE.I

III.D.1 **Introductive Keynote**
Michele CONTI, *University of Pavia*
3D Bioprinting. One word, many technologies, and applications

III.D.2 Elia BARI, *University of Piemonte Orientale*
Lyosecretome: the new component for regenerative bio-inks?

III.D.3 Mattia TIBONI, *University of Urbino*
The revolutionary technology of 3D printing in the pharmaceutical field

III.D.4 Giuseppe BARBERI, *University of Palermo*
Polysaccharide/polyaminoacid based hydrogels containing hydroxyapatite nanoparticles as potential bioinks for bone regeneration

III.D.5 Giulia DI GRAVINA, *University of Pavia*
Towards a 3D bio-printed in-vitro model for liver

III.D.6 4D printing in the development of retentive drug delicery systems

III.E Innovative approaches in UNMET clinical needs for maximum health care impact - Part 3

Co-organized with Don Gnocchi Foundation, University of Modena and Reggio Emilia and University Magna Graecia of Catanzaro
Chairs: Marzia BEDONI, *Don Gnocchi Foundation*, Giovanni TOSI, *University of Modena and Reggio Emilia* & Donatella PAOLINO, *University Magna Graecia of Catanzaro*

The symposium is part of the workshop WS.III

III.E.1 Vincenzina MESSINA, *University of Milano Bicocca*
DeepRaman: a Deep learning diagnostic pipeline based on Raman spectroscopy

III.E.2 Alessandra BIFFI, *University of Padova*
Gene therapy in Rare and Genetic Diseases

III.E.3 Adriele Prina MELLO, *TRINITY College Dublin, Ireland*
Characterisation of mRNA LNPs for oncological applications: landscape and experience

III.E.4 Massimo DOMINICI & Giulia GRISENDI, *Univ. of Modena and Reggio Emilia*
Innovation in personalized cancer therapy

IV.A Batteries of the future: new generation of scientists sharing innovative ideas - Part 2

Co-organized with ENEA and Polytechnic University of Turin
Chair: Margherita MORENO, *ENEA*

The symposium is part of the workshop WS.I

IV.A.1 Sanchari DEB, *Uppsala University, Sweden*
Recycling

IV.A.2 Maria ARNAIZ, *CICenergigune*
The role of Academia & Industry towards the Batteries of the Future

IV.A.3 Laura PARA, *Polytechnic University of Turin*
Chemistry and critical raw materials

IV.A.4 Maciej SMOLIŃSKI, *University of Warsaw, Poland*
Social aspects of the new battery manufacturing and worldwide electrification

IV.B Wearable Devices: The New Frontier of Medical Care

Co-organized with Distretto Tecnologico Sicilia Micro e Nano Sistemi
Chairs: Sabrina CONOCI, *University of Messina* & Pietro Aleardo SICILIANO, *CNR-IMM, Lecce*

IV.B.1 Alessandro MANONI, *Sapienza University of Rome*
Wearable devices and innovative technologies for sleep analysis

IV.B.2 Irene BURAIOLI, *Polytechnic University of Turin*
Clinical Pulse Wave Velocity: from discrete evaluation towards continuous monitoring approach

IV.B.3 Alberto GIACOBBE, *University of Messina*
Multisite PPG measurements for better diagnosis of cardiac and vascular diseases

IV.C Beyond state of the art, through Safe and Sustainable Development approaches for materials development - Strategies, frameworks and criteria for Safe and Sustainable Development

Co-organized with AIRI, ISS, FBK, INAIL and Gov4Nano project
Chair: Isabella DE ANGELIS, *ISS*

The symposium is part of the Workshop WS.IV

IV.C.1 Isabella DE ANGELIS, *ISS*
Safe and Sustainable Development approaches for materials development Part 2 strategies, frameworks and criteria

IV.C.2 Cecilia BOSSA, *ISS & Gov4Nano*
Advancements in risk governance toward a safe and sustainable use of nanomaterials - FAIRification of nanosafety data

IV.C.3 Lya HERNANDEZ, *RIVM - National Institute for the Public Health and the Environment and OECD, The Netherlands*
Safe and Sustainable Innovation Approach (SSIA): A system approach for Safe and Sustainable (Nano) Innovations

IV.C.4 Marco FALZETTI, *APRE & EuMaT – European Technology Platform for Advanced Engineering Materials and Technologies*
The Advanced Materials Initiative 2030 - AMI2030

IV.C.5 Ilaria SALVATORI, *BU INDUSTRY – RINA*
Development and scaled Implementation of sAfe by design tools and Guidelines for multicOmponent aNd hArn nanomateriaLs

IV.C.6 Andrea PORCARI, *AIRI & Gov4Nano*
Advancements in risk governance toward a safe and sustainable use of nanomaterials (Gov4Nano & NMBP-13 projects KEY RESULTS)

IV.C.7 *Discussion: Informing Safe By Design and Safe and Sustainable by Design implementation at national level*

IV.D The many ways to myocardial regeneration

Co-organized with Univ. Magna Graecia of Catanzaro and Sapienza Univ. of Rome
Chair: Konrad URBANEK, *University Magna Graecia of Catanzaro*

The symposium is part of the special event SE.I

IV.D.1 Sebastiano SCIARRETTA, *Sapienza University of Rome*
The role of autophagy in cardioprotection and cardiac regeneration

IV.D.2 Fabiola MARINO, *University Magna Graecia of Catanzaro*
The piRNome of cardiac/progenitor cells: a novel procardiogenic piRNA promotes their specification and differentiation in cardiomyocytes in vitro

IV.D.3 Leonardo SCHIRONE, *Sapienza University of Rome*
Hippo pathway and tissue regeneration

IV.D.4 Mariangela SCALISE, *University Magna Graecia of Catanzaro*
Diabetes-Induced Cellular Senescence and Senescence-Associated Secretory Phenotype Impair Cardiac Regeneration and Function Independently of Age

IV.D.5 Manuela MURA, *Fondazione IRCCS*
Induced pluripotent stem cells as model systems for precision medicine in cardiovascular diseases

IV.D.6 Nadia SALERNO, *University Magna Graecia of Catanzaro*
Pharmacological clearance of senescent cells improves cardiac remodeling and function after myocardial infarction in female aged mice

IV.E Infrared microscopy with nanometric spatial resolution

Co-organized with Sapienza University of Rome
Chair: Stefano LUPI, *Sapienza University of Rome*

IV.E.1 Federica PICCIRILLI, *Elettra Sincrotrone Trieste*
SISSI-Nano: the nanoresolved infrared endstation at Elettra synchrotron facility

IV.E.2 Antonio CRICENTI, *CNR-ISM, Rome*
Infrared Nanospectrospy: from Heat Transfer in Nanoelectronics to early Diagnosis of Cancer

IV.E.3 Philip SCHAEFER, *Attocube Systems, Nanoscale Analytics, Germany*
s-SNOM for various applications: Carrier density profiling in semiconductors, plasmonic field mapping, 2D-material characterization, and chemical identification of biomaterials and polymers

IV.E.4 Miriam UNGER, *Bruker Nano Surfaces Division*
Latest Advancements in photothermal AFM-IR spectroscopy and imaging

V.A Nanomaterials and Nanotechnology for the virtuous CO_2 circle - Part 1

Co-organized with Polytechnic University of Turin, IIT Center for Sustainable Future Technologies - CSFT@POLITO and ENEA
Chair: Adriano SACCO, *IIT Center for Sustainable Future Technologies - CSFT@POLITO*

The symposium is part of the workshop WS.I

V.A.1 Roberto MILLINI, *ENI*
Capturing CO_2 and Transforming it into Valuable Products

V.A.2 Matteo ROMANO, *Polytechnic University of Milan*
CCS: an essential ingredient for the energy transition towards net zero

V.A.3 Candido Fabrizio PIRRI, *Polytechnic University of Turin, IIT Center for Sustainable Future Technologies - CSFT@POLITO*
Strategies for the CO_2 valorisation at the Centre for Sustainable Future Technologies (IIT)

V.A.4 Esther SANTOS, *APRIA System, Spain*
Breakthrough zero-emission technologies for energy transition: APRIA showcase

V.A.5 Mario FORGNONE, *Saipem SpA*
The key role of carbon capture technologies in clean energy transition and a successful ccus case history – saint felicien plant (qc, canada) using enzymatic carbon capture absorbent process

V.B ARTES4.0@SNS: the competences of the Macronode Scuola Normale Superiore in the field I4.0

Co-organized with Scuola Normale Superiore
Chair: Pasqualantonio PINGUE, *Scuola Normale Superiore*

V.B.1 Chiara CAPPELLI, *Scuola Normale Superiore, Deputy Rector for Technology Transfer and ARTES4.0@SNS coordinator*
ARTES 4.0 and Technology Transfer at Scuola Normale Superiore

V.B.2 Pasqualantonio PINGUE, *Scuola Normale Superiore, Head of Research and Innovation Area, ARTES4.0@SNS vice-coordinator and CdA ARTES4.0*
ARTES4.0: presentazione del Centro di competenza nazionale sui temi delle Industrie 4.0

V.B.3 Tommaso GIOVANNINI, *Scuola Normale Superiore, Researcher*
In-silico protocol to design plasmonic sensors

V.B.4 Andrea GUERRINI, *Scuola Normale Superiore, Researcher*
Il nodo ARTES 4.0 di Innovazione e sviluppo IDN-SNS della Scuola Normale Superiore: facilities disponibili e casi studio di collaborazione con le imprese

V.C Organic transistors-based biosensors

Co-organized with Polytechnic University of Turin and CNR-IMEM
Chairs: Matteo COCUZZA, *Polytechnic Univ. of Turin* & Simone MARASSO, *CNR-IMEM*

The symposium is part of the workshop WS.V

V.C.1 Marta MAS-TORRENT, *ICMAB-CSIC, Spain*
Blends of organic semiconductors for high performing electrolyte-gated field-effect transistors

V.C.2 Benoît PIRO, *Université de Paris Cité, France*
Printed electrolyte-gated transistors: recent outcomes, limiting issues

V.C.3 Tsuyoshi MINAMI, *University of Tokyo, Japan*
Real-sample analysis based on organic field-effect transistors

V.C.4 Matteo PARMEGGIANI, *Polytechnic University of Turin*
Rapid prototyping of 3D Organic Electrochemical Transistors by composite photocurable resin

V.D Extracellular vesicles: a new tool in personalized medicine

Co-organized with Univ. Magna Graecia of Catanzaro and Sapienza Univ. of Rome
Chair: Christian CELIA, *The 'Gabriele d'Annunzio' University, Chieti-Pescara*

The symposium is part of the special event SE.I

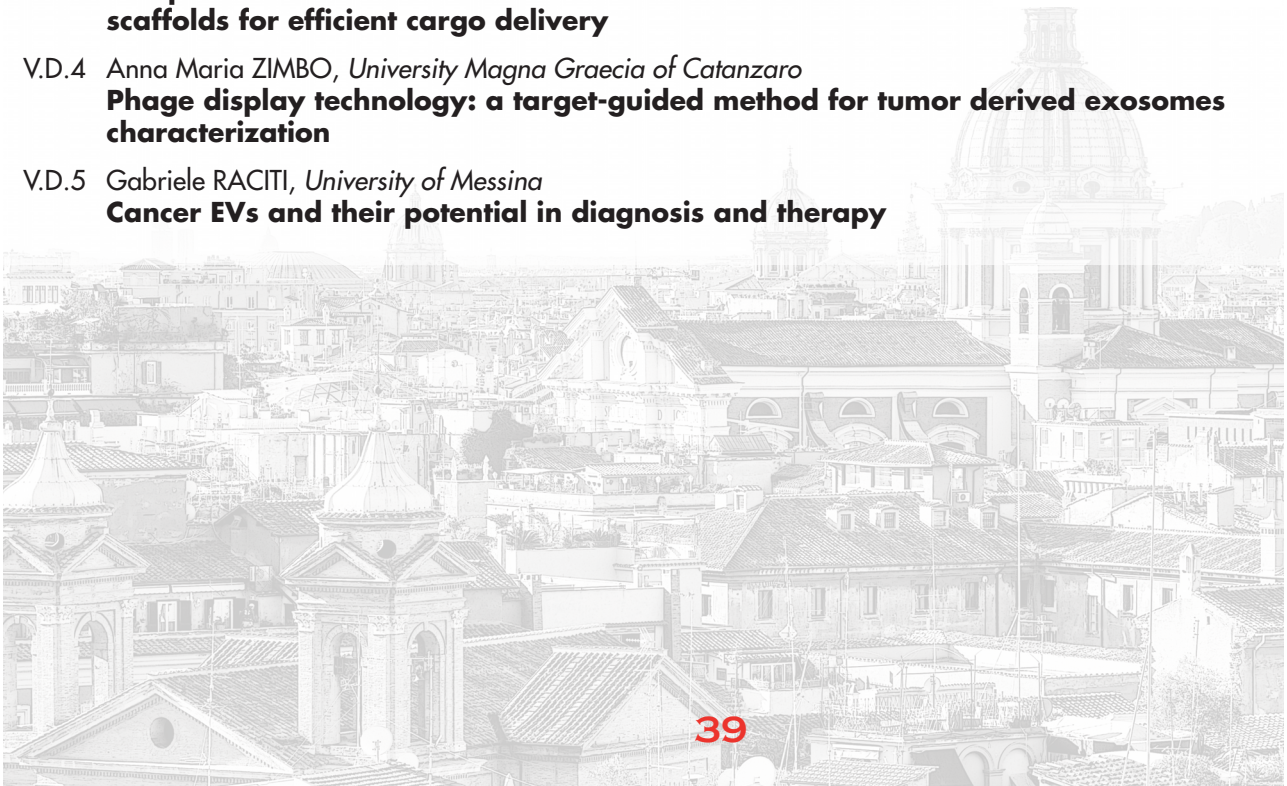
V.D.1 ***Introductive Keynote***
Joel Zacharias NORDIN, *Karolinska Institutet, Sweden*
Bioengineering extracellular vesicles for drug deliverys

V.D.2 Antonella BARONE, *University Magna Graecia of Catanzaro*
Extracellular vesicles-Liposomes Hybrid thermoresponsive nanovesicles for selective tumor targeting

V.D.3 Xiuming LIANG, *Karolinska Institutet, Sweden*
Comprehensive functional screen of extracellular vesicle scaffolds for efficient cargo delivery

V.D.4 Anna Maria ZIMBO, *University Magna Graecia of Catanzaro*
Phage display technology: a target-guided method for tumor derived exosomes characterization

V.D.5 Gabriele RACITI, *University of Messina*
Cancer EVs and their potential in diagnosis and therapy



V.E Organoid Experiment Analysis: From Image to Numerical Results

Co-organized with ZEISS
Chair: Francesco BIANCARDI, *ZEISS*

V.E.1 Giovanni FAGA, *Human Technopole Foundation*
It's a bird! It's a plane! No, it's an Organoid

V.E.2 Leopoldo STAIANO, *Telethon Institute of Genetics and Medicine - TIGEM & CNR-IRGB, Milan*
Modeling Fabry Nephropathy with hPSC-derived kidney organoids

V.E.3 Alessandro COMETTA, *ZEISS*
Organoid analysis with confocal and widefield automated imaging

V.E.4 Jacopo ZASSO, *Human Technopole Foundation*
It's a bird! It's a plane! No, it's an Organoid

V.F New products or manufacturing process development

Co-organized with University for Innovation Foundation (U4I)
Chair: Hermes GIBERTI, *University of Pavia*

The symposium is part of the workshop WS.VI

V.F.1 Claudia SCOTTI, *University of Pavia*
N24S asparaginase: a new option for Acute Lymphoblastic Leukaemia treatment

V.F.2 Giuseppe RUSCICA, *University of Bergamo*
Distributed acoustic sensing as a tool for subsurface mapping and seismic event monitoring a proof of concept

V.F.3 Ferdinando AURICCHIO, *University of Pavia*
A novel wideband microstrip to additively fabricated waveguide transition

V.F.4 Anna ESPINOZA, *University of Milano Bicocca*
Development of a new technology for biological soil remediation

V.F.5 Valentina TROVATO, *University of Bergamo*
Strategies for removing chemical finishes from post-consumer outdoor fabrics

V.G Emerging and advanced techologies in Electronics - Part 1

Co-organized with Sapienza University of Rome
Chair: Roberto BEZ, *Micron*

The symposium is part of the special event SE.II

V.G.1 Alessio PANTELLINI, *Leonardo*
GaN 0.25um technology performances and reliability needs at Leonardo

V.G.2 Paolo FANTINI, *Micron*
Memory Technology Enabling the Future Computing Systems

V.G.3 Paola TIBERTO, *INRIM & Italian Association of Magnetism, President*
Spintronics for energy efficient magnetoelectronics

V.G.4 Adriano DIAZ FATTORINI, *CNR-IMM*
Thermal stability of Ge-rich $Ge_xSb_2Te_5$ layers

V.G.5 Paolo TESSARIOL, *Micron*
Innovations and future trends in the NAND Flash technology

VI.A Nanomaterials and Nanotechnology for the virtuous CO_2 circle - Part 2

Co-organized with Polytechnic University of Turin, IIT Center for Sustainable Future Technologies - CSFT@POLITO and ENEA
Chair: Michele RE FIORENTIN, *IIT Center for Sustainable Future Technologies - CSFT@POLITO*

The symposium is part of the workshop WS.I

VI.A.1 Hannes JÓNSSON, *University of Iceland, Iceland*
Calculations of the mechanism and rate of CO_2 electrochemical reduction to form fuel and/or chemical feedstock

VI.A.2 Damien VOIRY, *University of Montpellier, France*
Conversion of CO_2 using electrochemical flow processes

VI.A.3 Francesca RISPLENDI, *Polytechnic University of Turin*
The importance of a synergistic theoretical and experimental approach to design efficient electrochemical CO_2 reduction catalysts

VI.A.4 Amin FARKHONDEHFAL, *VITO, Belgium*
Development and upscaling of gas diffusion electrodes for CO_2 reduction and electrosynthesis of chemicals

VI.B Nano-based drug delivery systems: recent developments and preclinical studies for biomedical applications

Co-organized with ISS
Chairs: Marisa COLONE & Maria CONDELLO, *ISS*

VI.B.1 Chiara LICO, *Laboratory Biomedical Technologies, ENEA Centro Ricerche Casaccia*
Plant virus nanoparticles as an innovative platform for targeted drug delivery to medulloblastoma

VI.B.2 Luigi BATTAGLIA, *University of Turin*
Nanoemulsions as delivery systems for poly-chemotherapy aiming at melanoma treatment

VI.B.3 Manuela SCARSELLI, *University of Rome Tor Vergata*
Synthesis and applications of 3D multifunctional carbon nanotube networks

VI.B.4 Luca MENICHETTI, *CNR-IFC, Pisa*
Multimodality imaging in nanomedicine and theranostics

VI.C SERS and Nanophotonics

Co-organized with Polytechnic University of Turin
Chairs: Laura FABRIS & Enzo DI FABRIZIO, *Polytechnic University of Turin*

The symposium is part of the workshop WS.V

VI.C.1 Duncan GRAHAM, *University of Strathclyde,Glasgow, UK*
Point of use SERS for Biomolecular Detection

VI.C.2 Janina KNEIPP, *Humboldt University of Berlin, Germany*
Applications of one-and two-photon excited SERS

VI.C.3 Marc LAMY DE LA CHAPELLE, *Le Mans University, France*
New Insight on the Aptamer Conformation and Aptamer/protein Interaction by Surface Enhanced Raman Scattering and Multivariate Statistical Analysis

VI.C.4 Renzo VANNA, *Polytechnic University of Milan*
From whole body to subcellular imaging by applying single bimodal fluorinated nanoprobes compatible with both MRI and Raman imaging

VI.D Theranostic nanomedicine: current challenges and future perspectives

Co-organized with Univ. Magna Graecia of Catanzaro & Sapienza Univ. of Rome
Chair: Emanuela CRAPARO, *University of Palermo*

The symposium is part of the special event SE.I

VI.D.1 ***Introductive Keynote***
Cristina SATRIANO, *University of Catania*
Multimodal theranostic nanoplatforms for nanomedicine applications

VI.D.2 Mara Andrea UTZERI, *University of Palermo*
β-cyclodextrin decorated multicolor carbon nanodots as theranostic nanosystem for the delivery of sildenafil in breast cancer

VI.D.3 Alice FOTI, *University of Catania*
A study on the effective removal of cetyltrimethylammonium bromide from gold nanorods to enhance their potential as theranostic nanoplatforms

VI.D.4 Mariarosa GIGLIOBIANCO, *Percuros B.V., The Netherlands*
Development of Perfluorocarbon-Loaded Polymeric Nanoparticles For 19F Magnetic Resonance Imaging

VI.E Novel nanomaterials for restoration of artworks: from the lab to the bench

Co-organized with CSGI
Chair: Rodorico GIORGI, *CSGI & University of Florence*

VI.E.1 Andrea CASINI, *CSGI*
Hybrid nanomaterials for consolidation and protection

VI.E.2 Teresa GUARAGNONE, *CSGI*
Nanostructured fluids and gels for the cleaning of artworks

VI.E.3 Rodorico GIORGI, *CSGI & University of Florence*
Recent advancements in Colloid and Materials Science for the Conservation of Cultural Heritage

VI.E.4 Rachel CAMERINI, *CSGI & University of Florence*
From the lab to the bench: some insights about the application of new products

VI.F IPCEI Microelectronics initiative: Tech solutions for the digital transformation, IoT and Industry 4.0

Co-organized with AIRI, FBK and STMicroelectronics
Chairs: Andrea PORCARI, *AIRI* & Cosimo MUSCA, *STMicroelectronics*

The symposium is part of the special event SE.II

VI.F.1 Introduction: **The IPCEI Microelectronics: Tech solutions for the digital transformation, IoT, smart sensors and Industry 4.0**

VI.F.2 Josef-Anton MOSER, *Infineon Technologies Austria AG, Austria*
IPCEI contribution to Si and SiC based solutions for energy efficient mobility

VI.F.3 Hannes VORABERGER, *AT&S Austria Technologie & Systemtechnik AG, Austria*
IPCEI ME 1 in implementation – AT&S results, experiences and impacts

VI.F.4 Giovanni PATERNOSTER, *FBK*
Recent updates on 3D integration approaches for Silicon Photomultipliers (SiPM)

VI.F.5 Laurent DUGOUJON, *STMicroelectronics, France*
Advanced Internet of things applications

VI.F.6 *Models and experiences to spill-over technologies to industry and territories*
Contributions from networks and technology clusters in non -IPCEI countries

VII.A Advances in the field of carbon capture and storage technologies

Co-organized with Polytechnic University of Turin, IIT Center for Sustainable Future Technologies - CSFT@POLITO and ENEA
Chair: Stefano STENDARDO, *ENEA*

The symposium is part of the workshop WS.I

VII.A.1 Enrico PARIS, *Sapienza University of Rome*
Sorption Enhanced Water Gas Shift for hydrogen-rich syngas production from biomass

VII.A.2 Erwin ZULETA CIRO, *University of Guglielmo Marconi - Rome*
High temperature desulfurization process assisted by ZnO sorbents for gas conditioning during biomass conversion intensified by CO_2 capture

VII.A.3 Umberto Pasqual LAVERDURA, *Roma Tre University*
CO_2 valorization through low-temperature methanation: the case of ruthenium-based catalysts

VII.B A SWOT approach to Green Energy Innovation - Part 1

Co-organized with the European Innovation Council
Chairs: Roberto GIANNANTONIO, *Klopman International Srl* & Francesco MATTEUCCI, *European Innovation Council (EISMEA)*

VII.B.1 Roberto GIANNANTONIO, *Klopman International Srl*
SWOT analysis of projects, innovation and business opportunities

VII.B.2 Francesco MATTEUCCI, *European Innovation Council (EISMEA)*
SWOT analysis and the green Innovation journey

VII.B.3 Paolo STUFANO, *CNR NANOTEC*
SWOT highlights on bio-based materials from agri-food wastes

VII.B.4 Carlo PASTORE, *CNR-IRSA*
Innovative processes for lipid recovery from sewage sludge and their conversion into biofuels and biolubricants: a SWOT analysis

VII.C Energy and charge transfer on surfaces and nanostructures - Part 1

Co-organized with University of Reggio Calabria & ENEA
Chairs: Giuliana FAGGIO & Giacomo MESSINA, *University of Reggio Calabria* and Nicola LISI, *ENEA*

VII.C.1 Marco CANNAS, *University of Palermo*
Applications of Al_2O_3 ultrathin films in electronic devices

VII.C.2 Antonino FOTI, *CNR-IPCF, Messina*
Tip-enhanced Raman spectroscopy of multiwalled carbon nanotubes functionalized with polymers

VII.C.3 Kaveh MOULAEE, *University of Messina*
Role of electronic charge transfer mechanisms in core-shell nanostructures for gas sensing

VII.C.4 Francesca PETRONELLA, *CNR-IC, Rome*
Label-free plasmonic biosensors for environmental and medical applications

VII.D Synthesis of heterogeneous materials

Co-organized with Univ. Magna Graecia of Catanzaro and Sapienza Univ. of Rome
Chair: Marta FEROCI, *Sapienza University of Rome*

The symposium is part of the special event SE.I

VII.D.1 ***Introductive Keynote***
Rubia Y. S. ZAMPIVA, *Sapienza University of Rome*
Controlled preparation of heterogeneous nanostructures by Chemical Vapor Deposition

VII.D.2 Beatrice SIMONIS, *Sapienza University of Rome*
Core-shell lipid-based nanosystems for mitochondrial targeting of cancer cells

VII.D.3 Roya BINAYMOTLAGH, *Sapienza University of Rome*
Synthesis of a novel biocompatible peptide hydrogel impregnated with titanium oxide nanoparticles; investigation of its biological applications

VII.D.4 Mariangela CLEMENTE, *CNR-ISB, Rome*
Development of nanocarriers to improve the transport of drugs across the blood brain barrier

VII.D.5 Angela CAPOCEFALO, *CNR-ISC, Rome*
Assembly of patchy colloids towards the development of functional nanomaterials

VII.E From artificial intelligence research to new scientific discoveries in biomedicine and vice versa

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

VII.E.1 Alessandro GIULIANI, *ISS*
Metabolic Networks Classification: expainability by multidiciplinary integration

VII.E.2 Enrico GUARNERA, *Bioinformatics Institute - Agency for Science, Technology and Research, Singapore*
Markov state modeling of chromatin hierarchical 3D reconstruction

VII.E.3 Maurizio MATTIA, *ISS*
Neuromorphic computing: towards a brain-inspired 'intelligence'

VII.E.4 Matteo PALLOCCA, *Biostatistics, Bioinformatics and clinical trial center, Regina Elena Nat. Cancer Inst.*
AI-applications in Clinical Bioinformatics and Personalized Oncology

VII.F New technological applications

Co-organized with University for Innovation Foundation (U4I)
Chair: Francesco PERI, *University of Milano Bicocca*

The symposium is part of the workshop WS.VI

VII.F.1 Maddalena COLLINI, *University of Milano Bicocca*
Development of a new technology for controlled heat treatment of muscle contractures

VII.F.2 Giuseppe SCARATTI, *University of Bergamo*
An experience of environmental protection and urban regeneration

VII.G Industrial strategies and research policies toward Electronics Technology

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

The symposium is part of the special event SE.II

VII.G.1 Andrea LUCIBELLO, *Leonardo*
Leonardo GaAs/GaN Foundry a National strategic asset toward the technology independent

VII.G.2 ***Special interview with Prof. Francesco PRIOLO, University of Catania, Rector***
Hosted by Chiara LICO, *Journalist*
The impact of PNRR on research fundings and the relationships among the research ecosystems, infrastructures and business worl

VII.G.3 Steve BROWN, *Director ESI Automotive, Stellantis*
Electronic Materials Innovations for Sustainable Assembly

VII.H Key Enabling Technologies for the protection of cultural heritage: from earthquakes to big data - Part 1

Co-organized with CdE DTC Lazio
Chair: Mariangela CESTELLI GUIDI, *INFN*

VII.H.1 Sabina BOTTI, *ENEA*
Raman/luminescence mapping monitoring of UV-EUV irradiation effect on cellulose for the cleaning of ancient paper surface

VII.H.2 Francesco COCHETTI, *CoopCulture*
AMOR- Advanced Multimedia and Observation services for the Rome cultural heritage

VII.H.3 Valeria STAGNO, *Sapienza University of Rome*
Portable low-field single-sided NMR for wooden cultural heritage diagnostics

VII.H.4 Silvia CAPUANI, *CNR-ISC & Sapienza University of Rome*
Clinical MRI and CT protocols to investigate wooden artworks

VII.H.5 Antonio PUGLIANO, *Roma Tre University*
INT4CT "Integrated digital system for the knowledge, active conservation, dissemination and safe use of Heritage and Landscape"

VII.H.6 Mariangela CESTELLI GUIDI, *INFN*
ARTEMISIA- Artificial intelligence to support diagnostic technologies for cultural heritage: a prototype for assessing the state of conservation of pictorial works

VIII.A The role of circular carbon for the future energy system

Co-organized with Polytechnic University of Turin, IIT Center for Sustainable Future Technologies - CSFT @ POLITO and ENEA
Chair: Stefano STENDARDO, *ENEA*

The symposium is part of the workshop WS.I

VIII.A.1 Carmine CAVA, *Sapienza University of Rome*
H_2/Co Syngas Production in a Fe Based Oxidizer Reactor of a Chemical Looping Cycle: Experimental Investigation

VIII.A.2 Igor LUISETTO, *ENEA*
Carbon resistant dry reforming catalysts for syngas production over Ru supported $CaZr_{0.85}Sm_{0.15}O_{3-d}$ perovskite prepared by the auto-combustion method: the effect of Ru loading on catalytic activity

VIII.A.3 Nicola LISI, *ENEA*
CO_2 reuse and valorization: development and application of plasma technology

VIII.B A SWOT approach to Green Energy Innovation - Part 2

Co-organized with the European Innovation Council
Chairs: Roberto GIANNANTONIO, *Klopman International Srl* & Francesco MATTEUCCI, *European Innovation Council (EISMEA)*

VIII.B.1 Luisa DE MARCO, *CNR NANOTEC*
HYbrid NANOstructured systems for sustainable energy STORagE (ERC)

VIII.B.2 Thomas SCHLEKER, *DG RTD*
European Research & Innovation Goals on Renewable Fuels

VIII.B.3 Mohamed ABO RAS, *Nanotest Berliner, Germany*
Meta-Antenna and Energy Harvesting/Storage Modules Development for Autarkic Sensors Arrays

VIII.B.4 Bruno MOTTET, *Sweetch Energy*
Nanobased salinity gradient technology: SWOT analysis as a tool to scale-up

VIII.C Energy and charge transfer on surfaces and nanostructures - Part 2

Co-organized with University of Reggio Calabria & ENEA
Chairs: Giuliana FAGGIO & Giacomo MESSINA, *University of Reggio Calabria* and Nicola LISI, *ENEA*

VIII.C.1 Raffaele AGOSTINO, *University of Calabria*
Tunable Nearly-Freestanding Supramolecular Assembly

VIII.C.2 Barbara FERRUCCI, *ENEA Centro Ricerche Bologna*
Ab Initio Study of Octane Moiety Adsorption on H- and Cl-Functionalized Silicon Nanowires

VIII.C.3 Sandro RAO, *University of Reggio Calabria*
Graphene as active material for modulation and photo-detection in integrated optoelectronic devices

VIII.C.4 Francesca MENCHINI, *ENEA Centro Ricerche Casaccia Roma*
UV photoelectron spectroscopy as a tool for characterizing materials for photovoltaic applications

VIII.C.5 Ilaria MATACENA, *ENEA Centro Ricerche Portici-Napoli*
Graphene-Silicon Solar Cells Characterization by means of Impedance Spectroscopy

VIII.D Polymers & Nanosystems

Co-organized with University Magna Graecia of Catanzaro and Sapienza University of Rome
Chair: Daniela DE VITA, *Sapienza University of Rome*

The symposium is part of the special event SE.I

VIII.D.1 ***Introductive Keynote***
Daniele ROCCO, *Sapienza University of Rome*
Polyhydroxyalkanoates (PHAs): synthesis, properties and applications

VIII.D.2 Sara CERRA, *Sapienza University of Rome*
Polymeric nanoparticles as bimodal imaging contrast agents

VIII.D.3 Gianluca FORCINA, *Sapienza University of Rome*
Fabrication of polyesters nanoparticles with green solvents and reagents

VIII.D.4 Martina MERCURIO, *Sapienza University of Rome*
Silver nanoparticles as efficient tool in agrifood applications

VIII.D.5 Susanna ROMANO, *Roma Tre University*
Ionic liquids used as plasticizers of starch: Influence of anionic part

VIII.E Development of new monitoring service

Co-organized with University for Innovation Foundation (U4I)
Chair: Giuseppe ROSACE, *University of Bergamo*

The symposium is part of the workshop WS.VI

VIII.E.1 Alberto BRUGNOLI, *University of Bergamo*
On smart institutions: towards new territorial actors to support ecological transition and regional diversification

VIII.E.2 Simone MONTANO, *University of Milano Bicocca*
Smart materials for the coral reefs of tomorrow

VIII.E.3 Marco CONTARDI, *University of Milano Bicocca*
Advanced biocomposites for delivering curcumin and mitigating coral bleaching

VIII.E.4 Matteo ZAFFALON, *University of Milano Bicocca*
Self-powered nano-scintillators for energy

VIII.F Key Enabling Technologies for the protection of cultural heritage: from earthquakes to big data - Part 2

Co-organized with CdE DTC Lazio
Chair: Mariangela CESTELLI GUIDI, *INFN*

VIII.F.1 Leonardo SEVERINI, *University of Rome Tor Vergata*
Tuned microgels as efficient systems for paper materials conservation

VIII.F.2 Mattia IPPOLITI, *Sapienza University of Rome*
Lazio Antico: the information system for the archaeological heritage of ancient Latium

VIII.F.3 Aldo WINKLER, *INGV*
Assessing the impact of vehicular particulate matter on cultural heritage by magnetic biomonitoring: Villa Farnesina and Palatine Hill in Rome, Italy

VIII.F.4 Luca BIANCHINI, *Roma Tre University*
BIMHERIT: towards a novel digital twin approach in cultural heritage assessment

VIII.F.5 Luigi SORRENTINO, *Sapienza University of Rome*
Protecting museum cultural heritage from earthquake and traffic vibrations: the MONALISA project

VIII.F.6 Edoardo COLONNA & Candida MOFFA, *Sapienza University of Rome*
Advanced methods for multispectral image processing and multi techniques diagnostic for an innovative fruition of paintings: the case study of IMAGO project

VIII.F.7 Tommaso ROSSI, *Univ. of Rome Tor Vergata* & Cecilia BARTULI, *Sapienza Univ. of Rome*
CIABOT - Controllo e gestione tramite IA dei Beni culturali per Operazioni di Tutela e conservazione

VIII.G Emerging and advanced techologies in Electronics - Part 2

Co-organized with Sapienza University of Rome
Chair: Vittorio MORANDI, *CNR-IMM*

The symposium is part of the special event SE.II

VIII.G.1 Roberto MANTOVAN, *CNR-IMM*
Development of large-area topological insulators on Silicon for spintronics

VIII.G.2 Andrzej SIKORA, *Wrocław University of Science and Technology, Poland*
Diagnostics of microelectronic devices with scanning probe microscopy methods: problems and solutions

VIII.G.3 Vincenzo VINCIGUERRA, *STMicroelectronics*
Modelling the Elastic Energy of a Bifurcated Wafer: A Benchmark of the Analytical Solution vs. the ANSYS Finite Element Analysis

VIII.G.4 Alessio URBANI, *Micron*
3D-NAND cell challenges to enable high density and high-performance devices

VIII.G.5 Raffaella CALARCO, *CNR-IMM*
Boosting automotive applications with phase change alloys and heterostructures

VIII.G.6 Ivana ZRINKSI, *Institute of Chemical Technology of Inorganic Materials, Johannes Kepler University, Austria*
Resistive switching in tantalum and hafnium nanoscale anodic oxide devices

SEPTEMBER 23 **09:00 - 10:30**

IX.A Nanotechnology-based Innovative Approaches in Agriculture - Part 1

Co-organized with University of Tuscia, Udine and ISS
Chair: Guido FELLET, *University of Udine*

The symposium is part of the workshop WS.VII

IX.A.1 Luca PAGANO, *University of Parma*
From mechanistic understanding to application: the plant nanofertilization

IX.A.2 Youry PII, *Free University of Bozen-Bolzano*
Urea-doped hydroxyapatite nanoparticles and effects on crops: from lab to field scale

IX.A.3 Monica GRANETTO, *Polytechnic University of Turin*
Natural mineral materials as sustainable carriers for herbicides: from synthesis to environmental impact assessment

IX.A.4 Graziella AMENDOLA, *ISS*
Nanopesticides for sustainable agriculture: analytical approach for characterisation

IX.B 3D printing for advanced healthcare: from life sciences to innovative materials - Part 1

Co-organized with Polytechnic University of Turin
Chairs: Francesca FRASCELLA, Lucia NAPIONE & Ignazio ROPPOLO, *Polytechnic University of Turin*

IX.B.1 Alberto RAINER, *University Campus Bio-Medico, Rome*
Bioprinting for in vitro models of organ pathophysiology

IX.B.2 Eleonora ZENOBI, *Consorzio di Ricerca Hypatia*
3D printed biomimetic polylactic acid/graphene oxide scaffolds for bone tissue engineering

IX.B.3 Vincenzo AFFINITA, *CELLINK Bioprinting, Lyon*
Cell-friendly 3D Bioprinting for precision medicine and drug discovery

IX.C Advances in electronic components: Unconventional radiation hardness characterisation and novel detectors

Co-organized with ASI & ESRF
Chair: Marco DI CLEMENTE, *ASI*

The symposium is part of the workshop WS.VIII

IX.C.1 ENNIO CAPRIA, *ESRF, France*
The use of synchrotron X-rays to emulate the interaction between heavy ions and electronic devices for next generation space application

IX.C.2 Manon LETICHE, *ILL - Institut Laue Langevin, France*
Interaction between neutrons and electronic devices: origin, impact and evaluation

IX.C.3 Alessandro DRAGO, *INFN*
Ultra-Fast InfraRed Detector for Astronomy

IX.C.4 Narciso GAMBACORTI, *CEA-Leti, France*
The Nanoelec Platform for Advanced Characterisation - Grenoble: access to large scale research infrastructures for industry

IX.D Carbon based nanomaterials

Co-organized with Univ. Magna Graecia of Catanzaro & Sapienza Univ. of Rome
Chair: Antonella MESSORE, *Sapienza University of Rome*

The symposium is part of the special event SE.I

IX.D.1 ***Introductive Keynote***
Martina BORTOLAMI, *Sapienza University of Rome*
Carbon dots: synthesis and applications

IX.D.2 Anastasia FORNARI, *Sapienza University of Rome & NanoShare Srl*
Cellulose nanomaterials for Cultural Heritage: extraction, synthesis, characterization and applications

IX.D.3 Cinzia MICHENZI, *Sapienza University of Rome*
Sustainable synthesis of Carbon Dots from industrial orange peel waste for catalysis and photocatalysis applications

IX.D.4 Bajramshahe SHKODRA, *Free University of Bozen-Bolzano*
Carbon nanotube-based biosensors: Principles and applications

IX.D.5 Fabrizio VETICA, *Sapienza University of Rome*
Electrochemical synthesis of amino acid-derived Chiral Carbon Dots as recyclable heterogeneous nano-organocatalysts

IX.E Quantum Metrology and Technologies - Part 1

Co-organized with INRIM
Chairs: Luca BOARINO & Natascia DE LEO, *INRIM*

IX.E.1 Natascia DE LEO, *INRIM*
Opening

IX.E.2 Marc-Olivier ANDRÉ, *Sector Electricity METAS, Switzerland*
Quantum Electrical Metrology

IX.E.3 Janne LEHTINEN, *VTT, Technical Research Centre, Finland*
Superconducting multi-stage thermionic cooler for quantum technology

IX.E.4 Simon BERNON, *IOGS, France*
The QuantERA Project MOCA: Towards integrated microwave-to-optical conversion by atoms on a superconducting chip

IX.F Nanomedicine: what can European initiatives do to accelerate your clinical development?

Co-organized with the European Technology Platform on Nanomedicine (ETPN)
Chair: Alexandre CECCALDI, *ETPN*

IX.F.1 Alexandre CECCALDI, *ETPN*
The ETPN - how to get connected with the European ecosystem of Nanomedicine

IX.F.2 Kathleen SPRING, *Bioanalytik Muenster, Germany*
The REFINE project: how to make Nanomedicine design and characterization smarter

IX.F.3 Lorena DIÉGUEZ, *International Iberian Nanotechnology Laboratory, Portugal*
The HealthTech TAB: how to get industry support for your (future) SME in Nanomedicine

IX.F.4 Angel DEL POZO, *BioKeralty Research Institute, Spain*
How OITBs can foster innovation in Nanomedicine and beyond, lessons learnt from Safe-n-MedTech

X.A Nanotechnology-based Innovative Approaches in Agriculture - Part 2

Co-organized with University of Tuscia, Udine and ISS
Chair: Guido FELLET, *University of Udine*

The symposium is part of the workshop WS.VII

X.A.1 Irem ALTIN, *University of Modena and Reggio Emilia*
Synthesis and Application of Silver Nanoparticles against Xanthomonas vesicatoria, the Causal Agent of Tomato Bacterial Spot

X.A.2 Sara FRANCESCONI, *University of Tuscia*
Bio-based composite of chitosan, gallic acid, cellulose nano-crystals and high-amylose starch as organic control strategy of Fusarium spp. diseases in wheat and as biostimulant on plants

X.A.3 Giorgio Mariano BALESTRA, *University of Tuscia*
1st Summer School Nanotechnology in Agriculture – Results

X.B EELISA@SNS

Co-organized with Scuola Normale Superiore
Chair: Pasqualantonio PINGUE, *Scuola Normale Superiore*

X.B.1 Pasqualantonio PINGUE, *Scuola Normale Superiore, Head of Research and Innovation Area, ARTES4.0@SNS vice-coordinator and CdA ARTES4.0*
EELISA UNFOLDS: student entrepreneurship

X.B.2 ANDREA GUERRINI, *Scuola Normale Superiore*
EELISA INNOCORE: how to create a common European playground for research and infrastructures

X.B.3 Calogero ODDO, *Scuola Superiore Sant'Anna - SSSA*
EELISA ERASMUS + : the first alliance of Higher Education Institutions from different countries in Europe meant to define and implement a common model of European engineer rooted in society

X.C Advances in manufacturing, materials and characterisation

Co-organized with ASI & ESRF
Chair: Marco SEBASTIANI, *Roma Tre University*

The symposium is part of the workshop WS.VIII

X.C.1 Karine MOUGIN, *CNRS - Université de Haute Alsace, France*
Towards the development of sensors and actuators by 4D printing

X.C.2 Marco CONTI, *Sapienza University of Rome*
Ni-Cr nano composite coating developed via electroless route: influence of deposition parameters

X.C.3 Giulia PEDRIZZETTI, *Sapienza University of Rome*
Microstructural and hardness studies of ZrO_2 reinforced NiP nano-composite coatings for anti-erosion and anti-wear applications

X.C.4 Mohamed FARES-SLIM, *ESRF, France*
Synchrotron X-rays methodologies for non destructive mapping of residual stress in metallic objects

X.D Multiscale & multitechniques for Characterization

Co-organized with Univ. Magna Graecia of Catanzaro & Sapienza Univ.of Rome
Chair: Francesca Anna SCARAMUZZO, *Sapienza University of Rome*

The symposium is part of the special event SE.I

X.D.1 ***Introductive Keynote***
Stefano TACCONI, *Sapienza University of Rome & NanoShare Srl*
Micro- and nano-sized plastics in biological matrices: analysis and characterization through microscopic approaches

X.D.2 Eugenia PECHKOVA, *University of Genoa*
Light-harvesting protein intermolecular order in the Langmuir-Blodgett (LB) nanofilms – methods and applications

X.D.3 Simone SOTGIU, *Sapienza University of Rome*
Near-Field spectroscopy investigation of the strong coupling between an infrared nanoantenna and a semiconductor quantum-well

X.D.4 Fernando Jr. PIAMONTE MAGBOO, *Sapienza University of Rome*
Atmospheric gas sensing through Terahertz Continuous Wave Spectroscopy

X.D.5 Francesca RUSSO, *CNR-ITM, Rende*
Towards sustainable membranes preparation using Deep eutectic solvents (DESs)

X.E Quantum Metrology and Technologies - Part 2

Co-organized with INRIM
Chairs: Luca BOARINO & Natascia DE LEO, *INRIM*

X.E.1 Janne LEHTINEN, *VTT Technical Research Centre, Finland*
Monolithically integrated silicon spin qubits and cryogenic CMOS circuits for quantum computing

X.E.2 Enrico EMANUELE, *INRIM*
An heralded single microwave photon source for the metrological calibration of quantum limited detectors

X.E.3 GIANLUCA MILANO, *INRIM*
The EMPIR Project MEMQuD, towards a Quantum Conductance standard based on Atom Point Contact Devices

X.E.4 ***Final discussion and remarks***

X.F 3D printing for advanced healthcare: from life sciences to innovative materials - Part 2

Co-organized with Polytechnic University of Turin
Chairs: Francesca FRASCELLA, Lucia NAPIONE & Ignazio ROPPOLO, *Polytechnic University of Turin*

X.F.1 Marco COSTANTINI, *Polish Academy of Sciences, Poland*
Innovative biofabrication strategies for engineering large, artificial skeletal muscles

X.F.2 Désirée BARUFFALDI, *Polytechnic University of Turin*
Three-dimensional cell culture system as an in-vitro platform for lung cancer modelling

X.F.3 Niklas KÖNIG, *XOLO, Germany*
Xolography - volumetric 3D printing for advanced healthcare and beyond

SEPTEMBER 23 **14:00 - 15:30**

XI.A Energy production & storage

Co-organized with Univ. Magna Graecia of Catanzaro & Sapienza Univ. of Rome
Chair: Leonardo MATTIELLO, *Sapienza University of Rome*

The symposium is part of the special event SE.I

XI.A.1 ***Introductive Keynote***
Pier Giorgio SCHIAVI, *Sapienza University of Rome*
Synthesis of nanostructured energy storage materials from end-of-life lithium-ion batteries

XI.A.2 Laura PIPERNO, *ENEA Frascati Research Centre*
Progress towards iron-based coated conductors

XI.A.3 ***Keynote***
Matteo BONOMO, *University of Turin*
Nanomaterials for PhotoVoltaic: a spotlight on sustainability

XI.A.4 Vincenzo SCARANO, *Sapienza University of Rome*
Oligotiophenes: synthesis, characterization and applications as semiconductors in organic thin film transistors

PARALLEL LECTURES (PL) SESSIONS

21 SEPTEMBER	
10:50 - 11:30	
Chair: Marco VITTORI ANTISARI, *Nanoltaly Association*	
PL.I.A	Pietro ASINARI, *INRIM, Scientific Director* **Micro/nano fabrication and quantum technologies for metrology at INRIM**
Chair: Francesco BIANCARDI, *ZEISS*	
PL.I.B	Richard HALL-WILTON, *FBK, Sensors & Devices Director* **Enhancing Research and Innovation Capacity: Perspectives from a recent outsider**

22 SEPTEMBER	
10:50 - 11:30	
Chair: Marco VITTORI ANTISARI, *Nanoltaly Association*	
PL.II.A	Paavo NISKALA, *TactoTek, SVP IMSE Technology* **Sustainable smart molded structures**
Chair: Francesco BIANCARDI, *ZEISS*	
PL.II.B	Renzo CAPELLI, *Carl Zeiss SMT GmbH* **EUV development at ZEISS SMT: enabling the new era of EUV Lithography**

23 SEPTEMBER	
10:50 - 11:30	
Chair: Luca BOARINO, *INRIM*	
PL.III.A.1	Ivo DEGIOVANNI, *INRIM* **EURAMET EMN-Q: The European Metrology Network for Quantum Technologies**
PL.III.A.2	Alberto Giuliano ALBO, *INRIM* **European Metrology Network for Clean Energy and energy transition**
PL.III.A.3	Alessandro BALSAMO, *INRIM* **European Metrology Network FOR ADVANCED MANUFACTURING**
Chair: in definition	
PL.III.B	Luciana DINI, *Sapienza University of Rome* **Disposable face masks after their use: a potential significant source of microplastics to environment**

3NANO 2022

September 20 - 21 - 22 - 23

Chairs: Davide PEDDIS, *University of Genova & CNR-ISM*, Sara LAURETI, *CNR-ISM*, Gaspare VARVARO, *CNR-ISM* and Dino FIORANI, *CNR-ISM*

3NANO-22
Nano Science/Technology/Biotechnology
6th Edition, Roma (Italy)

3NANO 2022 Conference, the VI edition of the series started in 2007 as a Brazilian - French conference, will focus on the latest advances in modeling, synthesis and characterization of (multi)functional nano-materials, nano-composites and multiscale systems with magnetic, electric and optical properties and their applications in different fields including biomedicine, energy, life science and electronics.

The Conference will be held in hybrid form. It is organized by the Nanostructured Magnetic Materials Lab (nM2-Lab) of CNR-ISM (Roma, Italy) and University of Genova - DCCI (Genova, Italy). The program will consist of invited talks, oral and poster contributions.

Official website www.3nano.it

Tuesday 20 September

09:30 - 09:50	**Conference Opening**
	MAGNETIC PROPERTIES I
09:50 10:30	Oliver GUTFLEISCH, *Technische Universität Darmstadt, Germany* **[Invited] Magnetic materials for efficient energy conversion**
11:00 - 11:20	Oksana KOPLAK, *Polytechnic University of Milan, Italy* **The magnetocaloric effect in rare - earth based micro and nanostructures**
11:20 - 11:40	Julian GESHEV, *Universidade do Rio Grande do Sul, Brazil* **Recoil magnetization curves outside the major hysteresis loop and intergrain interactions in ferromagnetic systems**
11:40 - 12:00	Franciscarlos GOMES DA SILVA, *Universidade de Brasília, Brazil* **A numerical study on the interplay between the intra-particle and interparticle characteristics in bimagnetic soft/soft and hard/soft ultrasmall nanoparticles assemblies**
12:00 - 12:20	Karine CHESNEL, *Brigham Young University, USA* **Interparticle magnetic correlations in assemblies of Fe_3O_4 nanoparticles**
12:20 - 12:40	Jean Pierre MIRANDA MURILLO, *University of Genova, Italy* **Synthesis of maghemite nanoparticles by self-combustion: the atmosphere effect**
12:40 - 13:00	Marianna VASILAKAKI, *Institute of Nanoscience and Nanotechnology, Greece* **Magnetic Properties of Albumin coated Mn ferrite Nanoclusters**
	OPTICAL PROPERTIES I
14:00 - 14:50	Jochen FELDMANN, *Ludwig-Maximilians-Universität, Germany* **[Invited] Novel semiconductor nanocrystals: Ultrafast spectroscopy and energy conversion**
14:50 - 15:10	Giuseppe AMMIRATI, *CNR-ISM & University of Rome Tor Vergata, Italy* **Band structure and exciton dynamics in mono and multi-layer 2D perovskites**
15:10 - 15:30	Fabrizio MESSINA, *University of Palermo, Italy* **Electronic interactions within Carbon nanodots-metal nanoparticles nanohybrids, and their applications in photocatalysis and photonics**
	APPLICATIONS I: ENERGY & SENSORS
16:00 - 16:40	Markéta ZUKALOVA, *The Czech Academy of Sciences, Czech Republic* **[Invited] The effect of TiO_2 top layer and modified separator on charge capacity of Li-sulfur battery**
16:40 - 17:00	Michaël REDOLFI, *Université Paris Cité, France* **Metal-Microwave Plasma Interaction for Hydrogen Storage**
17:00 - 17:20	Thiago FIUZA, *Université Paris-Saclay, Gif sur Yvette & Sorbonne Université, France - Universidade de Brasília, Brazil* **Thermoelectric coefficient dependency on chemical composition of ionic liquid based ferrofluids**
17:20 - 17:40	Alice SCIORTINO, *University of Palermo, Italy* **B_2O_3 nanodisks synthesized by liquid laser ablation**
17:40 - 18:00	Youssef SNOUSSI, *Université Paris Cité, France* **Biochar: revisiting an availful material for life sustainability**

Wednesday 21 September

DESIGN & CHARACTERIZATION TECHNIQUES

08:30 - 09:10	Cinzia GIANNINI, *Institute of Crystallography - CNR, Bari, Italy* **[Invited] Small and Wide Angle X-ray Scattering as scanning microscopies to study ecosystem, human or animal health problems or to inspect novel smart materials**
09:10 - 09:30	Nicole CHAARAOUI, *University of Reims Champagne-Ardenne, France* **Investigation of nanostructured materials of topography free surface by Scanning Thermal microscopy**
09:30 - 09:50	Alessio MEZZI, *Institute for the Study of Nanostructured Materials, Italy* **New features for the investigation of advanced materials by ESCA**
09:50 - 10:10	Maria BALASOIU, *Joint Institute of Nuclear Research, Russia - Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering, Bucharest & Magurele & West University of Timisoara, Romania* **Small-angle neutron scattering investigation of ferrofluids with anisometric nanoparticles**
10:10 - 10:30	Thanh HA DUONG, *Université de Paris, France* **Plant virus capsids: 3D scaffolds to organize nanoparticles**
11:00 - 11:40	Majed CHERGUI, *École Polytechnique Fédérale de Lausanne, Switzerland* **[Invited] Novel characterization methods of the ultrafast electronic and structural dynamics in nanomaterials**
11:40 - 12:00	Antonino MADONIA, *CNR-IPCF, Bari, Italy* **Tuning the Optical Properties of Carbon Dots Towards Red Emission**
12:00 - 12:20	Hadar MANIS LEVY, *University of Padova, Italy* **Characterization of the ultrafast dynamics of Multilayer Quantum Dot nano-Materials: the effect of chiral linkers**
12:20 - 12:40	Guilherme Siqueira GOMIDE, *Universidade de Brasília, Brazil* **Novel magnetic fluorescent nanofluids obtained by a colloidal approach**
12:40 - 13:00	Peter SCHALL, *University of Amsterdam, The Netherlands* **Photonic and excitonic coupling in nanocrystal superstructures**

ELECTRONIC PROPERTIES

14:10 - 14:50	Santiago Jose Alejandro FIGUEROA, *Laboratório Nacional de Luz Síncrontron, Brazil* **[Invited] Sirius Beamlines for Nanoscience Studies**
14:50 - 15:10	Souad AMMAR, *Université de Paris Cité, France* **From non-toxic quantum dots to light displays**
15:10 - 15:30	Gil GONÇALVES, *University of Aveiro, Aveiro & 2LASI - Intelligent Systems Associate Laboratory, Portugal* **Highly efficient graphene quantum dots/porphyrin photodynamic therapeutic agents for breast cancer**

THEORY & MODELLING I

16:30 - 17:10	Felipe David Crasto DE LIMA, *Laboratório Nacional de Nanotecnologia, Brazil* **[Invited] Emergent Quasiparticles in 2D Materials**
17:10 - 17:30	Artem KUKLIN, *Uppsala University, Sweden* **Superatom Molecular Orbitals of Li@C_{60} Monolayer**
17:30 - 17:50	Pedro A. SANCHEZ, *University of the Balearic Islands, Spain & University of Vienna, Austria* **Structure and electrostatic properties of polyelectrolyte dendrimer coatings**

Thursday 22 September

APPLICATIONS II: BIOMEDICINE	
08:30 - 09:10	Montserrat RIVAS, *University Oviedo, Spain* **[Invited] Magnetic Nanoparticles and Sensors for Rapid Diagnostic Testing for Health Care: Application to Pneumonia, Histamine, and COVID Antibodies Detection**
09:10 - 09:30	Tania POMILI, *IIT & University of Genoa, Italy* **Paper-based multiplexed colorimetric device for the simultaneous detection of salivary biomarkers**
09:30 - 09:50	Anna SCARSI, *IIT & University of Genoa, Italy* **Multi-line Pt-based lateral flow device for the colorimetric measurement of antioxidant levels in saliva**
09:50 - 10:10	Nawal SERRADJI, *Université Paris Cité, France* **Interaction between Carbon dots from folic acid and their cellular receptor: the first qualitative spectroscopic approach**
10:10 - 10:30	Rita BENCIVENGA, *University of Genoa, Italy* **Horizon Europe and Gender+: a focus on Nano Science and Technology**
MAGNETIC PROPERTIES II	
11:00 - 11:40	Josep NOGUÉS, *Institut Català de Nanociència i Nanotecnologia, Spain* **[Invited] Magnetoplasmonic nanodomes as a novel structure for biomedical applications**
11:40 - 12:00	Alessio GABBANI, *University of Pisa & University of Florence, Italy* **Transparent Conductive Oxide Nanocrystals as Promising Materials for Magnetoplasmonics**
12:00 - 12:20	Nikolaos NTALLIS, *National Centre of Scientific Research "Demokritos", Greece* **Functionalization of ferrite nanoparticles with organic coatings**
12:20 - 12:40	Konstantinos SIMEONIDIS, *Aristotle University of Thessaloniki & 2Ecoresources P.C., Greece* **A continuous-flow process for the rapid synthesis of Fe_3O_4 nanoparticles using microwaves**
12:40 - 13:00	Daniela Paola VALDÉS, *Instituto de Nanociencia y Nanotecnologia & Universidad Nacional de Cuyo, Argentina* **Role of particle-intrinsic parameters, experimental conditions and interactions in magnetic fluid hyperthermia**
THEORY & DESIGN	
14:10 - 14:50	Andrey VARLAMOV, *Institute for Superconductivity and Innovative Materials - CNR, Rome, Italy* **[Invited] Charged Colloids at the Metal–Electrolyte Interface**
14:50 - 15:10	Régine PERZYNSKI, *Sorbonne Université, France* **Colloidal structure and thermodiffusion of magnetic-nanoparticle dispersions in ionic liquids**
15:10 - 15:30	C. KERN, *Sorbonne Université, France & Universidade de Brasilia, Brasil* **Influence of low water content on the thermo-physical properties of deep eutectic solvent choline chloride-urea and its application to colloidal dispersions**
MAGNETIC PROPERTIES III	
16:30 - 17:10	Elin Lilian WINKLER, *Consejo Nacional de Investigaciones Científicas y Técnicas, Argentina* **[Invited] Surface and interfaces effects in two or three phases magnetic nanoparticles with onion-like architecture**
17:10 - 17:30	Luca GNOLI, *Institute of Nanostructured Materials – CNR, Bologna, Italy* **Exchange bias effects in Co/CoO coupled with molecular layers**
17:30 - 17:50	Mirjana BARICIC, *Université de Paris Cité, France* **The polyol synthesis of antiferromagnetic CoO nanoparticles: how to tune aggregation and – thus – magnetic properties**

Friday 23 September

APPLICATIONS III

08:30 - 09:10	Mohammed BOUJTITA, *Université de Nantes France, France* **[Invited] Inks for Alternating Current Electroluminescent Devices: Characterizations and applications**
09:10 - 09:30	Fayna MAMMERI, *Université de Paris Cité, France* **Preventing the toxicity of ZnS:Mn nanoparticles in aquatic media, using the sol-gel technology**
09:30 - 09:50	Gerardo F. GOYA, *Instituto de Nanociencia y Materiales de Aragón & University of Zaragoza, Spain* **Degradation of methylene blue organic wastewater by magnetically activated nanofibers**
09:50 - 10:10	Claudia BELVISO, *Institute of Methodologies for Environmental Analysis - CNR, Tito Scalo, Italy* **Magnetic zeolites from wastes and natural sources**
10:10 - 10:30	Alex Fabiano Cortez CAMPOS, *University of Brasília, Brazil* **Hybrid magnetic core@shell@shell nanocomposites as efficient and reusable adsorbents for anionic dyes**

THEORY & MODELLING II

11:00 - 11:20	Andrejs CEBERS, *University of Latvia, Latvia* **Dynamics of a spontaneously bent ferromagnetic filament**
11:20 - 11:40	Mark AUSLENDER, *Ben Gurion University of the Negev, Israel* **A software for simulation and inverse design of nanophotonic metamaterials based on periodic metasurfaces**

MULTIFUNCTIONAL MATERIALS

11:40 - 12:00	Osman ADIGUZEL, *Firat University, Turkey* **Shape Memory Phenomena and Multilayered Nature of Martensite in Copper Based Shape Memory Alloys**
12:00 - 12:20	Sourov CHANDRA, *Aalto University, Finland* **Core-selective silver-doping of gold nanoclusters by surface-bound sulphates on colloidal templates: From synthetic mechanism to relaxation dynamics**
12:20 - 12:40	Maxime RABOISSON-MICHEL, *Institute de Physique de Nice, France* **Creation of recirculation micro-currents by vector magnetic microswimmers**
12:40 - 13:00	Adriana GRANDOLFO, *Polytechnic University of Bari, Italy* **Novel hybrid nanocomposites based on Reduced Graphene Oxide decorated with Ag Nanoparticles for antibacterial textile coatings**

YOUNGINNOVATION

The State of Research communicated by Young Researchers

September 21 - 22 - 23

Chairs:
Donatella PAOLINO & Maria Chiara CRISTIANO, *University Magna Graecia of Catanzaro*
Marta FEROCI & Leonardo MATTIELLO, *Sapienza University of Rome*

ORGANIZING BOARD:
Donatella PAOLINO, *University Magna Graecia of Catanzaro*
Christian CELIA, *The 'Gabriele d'Annunzio' University, Chieti-Pescara*
Emanuela Fabiola CRAPARO, *University of Palermo*
Maria Chiara CRISTIANO, *University Magna Graecia of Catanzaro*
Teresa MUSUMECI, *University of Catania*
Michele CONTI, *University of Pavia*
Francesco PUOCI, *University of Calabria*
Giovanni TOSI, *University of Modena and Reggio Emilia*
Daniele TORELLA, *University Magna Graecia of Catanzaro*
Giovanni CUDA, *Università Magna Graecia di Catanzaro*

YOUNG 2022 Innovation

Co-organized with

UMG dubium sapientiae initium

SAPIENZA UNIVERSITÀ DI ROMA

NanoInnovation has always tried to promote science and research at all levels, to encourage exchanges between universities, research institutions and companies, to facilitate participation of early stage researchers in the scientific world, to support their careers and promote mentorship activities. For these reasons, thanks to the collaboration with University Magna Graecia of Catanzaro and Sapienza University of Rome, the third edition of the special event "**YoungInnovation - The State of Research communicated by Young Researchers**" will take place on September 21-22-23 to underline its importance and to reserve even more space for the contributions of young researchers in this field.
Today science, technology and innovation are the engine of development all over the world. In a complex and fast-changing world, researchers can contribute to face all big challenges ahead. For this reason, new generations of researchers and scientists are key to world future development.
The three-days event will host a series of symposia where the state of research will be presented by young researchers (< 35 years old), who daily work in laboratory to produce innovation. The aim of YoungInnovation is to communicate the current status of the research. In particular, very innovative aspects will be analysed, ranging from life science to material science with a particular focus on personalized medicine, microscopy techniques (AFM, TERS, SERS), micro and nanoelectronics, nanotechnology, advanced materials, photonics, advanced manufacturing and quantum technologies. The special event will be completed and enriched with plenary scientific lectures, consisting in lectio magistralis held by "Senior Scientists" who will give a roadmap on the topics developed in the daily symposia.
The event meets the need to encourage the exchange of ideas and to support young researchers in their activities. This will be the place where young researchers will be able to discuss science and meet their colleagues in attendance.

21 SEPTEMBER

09:00 - 10:30	SE.I.1

Targeted therapy: the importance of specificity- based therapy

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chair: Mauro FERRARI, *BrYet Pharma & University of Washington, USA*

SE.I.1.1	***Introductive Keynote*** Tambet TEESALU, *University of Tartu, Estonia* **Precision systemic targeting of nanoparticles with homing peptides**
SE.I.1.2	Nicola D'AVANZO, *The 'Gabriele d'Annunzio' University, Chieti-Pescara* **RPAR-conjugated nanovesicles for the potential targeting of prostate cancer**
SE.I.1.3	Ilaria OTTONELLI, *University of Modena & Reggio Emilia* **Hybrid nanomedicines for the central nervous system: optimization, targeting, and scale up**
SE.I.1.4	Luca CERRI, *University of Siena* **Camouflaged SEDDS for the active targeting of Inula Viscosa extract for the treatment of metastatic melanoma**
SE.I.1.5	Francesco PATITUCCI, *University of Calabria* **Molecularly Imprinted Polymers as carriers for Mannose-targeting of anticancer-drug**

11:30 - 13:00	SE.I.2

OMIC technologies: a useful tool in advanced medicine

Co-organized with University Magna Graecia of Catanzaro and Sapienza University of Rome
Chair: Adriele Prina MELLO, *TRINITY College Dublin, Ireland*

SE.I.2.1	***Introductive Keynote*** Luana LICATA, *Human Technopole Foundation & University of Rome Tor Vergata* **Omics Technologies, Data and Bioinformatics Resources**
SE.I.2.2	Licia E. PRESTAGIACOMO, *University Magna Graecia of Catanzaro* **Data- Independent Analysis of EPS-urine coupled to Machine Learning: a predictive model for prostate cancer**
SE.I.2.3	Maria Stella MURFUNI, *University Magna Graecia of Catanzaro* **Interactome Analysis of Lin28a by Proteomics approach**
SE.I.2.4	Miriam GAGGIANESI, *University of Palermo* **Cancer stem cells (CSCs) in the -Omics era**
SE.I.2.5	Gabriele VELLA, *TRINITY College Dublin, Ireland* **ExtraCellular Vesicles applications: inherently -omics based**

21 SEPTEMBER

14:00 - 15:30	SE.I.3

3D bioprinting for translational and personalized medicine

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chair: Francesco PUOCI, *University of Calabria*

SE.I.3.1	***Introductive Keynote*** Michele CONTI, *University of Pavia* **3D Bioprinting. One word, many technologies, and applications**
SE.I.3.2	Elia BARI, *University of Piemonte Orientale* **Lyosecretome: the new component for regenerative bio-inks?**
SE.I.3.3	Mattia TIBONI, *University of Urbino* **The revolutionary technology of 3D printing in the pharmaceutical field**
SE.I.3.4	Giuseppe BARBERI, *University of Palermo* **Polysaccharide/polyaminoacid based hydrogels containing hydroxyapatite nanoparticles as potential bioinks for bone regeneration**
SE.I.3.5	Giulia DI GRAVINA, *University of Pavia* **Towards a 3D bio-printed in-vitro model for liver**
SE.I.3.6	4D printing in the development of retentive drug delicery systems

16:00 - 17:30	SE.I.4

The many ways to myocardial regeneration

Co-organized with University Magna Graecia of Catanzaro and Sapienza University of Rome
Chair: Konrad URBANEK, *University Magna Graecia of Catanzaro*

SE.I.4.1	Sebastiano SCIARRETTA, *Sapienza University of Rome* **The role of autophagy in cardioprotection and cardiac regeneration**
SE.I.4.2	Fabiola MARINO, *University Magna Graecia of Catanzaro* **The piRNome of cardiac/progenitor cells: a novel procardiogenic piRNA promotes their specification and differentiation in cardiomyocytes in vitro**
SE.I.4.3	Leonardo SCHIRONE, *Sapienza University of Rome* **Hippo pathway and tissue regeneration**
SE.I.4.4	Mariangela SCALISE, *University Magna Graecia of Catanzaro* **Diabetes-Induced Cellular Senescence and Senescence-Associated Secretory Phenotype Impair Cardiac Regeneration and Function Independently of Age**
SE.I.4.5	Manuela MURA, *Fondazione IRCCS* **Induced pluripotent stem cells as model systems for precision medicine in cardiovascular diseases**
SE.I.4.6	Nadia SALERNO, *University Magna Graecia of Catanzaro* **Pharmacological clearance of senescent cells improves cardiac remodeling and function after myocardial infarction in female aged mice**

21 SEPTEMBER

17:30 - 18:30	SE.I.5
REMARKS AND CONCLUSIONS	
Co-organized with Univ. Magna Graecia of Catanzaro and Sapienza Univ. of Rome Chair: Marco VITTORI ANTISARI, *Nanoltaly Association*	
SE.I.5.1	Annalisa CAPUANO, *University of Campania "Luigi Vanvitelli"* **Target Therapies: Where do we stand and looking for**
SE.I.5.2	Marco GASPARI, *University Magna Graecia of Catanzaro* **Mass spectrometry: looking at the "omics" horizon in high resolution**
SE.I.5.3	Laura RUSSO, *University of Milano-Bicocca* **ECM mimetics for 3D Bioprinting applications: the importance of chemical and biomolecular features to guide cell fate**
SE.I.5.4	Daniele TORELLA, *University Magna Graecia of Catanzaro* **Myocardial regeneration protocols towards the routine clinical scenario: An unseemly path from bench to bedside**
19:00 **AperitivYoung**	

22 SEPTEMBER

09:00 - 10:30	SE.I.6

Extracellular vesicles: a new tool in personalized medicine

Co-organized with University Magna Graecia of Catanzaro and Sapienza University of Rome
Chair: Christian CELIA, *The 'Gabriele d'Annunzio' University, Chieti-Pescara*

SE.I.6.1	***Introductive Keynote*** Joel Zacharias NORDIN, *Karolinska Institutet, Sweden* **Bioengineering extracellular vesicles for drug delivery**
SE.I.6.2	Antonella BARONE, *University Magna Graecia of Catanzaro* **Extracellular vesicles-Liposomes Hybrid thermoresponsive nanovesicles for selective tumor targeting**
SE.I.6.3	Xiuming LIANG, *Karolinska Institutet, Sweden* **Comprehensive functional screen of extracellular vesicle scaffolds for efficient cargo delivery**
SE.I.6.4	Anna Maria ZIMBO, *University Magna Graecia of Catanzaro* **Phage display technology: a target-guided method for tumor derived exosomes characterization**
SE.I.6.5	Gabriele RACITI, *University of Messina* **Cancer EVs and their potential in diagnosis and therapy**

11:30 - 13:00	SE.I.7

Theranostic nanomedicine: current challenges and future perspectives

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chair: Emanuela CRAPARO, *University of Palermo*

SE.I.7.1	***Introductive Keynote*** Cristina SATRIANO, *University of Catania* **Multimodal theranostic nanoplatforms for nanomedicine applications**
SE.I.7.2	Mara Andrea UTZERI, *University of Palermo* **β-cyclodextrin decorated multicolor carbon nanodots as theranostic nanosystem for the delivery of sildenafil in breast cancer**
SE.I.7.3	Alice FOTI, *University of Catania* **A study on the effective removal of cetyltrimethylammonium bromide from gold nanorods to enhance their potential as theranostic nanoplatforms**
SE.I.7.4	Mariarosa GIGLIOBIANCO, *Percuros B.V., The Netherlands* **Development of Perfluorocarbon-Loaded Polymeric Nanoparticles For 19F Magnetic Resonance Imaging**

22 SEPTEMBER

14:00 - 15:30	SE.I.8

Synthesis of heterogeneous materials

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chair: Marta FEROCI, *Sapienza University of Rome*

SE.I.8.1	***Introductive Keynote*** Rubia Y. S. ZAMPIVA, *Sapienza University of Rome* **Controlled preparation of heterogeneous nanostructures by Chemical Vapor Deposition**
SE.I.8.2	Beatrice SIMONIS, *Sapienza University of Rome* **Core-shell lipid-based nanosystems for mitochondrial targeting of cancer cells**
SE.I.8.3	Roya BINAYMOTLAGH, *Sapienza University of Rome* **Synthesis of a novel biocompatible peptide hydrogel impregnated with titanium oxide nanoparticles; investigation of its biological applications**
SE.I.8.4	Mariangela CLEMENTE, *CNR-ISB, Rome* **Development of nanocarriers to improve the transport of drugs across the blood brain barrier**
SE.I.8.5	Angela CAPOCEFALO, *CNR-ISC, Rome* **Assembly of patchy colloids towards the development of functional nanomaterials**

16:00 - 17:30	SE.I.9

Polymers & Nanosystems

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chair: Daniela DE VITA, *Sapienza University of Rome*

SE.I.9.1	***Introductive Keynote*** Daniele ROCCO, *Sapienza University of Rome* **Polyhydroxyalkanoates (PHAs): synthesis, properties and applications**
SE.I.9.2	Sara CERRA, *Sapienza University of Rome* **Polymeric nanoparticles as bimodal imaging contrast agents**
SE.I.9.3	Gianluca FORCINA, *Sapienza University of Rome* **Fabrication of polyesters nanoparticles with green solvents and reagents**
SE.I.9.4	Martina MERCURIO, *Sapienza University of Rome* **Silver nanoparticles as efficient tool in agrifood applications**
SE.I.9.5	Susanna ROMANO, *Roma Tre University* **Ionic liquids used as plasticizers of starch: Influence of anionic part**

22 SEPTEMBER

17:30 - 18:30	SE.I.10
REMARKS AND CONCLUSIONS	
Co-organized with Univ. Magna Graecia of Catanzaro and Sapienza Univ. of Rome Chair: Marco VITTORI ANTISARI, *Nanoltaly Association*	
SE.I.10.1	Enrico IACCINO *University Magna Graecia of Catanzaro* **Exosome based-vehicles: a game-changer in the new era of nanomedicine**
SE.I.10.2	Concetta RAFANIELLO *University of Campania "Luigi Vanvitelli"* **Theranostic strategies: new frontiers in precision medicine**
19:00 **AperitivYoung**	

23 SEPTEMBER

09:00 - 10:30	SE.I.11

Carbon based nanomaterials

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chair: Antonella MESSORE, *Sapienza University of Rome*

SE.I.11.1	***Introductive Keynote*** Martina BORTOLAMI, *Sapienza University of Rome* **Carbon dots: synthesis and applications**
SE.I.11.2	Anastasia FORNARI, *Sapienza University of Rome & NanoShare Srl* **Cellulose nanomaterials for Cultural Heritage: extraction, synthesis, characterization and applications**
SE.I.11.3	Cinzia MICHENZI, *Sapienza University of Rome* **Sustainable synthesis of Carbon Dots from industrial orange peel waste for catalysis and photocatalysis applications**
SE.I.11.4	Bajramshahe SHKODRA, *Free University of Bozen-Bolzano* **Carbon nanotube-based biosensors: Principles and applications**
SE.I.11.5	Fabrizio VETICA, *Sapienza University of Rome* **Electrochemical synthesis of amino acid-derived Chiral Carbon Dots as recyclable heterogeneous nano-organocatalysts**

11:30 - 13:00	SE.I.12

Multiscale & multitechniques for Characterization

Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome
Chair: Francesca Anna SCARAMUZZO, *Sapienza University of Rome*

SE.I.12.1	***Introductive Keynote*** Stefano TACCONI, *Sapienza University of Rome & NanoShare Srl* **Micro- and nano-sized plastics in biological matrices: analysis and characterization through microscopic approaches**
SE.I.12.2	Eugenia PECHKOVA, *University of Genoa* **Light-harvesting protein intermolecular order in the Langmuir-Blodgett (LB) nanofilms – methods and applications**
SE.I.12.3	Simone SOTGIU, *Sapienza University of Rome* **Near-Field spectroscopy investigation of the strong coupling between an infrared nanoantenna and a semiconductor quantum-well**
SE.I.12.4	Fernando Jr. PIAMONTE MAGBOO, *Sapienza University of Rome* **Atmospheric gas sensing through Terahertz Continuous Wave Spectroscopy**
SE.I.12.5	Francesca RUSSO, *CNR-ITM, Rende* **Towards sustainable membranes preparation using Deep eutectic solvents (DESs)**

23 SEPTEMBER

14:00 - 15:30	SE.I.13
Energy production & storage	
Co-organized with University Magna Graecia of Catanzaro & Sapienza University of Rome Chair: Leonardo MATTIELLO, *Sapienza University of Rome*	
SE.I.13.1	***Introductive Keynote*** Pier Giorgio SCHIAVI, *Sapienza University of Rome* **Synthesis of nanostructured energy storage materials from end-of-life lithium-ion batteries**
SE.I.13.2	Laura PIPERNO, *ENEA Frascati Research Centre* **Progress towards iron-based coated conductors**
SE.I.13.3	**Keynote** Matteo BONOMO, *University of Turin* **Nanomaterials for PhotoVoltaic: a spotlight on sustainability**
SE.I.13.4	Vincenzo SCARANO, *Sapienza University of Rome* **Oligotiophenes: synthesis, characterization and applications as semiconductors in organic thin film transistors**

ADVANCES AND INNOVATION IN ELECTRONICS IN THE CHIPS ACTS ERA

September 22

Co-organized with

SAPIENZA UNIVERSITÀ DI ROMA

IMM Institute for Microelectronics and Microsystems

Airi ASSOCIAZIONE ITALIANA PER LA RICERCA INDUSTRIALE

22 SEPTEMBER

09:00 - 10:30	SE.II.1
Emerging and advanced techologies in Electronics - Part 1	
Co-organized with Sapienza University of Rome Chair: Roberto BEZ, *Micron*	
SE.II.1.1	Alessio PANTELLINI, *Leonardo* **GaN 0.25um technology performances and reliability needs at Leonardo**
SE.II.1.2	Paolo FANTINI, *Micron* **Memory Technology Enabling the Future Computing Systems**
SE.II.1.3	Paola TIBERTO, *INRIM & Italian Association of Magnetism, President* **Spintronics for energy efficient magnetoelectronics**
SE.II.1.4	Adriano DIAZ FATTORINI, *CNR-IMM* **Thermal stability of Ge-rich $Ge_xSb_2Te_5$ layers**
SE.II.1.5	Paolo TESSARIOL, *Micron* **Innovations and future trends in the NAND Flash technology**

11:30 - 13:00	SE.II.2
IPCEI Microelectronics initiative: Tech solutions for the digital transformation, IoT and Industry 4.0	
Co-organized with AIRI, FBK and STM - Chairs: Andrea PORCARI, *AIRI* & Cosimo MUSCA, *STM*	
SE.II.2.1	Introduction: **The IPCEI Microelectronics: Tech solutions for the digital transformation, IoT, smart sensors and Industry 4.0**
SE.II.2.2	Josef-Anton MOSER, *Infineon Technologies Austria AG, Austria* **IPCEI contribution to Si and SiC based solutions for energy efficient mobility**
SE.II.2.3	Hannes VORABERGER, *AT&S Austria Technologie & Systemtechnik AG, Austria* **IPCEI ME 1 in implementation – AT&S results, experiences and impacts**
SE.II.2.4	Giovanni PATERNOSTER, *FBK* **Recent updates on 3D integration approaches for Silicon Photomultipliers (SiPM)**
SE.II.2.5	Laurent DUGOUJON, *STMicroelectronics, France* **Advanced Internet of things applications**
SE.II.2.6	*Models and experiences to spill-over technologies to industry and territories* *Contributions from networks and technology clusters in non -IPCEI countries*

14:00 - 15:30	SE.II.3
Industrial strategies and research policies toward Electronics Technology	
Co-organized with Sapienza University of Rome - Chair: Marco Balucani, *Sapienza*	
SE.II.3.1	Andrea LUCIBELLO, *Leonardo* **Leonardo GaAs/GaN Foundry a National strategic asset toward the technology independent**
SE.II.3.2	Steve BROWN, *Director ESI Automotive, Stellantis* **Electronic Materials Innovations for Sustainable Assembly**
SE.II.3.3	***Special interview with Prof. Francesco PRIOLO, University of Catania, Rector*** Hosted by Chiara LICO, *Journalist*

16:00 - 17:30	SE.II.4
Emerging and advanced techologies in Electronics - Part 2	
Co-organized with Sapienza Univ. of Rome - Chair: Vittorio MORANDI, *IMM-CNR*	
SE.II.4.1	Roberto MANTOVAN, *CNR-IMM* **Development of large-area topological insulators on Silicon for spintronics**
SE.II.4.2	Andrzej SIKORA, *Wrocław University of Science and Technology, Poland* **Diagnostics of microelectronic devices with SPM methods: problems and solutions**
SE.II.4.3	Vincenzo VINCIGUERRA, *STMicroelectronics* **Modelling the Elastic Energy of a Bifurcated Wafer: A Benchmark of the Analytical Solution vs. the ANSYS Finite Element Analysis**
SE.II.4.4	Alessio URBANI, *Micron* **3D-NAND cell challenges to enable high density and high-performance devices**
SE.II.4.5	Raffaella CALARCO, *CNR-IMM* **Boosting automotive applications with phase change alloys and heterostructures**
SE.II.4.6	Ivana ZRINKSI, *Inst. of Chemical Technology of Inorganic Materials, Johannes Kepler Univ., Austria* **Resistive switching in tantalum and hafnium nanoscale anodic oxide devices**

KEY ENABLING TECHNOLOGIES FOR THE PROTECTION OF CULTURAL HERITAGE: FROM EARTHQUAKES TO BIG DATA

September 22

The hybrid session aims to share different approaches to the development of new technologies in the domain of cultural heritage. Private entrepreneurs and scientists, along with young researchers, will focus on KETs in the broad context of tangible cultural heritage. Preventive damage assessment, data integration, service design, technology transfer, early hazard systems, digitization, AI, consolidation of built heritage, sensing methods will be among the topics debated in the hybrid session.

The aim is to bring together specialists and innovators within the highly diverse know-how cluster of the Centre of Excellence DTC Lazio towards future inclusive research endeavors.

22 SEPTEMBER

14:00 - 15:30	SE.III.1
Key Enabling Technologies for the protection of cultural heritage: from earthquakes to big data - Part 1	
Co-organized with CdE DTC Lazio Chair: Mariangela CESTELLI GUIDI, *INFN*	
SE.III.1.1	Sabina BOTTI, *ENEA* **Raman/luminescence mapping monitoring of UV-EUV irradiation effect on cellulose for the cleaning of ancient paper surface**
SE.III.1.2	Francesco COCHETTI, *CoopCulture* **AMOR- Advanced Multimedia and Observation services for the Rome cultural heritage**
SE.III.1.3	Valeria STAGNO, *Sapienza University of Rome* **Portable low-field single-sided NMR for wooden cultural heritage diagnostics**
SE.III.1.4	Silvia CAPUANI, *CNR-ISC & Sapienza University of Rome* **Clinical MRI and CT protocols to investigate wooden artworks**
SE.III.1.5	Antonio PUGLIANO, *Roma Tre University* **INT4CT "Integrated digital system for the knowledge, active conservation, dissemination and safe use of Heritage and Landscape"**
SE.III.1.6	Mariangela CESTELLI GUIDI, *INFN* **ARTEMISIA- Artificial intelligence to support diagnostic technologies for cultural heritage: a prototype for assessing the state of conservation of pictorial works**

22 SEPTEMBER

16:00 - 17:30	SE.III.2

Key Enabling Technologies for the protection of cultural heritage: from earthquakes to big data - Part 2

Co-organized with CdE DTC Lazio
Chair: Mariangela CESTELLI GUIDI, *INFN*

SE.III.2.1	Leonardo SEVERINI, *University of Rome Tor Vergata* **Tuned microgels as efficient systems for paper materials conservation**
SE.III.2.2	Mattia IPPOLITI, *Sapienza University of Rome* **Lazio Antico: the information system for the archaeological heritage of ancient Latium**
SE.III.2.3	Aldo WINKLER, *INGV* **Assessing the impact of vehicular particulate matter on cultural heritage by magnetic biomonitoring: Villa Farnesina and Palatine Hill in Rome, Italy**
SE.III.2.4	Luca BIANCHINI, *Roma Tre University* **BIMHERIT: towards a novel digital twin approach in cultural heritage assessment**
SE.III.2.5	Luigi SORRENTINO, *Sapienza University of Rome* **Protecting museum cultural heritage from earthquake and traffic vibrations: the MONALISA project**
SE.III.2.6	Edoardo COLONNA & Candida MOFFA, *Sapienza University of Rome* **Advanced methods for multispectral image processing and multi techniques diagnostic for an innovative fruition of paintings: the case study of IMAGO project**
SE.III.2.7	Tommaso ROSSI, *University of Rome Tor Vergata* & Cecilia BARTULI, *Sapienza University of Rome* **CIABOT - Controllo e gestione tramite IA dei Beni culturali per Operazioni di Tutela e conservazione**

For the latest updates, please check the QRcode on the side

01 Badrul ALAM, *Sapienza University of Rome*
Integrated spectroscopic setup with plasmonic nano structures for the enhancement of fluorescence and Raman sensing

02 Nathalie ALMEIDA LOPES, *AMYLUM, BR*
Giant liposomes containing resistant starch for probiotics microorganisms encapsulation: Preparation and characterization

03 Sergio AMMENDOLA, *Ambiotec*
Synthesis of the N-acetylcarnitine nanoparticles and study of their effects on Caco-2 cells

04 Mehdi ASADI, *Gestamp*
New Advanced High Strength Steel for Automotive Application

05 Chiara BARATTINI, *Aczon S.R.L.*
Fluorescent silica nanoparticles to improve (and monitor) targeted drug delivery

06 Davide BARBAGALLO, *University of Catania*
Serum extracellular vesicle-derived circhipk3 and circsmarca5 are two novel diagnostic biomarkers for glioblastoma multiforme

07 Beatrice BATTISTINI, *ISS*
Nano-sized particles contained in tattoo inks: distribution and toxicity using ex-vivo human skin

08 Silvia BATTISTONI, *CNR-IMEM*
Design, fabrication and characterization of 2D and 3D systems based on Conducting Polymers (CPs) for Organic Electronic Devices

09 Marco BERTELLI, *CNR-IMM*
Structural and electrical characterization of $Sb_2Te_3/Ge_xSb_2Te_5/Ge$ heterostructures

10 Simone BINI, *INFN*
Ultra-Fast InfraRed Detector for Astronomy

11 Beatrice BOCCA, *ISS*
Biomonitoring and biomarkers to assess metal-based nanomaterial exposure of consumers, workers and the general population

12 Francesca BONFIGLI, *ENEA*
Combination of LiF crystals with optical confocal micro-spectroscopy for advanced 2D-3D X-ray detection

13 Sabina BOTTI, *ENEA*
Raman/luminescence mapping monitoring of UV-EUV irradiation effect on cellulose for the cleaning of ancient paper surface

14 Andreea CAMPU, *Babes-Bolyai University, RO*
Fabrication of a Miniaturized Flexible Metalized Micro-Rough PDMS Substrate with Dual SPR-SERS Sensing Capabilities

15 Annalisa CARRETTA, *NEST*
Fluorescence lifetime microscopy reveals synthetic identity and biological function of liposomal Doxorubicin

16 Silvia CASALINUOVO, *Sapienza University of Rome*
VOC detection: hope or hype? A preliminary study to overcome many challenges

17 Enrico CATALANO, *IIT*
Recent and future applications of ultrasound-induced piezomagnetic nanoparticles for anticancer treatment

18 Virginia CAZZAGON, *Ca' Foscari University of Venice*
Safe(r) By Design alternatives of nanosilver-enabled wound dressings

19 Marco CONTI, *Sapienza University of Rome*
Ni-Cr nano composite coating developed via electroless route: influence of deposition parameters

20 Stefania D'ALESSIO, *University of Westminster, UK*
Extracellular vesicles signatures and deiminated proteins in the naked mole-rats (Heterocephalus Glauber) brain are altered by acute hypoxia

21 Rosaria D'AMATO, *ENEA*
Nanomaterials for conservation of peperino artworks

23 Adriano DIAZ FATTORINI, *CNR - IMM*
Thermal stability of Ge-rich $Ge_xSb_2Te_5$ layers

24 Rossella DI RAIMO, *Exo Lab Italia S.r.l.*
Plant-derived nanovesicles the natural carriers for drug delivery

25 Peter FAJFAR, *University of Ljubljana, SI*
Repeatable thermal cycling in thermal fatigue tests of base material or surface layers

26 Emma FENUDE, *CNR-ICB*
The Dominant Role of Side Chains in β-Sheets Aggregates

27 Maria Luisa FIANI, *ISS*
Engineered Extracellular Vesicles for biogenesis and immunomodulation studies

28 Eleonora FICIARÀ, *University of Turin*
Nano-theranostic chelating agents: an innovative approach to regulate intracellular iron in brain

30 Celestino FONTANETO, *ITIOMAR*
"GOLD RICE": gold nanosensors for the protection of the Health and the Environment

31 Sergio GALVAGNO, *ENEA*
Plasma Spheroidization of SS316L: Preliminary Experimental Results

Poster Session

32 Maria Gessica CIULLA, *Casa Sollievo della Sofferenza Fdn*
The Role of SAPs and hybrid SAP-PNAs in the Fabrication of a Synthetic Erythrocyte

33 Alice GUALERZI, *Fondazione Don Carlo Gnocchi Onlus*
Blood-derived Extracellular Vesicles are potential biomarkers of response and recovery after stroke

34 Alexandru-Milentie HADA, *Babes-Bolyai University, RO*
Highly-sensitive C-reactive protein detection based on the selective aggregation of aptamer-conjugated silver nanoparticles

35 Farid HAJAREH HAGHIGHI, *Sapienza Univ. of Rome*
Synthesis and characterizations of highly stable magnetite-silver (Fe_3O_4-Ag) nanohybrid for recyclable antibacterial materials

36 Razieh IZADI, *Sapienza University of Rome*
Mechanical Characteristics of Carbon Nanotubes: Micropolar Elasticity Models and Molecular Dynamics Simulations under Torsion and Bending

37 Somayeh KHANI, *Clausthal Univ. of Technology, DE*
Plasticity Investigation of Pure Aluminum Using Multiscale Simulation Approach

40 Francesca LIMOSANI, *ENEA*
Lithium Fluoride and Smart Microgels for Innovative Fluorescent Nuclear Track Detectors in Radiobiology

41 Antonella MACAGNANO, *CNR-IIA*
TERRE PROJECT: multifunctional nanofibrous systems to control and reduce environmental impacts in agricultural systems

42 Mallikarjun MADAGALAM, *Polytechnic University of Turin*
Ferrite-based Nanoparticles: Synthesis, Characterization, and Non-Enzymatic Electrochemical Sensing Applications

43 Noureddine MAHDHI, *Tunis El Manar University, TN*
Effect of TiO_2 Nanoparticles on Capillary-Driven Flow in Water Nanofilters Based on Chitosan Cellulose and Polyvinylidene Fluoride Nanocomposites

44 Emiliana MANSI, *ENEA*
Restoration of exterior artworks by 3D printing and nanomaterials

45 Elena MAZZINELLI, *University Cattolica del Sacro Cuore*
Development of an oral mucosa model useful to characterize drug delivery systems for the oral lichen planus treatment

46 Chiara MEAZZINI, *University of Milano*
Extemporaneous preparation of fixed-dose combination orodispersible films by hot melt ram extrusion 3D printing

47 Daniele MIRABILE GATTIA, *ENEA*
Mg-based materials as anode for Li ion cells

48 Daniele MIRABILE GATTIA, *ENEA*
Superferritic-type alloy for fabrication of heat exchangers by Additive Manufacturing

49 Daniele MIRABILE GATTIA, *ENEA*
Realization of heat exchangers in composite materials and metal alloy by AM

50 Maria MONTANINO, *ENEA*
Ink formulation for gravure printed Lithium-ion batteries

51 Lucia MONTENEGRO, *University of Catania*
In Vitro Evaluation of Topical Vehicles containing Bemotrizinol loaded Lipid Nanoparticles

52 Amelia MONTONE, *ENEA*
Pyroelectric device of ZnO ceramics as thermal energy harvesting

53 Karine MOUGIN, *The Mulhouse Materials Science Institute (IS2M), FR*
Toward the development of sensors and actuators by 4D printing

54 Asma NOSHAD, *Bacha Khan University Charsadda, PK*
Metal based nanopesticides-A green approach towards sustainavle agriculture

55 Elena OLIVIERI, *Roma Tre University*
Functionalized gold nanorods as promising carrier for antiviral drugs

56 Ilaria OTTONELLI, *University of Modena and Reggio Emilia*
Retinal Targeted Hybrid Nanomedicines Loaded Into An Injectable Thermosensitive Hydrogel For Inherited Retinal Degeneration

57 Francesco PATITUCCI, *University of Calabria*
Molecularly Imprinted Polymers (MIPs) as carriers for Mannose-targeting delivery of 5-FU

58 Federico PAZZAGLIA, *Sapienza University of Rome*
2D material deterministic stacking exploiting scalable transfer techniques

59 Giulia PEDRIZZETTI, *Sapienza University of Rome*
Microstructural and hardness studies of ZrO_2 reinforced NiP nano-composite coatings for anti-erosion and anti-wear applications

60 Silvia PICCIOLINI, *IRCCS Fondazione Don Carlo Gnocchi Onlus*
Biophotonics Platforms for the characterization of functionalized nanoliposomes

61 Lorenzo PIN, *CNR-ISB*
A rapid shotgun metagenome protocol based on Oxford Nanopore Technology applied to soil biodiversity analysis

62 Valentina PROTA, *ISS*
Investigation of nanoplastic biological effects on Caco-2 cells

63 Luigi RIBOTTA, *INRIM*
Traceable Dimensional Metrology of Nanoparticles and Nanostructures

64 Alessandra RICCIARDI, *Maugeri Institute*
Longitudinal and prospective evaluation of serum neurofilament light chain in acute ischemic stroke patients by Single Molecular Array technology

65 Jasmine RODESI, *Sapienza Univ. of Rome*
Nanocomposite hydrogels with TiO_2 nanoparticles as colorimetric sensors for monitoring UV radiation exposure

66 Federico SCAGLIONE, *University of Turin*
Breaking Down SERS Detection Limit: Engineering of a Nanoporous Platform for High Sensing and Technology

67 Marco STOLLER, *Sapienza University of Rome*
Low energy production of nanoliposomes by means of a spinning disk reactor

68 Ilaria STURA, *University of Turin*
Berries preservation with curcumin and beta-cyclodextrin: the use of blue light for a 'green' approach

69 Martine TARSITANO, *Univ. Magna Græcia of Catanzaro*
Potential application of lyotropic liquid crystal gel for vaginal administration of drugs

70 Fischer TOBIAS, *Clausthal University of Technology, DE*
New Concepts for Variothermal Processing of Metal- Composite Sandwich Systems

73 Iole VENDITTI, *Roma Tre University*
Hydrophilic silver nanoparticles for the treatment of water polluted by heavy metals

74 Vincenzo VINCIGUERRA, *STMicroelectronics*
Modelling the Elastic Energy of a Bifurcated Wafer: A Benchmark of the Analytical Solution vs. the ANSYS Finite Element Analysis

75 Federica ZACCAGNINI, *Sapienza University of Rome*
Reusable Plasmonic biosensor for the rapid detection of Escherichia coli cells in potable water

76 Ivana ZRINSKI, *Johannes Kepler University, AT*
Resistive switching in tantalum and hafnium nanoscale anodic oxide devices

77 ILudmila ŽÁRSKÁ, *Palacký University Olomouc, CZ*
Platinum conjugated to Graphen Oxide nanoplatform for drug delivery in antitumor therapy

78 Benedetta DI CHIARA STANCA, *Salento University*
Chemical,structural and biological characterization of CGF and analysis of its osteogenic potential

79 Laura GIANNOTTI, *Salento University*
Osteogenic differentiation of CGF cells can be induced by Silicon scaffold

3N.01
Georgiana BULAI, *Alexandru Ioan Cuza Univ. of Iasi, RO*
Laser plasma threshold. Numerical study in COMSOL

3N.02
Georgiana BULAI, *Alexandru Ioan Cuza Univ. of Iasi, RO*
Oxide nanostructures for solar energy conversion devices

3N.03
Isabela Simona CAIZER, *West University of Timisoara - "Victor Babes" University of Medicine and Pharmacy of Timisoara, RO*
The Fe_3O_4-PAA–(HP-γ-CDs) Biocompatible Ferrimagnetic Nanoparticles for Increasing Efficacy and Reducing Toxicity in Superparamagnetic Hyperthermia: A Promising Approach for Alternative Cancer Therapy

3N.04
Ana Maria DE ALMEIDA, *University of Campinas, BR*
Control of the Magnetic Properties of $CoXFe_3$-XO_4 Nanoparticles for Performance Optimization in Magnetic Fluid Hyperthermia to Activate Magnetoliposomes for Remote Controlled Drug Release

3N.05
Antonio Marcos Helgueira DE ANDRADE, *University of Rio Grande do Sul, BR*
Ion-irradiation-induced rotation of the direction of the collapsed hard axis in thin films presenting recoil-curve overshoot

3N.06
Fernando FABRIS, *University of Campinas, BR*
Synthesis and characterization of rare earth doped α-$NaYF_4$ nanoparticles: Crystal-Field Stark Effect on the upconversion light emission spectrum

3N.07
Maria Luisa GIANCASPRO, *Univ. of Bari - CNR-IPCF*
Polar solvent-free ligand assisted reprecipitation for the synthesis of CsPbBr3 colloidal nanocrystals with tunable surface chemistry

3N.08
Ayda Ghary HAGHIGHAT, *CNR - Roma Tre University*
Recycling of End of life rare-earth permanent magnets

3N.09
Kyriaki KALAITZIDOU, *Aristotle Univ. of Thessaloniki, EL*
Adopting magnetite nanoparticles synthesis into drinking water treatment requirements: The case of hexavalent chromium

3N.10
Kyriaki KALAITZIDOU, *Aristotle Univ. of Thessaloniki, EL*
Magnetically-driven iron oxy-hydroxides for selenium uptake from water

3N.11
Oksana KOPLAK, *Polytechnic University of Milan*
Hybridization of orbital moment and spin relaxation of Er3+ single-ion magnet in ferromagnetic matrix

3N.12
Pravin KUMAR, *CSIR, India - RMIT University, AUS*
Spin dynamics and magneto-optical study on mixed ferrites based nanofluid

3N.13
Nikos MANIOTIS, *Aristotle Univ. of Thessaloniki, EL*
Numerical investigation of magnetic nanoparticles clearance from drinking water using a rotating magneto-mechanical device

3N.14
Nikos MANIOTIS, *Aristotle University of Thessaloniki, EL*
The role of the magnetocrystalline anisotropy on the frequency-dependent heating performance of magnetic nanoparticles

3N.15
Hilda MERCADO-URIBE, *Center for Research and Advanced Studies, MX*
Photoinactivation of Escherichia coli with pheomelanin nanoparticles and a chelant agent

3N.16
Ana Carolina MORENO MALDONADO, *University of Zaragoza, ES*
Better with fat: Synthesis of magnetosomes with high power absorption for a thermo-active drug release

3N.17
Nikolaos NTALLIS, *National Centre of Scientific Research "Demokritos", EL*
Size effects on the magnetic performance of organic coated ferrite nanoparticles

3N.18
Jorge Mártin NUÑEZ, *CNEA, CONICET & UNCuvo, Argentina - University of Zaragoza, ES*
Surface and interface effects in magnetic Fe_3O_4@MgO@$CoFe_2O_4$ onion-like nanoparticles

3N.19
Liudmyla OMELCHENKO, *B.I. Verkin Institute for Low Temperature Physics and Engineering of National Academy of Science of Ukrain, UA*
Fluctuation conductivity and pseudogap in $YBa_2Cu_3O_7$-δ nanolayers

3N.20
Alexander OMELYANCHIK, *University of Genoa - Immanuel Kant Baltic Federal University, RU*
Chemical tailoring of the magnetic properties of core/shell nanoparticles

3N.21
B.C.C. PEREIRA, *University of Brasília, BR*
Structural and magnetic properties of mixed ferrite nanoparticles based on zinc copper and cobalt

3N.22
Eugene PETRENKO, *B.Verkin Institute for Low Temperature Physics and Engineering of NAS of Ukraine, UA*
Comparison of the upper critical fields obtained within Ginzburg-Landau and Werthamer – Helfand – Hohenberg theories for optimally-doped $YBa_2Cu_3O_7$-δ thin films

3N.23
Jordy QUEIROS CAMPOS, *University Côte d'Azur, FR*
Improved Magneto-Microfluidic Separation of Nanoparticles through Formation of the β-Cyclodextrin–Curcumin Inclusion Complex

3N.24
Pedro SÁNCHEZ, *University of the Balearic Islands, Spain - University of Vienna, AT*
Modeling the impact of finite magnetic anisotropy on systems of ferromagnetic nanoparticles

3N.25
T.Q. SILVA, *University of Brasília, BR*
Dependence on size and shell fraction of exchange coupling and coercivity of hard/soft core/shell ferrite nanoparticles

3N.26
Konstantinos SIMEONIDIS, *Aristotle University of Thessaloniki, EL*
Sustainable tin-based biochar nanocomposite for hexavalent chromium removal from drinking water

3N.27
Teobaldo TORRES, *CNEA-CONICET, ARG*
Determining the key parameters to reach synergistic effects between magnetic hyperthermia and ROS production in ZnxFe3-XO4 magnetic Nanoparticles

3N.28
Marianna VASILAKAKI, *National Centre of Scientific Research "Demokritos", EL*
Defect-engineering of bi-magnetic iron-oxide nanoparticles for optimal heating power

INNOVATION FOR THE ENERGY TRANSITION

September 21 - 22

Co-organized with:

Politecnico di Torino

ISTITUTO ITALIANO DI TECNOLOGIA

ENEA
Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile

WORKSHOP COMMITTEE

Giancarlo CICERO, *Polytechnic University of Turin*
Stefano BIANCO, *Polytechnic University of Turin*
Candido Fabrizio PIRRI, *IIT Center for Sustainable Future Technologies - CSFT@POLITO*
Nicola LISI, *ENEA*

In recent years, the negative impact of anthropogenic CO_2 emissions on our planet's climate has motivated a progressive transition from a global energy scenario heavily reliant on fossil fuels to one based on environmentally benign, renewable energy sources. Several studies highlighted that advanced nanomaterials and nanotechnology have the potential to achieve a breakthrough in the development of novel applications for a sustainable future and for the energy transition. This workshop gathers contributions from both the academic and industrial world to strengthen their synergistic contribution to technological growth for sustainability.

Renewable energy sources produce energy following a mostly unpredictable pattern, linked to meteorological winds and clouds. However, the energy network is rigid and production must closely match consumption daily curves. That implies the necessity to store the mismatched generated energy for later use, a technologically advanced, industrially demanding and scientifically challenging task. Electrochemical energy storage can help to some extent but it is not suited for long term high power GW systems. Hydrogen can be seen as an ideal energy vector, that faces however the issue of storage and requires efficient generation and compression.

While the long-term solution is abandoning fossil fuels for renewable sources, it has been shown that in the short-to-medium term conventional fuels will still be used and CO_2 emissions will have to be compensated for. In this scenario, one of the most interesting and challenging strategies to mitigate the disastrous effect of carbon dioxide on earth's climate, is to consider CO_2 as valuable raw material to obtain value-added fuels and chemicals through its photo/electrochemical reduction (CO_2RR). The key challenge for this application is to develop highly selective, stable, efficient, environmental-friendly and inexpensive photo/electrocatalysts.

Combining H_2 and CO_2 technologies is also emerging as a positive strategy for a progressive and economically sustainable energy transition, capable to reduce fuels' impact on the environment, while still granting their use where necessary. Moreover, it's worth noting that the scenario appears strategically suited for Italy, that has several mayor and technologically advanced gas industries, a capillary methane distribution system and erratic meteorological patterns while it has abandoned the alternative nuclear energy.

LCA is finally vital to understand if technologies proposed by researchers are, however fascinating for the layman and for the legislator, overall counterproductive for the planet.

In all the boiling mix of ideas that are currently emerging in the landscape, we suggest that a few major, plurennial, country size, research programs should be activated for exploiting some long term technological and scientific developments in the field.

21 SEPTEMBER

09:00 - 10:30	WS.I.1 - TT.I.A

Hydrogen as an energy vector for the future mobility

Chair: Marzia QUAGLIO, *Polytechnic University of Turin*

WS.I.1.1 TT.I.A.1	Mauro SGROI, *(currently at Stellantis)* **Integrating hydrogen and batteries for future transport: an industrial point of view**
WS.I.1.2 TT.I.A.2	Romualdo RUOTOLO, *PUNCH Hydrocells* **The Hydrogen Engine as Enabler to Decarbonize Mobility**
WS.I.1.3 TT.I.A.3	Alessandro IANNOTTA, *API Group* **Development of hydrogen infrastructures in Italy: IP point of view on transport mobility**
WS.I.1.4 TT.I.A.4	Carlo SANTORO, *University of Milano Bicocca* **Platinum group metal-free electrocatalysts derived from wastes for fuel cells and electrolyzers**

11:30 - 13:00	WS.I.2 - TT.II.A

The role of Hydrogen for the future energy system

Chair: Elena TRESSO, *Polytechnic University of Turin*

WS.I.2.1 TT.II.A.1	Cristina MAGGI, *H2IT* **Ambitions, scenarios and opportunities of using hydrogen for the energy transition**
WS.I.2.2 TT.II.A.2	Giorgio GIGLIO, *Polytechnic University of Turin* **Underground Hydrogen Storage (UHS): A new opportunity for Energy Transition**
WS.I.2.3 TT.II.A.3	Patrick SCILABRA, *De Nora Group* **Role of Water Electrolysis in the Energy Transition**
WS.I.2.4 TT.II.A.4	Stefano CAON, *Piedmont Region* **The Piemonte hydrogen strategy: building a regional path for decarbonization and innovation**

21 SEPTEMBER

14:00 - 15:30	WS.I.3 - TT.III.A

Batteries of the future: new generation of scientists sharing innovative ideas - Part 1

Chair: Margherita MORENO, *ENEA*

WS.I.3.1 TT.III.A.1	Pier Paolo PROSINI, *ENEA* **Il Progetto di Ricerca Triennale 2019-2021 dell'ENEA sullo stoccaggio elettrochimico dell'energia. The 2019-2021 ENEA project on electrochemical energy storage**
WS.I.3.2 TT.III.A.2	Kristina EDSTRÖM, *Uppsala University, Sweden* **Battery 2030+ long term research initiative**
WS.I.3.3 TT.III.A.3	Silvia BODOARDO, *Polytechnic University of Turin* **Education and Young Scientists engagement in Battery2030+ initiative**
WS.I.3.4 TT.III.A.4	Leiting ZHANG, *Uppsala University, Sweden* **Towards a sustainable future powered by batteries**

16:00 - 17:30	WS.I.4 - TT.IV.A

Batteries of the future: new generation of scientists sharing innovative ideas - Part 2

Chair: Margherita MORENO, *ENEA*

WS.I.4.1 TT.IV.A.1	Sanchari DEB, *Uppsala University, Sweden* **Recycling**
WS.I.4.2 TT.IV.A.2	Maria ARNAIZ, *CICenergigune* **The role of Academia & Industry towards the Batteries of the Future**
WS.I.4.3 TT.IV.A.3	Laura PARA, *Polytechnic University of Turin* **Chemistry and critical raw materials**
WS.I.4.4 TT.IV.A.4	Maciej SMOLIŃSKI, *University of Warsaw, Poland* **Social aspects of the new battery manufacturing and worldwide electrification**

22 SEPTEMBER

09:00 - 10:30	WS.I.5 - TT.V.A

Nanomaterials and Nanotechnology for the virtuous CO_2 circle - Part 1

Chair: Adriano SACCO, *IIT Center for Sustainable Future Technologies - CSFT@POLITO*

WS.I.5.1 TT.V.A.1	Roberto MILLINI, *ENI* **Capturing CO_2 and Transforming it into Valuable Products**
WS.I.5.2 TT.V.A.2	Matteo ROMANO, *Polytechnic University of Milan* **CCS: an essential ingredient for the energy transition towards net zero**
WS.I.5.3 TT.V.A.3	Candido Fabrizio PIRRI, *Polytechnic University of Turin, IIT Center for Sustainable Future Technologies - CSFT@POLITO* **Strategies for the CO_2 valorisation at the Centre for Sustainable Future Technologies (IIT)**
WS.I.5.4 TT.V.A.4	Esther SANTOS, *APRIA System, Spain* **Breakthrough zero-emission technologies for energy transition: APRIA showcase**
WS.I.5.5 TT.V.A.5	Mario FORGNONE, *Saipem SpA* **The key role of carbon capture technologies in clean energy transition and a successful ccus case history – saint felicien plant (qc, canada) using enzymatic carbon capture absorbent process**

11:30 - 13:00	WS.I.6 - TT.VI.A

Nanomaterials and Nanotechnology for the virtuous CO_2 circle - Part 2

Chair: Michele RE FIORENTIN, *IIT Center for Sustainable Future Technologies - CSFT@POLITO*

WS.I.6.1 TT.VI.A.1	Hannes JÓNSSON, *University of Iceland, Iceland* **Calculations of the mechanism and rate of CO_2 electrochemical reduction to form fuel and/or chemical feedstock**
WS.I.6.2 TT.VI.A.2	Damien VOIRY, *University of Montpellier, France* **Conversion of CO_2 using electrochemical flow processes**
WS.I.6.3 TT.VI.A.3	Francesca RISPLENDI, *Polytechnic University of Turin* **The importance of a synergistic theoretical and experimental approach to design efficient electrochemical CO_2 reduction catalysts**
WS.I.6.4 TT.VI.A.4	Amin FARKHONDEHFAL, *VITO, Belgium* **Development and upscaling of gas diffusion electrodes for CO_2 reduction and electrosynthesis of chemicals**

22 SEPTEMBER

14:00 - 15:30	WS.I.7 - TT.VII.A

Advances in the field of carbon capture and storage technologies

Chair: Stefano STENDARDO, *ENEA*

WS.I.7.1 TT.VII.A.1	Enrico PARIS, *Sapienza University of Rome* **Sorption Enhanced Water Gas Shift for hydrogen-rich syngas production frombiomass**
WS.I.7.2 TT.VII.A.2	Erwin ZULETA CIRO, *University of Guglielmo Marconi - Rome* **High temperature desulfurization process assisted by ZnO sorbents for gas conditioning during biomass conversion intensified by CO_2 capture**
WS.I.7.3 TT.VII.A.3	Umberto Pasqual LAVERDURA, *Roma Tre University* **CO_2 valorization through low-temperature methanation: the case of ruthenium-based catalysts**

16:00 - 17:30	WS.I.8 - TT.VIII.A

The role of circular carbon for the future energy system

Chair: Stefano STENDARDO, *ENEA*

WS.I.8.1 TT.VIII.A.1	Carmine CAVA, *Sapienza University of Rome* **H_2/Co Syngas Production in a Fe Based Oxidizer Reactor of a Chemical Looping Cycle: Experimental Investigation**
WS.I.8.2 TT.VIII.A.2	Igor LUISETTO, *ENEA* **Carbon resistant dry reforming catalysts for syngas production over Ru supported $CaZr_{0.85}Sm_{0.15}O_{3-d}$ perovskite prepared by the auto-combustion method: the effect of Ru loading on catalytic activity**
WS.I.8.3 TT.VIII.A.3	Nicola LISI, *ENEA* **CO_2 reuse and valorization: development and application of plasma technology**

EXTRACELLULAR VESICLES: The new era of the intercellular communication

September 21

Co-organized with:

SAPIENZA UNIVERSITÀ DI ROMA

EVCIta
SOCIETÀ ITALIANA PER LE VESCICOLE EXTRACELLULARI

WORKSHOP COMMITTEE

Luciana DINI, *Sapienza University of Rome*
Stefano TACCONI, *Sapienza University of Rome & NanoShare Srl*
Annalisa RADEGHIERI, *University of Brescia*

Extracellular vesicles (EVs) have until recently been considered only cellular debris. Today they have been recognized as fundamental elements in intercellular communication. They are a heterogeneous population of membrane-bounded vesicles that play important roles not only in cellular communication but also in preventing or promoting certain diseases, including infectious diseases, neurological disorders, metabolic alterations, and cancer. With this session, we want to highlight two fundamental aspects in the study of EVs: the techniques and innovative approaches for EVs isolation and characterization and give some examples of their role in the onset of diseases. Considering the extreme heterogeneity of the EVs and the difficulty of establishing standard analytical procedures, in the first part of this session we will examine problems related to isolation, classification, and their characterization (morphological and biochemical). Furthermore, an example of isolation and use of EVs from milk will be provided as innovative possible carriers for the delivery of drugs or bioactive compounds. The second part of the workshop will focus on the role of EVs in the development and progression of diseases, like cancer, metabolic diseases and in the physiological maintenance of the extracellular matrix. The workshop will end with a symposium dedicated to young researchers in the field of extracellular vesicles.

21 SEPTEMBER

09:00 - 10:30	WS.II.1 - TT.I.B

Isolation and characterization of EVs

Chairs: Luciana DINI, *Sapienza University of Rome* & Stefano TACCONI, *Sapienza University of Rome & NanoShare Srl*

WS.II.1.1 TT.I.B.1	Rienk NIEUWLAND, *Amsterdam UMC - University Medical Center, The Netherland* **A roadmap to improve the reproducibility of extracellular vesicle research**
WS.II.1.2 TT.I.B.2	Simone DINARELLI, *CNR-ISM* **High resolution atomic force microscopy as a tool for topographical mapping of surface budding**
WS.II.1.3 TT.I.B.3	Piero DEL BOCCIO, *The 'Gabriele d'Annunzio' University, Chieti-Pescara* **Proteomics characterization of FACS-sorted Extracellular Vesicles sub-types as liquid biopsy: new challenges in biomarkers discovery**
WS.II.1.4 TT.I.B.4	Stefano TACCONI, *Sapienza University of Rome & NanoShare Srl* **Bovine milk-derived Extracellular Vesicles as new drug delivery system for bioactive compounds**

21 SEPTEMBER

11:30 - 13:00	WS.II.2 - TT.II.B

EVs in diseases

Chairs: Anna Maria GIUDETTI, *University of Salento* & *Stefania MESCHINI, ISS*

WS.II.2.1 TT.II.B.1	Maria FIANI, *ISS* **Metabolically labeled exosomes for biogenesis and functional studies**
WS.II.2.2 TT.II.B.2	Anna Maria GIUDETTI, *University of Salento* **Insulin-resistant M2-CD163⁺ macrophages release extracellular vesicles affecting lipid metabolism in muscle cells**
WS.II.2.3 TT.II.B.3	Flora GUERRA, *University of Salento* **Extracellular vesicle secretion promotes cisplatin chemoresistance in a context of late endocytic impairment**
WS.II.2.4 TT.II.B.4	Alberto DIASPRO, *University of Genoa* **The era of the intelligent optical microscope towards extracellular vesicles visualization**

14:00 - 15:30	WS.II.3 - TT.III.B

PhD- derived EVs: implementing communication

Chairs: Annalisa RADEGHIERI, *University of Brescia* & Massimo BOTTINI, *University of Rome Tor Vergata*

WS.II.3.1 TT.III.B.1	Massimo BOTTINI, *University of Rome Tor Vergata* **Matrix vesicles: biochemical, biophysical, and biological properties**
WS.II.3.2 TT.III.B.2	Emanuela FRUSTACI, *University of Rome Tor Vergata* **Biophysical and biochemical characterization of matrix vesicles**
WS.II.3.3 TT.III.B.3	Lucas NOGUEIRA, *University of Rome Tor Vergata* **Matrix vesicle-embedded biopolymeric scaffolds: a model for in vivo bone mineralization studies**
WS.II.3.4 TT.III.B.4	Rossella ZENATELLI, *University of Brescia* **EV-protein corona and EV surface engineering, a first study**
WS.II.3.5 TT.III.B.5	Diana VARDANYAN, *University of Salento* **A step toward precision medicine using extracellular vesicles derived from different temozolomide-treated glioblastoma cells**

WS.III

INNOVATIVE APPROACHES IN UNMET CLINICAL NEEDS FOR MAXIMUM HEALTH CARE IMPACT

September 21

Co-organized with:

UNIMORE
UNIVERSITÀ DEGLI STUDI DI MODENA E REGGIO EMILIA

Fondazione Don Carlo Gnocchi Onlus

UMG dubium sapientiae initium

WORKSHOP COMMITTEE

Giovanni TOSI, *University of Modena and Reggio Emilia*
Marzia BEDONI, *Don Gnocchi Foundation*
Donatella PAOLINO, *University Magna Graecia of Catanzaro*

In this day, different actors (academia, industry, regulatory) will discuss and describe the development of innovative and enabling technologies for facing unmet clinical needs, varying from diagnosis to therapeutic aims. In line with Horizon Europe pipelines, pathological focuses will be devoted on cancer, brain related diseases, cardiovascular pathologies.

A comprehensive overview of the recent and established innovation in health technologies will be highlighted with a special focus on several aspects strongly impacting on the success of innovation approaches and its application into clinical setting and shown by different sides of view, from design, to materials, characterization, production and scale up, ending to successful stories of yet approved and on market technologies.

21 SEPTEMBER

09:00 - 10:30	WS.III.1 - TT.I.E

Innovative approaches in UNMET clinical needs for maximum health care impact - Part 1

Chairs: Marzia BEDONI, *Don Gnocchi Foundation*, Giovanni TOSI, *University of Modena and Reggio Emilia* & Donatella PAOLINO, *University Magna Graecia of Catanzaro*

WS.III.1.1 TT.I.E.1	Jason Thomas DUSKEY, *University of Modena & Reggio Emilia* **Targeted Nanomedicines for Cancer Therapy: More than Just Crossing the BBB**
WS.III.1.2 TT.I.E.2	Fabio BISCARINI, *IIT & University of Modena & Reggio Emilia* **Organic Bioelectronics Multiscale Sensing: state-of—the-art and issues**
WS.III.1.3 TT.I.E.3	Francesca RE, *University of Milano Bicocca* **Implantable hydrogel design for nanoparticles release useful for glioblastoma treatment**
WS.III.1.4 TT.I.E.4	Matteo SANTIN, *Director of the Centre for Regenerative Medicine and Devices, School of Applied Sciences, University of Brighton, UK* **Technological and regulatory pathways to accelerate the adoption of nano-diagnostics and nano-medicines in clinics**

21 SEPTEMBER

11:30 - 13:00	WS.III.2 - TT.II.E

Innovative approaches in UNMET clinical needs for maximum health care impact - Part 2

Chairs: Marzia BEDONI, *Don Gnocchi Foundation*, Giovanni TOSI, *University of Modena and Reggio Emilia* & Donatella PAOLINO, *University Magna Graecia of Catanzaro*

WS.III.2.1 TT.II.E.1	Lorena DIÉGUEZ, *International Iberian Nanotechnology Laboratory, Braga, Portugal* **Innovative technologies for in vitro diagnosis and monitoring in cancer: towards personalized care**
WS.III.2.2 TT.II.E.2	Yuliya SHAKALISAVA, *Leiden University, Exit 071 (spin off), The Netherlands* **Innovative microfluidic technology for the analysis of exosomes in therapeutic and diagnostic applications**
WS.III.2.3 TT.II.E.3	Marco MONOPOLI, *Royal College of Surgeons, Ireland* **Use of nanoparticles for biomolecular diagnostics in chronic disease**
WS.III.2.4 TT.II.E.4	Francesca RODÀ, *LABION Laboratory, Don Gnocchi Foundation* **Biophotonics-based characterization of liposomes for the treatment of neurological disorders**

14:00 - 15:30	WS.III.3 - TT.III.E

Innovative approaches in UNMET clinical needs for maximum health care impact - Part 3

Chairs: Marzia BEDONI, *Don Gnocchi Foundation*, Giovanni TOSI, *University of Modena and Reggio Emilia* & Donatella PAOLINO, *University Magna Graecia of Catanzaro*

WS.III.3.1 TT.III.E.1	Vincenzina MESSINA, *University of Milano Bicocca* **DeepRaman: a Deep learning diagnostic pipeline based on Raman spectroscopy**
WS.III.3.2 TT.III.E.2	Alessandra BIFFI, *University of Padova* **Gene therapy in Rare and Genetic Diseases**
WS.III.3.3 TT.III.E.3	Adriele Prina MELLO, *TRINITY College Dublin, Ireland* **Non viral RNA/DNA delivery for cancer therapy**
WS.III.3.4 TT.III.E.4	Massimo DOMINICI & Giulia GRISENDI, *University of Modena and Reggio Emilia* **Innovation in personalized cancer therapy**

BEYOND STATE OF THE ART, THROUGH SAFE AND SUSTAINABLE DEVELOPMENT APPROACHES FOR MATERIALS DEVELOPMENT

September 21

Co-organized with:

The safety and sustainability of chemicals and materials and their applications is a cornerstone of current EU policy and industrial strategies. Policy makers and industrial actors are working to identify frameworks and criteria for the practical implementation of the Chemicals Strategy for Sustainability (CSS), and these will increasingly become premium aspects to access funding and contracts. Nanomaterials provide an exemplar of initial implementation of SSbD.

The workshop will reflect on the recent policy discussion at EU at national level and will provide examples and case studies from research and production processes and will illustrate findings of Gov4Nano and other EU projects on the matter.

The workshop is also open to both innovators and risk managers in research organizations, companies, institutions and other organizations active and interested in the safety and sustainability of advanced materials, nanomaterial and related products.

21 SEPTEMBER

14:00 - 15:30	WS.IV.1 - TT.III.C
Practical implementation of Safe and Sustainable by Design approaches in applied and industrial research	
Chairs: Andrea PORCARI, *AIRI & Gov4Nano* and Lorenzo CALABRI, *Art-er & Sbd4Nano*	
WS.IV.1.1 TT.III.C.1	Lorenzo CALABRI, *ART-ER & SbD4Nano* & Andrea PORCARI, *AIRI & Gov4Nano* **Introduction on Safe and Sustainable Development projects**
WS.IV.1.2 TT.III.C.2	Ana SERRANO-LOTINA, *Instituto de Catálisis y Petroleoquímica, CSIC, Spain* **Safe by Design multi-component nanomaterials for food, automotive and construction sectors**
WS.IV.1.3 TT.III.C.3	Francesca BRACA, *Archa Srl* **Safety, LCA and certification practices toward green chemicals and biodegradable new products. Experiences from the (BBI-JU) Mandala project**
WS.IV.1.4 TT.III.C.4	Chiara BARATTINI, *Aczon* **Silica Nanoparticles for Diagnostic Applications**
WS.IV.1.5 TT.III.C.5	Iluminada RODRÍGUEZ-PASTOR, *ApplyNano, Spain* **Functionalization of graphene oxide for higher chemical activity, compatibility and selectivity**
WS.IV.1.6 TT.III.C.6	Daniele MAGNI, *LATI Industria Termoplastici S.p.A.* **Assess the development of Safe-by-design nano-enabled polymeric compounds for the Additive Manufacturing sector: the SAbyNa user friendly guidance platform**

21 SEPTEMBER

16:00 - 17:30	WS.IV.2 - TT.IV.C

Strategies, frameworks and criteria for Safe and Sustainable Development

Chair: Isabella DE ANGELIS, *ISS*

WS.IV.2.1 TT.IV.C.1	Isabella DE ANGELIS, *ISS* **Safe and Sustainable Development approaches for materials development Part 2 strategies, frameworks and criteria**
WS.IV.2.2 TT.IV.C.2	Cecilia BOSSA, *ISS & Gov4Nano* **Advancements in risk governance toward a safe and sustainable use of nanomaterials - FAIRification of nanosafety data**
WS.IV.2.3 TT.IV.C.3	Lya HERNANDEZ, *RIVM - National Institute for the Public Health and the Environment and OECD, The Netherlands* **Safe and Sustainable Innovation Approach (SSIA): A system approach for Safe and Sustainable (Nano) Innovations**
WS.IV.2.4 TT.IV.C.4	Marco FALZETTI, *APRE & EuMaT – European Technology Platform for Advanced Engineering Materials and Technologies* **The Advanced Materials Initiative 2030 - AMI2030**
WS.IV.2.5 TT.IV.C.5	Ilaria SALVATORI, *BU INDUSTRY – RINA* **Development and scaled Implementation of sAfe by design tools and Guidelines for multicOmponent aNd hArn nanomateriaLs**
WS.IV.2.6 TT.IV.C.6	Andrea PORCARI, *AIRI & Gov4Nano* **Advancements in risk governance toward a safe and sustainable use of nanomaterials (Gov4Nano & NMBP-13 projects KEY RESULTS)**
WS.IV.2.7 TT.IV.C.7	*Discussion: Informing Safe By Design and Safe and Sustainable by Design implementation at national level*

MICRO AND NANOTECHNOLOGIES IN EMERGING LIQUID BIOPSY APPLICATIONS

September 22

Co-organized with:

Politecnico di Torino

WORKSHOP COMMITTEE

Francesca FRASCELLA, *Polytechnic University of Turin*
Simone MARASSO, *CNR-IMEM*
Matteo COCUZZA, *Polytechnic University of Turin*
Laura FABRIS, *Polytechnic University of Turin*
Enzo DI FABRIZIO, *Polytechnic University of Turin*

Organic transistors like Organic Field Effect Transistor OFETs, Electrolyte-gated organic Transistor EGOFETs and Organic Electrochemical Transistor OECTs have recently attracted intensive investigation for several biosensing applications thanks their flexibility, biocompatibility, large-scale processability, sensitivity and intrinsic biological to electrical signal transduction capability. The first symposium "Organic transistors-based biosensors" will cover and discuss the most recent outcomes in this field, future perspective and limiting issues to overcome for practical applications.
In the last years the combination of nanofabrication, nanoplasmonics and SERS underwent a strong development. The possibility to obtain chemical and structural information, down to single molecule level, or nano aggregates, became a reality and helped in characterizing a wide category of novel materials that range from 2D materials, conductive polymers to biomolecules. In this second symposium "SERS and Nanophotonics" we will invite speakers, well known internationally in their own fields, that will update the audience on the state of the art of SERS activity worldwide.

22 SEPTEMBER

09:00 - 10:30	WS.V.1 - TT.V.C

Organic transistors-based biosensors

Chairs: Matteo COCUZZA, *Polytechnic University of Turin* & Simone MARASSO, *CNR-IMEM*

WS.V.1.1 TT.V.C.1	Marta MAS-TORRENT, *ICMAB-CSIC, Spain* **Blends of organic semiconductors for high performing electrolyte-gated field-effect transistors**
WS.V.1.2 TT.V.C.2	Benoît PIRO, *Université de Paris Cité, France* **Printed electrolyte-gated transistors: recent outcomes, limiting issues**
WS.V.1.3 TT.V.C.3	Tsuyoshi MINAMI, *University of Tokyo, Japan* **Real-sample analysis based on organic field-effect transistors**
WS.V.1.4 TT.V.C.4	Matteo PARMEGGIANI, *Polytechnic University of Turin* **Rapid prototyping of 3D Organic Electrochemical Transistors by composite photocurable resin**

22 SEPTEMBER

11:30 - 13:00	WS.V.2 - TT.VI.C

SERS and Nanophotonics

Chairs: Laura FABRIS & Enzo DI FABRIZIO, *Polytechnic University of Turin*

WS.V.2.1 TT.VI.C.1	Duncan GRAHAM, *University of Strathclyde,Glasgow, UK* **Point of use SERS for Biomolecular Detection**
WS.V.2.2 TT.VI.C.2	Janina KNEIPP, *Humboldt University of Berlin, Germany* **Applications of one-and two-photon excited SERS**
WS.V.2.3 TT.VI.C.3	Marc LAMY DE LA CHAPELLE, *Le Mans University, France* **New Insight on the Aptamer Conformation and Aptamer/protein Interaction by Surface Enhanced Raman Scattering and Multivariate Statistical Analysis**
WS.V.2.4 TT.VI.C.4	Renzo VANNA, *Polytechnic University of Milan* **From whole body to subcellular imaging by applying single bimodal fluorinated nanoprobes compatible with both MRI and Raman imaging**

WS.VI

FROM UNIVERSITY TO MARKET
U4I as a Driver for Technology Transfer

September 22

Co-organized with:

FONDAZIONE
UNIVERSITY
FOR INNOVATION

WORKSHOP COMMITTEE

Hermes GIBERTI, *University of Pavia*
Francesco PERI, *University of Milano-Bicocca*
Giuseppe ROSACE, *University of Bergamo*

The ability to create innovation plays a central role in economic growth and quality of life but it is also increasingly important in addressing the many social challenges. Therefore, in developing effective innovation-oriented R&D policies, it is crucial to understand how research-based expertise can contribute to prosperity and address social challenges. Moreover, due to the difficulty of collecting all the necessary competencies in a single organisation, innovation integrates knowledge from many different fields (e.g., chemistry, physic, technology, design, economics), becoming a process of constant interaction between academic researchers and the market. To ensure wide-ranging exploitation of the research and technological innovation results developed at the founding Universities, the University for Innovation Foundation (U4I) has organized the workshop entitled "From University to market: U4I as a driver for technology transfer." Researchers from the Universities of Bergamo, Milano Bicocca and Pavia will present the results of scientific research, possibly already translated into innovative products, processes or services, promoting on this occasion the meeting between university research, business, and the market favoured by the stage provided by the NanoInnovation 2022 event.

22 SEPTEMBER

09:00 - 10:30	WS.VI.1 - TT.V.F
New products or manufacturing process development	
Chair: Hermes GIBERTI, *University of Pavia*	
WS.VI.1.1 TT.V.F.1	Claudia SCOTTI, *University of Pavia* **N24S asparaginase: a new option for Acute Lymphoblastic Leukaemia treatment**
WS.VI.1.2 TT.V.F.2	Giuseppe RUSCICA, *University of Bergamo* **Distributed acoustic sensing as a tool for subsurface mapping and seismic event monitoring a proof of concept**
WS.VI.1.3 TT.V.F.3	Ferdinando AURICCHIO, *University of Pavia* **A novel wideband microstrip to additively fabricated waveguide transition**
WS.VI.1.4 TT.V.F.4	Anna ESPINOZA, *University of Milano Bicocca* **Development of a new technology for biological soil remediation**
WS.VI.1.5 TT.V.F.5	Valentina TROVATO, *University of Bergamo* **Strategies for removing chemical finishes from post-consumer outdoor fabrics**

22 SEPTEMBER

14:00 - 15:30	WS.VI.2 - TT.VII.F
New technological applications	
Chair: Francesco PERI, *University of Milano Bicocca*	
WS.VI.2.1 TT.VII.F.1	Maddalena COLLINI, *University of Milano Bicocca* **Development of a new technology for controlled heat treatment of muscle contractures**
WS.VI.2.2 TT.VII.F.4	Giuseppe SCARATTI, *University of Bergamo* **An experience of environmental protection and urban regeneration**

16:00 - 17:30	WS.VI.3 - TT.VIII.E
Development of new monitoring service	
Chair: Giuseppe ROSACE, *University of Bergamo*	
WS.VI.3.1 TT.VIII.E.1	Alberto BRUGNOLI, *University of Bergamo* **On smart institutions: towards new territorial actors to support ecological transition and regional diversification**
WS.VI.3.2 TT.VIII.E.2	Simone MONTANO, *University of Milano Bicocca* **Smart materials for the coral reefs of tomorrow**
WS.VI.3.3 TT.VIII.E.3	Marco CONTARDI, *University of Milano Bicocca* **Advanced biocomposites for delivering curcumin and mitigating coral bleaching**
WS.VI.3.4 TT.VIII.E.4	Matteo ZAFFALON, *University of Milano Bicocca* **Self-powered nano-scintillators for energy**

AGRI-NANOTECHNIQUES: Nanotechnology-based Innovative Approaches in Agriculture

September 23

Co-organized with:

Under the patronage of

WORKSHOP COMMITTEE

Luca MARCHIOL, *University of Udine*
Giorgio Mariano BALESTRA, *University of Tuscia*
Flavia BARONE, *ISS*

With the world's population expected to exceed nine billion by 2050, scientists are working to develop new ways to meet rising global demand for food, energy and water without increasing the strain on natural resources and the environmental pressure. Organizations including the World Bank, and the U.N. Food and Agriculture Organization, as well as the EU F2F and Green Deal strategies are calling for more innovation to address the challenges of the agri-food sector.

The development of AgriNanoTechniques has been started very recently; they will be implemented within the evolving science of precision agriculture, in which farmers use technology to target their use of water, fertilizer, plant protection products and other inputs. A second, broad potential application concerns the issues of reduction and valorization of agri-food wastes.

The introduction of nanotechnologies in agriculture still needs deepen basic and applied knowledge, however several promising results were achieved, so far. A huge development is taking place in this sector, therefore nanotech applications currently under development will soon be overtaken by other ideas that are expected to contribute to solve several issues in the field of sustainable agriculture.

NanoInnovation 2022 hosts the 6th edition of the workshop "AgriNanoTechniques" co-organized by the Universities of Udine, Tuscia, and the Italian National Institute of Health (ISS). The workshop will be the forum for discussing the perspective of nanotechnologies in the primary sector among the stakeholders and scientific research.

23 SEPTEMBER

09:30 - 10:30	WS.VII.1 - TT.IX.A

Nanotechnology-based Innovative Approaches in Agriculture - Part 1

Chair: Guido FELLET, *University of Udine*

WS.VII.1.1 TT.IX.A.1	Luca PAGANO, *University of Parma* **From mechanistic understanding to application: the plant nanofertilization**
WS.VII.1.2 TT.IX.A.2	Youry PII, *Free University of Bozen-Bolzano* **Urea-doped hydroxyapatite nanoparticles and effects on crops: from lab to field scale**
WS.VII.1.3 TT.IX.A.3	Monica GRANETTO, *Polytechnic University of Turin* **Natural mineral materials as sustainable carriers for herbicides: from synthesis to environmental impact assessment**
WS.VII.1.4 TT.IX.A.4	Graziella AMENDOLA, *ISS* **Nanopesticides for sustainable agriculture: analytical approach for characterisation**

11:30 - 13:00	WS.VII.2 - TT.X.A

Nanotechnology-based Innovative Approaches in Agriculture - Part 2

Chair: Guido FELLET, *University of Udine*

WS.VII.2.1 TT.X.A.1	Irem ALTIN, *University of Modena and Reggio Emilia* **Synthesis and Application of Silver Nanoparticles against Xanthomonas vesicatoria, the Causal Agent of Tomato Bacterial Spot**
WS.VII.2.2 TT.X.A.2	Sara FRANCESCONI, *University of Tuscia* **Bio-based composite of chitosan, gallic acid, cellulose nano-crystals and high-amylose starch as organic control strategy of Fusarium spp. diseases in wheat and as biostimulant on plants**
WS.VII.2.3 TT.X.A.3	Giorgio Mariano BALESTRA, *University of Tuscia* **1st Summer School Nanotechnology in Agriculture – Results**

WS.VIII

NEW SPACE

September 23

Co-organized with:

Agenzia Spaziale Italiana

The European Synchrotron

WORKSHOP COMMITTEE

Marco DI CLEMENTE, *ASI*
Ennio CAPRIA, *ESRF*

Aerospace is definitely one of the fields where the impact of innovation is the most important. This is the direct consequence of the need for excellence related to the extreme conditions of operation, the very demanding specifications, the complexity of the equipment and the need for high level of reliability (very low rates of failure). In this section we will present and discuss two of the key technologies for the so-called ": New Space": a) the use of COTS (components on the shelf) in electronic systems for space applications; b) the extensive use of metallic parts made by additive manufacturing for aerospace.

The New Space denomination indicates a change of paradigm within the business model of the space industry, characterised by a continued democratisation of space technology. This is mainly achieved with a constant decrease of the cost of the launching and of the satellite constellations and a consequent growing need for components with novel functionalities at lower costs. In this configuration the interest for COTS, i.e. components that are not especially conceived to operate in harsh radiative environments (RadHard), is growing considerably. As a consequence, the fact of properly characterising and understanding the limitations and the performance of standard components in a radiation environment gains momentum, with respect to the intention to design specific components dedicated for space. In this kind of perspective, the development of novel testing methodologies and the possibility to have access to opportune nuclear physics facilities to carry on some testing campaigns become strategic. A complete picture around this topic will be provided in the first part of the workshop.

Complementary to the aspects related to embedded electronics, the advanced manufacturing is another topic of primary importance for the future of the race for space. In this respect, Additive Manufacturing (AM) is the absolute game changer. AM offers the possibility to obtain unique shapes that can implement outstanding mechanical performances with reduced weight. Furthermore, AM is ideal when small series of pieces with very high added value are conceived, and when a continuous product development is envisaged. For these reasons, the second part of the workshop will be dedicated to the AM of metallic parts. The challenges related with the manufacturing will be discussed, but also the characterisation methodologies.

23 SEPTEMBER

09:00 - 10:30	WS.VIII.1 - TT.IX.C

Advances in electronic components: Unconventional radiation hardness characterisation and novel detectors

Chair: Marco DI CLEMENTE, *ASI*

WS.VIII.1.1 TT.IX.C.1	ENNIO CAPRIA, *ESRF, France* **The use of synchrotron X-rays to emulate the interaction between heavy ions and electronic devices for next generation space application**
WS.VIII.1.2 TT.IX.C.2	Manon LETICHE, *ILL - Institut Laue Langevin, France* **Interaction between neutrons and electronic devices: origin, impact and evaluation**
WS.VIII.1.3 TT.IX.C.3	Alessandro DRAGO, *INFN* **Ultra-Fast InfraRed Detector for Astronomy**
WS.VIII.1.4 TT.IX.C.4	Narciso GAMBACORTI, *CEA-Leti, France* **The Nanoelec Platform for Advanced Characterisation - Grenoble: access to large scale research infrastructures for industry**

11:30 - 13:00	WS.VIII.2 - TT.X.C

Advances in manufacturing, materials and characterisation

Chair: Marco SEBASTIANI, *Roma Tre University*

WS.VIII.2.1 TT.X.C.1	Karine MOUGIN, *CNRS - Université de Haute Alsace, France* **Towards the development of sensors and actuators by 4D printing**
WS.VIII.2.2 TT.X.C.2	Marco CONTI, *Sapienza University of Rome* **Ni-Cr nano composite coating developed via electroless route: influence of deposition parameters**
WS.VIII.2.3 TT.X.C.3	Giulia PEDRIZZETTI, *Sapienza University of Rome* **Microstructural and hardness studies of ZrO_2 reinforced NiP nano-composite coatings for anti-erosion and anti-wear applications**
WS.VIII.2.4 TT.X.C.4	Mohamed FARES-SLIM, *ESRF, France* **Synchrotron X-rays methodologies for non destructive mapping of residual stress in metallic objects**

SCHOOL ON MICRO- AND NANO-TECHNOLOGIES

September 21-22-23

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

Co-organized with

It-fab Italian Network for Micro and Nano Fabrication

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 fundamentals on processes, devices 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.
The School will be completed with live sessions from cleanrooms to practically show some of the fundamental silicon processing steps. NEW IN THE 2022 EDITION, A RESIDENTIAL SESSION BY FBK

The School will be held both REMOTELY and IN ATTENDANCE

Wednesday 21 September

09:00 - 09:15	**Welcome and Introduction** Vittorio MORANDI, *CNR-IMM, Bologna*
09:15 - 09:45	**Cleanroom, introduction to the functioning** Lorenza FERRARIO, *FBK*
09:45 - 10:30	**Ionic implantation** Antonino PICCIOTTO, *FBK*
break	
11:30 - 12:15	**Depostion techniques 1** Riccardo BERTACCO, *Polytechnic University of Milan*
12:15 - 13:00	**Depostion techniques 2** Riccardo BERTACCO, *Polytechnic University of Milan*
light lunch	
14:00 - 14:45	**Plasma/etching 1** Fulvio MANCARELLA, *CNR-IMM*
14:45 - 15:30	**Plasma/etching 2** Fulvio MANCARELLA, *CNR-IMM*
15:30 - 17:00	*Live from FBK facility, Trento*

Thursday 22 September

09:00 - 09:45	**Lithography 1** Massimo CUSCUNA', *CNR NANOTEC*
09:45 - 10:30	**Lithography 2** Massimo CUSCUNA', *CNR NANOTEC*
break	
11:30 - 12:15	**Self-assembling lithography for nanoscale metrology** Luca BOARINO, *INRIM*
12:15 - 13:00	**Metrology in Nanotechnologies** Davide CALONICO, *INRIM*
light lunch	
14:45 - 15:30	**Two Photon Polymerization and Additive Manufacturing** Valentina BERTANA, *Polytechnic University of Turin*
15:30 - 17:00	*Live from FBK facility, Trento*

Friday 23 September

09:00 - 09:45	**Nanostructured Superconductors for Quantum Technologies** Enrico EMANUELE, *INRIM*
09:45 - 10:30	**Quantum and nanotechnologies applied to time and frequency metrology** Giulia APRILE, *INRIM*
break	
11:30 - 12:15	**Microfluidics and biosensors** Simone Luigi MARASSO, *CNR-IMEM*
12:15 - 13:00	**BCD - story, application and process technology** Fabrizio TOIA, *STMicroelectronics*
light lunch	
14:30 - 15:30	*Live from FBK facility, Trento*

CHALLENGES TRAINING SCHOOL
Real time nano characterization related technologies

September 21-22-23

Chairs: Daniele PASSERI, *Sapienza University of Rome* & Stefania MELANDRI, *Warrant Hub*

Co-organized with

CHALLENGES
Real time nano CHAracterization reLatEd techNoloGiEeS

The course is dedicated to PhD students and postdoc young scientists, from Italian and European Institutions, companies and industry. The programme includes 2 days of frontal lessons and 1 day of training (i.e. lessons, visits and practical demonstrations) at the Laboratory for Nanotechnologies and Nanosciences of Sapienza (SNN-Lab) of the interdepartmental research center on nanotechnologies applied to engineering (CNIS) and at the ATOM (Open Infrastructure for Advanced Tomography and Microscopies) Research Center. The topics covered by the CHALLENGES School will be focused on: •Nanomaterials production in industrial environment, •Conventional strain characterization methods in materials science and in the industrial environment, •Innovative plasmonic techniques for strain characterization, •Multiscale simulation and modelling.

The School will be held both REMOTELY and IN ATTENDANCE

Wednesday 21 September

09:00 - 09:30	*Arrival & Registration*
09:30 - 09:45	**Welcome and introduction** Daniele PASSERI, *Sapienza University of Rome*
STRAIN IN MATERIALS SCIENCE AND CONVENTIONAL CHARACTERIZATION METHODS	
09:45 - 10:30	**Welcome Speech** Marco ROSSI, *Sapienza University of Rome* **General introduction on strain in materials science** Paolo POSTORINO, *Sapienza University of Rome*
10:30 - 11:15	**Introduction to strain characterization methods in Transmission Electron Microscopy** Roberto BALBONI, *CNR-IMM, Bologna*
break	
11:30 - 12:15	**Metrological raman spectroscopy for strain characterization** Stefan WUNDRACK, *Physikalisch-Technische Bundesanastalt (PTB), Germany*
12:15 - 13:00	**X-ray strain analysis** Patrice GERGAUD, *CEA-Leti, France*
light lunch	

Wednesday 21 September

INNOVATIVE PLASMONIC TECHNIQUES FOR STRAIN CHARACTERIZATION	
14:00 - 14:45	**Basics on plasmonic enhanced characterization techniques** Aaron LEWIS, *NANONICS, Israel*
14:45 - 15:30	**Enhanced Optical Heating of Silicon Nano-Cones Under CW Illumination** Sergey S. KHARINTSEV, *Challenges Invited Speaker*
break	
15:45 - 16:30	**Plasmonic enhanced optical spectroscopy - from the lab environment to the factory floors** Aaron LEWIS, *NANONICS, Israel*
16:30 - 17:15	**AI and machine learning algorithms to fast optical material metrology tools** Roy PINHASSI, *NOVA, Israel*

Thursday 22 September

09:00 - 09:30	*Arrival*
09:30 - 09:45	**Introduction** Daniele PASSERI, *Sapienza University of Rome*
NANOMATERIALS PRODUCTION IN INDUSTRIAL ENVIRONMENT	
09:45 - 10:30	**Metrology for process control in semiconductor industry** Delphine LE CUNFF, *STMicroelectronics, France*
10:30 - 11:15	**Status and production process of crystalline Silicon solar cells and modules** Ivan GORDON, *IMEC, Belgium*
break	
11:30 - 12:15	**Process control and QC on graphene** Amaia ZURUTUZA, *Graphenea, USA*
	Transmission Electron Microscopy for 2D materials characterization & standardization Vittorio MORANDI, *CNR-IMM, Bologna*
SIMULATION AND MODELLING	
12:15 - 13:00	**Multiscale simulation and modelling** Matthias AUF DER MAUR, *Tiberlab*
light lunch	
14:30 - 17:00	*Visit to Laboratories of CNIS (Interdepartmental Research Center on Nanotechnologies applied to Engineering of Sapienza): Laboratory for Nanotechnologies and Nanosciences of Sapienza (SNN-LAB); Open Infrastructure for Advanced Tomography and Microscopies Research Center (ATOM)*

Friday 23 September

09:00 - 09:30	**Arrival and Introduction** Daniele PASSERI, *Sapienza University of Rome*
09:30 - 09:50	**CHALLENGES - Real Time Nano Characterization Related Technologies Project** Daniele PASSERI, *Sapienza University of Rome*
09:50 - 10:10	**Horizon Europe: new challenges and opportunities (WH)**
10:10 - 10:30	**EMMC / EMCC clusters** Marco SEBASTIANI, *Roma Tre University* Gerhard GOLDBECK, *Goldbeck Consulting*
10:30 - 11:30	**PITCH SESSION - SISTERS PROJECTS** Ioannis KAKOGIANNOS, *NanoPAT Project Coordinator* Ferry KIENBERGER, *NanoBat Project Coordinator* **Nanoscale materials science and advanced battery tests for improved industrial manfuacturing in Gigafactories (NanoBat EU project)** Martina CHOPART, *NanoQI Project Coordinator* Christos KAPNOPOULOS, *RealNano Project Coordinator*
break	
11:45 - 13:00	*Round Table, Discussion and Conclusion*

Aggiornamento Ingegneri CFP

NANOMATERIALI E NANOTECNOLOGIE

corsi per aggiornamento professionale

Settembre 21, 22, 23, 24

in collaborazione con

Ordine degli Ingegneri della Provincia di Roma

Fondazione Ordine degli Ingegneri Provincia di Roma

Comitato Organizzativo
Massimo CERRI, *Ordine degli Ingegneri della Provincia di Roma - Vice-Presidente*
Giorgio MARTINO, *Ordine degli Ingegneri della Provincia di Roma - Consigliere*
Giovanni NICOLAI, *Ordine degli Ingegneri della Provincia di Roma - Consigliere*
Paolo REALE, *Ordine degli Ingegneri della Provincia di Roma - Consigliere*

Chairs: Manuel CASALBONI *(Ordine degli Ingegneri, Presidente del Comitato Tecnico-Scientifico)*
Marco ROSSI *(Sapienza Università di Roma, Presidente del Consiglio d'Area Didattica in Ingegneria delle Nanotecnologie)*

20 SETTEMBRE

NANOMATERIALI E NANOTECNOLOGIE: RISCHI E OPPORTUNITÀ	
Coordina e modera: Massimo CERRI, *Presidente dell'Ordine degli Ingegneri della Provincia di Roma*	
08:45 - 09:00	**Saluti Istituzionali** Massimo CERRI *Presidente dell'Ordine degli Ingegneria della Provincia di Roma*
09:00 - 09:45	**Metodologie di analisi, misura e caratterizzazione dell'esposizione a nanomateriali aerodispersi nei luoghi di lavoro** Fabio BOCCUNI, *INAIL*
09:45 - 10:30	**Vantaggi e potenziali rischi per la salute umana dei Nanomateriali e delle Nanotecnologie** Annarita STRINGARO, *ISS*
break	
11:00 - 11:45	**Prospettive e strumenti per la valutazione e gestione dell'impatto dei nanomateriali in ottica Safe by Design** Andrea PORCARI & Gustavo GONZALEZ, *Airi & Gov4Nano* Beatrice SALIERI, *Temasol, Switzerland & Gov4Nano*
11:45 - 12:30	**Gli effetti dell'entrata in vigore dei Regolamenti comunitari sui Dispositivi Medici anche realizzati con nanomateriali** Paolo GIRAUDI, *Università di Genova - CEI*

CFP

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 della Sapienza Università 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 e certificazione 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.
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 online 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 anche la registrazione sul sito ufficiale dell'Ordine degli Ingegneri della provincia di Roma. Il rilascio dei CFP avverrà solo in caso di partecipazione in presenza.
Le varie giornate potranno essere seguite anche in modalità telematica, ma non consentiranno di ottenere la certificazione di partecipazione e il conseguente rilascio dei CFP.

21 SETTEMBRE

NANOTECNOLOGIE NELL'INGEGNERIA CIVILE E NELL'ARCHITETTURA	
Coordina e modera: Giorgio MARTINO, *Consigliere dell'Ordine degli Ingegneri della Provincia di Roma*	
08:45 - 09:00	**Saluti Istituzionali** Giorgio MARTINO, *Consigliere dell' Ordine degli Ingegneri della Provincia di Roma*
09:00 - 09:45	**Alcune case histories di pavimentazioni realizzate con supermodificante a base di plastiche da recupero e grafene nanometrico - Parte I** Alessandro CARUSO, *Iterchimica S.p.A., Suisio, Bergamo*
09:45 - 10:30	**Alcune case histories di pavimentazioni realizzate con supermodificante a base di plastiche da recupero e grafene nanometrico - Parte II** Lorenzo SANGALLI, *Iterchimica S.p.A., Suisio, Bergamo*
break	
11:30 - 12:15	**Innovation journey for Deeptech for EU green deal** Francesco MATTEUCCI, *European Innovation Council (EISMEA)*
12:15 - 13:00	**Le tecnologie additive e le loro applicazioni nel campo ingegneristico** Daniele MIRABILE GATTIA, *SSPT-PROMAS-MATPRO, ENEA Centro Ricerche Casaccia, Roma*
break	
14:00 - 14:45	**Nanomateriali per l'architettura e il patrimonio culturale - Parte I** Federica FERNANDEZ, *Università di Palermo*
14:45 - 15:30	**Nanomateriali per l'architettura e il patrimonio culturale - Parte II** Federica FERNANDEZ, *Università di Palermo*
break	
16:00 - 16:45	**Nanomateriali per smart buildings - Parte I** Danilo DINI, *Sapienza Università di Roma*
16:45 - 17:30	**Nanomateriali per smart buildings - Parte II** Danilo DINI, *Sapienza Università di Roma*

22 SETTEMBRE

NANOTECNOLOGIE NELL'INGEGNERIA INDUSTRIALE	
Coordina e modera: Giovanni NICOLAI, *Consigliere dell'Ordine degli Ingegneri della Provincia di Roma*	
08:45 - 09:00	**Saluti Istituzionali** Giovanni NICOLAI, *Consigliere dell'Ordine degli Ingegneri della Provincia di Roma*
09:00 - 09:45	**Nanotecnologie per la protezione dalla corrosione** Federica DE RICCARDIS, *Technical Unit for Material Technologies UTTMATB, ENEA, Brindisi*
09:45 - 10:30	**Introduzione alle nanotecnologie e ai nanomateriali nell' ingegneria industriale** Francesco MARRA, *Sapienza Università di Roma*
break	
11:30 - 12:15	**Hard Disk Drives & Magnetic Memories** Gaspare VARVARO, *CNR-ISM, Roma*
12:15 - 13:00	**The potential of deploying statistical design of experiments (DOE) in electrospinning and electrospraying for the rational development of advanced engineering materials** Antonio RINALDI, *Laboratorio Materiali e Processi Chimico-Fisici, ENEA Centro Ricerche Casaccia, Roma*
break	
14:00 - 14:45	**Aspetti tecnologici e innovativi che influenzano il ruolo chiave delle batterie nella transizione energetica - Parte I** Margherita MORENO, *Tecnologie Energetiche e Fonti Rinnovabili (TERIN), ENEA Centro Ricerche Casaccia, Roma*
14:45 - 15:30	**Aspetti tecnologici e innovativi che influenzano il ruolo chiave delle batterie nella transizione energetica - Parte II** Margherita MORENO, *Tecnologie Energetiche e Fonti Rinnovabili (TERIN), ENEA Centro Ricerche Casaccia, Roma*
break	
16:00 - 16:45	**Solar cells - Parte I** Mario TUCCI, *Responsabile TERIN-FSD-IIF Photovoltaic Labs, ENEA Centro Ricerche Casaccia, Roma*
16:45 - 17:30	**Solar cells - Parte II** Mario TUCCI, *Responsabile TERIN-FSD-IIF Photovoltaic Labs, ENEA Centro Ricerche Casaccia, Roma*

23 SETTEMBRE

NANOTECNOLOGIE NELL'INGEGNERIA DELL'INFORMAZIONE	
Coordina e modera: Paolo REALE, *Consigliere dell'Ordine degli Ingegneri della Provincia di Roma*	
08:45 - 09:00	**Saluti Istituzionali** Paolo REALE, *Consigliere dell'Ordine degli Ingegneri della Provincia di Roma*
09:00 - 09:45	**L'Europa e i Semiconduttori: è troppo tardi per accorgersi del tempo perduto? - Parte I** Fabrizio FAMA', *YOURgroup*
09:45 - 10:30	**L'Europa e i Semiconduttori: è troppo tardi per accorgersi del tempo perduto? - Parte II** Fabrizio FAMA', *YOURgroup*
break	
11:30 - 12:15	**Elettronica Organica: dalle sintesi alle applicazioni - Parte I** Leonardo MATTIELLO, *Sapienza Università di Roma*
12:15 - 13:00	**Elettronica Organica: dalle sintesi alle applicazioni - Parte II** Leonardo MATTIELLO, *Sapienza Università di Roma*
break	
14:00 - 14:45	**Nanocomputing: dai materiali alla progettazione dei sistemi intelligenti per le ICT - parte I** Mariagrazia GRAZIANO, *Politecnico di Torino*
14:45 - 15:30	**Nanocomputing: dai materiali alla progettazione dei sistemi intelligenti per le ICT - parte II** Mariagrazia GRAZIANO, *Politecnico di Torino*
15:30 - 16:15	**Opportunità delle Nanotecnologie nel settore Industriale e Conclusione** Giovanni NICOLAI, *Consigliere dell'Ordine degli Ingegneri della Provincia di Roma*

70th Year Birthday Symposium in Honor of Prof. Dr. Ing. Heinz Palkowski

September 21

Chairs: Adele CARRADÒ, *IPCMS – CNRS & IUT Louis Pasteur - University of Strasbourg, France*, Marco ROSSI, *Sapienza University of Rome, Italy,* Diego MANTOVANI, *Laval University, Québec,* Laura VERGANI, *Polytechnic University of Milan* and Peter FAJFAR, *University of Ljubljana, Slovenia*

This Honorary symposium will host Heinz Palkowski's 70th year birthday at NanoInnovation, dedicated to his innovative contributions at Clausthal University of Technology encompassing **materials development** (e.g. steels and lightmetals) by alloying and thermomechanical treatments, **processing** and **characterization**.Moreover, this event will focus on his elaboration of **advanced composite materials** for improving their mechanical properties as well as structures in combination of metals and polymers in the range from automotive to biological applications. The participation is open to all NanoInnovation 2022 attendees.

09:00 - 09:20	**JE.I.1**
INTRODUCTION	
JE.I.1.1	Adele CARRADÒ, *IPCMS – CNRS & IUT Louis Pasteur - University of Strasbourg, France* **Life with a wide-spread research**
09:20 - 10:30	**JE.I.2**
SIMULATION	
JE.I.2.1	Farzad FOADIAN, *University of Applied Sciences and Arts, Dortmund, Germany* **Integrated Computational Materials Engineering for the production of novel materials and the optimization of manufacturing processes**
JE.I.2.2	Somayeh KHANI, *Clausthal University of Technology, Germany* **Plasticity Investigation of Pure Aluminum Using Multiscale Simulation Approach**
JE.I.2.3	Razieh IZADI, *Sapienza University of Rome* **Mechanical Characteristics of Carbon Nanotubes: Micropolar Elasticity Models and Molecular Dynamics Simulations under Torsion and Bending**

11:00 - 12:30	JE.I.3
STEEL	
JE.I.3.1	Mehdi ASADI, *Gestamp Metal Forming GmbH, Bielefeld, Germany* **New Advanced High Strength Steel for Automotive Application**
JE.I.3.2	Diego MANTOVANI, *Laval University, Québec* **A Journey through Fe, Mg, and Zn – based bioabsorbable metals for the next generation of medical therapies: Structure, properties and more**
JE.I.3.3	Peter FAJFAR, *University of Ljubljana, Slovenia* **Thermal fatigue testing with repeatable temperature cycles on thermomechanical simulator**
14:00 - 16:00	**JE.I.4**
COMPOSITE	
JE.I.4.1	Gerhard ZIEGMANN, *Clausthal University of Technology, Germany* **New Concepts for Variothermal Processing of Metal- Composite Sandwich Systems**
JE.I.4.2	Melania REGGENTE, *École Polytechnique Fédérale de Lausanne, Switzerland* **Resin-free three-layered Ti/PMMA/Ti sandwich materials: Adhesion and formability study**
JE.I.4.3	Marco CONTI, *Sapienza University of Rome* **Ni-Cr nano composite coating developed via electroless route: influence of deposition parameters**
16:30 - 18:10	**JE.I.5**
PROCESSING	
JE.I.5.1	Peter ENGEL, *former Mannstaedt Works, Troisdorf, Germany* **PAT - mast sections for high performance applications**
JE.I.5.2	Laura VERGANI, *Polytechnic University of Milan* **The mechanobiological link between micro-cracks and lacunae: a fracture mechanics approach**
JE.I.5.3	Karine MOUGIN, *CNRS - Université de Haute Alsace, France* **Toward the development of sensors and actuators by 4D printing**
JE.I.5.4	Ravindra NUGGEHALLI, *New Jersey Institute of Technology, USA* **An Overview of Materials Research In Heinz Palkowski's Research Group**
18:10 - 18:30	**JE.I.6**
CONCLUSION	
JE.I.6.1	Heinz PALKOWSKI, *Clausthal University of Technology, Germany* **Conclusions**

I polimeri per la vita... Una vita per i polimeri

Una giornata di Scienza in onore del Prof. Gaetano Giammona Professore Emerito Università degli Studi di Palermo

Settembre 23

Chair: Donatella PAOLINO, *Università Magna Graecia di Catanzaro*

L'evento dal titolo "I polimeri per la vita…. Una vita per i polimeri" si terrà in occasione di NanoInnovation, il 23 settembre 2022 in onore di Gaetano Giammona, Professore Emerito dell'Università di Palermo che ha dedicato la sua vita all'affascinante mondo dei polimeri. Sarà una giornata di scienza dedicata alla celebrazione delle sue grandi doti scientifiche, professionali e umane. Parteciperanno all'evento numerosi suoi ex Allievi e Colleghi che con i loro interventi ripercorreranno la carriera scientifica del Prof. Giammona.

JE.II.1	
09:30 - 10:30	
JE.II.1.1	Giovanni PUGLISI, *Presidente Ordine dei Farmacisti Catania* **Saluti ed Introduzione**
JE.II.1.2	Gennara CAVALLARO, *Università degli Studi di Palermo* **Dai profarmaci alla teranostica: il viaggio dei polimeri nella nanomedicina**
break	
JE.II.2	
11:00 - 12:30	
JE.II.2.1	Vincenzo TOMARCHIO, *Procter and Gamble, Brussels, Belgium* **Sistemi polimerici a rilascio controllato e sicurezza psicologica: uno strano connubio**
JE.II.2.2	Rosario PIGNATELLO, *Università degli Studi di Catania* **I polimeri 'food-grade': una nuova prospettiva del rilascio controllato di sostanze bioattive**
lunch	
JE.II.3	
14:30 - 16:00	
JE.II.3.1	Cinzia Anna VENTURA, *Università degli Studi di Messina* **Le ciclodestrine: dai complessi di inclusione alle nanoparticelle per il drug delivery**
JE.II.3.2	Mauro DI STEFANO, *Novartis Pharma AG, Basel, Switzerland* **Network professionali e network polimerici. L'importanza del fattore "N"**
JE.II.3.3	Massimo FRESTA, *Università Magna Graecia di Catanzaro* **Un viaggio polimerico: dalle nanoparticelle ai sistemi ibridi sopramolecolari. Storia di un sicuro successo**
JE.II.4	
16:00 - 17:30	
JE.II.4.1	Giovanna PITARRESI, *Università degli Studi di Palermo* **Idrogeli: trait d'union tra rilascio modificato di farmaci e medicina rigenerativa**
JE.II.4.2	Gaetano GIAMMONA, *Professore Emerito, Università degli Studi di Palermo* **Biomateriali innovativi: dal laboratorio al trasferimento tecnologico**

SLOWSCIENCE@NANOINNOVATION 2022

September 20 - 21 - 22

Chair: Vittorio MORANDI, *CNR-IMM, Bologna*

Co-organized with

Slow Science

Doing science is serious business; it means taking the time to observe, understand and learn, formulate questions and perhaps give answers. In this spirit, the SLOWSCIENCE initiative was created. The starting point was: if specialists need time to understand the universe around us, all the more so the nonspecialist needs time to assimilate information. What better place than the border space of the Dario Nobili Library of the CNR in Bologna, a highly specialized but public science library, to spread passion, culture, and scientific excellence? We built a shelf of science-themed books (from comics to essays, from biographies to science fiction novels). From those books, a series of public appointments has been born with specialists from different fields of scientific research who tell about science involving people in an informal and barrier-free way. What joins the experts involved is the desire to stimulate knowledge in no longer sectionalized way, but embrace and foster dialogue between seemingly distant contexts. What Slowscience@NanoInnovation proposes from Sept. 20-22 is a three-meeting journey exploring the interactions between art and science. This is how comic strips tell the mathematical insights of a brilliant young woman, the figurative language of geometric modules allows for the telling of trigonometric knowledge in history, and the music becomes a tool to navigate some scientific disciplines.

20 SEPTEMBER

18:30 - 20:00	JE.III.1

THE MIRZAKHANI ISSUE

Presentation of the UNDER THE SIGN OF TORUS, published by Comics & Science, the CNR Edizioni series. Maryam Mirzakhani as an outstanding mathematician deserved special consideration in this meeting. The graphic novel, by Silvia Ziche and Davide La Rosa, is contained in the volume "THE MIRZAKHANI ISSUE", which presents the life and research of Maryam Mirzakhani, the first woman to receive the prestigious FIELDS MEDAL in 2014, the highest recognition for those mathematicians. Is it possible to present science in comics? What do mathematicians do? Is it true that women can do math at the highest levels? These and other questions will be answered during the meeting in which cartoonist and illustrator Gabriele Peddes will comment in real time the speeches of the speakers and fellow cartoonists, with a display of "scribing" combining comics, illustration and visual communication into a graphic summary of the main moments.

JE.III.1.1	Roberto NATALINI, *Director CNR-IAC, Rome - Member of the Management and Coordination Committee - Comics&Science*
JE.III.1.2	Barbara NELLI, *University of L'Aquila*
JE.III.1.3	Andrea PLAZZI, *Comics&Science*
JE.III.1.4	Davide LA ROSA, *Graphic Novelist*
JE.III.1.5	Silvia ZICHE, *Graphic Novelist*
JE.III.1.6	Gabriele PEDDES, *Graphic Novelist*

21 SEPTEMBER

18:30 - 20:00	JE.III.2

PATTERNLAND. THE INEQUALITY IN ART

From the Greek and Roman worlds to our Middle Ages and the splendid Islamic tessellations, Sciuto's formulas (which use only the mathematical and trigonometry of the time, unchanged since the 2nd century B.C. for more than 1,600 years) go further, touching on art and artists of the early 20th century, with geometric effects sometimes rigorous sometimes psychedelic, but always surprising. Are you ready for an immersive journey into the tessellated world of patterns?

JE.III.2.1	Pier Francesco SCIUTO, *Emilia Romagna Region Geological Service*

22 SEPTEMBER

18:30 - 20:00	JE.III.3

MUSIC AS THE ALGEBRA OF THE SOUL

Music has great power over our lives: it can change our emotional states.
But why do we like music? And ultimately: what is music?
To answer these questions we will embark on a journey that will frame the musical phenomenon from a multidisciplinary point of view: mathematics, physics, sociology, cognitive science, and, of course, art will guide us to fully understand its meaning.

JE.III.3.1	Mauro ORLANDINI, *OAS INAF, Bologna*

OPEN INNOVATION & OPEN SCIENCE
V Edition

September 23

In collaboration with

Thanks to the interest arisen by the previous four editions of "Open Innovation and Open Science", the event is again organized during NanoInnovation 2022, thus reaching its fifth edition.
It was decided, for continuity, to maintain the same title, but the contents and aims of the 2021 edition have been revised and reconfigured to keep in due consideration the PNRR scenarios, in terms of sustainability, 'local' re-industrialization, rethinking of globalization policies and new requirements of university and post-graduate training courses.
The policies for the use of resources deriving from the application of Recovery Funds will make the relationship between public and private research even more crucial and strategic, with a focus on the valorization of knowledge which will represent a key factor for a concrete and stable economic recovery.
The ability to identify and exploit network skills and knowledge, to manage rapid and complex cooperative processes, to promote inclusive and multi-stakeholder processes to increase the social impact of innovation, to aggregate multidisciplinary skills and knowledge, are increasingly crucial factors for the success of research and innovation.
In the last years the innovation processes have undergone profound changes. The principles of Open Innovation, as a response to the changes in the competitive, technological, scientific environment and the entire approach to research pursued at a national or supranational level according to the principles of Open Science, demonstrate how much the spaces and places of innovation today require careful consideration of the new forms and organizational mechanisms that permeate the action of public and private actors operating in increasingly dynamic contexts, such as those that are determined by the effect of technological convergence, digital transition and the progressive blurring of the boundaries that once allowed to clearly distinguish the various industrial sectors.
The interweaving of relationships between a multiplicity of actors (private and public companies, government bodies and authorities, public and private research bodies, etc.), giving rise to particularly complex networked systems, determines the generation of new organizational forms with a "hybrid nature" (strategic alliances, partnerships, joint ventures, consortia, temporary entrepreneurial formations, supply chain systems, etc.) which are based on hybrid mechanisms of regulation and management of relations (market, hierarchy, clan, trust), whose understanding and correct application, of a contextual nature with respect to the needs of the various actors participating in the innovative projects, contributes significantly to determining their effectiveness and efficiency.
In such a framework, the current national context is strongly conditioned by the availability of huge financial resources made available by Europe through Next Generation EU and managed through the National Recovery and Resilience Plan (PNRR). At the same time, the international situation demonstrates various structural criticalities, first of all that concerning the supply of electronic devices on a global market but with production concentrated in some geographical areas. This resulted in the adoption of specific development and policy plans (Chips Acts) both by Europe (February 2022) and USA (July 2022).
The 5th edition of Open Innovation and Open Science was therefore divided into 4 sessions, focusing attention on 3 main topics as highlighted below. During these sessions some of the main research organizations, universities and large national companies, SMEs, national professional associations and territorial bodies will discuss models and experiences related to:

- Policies for the creation and the sustainability of research and technological infrastructures
- Technology transfer
- Principles and methods for open science
- Principles and methods for open innovation
- Local initiatives and approach towards processes and products integration and sustainability
- Higher education system: innovation policies and requirements

23 SEPTEMBER

09:00 - 10:30	JE.IV.1
Innovation Policies for the technological transfer: public-private partnerships	
Chair: Mauro GATTI, *Sapienza University of Rome*	
JE.IV.1.1	**Pierpaolo GAMBINI** *Leonardo Company, SVP Innovation and IP* Open Innovation and PNRR their role to support new competencies and technologies
JE.IV.1.2	**Giuliana MATTIAZZO**, *Polytechnic University of Turin, VR for the Technology Transfer* Survey of ITEC_pnrr@polito
JE.IV.1.3	**Corrado SPINELLA**, *CNR-DSFTM, Director* HPMI - High Performance Microelectronics Infrastructure
JE.IV.1.4	**Candido Fabrizio PIRRI**, *IIT* Infrastruttura tecnologica di innovazione "Components and Systems for Energy Transition" (CoSyET)
JE.IV.1.5	**Edoardo MOLA**, *PRAXI Intellectual Property, CEO* Comments on different TTO contexts
JE.IV.1.6	**Michele MUCCINI**, *CNR-ISMN, Director & MISTER Smart Innovation, President* i-MATT - Italian MATerials Technologies Infrastructure

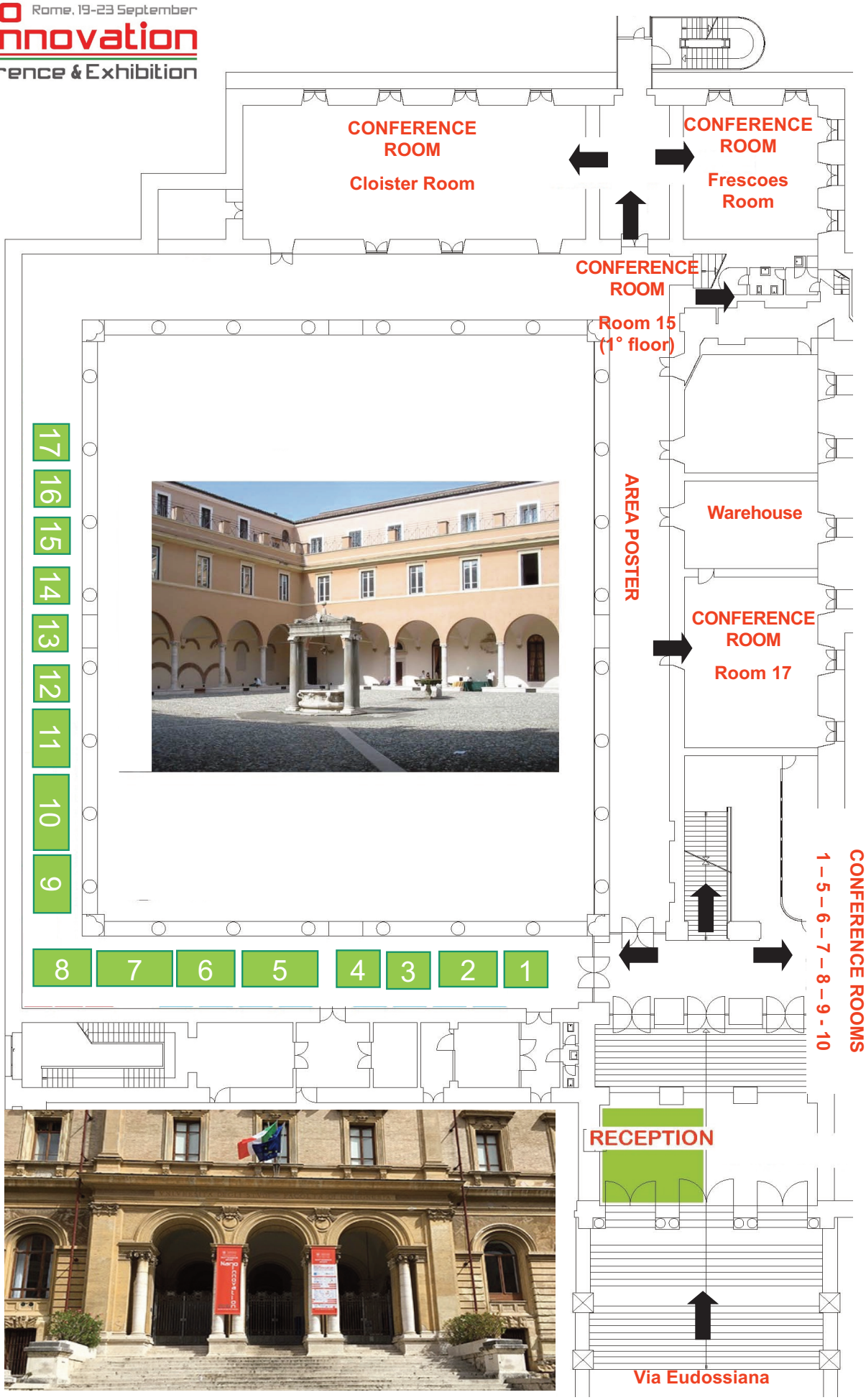
11:30 - 13:00	JE.IV.2
Chips Acts: possible driving forces for a technological independence	
Chair: Fabrizio FAMÀ, *YourGroup*	
JE.IV.2.1	**Roberto Emilio Luigi BEZ**, *SR Director, NVM Strategic Technology, Italy Country Manager, Micron* Future of Semiconductor Memory
JE.IV.2.2	**Corrado SPINELLA**, *CNR-DSFTM, Director* Perspectives and opportunities of microelectronics developments in Italy: the contribution of scientific research
JE.IV.2.3	**Pierluigi BELLUTTI**, *FBK* Chips Act at FBK: a strategy for market niches

23 SEPTEMBER

14:00 - 15:30	JE.IV.3
Research Ecosystems at the PNRR time: an unique opportunity for the Italian system	
Chair: Ennio CAPRIA, *ESRF, Grenoble*	
JE.IV.3.1	**Lorenzo LO CASCIO**, *Lazio Region, Department of Economic Development, Commerce and Handicraft, University, Research, Start-Up and Innovation*
JE.IV.3.2	**Maria Sabrina SARTO**, *Sapienza University of Rome* ROME TECHNOPOLE - Lazio
JE.IV.3.3	**Michele MUCCINI**, *CNR-ISMN, Director & MISTER Smart Innovation, President* ECOSISTER - Ecosystem for Sustainable Transition in Emilia-Romagna
JE.IV.3.4	**Giuliana MATTIAZZO**, *Polytechnic University of Turin, VR for the Technology Transfer* NODES - Nord Ovest Digitale E Sostenibile - Piemonte
JE.IV.3.5	**Salvatore BAGLIO**, *University of Catania* SAMOTHRACE Foundation
JE.IV.3.6	**Franco BONOLLO**, *University of Padua* INEST - Interconnected Nord-Est Innovation Ecosystem - Veneto

16:00 - 17:30	JE.IV.4
Innovation: how to join the gap between research and industry	
CLOSING and RECAPPING session	
Chair: Fabio SCIARRINO, *Deputy Rector for Competitive Strategies for International*	
JE.IV.4.1	**Nello LI PIRA**, *STELLANTIS, Materials Sustainability Engineering - Global Materials R&I* Evolution in Future Vehicles: an overview on Innovative materials & processes for e-mobility
JE.IV.4.2	**Marziale FEUDALE**, *Thales Alenia Space, Thales Expert - TASI CTO Innovation and Technology Manager* Nanotechnologies in the Innovation of Space Segment
JE.IV.4.3	**Maria Ilaria PISTELLI**, BU INDUSTRY – RINA Research Technological Organizations and their role in the Gap among Research and Industry
JE.IV.4.4	**Sabrina ZUCCALA'**, *4ward360°, President* Sustainability and technological innovation thanks to nanotechnologies
JE.IV.4.5	**Cosimo MUSCA**, *STMicroelectronics, Deputy Head of Italy Public Affairs* The IPCEI initiative: an innovative approach to reduce the gap between research and industry
JE.IV.4.6	**Fabrizio TUBERTINI,** *IIT, Head of Industrial Innovation* From lab to market
JE.IV.4.7	**Giorgio GRADITI**, *ENEA, Dept. Energy Technologies and Renewable Energy Sources Director* Green technologies, new energy carriers and R&D drivers to the decarbonising energy system and Closing Remarks

Nano 2022 Innovation
Rome, 19-23 September
Conference & Exhibition



ALPHABETICAL ORDER

17	**AIRI & GOV4NANO**
10	**ASSING** AGAR SCIENTIFIC BRUKER SURFACE & DIMENSIONAL ANALYSIS CRESTEC CORPORATION IMINA TECHNOLOGIES NENOVISION NU INSTRUMENTS PHYSICAL ELECTRONICS RIBER RIGAKU TESCAN
6	**BRUKER**
16	**DTC LAZIO**
8	**EMME 3**
7	**GAMBETTI KENOLOGIA** HEIDELBERG INSTRUMENTS KLA INSTRUMENTS OXFORD INSTRUMENTS PLASMA TECHNOLOGY PARK SYSTEMS POLYTEKNIK
9	**JEOL**
13	**MDPI**
14	**MICRON SEMICONDUCTOR ITALIA**
1	**NETZSCH-GERÄTEBAU GmbH**
12	**OXFORD INSTRUMENTS NANOANALYSIS**
15	**PLATINUM**
2	**QUANTUM DESIGN ITALY**
3	**RENISHAW**
4	**SCHAEFER ITALY**
5	**THERMO FISHER SCIENTIFIC**
11	**ZEISS**

BOOTH ORDER

1	**NETZSCH-GERÄTEBAU GmbH**
2	**QUANTUM DESIGN ITALY**
3	**RENISHAW**
4	**SCHAEFER ITALY**
5	**THERMO FISHER SCIENTIFIC**
6	**BRUKER**
7	**GAMBETTI KENOLOGIA** HEIDELBERG INSTRUMENTS KLA INSTRUMENTS OXFORD INSTRUMENTS PLASMA TECHNOLOGY PARK SYSTEMS POLYTEKNIK
8	**EMME 3**
9	**JEOL**
10	**ASSING** AGAR SCIENTIFIC BRUKER SURFACE & DIMENSIONAL ANALYSIS CRESTEC CORPORATION IMINA TECHNOLOGIES NENOVISION NU INSTRUMENTS PHYSICAL ELECTRONICS RIBER RIGAKU TESCAN
11	**ZEISS**
12	**OXFORD INSTRUMENTS NANOANALYSIS**
13	**MDPI**
14	**MICRON SEMICONDUCTOR ITALIA**
15	**PLATINUM**
16	**DTC LAZIO**
17	**AIRI & GOV4NANO**

BOOTH 17

AIRI & GOV4NANO

website:www.airi.it, www.gov4nano.eu
contact person: **Andrea PORCARI**
e-mail: info@airi.it

Airi is a not-for-profit private organization with the mission to promote industrial Research and Innovation and co-operation between the private and public sectors. Areas of activity include Technology assessment & foresight, R&I policies and incentives, Education and training on STEM, Co-creation and multi-stakeholder dialogue, Impact & risk analysis. Over the past 15 years Airi has been active in participating in European, national and regional cooperative projects dealing with emerging and enabling technologies (see the **project portfolio at http://www.airi.it/progetti**).

Airi is partner of a joint initiative of three projects granted by the EU's Horizon 2020 R&I programme, **Gov4Nano, NanoRigo and RiskGone**, dealing with risk governance of nanomaterials in Europe, to advance and exploit knowledge and practices on data management, harmonization of risk assessment methods, regulatory research, risk modelling methods and tools, and to improve network and dialogue amongst research, innovation, regulatory, and civil society stakeholders. Activities are in line on the policy goals set in the EC Chemicals Strategy for Sustainability, and most recent developments in regulation of nanomaterials (e.g., REACH). The initiative offers a unique place to get state-of-the-art expertise and knowledge on safe and sustainable development and use of (products containing) nanomaterials.

BOOTH 10

ASSING SPA

Via Edoardo Amaldi, 14
00015 Monterotondo (RM), ITALIA
Tel. +39 06 906701
Fax +39 06 90670200

website: www.assing.it
contact person: **Ettore GAROFALO**
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* **AFMs**, designed for easy integration into variety of **SEMs**, enabling fast correlative sample characterization in the nanoscale (**NenoVision**), 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 10

AGAR SCIENTIFIC

Unit 7, M11 Business Link
Parsonage Lane, Stansted, Essex
CM24 8GF, UNITED KINGDOM
Tel. +44 (0)1279 215 506
Fax +44 (0)1279 813 105

website: www.agarscientific.com
contact person: **Ettore GAROFALO**
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 10

BRUKER SURFACE & DIMENSIONAL ANALYSIS

7, rue de la Croix Martre
91120 Palaiseau, FRANCE
Tel. +33 172 86 61 00
Fax +33 172 86 61 20

website: www.bruker.com/en/landingpages/bns/technology-for-surface-measurement---surface-analysis.html
contact person: **Ettore GAROFALO**
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.

Bruker's nanomechanical test systems (nanoindenters) deliver the highest degree of performance, accuracy, reliability, and versatility for quantitative mechanical and tribological characterization at the nanoscale and microscale.

Our tribometers and mechanical testers deliver practical data used to help improve development of materials and tribological systems.

BOOTH 10

CRESTEC CORPORATION

9-2, Owada-machi, Hachioji-shi,
Tokyo 192-0045, JAPAN
Tel. +81 042-660-1195
Fax +81 042-660-1198

website: www.crestec8.co.jp
contact person: **Ettore GAROFALO**
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 10

IMINA TECHNOLOGIES SA

EPFL Innovation Park, Bâtiment E
CH-1015 Lausanne, SWITZERLAND
Tel. +41 21 552 40 50
Fax +41 21 552 40 50

website: www.imina.ch
contact person: **Ettore GAROFALO**
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 10

NENOVISION

Purkyňova 649/127
612 00 Brno – Kohoutovice, ČESKÁ REPUBLIKA
Tel. +420 605 287 732
Fax +420 605 287 732

website: www.nenovision.com
contact person: **Ettore GAROFALO**
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 10

NU INSTRUMENTS Ltd

Unit 74, Clywedog Road South
Wrexham, LL13 9XS
UNITED KINGDOM
Tel. +44 (0)1978 661304

website: www.nu-ins.com
contact person: **Ettore GAROFALO**
e-mail: sales@assing.it

NU INSTRUMENTS is a company specialized in the production of high performance mass spectrometers.

The instrumentation produced covers the various high resolution elemental and isotope mass spectrometry techniques, such as HR-ICP-MS, MC-ICP-MS, GD-MS, TIMS, IRMS, Noble Gas Analysis.

BOOTH 10

PHYSICAL ELECTRONICS INC. (PHI)

18725 Lake Drive East
Chanhassen, MN 55317
Tel. +952 8286100
Fax +952 8286100

website: www.phi.com
contact person: **Ettore GAROFALO**
e-mail: sales@assing.it

Physical Electronics (PHI) the world's leading supplier of UHV surface analysis instrumentation used for research and development of advanced materials in a number of high technology fields including: nanotechnology, microelectronics, storage media, bio-medical, and basic materials such as metals, polymers, and coatings. PHI's innovative XPS, AES, and SIMS technologies provide our customers with unique tools to solve challenging materials problems and accelerate the development of new materials and products.

BOOTH 10

RIBER

31 Rue Casimir Périer
95870 Bezons, FRANCE
Tel. +33 (0)1 39 96 65 03
Fax +33 (0)1 39 96 65 03

website: www.riber.com
contact person: **Ettore GAROFALO**
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 10

RIGAKU CORPORATION

3-9-12, Matsubara-cho, Akishima-shi
Tokyo 196-8666, JAPAN
Tel. +81 3-3479-0618
Fax +81 3-3479-6171

website: www.rigaku.com/en
contact person: **Ettore GAROFALO**
e-mail: sales@assing.it

Since its inception in 1951, Rigaku has been at the forefront of analytical and industrial instrumentation technology. Today, with hundreds of major innovations to their credit, the Rigaku group of companies are world leaders in the fields of general X-ray diffraction, thin film analysis, X-ray fluorescence spectrometry, small angle X-ray scattering, protein and small molecule X-ray crystallography, Raman spectroscopy, X-ray optics, semiconductor metrology, X-ray sources, computed tomography, non-destructive testing and thermal analysis.

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

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

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

BOOTH 10

TESCAN

Libušina tř. 21
623 00 Brno – Kohoutovice, ČESKÁ REPUBLIKA
Tel. +420 530 353 411
Fax +420 530 353 415

website: www.tescan.com
contact person: **Ettore GAROFALO**
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 6

BRUKER ITALIA

Viale V. Lancetti, 43
20158 Milano (MI), ITALIA
Tel. + 39 02 70636370
Fax +39 02 2361294

website: www.bruker.com/en/products-and-solutions/elemental-analyzers/eds-wds-ebsd-SEM-Micro-XRF.html
contact person: **Cristian VAILATI**
e-mail: bruker.italy@bruker.com

Unique Range of Analytical Tools for Electron Microscopes

Bruker's electron microscope analyzers EDS, WDS, EBSD and Micro-XRF on SEM offer the most comprehensive compositional and structural analysis of materials available today. The full integration of all these techniques into the ESPRIT 2 software allows you to easily combine data obtained by these complementary methods for best results.

M4 TORNADO PLUS - XRF Mapping Down to Carbon
The Revolutionary Super-Light Element micro-XRF Scanner

With the newest model of Bruker's micro-XRF family, you can find out more about your sample than XRF ever showed you before.

With its super-light element detectors, the M4 TORNADO PLUS is the first micro-XRF scanner able to measure any element from carbon upwards. Additionally, the performance of all light elements is strongly increased.

BOOTH 16

DTC LAZIO

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 (RM), ITALIA
Tel. +39 06 49910566

website: www.dtclazio.it
e-mail: dtc@uniroma1.it

Technological District for Cultural Heritage and Activities - CENTRE OF EXCELLENCE

The Centre of Excellence of the Lazio Technological District for Cultural Heritage and Activities (CoE DTC Lazio) was founded on 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 three main national research bodies (CNR, ENEA, INFN), with the support of the Lazio Region and MUR, and in collaboration with MiC. The CoE DTC Lazio is a registered association that promotes and integrates research expertise and advanced training in conservation, enhancement and management of historic, artistic and cultural heritage of the Lazio Region. The goal of the Centre of Excellence is the implementation of strategic actions in order to enhancing, at both national and international levels, the attractiveness of the regional system of training-research-innovation-technology transfer-industrial productivity with reference to the Cultural Heritage, and implementing an excellent public-private model for collaboration and stable partnerships between research and enterprise in Lazio Region. Today the DTC Lazio Community includes: •more than 700 researchers and teachers engaged in research and education projects; •350 learners of the advanced training courses offered by the Centre; •20,000 users of "massive open online courses" published on the Coursera platform; •154 members of the Stakeholder Board; •275 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.

BOOTH 8

EMME 3 S.R.L.

Via Meraviglia, 31
20045 Lainate (MI), ITALIA
Tel. +39 02 93466541

website: www.emme3-srl.it
contact person: **Gianvito ARPINO**
e-mail: g.arpino@emme3-srl.it

Emme 3 was founded in 1980 to offer only the best scientific equipment to laboratories in the main research and industry sectors. We are specialized in the marketing and assistance of laboratory and scientific equipment, and their accessories and materials. As an official Italian retailer of the best foreign manufacturers, Emme 3 is able to offer products that meet the highest quality standards. Only thanks to our team of qualified operators we can offer all the assistance and help you need. In 2020, Emme 3 absorbed the "2M strumenti" sales program, a company with 30 years of experience in the field of materials science and nanotechnologies.
Emme 3 is now global interlocutor for SEM/TEM users and Italian retailer for the best foreign manufactures within the electron microscopy field, offering scientific instruments aimed to improve research and development such as:

- TEM preparation systems (ultramicrotome, glass knife maker, **RMC Boeckeler**)
- SEM/TEM preparations systems (carbon coater, sputter, glow discharge, **Quorum**)
- material characterization solutions (cooling/heating/controlled atmosphere stages, **Linkam**)
- SEM/TEM preparation/analysis systems (cameras, detectors, holders, **Gatan**, **EDAX**)
- micromanipulators e nanoprobes for SEM (**Kleindiek**)
- vacuum deposition systems (**Moorfield**)
- in-situ systems for material characterization by TEM (**Protochips**)
- consumables for SEM/TEM (**TAAB, EMS, Diatome**).
- works under controlled atmosphere (glovebox for chemists, new materials research, lithium research etc, **Jacomex**)

BOOTH 7

GAMBETTI KENOLOGIA SRL

Via A. Volta, 27
20082 Binasco (MI), ITALIA
Tel. +39 02 90093082
Fax +39 02 952778

website: www.gambetti.it
contact person: **Stefania FABBRI**
e-mail: sales@gambetti.it

Gambetti Kenologia has been present in the market of surface characterization, micro and nano fabrication, surface treatment systems and vacuum and ultra-vacuum components for almost 4 decades.

Since our creation, we have embarked on a path of selecting the best international partners to introduce cutting-edge techniques and technologies to the Italian market.

Ours is now a solid and consolidated presence that provides technical advice, a wide range of solutions and products and a high-profile pre- and post-sales service.

Our philosophy of constant research of innovative products has allowed us to create new important collaborations and synergies with companies such as POLYTEKNIK, Heidelberg, Osiris, Molecular Vista and ForgeNano.

We are therefore pleased to propose these new instruments and systems in addition to our historical partners, including Park Systems, KLA, Oxford Instruments Plasma Technology and others.

BOOTH 7

HEIDELBERG INSTRUMENTS

Mittelgewannweg, 27
69123 Heidelberg, GERMANY
Tel. +49 6221 728899 0

website: https://heidelberg-instruments.com/

With more than 1,200 systems installed worldwide Heidelberg Instruments is a world leader in the development and production of high-precision laser lithography systems, maskless aligners and nanofabrication tools.

Due to their flexibility, our systems are used by some of the most prestigious universities and industry leaders, for the production of complex 2.5 and 3D structures in micro-optics, microfluidics and nanobiotechnology, electronics, communication technology, and in materials science.

BOOTH 7

KLA INSTRUMENTS

Three Technology Drive
Milpitas, 9503 California, USA
Tel. +1-408-875-3000

website: www.kla.com

A global technology leader. We make an impact by creating solutions that drive progress and transform industries.

We provide leading-edge technology and devices using advanced inspection tools, metrology systems, and computational analytics. Our solutions accelerate tomorrow's electronic devices.

We enable The evolution and innovation in the data era across key industries including automotive, mobile and data center.

BOOTH 7

OXFORD INSTRUMENTS PLASMA TECHNOLOGY

66.8 mi Yatton
BS49 4AP, Bristol, UK
Tel. +44 (0)1934 837000

website: www.oxinst.com

Oxford Instruments Plasma Technology is a leading provider of etch & deposition processing equipment & solutions.

Plasma technology is used in the fabrication of most semiconductor devices created today across a wide range of industries. It is able to provide unique solutions for the creation and manipulation of matter with atomic-scale accuracy.

BOOTH 7

PARK SYSTEMS

KANC 4F, Gwanggyo-ro 109
Suwon 16229, SOUTH KOREA
Tel. +82-31-546-6800
Fax +82-31-546-6805

website: www.parksystems.com

Park Systems. Leading innovation in emerging nanoscale microscopy and metrology technology

Products from Park Systems are used by some of the most notable researchers and corporations across the globe. We strive to meet the needs of our clients by constantly working to create the most accurate, easy to use nanoscale microscopy technology available

BOOTH 7

POLYTEKNIK

POLYTEKNIK

Moellegade, 21
DK-9750 Oestervraa, DENMARK
Tel. +45 9689 2800

website: www.polyteknik.com
e-mail: sales@polyteknik.dk

Polyteknik AS - WHEN THIN FILM MATTERS

Polyteknik AS is a PVD equipment manufacturer with an innovative and best service approach. With more than twenty years in business, a global reference list, and an excellent platform of technology, Polyteknik AS has turned to be an appreciated partner in the thin film industry.

PVD Systems

The portfolio of platform systems range from small scale R&D to high volume or large area deposition systems - covered by the FLEXTURA and INFINITY VB platforms. Polyteknik AS cover several deposition processes including sputtering, evaporation, and varieties of these. At Polyteknik AS you will meet a dedicated team interested in a strong cooperation towards the best solution.

BOOTH 9

JEOL

JEOL (ITALIA) S.p.a.

Palazzo Pacinotti - Milano 3 City
Via Ludovico il Moro, 6/A
20080 Basiglio (MI), ITALIA
Tel. +39 02 9041431
Fax +39 02 90414343

website: www.jeol.it
contact person: **Gabriele BULLA**
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 13

MDPI

St. Alban-Anlage, 66
4052 Basel, SWITZERLAND
Tel. +41 61 683 77 34

website: www.mdpi.com
contact person: **Dragana MA**
e-mail: applsci@mdpi.com

A pioneer in scholarly, open access publishing, MDPI has supported academic communities since 1996. Based in Basel, Switzerland, MDPI has the mission to foster open scientific exchange in all forms, across all disciplines.

Their 408 diverse and open access journals, including 399 peer-reviewed journals and 9 conference journals, are supported by more than 115,000 academic experts who share their mission, values, and commitment to providing high-quality service for their authors. They serve scholars from around the world to ensure the latest research is freely available and all content is distributed under a Creative Commons Attribution License (CC BY)

MDPI publishes over 98 journals that are ranked as high impact within their fields. To view the current impact factors for MDPI journals (according to the Journal Citation Reports), please visit our yearly announcement page https://www.mdpi.com/about/announcements/4095.

BOOTH 14

MICRON SEMICONDUCTOR ITALIA

Sede Legale
Via Trento, 26
20871 Vimercate (MB), ITALIA

Unità Locale
Via Newton, 34
67051 Avezzano (AQ), ITALIA
Tel. +39 0863 456001
Fax +39 0863 423283

website: www.micron.com
contact person: **Massimo ROSSINI**
e-mail: micronsemitalia@pec.micron.com

We are an industry leader in innovative memory and storage solutions transforming how the world uses information to enrich life for all. With a relentless focus on our customers, technology leadership, and manufacturing and operational excellence, Micron delivers a rich portfolio of high-performance DRAM, NAND and NOR memory and storage products through our Micron® and Crucial® brands. Every day, the innovations that our people create fuel the data economy, enabling advances in artificial intelligence and 5G applications that unleash opportunities — from the data center to the intelligent edge and across the client and mobile user experience.

To learn more about Micron Technology, Inc. (Nasdaq: MU), visit micron.com

BOOTH 1

NETZSCH-Gerätebau GmbH

Via Albere, 132
37137 Verona (VR), ITALIA
Tel. +39 045 8626301

website: www.netzsch.com
contact person: **Valentina POZZATO**

The NETZSCH Group is an owner-managed, international technology company with headquarters in Germany. The Business Units Analyzing & Testing, Grinding & Dispersing and Pumps & Systems represent customized solutions at the highest level. More than 4,000 employees in 36 countries and a worldwide sales and service network ensure customer proximity and competent service.

Our performance standards are high. We promise our customers Proven Excellence – exceptional performance in everything we do, proven time and again since 1873.

When it comes to Thermal Analysis, Calorimetry (adiabatic & reaction), the determination of Thermophysical Properties, Rheology and Fire Testing, NETZSCH has it covered. Our 60 years of applications experience, broad state-of-the-art product line and comprehensive service offerings ensure that our solutions will not only meet your every requirement but also exceed your every expectation.

For much information on our analytical solutions, please visit our website: https://analyzing-testing.netzsch.com/

For an even deeper insight in our know-how, check the contents of our blog: https://ta-netzsch.com/

BOOTH 12

OXFORD INSTRUMENTS NANOANALYSIS

Tubney Woods
Abingdon, Oxon
OX13 5QX, UNITED KINGDOM
Tel. +44 (0) 1494 479284

Website: https://nano.oxinst.com/
contact person: **David WESTMORELAND**
e-mail: David.WESTMORELAND@oxinst.com

Celebrating over 60 years of scientific excellence and innovation, Oxford Instruments is committed to supporting research and industrial applications in order to develop a deeper understanding of the world through Science & Technology. Our innovative key-enabling technologies and expertise empower customers to accelerate their R&D, increase productivity and make new scientific discoveries. We are proud to be recognised as the leaders in what we do and for the difference we make in the world.

Welcome to the Oxford Instruments booth! We'd love talk to you about what's new in NanoAnalysis, especially our recently released software updates:

During exhibitions, we have experts on hand to speak to via the video chat, for if you'd like an instant answer to you question. Alternatively, send us a question using the "Request Information" button, below.

BOOTH 15

PLATINUM "Aziende&Protagonisti"

Publiscoop Più Srl
Piazza della Serenissima, 40/A
31033 Castelfranco Veneto (TV), ITALIA
Tel. +39 0423 425411
Fax +39 0423 425402

website: www.platinum-online.com
contact person: **Gaetano FERRETTI**
e-mail: gaetano.ferretti@platinum-online.com

PLATINUM "Aziende&Protagonisti" è la rivista a colori allegata a "Il Sole 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 2

QUANTUM DESIGN ITALY

Via Francesco Sapori, 27
00143 Roma (RM), ITALIA
Tel. +39 06 5004204
Fax +39 06 5010389

website: https://qd-europe.com/it/it/
contact person: **Diego VITAGLIONE**
e-mail: italy@qd-europe.com

For more than 50 years, Quantum Design Europe has been one of the **leading distributors of high-tech systems and components for research and industry**. With **120 employees in 20 European countries**, we offer the broadest selection with an exciting mix of suppliers from long-established corporations on the one hand and innovative start-up companies on the other.

We provide well-founded and independent advice catered to your individual requirements and see ourselves as links between highly specialized manufacturers and science. This can only work when all partners are on an equal level. Our motto is thus: **"From scientists to scientists"**. In line with this aspiration, **all our sales and service employees have a scientific degree**. We can propose solutions for materials science, imaging, spectroscopy, photonics, nanotechnology and life science research.

Nanotechnology has always been one of the most important fields for us, we can offer several instruments like AFM, from the educational ones to the High-End platforms (**Nanosurf**), Electron microscopes, from the benchtop SEM to the high-end SEM and TEM (**HITACHI High-Tech**), different solutions for **Correlative Microscopy** like the Raman/confocal/AFM systems (**WITec**), In Situ TEM Solutions (**DENSsolutions**), Cathodoluminescence, Crio-EM and Fast-EM (**Delmic**), and the AFSEM, that combines AFM with SEM (**Quantum Design microscopy**).

BOOTH 3

RENISHAW

Via dei Prati, 5
10044 Pianezza (TO), ITALIA
Tel. + 39 011 9666700
Fax + 39 011 9664083

website: www.renishaw.it
contact person: **Riccardo TAGLIAPIETRA**
e-mail: italy@renishaw.com

Renishaw is a global, high precision metrology and healthcare technology group.

We design, develop and deliver solutions and systems that provide unparalleled precision, control and reliability.

We are also a world leader in the field of additive manufacturing (also referred to as metal 3D printing), where we design and produce industrial machines which 'print' parts from metal powder. From transport to agriculture, electronics to healthcare, our breakthrough technology transforms product performance.

We have more than 79 offices in 37 countries, with over 4,400 employees worldwide. Over 2,500 people are employed within the UK where we carry out the majority of our research and development and manufacturing.

BOOTH 4

SCHAEFER ITALY

Via Luigi Einaudi, 23/2
45100 Rovigo (RO), ITALIA
Tel. +39.0425.073130
Fax +39.0425.27228

website: www.schaefer-tec.it
contact person: **Paolo BARIANI**
e-mail: info@schaefer-tec.it

Schaefer SEE is a microscopy services company active in Italy since 2005. We bring to market highly innovative nano-scale characterization instruments.

We are much more than just a dealer. Our strengths are:

- Competence;
- Premium after-sale customer support delivered by our trained engineers;
- Our ability to run tests and measurement with the instruments we own in our offices.

2022 Instruments portfolio:

- SPM microscopes for operation in: air, environments or vacuum, and related accessories;
- Tabletop SEM microscopes;
- Optical profilers and optical 3D microscopes;
- 3D/4D label free microscopes developed specifically for the life sciences;
- Microscopy-based cell counters, also with recognition capabilities;
- Nanovesicles/Exosomes separation and analysis tools;
- Light scattering nanoparticles characterization tools;
- Control instrumentation (vacuum control, mass flow meters, HV and UHV parts)

Please don't hesitate to contact us for discussing your measurement needs. Whether you are looking for the best tool to invest into for your lab, or whether you need just measurements to be performed on contract, we will be happy to work with you!

BOOTH 5

THERMO FISHER SCIENTIFIC

Strada Rivoltana
20090 Rodano (MI), ITALIA
Tel. +39 0398389490
Fax +39 02 95059 256

website: www.thermofisher.com
contact person: **Andrea STARACE**
e-mail: andrea.starace@thermofisher.com

The world leader in serving science

To serve science, Thermo Fisher Scientific needs to stay ahead of it, we need to anticipate customer needs. We need to constantly think about advancing science, so customers have the freedom to be bolder and more innovative – we are committed to pushing science and technology a step beyond where it is today.
To enable our customers to make the world healthier, cleaner and safer.
Whether they are improving life for patients, protecting our global climate or keeping people safe, our customers look to Thermo Fisher Scientific for innovative solutions. Products and services sold under the following Thermo Fisher brands enable customers to push science and technology a step beyond.

Thermo Scientific – a commitment to analytical precision

Thermo Scientific instruments, equipment, software, services and consumables empower scientists to solve for complex analytical challenges in pharmaceutical, biotechnology, academic, government, environmental and industrial research, as well as the clinical laboratory. Our products address a range of needs from sample, material characterization and chemical analysis to clinical diagnoses and biological-based therapeutics manufacturing.

BOOTH 11

CARL ZEISS SPA con socio unico

Via Varesina, 162
20156 Milano (MI), ITALIA
Tel. +39 02 93773.1
Fax +39 02 93773.539

website: www.zeiss.it
contact person: **MarComm Office**
e-mail: marketing.czi@zeiss.com

Seeing beyond

What Drives Us

As the pioneer of scientific optics, we continue to challenge the limits of human imagination. With our passion for excellence, we create value for our customers and inspire the world in new ways.

ZEISS is an internationally leading technology enterprise operating in the optics and optoelectronics industries. In the past fiscal year, the ZEISS Group generated annual revenue totaling 6.3 billion euros in the four segments Semiconductor Manufacturing Technology, Industrial Quality & Research, Medical Technology, and Consumer Markets, and invested 13% of its revenue in research and development (as of 30/09/2020). ZEISS has a long tradition of similarly high expenditures for research and development, which also represent an investment in the future. Research Microscopy Solutions - Seeing even the finest details. As a leading manufacturer of microscopes ZEISS offers inspiring solutions and services for your life sciences and materials research, teaching and clinical routine. Reliable ZEISS systems are used for manufacturing and assembly in high tech industries as well as exploration and processing of raw materials worldwide. With its unique portfolio, constant innovations and strong partnerships, ZEISS Microscopy enables leading researchers to find answers to our society's most pressing challenges and drive scientific discovery forward. A dedicated and well-trained sales force and a responsive service team enable customers to use their ZEISS microscopes to their full potential.
ZEISS microscopes visualize tiny structures in nano dimensions, and highly efficient metrology systems guarantee productivity and quality assurance in industry. Prominent scientists put their trust in ZEISS microscopes when conducting their research.

SUPPORTERS

AMERICAN ELEMENTS
THE ADVANCED MATERIALS MANUFACTURER®

EVIta
SOCIETÀ ITALIANA PER LE VESCICOLE EXTRACELLULARI

FEDERCHIMICA
CONFINDUSTRIA

Galvani
DRESSES YOUR PROCESS

NETZSCH
Proven Excellence.

PRAXI
INTELLECTUAL PROPERTY

FONDAZIONE
UNIVERSITY
FOR INNOVATION

The printed version of NanoInnovation 2022 programme
is updated at September 12.

All subsequents changes and updates will be available on the official website:
www.nanoinnovation2022.eu

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

You can access directly the updated information using the QR-codes.

Consiglio Nazionale delle Ricerche

Politecnico di Torino

INRiM Istituto Nazionale di Ricerca Metrologica

Sapienza Università di Roma

Alma Mater Studiorum Università di Bologna

Roma Tre Università degli Studi

iENTRANCE

Infrastructure for ENergy TRANsition and Circular Economy @ EuroNanoLab

Nanomaterials for energy

Processes for material production and transformation to devices for green energy, green fuel production, energy storage, and energy management

Micro and nanoscale characterization systems and multiscale experimental techniques for functional and structural/mechanical properties and devices

Technologies for the realization of devices and systems

stay tuned

soon on

www.ientrance.eu

EUROnanoLAB

MUR Ministero dell'Università e della Ricerca

Funded by the European Union NextGenerationEU