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Faculty of Civil and Industrial Engineering

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UNIVERSITÀ DI ROMA

SEPTEMBER 9-13 2024

Nano Innovation 2024

Rome, 9-13 September

Conference & Exhibition

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www.nanoinnovation2024.eu

index

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PROGETTO GRAFICO E SITO WEB: AZIMUTH DI PATRIZIA DE CASTRO

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The printed version of NanoInnovation 2024 programme *is updated at September 2.*

This pdf is updated to September 3 at 23:21

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

You can access up-to-date information directly using QR codes present in the various pages of this program.

WELCOME

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

The previous seven editions of NanoInnovation were successfully concluded with an average of more than 1200 participants from different countries and 60 thematic symposia and workshops with more than 400 speakers and chairpersons. Most of the leading national public and private research players in nanotechnologies participated.

Following the style adopted during the Pandemic, the VIII edition of NanoInnovation, which will take place from **9 to 13 September 2024**, will also be held in a hybrid format. To ensure broad participation, most of the initiatives will take place both online and in person. NanoInnovation will once again be held in the Renaissance cloister of Sangallo, at the Faculty of Civil and Industrial Engineering of the Sapienza University of Rome.

NanoInnovation is the national reference event for the broad and multidisciplinary community involved in the study and development of micro- and nanotechnologies and their integration with other enabling technologies (KETs) in all application areas. NanoInnovation has always been a unique and unmissable opportunity to bring together academia, research and the entrepreneurial system with the aim of presenting and exchanging innovative ideas, transferring know-how, and enabling the integration of knowledge and experience between different application areas of nanobiotechnologies.
In this eighth edition of NanoInnovation, the role of PNRR actions and their impact on the research, innovation and industrial ecosystems will be demonstrated and discussed. **NanoInnovation 2024** will:

- Provide a **meeting forum** for academia, research, business and economic operators;
- Showcase **state-of-the-art** developments in applied nanotechnology research;
- Act as a **stage for innovations** in nanotechnologies and KETs;
- Promote **knowledge transfer** between different R&D actors and sectors;
- Provide **capacity building** and **training** opportunities for scientists and professionals.

The promotion of responsible research and innovation for sustainable development is one of the driving themes of the event. The programme of NanoInnovation 2024, increasingly focused on the application and market aspects of nanotechnology, KETs and innovation in all its aspects, includes highly qualified speakers and organisations.

NanoInnovation also offers students, PhD students and young researchers an excellent and unique opportunity to follow the latest developments in nanotechnologies and to meet leading players in the field.
A special thanks to all our co-organisers. Their scientific collaboration and economic support have been essential for the organisation of this VIII edition.

We would also like to thank the Sapienza University of Rome and its Faculty of Civil and Industrial Engineering for kindly hosting the conference, the Department of Basic and Applied Sciences in Engineering for logistical and scientific support, the Steering and Programme Committees for setting up the programme structure, the session chairs and the speakers who accepted our invitation to share their expertise.

Special thanks are due to the companies and organisations that have supported the event and once again made it possible to attend free of charge. We would like to thank all the people who worked hard to make NanoInnovation a valuable and informative experience.

The NanoInnovation 2024 Organising Committee

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AIRI
Associazione Italiana per la Ricerca Industriale

Airi (Italian Association for Industrial Research) is a non-profit private organization, founded 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's 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.

Since 1995, Airi publishes the report "Key Technologies for the Italian Industry, based on 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 up 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 non-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 in relation to the wide field of bio-nano technologies, composed of researchers, technologists and professionals from public research and industrial laboratories, in order to discuss innovative ideas, exchange knowledge and 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 the development of the variegated world of nano-bio-technology.
For more information and to join please visit 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 community of knowledge, 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 wide tange 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 with a high cultural background, qualified to meet the real needs of training and research companies, 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 that 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 in particular to meet local engineering needs, but also to prepare 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 creation 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 Elia Eudocia, wife of Teodosio II (408-550), emperor of the Eastenr Roman Empire, 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 close to those that hold San Peter during his roman imprisonment, 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)

The CNIS was enstablished in 2006, and now involves more than 90 professors and researchers, 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), the core-facility at Sapienza dedicated to nanoscience and nanotech multidisciplinary applications in materials science, life sciences, engineering and solid state physics. It brings together state-of-art instrumentation for nanotechnology 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 range of microscopy and nanoscopy techniques are 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 skills available at Sapienza University in the fields of nanotechnology and nanosciences, with the aim of creating synergies between research groups operating in different areas of science, engineering, medicine.
- Constitute a research infrastructure at Sapienza supportive the design, realization and characterization of nanostructures and innovative micro/nano-devices for different fields of applications.
- Provide instrumentation and services for 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 the for "the territory" and enterprise, responding to the research and technological development needs of the research programs at regional, national and international levels.

The SNN-Lab has also been made possible thanks to the funding from the Lazio region to promote innovation and technological transfer. The Lab is located on the main campus of Sapienza University in an area of 400 mq.

More information on: **web.uniroma1.it/cnis/**

SNN Lab – CNIS
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Contact person: Prof. Marco Rossi (marco.rossi@uniroma1.it)

Masterplan

Break and visit of the exhibition area

Monday 9	Tuesday 10	Wednesday 11	Thursday 12	Friday 13
09:00 - 17:30	**09:00 - 11:00**	**09:00 - 10:30**	**09:00 - 10:30**	**09:00 - 10:30**
Guest Event I Nano-enabled Agriculture **Guest Event II** S for sustainability: reuse, recycling and environmental impact for sustainable development **Guest Event III** Aspetti della proprietà intellettuale: dalla tutela alla condivisione della conoscenza **Guest Event IV** National Quantum Science and Technology Institute - Spoke 5 Workshop **NEST PRICE 2023** & Announcement NEST PRIZE 2024 **Guest Event V** D^{3}4 HEALTH - Digital Driven Diagnostics, prognostics and therapeutics for sustainable health care **Guest Event VI** Innovazione e futuro: frutti e prospettive della collaborazione tra Ricerca e Impresa per il Patrimonio Culturale del Lazio **Guest Event VII** Tech 4 You Convergenze negli Ecosistemi di Innovazione **Guest Event VIII** COST Actions Inclusive Networking for Excellence and Innovation	Welcome Session & Opening Session	Multi-track sessions & Workshops Joint Events, Special Events & more	Multi-track sessions & Workshops Joint Events, Special Events & more	Multi-track sessions & Workshops Joint Events, Special Events & more
		10:30 - 10:50		
	11:00 - 11:30	**10:50 - 11:30**	**10:50 - 11:30**	**10:50 - 11:30**
		Parallel Lectures	Parallel Lectures	Parallel Lectures
	11:30 - 13:00	**11:30 - 13:00**	**11:30 - 13:00**	**11:30 - 13:00**
	Round table	Multi-track sessions & Workshops Joint Events, Special Events & more	Multi-track sessions & Workshops Joint Events, Special Events & more	Multi-track sessions & Workshops Joint Events, Special Events & more
	13:00 - 14:00			
	14:00 - 16:10	**14:00 - 15:30**	**14:00 - 15:30**	**14:00 - 15:30**
	Scientific Plenary Session	Multi-track sessions & Workshops Joint Events, Special Events & more	Multi-track sessions & Workshops Joint Events, Special Events & more	Multi-track sessions & Workshops Joint Events, Special Events & more
	16:10 - 16:30	**15:30 - 16:00**		
	16:30 - 18:40	**16:00 - 17:30**	**16:00 - 17:30**	**16:00 - 17:30**
	Scientific Plenary Session	Multi-track sessions & Workshops Joint Events, Special Events & more	Multi-track sessions & Workshops Joint Events, Special Events & more	Multi-track sessions & Workshops Joint Events, Special Events & more
		17:45 - 19:15	**17:45 - 19:15**	**17:45 - 19:15**
		BreakOut sessions	BreakOut sessions	BreakOut sessions

Exhibition, Satellite Events, Poster Session and Social Events

Below you can find a detailed legend of all acronyms used in NanoInnovation 2024 conference program:

TT = Technical Multi-Track Session
Technical Multi-Track Session identifies a 90-minute slot. Two slots are held in the morning (09.00 -10.30 and 11.30 - 13.00) and two in the afternoon (14.00 - 15.30 and 16.00 - 17.30) On the whole, NanoInnovation program has 12 Technical Multi-Track Sessions, 4 for each day of conference.

Each of the twelve Technical Multi-Track Sessions includes several parallel thematic symposia. Some thematic symposia are part of workshops and special events while others are organized independently.

NanoInnovation 2024 acronyms are:

WS = Workshop
GE = Guest Event
BO = BreakOut sessions
DE = Demo Event
SE = Special Event
SF = Satellite Forum
JE = Joint Event

11:30 - 17:30

GUEST EVENT I

NANO-ENABLED AGRICULTURE

Chairs: Luca MARCHIOL, *University of Udine* & Daniele SCHIAVI, *University of Tuscia*

Co-organized with

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 nano-based techniques in agriculture 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 2024 hosts workshop "Nano-enabled Agriculture" co-organized by the Universities of Parma, Tuscia and Udine. The workshop will be the forum for discussing the perspective of nanotechnologies in the primary sector among the stakeholders and scientific research.

Session I - Research projects
Italian research on nano-enabled agriculture is vibrant on the global stage. During the session, several ongoing research projects in Italy, facilitated by international collaborations, will be presented.

Session II - ROUND TABLE
A view of nano-enabled agriculture in Italy. Let's talk about the game rules
The purpose of applied research is to develop knowledge which will eventually lead to innovations that can potentially change the rules of the game in a production sector. The global primary sector is currently in a complicated phase. Structural efficiency is required to reduce pressure on the environment, which can be achieved by introducing technological innovations such as nanotechnologies. Several far-east countries and India have already implemented nano-enabled agriculture, while in the USA, significant resources have been invested in R&D projects. However, in the EU, a precise system of regulations for nano-agrochemicals has not yet been established. A group of researchers in Italy are working on developing innovations, and some manufacturers are starting to enter the market. However, it is essential to understand the current and future market conditions in our country, the technical skills of farmers and the perceptions of consumers. The PRIN20022 Cleopatra project facilitates discussions with various stakeholders on these crucial issues.

Session III - Circular Economy as the next step for sustainable nano-inspired applications
Nanotechnology could have a huge impact on many agricultural areas in the recent future. This is particularly true for pest control, plant nutrition and priming, bioremediation and sensors, as well as food packaging. However, nanotechnology could play an even more relevant role in boosting the sustainability of our supply chains if we consider the potential in dealing with waste. Indeed, the European Community is asking us to shape new industrial processes to minimize the production and enhance the alternative use of waste, according to the principles of circular economy. Waste represents an interesting source of raw materials, such as polymers, organic molecules, humic substances, which can be isolated, purified, engineered and transformed by several chemical-physical methods to obtain functional nanomaterials with novel properties. The aim of this session is to give a glimpse of feasible applications of the aforementioned concepts, giving example of how incredible nanomaterials for agriculture could be obtained from residues and debris.

GUEST EVENT I

11:30 - 17:30

Session I **Research projects**	
Chair: Daniele SCHIAVI, *University of Tuscia*	
11:30 - 11:45	Chuanxin MA, *Guangdong University of Technology, China* **Engineered nanomaterials defend against biotic and abiotic stresses in crops**
11:45 - 12:00	Fabrizio DE CESARE, *University of Tuscia* **MOSSA - Monitoring Fruit Tree Health: Nanomaterial-Driven Sensors and Power Systems in a Multifunctional Platform**
12:00 - 12:15	Guido FELLET, *University of Udine, PRIN – CLEOPATRA* **Circular economy and sustainable agriculture: Hydroxyapatite from biowastes as smart nanofertilizer - CLEOPATRA**
12:15 - 12:30	Magda BLOSI, *ISSMC CNR, PNRR – ECOSISTER* **Advanced Materials for Sustainable Water Treatment: Integrating Microalgae Biomass with Inorganic Nanomaterials**

Session II **ROUND TABLE** **A view of nano-enabled agriculture in Italy. Let's talk about the game rules**
Moderator: Cristiano RICIPUTI, *Professional Journalist*
PANELISTS
Luca MARCHIOL, *University of Udine*
Giuseppe CIUFFREDA, *FCP Cerea, NANO.T*
Stefania BOI, *NANOMNIA*
Silver GIORGINI, *OROGEL*
Manuel ISCERI, *Federchimica, Assofertilizzanti*

Session III **Circular Economy as the next step for sustainable nano-inspired applications**	
Chair: Davide SAVY, *University of Naples "Federico II"*	
16:00 - 16:20	Riccardo RONCHETTI, *University of Perugia* **Functional nanostructured cellulose as potential carrier system for bioactive compounds**
16:20 - 16:50	Davide PICCININO, *University of Tuscia – GentoxChem* **Lignin chemistry as natural starting platform to design innovative replacing multifunctional ingredients: a green chemistry approach**
16:50 - 17:10	Sara Paola NASTASI, *University of Milano* **Bioinspired Pest Control: Sustainable Formulations for Bioactive Molecule Delivery in Plants**
17:10 - 17:30	Michele RICUPERO, *University of Catania* **Nanoformulated essential oil-based insecticides: an ongoing scenario for greenhouse pest control**

11:00 - 16:00

GUEST EVENT II

S FOR SUSTAINABILITY: REUSE, RECYCLING AND ENVIRONMENTAL IMPACT FOR SUSTAINABLE DEVELOPMENT

Chair: Maria Laura SANTARELLI, *Sapienza University of Rome*

Co-organized with

SAPIENZA UNIVERSITÀ DI ROMA

PRIORITY

The pivotal role of reuse, recycling, and environmental impact management is explored in fostering sustainable development. It emphasizes the importance of adopting circular economy principles, where materials and products are reused and recycled, thereby minimizing waste and conserving natural resources. tne meeting analyzes the environmental, economic, and social benefits of these practices, highlighting their contribution to reducing carbon footprints and mitigating climate change. Furthermore, it discusses innovative approaches and policies that can enhance the effectiveness of reuse and recycling efforts, ultimately driving a more sustainable and resilient future. Through a comprehensive review of current practices and emerging trends, the meeting underscores the necessity of integrating sustainability into all aspects of production and consumption to achieve long-term ecological balance.

11:00 - 11:15	**WELCOME GREETINGS** Carlo Massimo CASCIOLA, *Sapienza University of Rome, Dean of the Faculty of Civil and Industrial Engineering* Paolo DE FILIPPIS, *Sapienza University of Rome*
11:15 - 11:30	Maria Laura SANTARELLI, Sapienza University of Rome **Introduction S for Sustainability**
11:30 - 11:55	Benedetta DE CAPRARIIS, *Sapienza University of Rome* **Chemical recycling of eyewear industry cellulose acetate waste for the recovery of acetic acid and plastic**
11:55 - 12:20	Francesca CHIONCHIO, *Nextchem* **Innovative approaches in plastic waste chemical recycling**
12:20 - 12:45	Assunta MARROCCHI, *University of Perugia* **POLYMEER – Brewers spent grain as main by-product for development of novel, high-performance biobased polymers, polymer blends, and co-polymers**
13:00 - 14:00 lunch break	
14:00 - 14:25	Roberta MECOZZI, *ENEA* **Research in pristine environments: impact of logistics vs the importance of scientific results: the work of the Italian National Antarctic Programme**
14:25 - 14:50	Marco PAROLINI, *University of Milan* **Plastic contamination in high-mountain ecosystems: an overview on microplastic contamination on glaciers**
14:50 - 15:25	Lucia GORACCI & Ivano CAPOLUNGO, *LyondellBasell* **MoReTec: the new LYB advanced molecular technology**
15:25 - 15:50	Stefania FEDERICI, *University of Brescia* **Building a European Network: Collaborative Approaches to Advancing Microplastic Research**
15:50 - 16:00	**CONCLUSION**

GUEST EVENT III | **11:30 - 13:00**

ASPETTI DELLA PROPRIETÀ INTELLETTUALE: DALLA TUTELA ALLA CONDIVISIONE DELLA CONOSCENZA

Chair: Leonardo MATTIELLO, *Sapienza University of Rome*

Organized in collaboration with

PRAXI INTELLECTUAL PROPERTY

SAPIENZA UNIVERSITÀ DI ROMA

Scientific research and patenting are intertwined in the process of innovation: a complex relationship that offers various advantages and presents challenges. Patents protect intellectual property, provide financial incentives, foster collaborations, promote innovation, and enable technology transfer. However, the process can be administratively difficult, costly, and may conflict with the timely dissemination of research findings. Balancing the benefits and drawbacks of patenting is essential for researchers and institutions, emphasizing the need for collaboration to drive the technological progress.

11:30 - 12:00	Orlando MAIORANI, *Sapienza University of Rome - Settore Brevetti e Licensing* **Policy, knowledge value and strategic relevance of protection**
12:00 - 12:30	Maria Vittoria PRIMICERI, *PRAXI Intellectual Property* **Management of international procedures of protection (and breaking news)**
12:30 - 13:00	Daniele RICCIONI, *Sapienza University of Rome - Ufficio Valorizzazione e Trasferimento Tecnologico* **Technology Transfer – Intellectual Property and Start up**

10:00 - 18:00

GUEST EVENT IV

NATIONAL QUANTUM SCIENCE AND TECHNOLOGY INSTITUTE - SPOKE 5 WORKSHOP

Co-organized with

WORKSHOP COMMITTEE

Fabio BELTRAM, *NQSTI | Scuola Normale Superiore*
Marco FANCIULLI, *NQSTI | University of Milano Bicocca*
Francesco GIAZOTTO & Lucia SORBA, *NQSTI | Istituto NANO-CNR*
Marco GRILLI, *NQSTI | Sapienza University of Rome*
Davide MASSAROTTI, *NQSTI | University of Naples*

Spoke 5 of National Quantum Science and Technology Institute is dedicated to the consolidation of a coordinated network of fabrication facilities, a "national quantum fab" that supports the Italian QST research community by designing, fabricating and characterizing solid-state systems whose shape, chemical composition and structure are tailored to host electronic configurations of interest for QST. Nanotechnology is a key tool in this context: Nanoinnovation is therefore the natural venue for a Spoke 5 workshop where highlights of the research activity will be presented to favor collaboration and a better valorization of Spoke 5 innovation. Opportunites will be offered for discussions in small parallel groups. All Spoke 5 scientists and Nanoinnovation participants are invited.

10:00 - 10:15	Opening session **Spoke 5 in NQSTI**
TUNABLE EMERGING ELECTRONIC CONFIGURATIONS IN HYBRID/TOPOLOGICAL SYSTEMS	
Chair: Lucia SORBA, *NEST, Istituto Nanoscienze-CNR & Scuola Normale Superiore*	
10:15 - 10:30	Stefan HEUN, *NEST, Istituto Nanoscienze-CNR and Scuola Normale Superiore* **Towards superconducting correlations in the quantum Hall regime**
10:30 - 10:45	Sergio PEZZINI, *NEST, Istituto Nanoscienze-CNR and Scuola Normale Superiore* **Twistronic engineering of two-dimensional quantum states**
10:45 - 11:00	Francesco TAFURI, *University of Naples "Federico II"* **High critical temperature superconductivity: an old story with a new twist**
11:00 - 11:20	Marco GRILLI, *Sapienza University of Rome* **Majorana fermions in filamentary low dimensional superconductors**

GUEST EVENT IV

10:00 - 18:00

NOVEL NANOMATERIALS FOR HYBRID ARCHITECTURES	
Chair: Marco GRILLI, *Sapienza University of Rome*	
11:20 - 11:35	Lucia SORBA, *NEST, Istituto Nanoscienze-CNR and Scuola Normale Superiore* **Novel nanomaterials for hybrid quantum architectures**
11:35 - 11:50	Roberto GUNNELLA, *University of Camerino* **Borophene Nanosheets vs 2D hybrids**
11:50 - 12:05	Fabrizio DOLCINI, *Polytechnic University of Turin* **Topological Materials for Andreev spin qubits**
12:05 - 12:25	Marco GIBERTINI, *Università di Modena and Reggio Emilia* **Emergent controllable topological states in van der Waals heterostructures**

QUANTUM ENERGY MANAGEMENT	
Chair: Francesco GIAZOTTO, *NEST, Istituto Nanoscienze-CNR & Scuola Normale Superiore*	
12:25 - 12:40	Vittorio GIOVANNETTI, *NEST, Istituto Nanoscienze-CNR and Scuola Normale Superiore* **Quantum work extraction efficiency for noisy quantum batteries**
12:40 - 13:00	Camilla COLETTI, *CNI@NEST	Istituto Italiano di Tecnologia* **Scalable graphene for quantum energy management**

PHASE-SENSITIVE ARCHITECTURES	
Chair: Vittorio GIOVANNETTI, *NEST, Istituto Nanoscienze-CNR & Scuola Normale Superiore*	
14:00 - 14:20	Francesco GIAZOTTO, *NEST, Istituto Nanoscienze-CNR and Scuola Normale Superiore* **Phase-coherent superconducting quantum devices for sensing and non-reciprocal electronics**

QUANTUM INTERFACING, CONTROL AND READOUT	
Chair: Marco FANCIULLI, *University of Milano Bicocca*	
14:20 - 14:40	Davide MASSAROTTI, *University of Naples "Federico II"* **Unconventional Josephson junctions and circuits for superconducting quantum hardware**
14:40 - 14:55	Martina ESPOSITO, *CNR SPIN Naples* **Investigating Spurious tones in Traveling Wave Parametric Amplifiers**
14:55 - 15:10	Carmine ATTANASIO, *University of Salerno* **High-performance Josephson junctions for ferrotransmons**

10:00 - 18:00	GUEST EVENT IV

TAILORED DEFECTS AND MOLECULES FOR QT	
Chair: Davide MASSAROTTI, *University of Naples "Federico II"*	
15:10 - 15:25	Marco FANCIULLI, *University of Milano Bicocca* **Arrays of donors in silicon for quantum technologies**
15:25 - 15:40	Stefano CARRETTA, *University of Parma* **Quantum Simulator Based on Molecular Spin Qudits**
15:40 - 15:55	Lorenzo SORACE, *University of Firenze* **Oligomeric Porphyrin complexes as candidates for quantum logic gates implementation**
15:55 - 16:10	Marco AFFRONTE, *Università di Modena and Reggio Emilia* **Hybrid spin-superconductors for QT**
16:10 - 16:30	Enrico SALVADORI & Mario CHIESA, *University of Turin* **Electron spin coherence in molecular and solid-state systems**

Closing session
WINNERS of the NEST PRIZES 2022, 2023 & Announcement of the NEST PRIZE 2024
Chair: Pasqualantonio PINGUE, *Scuola Normale Superiore*

GUEST EVENT V

14:00 - 18:00

D³4 HEALTH - DIGITAL DRIVEN DIAGNOSTICS, PROGNOSTICS AND THERAPEUTICS FOR SUSTAINABLE HEALTH CARE

Chairs: Valeria PANEBIANCO, *Sapienza University of Rome* & Candido Fabrizio PIRRI, *Polytechnic University of Turin*

Co-organized with:

D³4 HEALTH
Digital Driven Diagnostics, prognostics and therapeutics for sustainable Health care

The project originated as part of the Complementary National Plan (PNC), which has a specific focus on Health, Environment, Biodiversity and Climate. D³4 Health, in particular, promotes research in the area of Health, through the development of digital technologies and data mining approaches, applied to the treatment of 5 main diseases: metastatic colon cancer, liver and bile duct cancer, central nervous system cancer, diabetes type I and multiple sclerosis. Specifically, the project aims to develop digital and biological twins for the diagnosis, monitoring and treatment of these five benchmark diseases, through the collection of health data analyzed by artificial intelligence-powered algorithms, collected on a multilayer platform and also obtained through the development and use of innovative technologies such as wearable devices, sensors and biomarkers. The D³4 Health Foundation, established to manage the project, consists of 28 partners including public and private universities, research institutes and companies, with Prof. Maria Sabrina Sarto being the President. Sapienza University of Rome is the project leader, and the scientific contact person is Prof. Carlo Catalano, (carlo.catalano@uniroma1.it). The project is also a great opportunity for young researchers to be part of an RD program aimed at health system innovation through the digital technology transition, where Research and Business come together to jointly promote and support high-level research, technology transfer and higher education. The participation to the Nanoinnovation 2024 will represent an opportunity to showcase cutting-edge activities, to network with leading experts in the field, and explore potential collaborations with other pioneering research initiatives, fostering interdisciplinary collaborations and drive forward the integration of nanotechnology and digital health solutions.

14:00 - 14:10	Maria Sabrina SARTO, *Sapienza University of Rome | HUB President* **Brief introduction**
14:10 - 14:20	Carlo CATALANO, *Sapienza University of Rome* **Brief introduction**
14:20 - 14:30	Laura PATELLA, *MUR* **Greetings from MUR**
14:30 - 14:45	Huan NGUYEN, *Middlesex University London, UK* **Digital Twin framework: Technical Implementation**
14:45 - 15:00	Monica Rosa MIOZZO & Raffaella CHIARAMONTE, *University of Milan* **Extracellular Vesicles-based Biomarkers**
15:00 - 15:15	Alessandro D'ALOIA, *Sapienza University of Rome* **Wereable technologies, sensors and devices**
15:15 - 15:25	Martina PECORARO, *Sapienza University of Rome* **Imaging biomarkers**
15:25 - 15:40	Evaristo CISBANI, *ISS* **AI algorithms for DT implementation**

14:00 - 18:00

GUEST EVENT V

PANEL DISCUSSION: D³4 HEALTH DIGITAL TWIN IMPLEMENTATION
Chair: Valeria PANEBIANCO, *Sapienza Universiy of Rome* Moderator: Domenico ALVARO, *Sapienza Universiy of Rome*
PANELISTS
Vitoantonio BEVILACQUA, *Polytechnic University of Bari*
Pietro CAMPIGLIA, *University of Salerno*
Francesco DOTTA, *University of Siena*
Laura MASUELLI, *Sapienza University of Rome*
Simone NOVELLI, *Sapienza University of Rome*
Claudio RUSSO, *University of Molise*
Gabriella BRETTI, *CNR*
Lorena NAPPA, *HUB*

BIOLOGICAL TWIN: THE HEALTHCARE NEW ERA	
Chair: Candido Fabrizio PIRRI, *Polytechnic University of Turin* Moderators: Francesca FRASCELLA & Lucia NAPIONE, *Polytechnic University of Turin* and Simone Luigi MARASSO, *CNR*	
16:00 - 16:15	Nazli Ece ORDUERI, *Biruni University of Instanbul* **Testicular biopsy material and its aspects for the selection in vitro by using microfluidics**
16:15 - 16:30	Giulia MESIANO, *Polytechnic University of Turin* **Mimicking tumor microenvironment to model Metastatic Colorectal Cancer (CRC) patient-derived organoids dynamics**
16:30 - 16:45	Luca BUSINARO, *CNR* **Integrating Organ-on-Chip and In-Silico Models: Towards a Cybernetic Platform for Complex In-Vitro Models**
16:45 - 17:00	Paolo FALCO, *aizoOn* **The possible role of biological twins in the development of Artificial Intelligence solutions for precision medicine: targeted in vitro experiments as a complement to traditional data strategies**
17:00 - 17:15	Agostino OCCHICONE, *Sapienza University of Rome* **Enhanced fluorescence detection of miRNA by means of Bloch surface wave-based biochips**

GUEST EVENT V

14:00 - 18:00

PANEL DISCUSSION: D³4 HEALTH BIOLOGICAL TWIN IMPLEMENTATION
Chair: Fabrizio PIRRI, *Polytechnic University of Turin* Moderators: Francesca FRASCELLA & Lucia NAPIONE, *Polytechnic University of Turin*
PANELISTS
Giovanni TONON, *University Vita - Salute San Raffaele*
Chiara TONDA-TURO, *Polytechnic University of Turin*
Francesco MICHELOTTI, *Sapienza University of Rome*
Luca BUSINARO, *CNR*
Simone Luigi MARASSO, *CNR*
Paola Maria TIBERTO, *INRiM*
Paolo NETTI, *IIT*

14:00 - 16:00

GUEST EVENT VI

INNOVAZIONE E FUTURO: FRUTTI E PROSPETTIVE DELLA COLLABORAZIONE TRA RICERCA E IMPRESA PER IL PATRIMONIO CULTURALE DEL LAZIO

Chairs: Luisa CANEVE, *ENEA* | Mariangela CESTELLI GUIDI, *INFN-LNF* | Valeria GUERRISI, *CdE DTC Lazio* | Edoardo LAMPIS, *Lazio Innova*

Co-organized with DTC LAZIO DISTRETTO TECNOLOGICO BENI E ATTIVITÀ CULTURALI CENTRO DI ECCELLENZA

STEERING COMMITTEE
Simone BOZZATO, University of Rome Tor Vergata

PROGRAMME COMMITTEE
Luisa CANEVE, ENEA & Mariangela CESTELLI GUIDI, INFN-LNF

14:00 - 14:10	Saluti e introduzione
14:10 - 14:20	**Soluzioni innovative per la conservazione del peperino** Valeria SPIZZICHINO, *ENEA*
14:20 - 14:30	**Attività del laboratorio delle tavole vibranti ENEA nell'ambito del DTC Lazio** Ivan ROSELLI, *ENEA*
14:30 - 14:45	**Il progetto ARTEMISIA: imaging multispettrale esteso con Intelligenza Artificale per l'analisi in situ delle opere d'arte** Lucilla PRONTI, *INFN*
14:45 - 14:55	**Stampa 3D per Beni Culturali, interventi avanzati per il recupero e monitoraggio strutturale di elementi architettonici e di decoro** Ernesto GRANDE, *Università degli studi di Cassino*
14:55 - 15:05	**Il supporto del DTC Lazio all'innovazione tecnologica strumentale delle attività private nella diagnostica dei Beni Culturali: Cofinanziamento del progetto ARS MENSURAE per la ricerca e sviluppo per il patrimonio culturale e le tecnologie per la cultura** Giulia RISTORI, *Ars Mensurae Srl*
15:05 - 15:15	**"OLOS®GIS": i dati complessi si convertono in narrazioni interattive accessibili e immersive grazie alle nuove frontiere dello storytelling digitale, dell'AI e dei modelli linguistici LLM** Daniele BALDACCI & Giulia CASTORINA, *Blue Cinema TV Srl*
15:15 - 15:30	**Il ruolo delle istituzioni nella collaborazione tra imprese e ricerca** Edoardo LAMPIS, *Lazio Innova*

GUEST EVENT VII | **10:00 - 13:30**

TECH 4 YOU: CONVERGENZE NEGLI ECOSISTEMI DI INNOVAZIONE

Le convergenze progettuali e strategiche tra gli Ecosistemi di Innovazione: dibattitto per la definizione di uno scenario futuro

Chairs: Donatella PAOLINO, *University Magna Graecia of Catanzaro* & Aleardo FURLANI, *Tech4You*

Evento di confronto tra i vari Ecosistemi dell'Innovazione finanziati dal PNRR

Co-organized with:

PRESENTAZIONE

Il workshop rappresenta un momento di incontro e di confronto, volto a valutare la possibile convergenza tecnologica dei team di ricerca dei vari Ecosistemi dell'innovazione e la possibile definizione di una pipeline condivisa di progetti e applicazioni, come leva operativa per garantire la futura sostenibilità finanziaria e strategica degli Ecosistemi di Innovazione.

Il workshop è strutturato in 2 momenti di discussione: nel corso della prima parte verranno esplorate le possibili sinergie future tra i progetti di ricerca degli Ecosistemi di Innovazione in cui vengono rappresentati i risultati preliminari della mappatura effettuata e le ipotesi di convergenza tecnologica tra gli Ecosistemi TECH4YOU e VITALITY. Nel corso della seconda parte avrà luogo una tavola rotonda a cui verranno invitati i rappresentanti dei vari ecosistemi di innovazione al fine di condividere i modelli di ulteriore sviluppo futuro e sostenibili degli ecosistemi al termine della fase di finanziamento prevista dal PNRR

PROGRAMMA	
10:00 - 10:45	**Ipotesi di convergenze di progetti e tematiche di ricerca e sviluppo tra gli Ecosistemi Nazionali di Innovazione - le possibili 4 aree tecnologiche di sviluppo congiunto** Dott. Domenico Greco, *HUB Tech4You, Sabrina Graziano Research Manager dello Spoke 5 di Tech4you.*
10:45 - 11:15	Conclusioni e prossimi passi
11:15 - 11:30	*Coffee Break*
11:30 - 12:45	**La sostenibilità post-finanziamento degli ecosistemi nazionali di Innovazione** Tavola rotonda (in presenza ed in remoto) con i Programme manager e i rappresentanti degli Ecosistemi di Innovazione
12:45 - 13:15	**Final Remarks:** Gabriele LOBACCARO, ETS per Ecosister, Musa, Tech4You Fabrizio COBIS, MUR, Direzione Generale della Ricerca
13:15 - 13:30	Conclusioni e prossimi passi
Per la partecipazione al workshop in presenza o da remoto compilare il modulo di adesione online	

18:00 - 19:30 | **GUEST EVENT VIII**

COST ACTIONS
INCLUSIVE NETWORKING FOR EXCELLENCE AND INNOVATION

Chair: Radenka KRSMANOVIC WHIFFEN, *COST*

Co-organized with

COST is an EU-funded programme that enables researchers to set up their interdisciplinary research networks in Europe and beyond, called COST Actions. We provide funds for organising conferences, meetings, training schools, short scientific exchanges or other networking activities in a wide range of scientific topics. By creating open spaces where people and ideas can grow, we unlock the full potential of science. www.cost.eu www.cost.eu/what-do-we-fund COST Actions bring together researchers and innovators to investigate a topic of their choice for 4 years. Participants are usually researchers from academia, SMEs, public institutions and other relevant organisations or interested parties. Open to all science and technology fields, including new and emerging fields, COST Actions offer an inclusive, pan-European environment for individuals of all levels of seniority to grow their professional research networks and boost their careers, paving the way to new synergies with EU-funded research projects, and enhancing the networking potential of new consortia. www.cost.eu/cost-actions/what-are-cost-actions www.cost.eu/cost-actions-event/browse-actions At this session seven COST Action representatives will share their experience of being part of a COST Action. In particular, they will explore how COST Actions help advance knowledge and strengthen the research in their respective scientific fields, and many advantages which membership of their Action has afforded them.

18:00 - 18:05	Radenka KRSMANOVIC WHIFFEN, *COST Association, Belgium* **COST in a nutshell**
18:05 - 18:15	Monica FABRIZIO, *CNR* **European Materials Acceleration Center for Energy (EU-MACE)**
18:15 - 18:25	Kevin ROSSI, *Technische Universiteit Delft, The Netherlands* **Data-driven Applications towards the Engineering of functional Materials: an Open Network (DAEMON)**
18:25 - 18:35	Antonella DALLA CORT, *Sapienza University of Rome* **Supramolecular LUminescent Chemosensors for Environmental Security (LUCES)**
18:35 - 18:45	Patrina PARASKEVOPOULOU, *National and Kapodistrian Univ. of Athens, Greece* **Advanced Engineering and Research of aeroGels for Environment and Life Sciences (AEROGELS)**
18:45 - 18:55	Bogdan POSTOLNYI, *University of Porto, Portugal* **Innovative and sustainable TecHnologies for reducing critical raw mAterials dependence for Cleaner transportation Applications (ITHACA)**
18:55 - 19:05	Romy Lena ETTLINGER, *University of St Andrews, United Kingdom* **European metal-organic framework network: combining research and development to promote technological solutions (EU4MOFs)**
19:05 - 19:15	Stefania FEDERICI, *INSTM* **Plastics monitoRIng detectiOn RemedIaTion recoverY (PRIORITY)**
19:15-19:30 Questions & Answers	
19:30 - 20:00 Cocktail	

09:00 - 11:00

WELCOME SESSION	
Chair: **Maria Sabrina SARTO**, *Sapienza Univ. of Rome, Deputy Rectress for Research* **Carlo Massimo CASCIOLA,** *Sapienza Univ. of Rome, Faculty of Civil and Industrial Eng., Dean*	
OPENING GREETINGS	
PS.I.1	**Maria Sabrina SARTO**, *Sapienza University of Rome, Deputy Rectress for Research*
GREETINGS	
PS.I.2	**Monica LUCARELLI,** *Comune di Roma, Assessora alle Attività Produttive e alle Pari Opportunità*
PS.I.3	**Maria Cristina MESSA,** *Fondazione Don Carlo Gnocchi, Scientific Director*
PS.I.4	**Candido Fabrizio PIRRI,** *Polytechnic University of Turin, Vice Rector for Research Model and Infrastructure Development*
PS.I.5	**Giorgio GRADITI,** *ENEA, General Director*
PS.I.6	**Massimo CARNELOS** *(to be confirmed), MAECI, Capo dell'Ufficio Innovazione, start-up e spazio - DGSP Uff. XI*
CLOSING GREETINGS	
PS.I.7	**Carlo Massimo CASCIOLA,** *Sapienza University of Rome, Faculty of Civil and Industrial Engineering, Dean*

OPENING SESSION Research & Innovation Strategies at the PNRR Era	
Chair: **Marco VITTORI ANTISARI**, *NanoItaly Association*	
PS.II.1	**Giulia MONTELEONE,** *ENEA, Dip. Tecnologie energetiche e fonti rinnovabili, Direttrice Strategie ENEA Innovazione e Trasferimento Tecnologico*
PS.II.2	**Rudy Alexander ROSSETTO,** *Professional Order of Biologists in Lombardy, President* The role of biologists in the life sciences and nanotechnologies: insights and challenges of the Lombardy Region model
PS.II.3	**Marziale FEUDALE**, *Thales Alenia Space - Italia, CTO, Senior Expert, R&D&T and Horizon EU* Introducing different to create value: innovation and R&D strategy at TAS-I
PS.II.4	**Sara MORISANI**, *AIRI, Director* Tecnologie prioritarie per l'industria nazionale
PS.II.5	**Massimo SCACCABAROZZI** *Direttore Think Tank on Radar Fondazione Menarini - Presidente Sezione Farmaceutica e Biomedicale Unindustria Lazio* Le trasformazioni della farmaceutica: ricerca, produzione, valore economico e sicurezza nazionale. Come cambiano gli scenari al servizio della salute dei pazienti
PS.II.6	**Massimo CARNELOS** *(to be confirmed), MAECI, Capo dell'Ufficio Innovazione, start-up e spazio - DGSP Uff. XI* *title to be defined*
PS.II.7	**Alessandro GARIBBO,** *Leonardo, Head of Universities and Research Centers Coordination* PNRR and PhDs as a model (which could be improved) for cooperation between industry and academia – Leonardo's experience

11:30 - 13:00

ROUND TABLE

PLATFORMS and OPEN ACCESS RESEARCH INFRASTRUCTURES for the TECHNOLOGY TRANSFER

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

Moderator: Chiara LICO, *Journalist, writer and TV presenter*

In recent years, the importance of research infrastructures, as providers of advanced instrumentation and specialized skills, has dramatically increased due to the necessity for optimal management of highly complex and costly instruments. In a constantly evolving landscape of scientific and technological advancement, the pivotal role of research infrastructures is undergoing a significant transformation. These infrastructures are not just repositories of cutting-edge instrumentation and specialized expertise; they have become catalysts for innovation, driving progress through optimal management of high-cost, complex equipment. This shift in research activity management, where laboratory results need to be integrated with experiments conducted in large, publicly accessible research infrastructures, presents not only new opportunities but also new and often uncharted challenges. Optimizing the interactions between various structures and research teams, managing intellectual property, and coordinating time and access modes are essential aspects. The creation of decentralized research infrastructures, organized as a network of independent laboratories, adds another layer of complexity. Furthermore, recent funding initiatives under the Next Generation EU Plan (PNRR) have significantly accelerated investments in Italy in both Research Infrastructures and Technological Infrastructures for Innovation. It is crucial to align these new initiatives with existing national efforts in a coordinated, inclusive, and synergistic manner, promoting best practices and effective governance. The Round Table aims to be one occasion to facilitate a dialogue among all stakeholders involved in the establishment, management, and operation of research infrastructures, and those potentially interested in utilizing these infrastructures. It will provide information on both technological and organizational-managerial characteristics essential for creating a network of research infrastructures while collecting opinions and suggestions on the most effective management approaches. The themes on the table span from the needs in terms of operative structure, operator skills, to the instrument characteristics and their evolution strategy. By doing so, we hope to further stimulate the interests of operators, fostering a greater awareness of the potential offered by individual infrastructures and their integration. Overall, this initiative aims to create a collaborative environment to address the pressing challenges faced by the research community in managing and optimizing the use of research infrastructures. By sharing knowledge, experiences, and suggestions, we can work towards a more integrated and efficient network of research infrastructures, ultimately contributing to the acceleration of technology transfer and innovation. The discussion at the beginning of the Round Table will be started by the panelists listed below. Participation is open and free upon online registration. Your participation and input are invaluable in shaping the future of research and technology transfer in Italy and beyond. We invite you to be part of this seminal discussion, as we collaboratively envision the future of research infrastructures in an integrated, efficient, and innovative manner. If you wish to join the list of panelists, kindly forward your request to the coordinators: Vittorio Morandi (morandi@bo.imm.cnr.it) and Marco Rossi (marco.rossi@uniroma1.it).

iENTRANCE

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Panelists	
Pietro ASINARI	*INRiM, Scientific Director*
Massimo BERSANI	*Fondazione Bruno Kessler - FBK*
Andrea CAPASSO	*NL - International Iberian Nanotechnology Laboratory, Braga, Portugal*
Ennio CAPRIA	*ESRF, Grenoble - FR, Deputy Head of Business Development*
Massimo CARNELOS *(to be confirmed)*	*MAECI, Capo dell'Ufficio Innovazione, start-up e spazio - DGSP Uff. XI*
Marziale FEUDALE	*Thales Alenia Space - Italia, CTO, Senior Expert, R&D&T and Horizon EU*
Alessandro GARIBBO	Leonardo, Head of Universities and Research Centers Coordination
Michele MAZZOLA	*Ministero dell'Università e della Ricerca Ufficio III - Internazionalizzazione della Ricerca*
Giulia MONTELEONE	*ENEA, Dip. Tecnologie energetiche e fonti rinnovabili, Direttrice*
Francesca NATALI	*Meta Group, Fund Managing director and Senior expert*
Donatella PAOLINO	*University of Magna Grecia & Tech4You Scarl*
Fabrizio PIRRI	*Polytechnic University of Turin, Vice Rector for Research Model and Infrastructure Development*
Rudy Alexander ROSSETTO	*Professional Order of Biologists in Lombardy, President*
Roberto SANTANGELO *(waiting confirmation)*	*Regione Abruzzo, Assessore*
Massimo SCACCABAROZZI	*Direttore Think Tank on Radar Fondazione Menarini - Presidente Sezione Farmaceutica e Biomedicale Unindustria Lazio*
Giovanni TOSI	*UniMORE, Nanomedicine Platform Coordinator and Secretary of the European Technology Platform on Nanomedicine (ETPN)*

14:00 - 16:00

SCIENTIFIC PLENARY SESSION
Advancements and Frontiers in Scientific Research and Innovation 1/2

Chair: Danilo DINI, *Sapienza University of Rome*

PS.III.1	Jürgen GARCHE, *Senior Professor, Ulm University, Germany* **Electrochemical energy storage for automotive, stationary and portable application**
PS.III.2	Giovanni Battista APPETECCHI, *ENEA* **Sodium-ion battery technology: a look on the state-of-art and main ENEA achievements**
PS.III.3	Burkhard BECKHOFF, *Physikalisch-Technische Bundesanstalt, Germany* **Quantitative characterization of energy and nanomaterials by means of traceable x-ray spectrometry**
PS.III.4	Domenico MELLO, *EM Microelectronic, a Company of the Swatch Group* **Tomography revolutionizing microelectronics and semiconductor analysis approach**

16:30 - 18:30

SCIENTIFIC PLENARY SESSION
Advancements and Frontiers in Scientific Research and Innovation 2/2

Chair: Danilo DINI, *Sapienza University of Rome*

PS.IV.1	Fernando Araujo de CASTRO, *National Physical Laboratory, UK* **Metrology for innovation of next generation semiconductor materials**
PS.IV.2	Lucio CALCAGNILE, *University of Salento | CEDAD* **The CEDAD research infrastructure at the University of Salento: 25 years of research in Material Science, Environment and Cultural Heritage**
PS.IV.3	Andrea CAPASSO, *International Iberian Nanotechnology Laboratory - INL, Portugal* **2D material-based memristors for neuromorphic computing**
PS.IV.4	Simone MELONI, *University of Ferrara* **Does nanoconfined water look like bulk water?**

WELCOME COCKTAIL in THE CLOISTER

09:00 - 10:30 | **TT.I**

TT.I.A **JE.I.1**	**Animal reproduction and the role of extracellular vesicles 1/2** *Co-organized with Sapienza University of Rome, EVita, GEI-SIBSC* Chairs: Annalisa RADEGHIERI, *EVita* & Luciana DINI, *Sapienza University of Rome | GEI-SIBSC*
TT.I.B **WS.X.1**	**Green chemistry and sustainable approaches for innovative materials 1/2** *Co-organized with Sapienza University of Rome* Chair: Maria Laura SANTARELLI, *Sapienza University of Rome*
TT.I.C	**Innovations for enhanced perfomances DSSCs 1/2** *Co-organized with University of Tor Vergata and Sapienza University of Rome* Chair: Marilena CARBONE, *University of Tor Vergata*
TT.I.D	*Deleted, postponed to the X edition of NanoInnovation (15-19 September 2025)*
TT.I.E **WS.II.1**	**The role of H_2 in the energy transition from production to use** *Co-organized with Polytechnic University of Turin* Chair: Giulia MASSAGLIA, *Polytechnic University of Turin*
TT.I.F	**Maskless Lithography Technologies for the Advanced Micro- and Nanofabrication** *Co-organized with Heidelberg Instruments, Gambetti Kenologia* Chairs: Christian PIES & Vasileios THEOFYLAKTOPOULOS, *Heidelberg Instruments*
TT.I.G **WS.IX.1**	**Electrochemical Energy Storage: LIB - innovative electrolytes 1/4** *Co-organized with ENEA* Chair: Giovanni Battista APPETECCHI, *ENEA*
TT.I.H **SE.I.1**	**Next-generation semiconductor devices for power electronics applications** *Co-organized with iENTRANCE@ENL, CNR-IMM* Chair: Simonpietro AGNELLO, *University of Palermo*
TT.I.I **SE.I.2**	**Artificial intelligence and Machine learning in digital health** *Co-organized with University Magna Graecia of Catanzaro* Chair: Alessia BRAMANTI, *University of Salerno*
TT.I.J **WS.IV.1**	**Materials for Environment 1/3** *Co-organized with University of Milan* Chair: Claudia Letizia Maddalena BIANCHI, *University of Milan*

TT.II

11:30 - 13:00

TT.II.A **JE.I.2**	**Animal reproduction and the role of extracellular vesicles 2/2** *Co-organized with Sapienza University of Rome, EVita, GEI-SIBSC* Chairs: Emily SCHIFANO, *Sapienza University of Rome* & Alice GUALERZI, *EVita*
TT.II.B **WS.VII.1**	**Wide-bandgap semiconductors and heterostructures for power and RF electronics 1/3** *Co-organized with IMM-CNR & iENTRANCE@ENL* Chair: Filippo GIANNAZZO, *IMM-CNR*
TT.II.C	**Making Cultural Heritage conservation safer and sustainable: the GREENART project** *Co-organized with CSGI-University of Firenze* Chairs: Rodorico GIORGI & Giovanna POGGI, *CSGI-University of Firenze*
TT.II.D **WS.XIV.1**	**Smart materials and devices for precision agriculture applications 1/2** *Co-organized with CNR-IMM & CNR- ISMN* Chairs: Sebania LIBERTINO, *CNR-IMM* & Maria Rosaria PLUTINO, *CNR- ISMN*
TT.II.E **WS.II.2**	**Environmental and Energy Solutions: Sustainable Bio-based Processes and Technologies** *Co-organized with Polytechnic University of Turin* Chair: Nicolò VASILE, *Polytechnic University of Turin*
TT.II.F	**Innovations for enhanced perfomances DSSCs 2/2** *Co-organized with University of Tor Vergata and Sapienza University of Rome* Chair: Marilena CARBONE, *University of Tor Vergata*
TT.II.G **WS.IX.2**	**Electrochemical Energy Storage: LIB and Li-based new chemistries 2/4** *Co-organized with ENEA* Chair: Margherita MORENO, *ENEA*
TT.II.H **SE.I.3**	**Bioengineering for biomedical applications of microfluidics** *Co-organized with University Magna Graecia of Catanzaro* Chair: Nicola D'AVANZO, *University Magna Graecia of Catanzaro*
TT.II.I **SE.I.4**	**Composite materials for electrochemistry** *Co-organized with iENTRANCE@ENL* Chair: Mauro PASQUALI, *Sapienza University of Rome*
TT.II.J **WS.X.2**	**Green chemistry and sustainable approaches for innovative materials 2/2** *Co-organized with Sapienza University of Rome* Chair: Maria Laura SANTARELLI, *Sapienza University of Rome*
TT.II.K **WS.IV.2**	**Materials for Environment 2/3** *Co-organized with University of Milan* Chair: Valentino CAPUCCI, Graniti, Fianders

14:00 - 15:30 | **TT.III**

TT.III.A	**Exploring Amorphous Materials in Photonics and Optoelectronics: From Fundamentals to Applications** *Co-organized with University of Reggio Calabria* Chairs: Francesco Giuseppe DELLA CORTE, *University of Naples "Federico II"* & Maurizio CASALINO, *ISASI-CNR*
TT.III.B **WS.VII.2**	**Wide-bandgap semiconductors and heterostructures for power and RF electronics 2/3** *Co-organized with IMM-CNR & iENTRANCE@ENL* Chair: Luca SERAVALLI, *CNR-IMEM*
TT.III.C	**Nanomaterials and occupational health: risk and opportunities for safer workplaces in the near future** *Co-organized with INAIL, Sapienza University of Rome, IIT and RINA-CSM* Chair: Fabio BOCCUNI, *INAIL*
TT.III.D **WS.XIV.2**	**Smart materials and devices for precision agriculture applications 2/2** *Co-organized with CNR-IMM & CNR- ISMN* Chairs: Sebania LIBERTINO, *CNR-IMM* & Maria Rosaria PLUTINO, *CNR- ISMN*
TT.III.E **WS.II.3**	**Nanotechnologies for Sustainable Separation: From CO_2 Capture to Resource Recovery** *Co-organized with Polytechnic University of Turin* Chair: Marco FONTANA, *Polytechnic University of Turin*
TT.III.F	*Deleted, postponed to the X edition of NanoInnovation (15-19 September 2025)*
TT.III.G **WS.IX.3**	**Electrochemical Energy Storage: Sodium-based technologies 3/4** *Co-organized with ENEA* Chair: Omar PEREGO, *RSE S.p.A.*
TT.III.H **SE.I.5**	**Nanotherapeutic in unmet clinical need** *Co-organized with University "G. d'Annunzio" of Chieti- Pescara* Chair: Christian CELIA, *University "G. d'Annunzio" of Chieti- Pescara*
TT.III.I **SE.I.6**	**2D and Quantum Materials** *Co-organized with Sapienza University of Rome* Chair: Francesca SCARAMUZZO, *Sapienza University of Rome*
TT.III.J	**Molecular design for nanotechnology in medicine** *Deleted, postponed to the X edition of NanoInnovation (15-19 September 2025)*
TT.III.K **SE.II.1**	**Session Flagship Project FP1** *Co-organized with: to be defined* Chair: to be defined
TT.III.L **JE.I.3**	**Extracellular vesicles in reproduction– promotion and disorders** *Co-organized with Sapienza University of Rome, EVita, GEI-SIBSC* Chairs: Emily SCHIFANO, *Sapienza University of Rome* - Annalisa RADEGHIERI & Alice GUALERZI, *EVita* - Luciana DINI, *Sapienza University of Rome* | *GEI-SIBSC*
TT.III.M **WS.IV.3**	**Materials for Environment 3/3** *Co-organized with University of Milan* Chair: Giuseppina CERRATO, *University of Turin*

TT.IV

16:00 - 17:30

TT.IV.A	**Nano-based drug delivery systems for biomedical applications** *Co-organized with Istituto Superiore di Sanità* Chairs: Giuseppina BOZZUTO & Maria CONDELLO, *Istituto Superiore di Sanità*
TT.IV.B **WS.VII.3**	**Wide-bandgap semiconductors and heterostructures for power and RF electronics 3/3** *Co-organized with IMM-CNR & iENTRANCE@ENL* Chair: Patrick FIORENZA, *IMM-CNR*
TT.IV.C	*Deleted, postponed to the X edition of NanoInnovation (15-19 September 2025)*
TT.IV.D	**Advancements in Thin Films and Tailored Surfaces: Breaking Barriers in Sensing and Biomaterials** *Co-organized with University of Strasbourg, IUT Louis Pasteur* Chair: Adele CARRADÒ, *University of Strasbourg, IUT Louis Pasteur*
TT.IV.E **WS.II.4**	**Impacts of Energy Transition** *Co-organized with Polytechnic University of Turin* Chair: Mauro GATTI, *Sapienza University of Rome*
TT.IV.F **SE.II.2**	**Session Flagship Project FP2** *Co-organized with: to be defined* Chair: to be defined
TT.IV.G **WS.IX.4**	**Electrochemical Energy Storage 4/4** *Co-organized with ENEA* Chair: Alessandra DI BLASI, *CNR*
TT.IV.H **SE.I.7**	**Nanotechnologies for precision medicine** *Co-organized with University Magna Graecia of Catanzaro* Chair: Maria Chiara CRISTIANO, *University Magna Graecia of Catanzaro*

09:00 - 10:30 | **TT.V**

TT.V.A	**Flexible storage energy devices** *Co-organized with iENTRANCE@ENL* Chair: Alessandro PEDICO, *INRIM*
TT.V.B **WS.XI.1**	**NanoMicroFab Open Lab** *Co-organized with NanoMicroFAB & NanoMicroFAB@STESI* Chair: Fabrizio ARCIPRETE, *University of Tor Vergata*
TT.V.C **WS.VIII.1**	**Stress in Thin Films** *Co-organized with Roma Tre University, Sapienza University of Rome* Chair: Marco SEBASTIANI, *Roma Tre University*
TT.V.D **WS.V.1**	**Superconducting quantum devices: present developments and future perspectives** *Co-organized with FBK* Chair: Massimo BERSANI, *FBK*
TT.V.E **WS.II.5**	**Turning Carbon Challenges into Opportunities: CO_2 Reduction to Value-added Products** *Co-organized with Polytechnic University of Turin* Chair: Francesca RISPLENDI, *Polytechnic University of Turin*
TT.V.F **WS.VI.1**	**Biomaterials for nanomedicine and drug delivery** *Co-organized with INL* Chairs: Andrea CAPASSO, *INL, Portugal* & Mattia BRAMINI, *UGR, Spain*
TT.V.G **WS.IX.5**	**Thermal Energy Storage 1/2** *Co-organized with ENEA* Chair: Raffaele LIBERATORE, *ENEA*
TT.V.H **SE.I.8**	**Regenerative medicine: current applications, challenges and future directions** *Co-organized with University Magna Graecia of Catanzaro* Chair: Francesca MEGIORNI, *University "Sapienza" of Rome, Italy*
TT.V.I **SE.I.9**	**Structural and Surface properties of nanomaterials** *Co-organized with Sapienza University of Rome* Chair: Iolanda FRANCOLINI, *Sapienza University of Rome*
TT.V.J **WS.I.1**	**Nanomedicine: Successful Stories** *Co-organized with University of Modena and Reggio Emilia & Don Gnocchi Foundation* Chairs: Giovanni TOSI, *University of Modena and Reggio Emilia* & Marzia BEDONI, *Don Gnocchi Foundation*
TT.V.K **WS.IX.9**	**Automation and high throughput research 1/2** *Co-organized with ENEA* Chairs: Massimo CELINO & Francesco BUONOCORE, *ENEA*

TT.VI

11:30 - 13:00

TT.VI.A	**Advances in Additive Manufacturing of Metal Alloys** *Co-organized with ENEA* Chairs: Giovanni DI GIROLAMO & Daniele MIRABILE GATTIA, *ENEA* and Giuseppe BARBIERI, *ENEA-CALEF*
TT.VI.B	**Innovative materials for biomedical applications** *Co-organized with University of Reggio Calabria* Chairs: Giuliana FAGGIO & Giacomo MESSINA, *University of Reggio Calabria* and Maria Penelope DE SANTO, *University of Reggio Calabria & CNR-Nanotec*
TT.VI.C **WS.VIII.2**	**Strain in Semiconductor Materials 1/2** *Co-organized with Roma Tre University & Sapienza University of Rome* Chair: to be defined, *Sapienza University of Rome*
TT.VI.D	*Deleted, postponed to the X edition of NanoInnovation (15-19 September 2025)*
TT.VI.E **WS.II.6**	**Impacts of Energy Transition on the Urban Environment** *Co-organized with Polytechnic University of Turin* Chair: Giulia MASSAGLIA, *Polytechnic University of Turin*
TT.VI.F **WS.VI.2**	**Nanotechnology and neuromorphic devices for understanding brain functionality** *Co-organized with INL* Chairs: Andrea CAPASSO, *INL, Portugal* & Mattia BRAMINI, *UGR, Spain*
TT.VI.G **WS.IX.6**	**Thermal Energy Storage 2/2** *Co-organized with ENEA* Chair: Raffaele LIBERATORE, *ENEA*
TT.VI.H **SE.I.10**	**Hybrid and Composite nanomaterials for energy** *Co-organized with iENTRANCE@ENL, IPCB* Chair: Marino LAVORGNA, *CNR-IPCB*
TT.VI.I **SE.I.11**	**Preclinical, Clinical and Industrial Transfer** *Co-organized with University Magna Graecia of Catanzaro* Chair: Amedeo AMEDEI, *University of Florence*
TT.VI.J **WS.XI.2**	**NanoMicroFab@STESY infrastructure for sustainability** *Co-organized with NanoMicroFAB & NanoMicroFab@STESY* Chair: Marco FEROCI, *INAF*
TT.VI.K **WS.I.2**	**Nanomedicine: Progresses in Nanomedicine** *Co-organized with University of Modena and Reggio Emilia, Don Gnocchi Foundation & Federazione Nazionale degli Ordini dei Biologi* Chairs: Giovanni TOSI, *University of Modena and Reggio Emilia* & Marzia BEDONI, *Don Gnocchi Foundation*
TT.VI.L **WS.IX.10**	**Automation and high throughput research 2/2** *Co-organized with ENEA* Chairs: Massimo CELINO & Francesco BUONOCORE, *ENEA*

14:00 - 15:30

TT.VII

TT.VII.A	**Life in Space** *Co-organized with Thales Alenia Space* Chair: Marziale FEUDALE & Mirko ROCCI, *Thales Alenia Space*
TT.VII.B **WS.III.1**	**IPCEIs solutions** *Co-organized with AIRI, STMicroelectronics, Infineon* Chairs: Andrea PORCARI, *AIRI* & Cosimo MUSCA, *STMicroelectronics*
TT.VII.C	**Strain in Semiconductor Materials 2/2** *Co-organized with Roma Tre University & Sapienza University of Rome* Chair: Marco Vittori Antisari, *Sapienza University of Rome*
TT.VII.D	**Innovative gas sensor solutions for environmental monitoring 1/2** *Co-organized with FBK* Chair: Andrea GAIARDO, *FBK*
TT.VII.E **WS.II.7**	**Novel Strategies for Energy Harvesting** *Co-organized with Polytechnic University of Turin* Chair: Stefano STASSI, *Polytechnic University of Turin*
TT.VII.F **WS.VI.3**	**Neuro-nanotechnology for brain disorder treatment** *Co-organized with INL* Chairs: Andrea CAPASSO, *INL, Portugal* & Mattia BRAMINI, *UGR, Spain*
TT.VII.G **WS.IX.7**	**Materials and Approaches for Solar-Driven water splitting for Hydrogen Production: Perovskites and New Organic Compounds** *Co-organized with ENEA* Chair: Vera LA FERRARA, *ENEA*
TT.VII.H **SE.I.12**	**Photochemistry and Photophysics in energy conversion** *Co-organized with iENTRANCE@ENL* Chair: Raffaello MAZZARO, *University of Palermo*
TT.VII.I **SE.I.13**	**Nanomaterials characterization for biomedicine** *Co-organized with University Magna Graecia of Catanzaro* Chair: Antonia MANCUSO, *University Magna Graecia of Catanzaro*
TT.VII.J **SE.II.3**	**Session Flagship Project FP3** *Co-organized with: to be defined* Chair: to be defined
TT.VII.K **WS.I.3**	**Nanomedicine: Innovation** *Co-organized with University of Modena and Reggio Emilia, Don Gnocchi Foundation & Federazione Nazionale degli Ordini dei Biologi* Chairs: Giovanni TOSI, *University of Modena and Reggio Emilia* & Marzia BEDONI, *Fondazione Don Gnocchi*
TT.VII.L **WS.IX.11**	**Novel methodologies, models, and solutions for secure and cyber-resilient smart grids and multi-carrier energy systems 1/2** *Co-organized with ENEA* Chairs: Martina CALIANO, *ENEA*

TT.VIII

16:00 - 17:30

TT.VIII.A **WS.II.8** **WS.IV.4**	**Life-cycle Assessment (LCA) and Safe and Sustainable-by-Design (SSbD)** *Co-organized with Polytechnic University of Turin & University of Milan* Chair: Wenbin CAO, *USTB, China*
TT.VIII.B **WS.III.2**	**IPCEIs solutions & matchmaking** *Co-organized with AIRI, STMicroelectronics & Infineon* Chairs: Andrea PORCARI, *AIRI* & Cosimo MUSCA, *STMicroelectronics*
TT.VIII.C **SE.II.4**	**Session Flagship Project FP4** *Co-organized with: to be defined* Chair: to be defined
TT.VIII.D	**Innovative gas sensor solutions for environmental monitoring 2/2** *Co-organized with FBK* Chair: Matteo VALT, *FBK*
TT.VIII.E	**Bio-inspired materials for advanced characterization, regenerative medicine and therapy** *Co-organized with University of Lyon & University of Salento* Chair: Stefano TACCONI, *University of Lyon* & Laura GIANNOTTI, *University of Salento*
TT.VIII.F **WS.VI.4**	**Smart materials for neuro-applications** *Co-organized with INL* Chairs: Andrea CAPASSO, *INL, Portugal* & Mattia BRAMINI, *UGR, Spain*
TT.VIII.G **WS.IX.8**	**Hybrid energy storage for mobility (joint with ENEA & EERA Joint Programme Energy Storage)** *Co-organized with ENEA* Chair: Margherita MORENO, *ENEA*
TT.VIII.H **SE.I.14**	**Nanomaterials for catalytic processes** *Co-organized with iENTRANCE@ENL, STEMS* Chair: Gianluca LANDI, *CNR-STEMS*
TT.VIII.I **SE.I.15**	**Exploring the Future: Advances in 3D Bioprinting for Tissue Engineering and Regenerative Medicine** *Co-organized with Magna Graecia University of Catanzaro* Chair: Carmine GENTILE, *University of Technology, Sydney*

09:00 - 10:30 — TT.IX

TT.IX.A	**Nano and Metrology 1/2** *Co-organized with INRiM* Chairs: Natascia DE LEO & Luca BOARINO, *INRiM*
TT.IX.B **JE.III.1**	**Unpacking the essentials of plant biostimulants** *Co-organized with IIA-CNR* Chairs: Antonella MACAGNANO, *IIA-CNR* & Fabrizio DE CESARE, *DIBAF-Univ. of Tuscia*
TT.IX.C	**Advanced Nanocoatings** *Co-organized with RINA-CSM and Roma Tre University* Chair: Angelo MEDURI, *RINA-CSM*
TT.IX.D **JE.II.1**	**Technology Transfer and Innovation Policies for a Sustainable Research** *Co-organized with Distretto Tecnologico Sicilia Micro e Nano Sistemi* Chair: Sabrina CONOCI, *Distretto Tecnologico Sicilia Micro e Nano Sistemi*
TT.IX.E	**Machine learning approaches in materials science** *Co-organized with iENTRANCE@ENL, INRIM* Chair: Pietro ASINARI, *INRIM*
TT.IX.F	*Deleted, postponed to the X edition of NanoInnovation (15-19 September 2025)*
TT.IX.G	*Deleted, postponed to the X edition of NanoInnovation (15-19 September 2025)*
TT.IX.H **SE.I.16**	**Self-assembly and nanostructured materials** *Co-organized with Sapienza University of Rome* Chair: Iolanda FRANCOLINI, *Sapienza University of Rome*
TT.IX.I **SE.I.17**	**Biomaterials** *Co-organized with Magna Graecia University of Catanzaro* Chair: Massimo LA DEDA, *University of Calabria*

11:30 - 13:00 — TT.X

TT.X.A **JE.II.2**	**IM4EU: Advanced Materials for Industrial Leadership – come diventare protagonisti** *Co-organized with APRE & AIRI* - Chair: Marco FALZETTI, *APRE*
TT.X.B **JE.III.2**	**Harnessing nanotechnology for a greener future with nanobiostimulants** *Co-organized with IIA-CNR* Chairs: Antonella MACAGNANO, *IIA-CNR* & Fabrizio DE CESARE, *DIBAF-Univ. of Tuscia*
TT.X.C	**Protecting human and environmental health from micro- and nanoplastic exposure in a One Health perspective** *Co-organized with Istituto Superiore di Sanità* Chairs: Cristina ANDREOLI, Beatrice BOCCA, *Istituto Superiore di Sanità*
TT.X.D	**Innovative Approaches in Science and Technology: Sustainable Solutions and Advanced Applications** *Co-organized with Sapienza University of Rome* Chair: Marilena CARBONE, *University of Rome Tor Vergata*
TT.X.E	**Characterization of nanomaterials** *Co-organized with iENTRANCE@ENL* Chair: to be defined
TT.IX.F	*Deleted, postponed to the X edition of NanoInnovation (15-19 September 2025)*
TT.IX.G	*Deleted, postponed to the X edition of NanoInnovation (15-19 September 2025)*
TT.X.H **SE.I.18**	**Optical and Acoustic trapping** *Co-organized with The Mediterranean University of Reggio Calabria* Chairs: Giuliana FAGGIO & Giacomo MESSINA, *University of Reggio Calabria*
TT.X.I **SE.I.19**	**Gene and Biotech Delivery** *Co-organized with Magna Graecia University of Catanzaro* Chair: Massimo FRESTA, *University Magna Graecia of Catanzaro*

TT.XI

14:00 - 15:30

TT.XI.A	**Nano and Metrology 2/2** *Co-organized with INRiM* Chairs: Natascia DE LEO & Luca BOARINO, *INRiM*
TT.XI.B **JE.III.3**	**Collaborating for a sustainable future: joining industry, agriculture, and science for nanobiostimulant developments** *Co-organized with IIA-CNR* Chairs: Antonella MACAGNANO, *IIA-CNR* & Fabrizio DE CESARE, *DIBAF-Univ. of Tuscia*
TT.XI.C **JE.II.3**	**Research Infrastructure and Ecosystem within and beyond PNRR: Open Science, Open Innovation, and Higher Education 1/2** *Co-organized with iENTRANCE@ENL* Chair: Alfredo PICANO, *iENTRANCE@ENL Manager & CNR*
TT.XI.H **SE.I.20**	**CO_2 valorization and Hydrogen Technologies for a Sustainable Future** *Co-organized with Polytechnic University of Turin* Chair: Angelica CHIODONI, *IIT*
TT.XI.I **SE.I.21**	**Therapies and Microenvironment in the Neoplastic Diseases** *Co-organized with Magna Graecia University of Catanzaro* Chair: Antonella LEGGIO, *University of Calabria, Italy*

TT.XII

16:00 - 17:30

TT.XII.A **JE.II.4**	**Research Infrastructure and Ecosystem within and beyond PNRR: Open Science, Open Innovation, and Higher Education 2/2** **ROUND TABLE** *Co-organized with iENTRANCE@ENL* Moderator: in definition
TT.XII.B **SE.I.22**	**Cryo-Tem** *Co-organized with Sapienza University of Rome* Chair: Beatrice VALLONE, *Sapienza University of Rome*

TT.I.A JE.I.1 Animal reproduction and the role of extracellular vesicles 1/2

Co-organized with Sapienza University of Rome, EVita, GEI-SIBSC

Chairs: Annalisa RADEGHIERI, *EVita* & Luciana DINI, *Sapienza University of Rome | GEI-SIBSC*

1. Danilo CIMADOMO, *Centro PMA Genera, Rome*
   Assisted Reproduction Technologies in a modern IVF lab: current practice and future challenges
2. Carlos SALOMON, *University of Queensland, Australia*
   Clinical Translation of Extracellular Vesicles in pregnancy: What Are We Missing?
3. Maurizio ZUCCOTTI, *University of Pavia*
   Cumulus cells release extracellular vesicles containing microRNAs their potential

TT.I.B WS.X.1 Green chemistry and sustainable approaches for innovative materials 1/2

Co-organized with Sapienza University of Rome

Chair: Maria Laura SANTARELLI, *Sapienza University of Rome*

1. **WELCOME GREETINGS**
   Maria Laura SANTARELLI, *Sapienza University of Rome*
2. Erica SONAGLIA, *Sapienza University of Rome*
   Bacterial Nanocellulose from Kombucha By-Products: a Renewable Source for Green Hydrogels
3. Emily SCHIFANO, *Sapienza University of Rome*
   Ozone-Loaded Bacterial Cellulose Hydrogel: A Sustainable Antimicrobial Solution for Stone Cleaning
4. Gabriella DI CARLO & Chiara FRATELLO, *CNR - Institute for the Study of Nanostructured Materials*
   Smart and eco-sustainable materials for the long-term and safe protection of concrete heritage within the ECOforCONCRETE project

TT.I.C Innovations for enhanced perfomances DSSCs 1/2

Co-organized with University of Tor Vergata and Sapienza University of Rome

Chair: Marilena CARBONE, *University of Tor Vergata*

1. Andrea REALE, *University of Rome Tor Vergata*
   Semi-Transparent Dye-Sensitized Solar Modules for Greenhouse Application
2. Andrea LAMBERTI, *Polytechnic University of Turin*
   Innovative approach for DSSC fabrication and their integration with supercapacitor to achieve self rechargeable energy storage device
3. Alex SANGIORGI, *CNR - ISSMC*
   Inkjet-printed transparent photo-electrodes for Dye-Sensitized Solar Modules
4. Marina FREITAG, *University of Newcastle - UK*
   Diffuse Light to Structured Information

TT.I.E WS.II.1 The role of H_2 in the energy transition from production to use

Co-organized with Polytechnic University of Turin
Chair: Giulia MASSAGLIA, *Polytechnic University of Turin*

1. Francesca PANACCIONE, *FBK, Trento*
   Hydrogen production chain from water to energy2030
2. Saverio LATORRATA, *Polythecnic University of Milan*
   Novel porous layers and membranes for more efficient and durable PEM fuel cells
3. Livia GIORDANO, *University of Milano-Bicocca*
   Activity descriptors and reaction mechanisms of the oxygen evolution reaction on perovskite oxide electrocatalysts
4. Marco ETZI, *IIT*
   Proton Exchange Membrane Electrolyzers for green hydrogen production from materials design to cell tests

TT.I.F Maskless Lithography Technologies for the Advanced Micro- and Nanofabrication

Co-organized with Heidelberg Instruments, Gambetti Kenologia
Chairs: Christian PIES & Vasileios THEOFYLAKTOPOULOS, *Heidelberg Instruments*

1. Christian PIES, *Heidelberg Instruments*
   Direct Write Lithography – fast and flexible prototyping without photo masks
2. Vasileios THEOFYLAKTOPOULOS, *Heidelberg Instruments Nano*
   Expanding the nanolithography toolbox
3. Christian PIES, *Heidelberg Instruments Mikrotechnik*
   The MPO 100: 3D Lithography and 3D Microprinting via Two-Photon Polymerization

TT.I.G WS.IX.1 Electrochemical Energy Storage: LIB-innovative electrolytes 1/4

Co-organized with ENEA

Chair: Giovanni Battista APPETECCHI, *ENEA*

1. Margherita MORENO, *ENEA*
   Introduction on PTR22_24 Project 1.2 on Electrochemical Energy Storage
2. Giuseppe ELIA, *Polytechnic University of Turin*
   An Overview of Polymer-based Electrolytes with High Ionic Mobility for advanced Li-solid state battery
3. Arianna MASSARO, *University of Naples "Federico II"*
   Multiscale simulations of heterogeneous Li metal interfaces for next generation batteries
4. Giampalo LACARBONARA, *University of Bologna*
   Preparation of stable, safe electrolytes and innovative separators for improving electrode performance
5. Matteo PALLUZZI, *Sapienza University of Rome*
   Green Ionic Liquids additives in high-voltage lithium batteries

TT.I.H SE.I.1 Next-generation semiconductor devices for power electronics applications

Co-organized with iENTRANCE@ENL, CNR-IMM

Chair: Simonpietro AGNELLO, *University of Palermo*

1. ***Introductive Keynote***
   Filippo GIANNAZZO, *CNR-IMM*
   New devices based on 2D materials integrated on wide-bandgap semiconductors
2. Fiorenza ESPOSITO, *CNR-IMEM*
   Liquid precursor-based Chemical Vapor Deposition and Transfer of Monolayer MoS_2 on GaN
3. Francesca MIGLIORE, *University of Palermo*
   Photoluminescence enhancement in 1L-MoS_2 by thermal treatments
4. Umberto DELLASETTE, *CNR-NANOTEC*
   Nanostructured Perovskites: Single Crystals for smart Optics and Optoelectronics
5. Francesca SANTANGELI, *Sapienza University of Rome*
   Giant bandgap tuning of InN nanowires by post-growth Hydrogen irradiation for creation of tunable quantum dots

TT.I.I SE.I.2 Artificial intelligence and Machine learning in digital health

Co-organized with University Magna Graecia of Catanzaro in cooperation with SIRTEPS e SITELF

Chair: Alessia BRAMANTI, *University of Salerno*

1. ***Introductive Keynote***
   Giuseppe SCANNIELLO, *University of Salerno*
   Application of artificial intelligence and machine learning in cardiovascular diseases
2. Chiara CAMASTRA, *University of Catanzaro "Magna Graecia"*
   Exploring sex-based brain morphometry differences through Explainable Artificial Intelligence: insights for digital health innovation
3. Marina GAROFANO, *University of Salerno*
   Use of new technologies in physiotherapy in defining the therapeutic exercise dose
4. Assunta PELAGI, *University of Catanzaro "Magna Graecia"*
   Predicting and understanding psychological well-being in young adult: new insight for digital health
5. Luca BARILLARO, *University of Catanzaro "Magna Graecia"*
   Scalable deep learning: Applications in medicine

TT.I.J WS.IV.1 Materials for Environment 1/3

Co-organized with University of Milan

Chair: Claudia Letizia Maddalena BIANCHI, *University of Milan*

1. Wenbin CAO, *USTB, Cina*
   Construction of TiO_2 based composites towards enhanced performance on photocatalytic degradation of organic pollutants
2. Giuseppina CERRATO, *University of Turin*
   An overview about micrometric semiconductor materials to be employed in photocatalytic applications
3. Elisa ZANELLA, Carlo PIROLA, *Universitty of Milan*
   Towards a Cleaner Future: Electrochemical Innovations in Hydrogen Separation and Purification from Natural Gas in Distribution Networks and Their Impact on Air Quality
4. Vincenzo FABBRIZIO, *University of Milan*
   Vapour harvesting through nutrients modified superabsorbent polymers: exploiting surface enrichment into an opportunity for the sustainable agriculture

TT.II.A JE.I.2 Animal reproduction and the role of extracellular vesicles 2/2

Co-organized with Sapienza University of Rome, EVita, GEI-SIBSC
Chairs: Emily SCHIFANO, *Sapienza University of Rome* & Alice GUALERZI, *EVita*

1. Giulia FIORENTINO, *University of Pavia*
   Human cumulus cells-derived EVs and their role in the acquisition of the oocyte developmental competence
2. Paola VIGANÒ, *Polytechnic University of Milan*
   Embryo-derived EVs and their involvement in implantation
3. Luciana DINI, *Sapienza University of Rome*
   Animal models for the study of EVs in reproduction
4. Emily SCHIFANO, *Sapienza University of Rome*
   Extracellular vesicles in Caenorhabditis elegans reproduction

TT.II.B WS.VII.1 Wide-bandgap semiconductors and heterostructures for power and RF electronics 1/3

Co-organized with IMM-CNR & iENTRANCE@ENL
Chair: Filippo GIANNAZZO, *IMM-CNR*

1. Fabrizio ROCCAFORTE, *CNR-IMM*
   Advanced processing for energy efficient WBG semiconductors power devices: Recent trends and perspectives
2. Yvon CORDIER, *Université Côte d'Azur, CNRS-CRHEA, Valbonne, France*
   Recent advances in Nitride heterostructures for RF and power devices
3. Daniel ALQUIER, *University of Tours, France*
   Laser Annealing A New Strategy For SiC Power Device Contacts
4. Roberto FORNARI, *University of Parma*
   Development and perspectives of Ga_2O_3 epitaxial layers for power electronics

TT.II.C Making Cultural Heritage conservation safer and sustainable: the GREENART project

Co-organized with CSGI-University of Firenze
Chairs: Rodorico GIORGI & Giovanna POGGI, *CSGI-University of Firenze*

1. Giovanna POGGI, *CSGI & University of Florence*
   Innovative green materials for the cleaning and consolidation of works of art
2. Marino LAVORGNA, *CNR-IPCB*
   Sustainable multifunctional nanocomposites materials for protection of artworks: new perspectives in coating and packaging
3. Gabriella DI CARLO, *CNR-ISMN*
   Bio-based multifunctional coatings for a tailored and long-term protection of metal cultural objects
4. HANDS-ON session
   Innovative green materials for the conservation of works of art: hands-on session

TT.II.D WS.XIV.1 Smart materials and devices for precision agriculture applications 1/2

Co-organized with CNR-IMM & CNR- ISMN

Chairs: Sebania LIBERTINO, *CNR-IMM* & Maria Rosaria PLUTINO, *CNR- ISMN*

1. Salvatore BAGLIO, *University of Catania | SAMOTHRACE Hub*
   Revamping Etna valley: the role of Samothrace Innovation Ecosystem
2. Andrea ZAPPETTINI, *IMEM-CNR*
   Bioristor: an in-vivo Organic ElectroChemical Transistor for precision agriculture
3. Danilo DEMARCHI, *Polytechnic University of Turin*
   Let the Plants do the Talking: Climate-Smart Agriculture by the messages received from Plants and Soil

TT.II.E WS.II.2 Environmental and Energy Solutions: Sustainable Bio-based Processes and Technologies

Co-organized with Polytechnic University of Turin

Chair: Nicolò VASILE, *Polytechnic University of Turin*

1. Barbara MENIN, *CNR-IBBA*
   Biotechnological processes toward environmental sustainability prospects and challenges
2. Ruggero BELLINI, *IIT*
   Microbial aspects of underground hydrogen storage and underground bio-methanation
3. Antonino BIUNDO, *Greenoil s.r.l., Rewow s.r.l. & University of Bari Aldo Moro*
   Rewind Project: Enzymatic Recycling of Waste Cooking Oils for the Plastic Industry
4. Ilaria BASSANI, *IIT*
   Integrated approach to sea water brine valorisation and biomethane production using waste streams techno-economic analysis and challenges

TT.II.F Innovations for enhanced perfomances DSSCs 2/2

Co-organized with University of Tor Vergata and Sapienza University of Rome

Chair: Marilena CARBONE, *University of Tor Vergata*

1. Angelo LEMBO, *University of Rome Tor Vergata*
   Large area DSSCs. Facing stability issues from test cell to final modules by a nanometric approach
2. Danilo DINI, *Sapienza University of Rome*
   DSSC of p-type: status, development and perspectives
3. Paolo MARIANI, *CNR-ISM*
   Beyond the Lab: Bringing Dye-Sensitized Solar Cells technology to Market
4. Daniele FRANCHI, *CNR-ICCOM*
   New organic dyes and metallorganic complexes for high-transparency DSSC: complementarity and synergies

TT.II.G WS.IX.2 Electrochemical Energy Storage: LIB and Li-based new chemistries 2/4

Co-organized with ENEA

Chair: Margherita MORENO, *ENEA*

1. Stefano MARCHIONNA, *RSE*
   Oxidized $Ti_3Al_{(1-x)}Si_xC_2$ and $Ti_3Al_{(1-x)}Sn_xC_2$ MAX phases: innovative anodes of LIB and NIB
2. Maria MONTANINO, *ENEA*
   Gravure printed Lithium-ion batteries (LiBs): towards large area and high-performance materials
3. Francesca SCARAMUZZO, *Sapienza University of Rome*
   Electrode materials from alternative sources for supercapacitors
4. Gabriele D'AIUTO, *Sapienza University of Rome*
   Novel materials for anodeless lithium metal batteries
5. Julia AMICI, *Polytechnic University of Turin*
   Gel polymer electrolytes from renewable sources for Li-Oxygen batteries applications
6. Francesca SOAVI, *University of Bologna*
   LIB cathode production processes designed for "direct recycling"

TT.II.H SE.I.3 Bioengineering for biomedical applications of microfluidics

Co-organized with University Magna Graecia of Catanzaro

Chair: Nicola D'AVANZO, *University Magna Graecia of Catanzaro*

1. ***Introductive Keynote***
   Pier Luca MAFFETTONE, *University of Naples "Federico II"*
   Micro-particle manipulation in microfluidic with viscoelastic liquidis
2. Marco BELLOTTI, *University of Pavia*
   Novel fluid-dynamics variables for the optimization of nanoparticles manufacturing
3. Eleonora D'INTINO, *Sapienza University of Rome*
   Application of microfluidic technology to obtain pH-sensitive niosomes for ATRA delivery in high-grade serous ovarian cancer
4. Salvatore D'ALESSANDRO, *University of Rome "La Sapienza"*
   Design of a Microfluidic Open Source 3D Bioprinting for functional tissue engineering
5. Hiba NATSHEH, *An-Najah National University*
   Modified Release 3D-Printed Capsules Containing a Ketoprofen Self-Nanoemulsifying System for Personalized Medical Application

TT.II.I SE.I.4 Composite materials for electrochemistry

Co-organized with iENTRANCE@ENL

Chair: Mauro PASQUALI, *Sapienza University of Rome*

1. ***Introductive Keynote***
   Raffaello MAZZARO, *University of Bologna*
   Novel approaches for the development of electro- and photoelectrocatalysts
2. Giulia GIANOLA, *IIT*
   Iron-Nitrogen-Carbon Catalysts by Different Synthesis Approaches for Efficient Oxygen Reduction Reaction in Fuel Cells Applications
3. Jaimon CHONEDAN JOHNSON, *CNR-IMM*
   Fabrication of Electrodes using High Surface Area 3D Graphene Substrates
4. Alessia FORTUNATI, *IIT*
   CO_2 electroreduction to CO in a membrane electrode assembly cell configuration for process scaling up
5. Nicolò ROSSETTI, *University of Padova*
   Dual-Coordinated Nickel Single Atoms Stabilized in a Triazine-thiadiazole Based Organic Polymer for the Oxygen Evolution Reaction

TT.II.J WS.X.2 Green chemistry and sustainable approaches for innovative materials 2/2

Co-organized with Sapienza University of Rome

Chair: Maria Laura SANTARELLI, *Sapienza University of Rome*

1. Marcella IOELE, *ICR – Istituto Centrale per il Restauro*
   Eco-Friendly Nano-Materials for Consolidation of Works of Art. Icr Activities within the Changes Project
2. Carolina RIGON, *ICR – Istituto Centrale per il Restauro*
   Exploring the consolidation properties of nanocellulose for cut and ripped paper restoring
3. Luca TORTORA, *University of Roma Tre*
   Nanomaterials Based on Metal Oxides for Environmental and Cultural Heritage Protection
4. Francesca BOCCACCINI, *CNR - Institute for the Study of Nanostructured Materials*
   Development of green protective coatings for the conservation of silver artworks

TT.II.K WS.IV.2 Materials for Environment 2/3

Co-organized with University of Milan

Chair: Valentino CAPUCCI, *Graniti, Fianders*

1. Hongyan GUAN, *CTC, China*
   Technology and development of odor evaluation method for indoor environment and building materials in China
2. Eleonora MARCOLINI, *Graniti, Fianders*
   Active Surfaces: cutting-edge photocatalytic surfaces production process for the reduction of pollutants and enhancement of air purity
3. Marco GOLA, *Polytechnic University of Milan*
   Built environment and health: How indoor air quality can guarantee healthy confined environments
4. Gaetano SETTIMO, *Istituto Superiore di Sanità*
   Challenges in IAQ for Indoor Spaces: An international overview of the Reference Guideline Values of Indoor Air Pollutants

14:00 - 15:30 **11 SEPTEMBER**

TT.III.A Exploring Amorphous Materials in Photonics and Optoelectronics: From Fundamentals to Applications

Co-organized with University of Reggio Calabria
Chairs: Francesco Giuseppe DELLA CORTE, *University of Naples "Federico II"* & Maurizio CASALINO, *ISASI-CNR*

1. Haiyan OU, *Technical University of Denmark, Denmark*
   Strong nonlinear refractive index from amorphous SiC
2. Hichem BENCHERIF, *Higher National School of Renewable Energies, Environment & Sustainable Development, Algeria*
   Exploring Perovskite Materials in Photovoltaic Applications: Fundamentals, Methods, and Current Challenges
3. Lucia SANSONE, *CNR*
   Hyperbranched polymers with advanced optical, electrical, and magnetic characteristics
4. Francesco Giuseppe DELLA CORTE, *University of Naples "Federico II"*
   Use of hydrogenated amorphous Silicon in active photonic devices: GrapHICs Project experience

TT.III.B WS.VII.2 Wide-bandgap semiconductors and heterostructures for power and RF electronics 2/3

Co-organized with IMM-CNR & iENTRANCE@ENL
Chair: Luca SERAVALLI, *CNR-IMEM*

1. Ildiko CORA, *HUN-REN, Institute for Technical Physics and Materials Science, Hungary*
   Advanced structural characterization of Gallium Oxide by electron microscopy
2. Giuseppe GRECO, *CNR-IMM, Catania*
   Recent findings on Ohmic and Schottky contacts to β-Ga_2O_3
3. Manuel FREGOLENT, *University of Padova*
   Trapping processes in vertical GaN Trench MOSFETs: from experimental analysis to simulations
4. Béla PÉCZ, *HUN-REN, Institute of Technical Physics and Materials Science, Hungary*
   Advanced electron microscopy of WBG semiconductors and their heterostructures with 2D materials

TT.III.C Nanomaterials and occupational health: risk and opportunities for safer workplaces in the near future

Co-organized with INAIL, Sapienza University of Rome, IIT and RINA-CSM
Chair: Fabio BOCCUNI, *INAIL*

1. Francesca SEBASTIANI, *Sapienza University of Rome* & Riccardo FERRANTE, *INAIL*
   Hyphenated mass spectrometry for characterization and quantification of airborne nanoparticles
2. Claudio NATALE, *IIT* & Francesca TOMBOLINI, *INAIL*
   Scaling up the graphene production from R&D to the pilot plant stage: implications for occupational exposure
3. Silvia CASALINUOVO & Domenico CAPUTO, *Sapienza University of Rome*
   Safety of nanomaterial-decorated fabric for breath sensing
4. Fabrizio MARRA & Alessandro D'ALOIA, *Sapienza University of Rome*
   Wearable Systems based on Nanomaterials for Health and Safety
5. Rosanna PILEGGI & Teresa BEONE, *RINA-CSM*
   Workplace exposure assessment during the spray application of nanostructured coatings designed in the RESISTANT Project

TT.III.D WS.XIV.2 Smart materials and devices for precision agriculture applications 2/2

Co-organized with CNR-IMM & CNR- ISMN

Chairs: Sebania LIBERTINO, *CNR-IMM* & Maria Rosaria PLUTINO, *CNR- ISMN*

1. Domenico CAPUTO, *Sapienza University of Rome*
   An adaptable lab-on-chip for in-field analysis in agricolture
2. Marco ACCIAI, *Società Agrigeos*
   Development of a digital platform based on Artificial Intelligence for precision citrus farming
3. Giuseppe ROSACE, *University of Bergamo*
   Advanced materials in agriculture-related applications

TT.III.E WS.II.3 Nanotechnologies for Sustainable Separation: From CO_2 Capture to Resource Recovery

Co-organized with Polytechnic University of Turin

Chair: Marco FONTANA, *Polytechnic University of Turin*

1. Alessandro PEDICO, *INRiM*
   Graphene oxide membranes for energy harvesting and lithium recovery
2. Marco TADDEI, *University of Pisa*
   CO_2 capture with mixed matrix membranes containing (per-)fluorinated metal-organic framework fillers
3. Federico RAFFONE, *Polytechnic University of Turin*
   Nanotechnologies for Sustainable Separation From CO_2 Capture to Resource Recovery
4. Mirtha LOURENÇO, *University of Aveiro, Portugal*
   Evaluating the Impact of Synthesis Conditions on the Microstructure and CO_2 Adsorption and Separation of Nitrogen-Doped Biochar

TT.III.G WS.IX.3 Electrochemical Energy Storage: Sodium-based technologies 3/4

Co-organized with ENEA

Chair: Omar PEREGO, *RSE S.p.A.*

1. Omar PEREGO, *RSE S.p.A.*
   Introduction to sodium based electrochemical storage. Round robin test on sodium ion innovative materials within project RdS 1.2
2. Domenico CORONA, *University of Tor Vergata*
   Doped manganites as cathodes for sodium-ion batteries: a self-consistent DFT+U study
3. Leonardo SBRASCINI, *University of Camerino*
   Synthesis and Characterization of Prussian Blue Analogues as Cathodes for Sodium-ion Batteries
4. Ivan MASTRONARDO, *CNR-ITAE*
   Nasicon structure materials as cathode electrode for Na-ion battery
5. Francesco BOZZA, *ENEA*
   Synthesis and electrochemical characterizations of Li doped Mn and Ni based layered oxides as stable cathode materials for Na-ion batteries

TT.III.H SE.I.5 Nanotherapeutic in unmet clinical need

Co-organized with University "G. d'Annunzio" of Chieti- Pescara in cooperation with SIRTEPS e SITELF

Chair: Christian CELIA, *University "G. d'Annunzio" of Chieti- Pescara*

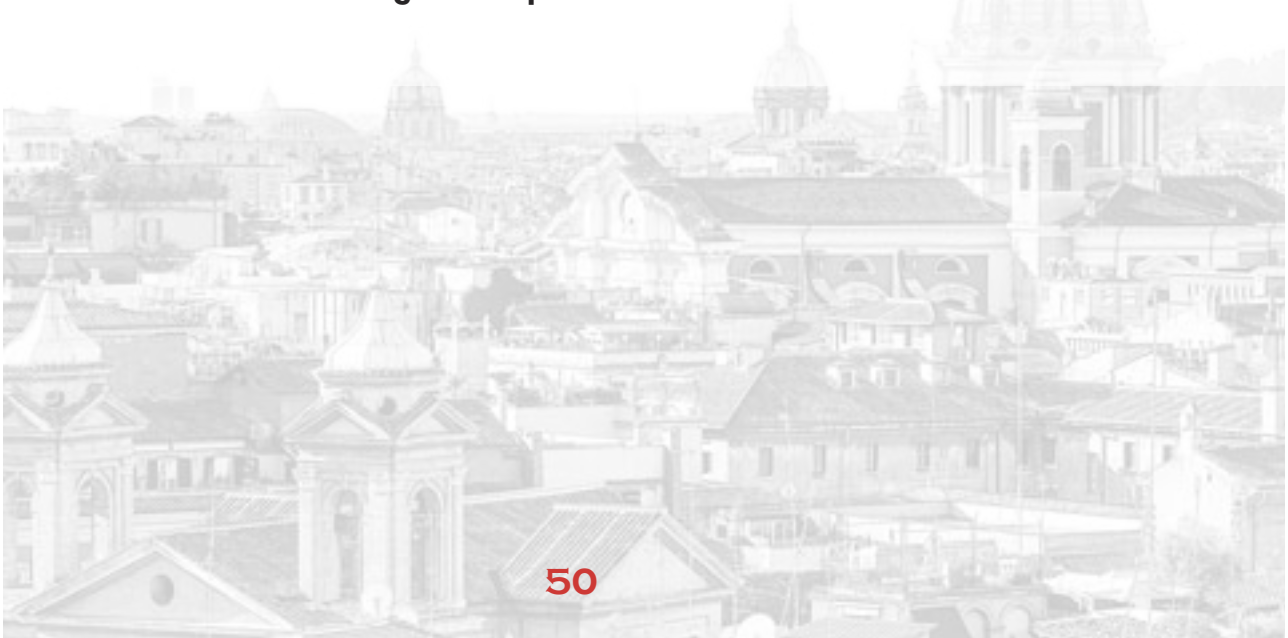
1. ***Introductive Keynote***
   Alexandre CECCALDI, *European Technology Platform for Nanomedicine (ETPN)*
   Charting the Future of Nanomedicine: Opportunities and Skills for Young Innovators in Europe
2. Alessandro NOTO, *IRCCS Regina Elena National Cancer Institute*
   Self-assembling nanoparticles for miRNA delivery towards precision medicine against melanoma
3. Salvatore PANZA, *Università Magna Graecia di Catanzaro*
   Nanomedicines on Multidrug Treatment Strategies for Vitiligo
4. Giuliana PREVETE, *CNR-ISB*
   How liposome encapsulation affects antimicrobial and antioxidant properties of Hydroxytyrosol and Hydroxytyrosol oleate
5. Gaia ZUCCA, *University of Pavia*
   Drug delivery system based on pH-responsive nanofibers for the prevention of sexually transmitted infections

TT.III.I SE.I.6 2D and Quantum Materials

Co-organized with Sapienza University of Rome

Chair: Francesca SCARAMUZZO, *Sapienza University of Rome*

1. ***Introductive Keynote***
   Paolo POSTORINO, *Sapienza University of Rome*
   Two-Dimensional Materials: From Theoretical Predictions to Experimental Realizations and Technological Applications
2. Alice Margherita FINARDI, *University of Milan*
   Time-resolved Raman spectroscopy on bulk and monolayer MoS_2
3. Mattia BECCACECI, *Sapienza University of Rome*
   Wavevector-resolved photonic entanglement from radiative cascades
4. Michele PERLANGELI, *University of Trieste*
   Time Resolved photoluminescence spectra of WS_2 and MoS_2 at high excitation fluence
5. Giuseppe RONCO, *Sapienza University of Rome*
   Exciton redistribution in 2D WSe_2 via external strain field for positioned quantum emitters with stable magnetic response



TT.III.K SE.II.1 Session Flagship Project FP1

Co-organized with: to be defined

Chair: to be defined

1. to be defined, *to be defined*
   to be defined
2. to be defined, *to be defined*
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3. to be defined, *to be defined*
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4. to be defined, *to be defined*
   to be defined
5. to be defined, *to be defined*
   to be defined

14:00 - 15:30 **11 SEPTEMBER**

TT.III.L JE.I.3 Extracellular vesicles in reproduction - promotion and disorders

Co-organized with Sapienza University of Rome, EVita, GEI-SIBSC
Chairs: Emily SCHIFANO, *Sapienza University of Rome* | Annalisa *RADEGHIERI & Alice GUALERZI, EVita* | *Luciana DINI, Sapienza University of Rome, GEI-SIBSC*

1. Felipe VILELLA MITJANA, *INCLIVA Carlos Simon Foundation, Spain*
   Materno-Fetal Crosstalk. The First Lullaby
2. Stefania BIFFI, *IRCCS Burlo Garofolo*
   Extracellular vesicles as biomarkers in endometriosis and reproductive diseases
3. Fabrizio FONTANA, *University of Milan*
   Unraveling the role of extracellular vesicles in ovarian cancer stroma
4. Stefano TACCONI, *Carmen Laboratory, France*
   Lipotoxicity: a new role of lipid cargo in Extracellular Vesicles biology

TT.III.M WS.IV.3 Materials for Environment 3/3

Co-organized with University of Milan
Chair: Giuseppina CERRATO, *University of Turin*

1. Pedro MARTINS, *University of Minho, Portugal*
   Advanced Materials and Strategies for Emerging Contaminants in Water Remediation
2. Melissa GALLONI, *University of Milan*
   Floating photocatalysts as key players in reshaping sustainable wastewater treatment: a green transition towards future society
3. Hugo SALAZAR, *BCMaterials, Spain*
   Merge of sonophotocatalysis and composite materials for addressing contaminants of emerging concern in water remediation
4. Ermelinda FALLETTA, *University of Milan | VisioNing*
   VisioNing: from an idea to a successful project

TT.IV.A Nano-based drug delivery systems for biomedical applications

Co-organized with Istituto Superiore di Sanità

Chairs: Giuseppina BOZZUTO & Maria CONDELLO, *Istituto Superiore di Sanità*

1. Giuseppina NOCCA, *UCSC*
   Synthesis and characterization of drug delivery system for oral lichen planus treatments
2. Cecilia BOMBELLI, *Institute for Biological Systems (ISB), National Research Council of Italy (CNR)*
   Development of liposomes and chitosan nanoparticles for the delivery of antimicrobial peptides
3. Giovanni BALDI, *Ce.Ri.Col -Research Center Colorobbia*
   Hybrid magnetic nanoparticles for nanomedicine and immune therapies
4. Beatrice ARASI, *Istituto Superiore di Sanità*
   MiR126-targeted-nanoparticles combined with PI3K/AKT inhibitor as a new strategy to overcome melanoma resistance

TT.IV.B WS.VII.3 Wide-bandgap semiconductors and heterostructures for power and RF electronics 3/3

Co-organized with IMM-CNR & iENTRANCE@ENL

Chair: Patrick FIORENZA, *IMM-CNR*

1. Luca SERAVALLI, *CNR-IMEM*
   Recent advances in the liquid precursors chemical vapor deposition (CVD) of MoS_2 on SiO_2 and on GaN
2. Federica BONDINO, *CNR-IOM*
   Advanced soft-x absorption and photoemission spectroscopy of 2D materials and their heterostructures
3. Simonpietro AGNELLO, *University of Palermo*
   Thermally induced strain and doping of monolayer MoS_2 on metal, insulator and WBG substrates
4. Salvatore Ethan PANASCI, *CNR-IMM, Catania*
   Integration strategies and nanoscale electrical characterization of MoS_2 on WBG semiconductors

16:00 - 17:30 **11 SEPTEMBER**

TT.IV.D Advancements in Thin Films and Tailored Surfaces: Breaking Barriers in Sensing and Biomaterials

Co-organized with University of Strasbourg, IUT Louis Pasteur
Chair: Adele CARRADÒ, *University of Strasbourg, IUT Louis Pasteur*

1. Isabelle POCHARD, *University Franche-Comte, Besancon, France*
   Functional thin films and surfaces from bottom-up colloid deposition
2. Melania REGGENTE, *École Polytechnique Fédérale de Lausanne (EPFL)*
   Enhancing microbe-electrode interactions for bioelectrochemical devices
3. Gargi SHANKAR NAYAK, *Saarland University, Saarbrücken, Germany*
   Suitability of metal-polymer composites for biomedical applications
4. Valeria VISTOSO, *Université de Strasbourg, Strasbourg, France*
   ATUM-SEM: Advancing Comprehensive Multi-Scale Analysis in Nanotechnology
5. Matteo CARANCHINI, *Polytechnic University of Milan | Université de Strasbourg, Strasbourg, France*
   Bioresorbable orthopaedical nails and plates manufactured by traditional processes

TT.IV.E WS.II.4 Impacts of Energy Transition

Co-organized with Polytechnic University of Turin
Chair: Mauro GATTI, *Sapienza University of Rome*

1. Mauro GATTI, *Sapienza University of Rome*
   Title to be defined
2. Mattia VOLTAGGIO, *ENI*
   ROAD – Rome Advanced District e Joule, la Scuola di Eni per l'impresa: due casi di ecosistemi imprenditoriali
3. Chiara CATGIU, *KPMG*
   Life Cycle Assessment Approaches for Sustainable Energy Transition

TT.IV.F SE.II.2 Session Flagship Project FP2

Co-organized with: to be defined
Chair: to be defined

1. to be defined, *to be defined*
   to be defined
2. to be defined, *to be defined*
   to be defined
3. to be defined, *to be defined*
   to be defined
4. to be defined, *to be defined*
   to be defined
5. to be defined, *to be defined*
   to be defined

TT.IV.G WS.IX.4 Electrochemical Energy Storage 4/4

Co-organized with ENEA

Chair: Alessandra DI BLASI, *CNR*

1. Marco DONNINI, *University of Tor Vergata*
   Storing electrochemical and thermal energy: influence of design on performance parameters
2. Livio DE CHICCIS & Vittoria BATTAGLIA, *ENEA*
   Technical, economic and environmental assessment of energy storage technologies via scenarios of penetration into Italian electric(power) grid
3. Giulio MELA, *RSE (Remotely)*
   Socio economic analisys: national gigafactories
4. Mauro FALCONIERI, *ENEA*
   Vibrational Spectroscopies for Characterization of Materials for Electrochemical Storage Devices
5. Alessandra DI BLASI, *CNR*
   CNR Research Activity on next generation sustainable electrochemical storage solutions

TT.IV.H SE.I.7 Nanotechnologies for precision medicine

Co-organized with University Magna Graecia of Catanzaro in cooperation with SIRTEPS e SITELF

Chair: Maria Chiara CRISTIANO, *Univ. Magna Graecia of Catanzaro*

1. ***Introductive Keynote***
   Marco MONOPOLI, *Royal College of Surgeons, Ireland | European Technology Platform on Nanomedicine (ETPN Association)*
   Understanding the nanomaterial interaction with biomolecules, a journey from safety to applications in modern medicine
2. Ruchi VYAS, *University of Rajasthan*
   Magnetic Nanobeads based Lateral flow assay for early detection of traumatic brain injury
3. Lorenzo SARDELLI, *University of Turin*
   Mucosomes: bioinspired nanoparticles of glycosylated mucins to re-think mucosal drug delivery
4. Alessandro PARADISI, *University of Modena and Reggio-Emilia*
   Carbon Nanotubes/Protein Hybrids for Healthcare Biosensing Applications
5. Miriam CAVIGLIA, *ISS*
   Copper complexes with biological active molecule amantadine as potential anticancer and antiviral agents

09:00 - 10:30 **12 SEPTEMBER**

TT.V.A Flexible storage energy devices

Co-organized with iENTRANCE@ENL
Chair: Alessandro PEDICO, *INRIM*

1. Eugenio GIBERTINI, *Polytechnic of Milan*
   Flexible energy storage devices
2. Davide ARCORACI, *Polytechnic of Turin*
   Perspectives on Flexible Hybrid Supercapacitor Manufacturing Processes and Accessible Applications
3. Gabriele PERNA, *University of Perugia*
   Low-cost 3D-printed piezoelecrets based on foamed PLA for energy harvesting devices
4. Roberto SPERANZA, *Polytechnic of Turin*
   Laser induced graphene and vacuum sealing encapsulation enabling flexible hybrid energy harvesting and storage devices

TT.V.B WS.XI.1 NanoMicroFab Open Lab

Co-organized with NanoMicroFAB & NanoMicroFAB@STESI
Chair: Fabrizio ARCIPRETE, *University of Tor Vergata*

1. Raffaella CALARCO, *IMM-CNR*
   NanoMicroFab an Open Infrastructure to Support Research and Development of Devices and Advanced Materials
2. Mattia SCAGLIOTTI, *IMM-CNR*
   Flexible Organic Photo-Transistors as Key Elements of Detectors for Medical Proton Therapy: Recent developments at NanoMicroFab
3. Alessandro GAGGERO, *IFN-CNR*
   Development of photonic platforms and superconducting detectors for quantum technologies
4. Daniele CATONE, *ISM-CNR*
   A Multiscale Strategy for Optimizing Materials in Semitransparent Photovoltaics
5. Marco GIRASOLE & Giovanni LONGO, *ISM-CNR*
   Single-Cell and Cluster-Level Investigations of Mammalian Cells via Atomic Force Microscopy and Correlative Techniques

TT.V.C WS.VIII.1 Stress in Thin Films

Co-organized with Roma Tre University, Sapienza University of Rome
Chair: Marco SEBASTIANI, *Roma Tre University*

1. Rostislav DANIEL, *Montanuniversität Leoben, Austria*
   Origins and control of residual stress in thin films
2. Edoardo ROSSI, *Roma Tre University*
   High resolution measurement Techniques for Stress in Thin Films
3. Savvas ORFANIDIS, *National Technical University of Athens, Greece*
   NanoMECommons: Harmonisation of EU-wide nanomechanics protocols and relevant data exchange procedures, across representative cases; standardisation, interoperability, data workflow
4. Matthieu LE BAILLIF, *Thales Researche and Technology, France*
   Residual Stress and reliability in Micro-Electromechanical Systems (MEMS)
5. Saqib RASHID, *Roma Tre University*
   In-situ measurement of residual stress in MEMS devices

TT.V.D WS.V.1 Superconducting quantum devices: present developments and future perspectivessolutions

Co-organized with FBK
Chair: Massimo BERSANI, *FBK*

1. Alessandro IRACE, *FBK*
   Overlap Josephson junctions for superconducting quantum circuits
2. Felix AHRENS, *FBK*
   High kinetic inductance superconducting amplifiers
3. Marco ARZEO, *SEEQC*
   Scalable energy-efficient quantum computing
4. Giovanna TANCREDI (remotely), *Scalinq, Chalmers*
   Builiding a large-scale quantum processor

TT.V.E WS.II.5 Turning Carbon Challenges into Opportunities: CO_2 Reduction to Value-added Products

Co-organized with Polytechnic University of Turin
Chair: Francesca RISPLENDI, *Polytechnic University of Turin*

1. Angelica CHIODONI, *IIT*
   The value chain of CO_2: an overview of the present technologies and perspectives of exploitation in the present industrial scenario
2. Antonina CLEMENTE, *Nippon Gases Industrial S.r.l.*
   From threat to valuable resource: challenges and prospects for the future of CO_2 in industry
3. Wenbo JU, *South China University of Technology, Guangzhou, China*
   The evolution of Bi-based electrocatalysts during CO_2RR: Post-mortem and Operando investigations
4. Guillermo DIAZ SAINZ, *University of Cantabria, Spain*
   Integration of oxidation reactions relevant to formate production via continuous CO_2 electroreduction

TT.V.F WS.VI.1 Biomaterials for nanomedicine and drug delivery

Co-organized with INL
Chairs: Andrea CAPASSO, *INL*, Portugal & Mattia BRAMINI, *UGR, Spain*

1. Ester VASQUEZ, *Universidad de Castilla-La Mancha, Spain*
   Hybrid Hydrogels as 4D Biomimetic Systems
2. Ester POLO, *University Santiago de Compostela, USC, Spain*
   Designing Bio-Inspired Nanocarriers for Advanced Drug Delivery Systems
3. Francesca BOCCAFOSCHI, *University Santiago de Compostela, USC, Spain*
   Materials derived from decellularized tissues: new frontiers in regenerative medicine

TT.V.G WS.IX.5 Thermal Energy Storage 1/2

Co-organized with ENEA

Chair: Raffaele LIBERATORE, *ENEA*

1. Raffaele LIBERATORE, *ENEA*
   Introduction on PTR22_24 Project 1.2 concerning Thermal Energy Storage
2. Roberto PETRUCCI, *University of Perugia*
   Nano-enhanced micro-encapsulated phase change materials in high-performance concrete for thermal energy storage
3. Franco DOMINICI, *University of Perugia*
   Nanostructured electro-dissipative concretes for power to heat applications in thermoelectric energy storage
4. Franco FORNARELLI, *University of Foggia*
   Unsteady simplified numerical model for the prediction of latent heat thermal energy storage devices
5. Alessandra ADROVER, *Sapienza University of Rome*
   CFD analysis on the thermo-physical characterization of a PCM storage medium

TT.V.H SE.I.8 Regenerative medicine: current applications, challenges and future directions

Co-organized with University Magna Graecia of Catanzaro in cooperation with SIRTEPS e SITELF

Chair: Francesca MEGIORNI, *University Sapienza of Rome, Italy*

1. ***Introductive Keynote***
   Calogero FIORICA, *University of Palermo, Italy*
   Development and characterization of polymeric biomaterilas for regenerative medicine application
2. Martine TARSITANO, *University Magna Graecia di Catanzaro & University of Technology Sydney*
   Chlorella-enriched hydrogels exhibit a protective role against myocardial damage by reducing reactive oxygen species in an in vitro model of ischemia/reperfusion using cardiac spheroids
3. Giulia GERINI, *Sapienza University of Rome, Italy*
   3D culturing as a promising strategy for the production of enhanced adipose stem cell-derived secretome for clinical applications
4. Fabrizio CECE, *Sapienza University of Rome, Italy*
   Nanostring-based analysis of transcriptional metabolic signatures in Adipose derived Stem Cells treated with epigenetic drugs during osteogenic differentiation
5. Benedetta DI CHIARA STANCA, *University of Salento*
   Revolutionizing Dental Implants: The Game-Changing Impact of Concentrated Growth Factors

TT.V.I SE.I.9 Structural and Surface properties of nanomaterials

Co-organized with Sapienza University of Rome
Chair: Iolanda FRANCOLINI, *Sapienza University of Rome*

1. ***Introductive Keynote***
   Giuseppe VITIELLO, *University of Naples "Federico II"*
   Amphiphiles functionalized colloidal metal-oxide nanoparticles: from design to technological applications
2. Lorenzo Augusto ROCCHI, *Sapienza University of Rome*
   Thermal Characterization on polysulfone nanoparticles: a study of glass transitio nand devitrification kinetics
3. Sara CERRA, *Sapienza Universisty of Rome*
   Hydrophobic gold nanoparticles coupled with fluorescent dyes: a smart tool for optoelectronic applications
4. Valerio LA GAMBINA, *Sapienza University of Rome*
   CTAB and a thermoresponsive bile acid derivative form catanionic tubules: sorting out an unexpected composition ratio
5. Emanuele BOSCO, *Sapienza University of Rome*
   α-Sn nanostructures with ultra-narrow direct bandgap on Silicon for THz applications

TT.V.J WS.I.1 Nanomedicine: Successful Stories

Co-organized with Univ. of Modena and Reggio Emilia & Don Gnocchi Found.
Chairs: Giovanni TOSI, *University of Modena and Reggio Emilia* & Marzia BEDONI, *Don Gnocchi Foundation*

1. Alexandre CECCALDI, *ETPN*
   Current and Emerging Nanomedicine Innovations: Success Stories from the European Frontlines
2. Lorena DIEGUEZ, *International Iberian Nanotechnology Laboratory (INL)*
   Nano-medical devices for liquid biopsy: our tech transfer journey
3. Francesca RE, *University of Milano Bicocca*
   Patient-derived Glioblastoma Stem Cell Secretome Modulates Blood-Brain Barrier Permeability via RAGE-Dependent Signaling Pathway

TT.V.K WS.IX.9 Automation and high throughput research 1/2

Co-organized with University of Modena and Reggio Emilia & Don Gnocchi Foundation
Chairs: Massimo CELINO & Francesco BUONOCORE, *ENEA*

1. Nicola LISI, *ENEA*
   Towards a universal materials sequencing machine
2. Francesco BUONOCORE, *ENEA*
   Advances in Na-Ion Battery Cathode Materials: Comparison of DFT and Machine Learning Approaches
3. Federica FORTE, *ENEA*
   Materials recovery from end-of-life electrochemical storage systems: results from the IEMAP project
4. Juliette ZITO, *IIT*
   A Universal Database of Surface Ligands in Colloidal Semiconductor Nanocrystals
5. Meenakshi PEGU, *IIT*
   Organic Amphiphile as a Surface Ligand for Stable Caesium Lead Bromide Nanocrystals

11:30 - 13:00 **12 SEPTEMBER**

TT.VI.A Advances in Additive Manufacturing of Metal Alloys

Co-organized with ENEA
Chairs: Giovanni DI GIROLAMO & Daniele MIRABILE GATTIA, *ENEA* and Giuseppe BARBIERI, *ENEA-CALEF*

1. Daniele MIRABILE GATTIA, *ENEA*
   Metal additive manufacturing for sustainable energy applications
2. Barbara PREVITALI, *Polytechnic University of Milan*
   Spatial Beam Shaping in Laser Powder Bed Fusion for enhancing the Processability of E-Mobility Alloys
3. Daniele GROSSO, *Prima Additive, Turin*
   Rapid coating of brake discs: lase cladding that enables sustainability
4. Sergio GALVAGNO, *ENEA*
   Production of additive manufacturing powders by thermal plasma
5. Giuseppe BARBIERI, *ENEA-CALEF*
   InSPiRATiON: Integrate and Sustainable PRocesses and mAterials for smarT ON demand laser additive manufacturing

TT.VI.B Innovative materials for biomedical applications

Co-organized with University of Reggio Calabria
Chairs: Giuliana FAGGIO & Giacomo MESSINA, *Univ. of Reggio Calabria* and Maria Penelope DE SANTO, *Univ. of Reggio Calabria & CNR-Nanotec*

Supported by: Fondo per lo Sviluppo e la Coesione and Ministero della Salute

1. Alice SCIORTINO, *University of Palermo*
   Carbon Nanodots: From Fundamental Insights to Biomedical Applications
2. Rita GUZZI, *University of Calabria & CNR-Nanotec Rende*
   Combining biophysical and multivariate statistical approaches in the analysis of plasma to discriminates multiple sclerosis disease
3. Caterina Maria TONE, *University of Calabria*
   Interaction of specific drug in mitochondrial biomimetic membranes
4. Giuseppe PALADINI & Federica DE GAETANO, *University of Messina*
   Novel anti-biofilm strategies based on innovative antimicrobial nanoparticles: physicochemical and technological issues

TT.VI.C WS.VIII.2 Strain in Semiconductor Materials 1/2

Co-organized with Roma Tre University & Sapienza University of Rome
Chair: Stefano LUPI, *Sapienza University of Rome (to be confirmed)*

1. Lorenzo MONACELLI, *Sapienza University of Rome, Italy*
   The origin of out-of-equilibrium ferroelectricity in $SrTiO_3$ under resonant ultrafast THz pumping
2. Antonio POLIMENI, *Sapienza University of Rome, Italy*
   Giant enhancement of light emission from InSe in selectively strained InSe/MS_2 (M=Mo,W) heterostructures
3. Elena STELLINO, *Sapienza University of Rome, Italy*
   Tuning the Excitonic Response of Monolayer WS_2 Domes via Coupled Pressure and Strain Variation
4. Pablo HERNANDEZ LOPEZ, *Humboldt Universitat zu Berlin, Germany*
   Strain tuning of optical properties in 2D semiconductors and optical readout of strain in thin films

TT.VI.E WS.II.6 Impacts of Energy Transition on the Urban Environment

Co-organized with Polytechnic University of Turin

Chair: Giulia MASSAGLIA, *Polytechnic University of Turin*

1. Maria FERRARA, *Polytechnic University of Turin*
   Introduction: The energy transition on the urban environment through the experience of pilot cities in the EU Mission '100 Climate-Neutral Cities by 2030'
2. Ilaria PIGLIAUTILE, *University of Perugia*
   A multi-level data collection framework to explore urban complexity and support communities' energy transition
3. Michele BOTTONI, *Q-RAD Consortium*
   The role of radiant-based energy systems technologies in deep and effective retrofitting of the urban building stock
4. Anselmo SEBASTIANO, *Knowledge Innovation Data s.r.l. for AEGcoop*
   Urban digital twins for renewable energy communities

TT.VI.F WS.VI.2 Nanotechnology and neuromorphic devices for understanding brain functionality

Co-organized with INL

Chairs: Andrea CAPASSO, *INL*, Portugal & Mattia BRAMINI, *UGR, Spain*

1. Federico FERRARESE LUPI, *INRiM*
   Visual memory in a 2D memitter
2. Paulo DE CASTRO AGUIAR, *I3s*
   A bio-electronic memristive interface for real-time and adaptive coupling of neuronal populations
3. Andres GODOY, *University of Granada*
   Multiscale simulation and modeling of memristive devices for neuromorphic computing

TT.VI.G WS.IX.6 Thermal Energy Storage 2/2

Co-organized with ENEA

Chair: Raffaele LIBERATORE, *ENEA*

1. Maria Anna MURMURA, *Sapienza University of Rome*
   Analysis of a high-temperature thermochemical storage process in fluidized bed reactors
2. Matteo BATTAGLIA, *University of Tor Vergata*
   Optimization of spinel synthesis method for thermal energy storage applications
3. Giuseppe MESSINA, *ENEA* & Ambra GIOVANNELLI, *Roma Tre University*
   Preliminary turbomachinery design of a power cycle integrated with a cold storage system
4. Paola CASTELLAZZI & Enrico PATRUCCO, *RSE*
   Mathematical modeling of a zeolite-based thermochemical storage reactor: experimental validation and building-plant integration
5. Gabriella SQUARZONI, *RSE*
   Pre-feasibility analysis of a HT-ATES system using numerical simulations
6. Angelo FRENI, *CNR*
   New adsorbents for thermochemical heat storage

TT.VI.H SE.I.10 Hybrid and Composite nanomaterials for energy

Co-organized with iENTRANCE@ENL, IPCB

Chair: Marino LAVORGNA, *CNR-IPCB*

1. ***Introductive Keynote***
   Pietro CATALDI, *IIT*
   Multifunctional and Sustainable hybrid and nanocomposite materials for electronics, sensors and energy
2. Pierluigi LASALA, *University of Bari "Aldo Moro"*
   Nanoparticles modified biohybrid photoanode for enhancing light-to-electricity conversion
3. Roberto FIORENZA, *University of Catania*
   Solar-promoted photo-thermal CO_2 methanation on SiC/hydrotalcites materials
4. Pencheng YANG, *CNR-IPCB*
   Innovation nanocomposites-based on large-size defect-free monolayers of MXene with enhanced hydrogen barrier properties
5. Matteo MASTELLONE, *CNR-ISM*
   Tailoring optical, photothermal and electronic properties of semiconductors and dielectrics by Laser-Induced Surface Nanotexturing

TT.VI.I SE.I.11 Preclinical, Clinical and Industrial Transfer

Co-organized with University Magna Graecia of Catanzaro in cooperation with SIRTEPS e SITELF

Chair: Amedeo AMEDEI, *University of Florence*

1. ***Introductive Keynote***
   Alice GUALERZI, *IRCCS "S. Maria Nascente" Fondazione Don Carlo Gnocchi*
   Interdisciplinary Aspects in Nanomedicine
2. Aurora MANGOLINI, *IRCCS "S. Maria Nascente" Fondazione Don Carlo Gnocchi*
   Extracellular Vesicles as biomarkers of the regenerative mechanisms induced by rehabilitation after heart transplantation
3. Gaia FATTORINI, *Sapienza University of Rome*
   Cell imaging approaches to identify prognostic and predictive biomarkers in Hereditary spastic paraplegias
4. Francesco SPEDICATO, *University of Salento*
   Biocompatible HA-Si Scaffolds with CGF: A Promising Approach for Osteogenic Differentiation
5. Stefania VILLANI, *University of Salento*
   Chracterization of bacterial cellulose-neem-hypericum oil wound care paste in vitro and in Galleria mellonella in vivo model

TT.VI.J WS.XI.2 NanoMicroFab@STESY infrastructure for sustainability

Co-organized with NanoMicroFAB & NanoMicroFab@STESY
Chair: Marco FEROCI, *INAF*

1. Stefano COLONNA, *ISM-CNR*
   NanoMicroFab@STESY an Infrastructure Devoted to the Development of Technologies for Sustainability
2. Yuri EVANGELISTA, *INAF*
   Design, development and qualification of space-borne instrumentation at INAF-IAPS
3. Mario LEDDA, *IFT-CNR*
   Advanced technologies for biomedical applications
4. Sabrina CALVI, *Tor Vergata University of Rome*
   Perspectives of storage class memories in flexible edge electronics
5. Fabio RONCI, *ISM-CNR*
   Research opportunities on energy production and storage systems at NanoMicroFab@STESY
6. Massimiliano DISPENZA, *Leonardo S.p.A*
   Innovative solutions and devices in Leonardo on Qunatum Technologies, Optronics and Advanced Materials

TT.VI.K WS.I.2 Nanomedicine: Progresses in Nanomedicine

Co-organized with University of Modena and Reggio Emilia & Don Gnocchi Foundation
Chair: Giovanni TOSI, *University of Modena and Reggio Emilia* & Marzia BEDONI, *Don Gnocchi Foundation*

1. Fabiana QUAGLIA, *University of Naples "Federico II"*
   Italian National Center for Gene Therapy
2. Valentina CAUDA, *Polytechnic University of Turin*
   Rational Design of nanoparticles mimicking extracellular vesicles
3. Francesca RODÀ, *University of Modena and Reggio Emilia & Don Gnocchi Foundation*
   mRNA-LNP Ex Vivo Interactions with Human Whole Blood

TT.VI.L WS.IX.10 Automation and high throughput research 2/2

Co-organized with ENEA
Chair: Francesco BUONOCORE, *ENEA*

1. Muhammad Y. BASHOUTI, *Ben-Gurion University of the Negev*
   Manipulating the surface electronic properties of Si by molecular engineering for water splitting
2. Leonarda Francesca LIOTTA, *CNR*
   Investigation of La0.6Sr0.4Fe0.8-xMxCo0.2O3-yFy (M= Cu, Ni) perovskite oxides as electrocatalysts for clean energy transition
3. Nicola BRIGUGLIO, *CNR*
   Scale-up studies on the optimization of catalyst loading and the porous transport layer for regenerative electrolyser applications
4. Stefania SIRACUSANO, *CNR*
   Low loading CRM and CRM - free electrocatalysts as new cost – effective strategy in PEMWE

14:00 - 15:30 **12 SEPTEMBER**

TT.VII.A Life in Space

Co-organized with Thales Alenia Space
Chair: Marziale FEUDALE & Mirko ROCCI, *Thales Alenia Space*

1. Cesare LOBASCIO, *Thales Alenia Space - Italy*
   Space Exploration, challenges and opportunities for humans and materials
2. Giorgio BOSCHERI, *Thales Alenia Space - Italy*
   Advanced life support for optimal management of vital resources in human space exploration missions
3. Francesco PUNZO, *Aerospace Laboratory Innovative components S.p.A., Naples*
   IRENESAT-ORBITAL - Innovative system for biological and pharmaceutical experimentation in microgravity
4. Andrea GAMUCCI, *BeDimensional S.p.A., Genova*
   Unlocking performances in coatings and composites with few-layer crystals: BeDimensional's atomically thin graphene and hexagonal boron nitride
5. Niccolò CRESCINI, *Fondazione Bruno Kessler, Trento*
   Quantum sensing in space with superconducting devices

TT.VII.B WS.III.1 IPCEIs solutions

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

1. Josef MOSER, *Infineon Technologies, Austria*
   Trapped ion quantum processor units (ionQPUs) for scalable quantum computers: developments and quality improvements
2. André MUGLIETT, *STMicroelectronics, Malta*
   Assembly, Test and Packaging is a critical step of the Semiconductors supply chain: Malta IPCEI supports re-shoring capacity and grow on innovative technology
3. Sandra EGER, *AT&S, Austria*
   IC substrates & advanced packaging Technologies: key to the Computing systems of the Future
4. Emanuele CORSI, *MEMC-GlobalWafers*
   The TeNeT Project: Leading Edge 300mm and 200mm Silicon Wafers Manufacturing in Italy to Strengthen the Europe's Microelectronic Ecosystem

TT.VII.C WS.VIII.3 Strain in Semiconductor Materials 2/2

Co-organized with Roma Tre University & Sapienza University of Rome
Chair: Marco Vittori Antisari, *Sapienza University of Rome*

1. Chiara MANCINI, *Sapienza University of Rome, Italy*
   Strain analysis in semiconductor devices through Tip-Enhanced Raman Spectroscopy
2. Roberto BALBONI, *IMM-CNR*
   Measuring crystals strain in the TEM: techniques and accuracy
3. Frederik OTTO, *Technische Universität Berlin*
   Analyzing Dynamic Diffraction at Strained Semiconductor Interfaces: A Method to Determine Alloy Concentrations
4. Stefan WUNDRACK, *Physikalisch-Technische Bundesanstalt, Germany*
   Metrological Raman shift calibration for strain quantification in semiconductor
5. Stefano LUPI, *Sapienza University of Rome, Italy*
   Optoelectronic Properties of Topological Quantum Materials

TT.VII.D Innovative gas sensor solutions for environmental monitoring 1/2

Co-organized with FBK
Chair: Andrea GAIARDO, *FBK*

1. Elena SPAGNOLI, *University of Ferrara*
   An Innovative 3 steps Experimental Procedure to Better to Understand the Detection Mechanism of D-Limonene
2. Guglielmo TRENTINI, *FBK | University of Bolzano*
   Organic membranes for the permeation of target gases to enhance selectivity in low-cost metal oxide gas sensors
3. Rubia ZAMPIVA, *Sapienza University of Rome*
   Production of printable gas sensors based on metal-decorated carbon nanotubes for application as smart PPE on industrial workwear
4. Arianna ROSSI, *University of Ferrara*
   Innovative Chemoresistive Gas Sensor for CO_2 Detection for Indoor Applications

TT.VII.E WS.II.7 Novel Strategies for Energy Harvesting

Co-organized with Polytechnic University of Turin
Chair: Stefano STASSI, *Polytechnic University of Turin*

1. Christian FALCONI, *Tor Vergata University of Rome*
   NanoEnergy challenges and opportunities
2. Carlo TRIGONA, *University of Catania*
   Novel Kinetic Energy Harvesting Solutions Integrating Dynamics, Materials, and Nature-Based Approaches
3. Giuseppina PACE, *IMM-CNR*
   2D-Materials and Hydrogels for Energy Harvesting and Self-Powered Sensing
4. Francesco COTTONE, *University of Perugia*
   3D printed energy harvesting devices based on biocompatible piezo-electret materials

TT.VII.F WS.VI.3 Neuro-nanotechnology for brain disorder treatment

Co-organized with INL
Chairs: Andrea CAPASSO, *INL*, Portugal & Mattia BRAMINI, *UGR, Spain*

1. Fabio BENFENATI, *IIT – Italy*
   Non-genetic neuronal stimulation with photochromic interfaces: application to retinal degeneration
2. Denis SCAINI, *Ikerbasque, Spain*
   It is just a matter of surfaces: how carbon-based multidimensional nanocues can modulate neuronal network activity
3. Evie L. PAPADOPOULOU, *BeDimensional S.p.A.*
   Industrial production of 2D Materials for Bio-Applications

TT.VII.G WS.IX.7 Materials and Approaches for Solar-Driven water splitting for Hydrogen Production: Perovskites and New Organic Compounds

Co-organized with ENEA
Chair: Vera LA FERRARA, *ENEA*

1. Vera LA FERRARA, *ENEA*
   Introduction
2. Lorenzo ZANI, *CNR-ICCOM*
   Development of New Organic Compounds for Dye-Sensitized Photocatalytic and Photoelectrochemical Hydrogen Production
3. Lorenzo MALAVASI, *University of Pavia*
   Metal halide perovskites and perovskite derivatives for photocatalytic solar fuel production: from design to application
4. Silvia COLELLA, *CNR-NANOTEC*
   Tailoring the perovskite interface for photocatalytic applications
5. Jessica BARICHELLO, *ISM-CNR*
   Encapsulation and Stability of Perovskite solar cells for Underwater applications

TT.VII.H SE.I.12 Photochemistry and Photophysics in energy conversion

Co-organized with iENTRANCE@ENL, CNR-IMM
Chair: Raffaello MAZZARO, *University of Bologna*

1. ***Introductive Keynote***
   Giacomo BERGAMINI, *University of Bologna*
   Photoactive materials and techniques for energy conversion
2. Soraia FLAMMINI, *CNR-ISOF*
   Multifunctional photoelectroactive oligothiophenes based on benzothiadiazole, thienopyrazine, and thienothiadiazole for optoelectronics and biology
3. Mengjiao WANG, *Polytechnic of Turin*
   Surface chemistry modified by facile liquid phase exfoliation on 2D layered BiOI as photoanode for enhanced oxygen evolution
4. Niloofar HAGHSHENAS, *University of Milan*
   Cutting-Edge Perovskite Photocatalysts synthesized by Ultrasound: A Game-Changer in Air Pollution Control
5. Tommaso GIOVANNINI, *University of Rome Tor Vergata*
   Energy Conversion in Plasmonic Materials: an Atomistic Perspective

TT.VII.I SE.I.13 Nanomaterials characterization for biomedicine

Co-organized with University Magna Graecia of Catanzaro in cooperation with SIRTEPS & SITELF
Chair: Antonia MANCUSO, *University Magna Graecia of Catanzaro*

1. ***Introductive Keynote***
   Luigi CALZOLAI, *European Commission, Joint Research Center (JRC), ISPRA, Italy*
   Characterization and preclinical testing of nanomedicines
2. Anastasia GAGANINA, *Sapienza University of Rome*
   Detection of anti-SARS CoV-2 antibodies in human serum by means of Bloch surface waves on 1D photonic crystal biochips
3. Eleonora D'ALESSANDRO, *Campus Bio-Medico University of Rome*
   Silica-based nanomaterials: design and optimization of in-batch and in-flow processes
4. Marco RANALDI, *Roma Tre University*
   Preliminary NMR characterization of gold nanorods developed for drug delivery systems in Glioblastoma cells
5. Elena OLIVIERI, *Roma Tre University*
   Fluorescently labelled gold nanoparticles as promising carrier for multiple sclerosis drugs

TT.VII.J SE.II.3 Session Flagship Project FP3

Co-organized with: to be defined
Chair: to be defined

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TT.VII.K WS.I.3 Nanomedicine: Innovation

Co-organized with University of Modena and Reggio Emilia, Don Gnocchi Foundation & Federazione Nazionale degli Ordini dei Biologi
Chairs: Giovanni TOSI, *University of Modena and Reggio Emilia* & Marzia BEDONI, *Fondazione Don Gnocchi*

1. Sabrina CUOGHI, *University of Modena and Reggio Emilia*
   Microfluidic and enzyme replacement therapy: PLGA Nanoparticles towards the development of new versatile therapeutic solutions
2. Carlotta MARIANECCI, *Sapienza University of Rome*
   Surfactant based nanobubbles: a combined strategy to enhance brain delivery
3. Luigi CALZOLAI, *ISPRA, JRC European Community*
   Advanced Characterization of Lipid-RNA therapeutics

TT.VII.L WS.IX.11 Novel methodologies, models, and solutions for secure and cyber-resilient smart grids and multi-carrier energy systems 1/2

Co-organized with ENEA
Chair: Martina CALIANO, *ENEA*

1. Giovanni BRUNACCINI, *CNR*
   Multi-agent based model for microgrid ancillary services privision
2. Martina CALIANO, *ENEA*
   Mission Project: Use Cases and Services of the Smart Energy Microgrid Platform (SEMP)
3. Giovanna ADINOLFI, *ENEA*
   Innovative devices for electric and cyber security in distribution grids
4. Roberto CIAVARELLA, *ENEA*
   2022-2024 Three-Year Plan for Electricity System Research - Research Topic 2.3 Evolution, planning, management and electricity networks operation
5. Luigi MARTIRANO, *Sapienza University of Rome*
   Microgrids with renewables, storage, fuel cells and electric vehicles charging stations integrated in smart buildings and energy communities: Hybrid Energy Hub Lab

16:00 - 17:30 **12 SEPTEMBER**

TT.VIII.A WS.II.8 WS.IV.4 Life-cycle Assessment (LCA) and Safe and Sustainable-by-Design (SSbD)

Co-organized with Polytechnic University of Turin & University of Milan

Chair: Wenbin CAO, *USTB, China*

1. Claudia BIANCHI, *University of Milan*
   Life Cycle Assessment: A Comprehensive Tool for Environmental Impact Evaluation and Sustainable Decision-Making
2. Vasilissa NIKONOVA, *University of Salerno*
   Method Matters: Exploring Assessment Variability in Carbon Footprint Analysis of Building Materials
3. Arian GRAINCA, *University of Milan*
   Advancing Sustainability in Hydrocarbon Production: Breakthroughs in CO_2 Hydrogenation with Iron-Based Catalysts and Comprehensive Life Cycle Assessment of Environmental Impacts
4. Jacopo BINDI, *University of Turin*
   Integrating Social Sustainability: Social Life Cycle Assessment and its application to green hydrogen
5. Serena BIELLA, *University of Milan*
   The Added Value of Consulting in ESG, Carbon Footprint, LCA, and Ecodesign for Business Competitiveness

TT.VIII.B WS.III.2 IPCEIs solutions & matchmaking

Co-organized with AIRI, STMicroelectronics & Infineon

Chairs: Andrea PORCARI, *AIRI* & Cosimo MUSCA, *STMicroelectronics*

1. Lorenza FERRARIO, *Micro Nano Facility* & Vittorio GUARNIERI, *FBK*
   MNF the Fondazione Bruno Kessler semiconductor Open Facility
2. Salvatore LOMBARDO, *CNR-IMM*
   The microtech for green project
3. Alessandro FONTE, *Siae Microelettronica*
   Enabling Microelectronics Solutions for Next-Generation High-Performance 6G Networks
4. Alfredo MAGLIONE, *Optoi*
   Photonic sensors and MEMS microsystems: the OPTOI microelectronic packaging facility
5. Marco DELUCA, *Silicon Austria Labs GmbH (SAL), Austria*
   Leading advanced thin film technologies for electronic-based microsystems
6. Elke KRAKER, *Material Center Leoben, GmbH (MCL), Austria*
   Materials understanding is the key to new innovations in microelectronics

TT.VIII.C SE.II.4 Session Flagship Project FP4

Co-organized with: to be defined
Chair: to be defined

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TT.VIII.D Innovative gas sensor solutions for environmental monitoring 2/2

Co-organized with FBK
Chair: Matteo VALT, *FBK*

1. Annalisa D'ARCO, *Sapienza University of Rome*
   FT-IR spectroscopy & Machine Learning for highly ultrasensitive detection and discrimination of Volatile Organic Compounds
2. Vittorio RICCI, *University of Aquila*
   Chemoresistive Humidity, NO_2 and H_2 Sensor Based on 2D- $CrCl_3$ Layered Trihalides Nanoflakes
3. Sahira VASQUEZ BAEZ, *University of Bolzano*
   Development of Flexible and Printed Carbon Nanotube-Based Gas Sensors for In-vitro Food Digestion Models
4. Marco MAGONI, *FBK | University of Ferrara*
   Monitoring Ozone using Low-Cost Gas Sensors and Deep Neural Network

TT.VIII.E Bio-inspired materials for advanced characterization, regenerative medicine and therapy

Co-organized with University of Lyon & University of Salento
Chair: Stefano TACCONI, *Univ. of Lyon* & Laura GIANNOTTI, *Univ. of Salento*

1. Christian DEMITRI, *University of Salento*
   Design of scaffolds for tissue engineering applications
2. Simone DINARELLI, *CNR*
   Advanced High-resolution microscopies for the characterization of scaffolds, gels and engineered tissues
3. Laura GIANNOTTI, *University of Salento*
   Exploring the Regenerative Capabilities of Concentrated Growth Factors: From Structure to Osteogenic Differentiation
4. Giada CORTI, *Tor Vergata University of Rome*
   Does the osteomimicry of breast cancer cells translate to the release of extracellular vesicles with different biogenesis and function?
5. Vanessa CHIAPPINI, *University of Turin*
   Three-dimensional insights into neuro-glia interaction: the role of SBF-SEM

16:00 - 17:30 **12 SEPTEMBER**

TT.VIII.F WS.VI.4 Smart materials for neuro-applications

Co-organized with INL

Chairs: Andrea CAPASSO, *INL*, Portugal & Mattia BRAMINI, *UGR, Spain*

1. Giada CELLOT, *International School for Advanced Studies (SISSA)*
   Assessing 2D materials safety for the nervous system in zebrafish
2. Rossana RAUTI, *University of Urbino "Carlo Bo"*
   Carbon-based nanotools interfacing with neurons: novel frontiers in nanomaterial-tissue interactions
3. Elisabetta COLOMBO, *IIT*
   Conjugated polymers nanoparticles to rescue visual functions in a model of retinal degeneration

TT.VIII.G WS.IX.8 Hybrid energy storage for mobility (joint with ENEA & EERA Joint Programme Energy Storage)

Co-organized with ENEA

Chair: Margherita MORENO, *ENEA*

1. Salvatore VASTA, *CNR-ITAEE*
   Revolutionizing Hybrid Mobile Storage with Adsorption Cooling Solutions
2. Annamaria BUONOMANO, *University of Naples*
   Advanced thermal energy storage systems for optimizing the on-board waste heat recovery
3. Giovanni ESPOSITO, *@ArgoTractors*
   Future propulsion systems for off-road vehicles, electric or endothermic? How the energy storage constraints steer the development
4. Valeria PALOMBA, *CNR-ITAE*
   Hybrid thermal storage solutions for passenger ships
5. Yannik WIMMER, *AIT*
   Techno-economic consideration on hybrid storage mobile application

TT.VIII.H SE.I.14 Nanomaterials for catalytic processes

Co-organized with iENTRANCE@ENL, STEMS

Chair: Gianluca LANDI, *CNR-STEMS*

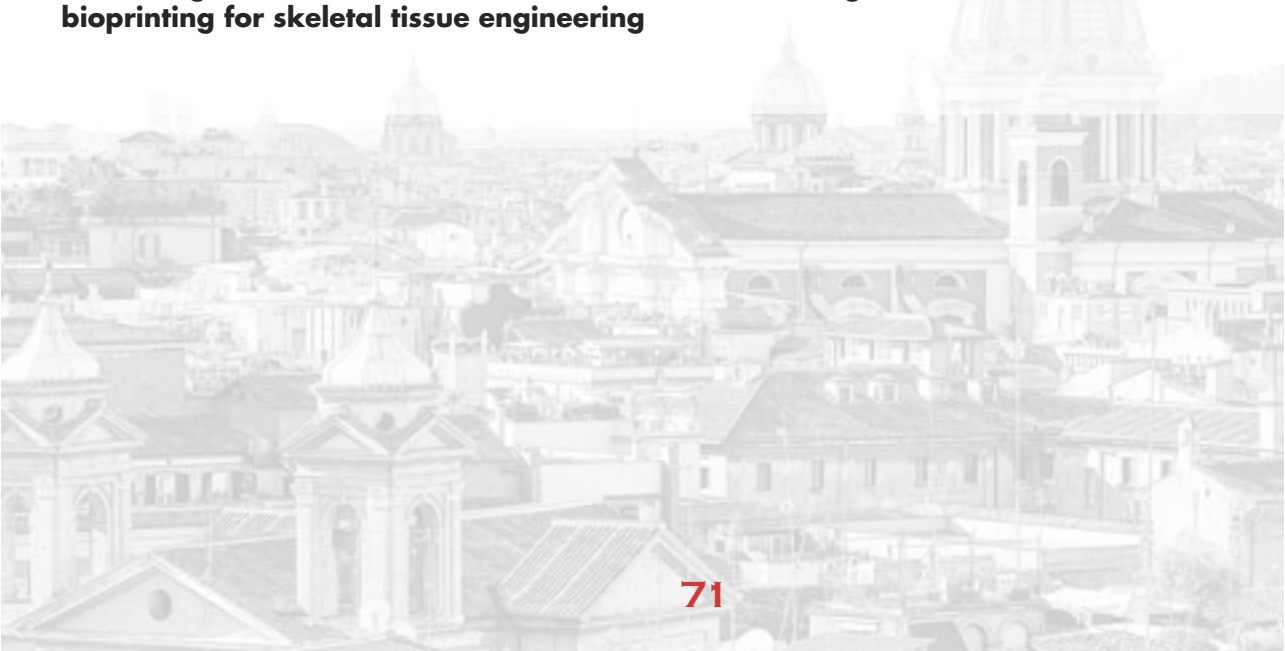
1. ***Introductive Keynote***
   Giuseppina LUCIANI, *University of Naples "Federico II"*
   Nanocatalysts for sustainable energy and environment
2. Sadaf YASMEEN, *University of Rome Tor Vergata*
   Synthesis and Characterization of highly efficient ZnO-Sm_2O_3 Photocatalyst for the photocatalytic degradation of bentazon herbicide
3. Virginia VENEZIA, *University of Naples Federico II*
   Innovative Lignin-TiO_2 Nanocomposites: Advancing Redox Materials and sustainable wastewater decontamination
4. Stefano SCOGNAMIGLIO, *Polytechnic of Turin*
   Fe-Cu(-Ce)/HZSM-5 catalysts for simultaneous methanol and DME synthesis
5. Alberto MARTIS, *IIT*
   From spirulina to nanoinnovation, fluorescent phycobilins to make nano catalyst

TT.VIII.I SE.I.15 Exploring the Future: Advances in 3D Bioprinting for Tissue Engineering and Regenerative Medicine

Co-organized with Magna Graecia University of Catanzaro in cooperation with SIRTEPS e SITELF

Chair: Carmine GENTILE, *University of Technology, Sydney*

1. ***Introductive Keynote***
   Francesco PASQUALINI, *University of Pavia*
   New Engineering Tools to Study Cell-ECM Interactions in-vitro
2. Klajdi GEGA, *Sapienza University of Rome, Italy*
   3d Bioprintable dystrogel faithfully recapitulates the characteristics of the dystrophic cardiac extracellular environment
3. Laura VETTORI, *University of Technology Sydney, Ultimo, NSW 2007, Australia*
   Silk fibroin modulates the mechanical properties of alginate-gelatin hydrogels and controls cardiac cell contractile function in cardiac bioinks
4. Michele MARINO, *University of Rome "Tor Vergata", Italy*
   Advanced Simulations of Bio-Ink Extrusion Dynamics
5. Lucia IAFRATE, *Italian Institute of Technology (IIT), Italy*
   Patterning decellularised human bone and vascular allograft bioinks via 3D bioprinting for skeletal tissue engineering



09:00 - 10:30 **13 SEPTEMBER**

TT.IX.A Nano and Metrology 1/2

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

1. Natascia DE LEO, *INRiM*
   Opening session
2. Federico FERRARESE LUPI, *INRiM*
   Self-assembling materials for operando metrology of energy storage materials
3. Angelo ANGELINI, *INRiM, PRIN PETALS*
   High-Q Fano Resonances in All-Dielectric Metasurfaces
4. Sara NOCENTINI, *INRiM, PRIN PHOTAG*
   Liquid crystal-based microstructured materials for secure anti-counterfeiting and authentication processes
5. Paola TIBERTO, *INRiM*
   Nanolithographic techniques for the fabrication of 2D and 3D magnetic nanostructures

TT.IX.B JE.III.1 Unpacking the essentials of plant biostimulants

Co-organized with IIA-CNR
Chairs: Antonella MACAGNANO, *IIA-CNR* & Fabrizio DE CESARE, *DIBAF-University of Tuscia*

1. Giuseppe COLLA, *DAFNE-University of Tuscia*
   Microbial and non microbial plant biostimulants: what they are and what they do according to the EU Regulation 2019/1009
2. Francesco PETRACCHINI, *DTA-CNR*
   Towards Agriculture 4.0: Environmental impact, sustainability, and innovation, perspectives and opportunities
3. Giuseppe SCARASCIA MUGNOZZA, *DIBAF-University of Tuscia*
   Towards a regenerative bioeconomy: Agroforestry and applications from ecofriendly circular nanotechnologies
4. Annalisa SANTUCCI, *DBCF-University of Siena*
   Circular bioeconomy as a novel source of bioactive compounds

TT.IX.C Advanced Nanocoatings

Co-organized with RINA-CSM and Roma Tre University
Chair: Angelo MEDURI, RINA-CSM

1. Mario TULUI, *RINA-CSM*
   MIRIA Project: Development of antimicrobial, antiviral, and antifungal nanocoatings for everyday surfaces
2. Laura FABIANI, *University of Rome Tor Vergata*
   RELIANCE Project: Smart response self-disinfected biobased nanocoated surfaces for healthier environments
3. Milena NASNER, *Arditec Assosiation, France*
   SUSAAN Project: Sustainable Antimicrobial and Antiviral Nanocating
4. Fabiola BRUSCIOTTI, *Tecnalia San Sebastian, Spain*
   PROPLANET Project: Enhanced Safe and Sustainable coatings for supporting the Planet

TT.IX.D JE.II.1 Technology Transfer and Innovation Policies for a Sustainable Research

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

1. Giorgio GRADITI | Giulia MONTELEONE, *ENEA*
   Visione a lungo termine delle infrastrutture ENEA, compreso DTT ed i vari IPCEI
2. Cesare LOBASCIO, *Thales Alenia Space, Space Exploration & Science Innovation Lead*
   Disruptive innovation for New Space Exploration Challenges
3. Rosaria RINALDI, *University of Salento, Vice-Rector for Technology Transfer*
   Green and Circular Chemistry for the Sustainable Production of Nano-Therapeutic Materials
4. Alessandro GARIBBO, *LEONARDO, Head of Universities and Research Centers Coordination*
   Title to be defined
5. Michele MUCCINI, *CNR-ISMN e MISTER Smart Innovation*
   Mister Smart Innovation and the CNR Bologna Technopole: an hands on experience for research valorization and public-private collaboration
6. Lorenzo ROSSI, *IIT, Intellectual Property Manager*
   Technology Transfer: Impact, Goals, People and Resources

TT.IX.E Machine learning approaches in materials science

Co-organized with IENTRANCE@ENL, INRIM
Chair: Pietro ASINARI, *INRIM*

1. Massimo BOCUS, *Center for Molecular Modeling, Ghent University*
   Machine learning potentials to bridge the gap between theory and experiments in zeolite catalysis
2. Paolo DE ANGELIS, *Polytechnic of Turin*
   Investigating Ion Transport in Solid Electrolyte Interfaces with Advanced Reactive Force Fields
3. Francesco MAMBRETTI, *IIT*
   How does structural disorder impact heterogeneous catalysts? Ammonia decomposition on ionic crystals
4. Umberto RAUCCI, *IIT*
   Revealing the Dynamic Behavior of Heterogeneous Catalysts via Machine Learning-Driven Molecular Dynamics

TT.IX.H SE.I.16 Self-assembly and nanostructured materials

Co-organized with Sapienza University of Rome
Chair: Iolanda Francolini, *Sapienza University of Rome*

1. ***Introductive Keynote***
   Stefano CINTI, *University of Naples "Federico II"*
   Smart/nano materials for enhancing diagnostics
2. Sara ALFANO, *Sapienza University of Rome*
   Polyhydroxyalkanoates nanocarriers: a pla4orm for hydrophobic bioactive delivery
3. Asma MUNIR, *University of Bologna*
   Design and Applications of Hybrid Silver Nanoparticles Exploiting Natural Sources
4. Benedetta BRUGNOLI, *Sapienza University of Rome*
   Rational Design of Self-assembled Poly-L-Lactide Nanosystems for Drug Delivery
5. Valeria D'ANNIBALE, *Sapienza University of Rome*
   A novel porphyrin-peptide derivative has been synthesized by a solid-phase peptide synthesis (SPPS) protocol, with the aim of defining a novel antimicrobial amphiphile

09:00 - 10:30 **13 SEPTEMBER**

TT.IX.I SE.I.17 Biomaterials

Co-organized with Magna Graecia University of Catanzaro in cooperation with SIRTEPS e SITELF

Chair: Massimo LA DEDA, *University of Calabria*

1. ***Introductive Keynote***
   Francesco PUOCI, *University of Calabria*
   New perspectives of drug targeting by molecular imprinting
2. Marco DATTILO, *University of Calabria, Italy*
   Alginate and Pectin-Based Molecularly imprinted polymers for targeted therapeutic intervention in Celiac Disease in Celiac Disease
3. Salma BOUSSELMI, *Sapienza University of Rome, Italy*
   Enhancing neovascularization post-myocardial infarction through injectable hydrogel functionalized with endothelial-derived EVs
4. Matteo GALBIATI, *CNR-ITB*
   Boosted skin regeneration through gelma-based hydrogel functionalized with Fibroblast-derived extracellular vesicles
5. Marta POLLINI, *University of Pavia*
   Electroactive nanofibrous scaffolds enhancing skin wound regeneration

TT.X.A JE.II.2 IM4EU: Advanced Materials for Industrial Leadership – come diventare protagonisti

Co-organized with APRE & AIRI
Chair: Marco FALZETTI, *APRE*

1. Marco FALZETTI, *Direttore APRE e Chair EuMaT*
   Introduction
2. ***Key note Speaker***
   Maria Cristina RUSSO, *Direttrice della Direzione Prosperity della DG- RTD della Commissione Europea*
   L'innovazione nei Materiali - dove sta andando la Commissione Europea
3. Maria Cristina RUSSO & Marco FALZETTI
   Dialogo: Verso il nuovo Partenariato sui Materiali Avanzati IM4EU

TT.X.B JE.III.2 Harnessing nanotechnology for a greener future with nanobiostimulants

Co-organized with IIA-CNR
Chairs: Antonella MACAGNANO, *IIA-CNR* & Fabrizio DE CESARE, *DIBAF-University of Tuscia*

1. Daniele DEL BUONO, *DSA3-University of Perugia*
   Nanomaterials from waste for a sustainable nano-circular economy. Biostimulant effect of nanoscaled lignin and biogenic nanoparticles
2. Fabrizio DE CESARE, *DIBAF-University of Tuscia*
   Microbial biostimulants: From traditional to nanomaterial-based formulations
3. Giuseppina LUCIANI, *DICMAPI-University of Naples "Federico II"*
   Nanotechnology meets sustainable agriculture: Nanohybrids from biowaste
4. Antonella MACAGNANO, *IIA-CNR*
   Transforming agriculture: Electrospinning nanobiostimulants for sustainable growth

TT.X.C Protecting human and environmental health from micro- and nanoplastic exposure in a One Health perspective

Co-organized with Istituto Superiore di Sanità
Chairs: Cristina ANDREOLI & Beatrice BOCCA, *Istituto Superiore di Sanità*

1. Giovanni LIBRALATO, *University "Federico II" of Naples*
   Micro- and nanoplastics from sea to spoon: an overview
2. Loredana MANFRA, *Istituto Superiore per la Protezione e la Ricerca Ambientale*
   Microplastics effects on marine organisms and potential health issues
3. Chiara RITAROSSI, *Istituto Superiore di Sanità*
   Methodological approach for the evaluation of potential toxic effects of micro- and nanoplastics
4. Beatrice BATTISTINI, *Istituto Superiore di Sanità*
   Biomonitoring and biomarkers to assess human exposure to micro- and nanoplastics
5. Chiara Laura BATTISTELLI, *Istituto Superiore di Sanità*
   Generating FAIR data production for micro- and nanoplastics in a regulatory perspective

11:30 - 13:00 **13 SEPTEMBER**

TT.X.D Innovative Approaches in Science and Technology: Sustainable Solutions and Advanced Applications

Co-organized with Sapienza University of Rome
Chair: Marilena CARBONE, *University of Rome Tor Vergata*

1. Cosimo RICCI, *University of Rome Tor Vergata*
   PET depolymerization using deep eutectic solvents
2. Rocco CARCIONE, *ENEA*
   Gamma irradiation technologies: a promising approach from cultural heritage to agri-food and space applications
3. Giuseppe CECI, *Sapienza University of Rome*
   Additive manufacturing and Innovation ecosystems: between competition and collaboration
4. Jacopo FORTE, *Sapienza University of Rome*
   Microfluidics technique: an Innovative production of Niosomal Formulations
5. Dalila FONTANA, *Università Campus Bio-Medico di Roma*
   Selective Photoinduced Biofunctionalization of 2PP 3D Microstructures

TT.X.E Characterization of nanomaterials

Co-organized with iENTRANCE@ENL
Chair: to be defined

1. ***Introductive keynote***
   Michela ALFE, *CNR STEMS*
   How easy is it to produce and characterize carbon-based nanomaterials from waste? Insights and future perspectives
2. Alessio OCCHICONE, *CNT-STEMS*
   Transforming red mud waste into valuable nano-magnetic materials: a comprehensive study
3. Luigi RIBOTTA, *INRIM*
   3D reconstruction of AFM tip by using known tip characterizers
4. Giacomo SPISNI, *Polytechnic of Turin*
   Electrospun manganese oxide nanostructured layer for alkaline oxygen reduction reaction catalysis
5. Eleonora BOLLI, *CNR-ISM*
   Advancements in Defect-Engineered Material Characterization: A TERS Analysis of Black Diamond

TT.X.H SE.I.18 Optical and Acoustic trapping

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

1. ***Introductive Keynote***
   Maria Grazia DONATO, *CNR- IPFC*
   Optical and Acoustic trapping for characterization of materials
2. Stefano FERRETTI, *University of Naples*
   Contamination-free manipulation of extraterrestrial dust particles using acoustic tweezers
3. Sonia MARRARA, *University of Messina*
   Optical calibration of acoustic tweezers
4. Dante Maria ACETI, *University of Calabria*
   Light-induced particle repulsion from epsilon near-zero thin film
5. Enrico TARTARI, *École Polytechnique Fédérale de Lausanne*
   Photonic crystal cavities as real-time sensors for single bacteria-antimicrobial interaction

TT.X.I SE.I.19 Gene and Biotech Delivery

Co-organized with Magna Graecia University of Catanzaro
inserire in collaboration with SIRTEPS e SITELF
Chair: Massimo FRESTA, *University Magna Graecia of Catanzaro*

1. Introductive Keynote
   Fabiana QUAGLIA, *University of Naples "Federico II"*
   From Innovation to Application: Non-Viral Approaches for RNA Delivery
2. Francesca BUFALIERI, *Sapienza University of Rome, Italy*
   MEX3A/RIG-I axis as a new therapeutic option for the treatment of glioblastoma
3. Martina VINCENZI, *University of Rome "La Sapienza"*
   Genetic engineering of probiotics: a new pharmacological tool for inflammatory and obesity-linked disorders
4. Teresa FERRILLO, *University of Naples "Federico II"*
   On the role of PEG-Lipids in the development of Lipid nanoparticles for siRNA delivery
5. Virgilio PICCOLO, *University of Naples "Federico II"*
   Innovative and smart functionalisable polymeric Nanoparticles for the delivery of Nucleic Acids and Chemotherapeutic in combination for tumor solid treatment

TT.XI.A Nano and Metrology 2/2

Co-organized with INRiM

Chairs: Natascia DE LEO & Luca BOARINO, *INRiM*

1. Chiara GIONCO, *PiQuET, INRiM*
   Design and charactarization of microring resonators for the generation of Optical Frequency Combs
2. Giulia APRILE, *PiQuET, INRiM*
   Bringing photonic quantum-enhanced sensors to the next level of integration and usability: the QUANTIFY project
3. Erik CERRATO, *PiQuET, INRiM*
   MEMS-like alkali vapors cells fabrication and characterization for quantum sensing devices
4. Matteo FRETTO, *INRiM*
   Deep reactive ion etching techniques for micro and nanotechnology

TT.XI.B JE.III.3 Collaborating for a sustainable future: joining industry agriculture and science for nanobiostimulant developments

Co-organized with IIA-CNR

Chairs: Antonella MACAGNANO, *IIA-CNR* & Fabrizio DE CESARE, *DIBAF-University of Tuscia*

1. Leonardo DRAGONI, *Italpollina-Hello Nature, Verona*
   The evolution from Italpollina to Hello Nature for a global approach to sustainable fertilization
2. Sarai AGUSTIN-SALAZAR, *IPCB-CNR, Naples*
   Characterization of multifunctional nanofibrous systems using hazelnut shell derivatives
3. Valentino RUSSO & Damiano SPAGNUOLO, *Promethea biochem solutions, Taranto*
   Beyond Nutrients: The Role of Macroalgae Derived Growth Regulators in Sustainable Agriculture
4. Massimo MARI, *DIITET-CNR, Rome*
   Innovative nanofibers from agro-industrial waste: Pioneering circular economy solutions
5. Mimmo SCOLLO, *Originy S.r.l, Catania*
   Microalgae biorefinery for nutraceuticals and agriculture, industrial experience in Green Extraction and future prospects
6. Bruna MATTURRO, *IRSA-CNR, Rome*
   Colonization of sustainable nanotissue derived from agricultural waste by Kosakonia radicincitans and its potential application
7. Antonio DI NARDO, *Huber AgroSolutions, Bologna*
   Nanomaterials or Nanobiostimulants: When Will We Have a Legally Recognized Definition?
8. Anita MAIENZA, *IBE-CNR, Rome*
   Nanofiber technology as support to plant and root development: Results from tomato pot experiments
9. Claudio CARAMADRE, *Biodistretto Etrusco Romano*
   Future-proofing agriculture: The role of Etruscan-Roman Bio-district in sustainable development

TT.XI.C JE.II.3 Research Infrastructure and Ecosystem within and beyond PNRR: Open Science, Open Innovation, and Higher Education 1/2

Co-organized with iENTRANCE@ENL
Chair: Alfredo PICANO, *iENTRANCE@ENL Manager & CNR*

1. Ennio CAPRIA, *ESFR, Deputy Head of Business Development, France*
   Ecosystems and Infrastructures: The example of Grenoble
2. Massimo CARNELOS *(to be confirmed), MAECI, Capo dell'Ufficio Innovazione, start-up e spazio - DGSP Uff. XI*
   title to be defined
3. Marina SILVERII, *Executive Director at ART-ER & Vice-President ECOSISTER Foundation*
   ECOSISTER: The Emilia-Romagna Region's ecosystem for sustainable transition
4. Franco FOSSATI, *Fondazione Rome Technopole, Direttore Scientifico*
   Title in definition
5. Speaker in definition, *SAMOTHRACE (ecosistema PNRR regionale della Sicilia)*
   Title in definition
6. Speaker in definition, *NODES (ecosistema PNRR regionale Piemonte)*
   Title in definition

TT.XI.H SE.I.20 CO_2 valorization and Hydrogen Technologies for a Sustainable Future

Co-organized with Polytechnic University of Turin
Chair: Angelica CHIODONI, *IIT*

1. ***Introductive Keynote***
   Juqin ZENG, *Polytechnic University of Turin*
   CO_2 and H_2 technologies for clean energy transition
2. Giacomo SPISNI, *Polytechnic University of Turin*
   Ultrasonic spray coated nanostructured layer to enhance anodic performance in Bio-Electrochemical Systems
3. Huang LAN, *IIT, Turin*
   Green synthesis of Cu-based catalyst for selective CO_2 electroreduction
4. Francesca FASULO, *University of Naples "Federico II"*
   What can we learn from quantum mechanics on energy conversion?
5. Paola MELI, *University of Palermo*
   Electrochemical reduction of CO_2 to formic acid: a study of operating parameters in a microfluidic cell

TT.XI.I SE.I.21 Therapies and Microenvironment in the Neoplastic Diseases

Co-organized with Magna Graecia University of Catanzaro in cooperation with SIRTEPS e SITELF
Chair: Antonella LEGGIO, *University of Calabria, Italy*

1. ***Introductive Keynote***
   Catia MORELLI, *University of Calabria*
   Targeted Mesoporosus Silica nanoparticles as smart vehicles for highly selective drug delivery
2. Antonella ROCCHI, *University of L'Aquila, L'Aquila, Italy*
   Targeted Hybrid Lipid-Polymer Nanoparticles for Glioblastoma Multiforme Treatment
3. Domenico LIGUORO, *IRCCS Regina Elena National Cancer Institute/ Sapienza University of Rome, Italy*
   miR-579-3p as checkpoint for adaptation to target therapy in melanoma
4. Palmira Alessia CAVALLARO, *University of Calabria, Italy*
   Novel Piperazine-Based Small Molecules in Antiviral and Anticancer Research
5. Nicole FRATINI, *Sapienza University of Rome, Italy*
   Immune-modulable biological environment (MBE) bioreactor to recapitulate the complexity of the vascularized breast cancer microenvironment

16:00 - 17:30 **13 SEPTEMBER**

TT.XII.A JE.II.4 Research Infrastructure and Ecosystem within and beyond PNRR: Open Science, Open Innovation, and Higher Education 2/2 ROUND TABLE

Co-organized with iENTRANCE@ENL

Moderators: Vittorio MORANDI, *CNR* & Marco ROSSI, *Sapienza Univ. of Rome*

PANELISTS in definition

Panelist in definiton, *Lazio Innova*

Panelist in definiton, *Regione Lazio*

Panelist in definiton, *Regione Piemonte*

Antonio ANDRETTA, *Klopman International, LCA Manager*

Massimo BERSANI, *FBK, Materials and Topologies for Sensors and Devices (MTDS) Unit Leader*

Ennio CAPRIA, *ESRF, Deputy Head of Business Development, France*

Massimo CARNELOS *(to be confirmed), MAECI, Capo dell'Ufficio Innovazione, start-up e spazio - DGSP Uff. XI*

Vincenzo COLLA, *Regione Emilia Romagna, Assessore Sviluppo Economico e Green Economy, Lavoro, Formazione, Relazioni Internazionali*

Marco CRESCENZI, ISS, Core Facilities, Director

Rosaria RINALDI *(to be confirmed), University of Salento, Vice-Rector for Technology Transfer*

TT.XII.B SE.I.22 Cryo-Tem

Co-organized with Sapienza University of Rome

Chair: Beatrice VALLONE, *Sapienza University of Rome*

1. ***Introductive Keynote***
   Marina CASIRAGHI, *University of Milan*
   Structure and dynamics determine G protein coupling specificity at a class A GPCR
2. Alessandro PORRO, *University of MIlan*
   Structural determinants of pacemaker HCN channels blockage by Ivabradine and its technological advancements
3. Giovanni BULFARO, *University of Rome La Sapienza*
   Development and characterization of high-affinity monoclonal antibodies targeting $ErbB_3$
4. Sharon SPIZZICHINO, *University of Rome La Sapienza*
   Riboregulation as a new player in the control of cellular metabolism: clues from the cryo-EM structure of serine hydroxymethyltransferase-RNA complex
5. Federica GABRIELE, *University of L'Aquila*
   Cryo-EM meets parasitic diseases: validating a novel approach to target thioredoxin-like enzymes

PARALLEL LECTURES (PL) SESSIONS

11 SEPTEMBER

10:50 - 11:30	
Chair: Marco Vittori ANTISARI, *Sapienza University of Rome & Nanoitaly Association*	
PL.I.A	Heiko STEGMANN, *Carl Zeiss Microscopy, GmbH, Germany* **TEM lamella preparation in FIB-SEM: Optimization of quality, accuracy and throughput**
Chair: to be defined	
PL.I.B	Rossella CANESE, *Istituto Superiore di Sanità - ISS* **MR spectroscopy in the study of human metabolism in health and disease**
Chair: to be defined	
PL.I.C	Radenka KRSMANOVIC WHIFFEN, *COST - the European Cooperation in Science and Technology* **COST – Driving Research Networks for Inclusive Excellence and Innovation**

12 SEPTEMBER

10:50 - 11:30	
Chair: Francesco BIANCARDI, *Carl Zeiss S.p.A.*	
PL.II.A	Flavio COGNIGNI, *Carl Zeiss S.p.A.* **Integrating advanced multimodal microscopy and artificial intelligence solutions for failure analysis in electronics and semiconductors**
Chair: Sabrina CONOCI, *University of Messina*	
PL.II.B	Luisa DE COLA, *University of Milano, Istituto di Ricerche Farmacologiche Mario Negri, IRCCS, Milano, & Institute of Nanotechnology, Karlsruhe Institute of Technology (KIT), Germany* **Hybrid nanomaterials for targeting and killing tumors**
Chair: Massimo BERSANI, *Fondazione Bruno Kessler - FBK*	
PL.II.C	Federica MANTEGAZZINI, *Fondazione Bruno Kessler - FBK* **Superconducting quantum devices at FBK: From single circuit components to the first qubit made in Italy**

13 SEPTEMBER

10:50 - 11:30	
Chair: Ernesto PLACIDI, *Sapienza University of Rome*	
PL.III.A	Livia ANGELONI, *Sapienza University of Rome* **Harnessing atomic force microscopy to investigate cell mechanics in response to physical cues**
Chair: Paolo POSTORINO, *Sapienza University of Rome*	
PL.III.B	Albert ANTONACCI, *LFoundry, Senior* **Failure Analysis Engineer Lead Failure Analysis Challenges in Semiconductor Industry**
Chair: Andrea GAIARDO, *FBK*	
PL.III.C	Massimo BERSANI, *FBK* **Innovative Fabrication Techniques for Flexible Surface Nanostructures on Industrial Objects of Large Scale and Complex Shapes**
Chair: Francesca SCARAMUZZO, *Sapienza University of Rome*	
PL.III.D	Antonio ANDRETTA *(to be confirmed), Klopman* **Sustainability in textiles according to Klopman**

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Sapienza Università di Roma

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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

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BREAKOUT SESSIONS

11 - 12 September

11 SEPTEMBER

BO.1 - BreakOut Session 17:45 - 19:15	
FAIR Data: present and future	
Chair: Francesca DE CHIARA, *CNR-IMM Bologna* *In collaboration with iEntrance@ENL*	
As the field of nanotechnology advances, adopting a FAIR (Findable, Accessible, Interoperable, and Reusable) by design approach is imperative for researchers aiming to enhance data management and collaboration. By integrating FAIR principles from the outset, nanotechnology labs can ensure that their research outputs are not only compliant with data standards but also optimized for accessibility and reuse. This proactive strategy fosters greater transparency, reproducibility, and innovation in nanotechnology research, ultimately contributing to more robust and impactful scientific discoveries. By embedding FAIR principles into their workflows, researchers can drive efficiency and elevate the quality and utility of their data in the nanotechnology domain. The interactive session is open and will showcase pilot case studies with the participation of researchers from the iEntrance Research infrastructure that are enriching and advancing research activity, applying FAIR principles in their experimental protocols. Expert researchers and technologists from the iEntrance consortium will provide insights into innovative methodologies, emphasizing the integration of fair/open data standards. Researchers will discuss applications and share their experiences on how adopting FAIR principles could enhance the quality and impact of their work.	
BO.1.A.1	Francesca DE CHIARA, *CNR* **FAIR Data Principles in Practice: Dealing with Experimental Data**
BO.1.A.2	Serena GRECO, *ISS* **FAIRification of genotoxicity data to improve their reusability: from Nanomaterials to Micro- and Nanoplastics**
BO.1.A.3	Short presentations and examples by iENTRANCE@ENL project members
Biomedical applications of advanced spectroscopic techniques to study new contrast angents and cell metabolism in aging and oncology	
Chair: Rossella CANESE, *Research Director, Istituto Superiore di Sanità*	
BO.1.B.1	Laura TORRIERI DI TULLIO, *Istituto Superiore di Sanità* **CW-EPR characterization of graphene oxide (GO) for biomedical applications**
BO.1.B.2	Taljinder SINGH, *Istituto Superiore di Sanità* **Alterations in brain functional networks and structure following RhoGTPases pharmacological modulation by using rs-fMRI and DTI**
BO.1.B.3	Valentina ZECCA, *Istituto Superiore di Sanità* **The role of Magnetic Resonance Spectroscopy (MRS) in the evaluation of the effects of Rho GTPases's modulation on CD1 mice**
BO.1.B.4	Francesco Mattia BONANNI, *Istituto Superiore di Sanità* **Exploring cancer cells metabolism by Magnetic Resonance Spectroscopy**
BO.1.B.5	Sveva GERMINI, *Istituto Superiore di Sanità* **Mass spectrometry-based proteomic investigation of novel therapeutic strategies for triple negative breast cancer**

12 SEPTEMBER

BO.2 - BreakOut Session 17:45 - 19:15	
Title to be defined	
Chair: Annukka SANTASALO-AARNIO, *Aalto University, Finland*	
BO.2.A.1	Annukka SANTASALO-AARNIO, *Aalto University, Finland* **Circular Economy Approaches in the Field of Materials for Energy**
BO.2.A.2	Simone QUARANTA, *CNR ISMN* **Inexpensive/environmentally friendly nanostructured MnO_2 recovered from Amazon and Italian mining tailings as electrode materials for rechargeable batteries**
BO.2.A.3	Vishal SHRIVASTAV, *Regional Centre of Advanced Technologies and Materials, Czech Republic* **Microwave activated mixed biowastes derived porous carbon-based electrode for all-solid-state symmetrical supercapacitors**
BO.2.A.4	Giorgio CELORIA, *University of Piemonte Orientale A. Avogadro* **Rice husk derived materials for environmental applications**
Innovative characterization tools and approaches for a sustainable energy transition	
Chair: Giulio Lamedica, *ZEISS SpA*	
BO.2.B.1	Francesco BIANCARDI, *Carl Zeiss S.p.A.* **Exploring the infiltrative and degradative ability of Fusarium oxysporum on polyethylene terephthalate (PET) using correlative microscopy and deep learning**

12 SEPTEMBER

Photonic biosensing for point-of-care diagnostic systems

Chairs: Massimo BERSANI, Leandro LORENZELLI and Laura PASQUARDINI, *FBK*

In the last years medicine has taken advantages of the interdisciplinary technology innovations in healthcare through the multitude of the point-of-care tests (POCTs) with the final aim of rising the population health and wellbeing converging preventive, personalized and precision medicine.

These modern diagnostic devices are getting common in many near-patient and critical care settings including operating rooms, intensive care units, emergency departments, and many primary care clinic settings as well as enhancing patient care by expanding the opportunities for healthcare services at different patient and population levels. Photonic biosensors have emerged as a potential solution for disease diagnostics and therapy follow-up at the point-of-care (POC).
These biosensor platforms could overcome some of the challenges faced in conventional diagnosis techniques offering label-free assays with immediate results and employing small and user-friendly devices. Furthermore, the capability to integrate photonic biosensors with microfluidics and the compatibility of most of the photonic architectures and materials with electric readouts make them the most suitable candidates for the development of lab-on-a-chip systems to be integrated in point-of-care instruments.

This BreakOut session will delve into the photonic platforms with the focus on whispering gallery mode resonators representing an interesting class inside the silicon-based optical biosensors that merge the advantages coming from the microelectronic technology in terms of scalability, spatial resolution and the optical confinement of the light, resulting in high accuracy, sensitivity, speed and high signal-to-noise ratio.

BO.2.C.1	Georg PUCKER and Mattia MANCINELLI, *FBK and Ligentec SA* **Photonic sensing technologies: status and outlook**
BO.2.C.2	Carlo GUARDIANI, *FTH Srl* **Fast prototyping of Nitride Electro-photonic Sensors (FANES project)**
BO.2.C.3	Cristina POTRICH, *FBK* **Surface functionalization approaches for biosensing**
BO.2.C.4	Nicola BELLOTTO, *FTH Srl* **A photonic sensor for multiple salivary biomarker detection in diagnostics**
BO.2.C.5	Massimiliano LANZAFAME and Giovanni MORI, **The Importance of Early Diagnosis in the Treatment of Sepsis**

YOUNGINNOVATION
The State of Research communicated by Young Researchers

11-12-13 September

Chairs: Donatella PAOLINO, *Univ. Magna Graecia of Catanzaro* & Marco ROSSI, *Sapienza Univ. of Rome*

SCIENTIFIC COMMITTEE: Maria Chiara CRISTIANO, *University Magna Graecia of Catanzaro*; Giuliana FAGGIO, *The "Mediterranean" University of Reggio Calabria*; Iolanda FRANCOLINI, *Sapienza University of Rome*; Giacomo MESSINA, *The "Mediterranean" University of Reggio Calabria*; Salvatore PANZA, *University Magna Graecia of Catanzaro*; Marzia QUAGLIO, *Polytechnic University of Turin*.

PROGRAM COMMITTEE: Alessia BRAMANTI, *University of Salerno*; Michele CONTI, *University of Pavia*; Giacomo PARISI, *Link Campus University*; Francesca RISPLENDI, *Polytechnic University of Turin*; Alessia SANNA, *Sapienza University of Rome*; Elena STELLINO, *Sapienza University of Rome*.

ORGANIZING BOARD: Alessia AIRI, INRIM; Antonella BARONE, *University Magna Graecia of Catanzaro*; Nicola D'AVANZO, *University Magna Graecia of Catanzaro*; Valentina GARGIULO, *CNR-STEMS*; Antonia MANCUSO, *University Magna Graecia of Catanzaro*; Annamaria SABETTA, *CNR-IPCB*.

Co-organized with

UMG

SAPIENZA UNIVERSITÀ DI ROMA

Researchers have always played a fundamental role in finding solutions to complex challenges. For this reason, NanoInnovation is committed to encouraging and facilitating the participation of young researchers (under 35 years of age) in the scientific world and supporting their careers through mentoring activities. In line with these objectives, Young Innovation has evolved into a semi-independent event, now in its fourth edition, to be held from 11 to 13 September 2024, increasingly enriched with significant presences and aimed at the researchers of the future.
Young Innovation has become a well-defined event consisting of three days of discussions, divided into 90-minute sessions. In particular, the sessions will be developed to include:
1. Parallel sessions focusing on the macro areas of Material Sciences and Life Sciences.
2. Other sessions covering topics common to both the above macro areas.
Each Young Innovation session will include:
- Introductory talk (max 30 min) on the state-of-the-art of the session theme by a senior researcher;
- 4 contributions (max 7 min/each) by young researchers, presenting the results of their current studies;
- A short concluding round table discussion (approx. 30 min) with questions and answers between young researchers and senior researchers.

The specific topics of the event will be selected by the Chairs and the NanoInnovation Organizing Committee, who will also appoint the members of the Young Innovation Scientific Committee and the Organizing Committee.
As for the young speakers interested in participating, the spontaneous application requires:
1. the uploading of the abstract of their research through the website, on the dedicated submission section CALL FOR POSTERS.
2. the ticking the 'Young Innovation" box during the submission.
Selected abstracts from the under-35 applicants, based on the quality of the proposed research and its relevance to the theme of the session, will be invited to present during Young Innovation and could be displayed in printed form during Nanoinnovation and uploaded on the website in the dedicated session.
Selected participants will not have to pay the submission fee required for the regular poster session. Those not selected for the event can still pay the fee and participate by uploading their poster to the website and displaying it during the event.
Overall, the purpose of the Young Innovation event is to provide a platform for these emerging scientists to share their research and network with colleagues at the event. As such, the event serves not only as a showcase for cutting-edge research, but also as a catalyst for collaboration, inspiration and the advancement of scientific knowledge.

11 SEPTEMBER

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

Next-generation semiconductor devices for power electronics applications

in cooperation with iENTRANCE@ENL
Chair: Simonpietro AGNELLO, University of Palermo

1	***Introductive Keynote*** Filippo GIANNAZZO, *CNR-IMM* **New devices based on 2D materials integrated on wide-bandgap semiconductors**
2	Fiorenza ESPOSITO, *CNR-IMEM* **Liquid precursor-based Chemical Vapor Deposition and Transfer of Monolayer MoS_2 on GaN**
3	Francesca MIGLIORE, *University of Palermo* **Photoluminescence enhancement in 1L-MoS_2 by thermal treatments**
4	Umberto DELLASETTE, *CNR-NANOTEC* **Nanostructured Perovskites: Single Crystals for smart Optics and Optoelectronics**
5	Francesca SANTANGELI, *Sapienza University of Rome* **Giant bandgap tuning of InN nanowires by post-growth Hydrogen irradiation for creation of tunable quantum dots**

Round table on the Topic

09:00 - 10:30	SE.I.2

Artificial intelligence and Machine learning in digital health

co-organized with University Magna Graecia of Catanzaro
in cooperation with SIRTEPS e SITELF
Chair: Alessia BRAMANTI, *University of Salerno*

1	***Introductive Keynote*** Giuseppe SCANIELLO, *University of Salerno* **Application of artificial intelligence and machine learning in cardiovascular diseases**
2	Chiara CAMASTRA, *University of Catanzaro "Magna Graecia"* **Exploring sex-based brain morphometry differences through Explainable Artificial Intelligence: insights for digital health innovation**
3	Marina GAROFANO, *University of Salerno* **Use of new technologies in physiotherapy in defining the therapeutic exercise dose**
4	Assunta PELAGI, *University of Catanzaro "Magna Graecia"* **Predicting and understanding psychological well-being in young adult: new insight for digital health**
5	Luca BARILLARO, *University of Catanzaro "Magna Graecia"* **Scalable deep learning: Applications in medicine**

Round table on the Topic

11:30 - 13:00	SE.I.3

Bioengineering for biomedical applications of microfluidics

co-organized with University Magna Graecia of Catanzaro
in cooperation with SIRTEPS e SITELF
Chair: Nicola D'AVANZO, *University Magna Graecia of Catanzaro*

1	***Introductive Keynote*** Pier Luca MAFFETTONE, *University of Naples "Federico II"* **Micro-particle manipulation in microfluidic with viscoelastic liquidis**
2	Marco BELLOTTI, *University of Pavia* **Novel fluid-dynamics variables for the optimization of nanoparticles manufacturing**
3	Eleonora D'INTINO, *Sapienza University of Rome* **Application of microfluidic technology to obtain pH-sensitive niosomes for ATRA delivery in high-grade serous ovarian cancer**
4	Salvatore D'ALESSANDRO, *University of Rome "La Sapienza"* **Design of a Microfluidic Open Source 3D Bioprinting for functional tissue engineering**
5	Hiba NATSHEH, *An-Najah National University* **Modified Release 3D-Printed Capsules Containing a Ketoprofen Self-Nanoemulsifying System for Personalized Medical Application**

Round table on the Topic

11:30 - 13:00	SE.I.4

Composite materials for electrochemistry

in cooperation with iENTRANCE@ENL
Chair: Mauro PASQUALI, *Sapienza University of Rome*

1	***Introductive Keynote*** Raffaello MAZZARO, *University of Bologna* **Novel approaches for the development of electro- and photoelectrocatalysts**
2	Giulia GIANOLA, *IIT* **Iron-Nitrogen-Carbon Catalysts by Different Synthesis Approaches for Efficient Oxygen Reduction Reaction in Fuel Cells Applications**
3	Jaimon CHONEDAN JOHNSON, *CNR-IMM* **Fabrication of Electrodes using High Surface Area 3D Graphene Substrates**
4	Alessia FORTUNATI, *IIT* **CO_2 electroreduction to CO in a membrane electrode assembly cell configuration for process scaling up**
5	Nicolò ROSSETTI, *University of Padova* **Dual-Coordinated Nickel Single Atoms Stabilized in a Triazine-thiadiazole Based Organic Polymer for the Oxygen Evolution Reaction**

Round table on the Topic

14:00 - 15:30	SE.I.5

Nanotherapeutic in unmet clinical need

Co-organized with University "G. d'Annunzio" of Chieti- Pescara
in cooperation with SIRTEPS e SITELF
Chair: Christian CELIA, *University "G. d'Annunzio" of Chieti- Pescara*

1	***Introductive Keynote*** Alexandre CECCALDI, *European Technology Platform for Nanomedicine (ETPN)* **Charting the Future of Nanomedicine: Opportunities and Skills for Young Innovators in Europe**
2	Alessandro NOTO, *IRCC S Regina Elena National Cancer Institute* **Self-assembling nanoparticles for miRNA delivery towards precision medicine against melanoma**
3	Salvatore PANZA, *Università Magna Graecia di Catanzaro* **Nanomedicines on Multidrug Treatment Strategies for Vitiligo**
4	Giuliana PREVETE, *CNR-ISB* **How liposome encapsulation affects antimicrobial and antioxidant properties of Hydroxytyrosol and Hydroxytyrosol oleate**
5	Gaia ZUCCA, *University of Pavia* **Drug delivery system based on pH-responsive nanofibers for the prevention of sexually transmitted infections**

Round table on the Topic

14:00 - 15:30	SE.I.6

2D and Quantum Materials

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

1	***Introductive Keynote*** Paolo POSTORINO, *Sapienza University of Rome* **Two-Dimensional Materials: From Theoretical Predictions to Experimental Realizations and Technological Applications**
2	Alice Margherita FINARDI, *University of Milan* **Time-resolved Raman spectroscopy on bulk and monolayer MoS_2**
3	Mattia BECCACECI, *Sapienza University of Rome* **Wavevector-resolved photonic entanglement from radiative cascades**
4	Michele PERLANGELI, *University of Trieste* **Time Resolved photoluminescence spectra of WS_2 and MoS_2 at high excitation fluence**
5	Giuseppe RONCO, *Sapienza University of Rome* **Exciton redistribution in 2D WSe_2 via external strain field for positioned quantum emitters with stable magnetic response**

Round table on the Topic

16:00 - 17:30	SE.I.7

Nanotechnologies for precision medicine

co-organized with University Magna Graecia of Catanzaro
in cooperation with SIRTEPS e SITELF
Chair: Maria Chiara CRISTIANO, *University Magna Graecia of Catanzaro*

1	***Introductive Keynote*** Marco MONOPOLI, *Royal College of Surgeons, Ireland | European Technology Platform on Nanomedicine (ETPN Association)* **Understanding the nanomaterial interaction with biomolecules, a journey from safety to applications in modern medicine**
2	Ruchi VYAS, *University of Rajasthan* **Magnetic Nanobeads based Lateral flow assay for early detection of traumatic brain injury**
3	Lorenzo SARDELLI, *University of Turin* **Mucosomes: bioinspired nanoparticles of glycosylated mucins to re-think mucosal drug delivery**
4	Alessandro PARADISI, *University of Modena and Reggio-Emilia* **Carbon Nanotubes/Protein Hybrids for Healthcare Biosensing Applications**
5	Miriam CAVIGLIA, *ISS* **Copper complexes with biological active molecule amantadine as potential anticancer and antiviral agents**

Round table on the Topic

17:30 - 20:00 Cocktail & Social

12 SEPTEMBER

09:00 - 10:30	SE.I.8

Regenerative medicine: current applications, challenges and future directions

co-organized with University Magna Graecia of Catanzaro
in cooperation with SIRTEPS e SITELF
Chair: Francesca MEGIORNI, *University "Sapienza" of Rome*

1	***Introductive Keynote*** Calogero FIORICA, *University of Palermo* **Development and characterization of polymeric biomaterials for regenerative medicine application**
2	Martine TARSITANO, *University Magna Graecia di Catanzaro & University of Technology Sydney* **Chlorella-enriched hydrogels exhibit a protective role against myocardial damage by reducing reactive oxygen species in an in vitro model of ischemia/reperfusion using cardiac spheroids**
3	Giulia GERINI, *University of Rome "La Sapienza"* **3D culturing as a promising strategy for the production of enhanced adipose stem cell-derived secretome for clinical applications**
4	Fabrizio CECE, *University of Rome "La Sapienza"* **Nanostring-based analysis of transcriptional metabolic signatures in Adipose derived Stem Cells treated with epigenetic drugs during osteogenic differentiation**
5	Benedetta DI CHIARA STANCA, *University of Salento* **Revolutionizing Dental Implants: The Game-Changing Impact of Concentrated Growth Factors**

Round table on the Topic

09:00 - 10:30	SE.I.9

Structural and Surface properties of nanomaterials

Co-organized with Sapienza University of Rome
Chair: Iolanda FRANCOLINI, *Sapienza University of Rome*

1	***Introductive Keynote*** Giuseppe VITIELLO, *University of Naples "Federico II"* **Amphiphiles functionalized colloidal metal-oxide nanoparticles: from design to technological applications**
2	Lorenzo Augusto ROCCHI, *Sapienza University of Rome* **Thermal Characterization of polysulfone nanoparticles: a study of glass transition and devitrification kinetics**
3	Sara CERRA, *Sapienza Universisty of Rome* **Hydrophobic gold nanoparticles coupled with fluorescent dyes: a smart tool for optoelectronic applications**
4	Valerio LA GAMBINA, *Sapienza University of Rome* **CTAB and a thermoresponsive bile acid derivative form catanionic tubules: sorting out an unexpected composition ratio**
5	Emanuele BOSCO, *Sapienza University of Rome* **α-Sn nanostructures with ultra-narrow direct bandgap on Silicon for THz applications**

Round table on the Topic

11:30 - 13:00	SE.I.10

Hybrid and Composite nanomaterials for energy

in cooperation with iENTRANCE
Chairs: Marino LAVORGNA, *CNR-IPCB*

1	***Introductive Keynote*** Pietro CATALDI, *IIT* **Multifunctional and Sustainable hybrid and nanocomposite materials for electronics, sensors and energy**
2	Pierluigi LASALA, *University of Bari "Aldo Moro"* **Nanoparticles modified biohybrid photoanode for enhancing light-to-electricity conversion**
3	Roberto FIORENZA, *University of Catania* **Solar-promoted photo-thermal CO_2 methanation on SiC/hydrotalcites materials**
4	Pencheng YANG, *CNR-IPCB* **Innovation nanocomposites-based on large-size defect-free monolayers of MXene with enhanced hydrogen barrier properties**
5	Matteo MASTELLONE, *CNR-ISM* **Tailoring optical, photothermal and electronic properties of semiconductors and dielectrics by Laser-Induced Surface Nanotexturing**

Round table on the Topic

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

Preclinical, Clinical and Industrial Transfer

co-organized with University Magna Graecia of Catanzaro
in cooperation with SIRTEPS e SITELF
Chair: Amedeo AMEDEI, *University of Florence*

1	***Introductive Keynote*** Alice GUALERZI, *IRCCS "S. Maria Nascente" Fondazione Don Carlo Gnocchi* **Interdisciplinary Aspects in Nanomedicine**
2	Aurora MANGOLINI, *IRCCS "S. Maria Nascente" Fondazione Don Carlo Gnocchi* **Extracellular Vesicles as biomarkers of the regenerative mechanisms induced by rehabilitation after heart transplantation**
3	Gaia FATTORINI, *Sapienza University of Rome* **Cell imaging approaches to identify prognostic and predictive biomarkers in Hereditary spastic paraplegias**
4	Francesco SPEDICATO, *University of Salento* **Biocompatible HA-Si Scaffolds with CGF: A Promising Approach for Osteogenic Differentiation**
5	Stefania VILLANI, *University of Salento* **Chracterization of bacterial cellulose-neem-hypericum oil wound care paste in vitro and in Galleria mellonella in vivo model**

Round table on the Topic

14:00 - 15:30	SE.I.12

Photochemistry and Photophysics in energy conversion

in cooperation with iENTRANCE@ENL
Chair: Raffaello MAZZARO, *University of Bologna*

1	***Introductive Keynote*** Giacomo BERGAMINI, *University of Bologna* **Photoactive materials and techniques for energy conversion**
2	Soraia FLAMMINI, *CNR-ISOF* **Multifunctional photoelectroactive oligothiophenes based on benzothiadiazole, thienopyrazine, and thienothiadiazole for optoelectronics and biology**
3	Mengjiao WANG, *Polytechnic of Turin* **Surface chemistry modified by facile liquid phase exfoliation on 2D layered BiOI as photoanode for enhanced oxygen evolution**
4	Niloofar HAGHSHENAS, *University of Milan* **Cutting-Edge Perovskite Photocatalysts synthesized by Ultrasound: A Game-Changer in Air Pollution Control**
5	Tommaso GIOVANNINI, *University of Rome Tor Vergata* **Energy Conversion in Plasmonic Materials: an Atomistic Perspective**

Round table on the Topic

14:00 - 15:30	SE.I.13

Nanomaterials characterization for biomedicine

co-organized with University Magna Graecia of Catanzaro
in cooperation with SIRTEPS e SITELF
Chair: Antonia MANCUSO, *University Magna Graecia of Catanzaro*

1	***Introductive Keynote*** Luigi CALZOLAI, *European Commission, Joint Research Center (JRC), ISPRA, Italy* **Characterization and preclinical testing of nanomedicines**
2	Anastasia GAGANINA, *Sapienza University of Rome* **Detection of anti-SARS CoV-2 antibodies in human serum by means of Bloch surface waves on 1D photonic crystal biochips**
3	Eleonora D'ALESSANDRO, *Campus Bio-Medico University of Rome* **Silica-based nanomaterials: design and optimization of in-batch and in-flow processes**
4	Marco RANALDI, *Roma Tre University* **Preliminary NMR characterization of gold nanorods developed for drug delivery systems in Glioblastoma cells**
5	Elena OLIVIERI, *Roma Tre University* **Fluorescently labelled gold nanoparticles as promising carrier for multiple sclerosis drugs**

Round table on the Topic

16:00 - 17:30	SE.I.14

Nanomaterials for catalytic processes

in cooperation with iENTRANCE
Chair: Gianluca LANDI, *CNR-STEMS*

1	***Introductive Keynote*** Giuseppina LUCIANI, *University of Naples "Federico II"* **Nanocatalysts for sustainable energy and environment**
2	Sadaf YASMEEN, *University of Rome Tor Vergata* **Synthesis and Characterization of highly efficient ZnO-Sm_2O_3 Photocatalyst for the photocatalytic degradation of bentazon herbicide**
3	Virginia VENEZIA, *University of Naples Federico II* **Innovative Lignin-TiO_2 Nanocomposites: Advancing Redox Materials and sustainable wastewater decontamination**
4	Stefano SCOGNAMIGLIO, *Polytechnic of Turin* **Fe-Cu(-Ce)/HZSM-5 catalysts for simultaneous methanol and DME synthesis**
5	Alberto MARTIS, *IIT* **From spirulina to nanoinnovation, fluorescent phycobilins to make nano catalyst**

Round table on the Topic

16:00 - 17:30	SE.I.15

Exploring the Future: Advances in 3D Bioprinting for Tissue Engineering and Regenerative Medicine

co-organized with University Magna Graecia of Catanzaro
in cooperation with SIRTEPS e SITELF
Chair: Carmine GENTILE, *University of Technology, Sydney*

1	***Introductive Keynote*** Francesco PASQUALINI, *University of Pavia* **New Engineering Tools to Study Cell-ECM Interactions in-vitro**
2	Klajdi GEGA, *Sapienza University of Rome, Italy* **3d Bioprintable dystrogel faithfully recapitulates the characteristics of the dystrophic cardiac extracellular environment**
3	Laura VETTORI, *University of Technology Sydney, Ultimo, NSW 2007, Australia* **Silk fibroin modulates the mechanical properties of alginate-gelatin hydrogels and controls cardiac cell contractile function in cardiac bioinks**
4	Michele MARINO, *University of Rome "Tor Vergata", Italy* **Advanced Simulations of Bio-Ink Extrusion Dynamics**
5	Lucia IAFRATE, *Italian Institute of Technology (IIT), Italy* **Patterning decellularised human bone and vascular allograft bioinks via 3D bioprinting for skeletal tissue engineering**

Round table on the Topic

17:30 - 20:00 Cocktail & Social

13 SEPTEMBER

09:00 - 10:30	SE.I.16
Self-assembly and nanostructured materials	
co-organized with Sapienza University of Rome Chair: Iolanda FRANCOLINI, *Sapienza University of Rome*	
1	***Introductive Keynote*** Stefano CINTI, *University of Naples "Federico II"* **Smart/nano materials for enhancing diagnostics**
2	Sara ALFANO, *Sapienza University of Rome* **Polyhydroxyalkanoates nanocarriers: a platform for hydrophobic bioactive delivery**
3	Asma MUNIR, *University of Bologna* **Design and Applications of Hybrid Silver Nanoparticles Exploiting Natural Sources**
4	Benedetta BRUGNOLI, *Sapienza University of Rome* **Rational Design of Self-assembled Poly-L-Lactide Nanosystems for Drug Delivery**
5	Valeria D'ANNIBALE, *Sapienza University of Rome* **A novel porphyrin-peptide derivative has been synthesized by a solid-phase peptide synthesis (SPPS) protocol, with the aim of defining a novel antimicrobial amphiphile**
Round table on the Topic	

09:00 - 10:30	SE.I.17
Biomaterials	
co-organized with University Magna Graecia of Catanzaro *in cooperation with SIRTEPS e SITELF* Chair: Massimo LA DEDA, *University of Calabria*	
1	***Introductive Keynote*** Francesco PUOCI, *University of Calabria* **New perspectives of drug targeting by molecular imprinting**
2	Marco DATTILO, *University of Calabria, Italy* **Alginate and Pectin-Based Molecularly imprinted polymers for targeted therapeutic intervention in Celiac Disease in Celiac Disease**
3	Salma BOUSSELMI, *Sapienza University of Rome, Italy* **Enhancing neovascularization post-myocardial infarction through injectable hydrogel functionalized with endothelial-derived EVs**
4	Matteo GALBIATI, *CNR-ITB* **Boosted skin regeneration through gelma-based hydrogel functionalized with Fibroblast-derived extracellular vesicles**
5	Marta POLLINI, *University of Pavia* **Electroactive nanofibrous scaffolds enhancing skin wound regeneration**
Round table on the Topic	

11:30 - 13:00	SE.I.18

Optical and Acoustic trapping

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

1	***Introductive Keynote*** Maria Grazia DONATO, *CNR- IPFC* **Optical and Acoustic trapping for characterization of materials**
2	Stefano FERRETTI, *University of Naples* **Contamination-free manipulation of extraterrestrial dust particles using acoustic tweezers**
3	Sonia MARRARA, *University of Messina* **Optical calibration of acoustic tweezers**
4	Dante Maria ACETI, *University of Calabria* **Light-induced particle repulsion from epsilon near-zero thin film**
5	Enrico TARTARI, *École Polytechnique Fédérale de Lausanne* **Photonic crystal cavities as real-time sensors for single bacteria-antimicrobial interaction**

Round table on the Topic

11:30 - 13:00	SE.I.19

Gene and Biotech Delivery

co-organized with University Magna Graecia of Catanzaro
in cooperation with SIRTEPS e SITELF
Chair: Massimo FRESTA, *University Magna Graecia of Catanzaro*

1	***Introductive Keynote*** Fabiana QUAGLIA, *University of Naples "Federico II"* **From innovation to application: non-viral approches for RNA delivery**
2	Francesca BUFALIERI, *Sapienza University of Rome, Italy* **MEX3A/RIG-I axis as a new therapeutic option for the treatment of glioblastoma**
3	Martina VINCENZI, *University of Rome "La Sapienza"* **Genetic engineering of probiotics: a new pharmacological tool for inflammatory and obesity-linked disorders**
4	Teresa FERRILLO, *University of Naples "Federico II"* **On the role of PEG-Lipids in the development of Lipid nanoparticles for siRNA delivery**
5	Virgilio PICCOLO, *University of Naples "Federico II"* **Innovative and smart functionalisable polymeric Nanoparticles for the delivery of Nucleic Acids and Chemotherapeutic in combination for tumor solid treatment**

Round table on the Topic

14:00 - 15:30	SE.I.20

CO_2 valorization and Hydrogen Technologies for a Sustainable Future

co-organized with Polytechnic University of Turin
Chair: Angelica CHIODONI, *IIT*

1	***Introductive Keynote*** Juqin ZENG, *Polytechnic University of Turin* **CO_2 and H_2 technologies for clean energy transition**
2	Giacomo SPISNI, *Polytechnic University of Turin* **Ultrasonic spray coated nanostructured layer to enhance anodic performance in Bio-Electrochemical Systems**
3	Huang LAN, *IIT, Turin* **Green synthesis of Cu-based catalyst for selective CO_2 electroreduction**
4	Francesca FASULO, *University of Naples "Federico II"* **What can we learn from quantum mechanics on energy conversion?**
5	Paola MELI, *University of Palermo* **Electrochemical reduction of CO_2 to formic acid: a study of operating parameters in a microfluidic cell**

Round table on the Topic

14:00 - 15:30	SE.I.21

Targeted Therapies for neoplastic diseases

co-organized with University Magna Graecia of Catanzaro
in cooperation with SIRTEPS e SITELF
Chair: Antonella LEGGIO, *University of Calabria*

1	***Introductive Keynote*** Catia MORELLI, *University of Calabria* **Targeted Mesoporosus Silica nanoparticles as smart vehicles for highly selective drug delivery**
2	Antonella ROCCHI, *University of L'Aquila, L'Aquila, Italy* **Targeted Hybrid Lipid-Polymer Nanoparticles for Glioblastoma Multiforme Treatment**
3	Domenico LIGUORO, *IRCCS Regina Elena National Cancer Institute/ Sapienza University of Rome, Italy* **miR-579-3p as checkpoint for adaptation to target therapy in melanoma**
4	Palmira Alessia CAVALLARO, *University of Calabria, Italy* **Novel Piperazine-Based Small Molecules in Antiviral and Anticancer Research**
5	Nicole FRATINI, *Sapienza University of Rome, Italy* **Immune-modulable biological environment (MBE) bioreactor to recapitulate the complexity of the vascularized breast cancer microenvironment**

Round table on the Topic

16:00 - 17:30	SE.I.22
Cryo-Tem	
co-organized with Sapienza University of Rome Chair: Beatrice VALLONE, *Sapienza University of Rome*	
1	***Introductive Keynote*** Marina CASIRAGHI, *University of Milan* **Structure and dynamics determine G protein coupling specificity at a class A GPCR**
2	Alessandro PORRO, *University of Milan* **Structural determinants of pacemaker HCN channels blockage by Ivabradine and its technological advancements**
3	Giovanni BULFARO, *University of Rome La Sapienza* **Development and characterization of high-affinity monoclonal antibodies targeting $ErbB_3$**
4	Sharon SPIZZICHINO, *University of Rome La Sapienza* **Riboregulation as a new player in the control of cellular metabolism: clues from the cryo-EM structure of serine hydroxymethyltransferase-RNA complex**
5	Federica GABRIELE, *University of L'Aquila* **Cryo-EM meets parasitic diseases: validating a novel approach to target thioredoxin-like enzymes**
Round table on the Topic	
17:30 - 20:00 Cocktail & Social	

ROME TECHNOPOLE

The state of research communicated by the players

11-12 September

Organized by: **Foundation Rome Technopole**

Rome Technopole is the Lazio regional innovation ecosystem - made up of 7 universities, 4 Research bodies, the Lazio Region and the Municipality of Rome, and other public bodies, 20 industrial groups and companies - which actively contributes to increasing investments in research and development, in the driving sectors of:
1. energy transition,
2. digital transition,
3. health and bio-pharma.

Rome Technopole is one of the most ambitious, innovative and challenging projects in the NRP area, financed by the MUR with 110 million Euros, which engages the Partners in the implementation of innovative projects over 3 years.

The 8 Flagship Projects of the Rome Technopole are:
1. Decarbonization and digitization in research on new green energy sources
2. Energy transition and digital transition in urban regeneration and construction
3. Digital transition in the decarbonization process and waste recycling processes
4. Development, innovation and certification of medical and non-medical devices for health
5. Digital transition through radar technologies, quantum cryptography and quantum communications
6. Artificial intelligence, virtual reality and digital twins for advanced engineering and aerospace
7. Advanced and automated innovation laboratories for diagnostic and therapeutic biopharmaceutical solutions
8. Human-centred artificial intelligence for customer service and business development.

Also, Rome Technopole provides the city of Rome and the Lazio region with a "one-door" model for university education, for higher education, for research and technology transfer, for the promotion and development of innovation in sectors with a higher technological content and of strategic interest for our country. Sapienza University of Rome is the project leader, and the President of Rome Technopole Foundation is Antonella Polimeni, Rector of Sapienza University of Rome. The Rome Technopole Foundation idea comes from the availability of several academic and industrial excellences established in a narrow geographycal comprensory and all related to research and technologies development applied to energy and digital transition as well as into the field of Health and Biopharma. This is seen as a viable answer to the challenges coming from the market demand evolution, from the increased commercial and technological capacities of emerging countries as well as from the need of keeping or reaching the state of the art in the domains mentioned above. The objective is intended to be reached by simplifying the enterprise-academia relationship through a unique entity where all the capacities are embedded, shortening the reaction time upon the request of qualified personnel/competencies and adapting the high educational path upon specific requests coming from the industrial world. The success of this initiative depends from the way it is applied in practice, from the acceptance of each partner of collaborating wherever there is not direct competition among each other and from the recognition of intensification of the level of the defies every company has to face to survive a market more and more aggressive, such that putting in place a research partership merging with its neighbors can be an effective way not to disperse resources.

For more information visit our web site here: Organized by the Foundation Rome Technopole, the Workshop is structured around a comprehensive workplan featuring the eight flagship projects, which together the 6 spokes collectively represent the pillars upon which the Rome Technopole's mission is built, embodying the intersection of research, academia, industry, and regional governance. By exploring the strategic details of each flagship project, this workshop serves as a critical platform for knowledge dissemination, idea exchange, and fostering collaborative synergies.

The sessions will provide an in-depth analysis of the technological breakthroughs, research milestones, and industry collaborations that define each flagship project. Participants will gain insights into the innovative methodologies, cross-disciplinary approaches, and transformative impacts that these projects are set to achieve within their respective thematic domains. As the Rome Technopole ecosystem propels forward, the workshop stands as a testament to the collective dedication towards shaping a future marked by sustainable energy, digital transformation, and advancements in healthcare and biopharmaceuticals.

11 SEPTEMBER

14:00 - 15:30	SE.II.1
Session Flagship Project FP1: **Title to be defined**	
Lead industry: to be defined **Universities and EPR:** to be defined **Industries and other entities:** to be defined	
Chair: to be defined	
0	Introduction by the Chairs
1	to be defined, *to be defined* **to be defined**
2	to be defined, *to be defined* **to be defined**
3	to be defined, *to be defined* **to be defined**
4	to be defined, *to be defined* **to be defined**

16:00 - 17:30	SE.II.2
Session Flagship Project FP2: **Title to be defined**	
Lead industry: to be defined **Universities and EPR:** to be defined **Industries and other entities:** to be defined	
Chair: to be defined	
0	Introduction by the Chairs
1	to be defined, *to be defined* **to be defined**
2	to be defined, *to be defined* **to be defined**
3	to be defined, *to be defined* **to be defined**
17:30 - 20:00 Cocktail & Social	
17:45 - 19:15 **ROUND TABLE**	

12 SEPTEMBER

14:00 - 15:30	SE.II.3
Spoke 6 Rome Technopole: Joint Labs and Research Infrastructures 1/2	
Chairs: Giulia RICCIO & Giorgio Maria MANINI, *Sapienza Università of Rome*	
1	Giulia RICCIO and Giorgio Maria MANINI, *Sapienza University of Rome* **Rome Technopole Spoke 6: Open Research Infrastructures**
2	Martina VINCENZI, *Sapienza University of Rome* **An innovative therapeutic biopharma solution to achieve peripheral and central protection during colitis**
3	Lucia GIULIANO, *Sapienza University of Rome* **Electron Linac for FLASH Radiotherapy @La Sapienza**
4	Fabrizio MARRA, *Sapienza University of Rome* **Wearable Systems based on nanomaterials for Health and Safety**
5	Antonella COSTANZO, Sapienza University of Rome **Development and characterization of high-affinity monoclonal antibodies targeting ErbB3**
6	Francesca Michela NARCISI, *Sapienza University of Rome* **Development of new antibodies against glioblastoma**

16:00 - 17:30	SE.II.4
Spoke 6 Rome Technopole: Joint Labs and Research Infrastructures 2/2	
Chairs: Giulia RICCIO & Giorgio Maria MANINI, *Sapienza Università of Rome*	
1	Marco Raul MARINI, *Sapienza University of Rome* **XR and Cobotics in industry 4.0**
2	Walter LACARBONARA, *Sapienza University of Rome* **Title in definition**
3	Marco CIRELLI, *Tor Vergata University of Rome* **Methods and experiments for the development of collaborative actions with cobots and digital twins**
4	Salvatore MACIS, *Sapienza University of Rome* **FT-IR spectroscopy coupled with Machine Learning for highly sensitive detection and discrimination of gaseous Volatile Organic Compounds**

001 Azin ABEDI, *Isfahan University of Medical Sciences, Iran*
Enhancing Wound Healing Efficiency: A Deep Dive into an Innovative 3D Printed Bilayer Wound Dressing

002 Olga AKOPOVA, *Bogomoletz Institute of Physiology NAS of Ukraine*
Design of Low-nanometer Scale Size Ag, Ni, and Co Nanocomposites in situ in a Polymer-Inorganic Carrier as a Promising Nanobiotechnology for Anti-Cancer Treatment

003 Domenico AMICO, *RINA Consulting*
An innovative concept for scalable production of In-free TCO layers for Silicon Heterojunction solar cells

004 Davide APPOLLONI, *University of Rome Tor Vergata*
Towards the exploitation of cellular mechanosensitive nanosensors for bioprocess optimization

005 Parisa BEHNAMRAD, *Reyhan Naghsh Jahan Pharmaceutical company, Iran*
Preparation and evaluation of alginate/collagen-coated nanoparticles of kojic acid in the treatment of acne and hyperpigmentation of scar acne

006 Mariangela BELLUSCI, *ENEA*
Magnetic nanoparticles incorporated in CALF-20 MOF for MISA assisted separation of CO_2/N_2 in post combustion mixtures

007 Edoardo BIANCHINI and Matteo GIOIOSA, *Sapienza University of Rome*
Synthesis and characterization of FDA-approved liposome NPs using microfluidic technique for cancer treatment

008 Barbara BIGI, *Sapienza University of Rome*
Enhancing liposome formation at low lipid concentration: advancing potential with microdroplets deposition over thin layer evaporation

009 Carmela BORRIELLO, *ENEA*
Chemical and physical treatments to improve surface hydrophobicity for passive anti-icing applications

010 Barbara BORTOT, *Institute for Maternal and Child Health IRCCS "Burlo Garofolo", Trieste*
Tetraspanins and PD-L1 Expression in Small Extracellular Vesicles Derived from Follicular Fluid During Treatment with Assisted Reproductive Technology

011 Yasemin CAGLAR, *Eskisehir Technical University, Turkey*
ZnO-Dye-Sensitized Solar Cell: Fabrication and Electrical Characterization

012 Mujdat CAGLAR, *Eskisehir Technical University, Turkey*
The effect of a cationic surfactant composition on the photovoltaic performance of ZnO-DSSC

013 Gabriele CALABRESE SIVIERI, *CNR-IMM Bologna*
Enhancing zT in solution-processable organic thermoelectric materials through lithographically control wetting: a leap towards high-performance flexible thermoelectric generators

014 Giancarlo CAPPELLINI, *Università di Cagliari*
Micro-Raman and Optical Reflectance measurements on miniatures of valuable texts of the University Library of Cagliari: the role of different colours

015 Lorenzo CASOLI, *University of Rome Tor Vergata*
Fluorescent Molecularly Imprinted Polymer based on ZnO nanoparticles for the detection of triazole pesticides

016 Enrico CATALANO, *University of Oslo, Norway*
Space nanomedicine and nanoinformatics: the state of the art for nanomedicine and nanobiotechnology in space human exploration

017 Santiago CHAVES CORDOBA, *Cauca Univ., Colombia*
Computational design through Functional Theory of the density of Magneto-Semiconductor nanoparticles with Fe_3O_4 @ TiO_2 @SiO_2 structure and its application in cancer treatment

018 Luigi CIRIOLO, *Univ. of Catanzaro "Magna Græcia"*
Doxorubicin-loaded super stealth liposomes as advanced nanomedicine for the treatment of metastatic breast cancer

019 Giorgia CIUFOLINI, *University of Rome Tor Vergata*
A green detection method and its validation for the detection of chlorinated pesticides using HPLC-MS: focus on penconazole in chili peppers, ginger, and basil

020 Claudio CLEMENTE, *CNR - STEMS*
Advanced core-shell MOF-Based Materials for Sensing Applications

021 Francesco COTTONE & Gabriele PERNA, *Univ. of Perugia*
Low-cost 3D-printed piezoelectrets based on foamed PLA for energy harvesting devices

022 Vanessa DA FERMO, *University "G. d'Annunzio" of Chieti-Pescara*
The SPINNERET project: Electrospun Nanocomposites for Energy Storage

023 Anna DE GIROLAMO DEL MAURO, *ENEA Portici*
Screen printed thermoelectric devices based on PEDOT:PSS/CNT composites

024 Azzurra DI BONAVENTURA, *University of Udine*
Coffea arabica L. cell suspension cultures as source of extracellular vesicles

025 Roberto DI CAPUA, *CNR – STEMS*
Insights about the effect of metal-organic framework hybridization with graphene-like materials

026 Valeria D'ANNIBALE, *Sapienza University of Rome*
Synthesis and characterization of a novel porphyrin-peptide derivative for antimicrobial activity

027 Guillermo DÍAZ-SAINZ, *University of Cantabria, Spain*
Synthesis and screening of MOF-based nanomaterials for the CO_2 electroreduction to methanol

028 Antonio FABOZZI, *CNR – STEMS*
Reduction of iron ore by using biomass: an effective strategy for environmental green ironmaking applications

029 Emma FENUDE, *CNR-ICB*
Understanding Assembly Enables the Better Design of Peptide Conjugate Which May Form Useful and Functional Nanostructures

030 Celestino FONTANETO, *I.T.I. Omar di Novara*
DAB-NANOTRAP: Low-cost Nanotraps for Water Purification

031 Patrizia FRONTERA, *Reggio Calabria University*
Stabilization of phase change materials for thermal storage applications

032 Miguel Ángel GAITÁN HERNÁNDEZ, *Cauca University, Colombia*
Effect of temperature on the synthesis of magnetite nanoparticles for environmental remediation applications

033 Francesca GAMNA, *Polytechnic of Turin*
Advanced Characterization Techniques for Assessing Novel Tanning Processes in Leather Production

034 Erfan GHOLAMZADEH, *Islamic Azad University of Shabestar branch, Iran*
Tunable terahertz refractive index sensor based on flexible thin-film elliptical split-ring resonator for Gas sensing application

035 Andrea GNISCI, *Malvern Panalytical, UK*
A new optical module for fast and accurate X-ray texture analysis

036 Valerio GRAZIANI, *CoE DTC Lazio*
Optimization of solvent-free TiO_2 nanoparticle synthesis using Full Factorial Design

037 Karlis GRUNDSTEINS, *Institute of Atomic Physics and Spectroscopy, University of Latvia*
Design and development of magnetic core-shell metal oxide nanofiber by co-axial electrospinning

038 Farid HAJAREH HAGHIGHI, *Sapienza Univ. of Rome*
Supercritical extraction of carotenoids from industrial wastes for the production of bioactive nanocomposites

039 Jianhua HAO, *The Hong Kong Polytechnic University*
Enhancing Energy Storage and Conversion with Heterostructure MXene

040 Maryam HASSANPOUR AMNIEH, *Shahid Sadoughi University of Medical Sciences, Iran*
Preparation and evaluation of kojic acid nanofibers for preparation of skin patch in Acne treatment

041 Lucie HOCHVALDOVA, *Palacky Univ. Olomouc, Czechia*
Antibacterial and Photothermal Properties of Silver Nanoparticles: Paving the Way for Targeted Therapeutic Strategies

042 Tulay HURMA, *Eskisehir Technical University, Turkey*
Characterization of Bi doped ZnO nanopowders by hydrothermal method

043 Ould-Brahim INSAF, *University of Science and Technology Houari Boumediene, Algeria*
Green nanomaterials for corrosion inhibition applications

044 Weng Fu IO, *The Hong Kong Polytechnic University*
Direct observation of 2D ferroelectricity in layered $CuCrP_2S_6$ at room temperature

045 Pierpaolo IOVANE, *ENEA*
The optimization of the production of spherical powders using DC thermal plasma

046 Muhammad Abdullah IQBAL, *Southern Illinois University, Carbondale, USA*
Structural and Surface Analysis of Selectively etched carbide MXene (Ti_3C_2) Nano sheet

047 Hana'a IQBAL, *University of Karachi, Pakistan*
MDG-1 peptide-based hydrogel encapsulating mesenchymal stem cells (MSCs) demonstrate enhanced bone regeneration

048 Razie IZADI, *Sapienza University of Rome*
Modelling Additive Manufactured Green Nanocomposites by Bridging Atomistic Description and Non-local Continuum Mechanics

049 Fotios KATSAROS, *Institute of Nanoscience and Nanotechnology, NCSR "Demokritos", Greece*
Advanced materials characterization tools: The development of CHADA documentation for Liquid Nitrogen Adsorption results on hierarchical porous carbons

050 Madiha KHAN, *University of Messina*
CuO-loaded NiO based gas sensor with dual selectivity to NO_2 and H_2 at Different operating temperature

051 Mahima KHANDELWAL, *Palacky University Olomouc of CATRIN, Czechia*
High performance asymmetric supercapacitors enabled by tailored active sites in 2D transition metal dichalcogenides

052 Michele LEONE, *Sapienza University of Rome*
Supported Ni and NiCo nanoparticles as catalysts for CO_2 valorisation by CH_4 tri-reforming

053 Francesca LIMOSANI, *ENEA*
Separation of Terbium from Gadolinium target using cation exchange chromatography

054 Pedro Pablo MACHADO PICO, *CNR*
Possible solution of low-cost and safe Zinc ion batteries using Ethyl cellulose as a binder

055 Tommaso MANCINI, *Sapienza University of Rome*
The non linear thermo elastic response in experiment of extreme ultraviolet transient grating

056 Eleonora MARCONI, *CoE - DTC Lazio, Rome*
Molybdenum doped mesoporous SBA-15 for selective RWGS reaction

057 Alberto MARTIS, *Istituto Italiano Tecnologia*
From spirulina to nanoinnovation, fluorescent phycobilins to make nano catalyst

058 Arslan MASOOD, *Sapienza University of Rome*
Investigation of the electronic properties of Ru bis-Phthalocyanine Molecules on MgO/Ag(100)

059 Sofia MIGANI, *Istituto Superiore di Sanità*
Synthesis, characterization and biological evaluation of new promising copper complexes on different glioblastoma cell lines

060 Riccardo MISCIOSCIA, *ENEA*
Electro-thermal characterization of 3D printed CNT-based samples for active de-icing applications

061 Giorgio MOGLI, *Polytechnic of Turin*
3D printable, self-healing and ionic conductive hydrogel for self powered tactile sensors

062 Maria MONTANINO, *ENEA*
Advances in gravure printed Li/Na batteries

063 Amelia MONTONE, ENEA
Pyroelectric devices of ZnO-based synthesized wurtzite nanopowders

064 Asma MUNIR, *University of Bologna*
Design and Applications of Hybrid Silver Nanoparticles Exploiting Natural Sources

065 Hiba NATSHEH, *An-Najah National University, Nablus, Palestine*
Modified Release 3D-Printed Capsules Containing a Ketoprofen Self-Nanoemulsifying System for Personalized Medical Application

066 Elena OLIVIERI, *Università degli Studi Roma Tre*
Fluorescently labelled gold nanoparticles as promising carrier for multiple sclerosis drugs

067 Andrea ORSINI, *CNR-ISM*
Ultrashort Laser for Defect Engineering of Wide Bandgap Semiconducting Substrates

068 Miranda PARISI, *Università degli Studi Roma Tre*
Chirality: from molecules, through gold nanoparticles to optical chiral sensors

069 Marzia PENTIMALLI, *ENEA SSPT-TIMAS-MADD*
Preparation of MOF/polymer adsorbent composites by casting and electrospinning

070 Asma Sadat PIRAYESH, *Alborz University of Medical Sciences, Sari, Iran*
Preparation of topical gel containing polymeric niosomes of naringenin and colchicine and evaluation of its antibacterial and anti-inflammatory effects in rat

071 Igor PÍŠ, *CNR-IOM*
Few-layer and single-layer MoS_2 studied by synchrotron radiation photoemission and X-ray absorption spectroscopy

072 Greta POMANTI, *Sapienza University of Rome*
REPorter system for RNA-based therapy detecting apoptosis and cellular stress in ORGanoid models - REP-ORG systems

073 Sabrina PORTOFINO, *ENEA*
Metal Material Extrusion 3D-printed stainless-steel electrodes for water electrolysis

074 Adel Sarolta RACZ, *HUN-REN Centre for Energy Research, Budapest, Hungary*
Carbide-rich protective nano-coatings produced by ion irradiation

075 Luigi RIBOTTA, *INRiM*
Silicon nanowires: fabrication and quantitative dimensional characterisation by AFM

076 Antonio RINALDI, *ENEA*
Exploring Solid-State Electrolyte Separators with Bio-Electrospun Polymer Membranes and Ionic Liquids for Future Eco-Sustainable Solutions

077 Andrea ROSATI, *RINA Consulting*
Development and Upscaling of Antisoiling Hybrid Sol-Gel Coatings

078 Mehrnaz SALAHI, *Isfahan University of Medical Sciences, Iran*
Development of Targeted Nanoliposomes Conjugated to A Cell-Penetrating Peptide for Delivery of Mitomycin C in Breast Cancer Cells

079 Raffaella SALERNO, *Università di Roma Tor Vergata*
Silicon/nanocrystalline-diamond cathodes for photon-enhanced thermionic emission

080 Dora SCARPIN, *University of Udine*
Sustainable agriculture by chitosan nanoparticles: characterisation and functionalization with double-stranded RNA molecules able to limit Botrytis cinerea mycelium growth

081 Riccardo SERGI, *Sapienza University of Rome*
Hybrid polymer nanocomposites for dye absorption in wastewater treatment

082 Zahra SHAHRAVI, *Yara Institute, Tehran, Iran*
Accelerating Wound Healing with Novel poly lactic acid PLA-Collagen Scaffold integrating Damaske Rose nanoparticles

083 Giuliano SICO, *ENEA*
Enhancement of pyroelectricity in gravure printed PVDF-TrFE films through corona poling: preliminary results

084 Zili SIDERATOU, *Institute of Nanoscience and Nanotechnology NCSR "Demokritos", Greece*
Air Quality and Health Impact of Primary Semi-Volatile and Secondary Particles and their Abatement: The AEROSOLS case study

085 Antonio SILLETTA, *Univ. "Magna Græcia" of Catanzaro*
Olive Leaves and Citrus Peels: Harnessing Waste for Eco-Friendly Cosmetic Applications

086 Brigida SILVESTRI & Rossella GRAPPA, *Univ. of Studies of Naples Federico II*
Phenolic driven decoration of silica with Ag nanoparticles: Towards sustainable water remediation

087 Nicol SPALLACCI, *CNR*
Bioassembly of DTTO-based oligothiophenes within living cells

088 Shashank SUNDRIYAL, *Palacký Univ. Olomouc, Czechia*
Unveiling the potential of two-dimensional conductive metal-organic frameworks for high-performance-safer aqueous zinc-ion batteries

089 Loredana TAMMARO, *ENEA*
Recycled carbon fiber PLA filament for additive manufacturing: morphological characterization and mechanical behaviour

090 Mindaugas TAMOSIUNAS, *University of Latvia*
Novel method for modification of vein surface by Fetuin A and its characterization by multi-imaging optical spectroscopy

091 Ritik TANWAR, *Polytechnic of Milan*
Surface and defect analysis in advanced materials: leveraging EBIC and SEES in SEM

092 Enrico TARTARI, *EPFL, Switzerland*
Photonic crystal cavities as real-time sensors for single bacteria-antimicrobial interaction

093 Umesh Kumar TIWARI, *CSIR- Central Scientific Instruments Organisation, Chandigarh, India*
Revolutionizing Energy Storage: Core–Shell MOF and Waste Tissue Paper-Based Asymmetric Supercapacitors with Unprecedented Energy Density

094 Enza TORINO, *University of Naples Federico II*
Microfluidics for the high-throughput isolation and loading of small Extracellular Vesicles in therapy and diagnosis

095 Levent TRABZON, *Istanbul Teknik University, Turkey*
Use of QDs based Fertilizers for Sustainable and Versatile Agriculture

096 Daniele VERSACI, *Polytechnic of Turin*
Innovative hybrid high voltage electrodes based on LMNO/LFP materials for lithium-ion batteries

097 Stefania VILLANI, *University of Salento*
Chracterization of bacterial cellulose-neem-hypericum oil wound care paste in vitro and in Galleria mellonella in vivo model

098 Lorenzo VINCENTI, *University of Salento*
Pulse-Atomic Force Lithography technique for the nanopatterning of chitosan films

099 Roman VITER, *University of Latvia*
Non destructive analysis of bitumen-lignin composites by using multispectral optical methods

100 Viktor ZABOLOTNII, *University of Latvia*
Fabrication and characterization of hexagonal phase of WO_3 doped with different metal ions using hydrothermal synthesis method

101 Adriano ZERBINI, *ENEA*
Photoluminescent colour centres in lithium fluoride film detectors for gamma rays

Late Posters

L01 Giuseppe ANGELLOTTI, *CNR*
Towards sustainable pest management of broad scope: sol-gel microencapsulation of Origanum vulgare essential oil

L02 Giovanni AVOLA, *CNR*
Exploring the Impact of Iron Nanoparticles on Seed Germination and Seedling Growth in Horticultural Crops

L03 Michele CURATOLO, *Università della Calabria*
Multilevel computational modelling of graphene

L04 Silvano DEL GOBBO, *ENEA*
Investigation of Cross-Metathesis in Fatty Acid Esters using nanosilica supported- and molecular Mo and W halides and oxyhalides precatalysts

L05 Lorenzo FRESCHI, *ENEA*
$BaCe_{1-x-y}Zr_xM_yO_3$ (M = Y, Gd) Proton Conductors for Solid Oxide Cells

L06 Serena GRECO, *Istituto Superiore di Sanità*
FAIRification of genotoxicity data to improve their reusability: from Nanomaterials to Micro- and Nanoplastics

L07 Claudio LAROSA, *ENEA*
Preparation of a tubular, metal supported Sm-doped Ceria oxygen permeable membrane prepared by RF Sputtering

L08 Daniele MIRABILE GATTIA, *ENEA*
Improved thermal conductivity in polymeric composites for Additive Manufacturing

L09 Giulia RANDO, *CNR-ISMN*
Design and development of nanostructured bio-based coatings for surface properties implementation in sustainable applications

L10 Elisabetta SCALONE, *CNR-ISMN*
Development of innovative functional high-performing clay-based sensing fabrics for environmental parameters detection

L11 Silvia SFAMENI, *CNR-ISMN*
Advanced functional nanostructured materials for portable sensors in the on-site detection of heavy metals

L12 Alessio VAROTTO, *ENEA*
Dry Reforming of Methane on Pt/CeO_2 catalyst starting from a recycled solution containing precious metals

NANOMEDICINE: FROM RESEARCH TO CLINIC APPLICATION

12 September

Co-organized with:

UNIMORE
UNIVERSITÀ DEGLI STUDI DI MODENA E REGGIO EMILIA

Fondazione Don Carlo Gnocchi Onlus

WORKSHOP COMMITTEE

Giovanni TOSI, *Full Professor, University of Modena & Reggio Emilia, Secretary of European Technology Platform for Nanomedicine*
Marzia BEDONI, *Head of Nanomedicine and Biophotonics Unit in Don Gnocchi Foundation*

The session will deal with precision approaches for diagnosis and therapy, as well as gene therapy and drug-based RNA/DNA technologies with applications in cancer, neurological diseases, cardiovascular, rare and genetic diseases.

12 SEPTEMBER

09:00 - 10:30	WS.I.1
Nanomedicine: Successful Stories	
Chairs: Giovanni TOSI, *University of Modena and Reggio Emilia* & Marzia BEDONI, *Don Gnocchi Foundation*	
1	Alexandre CECCALDI, *ETPN* **Current and Emerging Nanomedicine Innovations: Success Stories from the European Frontlines**
2	Lorena DIEGUEZ, *International Iberian Nanotechnology Laboratory (INL)* **Nano-medical devices for liquid biopsy: our tech transfer journey**
3	Francesca RE, *University of Milano Bicocca* **Patient-derived Glioblastoma Stem Cell Secretome Modulates Blood-Brain Barrier Permeability via RAGE-Dependent Signaling Pathway**

12 SEPTEMBER

11:30 - 13:00	WS.I.2
Nanomedicine: Progresses in Nanomedicine	
Chair: to be defined	
1	Fabiana QUAGLIA, *University of Naples* **Italian National Center for Gene Therapy**
2	Valentina CAUDA, *Polytechnic University of Turin* **Rational Design of nanoparticles mimicking extracellular vesicles**
3	Francesca RODÀ, *University of Modena and Reggio Emilia & Don Gnocchi Foundation* **mRNA-LNP Ex Vivo Interactions with Human Whole Blood**

14:00 - 15:30	WS.I.3
Nanomedicine: Innovation	
Chairs: Giovanni TOSI, *University of Modena and Reggio Emilia* & Marzia BEDONI, *Fondazione Don Gnocchi*	
1	Sabrina CUOGHI, *University of Modena and Reggio Emilia* **Microfluidic and enzyme replacement therapy: PLGA Nanoparticles towards the development of new versatile therapeutic solutions**
2	Carlotta MARIANECCI *Sapienza University of Rome* **Surfactant based nanobubbles: a combined strategy to enhance brain delivery**
3	Luigi CALZOLAI, *ISPRA, JRC European Community* **Advanced Characterization of Lipid-RNA therapeutics**

PATHWAYS TO SUSTAINABILITY: STRATEGIES FOR EFFECTIVE TRANSITIONS

11-12 September

Co-organized with:

Politecnico di Torino 1859 · Università degli Studi di Milano · Sapienza Università di Roma

WORKSHOP COMMITTEE

Marzia QUAGLIO, Francesca RISPLENDI & Marco FONTANA, *Polytechnic University of Turin*
Mauro GATTI, *Sapienza University of Rome*
Claudia Letizia Maddalena BIANCHI, *University of Milan*

In recent years, the negative impacts of anthropogenic GHG (greenhouse gas) emissions on the global climate and the rising energy demand have underscored the urgent need to transition significantly from fossil fuel dependence to renewable energy sources. This transition is essential for achieving sustainability and mitigating climate change, in line with UE protocols imposed for climate neutrality under the Green Deal. Advanced technologies and innovative approaches are critical to this energy transition, and this workshop brings together contributions from academia and industry to synergize efforts in driving technological growth towards a sustainable future. While the energy transition is predominantly driven by technological advancements, its broader scope significantly impacts architecture, urban planning and redevelopment, environmental and social sustainability. The workshop "Pathways to Sustainability: Strategies for Effective Transitions" aims to foster interdisciplinary collaboration, share cutting-edge research, and promote innovation in sustainable energy technologies, enhancing our collective understanding and drive towards a sustainable energy future. The workshop will explore novel strategies for energy harvesting such as advances in photovoltaics, harnessing ambient vibrations and thermal gradients. The integration of nanotechnology and flexible electronics opens new frontiers in sustainable power generation, offering promising solutions for various applications, from IoT devices to remote sensors. Hydrogen's role as an energy carrier for energy storage and utilization will also be discussed, along with challenges in production, storage, and distribution. The integration of hydrogen technologies, such as electrolyzers and fuel cells, into the energy market is set to transform energy generation and consumption, making significant steps towards decarbonization. Sustainable bio-based processes and technologies for converting agricultural and industrial residues into biofuels and high-value products will be emphasized, supporting the circular economy and offering renewable energy solutions. Short-term strategies such as the capture and abatement of pollutants like CO_2 are also essential. The rational design and synthesis of advanced nanostructured materials facilitate efficient separation processes, including CO_2 capture and resource recovery. Furthermore, the electrochemical reduction of CO_2 into value-added products, driven by renewable sources, offers a compelling avenue for CO_2 valorization. Developing high-performance electrocatalysts that balance selectivity, stability, efficiency, and cost-effectiveness is key to transforming CO_2 into valuable resources, thereby addressing short-to-medium-term emission challenges while promoting long-term sustainability. Decarbonization of urban environments through deep building renovation, urban space regeneration, and the establishment of renewable energy communities will be discussed as essential steps for achieving sustainable cities, in line with EU decarbonization targets. The integration of renewable energy technologies into urban planning and architecture will also be examined. Finally, comprehensive methodologies for evaluating environmental and social impacts are vital for developing sustainable energy systems. Life Cycle Assessment (LCA) and Social Life Cycle Assessment (S-LCA) frameworks provide robust approaches for assessing the sustainability of energy technologies.

11 SEPTEMBER

09:00 - 10:30	WS.II.1
The role of H_2 in the energy transition from production to use	
Co-organized with Polytechnic University of Turin Chair: Giulia MASSAGLIA, *Polytechnic University of Turin*	
1	Francesca PANACCIONE, *FBK, Trento* **Hydrogen production chain from water to energy2030**
2	Saverio LATORRATA, *Polythecnic University of Milan* **Novel porous layers and membranes for more efficient and durable PEM fuel cells**
3	Livia GIORDANO, *University of Milano-Bicocca* **Activity descriptors and reaction mechanisms of the oxygen evolution reaction on perovskite oxide electrocatalysts**
3	ETZI Marco, *IIT* **Proton Exchange Membrane Electrolyzers for green hydrogen production from materials design to cell tests**

11:30 - 13:00	WS.II.2
Environmental and Energy Solutions: Sustainable Bio-based Processes and Technologies	
Co-organized with Polytechnic University of Turin Chair: Nicolò VASILE, *Polytechnic University of Turin*	
1	Barbara MENIN, *CNR-IBBA* **Biotechnological processes toward environmental sustainability prospects and challenges**
2	Ruggero BELLINI, *IIT* **Microbial aspects of underground hydrogen storage and underground bio-methanation**
3	Antonino BIUNDO, *Greenoil s.r.l., Rewow s.r.l. & University of Bari Aldo Moro* **Rewind Project: Enzymatic Recycling of Waste Cooking Oils for the Plastic Industry**
4	Ilaria BASSANI, *IIT* **Integrated approach to sea water brine valorisation and biomethane production using waste streams techno-economic analysis and challenges**

11 SEPTEMBER

14:00 - 15:30	WS.II.3

Nanotechnologies for Sustainable Separation: From CO_2 Capture to Resource Recovery

Co-organized with Polytechnic University of Turin
Chair: Marco FONTANA, *Polytechnic University of Turin*

1	Alessandro PEDICO, *INRiM* **Graphene oxide membranes for energy harvesting and lithium recovery**
2	Marco TADDEI, *University of Pisa* **CO_2 capture with mixed matrix membranes containing (per-)fluorinated metal-organic framework fillers**
3	Federico RAFFONE, *Polytechnic University of Turin* **Nanotechnologies for Sustainable Separation From CO_2 Capture to Resource Recovery**
4	Mirtha LOURENÇO, *University of Aveiro, Portugal* **Evaluating the Impact of Synthesis Conditions on the Microstructure and CO_2 Adsorption and Separation of Nitrogen-Doped Biochar**

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

Impacts of Energy Transition

Co-organized with Polytechnic University of Turin
Chair: Mauro GATTI, *Sapienza University of Rome*

1	Mauro GATTI, *Sapienza University of Rome* **Title to be defined**
2	Mattia VOLTAGGIO, *ENI* **ROAD – Rome Advanced District e Joule, la Scuola di Eni per l'impresa: due casi di ecosistemi imprenditoriali**
3	Chiara CATGIU, *KPMG* **Life Cycle Assessment Approaches for Sustainable Energy Transition**

12 SEPTEMBER

09:00 - 10:30	WS.II.5

Turning Carbon Challenges into Opportunities: CO_2 Reduction to Value-added Products

Co-organized with Polytechnic University of Turin
Chair: Francesca RISPLENDI, *Polytechnic University of Turin*

1	Angelica CHIODONI, *IIT* **The value chain of CO_2: an overview of the present technologies and perspectives of exploitation in the present industrial scenario**
2	Antonina CLEMENTE, *Nippon Gases Industrial S.r.l.* **From threat to valuable resource: challenges and prospects for the future of CO_2 in industry**
3	Wenbo JU, *South China University of Technology, Guangzhou, China* **The evolution of Bi-based electrocatalysts during CO2RR: Post-mortem and Operando investigations**
4	Guillermo DIAZ SAINZ, *University of Cantabria, Spain* **Integration of oxidation reactions relevant to formate production via continuous CO_2 electroreduction**

11:30 - 13:00	WS.II.6

Impacts of Energy Transition on the Urban Environment

Co-organized with Polytechnic University of Turin
Chair: Giulia MASSAGLIA, *Polytechnic University of Turin*

1	Maria FERRARA, *Polytechnic University of Turin* **Introduction: The energy transition on the urban environment through the experience of pilot cities in the EU Mission '100 Climate-Neutral Cities by 2030**
2	Ilaria PIGLIAUTILE, *University of Perugia* **A multi-level data collection framework to explore urban complexity and support communities' energy transition**
3	Michele BOTTONI, *Q-RAD Consortium* **The role of radiant-based energy systems technologies in deep and effective retrofitting of the urban building stock**
4	Anselmo SEBASTIANO, *Knowledge Innovation Data s.r.l. for AEGcoop* **Urban digital twins for renewable energy communities**

12 SEPTEMBER

14:00 - 15:30	WS.II.7
Novel Strategies for Energy Harvesting	
Co-organized with Polytechnic University of Turin Chair: Stefano STASSI, *Polytechnic University of Turin*	
1	Christian FALCONI, *Tor Vergata University of Rome* **NanoEnergy challenges and opportunities**
2	Carlo TRIGONA, *University of Catania* **Novel Kinetic Energy Harvesting Solutions Integrating Dynamics, Materials, and Nature-Based Approaches**
3	Giuseppina PACE, *IMM-CNR* **2D-Materials and Hydrogels for Energy Harvesting and Self-Powered Sensing**
4	Francesco COTTONE, *University of Perugia* **3D printed energy harvesting devices based on biocompatible piezo-electret materials**

16:00 - 17:30	WS.II.8
Common Symposium of ***Polytechnic University of Turin | University of Milan***	
Life-cycle Assessment (LCA) and Safe and Sustainable-by-Design (SSbD)	
Co-organized with Polytechnic University of Turin & University of Milan Chair: Wenbin CAO, *USTB, China*	
1	Claudia BIANCHI, *University of Milan* **Life Cycle Assessment: A Comprehensive Tool for Environmental Impact Evaluation and Sustainable Decision-Making**
2	Vasilissa NIKONOVA, *University of Salerno* **Method Matters: Exploring Assessment Variability in Carbon Footprint Analysis of Building Materials**
3	Arian GRAINCA, *University of Milan* **Advancing Sustainability in Hydrocarbon Production: Breakthroughs in CO_2 Hydrogenation with Iron-Based Catalysts and Comprehensive Life Cycle Assessment of Environmental Impacts**
4	Jacopo BINDI, *University of Turin* **Integrating Social Sustainability: Social Life Cycle Assessment and its application to green hydrogen**
5	Serena BIELLA, *University of Milan* **The Added Value of Consulting in ESG, Carbon Footprint, LCA, and Ecodesign for Business Competitiveness**

IPCEIs MICROELECTRONICS: DEVICES AND SYSTEMS DRIVING THE DIGITAL AND GREEN TRANSITION

12 September

Co-organized with:

WORKSHOP COMMITTEE

Andrea PORCARI, AIRI
Cosimo MUSCA, STMicroelectronics

Europe is increasingly investing to strengthen our capacity and leadership in the semiconductor value chain, from materials to design, manufacturing and packaging of advanced chips and electronics devices and systems. The 2023 EU Chips Act is leveraging R&I efforts of all EU players in the field, and the two IPCEI (Important Projects of Common Interest) ME and ME/CT (MicroElectronics and Communication Technology) are supporting the transformation. IPCEI ME/CT builds on the first IPCEI ME results and involves 68 projects from 56 companies and an ecosystem of over 600 R&I players. Breakthrough are expected along four lines: sensing, thinking, acting, communicating, toward more efficient, faster, secure and reliable devices.
Italy and Austria are key players in all technology fields of IPCEI, such as novel semiconductor materials, sensors, actuators, high performance processors, and artificial intelligence systems. Solutions developed are strategic assets for major industrial value chains, including communications (5G, 6G), autonomous driving, digital technologies, energy generation, distribution and use.
The workshop, following the events held in 2020 and 2022, will provide an opportunity for companies, R&I centres, and universities to learn on the achievements and ongoing activities of IPCEI, and network with key players of the field. The first part will include talks from authoritative IPCEI partners. The second part will be a matchmaking session with IPCEI representatives, open to large industries, SMEs, startups, research organizations willing to meet, share and discuss RtoB and BtoB opportunities with IPCEI representatives.

12 SEPTEMBER

14:00 - 15:30	WS.III.1
IPCEIs solutions	
Co-organized with AIRI, STMicroelectronics, Infineon Chairs: Andrea PORCARI, *AIRI* & Cosimo MUSCA, *STMicroelectronics*	
1	Josef MOSER, *Infineon, Austria* **Trapped ion quantum processor units (ionQPUs) for scalable quantum computers: developments and quality improvements**
2	André MUGLIETT, *STMicroelectronics, Malta* **Assembly, Test and Packaging is a critical step of the Semiconductors supply chain: Malta IPCEI supports re-shoring capacity and grow on innovative technology**
3	Sandra EGER, *AT&S, Austria* **IC substrates & advanced packaging Technologies: key to the Computing systems of the Future**
4	Emanuele CORSI, *MEMC-GlobalWafers* **The TeNeT Project: Leading Edge 300mm and 200mm Silicon Wafers Manufacturing in Italy to Strengthen the Europe's Microelectronic Ecosystem**

16:00 - 17:30	WS.III.2
IPCEIs solutions & matchmaking	
Co-organized with AIRI, STMicroelectronics & Infineon Chairs: Andrea PORCARI, *AIRI* & Cosimo MUSCA, *STMicroelectronics*	
Register to the matchmaking session to meet, share, and discuss research and business opportunities with IPCEI representatives. (https://it.research.net/r/IPCEI2024) - Info: www.airi.it	
1	Lorenza FERRARIO, *Micro Nano Facility* & Vittorio GUARNIERI, *FBK* **The FBK semiconductor Open Facility**
2	Salvatore LOMBARDO, *CNR-IMM* **The microtech for green project**
3	Alessandro FONTE, *Siae Microelettronica* **Enabling Microelectronics Solutions for Next-Generation High-Performance 6G Networks**
4	Alfredo MAGLIONE, *Optoi* **Photonic sensors and MEMS microsystems: the OPTOI microelectronic packaging facility**
5	Marco DELUCA, *Silicon Austria Labs GmbH (SAL), Austria* **Leading advanced thin film technologies for electronic-based microsystems**
6	Elke KRAKER, *Material Center Leoben, GmbH (MCL), Austria* **Materials understanding is the key to new innovations in microelectronics**

MATERIALS FOR OUR ENVIRONMENT

11 - 12 September

Co-organized with:

UNIVERSITÀ DEGLI STUDI DI MILANO

WORKSHOP COMMITTEE

Claudia Letizia Maddalena BIANCHI, *University of Milan*
Wenbin CAO, *USTB, China*
Valentino CAPUCCI, *Graniti, Fianders*
Senentxu LANCEROS-MENDEZ, *Basque Center for Materials, Spain*

This workshop is dedicated to showcasing cutting-edge advancements in materials science with a specific focus on air and water remediation. It will feature a series of high-level talks from renowned experts in the field, providing deep insights into the latest research, technologies, and strategies for combating pollution and environmental degradation. The workshop aims to highlight innovative materials and methods that have shown promise in the purification and remediation of air and water, addressing critical issues such as the removal of toxic pollutants, reduction of carbon emissions, and enhancement of water quality in contaminated areas. By bringing together leading scientists, environmental policymakers, and industry stakeholders, the event will foster a rich dialogue on the integration of advanced materials into sustainable environmental practices. Attendees will have the opportunity to engage with speakers through comprehensive Q&A sessions, facilitating a deeper understanding of the challenges and opportunities in environmental remediation. This gathering is an essential platform for those committed to the development and deployment of groundbreaking solutions for air and water quality improvement, setting the stage for collaborative efforts towards a more sustainable and cleaner environment.

Common Symposium of Polytechnic University of Turin | University of Milan

The global shift towards sustainable energy systems necessitates comprehensive methodologies for evaluating environmental impacts and ensuring safe and sustainable development. This symposium integrates Life Cycle Assessment (LCA) and the Safe and Sustainable by Design (SSbD) framework within the context of the energy transition. LCA offers a robust approach to quantifying the effects on environments associated with energy technologies across their entire lifecycle—from resource extraction through to disposal. In addition to environmental consideration, a comprehensive evaluation of the impact of novel technologies must also consider the social dimension. Social Life Cycle Assessment (S-LCA) methodologies are promising tools for the evaluation of the social impact of technologies, products and services, through qualitative and semi-quantitative approaches. The afore-mentioned life cycle assessment methodologies are crucial for the design, development and production of clean, sustainable and safe chemical and materials. The SSbD framework emphasizes the proactive design of energy systems and technologies to minimize environmental harm, enhance safety, and ensure compliance with sustainability goals. This symposium focuses on state-of-the-art strategies for the assessment of environmental and social impacts, highlighting benefits and limitations of the current approaches through the presentation of case studies. Key findings underscore the importance of interdisciplinary collaboration and continuous innovation for the development of reliable assessment methodologies, which will serve as guidelines for the design of safe and sustainable innovative material sand technologies.

11 SEPTEMBER

09:00 - 10:30	WS.IV.1

Materials for Environment 1/3

Co-organized with University of Milan
Chair: Claudia Letizia Maddalena BIANCHI, *University of Milan*

1	Wenbin CAO, *USTB, Cina* **Construction of TiO_2 based composites towards enhanced performance on photocatalytic degradation of organic pollutants**
2	Giuseppina CERRATO, *University of Turin* **An overview about micrometric semiconductor materials to be employed in photocatalytic applications**
3	Elisa ZANELLA, Carlo PIROLA, *Universitty of Milan* **Towards a Cleaner Future: Electrochemical Innovations in Hydrogen Separation and Purification from Natural Gas in Distribution Networks and Their Impact on Air Quality**
4	Vincenzo FABBRIZIO, *University of Milan* **Vapour harvesting through nutrients modified superabsorbent polymers: exploiting surface enrichment into an opportunity for the sustainable agriculture**

11:30 - 13:00	WS.IV.2

Materials for Environment 2/3

Co-organized with University of Milan
Chair: Valentino CAPUCCI, *Graniti, Fianders*

1	Hongyan GUAN, *CTC, China* **Technology and development of odor evaluation method for indoor environment and building materials in China**
2	Eleonora MARCOLINI, *Graniti, Fianders* **Active Surfaces: cutting-edge photocatalytic surfaces production process for the reduction of pollutants and enhancement of air purity**
3	Marco GOLA, *Polytechnic University of Milan* **Built environment and health: How indoor air quality can guarantee healthy confined environments**
4	Gaetano SETTIMO, *Istituto Superiore di Sanità* **Challenges in IAQ for Indoor Spaces: An international overview of the Reference Guideline Values of Indoor Air Pollutants**

11 SEPTEMBER

14:00 - 15:30	WS.IV.3
Materials for Environment 3/3	
Co-organized with University of Milan Chair: Giuseppina CERRATO, *University of Turin*	
1	Pedro MARTINS, *University of Minho, Portugal* **Advanced Materials and Strategies for Emerging Contaminants in Water Remediation**
2	Melissa GALLONI, *University of Milan* **Floating photocatalysts as key players in reshaping sustainable wastewater treatment: a green transition towards future society**
3	Hugo SALAZAR, *BCMaterials, Spain* **Merge of sonophotocatalysis and composite materials for addressing contaminants of emerging concern in water remediation**
4	Ermelinda FALLETTA, *University of Milan | VisioNing* **VisioNing: from an idea to a successful project**

12 SEPTEMBER

16:00 - 17:30	WS.IV.4
Common Symposium of ***Polytechnic University of Turin | University of Milan***	
Life-cycle Assessment (LCA) and Safe and Sustainable-by-Design (SSbD)	
Co-organized with Polytechnic University of Turin & University of Milan Chair: Wenbin CAO, *USTB, China*	
1	Claudia BIANCHI, *University of Milan* **Life Cycle Assessment: A Comprehensive Tool for Environmental Impact Evaluation and Sustainable Decision-Making**
2	Vasilissa NIKONOVA, *University of Salerno* **Method Matters: Exploring Assessment Variability in Carbon Footprint Analysis of Building Materials**
3	Arian GRAINCA, *University of Milan* **Advancing Sustainability in Hydrocarbon Production: Breakthroughs in CO_2 Hydrogenation with Iron-Based Catalysts and Comprehensive Life Cycle Assessment of Environmental Impacts**
4	Jacopo BINDI, *University of Turin* **Integrating Social Sustainability: Social Life Cycle Assessment and its application to green hydrogen**
5	Serena BIELLA, *University of Milan* **The Added Value of Consulting in ESG, Carbon Footprint, LCA, and Ecodesign for Business Competitiveness**

SUPERCONDUCTING DEVICES AND TECHNOLOGIES

12 September

Co-organized with:

FONDAZIONE BRUNO KESSLER
FUTURE BUILT ON KNOWLEDGE

WORKSHOP COMMITTEE

Massimo BERSANI, FBK

This session aims at exploring the development of state-of-the-art superconducting quantum devices, which are becoming increasingly relevant for applications in the growing fields of quantum sensing, quantum computing and quantum simulations.
Different types of devices, such as superconducting qubits and superconducting microwave parametric amplifiers, and the related technological challenges and novel approaches will be discussed. Moreover, the present and future applications of superconducting quantum devices to real world applications will be investigated, bringing examples of industrial exploitations.

12 SEPTEMBER

09:00 - 10:30	WS.V.1
Superconducting quantum devices: present developments and future perspectives	
Co-organized with FBK Chair: Massimo BERSANI, *FBK*	
1	Alessandro IRACE, *FBK* **Overlap Josephson junctions for superconducting quantum circuits**
2	Felix AHRENS, *FBK* **High kinetic inductance superconducting amplifiers**
3	Marco ARZEO, *SEEQC* **Scalable energy-efficient quantum computing**
4	Giovanna TANCREDI (remotely), *Scalinq, Chalmers* **Builiding a large-scale quantum processor**

12 SEPTEMBER

10:50 - 11:30 Parallel Lecture	
Chair: Massimo BERSANI, *Fondazione Bruno Kessler - FBK*	
PL.II.C	Federica MANTEGAZZINI, *Fondazione Bruno Kessler - FBK* **Superconducting quantum devices at FBK: From single circuit components to the first qubit made in Italy**

FRONTIERS OF NANOMATERIALS IN BIOMEDICAL ENGINEERING: FROM HEALTHCARE TECHNOLOGIES TO NEUROMORPHIC APPLICATIONS

12 September

Co-organized with:

WORKSHOP COMMITTEE

Andrea CAPASSO, *International Iberian Nanotechnology Laboratory (INL), Portugal*
Mattia BRAMINI, *University of Granada (UGR), Spain*

Nanotechnology has revolutionized various fields within medicine and biosciences, offering innovative solutions for a wide range of applications. Nanomaterials significantly impact healthcare, enabling targeted drug delivery, improved diagnostics (for cancer too), and real-time biomarker monitoring for disease management and personalized medicine. This extends to aggressive disorders like those affecting the nervous system, where nanomedicine converges with neuroscience, presenting exciting opportunities for tackling brain-related challenges. Nanoscopic materials hold immense promise in neuroprotection, neuroregeneration, and drug delivery across the blood-brain barrier, while also playing a pivotal role in regenerative medicine and stem cell therapies. The integration of nanotechnology concepts into neuromorphic engineering marks a groundbreaking phase of innovation. Nanoscale materials serve as fundamental components for constructing neuromorphic chips, with potential applications in real-time data analysis and sensor data processing.

These chips present unprecedented opportunities for simulating intricate neural networks, furthering he development of brain-computer interfaces, and enabling cognitive computing. This convergence has the potential to deepen our comprehension of brain function and behavior. Ultimately, such advancements could profoundly influence artificial intelligence applications. Our symposium aims to explore cutting-edge research on nanomaterials tailored for diverse biomedical engineering applications.

Topics will encompass fabrication, functionalization, and characterization of nanomaterials, while also addressing fundamental biomaterial principles, safety evaluations (critical for clinical translation), and potential hazards, such as the presence of endotoxin, biodistribution, degradation, and elimination from the body. Biomedical applications will span from medical engineering to advancements in cancer diagnosis and therapy, including regenerative medicine and neurodegenerative disorder treatments. Furthermore, topics related to neuromorphic engineering will be covered, focusing on the development of new materials and architecture for neuromorphic hardware, spiking neural networks, brain-computer interfaces, and cognitive computing. Contributions featuring carbon-based nanomaterials (e.g., graphene, graphene oxide, boron nitride) and 2D materials (e.g., transition metal dichalcogenides, MXenes, black phosphorus) are particularly encouraged.

12 SEPTEMBER

09:00 - 10:30	WS.VI.1
Biomaterials for nanomedicine and drug delivery	
Chairs: Andrea CAPASSO, *INL, Portugal* & Mattia BRAMINI, *UGR, Spain*	
1	Ester VASQUEZ, *Universidad de Castilla-La Mancha, Spain* **Hybrid Hydrogels as 4D Biomimetic Systems**
2	Ester POLO, *University Santiago de Compostela, USC, Spain* **Designing Bio-Inspired Nanocarriers for Advanced Drug Delivery Systems**
3	Francesca BOCCAFOSCHI, *University Santiago de Compostela, USC, Spain* **Materials derived from decellularized tissues: new frontiers in regenerative medicine**

11:30 - 13:00	WS.VI.2
Nanotechnology and neuromorphic devices for understanding brain functionality	
Chairs: Andrea CAPASSO, *INL, Portugal* & Mattia BRAMINI, *UGR, Spain*	
1	Federico FERRARESE LUPI, *INRiM* **Visual memory in a 2D memitter**
2	Paulo DE CASTRO AGUIAR, *I3s* **A bio-electronic memristive interface for real-time and adaptive coupling of neuronal populations**
3	Andres GODOY, *University of Granada* **Multiscale simulation and modeling of memristive devices for neuromorphic computing**

12 SEPTEMBER

14:00 - 15:30	WS.VI.3
Neuro-nanotechnology for brain disorder treatment	
Chairs: Andrea CAPASSO, *INL, Portugal* & Mattia BRAMINI, *UGR, Spain*	
1	Fabio BENFENATI, *IIT – Italy* **Non-genetic neuronal stimulation with photochromic interfaces: application to retinal degeneration**
2	Denis SCAINI, *Ikerbasque, Spain* **It is just a matter of surfaces: how carbon-based multidimensional nanocues can modulate neuronal network activity**
3	Evie L. PAPADOPOULOU, *BeDimensional S.p.A.* **Industrial production of 2D Materials for Bio-Applications**

16:00 - 17:30	WS.VI.4
Smart materials for neuro-applications	
Chairs: Andrea CAPASSO, *INL, Portugal* & Mattia BRAMINI, *UGR, Spain*	
1	Giada CELLOT, *International School for Advanced Studies (SISSA)* **Assessing 2D materials safety for the nervous system in zebrafish**
2	Rossana RAUTI, *University of Urbino "Carlo Bo"* **Carbon-based nanotools interfacing with neurons: novel frontiers in nanomaterial-tissue interactions**
3	Elisabetta COLOMBO, *IIT* **Conjugated polymers nanoparticles to rescue visual functions in a model of retinal degeneration**

WIDE-BANDGAP SEMICONDUCTORS AND HETEROSTRUCTURES FOR POWER AND RF ELECTRONICS

11 September

Co-organized with:

IMM Institute for Microelectronics and Microsystems

iENTRANCE

WORKSHOP COMMITTEE

Filippo GIANNAZZO, *IMM-CNR*
Patrick FIORENZA, *IMM-CNR*

Due to their outstanding physical properties, wide-bandgap (WBG) semiconductors, such as silicon carbide (SiC) and gallium nitride (GaN), are the materials of choice for high-power and high frequency electronics, with a broad range of applications in strategic fields, like electric vehicles, power conversion for renewable energies, aerospace, telecommunications.
Owing to this strategic role, European Union recently funded, through the Chips-JU, the realization of a Pilot line dedicated to WBG semiconductor technology. This workshop will provide an opportunity for companies, R&I centres, and universities to learn about recent developments and open challenges in WBG and ultra-WBG (Ga_2O_3) materials and technology. Advanced characterization methods specifically optimized for these material systems and related devices will be presented. Finally, new opportunities offered by the integration of 2D materials (graphene, MoS_2) with WBG semiconductors will be discussed.

11 SEPTEMBER

11:30 - 13:00	WS.VII.1
Wide-bandgap semiconductors and heterostructures for power and RF electronics 1/3	
Chair: Filippo GIANNAZZO, *IMM-CNR & iENTRANCE@ENL*	
1	Fabrizio ROCCAFORTE, *CNR-IMM, Catania* **Advanced processing for energy efficient WBG semiconductors power devices: Recent trends and perspectives**
2	Yvon CORDIER, *Université Côte d'Azur, CNRS-CRHEA, Valbonne, France* **Recent advances in Nitride heterostructures for RF and power devices**
3	Daniel ALQUIER, *University of Tours, France* **Laser Annealing A New Strategy For SiC Power Device Contacts**
4	Roberto FORNARI, *University of Parma* **Development and perspectives of Ga_2O_3 epitaxial layers for power electronics**

11 SEPTEMBER

14:00 - 15:30	WS.VII.2
Wide-bandgap semiconductors and heterostructures for power and RF electronics 2/3	
Chair: Luca SERAVALLI, *CNR-IMEM & iENTRANCE@ENL*	
1	Ildiko CORA, *HUN-REN, Institute for Technical Physics and Materials Science, Hungary* **Advanced structural characterization of Gallium Oxide by electron microscopy**
2	Giuseppe GRECO, *CNR-IMM, Catania* **Recent findings on Ohmic and Schottky contacts to β-Ga_2O_3**
3	Manuel FREGOLENT, *University of Padova* **Trapping processes in vertical GaN Trench MOSFETs: from experimental analysis to simulations**
4	Béla PÉCZ, *HUN-REN, Institute of Technical Physics and Materials Science, Hungary* **Advanced electron microscopy of WBG semiconductors and their heterostructures with 2D materials**

16:00 - 17:30	WS.VII.3
Wide-bandgap semiconductors and heterostructures for power and RF electronics 3/3	
Chair: Patrick FIORENZA, *IMM-CNR & iENTRANCE@ENL*	
1	Luca SERAVALLI, *CNR-IMEM, Parma* **Recent advances in the liquid precursors chemical vapor deposition (CVD) of MoS_2 on SiO_2 and on GaN**
2	Federica BONDINO, *CNR-IOM, Trieste* **Advanced soft-x absorption and photoemission spectroscopy of 2D materials and their heterostructures**
3	Simonpietro AGNELLO, *University of Palermo* **Thermally induced strain and doping of monolayer MoS_2 on metal, insulator and WBG substrates**
4	Salvatore Ethan PANASCI, *CNR-IMM, Catania* **Integration strategies and nanoscale electrical characterization of MoS_2 on WBG semiconductors**

EXPLORING STRESS AND STRAIN IN THIN FILMS AND SEMICONDUCTOR MATERIALS

12 September

Co-organized with:

ROMA TRE UNIVERSITÀ DEGLI STUDI

SAPIENZA UNIVERSITÀ DI ROMA

WORKSHOP COMMITTEE

Marco SEBASTIANI, *Roma Tre University*
Marco ROSSI, *Sapienza University of Rome*

This workshop provides a focused platform for researchers and professionals to discuss the latest developments and research results related to stress and strain in thin films and semiconductor materials. Co-organised by Roma Tre University and Sapienza University of Rome, the event is structured into two distinct sessions, each dedicated to a specific aspect of the topic. The first session will focus on stress in thin films, covering topics such as the origin and control of residual stress, advanced measurement techniques and the impact of stress on the reliability of micro-electro-mechanical systems (MEMS). The second session will focus on strain in semiconductor materials, discussing the effects of strain on material properties, recent advances in measurement and control techniques, and the challenges of managing strain for improved material performance. This split allows for an in-depth exploration of both stress and strain, providing participants with a comprehensive understanding of the interrelationships and differences between these two critical areas of materials science. The workshop brings together leading experts in the field to share their insights and latest research, providing valuable opportunities for learning and collaboration.

12 SEPTEMBER

09:00 - 10:30	WS.VIII.1
Stress in Thin Films	
Chair: Marco SEBASTIANI, *Roma Tre University*	
1	Rostislav DANIEL, *Montanuniversität Leoben, Austria* **Origins and control of residual stress in thin films**
2	Edoardo ROSSI, *Roma Tre University* **High resolution measurement Techniques for Stress in Thin Films**
3	Savvas ORFANIDIS, *National Technical University of Athens, Greece* **NanoMECommons: Harmonisation of EU-wide nanomechanics protocols and relevant data exchange procedures, across representative cases; standardisation, interoperability, data workflow**
4	Matthieu LE BAILLIF, *Thales Researche and Technology, France* **Residual Stress and reliability in Micro-Electromechanical Systems (MEMS)**
5	Saqib RASHID, *Roma Tre University* **In-situ measurement of residual stress in MEMS devices**

12 SEPTEMBER

11:30 - 13:00	WS.VIII.2
Strain in Semiconductor Materials 1/2	
Chair: Marco ROSSI, *Sapienza University of Rome*	
1	Lorenzo MONACELLI, *Sapienza University of Rome, Italy* **The origin of out-of-equilibrium ferroelectricity in $SrTiO_3$ under resonant ultrafast THz pumping**
2	Antonio POLIMENI, *Sapienza University of Rome, Italy* **Giant enhancement of light emission from InSe in selectively strained InSe/MS_2 (M=Mo,W) heterostructures**
3	Elena STELLINO, *Sapienza University of Rome, Italy* **Tuning the Excitonic Response of Monolayer WS_2 Domes via Coupled Pressure and Strain Variation**
4	Pablo HERNANDEZ LOPEZ, *Humboldt Universitat zu Berlin, Germany* **Strain tuning of optical properties in 2D semiconductors and optical readout of strain in thin films**

14:00 - 15:30	WS.VIII.3
Strain in Semiconductor Materials 2/2	
Chair: Marco VITTORI ANTISARI, *Sapienza University of Rome*	
1	Chiara MANCINI, *Sapienza University of Rome, Italy* **Strain analysis in semiconductor devices through Tip-Enhanced Raman Spectroscopy**
2	Roberto BALBONI, *IMM-CNR* **Measuring crystals strain in the TEM: techniques and accuracy**
3	Frederik OTTO, *Technische Universität Berlin* **Analyzing Dynamic Diffraction at Strained Semiconductor Interfaces: A Method to Determine Alloy Concentrations**
4	Stefan WUNDRACK, *Physikalisch-Technische Bundesanstalt, Germany* **Metrological Raman shift calibration for strain quantification in semiconductor**
5	Stefano LUPI, *Sapienza University of Rome, Italy* **Optoelectronic Properties of Topological Quantum Materials**

TECHNOLOGIES FOR ENERGY TRANSITION

11 - 12 September

Co-organized with:

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

WORKSHOP COMMITTEE

Nicola LISI, *ENEA*
Vera LA FERRARA, *ENEA*
Massimo CELINO, *ENEA*
Margherita MORENO, *ENEA*
Raffaele LIBERATORE, *ENEA*
Martina CALIANO, *ENEA*
Francesco BUONOCORE, *ENEA*
Salvatore VASTA, *CNR*

The undeniable worsening of the planet's environmental health, with the onset of local and global problems, like climate warming, is linked to anthropic activities that unbalance the content of greenhouse gases in the atmosphere. Among anthropogenic activities, the massive quantities of energy that underlie the well-being of the growing world population contribute mostly to climate-altering emissions, and therefore will have to be gradually decarbonized to limit emissions of carbon dioxide and other greenhouse gases. To meet this challenging objective, the development of technologies that combine economic well- being and social sustainability with environmental sustainability is required. In some cases, these technologies correspond to well-known scientific and cultural objectives for the mankind, who, through the observation of nature, pursues the artificial reproduction of nuclear fusion, the energy engine of the cosmos, and of photosynthesis, which chemically fixes the energy of the emitted photons. On the other end, opposite to what happens in nature, developing and using energy technologies draws on the methods of the most advanced science, while undergoing low production costs and simple application methods that guarantee social acceptance. These are heavy constrains indeed, compared to combustion a technology accessible and understandable since the discovery of fire. The highest barrier to the use of more advanced technologies is probably the need to keep the cost of energy low; furthermore, the scenario of the technological development in the energy sector is dominated by the large gap that is created between the scientific demonstration of the operating principle of a technology and its large-scale industrial application, traditionally called the ""valley of death"". The erratic nature of the production of renewables, day-night, seasonal, clear-cloudy, wind-calm, requires that excess power be installed and stored for an indefinite time, from a few minutes, for peaks in demand, up to one season. As well understood by the European and national legislators, in this context public intervention in research is necessary, given that the economic return from the development of new emerging energy technologies takes place in an unspecified and uncertain time period, but also the optimization of the efficient use of pre-existing technologies requires a refinement of methods and materials that is not trivial at all. The seminars presented by ENEA are placed in this general context of improvement of energy production, conversion and storage technologies and concern: batteries and electrochemical accumulators, thermochemical storage, computational technologies linked to the development of the new necessary materials, the energy networks and the chemical accumulation in hydrogen as a temporary reduction of an oxide for the subsequent reaction with the atmosphere.

11 SEPTEMBER

09:00 - 10:30	WS.IX.1
Electrochemical Energy Storage: LIB - innovative electrolytes 1/4	
Chair: Giovanni Battista APPETECCHI, *ENEA*	
1	Margherita MORENO, *ENEA* **Introduction on PTR22_24 Project 1.2 on Electrochemical Energy Storage**
2	Giuseppe ELIA, *Polytechnic University of Turin* **An Overview of Polymer-based Electrolytes with High Ionic Mobility for advanced Li-solid state battery**
3	Arianna MASSARO, *University of Naples "Federico II"* **Multiscale simulations of heterogeneous Li metal interfaces for next generation batteries**
4	Giampaolo LACARBONARA, *University of Bologna* **Preparation of stable, safe electrolytes and innovative separators for improving electrode performance**
5	Matteo PALLUZZI, *Sapienza University of Rome* **Green Ionic Liquids additives in high-voltage lithium batteries**

11:30 - 13:00	WS.IX.2
Electrochemical Energy Storage: LIB and Li-based new chemistries 2/4	
Chair: Margherita MORENO, *ENEA*	
1	Stefano MARCHIONNA (to be confirmed), *RSE* **Oxidized $Ti_3Al_{(1-x)}Si_xC_2$ and $Ti_3Al_{(1-x)}Sn_xC_2$ MAX phases: innovative anodes of LIB and NIB**
2	Maria MONTANINO, *ENEA* **Gravure printed Lithium-ion batteries (LiBs): towards large area and high-performance materials**
3	Francesca SCARAMUZZO, *Sapienza University of Rome* **Electrode materials from alternative sources for supercapacitors**
4	Gabriele D'AIUTO, *Sapienza University of Rome* **Novel materials for anodeless lithium metal batteries**
5	Julia AMICI, *Polytechnic University of Turin* **Gel polymer electrolytes from renewable sources for Li-Oxygen batteries applications**
6	Francesca SOAVI, *University of Bologna* **LIB cathode production processes designed for "direct recycling"**

11 SEPTEMBER

14:00 - 15:30	WS.IX.3
Electrochemical Energy Storage: Sodium-based technologies 3/4	
Chair: Omar PEREGO, *RSE S.p.A.*	
1	Omar PEREGO, *RSE S.p.A.* **Introduction to sodium based electrochemical storage. Round robin test on sodium ion innovative materials within project RdS 1.2**
2	Domenico CORONA, *University of Tor Vergata* **Doped manganites as cathodes for sodium-ion batteries: a self-consistent DFT+U study**
3	Leonardo SBRASCINI, *University of Camerino* **Synthesis and Characterization of Prussian Blue Analogues as Cathodes for Sodium-ion Batteries**
4	Ivan MASTRONARDO, *CNR-ITAE* **Nasicon structure materials as cathode electrode for Na-ion battery**
5	Francesco BOZZA, *ENEA* **Synthesis and electrochemical characterizations of Li doped Mn and Ni based layered oxides as stable cathode materials for Na-ion batteries**

16:00 - 17:30	WS.IX.4
Electrochemical Energy Storage 4/4	
Chair: Alessandra DI BLASI, *CNR*	
1	Marco DONNINI, *University of Tor Vergata* **Storing electrochemical and thermal energy: influence of design on performance parameters**
2	Livio DE CHICCIS & Vittoria BATTAGLIA, *ENEA* **Technical, economic and environmental assessment of energy storage technologies via scenarios of penetration into Italian electric(power) grid**
3	Giulio MELA, *RSE (Remotely)* **Socio economic analisys: national gigafactories**
4	Mauro FALCONIERI, *ENEA* **Vibrational Spectroscopies for Characterization of Materials for Electrochemical Storage Devices**
5	Alessandra DI BLASI, *CNR* **CNR Research Activity on next generation sustainable electrochemical storage solutions**

12 SEPTEMBER

09:00 - 10:30	WS.IX.5
Thermal Energy Storage 1/2	
Chair: Raffaele LIBERATORE, *ENEA*	
1	Raffaele LIBERATORE, *ENEA* **Introduction on PTR22_24 Project 1.2 on Electrochemical Energy Storage**
2	Roberto PETRUCCI, *University of Perugia* **Nano-enhanced micro-encapsulated phase change materials in high-performance concrete for thermal energy storage**
3	Franco DOMINICI, *University of Perugia* **Nanostructured electro-dissipative concretes for power to heat applications in thermoelectric energy storage**
4	Franco FORNARELLI, *University of Foggia* **Unsteady simplified numerical model for the prediction of latent heat thermal energy storage devices**
5	Alessandra ADROVER, *Sapienza University of Rome* **CFD analysis on the thermo-physical characterization of a PCM storage medium**

11:30 - 13:00	WS.IX.6
Thermal Energy Storage 2/2	
Chair: Raffaele LIBERATORE, *ENEA*	
1	Maria Anna MURMURA, *Sapienza University of Rome* **Analysis of a high-temperature thermochemical storage process in fluidized bed reactors**
2	Matteo BATTAGLIA, *University of Tor Vergata* **Optimization of spinel synthesis method for thermal energy storage applications**
3	Giuseppe MESSINA, *ENEA* & Ambra GIOVANNELLI, *Roma Tre University* **Preliminary turbomachinery design of a power cycle integrated with a cold storage system**
4	Paola CASTELLAZZI & Enrico PATRUCCO, *RSE* **Mathematical modeling of a zeolite-based thermochemical storage reactor: experimental validation and building-plant integration**
5	Gabriella SQUARZONI, *RSE* **Pre-feasibility analysis of a HT-ATES system using numerical simulations**
6	Angelo FRENI, *CNR* **New adsorbents for thermochemical heat storage**

12 SEPTEMBER

14:00 - 15:30	WS.IX.7
Materials and Approaches for Solar-Driven water splitting for Hydrogen Production: Perovskites and New Organic Compounds	
Chair: Vera LA FERRARA, *ENEA*	
1	Vera LA FERRARA, *ENEA* **Introduction**
2	Lorenzo ZANI, *CNR-ICCOM* **Development of New Organic Compounds for Dye-Sensitized Photocatalytic and Photoelectrochemical Hydrogen Production**
3	Lorenzo MALAVASI, *University of Pavia* **Metal halide perovskites and perovskite derivatives for photocatalytic solar fuel production: from design to application**
4	Silvia COLELLA, *CNR-NANOTEC* **Tailoring the perovskite interface for photocatalytic applications**
5	Jessica BARICHELLO, *ISM-CNR* **Encapsulation and Stability of Perovskite solar cells for Underwater applications**

16:00 - 17:30	WS.IX.8
Hybrid energy storage for mobility (joint with ENEA & EERA Joint Programme Energy Storage)	
Chair: Margherita MORENO, *ENEA*	
1	Salvatore VASTA, *CNR-ITAEE* **Revolutionizing Hybrid Mobile Storage with Adsorption Cooling Solutions**
2	Annamaria BUONOMANO, *University of Naples* **Advanced Thermal Energy Storages On Large Ships: The "Atol" Project**
3	Giovanni ESPOSITO, *@ArgoTractors* **Future propulsion systems for off-road vehicles, electric or endothermic? How the energy storage constraints steer the development**
4	Valeria PALOMBA, *CNR-ITAE* **Hybrid thermal storage solutions for passenger ships**
5	Yannik WIMMER, *AIT* **Techno-economic consideration on hybrid storage mobile application**

12 SEPTEMBER

09:00 - 10:30	WS.IX.9
Automation and high throughput research 1/2	
Chairs: Massimo CELINO & Francesco BUONOCORE, *ENEA*	
1	Nicola LISI, *ENEA* **Towards a universal materials sequencing machine**
2	Francesco BUONOCORE, *ENEA* **Advances in Na-Ion Battery Cathode Materials: Comparison of DFT and Machine Learning Approaches**
3	Federica FORTE, *ENEA* **Materials recovery from end-of-life electrochemical storage systems: results from the IEMAP project**
4	Juliette ZITO, *IIT* **A Universal Database of Surface Ligands in Colloidal Semiconductor Nanocrystals**
5	Meenakshi PEGU, *IIT* **Organic Amphiphile as a Surface Ligand for Stable Caesium Lead Bromide Nanocrystals**

11:30 - 13:00	WS.IX.10
Automation and high throughput research 2/2	
Chair: Francesco BUONOCORE, *ENEA*	
1	Muhammad Y. BASHOUTI, *Ben-Gurion University of the Negev* **Manipulating the surface electronic properties of Si by molecular engineering for water splitting**
2	Leonarda Francesca LIOTTA, *CNR* **Investigation of La0.6Sr0.4Fe0.8-xMxCo0.2O3-yFy (M= Cu, Ni) perovskite oxides as electrocatalysts for clean energy transition**
3	Nicola BRIGUGLIO, *CNR* **Scale-up studies on the optimization of catalyst loading and the porous transport layer for regenerative electrolyser applications**
4	Stefania SIRACUSANO, *CNR* **Low loading CRM and CRM - free electrocatalysts as new cost – effective strategy in PEMWE**

12 SEPTEMBER

14:00 - 15:30	WS.IX.11
Novel methodologies, models, and solutions for secure and cyber-resilient smart grids and multi-carrier energy systems	
Chair: Martina CALIANO, *ENEA*	
1	Giovanni BRUNACCINI, *CNR* **Multi-agent based model for microgrid ancillary services privision**
2	Martina CALIANO, *ENEA* **Mission Project: Use Cases and Services of the Smart Energy Microgrid Platform (SEMP)**
3	Giovanna ADINOLFI, *ENEA* **Innovative devices for electric and cyber security in distribution grids**
4	Roberto CIAVARELLA, *ENEA* **2022-2024 Three-Year Plan for Electricity System Research - Research Topic 2.3 Evolution, planning, management and electricity networks operation**
5	Luigi MARTIRANO, *Sapienza University of Rome* **Microgrids with renewables, storage, fuel cells and electric vehicles charging stations integrated in smart buildings and energy communities: Hybrid Energy Hub Lab**

GREEN CHEMISTRY AND SUSTENABLE APPROACHES FOR INNOVATIVE MATERIALS

11 September

Co-organized with:

SAPIENZA
UNIVERSITÀ DI ROMA

CHANGES

Green chemistry principles are increasingly being applied in the synthesis of nanomaterials to minimize environmental impact and enhance sustainability. The field of green nanomaterials production focuses on developing eco-friendly methods that use benign solvents, reduce energy consumption, and employ renewable resources. Traditional approaches to nanomaterial synthesis often involve toxic chemicals and generate hazardous by-products, posing significant environmental and health risks. Green chemistry aims to address these issues by leveraging techniques such as biogenic synthesis, which uses plant extracts, microorganisms, and other natural agents as reducing and capping agents. Additionally, processes such as mechanochemistry and the use of supercritical fluids offer pathways to produce nanomaterials with minimal environmental footprint. The implementation of green chemistry in nanomaterials production not only contributes to environmental protection but also enhances the functional properties of the nanomaterials, making them suitable for applications in medicine, electronics, and energy storage. This workshop highlights the importance of integrating green chemistry principles in the development of nanomaterials to achieve sustainable technological advancements.

11 SEPTEMBER

09:00 - 10:30	WS.X.1
Green chemistry and sustainable approaches for innovative materials 1/2	
Chair: Maria Laura SANTARELLI, *Sapienza University of Rome*	
1	**WELCOME GREETINGS** Maria Laura SANTARELLI, Sapienza University of Rome
2	Erica SONAGLIA, *Sapienza University of Rome* **Bacterial Nanocellulose from Kombucha By-Products: a Renewable Source for Green Hydrogels**
3	Emily SCHIFANO, *Sapienza University of Rome* **Ozone-Loaded Bacterial Cellulose Hydrogel: A Sustainable Antimicrobial Solution for Stone Cleaning**
4	Gabriella DI CARLO & Chiara FRATELLO, *CNR - Institute for the Study of Nanostructured Materials* **Smart and eco-sustainable materials for the long-term and safe protection of concrete heritage within the ECOforCONCRETE project**

11 SEPTEMBER

11:30 - 13:00	WS.X.2
Green chemistry and sustainable approaches for innovative materials 2/2	
Chair: Maria Laura SANTARELLI, *Sapienza University of Rome*	
1	Marcella IOELE, *ICR – Istituto Centrale per il Restauro* **Eco-Friendly Nano-Materials for Consolidation of Works of Art. Icr Activities within the Changes Project**
2	Carolina RIGON, *ICR – Istituto Centrale per il Restauro* **Exploring the consolidation properties of nanocellulose for cut and ripped paper restoring**
3	Luca TORTORA, *University of Roma Tre* **Nanomaterials Based on Metal Oxides for Environmental and Cultural Heritage Protection**
4	Francesca BOCCACCINI, *CNR - Institute for the Study of Nanostructured Materials* **Development of green protective coatings for the conservation of silver artworks**

NANOMICROFAB ADVANCED LAB ALONGSIDE WITH NANOMICROFAB@STESY TO BOOST NOVEL MATERIALS AND DEVICES

12 September

Co-organized with:

NANOMICROFAB ADVANCED LAB

NanoMicroFab@STESY Science & TEchnology for SustainabilitY

WORKSHOP COMMITTEE

Stefano COLONNA, *CNR – ISM*; Raffaella CALARCO, *CNR – IMM*; Matteo RAPISARDA, *CNR – IMM*; Luca BUSINARO, *CNR - IFN*

The workshop aims at describing the open research infrastructures NanoMicroFab and NanoMicroFab@STESY based in the CNR research area of Rome Tor Vergata. Both infrastructures, led by CNR, are co-funded by Regione Lazio. NanoMicroFab open lab is governed by CNR in partnership with University of Rome Tor Vergata. It operates in the sector of advanced materials and electronic microfabrication with the mission to provide several services to companies, academia and research institutes. The proposed services include: new materials; development of processes and devices; design and characterization of materials and devices. NanoMicroFab@STESY is a new facility grown from the experience of NanoMicroFab that will implement new operational capabilities in the sector of sustainability in different application contexts, such as energy, aerospace and life sciences. NanoMicroFab@STESY intends to extend and integrate the instrumental support action of NanoMicroFab with the strong complementary skills and capabilities present in the CNR Area of Rome Tor Vergata, enhancing and developing the new regional STESY infrastructure through a synergistic strengthening with the instrumental backbone of NanoMicroFab. This infrastructure sees the participation of 5 CNR Institutes, the Engineering Department of the University of Tor Vergata, INAF Astrophysics Institute and the Hypatia Consortium. The organization, the available instrumentation and access rules of the two facilities will be illustrated along with their research activity in different sectors.

12 SEPTEMBER

09:00 - 10:30	WS.XI.1
NanoMicroFab Open Lab	
Chair: Fabrizio ARCIPRETE, *University of Tor Vergata*	
1	Raffaella CALARCO, *IMM-CNR* **NanoMicroFab an Open Infrastructure to Support Research and Development of Devices and Advanced Materials**
2	Mattia SCAGLIOTTI, *IMM-CNR* **Flexible Organic Photo-Transistors as Key Elements of Detectors for Medical Proton Therapy: Recent developments at NanoMicroFab**
3	Alessandro GAGGERO, *IFN-CNR* **Development of photonic platforms and superconducting detectors for quantum technologies**
4	Daniele CATONE, *ISM-CNR* **A Multiscale Strategy for Optimizing Materials in Semitransparent Photovoltaics**
5	Marco GIRASOLE & Giovanni LONGO, *ISM-CNR* **Single-Cell and Cluster-Level Investigations of Mammalian Cells via Atomic Force Microscopy and Correlative Techniques**

12 SEPTEMBER

11:30 - 13:00	WS.XI.2
NanoMicroFab@STESY infrastructure for sustainability	
Chair: to be defined	
1	Stefano COLONNA, *ISM-CNR* **NanoMicroFab@STESY an Infrastructure Devoted to the Development of Technologies for Sustainability**
2	Yuri EVANGELISTA, *INAF* **Design, development and qualification of space-borne instrumentation at INAF-IAPS**
3	Mario LEDDA, *IFT-CNR* **Advanced technologies for biomedical applications**
4	Sabrina CALVI, *Tor Vergata University of Rome* **Perspectives of storage class memories in flexible edge electronics**
5	Fabio RONCI, *ISM-CNR* **Research opportunities on energy production and storage systems at NanoMicroFab@STESY**
6	Massimiliano DISPENZA, *Leonardo S.p.A* **Innovative solutions and devices in Leonardo on Quantum Technologies, Optronics and Advanced Materials**

DRIVEAFM: INNOVATIONS, TRENDS AND FUTURE PERSPECTIVES IN AFM APPLICATION

11 September

Co-organized with:

Quantum Design ITALY

nanosurf

Quantum Design Italy is pleased to invite you to explore our partner Nanosurf's flagship AFM, the DriveAFM. Come to hear about recent advances in AFM technology and learn about the newest state-of-the-art atomic force microscope on the market. DriveAFM is delivered with WaveMode off-resonance photothermally driven excitation, and a fully automated laser alignment on a tip-scanning design, that offers unprecedented possibilities for AFM users in all applications spanning from life science with biological materials such as cells, DNA, viruses, etc. to material science with 2D materials, polymers, photovoltaics, and more.
The workshop will include a live demonstration of the DriveAFM: we offer you the opportunity to bring your own sample of interest to be measured and discussed during the workshop. Please send an email to ramberti@qd-europe.com if you would like to make use of this offer.

11:30 - 11:40	**Introduction to Quantum Design and Nanosurf**
11:40 - 12:00	**Short introduction to Atomic Force Microscopy and its applications**
12:00 - 12:20	**The Nanosurf DriveAFM, a technical overview** **Hands-on 1: atomic resolution**
12:20 - 12:40	**Photothermal excitation: principle and applications (off-resonance excitation WaveMode)** **Hands-on 2: soft sample imaged in WaveMode**
12:40 - 13:00	**Magnetic Force Microscopy** **Hands-on 3: MFM measurements**
14:00 - 14:20	**Kelvin Probe Force Microscopy** **Hands-on 4: KPFM measurements**
14:20 - 14:40	**Piezoresponse Force Microscopy** **Hands-on 5: PFM measurements**
14:40 - 15:00	**Liquid environments and WaveMode** **Hands-on 6: measurements in liquid**
15:50 - 15:30	**Live demo – Bring your own samples!**

Speakers
Héctor CORTE- LÉON, *Application Scientist at Nanosurf*
Marco PORTALUPI, *Sales Manager Europe at Nanosurf*
Stefano PERGOLINI, *Sales Engineer at Quantum Design Italy*

SMART MATERIALS AND DEVICES FOR PRECISION AGRICULTURE APPLICATIONS

11 September

Co-organized with:

IMM Institute for Microelectronics and Microsystems

CNR ISMN

WORKSHOP COMMITTEE

Sebania LIBERTINO, *CNR-IMM*
Maria Rosaria PLUTINO, *CNR-ISMN*

The proposed workshop aims to provide a flavor of the activities running in Italy, particularly within the SAMOTHRACE ecosystem in the Precision agriculture field. The agri-food chain nowadays needs novel approaches to support crop production and reduce its economic and environmental impacts. Sensors and smart materials, sustained by innovative management of the resources, will allow us to apply the 3 key points for precise and sustainable agriculture, i.e., to act exactly where, when, and how the crop requests it.

The main topics that will be covered are:

1. Sustainable management of natural water resources in agriculture;
2. Smart sensing of irrigation water;
3. Nanotechnologies for plant nutrition and protection;
4. Plant health monitoring; All activities and topics are supported by advanced data management and decision support systems.

11 SEPTEMBER

11:30 - 13:00	WS.XIV.1
Smart materials and devices for precision agriculture applications 1/2	
Chairs: Sebania LIBERTINO, *CNR-IMM* & Maria Rosaria PLUTINO, *CNR-ISMN*	
1	Salvatore BAGLIO, *University of Catania | SAMOTHRACE Hub* **Revamping Etna valley: the role of Samothrace Innovation Ecosystem**
2	Andrea ZAPPETTINI, *IMEM-CNR* **Bioristor: an in-vivo Organic ElectroChemical Transistor for precision agriculture**
3	Danilo DE MARCHI, *Polytechnic University of Turin* **Let the Plants do the Talking: Climate-Smart Agriculture by the messages received from Plants and Soil**

11 SEPTEMBER

14:00 - 15:30	WS.XIV.2
Smart materials and devices for precision agriculture applications 2/2	
Chairs: Sebania LIBERTINO, *CNR-IMM* & Maria Rosaria PLUTINO, *CNR-ISMN*	
1	Domenico CAPUTO, *Sapienza University of Rome* **An adaptable lab-on-chip for in-field analysis in agricolture**
2	Marco ACCIAI, *Società Agrigeos* **Development of a digital platform based on Artificial Intelligence for precision citrus farming**
3	Giuseppe ROSACE, *University of Bergamo* **Advanced materials in agriculture-related applications**

SCHOOL ON NANOTECHNOLOGIES: processes and applications to sensors and actuators

September 11 - 12 - 13

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

Organized by

According to the increasing request of STEM skills, the school keeps, for the sixth year, offering a great opportunity to understand how nanodevices are studied, designed, fabricated and controlled. 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, 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. Especially in nanoscience, where results require huge amounts of time and resources, enhance research results requires mastering data and their management. The European Community, and the EU funded projects, ask to share information according to open and standardized models in order to fasten research to innovation times. The school will offer talks on the FAIR data management paradigm, today massively diffused in the scientific community. The school is organized by It-fab (http://itfab.bo.imm.cnr.it/), the Italian network for Micro and Nano Fabrication research infrastructures.

Wednesday 11 September

School opening	
09:00 - 09:15	**Welcome and introduction** Lorenza FERRARIO, *FBK*
09:15 - 09:45	**PNRR Infrastructures, RIANA, ENL updates** Vittorio MORANDI, *CNR-ISMN*
09:45 - 10:30	**Best practices and lessons learned for managing reproducible processes in medium-sized research Clean rooms** Giulia APRILE, *INRiM*
break	
10:50 - 11:35	**Ion Implantation - basic technologies: doping 1** Antonino PICCIOTTO *(remotely)*, *FBK*
11:35 - 12:20	**Plasma/etching 1 - basic technologies: etching 1** Ali NAWAZ, *FBK*
12:20 - 13:00	**Plasma/etching 2 - basic technologies: etching 1** Ali NAWAZ, *FBK*
light lunch	
14:00 - 14:45	**Deposition of thin films - basic technologies: deposition 1** Riccardo BERTACCO, *PoliMI/PoliFAB*
14:45 - 15:30	**Deposition of thin films - basic technologies: deposition 2** Riccardo BERTACCO, *PoliMI/PoliFAB*
break	
16:00 - 16:45	**Hard and soft magnetic "thick" films for MEMS - applications of magnetic films** Riccardo BERTACCO, *PoliMI/PoliFAB*

Thursday 12 September

Basics - PATTERN TRANSFER	
09:00 - 09:45	**Lithography 1 - basic technologies: litho 1** Massimo CUSCUNÀ, *Nanotec CNR, Lecce*
09:45 - 10:30	**Lithography 2 - basic technologies: litho 2** Massimo CUSCUNÀ, *Nanotec CNR, Lecce*
break	
10:50 - 11:35	**Two photon polymerization for micrometric devices fabrication - basic technologies** Valentina BERTANA (remotely), *Polytechnic University of Turin*
11:35 - 12:20	**Lithography based on block copolymers - basic technologies: innovative patterning** Irdi MURATAJ, *INRIM/CNR-IMM*
12:20 - 13:00	**Litografia per applicazioni 3D - basic technologies: litho 3** Sara NOCENTINI, *INRiM*
light lunch	
14:00 - 14:45	**Biosensors and Microfluidics - technological platforms** Simone Luigi MARASSO, *PoliTo/CNR-IMEM*
break	
15:30 - 16:15	**Quantum and nanotechnologies applied to time and frequency metrology - METROLOGY - basic technologies: metrology** Chiara GIONCO, *INRiM*
16:15 - 17:00	**Traceable Dimensional Nanometrology by Metrological AFM - METROLOGY** Luigi RIBOTTA, *INRiM*

Friday 13 September

Applications	
09:45 - 10:30	**Fair Data, Open Data - 1: FAIR OPEN Data Management** Elena GIGLIA (remotely), *Polytechnic University of Turin*
break	
10:50 - 11:35	**Semiconductor Packaging: Overview of Main Assembly Steps and Nanotechnologies' Contribution** Matteo Luca QUATTROCCHIO (remotely), *ST Microelectronics*
11:35 - 12:20	**Fair Data, Open Data - 2: FAIR OPEN Data Management** Francesca DE CHIARA, *CNR-ISMN*
12:20 - 12:30	**DOE: an advanced application to dry etching processes** Simona FIORAVANTI, *FBK*

THE EMERGING ROLE OF EXTRACELLULAR VESICLES IN REPRODUCTION: FROM GAMETOGENESIS TO INTERACTION WITH IMMUNE SYSTEM

11 September

Chairs: Emily SCHIFANO, *Sapienza University of Rome*, Annalisa RADEGHIERI & Alice GUALERZI, *EVita* and Luciana DINI, *Sapienza University of Rome* | *GEI-SIBSC*

Co-organized with:

Extracellular vesicles (EVs), that are produced from all cells that have been studied to date, are membrane- bound complexes secreted from cells under both physiological and pathological conditions. EV research is a rapidly evolving and expanding field, and it appears that all biological fluids contain very large numbers of EVs. EVs act as messengers for cell–cell communication and signalling due to their cargo, containing proteins, nucleic acids and lipids; recently they are also known to have roles in several reproductive processes.
Although predominantly studied in mammals, extracellular vesicles are ubiquitous across metazoans. Research in non-mammalian models is critical for fully elucidating EV biology. Studies across diverse non-mammalian species reveal both highly conserved and uniquely adapted aspects of EV biology. From vertebrates to invertebrates, common themes emerge regarding EVs mediating immune regulation, tissue homeostasis, regeneration, and developmental signaling. Conserved EV biogenic pathways underlie EV release from Hydra to zebrafish. This workshop is aimed to discuss the role of EVs throughout reproduction (not only in humans), starting with the paternal and maternal gametes, followed by the establishment and continuation of successful pregnancies, with focus on the interaction of EVs with the maternal immune system and in various reproductive promotion and disorders. Additionally, we will explore how these concepts, well-documented in higher systems, are also relevant in less complex organisms, providing a broader understanding of EV function across different species.

11 SEPTEMBER

09:00 - 10:30	JE.I.1
ANIMAL REPRODUCTION AND THE ROLE OF EXTRACELLULAR VESICLES 1/2	
Chairs: Annalisa RADEGHIERI, *EVita* & Luciana DINI, *Sapienza University of Rome* | *GEI-SIBSC*	
1	Danilo CIMADOMO, *Centro PMA Genera, Rome* **Assisted Reproduction Technologies in a modern IVF lab: current practice and future challenges**
2	Carlos SALOMON, *University of Queensland, Australia* **Clinical Translation of Extracellular Vesicles in pregnancy: What Are We Missing?**
3	Maurizio ZUCCOTTI, *University of Pavia* **Cumulus cells release extracellular vesicles containing microRNAs their potential**

11 SEPTEMBER

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

ANIMAL REPRODUCTION AND THE ROLE OF EXTRACELLULAR VESICLES 2/2

Chairs: Emily SCHIFANO, *Sapienza University of Rome* & Alice GUALERZI, *EVita*

1	Giulia FIORENTINO, *University of Pavia* **Human cumulus cells-derived EVs and their role in the acquisition of the oocyte developmental competence**
2	Paola VIGANÒ, *Polytechnic University of Milan* **Embryo-derived EVs and their involvement in implantation**
3	Luciana DINI, *Sapienza University of Rome* **Animal models for the study of EVs in reproduction**
4	Emily SCHIFANO, *Sapienza University of Rome* **Extracellular vesicles in Caenorhabditis elegans reproduction**

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

EXTRACELLULAR VESICLES IN REPRODUCTION - PROMOTION AND DISORDERS

Chairs: Emily SCHIFANO, *Sapienza University of Rome* | Annalisa RADEGHIERI & Alice GUALERZI, *EVita* | Luciana DINI, *Sapienza University of Rome, GEI-SIBSC*

1	Felipe VILELLA MITJANA, *INCLIVA Carlos Simon Foundation, Spain* **Materno-Fetal Crosstalk. The First Lullaby**
2	Stefania BIFFI, *IRCCS Burlo Garofolo* **Extracellular vesicles as biomarkers in endometriosis and reproductive diseases**
3	Fabrizio FONTANA, *University of Milan* **Unraveling the role of extracellular vesicles in ovarian cancer stroma**
4	Stefano TACCONI, *Carmen Laboratory, France* **Lipotoxicity: a new role of lipid cargo in Extracellular Vesicles biology**

VII Edition

OPEN INNOVATION & OPEN SCIENCE
Infrastructures

13 September

Chairs: Vittorio MORANDI, *CNR* and Marco ROSSI, *Sapienza University of Rome*

In collaboration with:

With the growing interest generated by the previous six editions of *"Open Innovation and Open Science"*, the event is once again being organized as part of NanoInnovation 2024, marking its seventh edition. Since the 2022 edition, it was decided, for continuity, to retain the same title, but the contents and aims of the event have been revised and reconfigured to thoughtfully align with the scenarios presented in the National Recovery and Resilience Plan (PNRR), emphasizing sustainability, localized re-industrialization, reimagining globalization policies, and addressing the evolving needs of university and post-graduate training programs. In particular, the current 2024 edition will be mainly focused on the actions regarding the project for the implementation of the Research Infrastructures (RIs) and of the Technological Infrastructures for Innovation, that are strategic structural elements of the PNRR, as they have activated an investment plan that has no precedent in the Italian research landscape.

PNRR represents an unique opportunity to modernize and expand existing laboratories and infrastructures as well as to build new ones, and, at the same time, it will also result in an huge responsibility for all those laboratories, to develop cutting-edge projects in strategic sectors such as material development, quantum technologies, digital and ecological transition, and to realize a sustainable, effective and impactful ecosystem at the National and European level. Moreover, 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. In such a context, a key element of the PNRR action on RIs is the commitment to make available the result of these large scale investments – instrumentations, facilities and associated know-how – to a wide audience, from both the scientific and the business sector, and also to create training chains useful for filling skills gaps in cutting-edge sectors. 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 the ongoing projects on RIs.

In the last years, also before the pandemic, 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 interconnected systems, determines the generation of new organizational forms with a "hybrid nature" (strategic European and National initiatives, 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.

The 7th edition of Open Innovation and Open Science is structured 4 sessions. 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, Industrial Research, and Public-Private Partnerships within PNRR
- Principles and methods for open science and open innovation
- Initiatives and approach towards processes and products integration and sustainability
- Higher education system: innovation policies and requirements

13 SEPTEMBER

09:00 - 10:30	JE.II.1
TECHNOLOGY TRANSFER AND INNOVATION POLICIES FOR A SUSTAINABLE RESEARCH	
In collaboration with Distretto Tecnologico Sicilia Micro e Nano Sistemi S.C.A.R.L.	
Chair: Sabrina CONOCI, *Distretto Tecnologico Sicilia Micro e Nano Sistemi*	
1	Giorgio GRADITI | Giulia MONTELEONE, *ENEA* **Visione a lungo termine delle infrastrutture ENEA, compreso DTT ed i vari IPCEI**
2	Cesare LOBASCIO, *Thales Alenia Space, Space Exploration & Science Innovation Lead and Senior Expert Life Support & Habitability* **Disruptive innovation for New Space Exploration Challenges**
3	Rosaria RINALDI, *University of Salento, Vice-Rector for Technology Transfer* **Green and Circular Chemistry for the Sustainable Production of Nano-Therapeutic Materials**
4	Alessandro GARIBBO, *LEONARDO, Head of Universities and Research Centers Coordination (University Relations Manager)* **Title in definition**
5	Michele MUCCINI, *CNR-ISMN e MISTER Smart Innovation* **Mister Smart Innovation and the CNR Bologna Technopole: an hands on experience for research valorization and public-private collaboration**
6	Lorenzo ROSSI, *IIT, Intellectual Property Manager* **Technology Transfer: Impact, Goals, People and Resources**

13 SEPTEMBER

11:30 - 13:00	JE.II.2

IM4EU: ADVANCED MATERIALS FOR INDUSTRIAL LEADERSHIP – COME DIVENTARE PROTAGONISTI

Chair: Marco FALZETTI, *APRE*

1	Marco FALZETTI, *Direttore APRE e Chair EuMaT* **Introduction**
2	***Keynote Speaker*** Maria Cristina RUSSO, *Direttrice della Direzione Prosperity della DG- RTD della Commissione Europea* **L'innovazione nei Materiali - dove sta andando la Commissione Europea**
3	Maria Cristina RUSSO & Marco FALZETTI **Dialogo: Verso il nuovo Partenariato sui Materiali Avanzati IM4EU**

ROUND TABLE
ESSERE PROTAGONISTI DELLE FUTURE SFIDE SUI MATERIALI INNOVATIVI

Moderator:
Tullio TOLIO, *Esperto alla Configurazione di Programma del Cluster 4 di Horizon Europe, Politecnico di Milano*

PANELISTS

Stefano FABRIS, *Direttore del Dipartimento Scienze fisiche e tecnologie della materia – CNR*

Francesca GALLI, *Ufficio di Gabinetto MUR*

Luca DE ANGELIS, *Direttore della Direzione generale per le nuove tecnologie abilitanti, MIMIT*

Nicoletta AMODIO, *Responsabile Industria e Innovazione Confindustria*

Luigi NICOLAIS, *Prof. Emerito Università Federico II*

QUESTION & ANSWER

13 SEPTEMBER

14:00 - 15:30	JE.II.3

RESEARCH INFRASTRUCTURE AND ECOSYSTEM WITHIN AND BEYOND PNRR: OPEN SCIENCE, OPEN INNOVATION, AND HIGHER EDUCATION 1/2

Chair: Alfredo PICANO, *iENTRANCE@ENL Manager & CNR*

1	Ennio CAPRIA, *ESFR, Deputy Head of Business Development, France* **Ecosystems and Infrastructures: The example of Grenoble**
2	Massimo CARNELOS *(to be confirmed), MAECI, Capo dell'Ufficio Innovazione, start-up e spazio - DGSP Uff. XI* **title to be defined**
3	Marina SILVERII, *Executive Director at ART-ER & Vice-President ECOSISTER Foundation* **ECOSISTER: The Emilia-Romagna Region's ecosystem for sustainable transition**
4	Franco FOSSATI, *Fondazione Rome Technopole, Direttore Scientifico* **Drivers of Competitive Advantage: Education, Innovation, and Entrepreneurship in Open Ecosystems**
5	Speaker in definition, *SAMOTHRACE (ecosistema PNRR regionale della Sicilia)* **Title in definition**
6	Anastasia DOTOLO, *HUB NODES SCARL, Project Manager* **NODES: The North-West ecosystem for digital and sustainable transition**

16:00 - 17:30	JE.II.4

ROUND TABLE
RESEARCH INFRASTRUCTURE AND ECOSYSTEM WITHIN AND BEYOND PNRR: OPEN SCIENCE, OPEN INNOVATION, AND HIGHER EDUCATION 2/2

Moderators: Vittorio MORANDI, *CNR* & Marco ROSSI, *Sapienza University of Rome*

PANELISTS in definition

Panelist in definiton, *Lazio Innova*

Panelist in definiton, *Regione Lazio*

Panelist in definiton, *Regione Piemonte*

Antonio ANDRETTA, *Klopman International, LCA Manager*

Massimo BERSANI, FBK, Materials and Topologies for Sensors and Devices (MTDS) Unit Leader

Ennio CAPRIA, ESRF, Deputy Head of Business Development, France

Massimo CARNELOS *(to be confirmed), MAECI, Capo dell'Ufficio Innovazione, start-up e spazio - DGSP Uff. XI*

Vincenzo COLLA, *Regione Emilia Romagna, Assessore Sviluppo Economico e Green Economy, Lavoro, Formazione, Relazioni Internazionali*

Marco CRESCENZI, *ISS, Core Facilities, Director*

Alessandro GARIBBO, *LEONARDO, Head of Universities and Research Centers Coordination*

Rosaria RINALDI, *University of Salento, Vice-Rector for Technology Transfer*

QUESTION & ANSWER

CLOSING COCKTAIL IN THE CLOISTER
A moment to say goodbye and look forward to the 10th edition of Nanoinnovation (15-19 September 2025)

Greening Tomorrow: Exploring Nanobiostimulants for a Regenerative Economy and Positive Environmental Impact

13 September

Chairs: Antonella MACAGNANO, *IIA-CNR* & Fabrizio DE CESARE, *DIBAF-University of Tuscia*

Co-organized with:

Institute of Atmospheric Pollution Research
National Research Council of Italy

In today's ever-evolving landscape, the convergence of environmental sustainability and economic prosperity has never been more pivotal. As we confront urgent environmental challenges while nurturing economic progress, the imperative for innovative solutions becomes increasingly clear. Nanobiostimulants emerge as a promising avenue for addressing both imperatives simultaneously. Our workshop is dedicated to uncovering the transformative potential of nanobiostimulants in shaping a sustainable future. Through the utilization of nanotechnology, these pioneering solutions stand poised to revolutionize agriculture, environmental restoration, and economic advancement. Throughout our sessions, we will delve into the myriad environmental benefits offered by nanobiostimulants, their pivotal role in fostering regenerative economies, and the technological breakthroughs propelling their widespread adoption. Together, we'll dissect compelling case studies, deliberate on pertinent policy considerations, and foster collaboration among scientists and a diverse array of stakeholders.

TOPICS
- Types of nanobiostimulants and their applications in agriculture and environmental remediation; - Environmental Benefits of Nanobiostimulants: Reduced chemical inputs and their impact on soil and water quality, Enhanced plant growth and resilience to environmental stressors, Carbon sequestration and mitigation of greenhouse gas emissions. - Economic Opportunities in a Regenerative Economy: Role of nanobiostimulants in promoting sustainable agriculture practices, Market trends and opportunities for businesses in the nanobiostimulant sector, Case studies of successful implementation and economic outcomes - Technological Advances and Innovation: Cutting-edge research and development in nanobiostimulant technology, Novel applications and potential future uses of nanobiostimulants, Collaboration opportunities for interdisciplinary research and innovation - Policy and Regulation: Current regulatory landscape for nanobiostimulants, Considerations for sustainable and responsible use of nanobiostimulants, Advocacy and policy initiatives to support the adoption of nanobiostimulants in agriculture and environmental management - Case Studies and Success Stories: Real-world examples of nanobiostimulant applications and their environmental and economic benefits - Stakeholder Engagement and Collaboration: Importance of engaging diverse stakeholders, including farmers, researchers, policymakers, and industry representatives, Collaborative approaches to address challenges and leverage opportunities in the nanobiostimulant sector, Networking and partnership-building opportunities for workshop participants

13 SEPTEMBER

09:00 - 10:30	JE.III.1
UNPACKING THE ESSENTIALS OF PLANT BIOSTIMULANTS	
Chairs: Antonella MACAGNANO, *IIA-CNR* & Fabrizio DE CESARE, *DIBAF-University of Tuscia*	
1	Giuseppe COLLA, *DAFNE-University of Tuscia* **Microbial and non microbial plant biostimulants: what they are and what they do according to the EU Regulation 2019/1009**
2	Francesco PETRACCHINI, *DTA-CNR, Rome* **Towards Agriculture 4.0: Environmental impact, sustainability, and innovation, perspectives and opportunities**
3	Giuseppe SCARASCIA MUGNOZZA, *DIBAF-University of Tuscia* **Towards a regenerative bioeconomy: Agroforestry and applications from ecofriendly circular nanotechnologies**
4	Annalisa SANTUCCI, *DBCF-University of Siena* **Circular bioeconomy as a novel source of bioactive compounds**

11:30 - 13:00	JE.III.2
HARNESSING NANOTECHNOLOGY FOR A GREENER FUTURE WITH NANOBIOSTIMULANTS	
Chairs: Antonella MACAGNANO, *IIA-CNR* & Fabrizio DE CESARE, *DIBAF-University of Tuscia*	
1	Daniele DEL BUONO, *DSA3-University of Perugia* **Nanomaterials from waste for a sustainable nano-circular economy. Biostimulant effect of nanoscaled lignin and biogenic nanoparticles**
2	Fabrizio DE CESARE, *DIBAF-University of Tuscia* **Microbial biostimulants: From traditional to nanomaterial-based formulations**
3	Giuseppina LUCIANI, *DICMAPI-University of Naples "Federico II"* **Nanotechnology meets sustainable agriculture: Nanohybrids from biowaste**
4	Antonella MACAGNANO, *IIA-CNR, Rome* **Transforming agriculture: Electrospinning nanobiostimulants for sustainable grow**

13 SEPTEMBER

14:00 - 13:00	JE.III.3

COLLABORATING FOR A SUSTAINABLE FUTURE: JOINING INDUSTRY, AGRICULTURE, AND SCIENCE FOR NANOBIOSTIMULANT DEVELOPMENTS

Chairs: Antonella MACAGNANO, *IIA-CNR* & Fabrizio DE CESARE, *DIBAF-University of Tuscia*

1	Leonardo DRAGONI, *Italpollina-Hello Nature, Verona* **The evolution from Italpollina to Hello Nature for a global approach to sustainable fertilization**
2	Sarai AGUSTIN-SALAZAR, *IPCB-CNR, Naples* **Characterization of multifunctional nanofibrous systems using hazelnut shell derivatives**
3	Valentino RUSSO & Damiano SPAGNUOLO, *Promethea biochem solutions, Taranto* **Beyond Nutrients: The Role of Macroalgae Derived Growth Regulators in Sustainable Agriculture**
4	Massimo MARI, *DIITET-CNR, Rome* **Innovative nanofibers from agro-industrial waste: Pioneering circular economy solutions**
5	Mimmo SCOLLO, *Originy S.r.l, Catania* **Microalgae bioreginery for nutraceuticals and agriculture, industrial experience in Green Extraction and future prospects**
6	Bruna MATTURRO, *IRSA-CNR, Rome* **Colonization of sustainable nanotissue derived from agricultural waste by Kosakonia radicincitans and its potential application**
7	Antonio DI NARDO, *Huber AgroSolutions, Bologna* **Nanomaterials or Nanobiostimulants: When Will We Have a Legally Recognized Definition?**
8	Anita MAIENZA, *IBE-CNR, Rome* **Nanofiber technology as support to plant and root development: Results from tomato pot experiments**
9	Claudio CARAMADRE, *Biodistretto Etrusco Romano* **Future-proofing agriculture: The role of Etruscan-Roman Bio-district in sustainable development**

CIQTEK SEM LIVE DEMO
Rome is the place to be for microscopists

9 - 13 September

In collaboration with:

Media System Lab presents in Italy the new electron microscopes from Ciqtek, which in addition to SEM and TEM also produces EPR, magnetic microscopes, gas adsorption analysers and has quantum computers among its technological milestones.

The Ciqtek SEM3200 (watch the video) will be available for live demo during the NanoInnovation in Room 13, book your demo.

To enter the place of the microscopists and have the chance to test the quality of Ciqtek first hand, book your demo by calling Matteo Mariani at +393479742823 or by sending an email to: info@m-s.it

At Ciqtek innovation is fast and always at the side of Research and Industry.

DRIVEAFM: INNOVATIONS, TRENDS AND FUTURE PERSPECTIVES IN AFM APPLICATION

9 - 13 September

Quantum Design ITALY

Co-organized with: nanosurf

WS.XV - *11 September*
WORKSHOP

Quantum Design Italy is pleased to invite you to explore our partner Nanosurf's flagship AFM, the DriveAFM. Come to hear about recent advances in AFM technology and learn about the newest state-of-the-art atomic force microscope on the market. DriveAFM is delivered with WaveMode off-resonance photothermally driven excitation, and a fully automated laser alignment on a tip-scanning design, that offers unprecedented possibilities for AFM users in all applications spanning from life science with biological materials such as cells, DNA, viruses, etc. to material science with 2D materials, polymers, photovoltaics, and more. The workshop will include a live demonstration of the DriveAFM: we offer you the opportunity to bring your own sample of interest to be measured and discussed during the workshop. Please send an email to ramberti@qd-europe.com if you would like to make use of this offer.

11:30 - 11:40	Introduction to Quantum Design and Nanosurf
11:40 - 12:00	Short introduction to Atomic Force Microscopy and its applications
12:00 - 12:20	The Nanosurf DriveAFM, a technical overview Hands-on 1: atomic resolution
12:20 - 12:40	Photothermal excitation: principle and applications (off-resonance excitation WaveMode) Hands-on 2: soft sample imaged in WaveMode
12:40 - 13:00	Magnetic Force Microscopy Hands-on 3: MFM measurements
14:00 - 14:30	Kelvin Probe Force Microscopy Hands-on 4: KPFM measurements
14:30 - 15:00	Piezoresponse Force Microscopy Hands-on 5: PFM measurements
15:00 - 15:30	Liquid environments and WaveMode Hands-on 6: measurements in liquid

Speakers

Héctor CORTE- LÉON, *Application Scientist at Nanosurf*

Marco PORTALUPI, *Sales Manager Europe at Nanosurf*

Stefano PERGOLINI, *Sales Engineer at Quantum Design Italy*

LIVE DEMO *9-13 September*

Nanosurf's DriveAFM live demo – bring your own samples! The DriveAFM, Nanosurf's last generation tip-scanning AFM, will be available throughout the week for live demonstrations: discover the unique capabilities of PhotoThermal excitation (CleanDrive) and WaveMode: book your demo now and bring your samples*! The system empowers researchers with exceptional performance across a diverse range of applications, irrespective of the sample being analyzed. This unique, ultra-low noise architecture provides high-resolution data acquisition, and is compatible with high-fidelity small cantilevers that further boost performance. DriveAFM performs in a stand-alone setup as well as integrated with an inverted optical microscope. A full range of imaging modes are available and the system comes with full motorization that brings automation features that facilitate setting up and performing experiments. The DriveAFM offers a combination of high performance and adaptability for a broad spectrum of applications in materials research and in life science. Its design ensures consistent and reliable operation across both air and liquid environments, and effectively handles large and heavy samples. Beyond basic imaging, the DriveAFM supports the investigation of a sample's electrical and mechanical properties at the nanoscale. It also accommodates a variety of accessories, enhancing its functionality to include temperature control, magnetic field application, electrical current detection, and the ability to observe dynamic changes in electrochemical processes. * Please send an e-mail to ramberti@qd-europe.com to book your demo! In order to streamline demos we kindly ask you to limit the number of samples to 1 or 2 and to provide sample description and measurements expectation.

10 - 11 - 12 - 13 September

The "Infrastructure for Energy Transition and Circular Economy @ EuroNanoLab" (iENTRANCE@ENL) is a key initiative under Italy's National Recovery and Resilience Plan (NRRP), specifically within Mission 4: Education and Research, Component 2: From Research to Enterprise, Investment 3.1. This initiative aims to promote innovation, facilitate technology diffusion, enhance skills, and support the transition to a circular economy. The primary goal of iENTRANCE@ENL is to become Italy's leading research infrastructure in the following areas: Nanomaterials for Energy: developing advanced nanomaterials to improve energy efficiency and sustainability. Processes and Devices for Green Energy Production, Storage, and Management: innovating technologies that support renewable energy generation, efficient storage solutions, and effective energy management. Micro- and Nanoscale Characterization and Metrology: enhancing techniques for measurement and analysis at the micro and nanoscale to support advanced research and development. Technologies for Device and System Realization: creating and implementing new technologies for the development of advanced devices and systems. The infrastructure is coordinated by the National Research Council (CNR) and includes the National Metrology Institute of Italy, the Polytechnic University of Turin, the University of Bologna, Sapienza University of Rome, and the University of Roma Tre. CNR's representation spans several institutes: IMM Bologna (coordinator of the Research Infrastructure) and Catania, ISMN Bologna, NANO Modena, IMEM Parma, ISM Roma and Potenza, iPCB Pozzuoli, and STEMS Napoli. The consortium is organized into six geographical nodes: Bologna, Turin, Rome, Naples, Potenza, and Catania. Each node is internationally recognized for its expertise in complementary research areas, coordinated by a central hub. The initiative will be developed along three main project phases: Design and Implementation (2022-2024): establishing the operational and management backbone of the Research Infrastructure. A key component will be the digital infrastructure, based on FAIR principles. Ramp-Up (2024-2025): opening the facilities to users from academia and industry. New instrumentation will be acquired and commissioned to enable cutting-edge research. Access policies will incorporate Open Science best practices, emphasizing the importance of excellent science. In-house research will drive technologies beyond the current state-of-the-art to ensure sustainability after the NGEU Project. Full Operation: for at least 10 years, Italy will have a distributed, integrated, and fully interoperable structure for Clean Energy Transition research up to Technology Readiness Level (TRL) 4. Collaboration with other NGEU infrastructures and research innovation programs will ensure Italian competitiveness, autonomy, and sovereignty in this field, covering the entire value chain from low to high TRL.

In the context of the Nanoinnovation 2024 activities, the iENTRANCE@ENL Team has played a significant role in organizing and supporting the events listed below, either fully or partially.

Scientific Commettee of iENTRANCE@ENL for Nanoinnovation 2024

Alessia SANNA
Daniele ROCCO
Gianluca SBARDELLA
Valentina GARGIULO
Anna BASCO
Annamaria SABETTA
Gennaro ROLLO
Alessandro GRADONE
Nicola GILLI
Diego PUGLIESE
Alessia AIRI
Giuseppe FERRARO
Stefania LETTIERI
Mara SERRAPEDE
Salvatore Ethan PANASCI

10 SEPTEMBER

11:30 - 13:00

ROUND TABLE
PLATFORMS and OPEN ACCESS RESEARCH INFRASTRUCTURES for the TECHNOLOGY TRANSFER

11 SEPTEMBER

09:00 - 10:30

SCHOOL ON NANOTECHNOLOGIES:
processes and applications to sensors and actuators

09:00 - 10:30

SE.I.1

YOUNGINNOVATION SESSION
Next-generation semiconductor devices for power electronics applications

11:30 - 13:00

SE.I.4 - WS.VII

YOUNGINNOVATION SESSION
Composite materials for electrochemistry

17:45 - 19:15

BREAKOUT SESSION
FAIR Data: present and future

12 SEPTEMBER
09:00 - 10:30
TT.V.A
Flexible energy storage devices
11:30 - 13:00
SE.I.10
YOUNGINNOVATION SESSION Hybrid and Composite nanomaterials for energy
14:00 - 15:30
SE.I.12
YOUNGINNOVATION SESSION Photochemistry and Photophysics in energy conversion
16:00 - 17:30
SE.I.14
YOUNGINNOVATION SESSION Nanomaterials for catalytic processes
17:45 - 19:15
BREAKOUT SESSION Circular Economy Approaches in the Field of Materials for Energy

13 SEPTEMBER
09:00 - 10:30
TT.IX.E
Machine learning approaches in materials science
09:00 - 17:30
JE.II - TT.X.E
VII Edition OPEN INNOVATION & OPEN SCIENCE Infrastructures

ALPHABETICAL ORDER	
21	AIRI
7	ASSING
23	BRUKER
18	5PASCAL
14	COST
16	D^{3}4 HEALTH
17	DPI SMART
25	DTC LAZIO
1	EMME 3
20	ETPN
11	FBK
5	GAMBETTI
5	HEIDELBERG INSTRUMENTS
29	iENTRANCE *(day 11,12,13)*
19	INRIM
13	JEOL
10	MALVERN PANALYTICAL
27	MEDIA SYSTEM LAB
24	NFFA
29	NIPPON GASES *(day 09,10)*
9	NORDTEST
6	OXFORD INSTRUMENTS NANOANALYSIS
22	PLATINUM
2	QUANTUM DESIGN ITALY
8	RAITH
26	RENISHAW
15	RHP-TECHNOLOGY GMBH
12	ROME TECHNOPOLE
3	SCHAEFER ITALY
30	THERMO FISHER SCIENTIFIC
4	VERDER SCIENTIFIC
28	ZEISS

BOOTH ORDER	
1	EMME 3
2	QUANTUM DESIGN ITALY
3	SCHAEFER ITALY
4	VERDER SCIENTIFIC
5	GAMBETTI
5	HEIDELBERG INSTRUMENTS
6	OXFORD INSTRUMENTS NANOANALYSIS
7	ASSING
8	RAITH
9	NORDTEST
10	MALVERN PANALYTICAL
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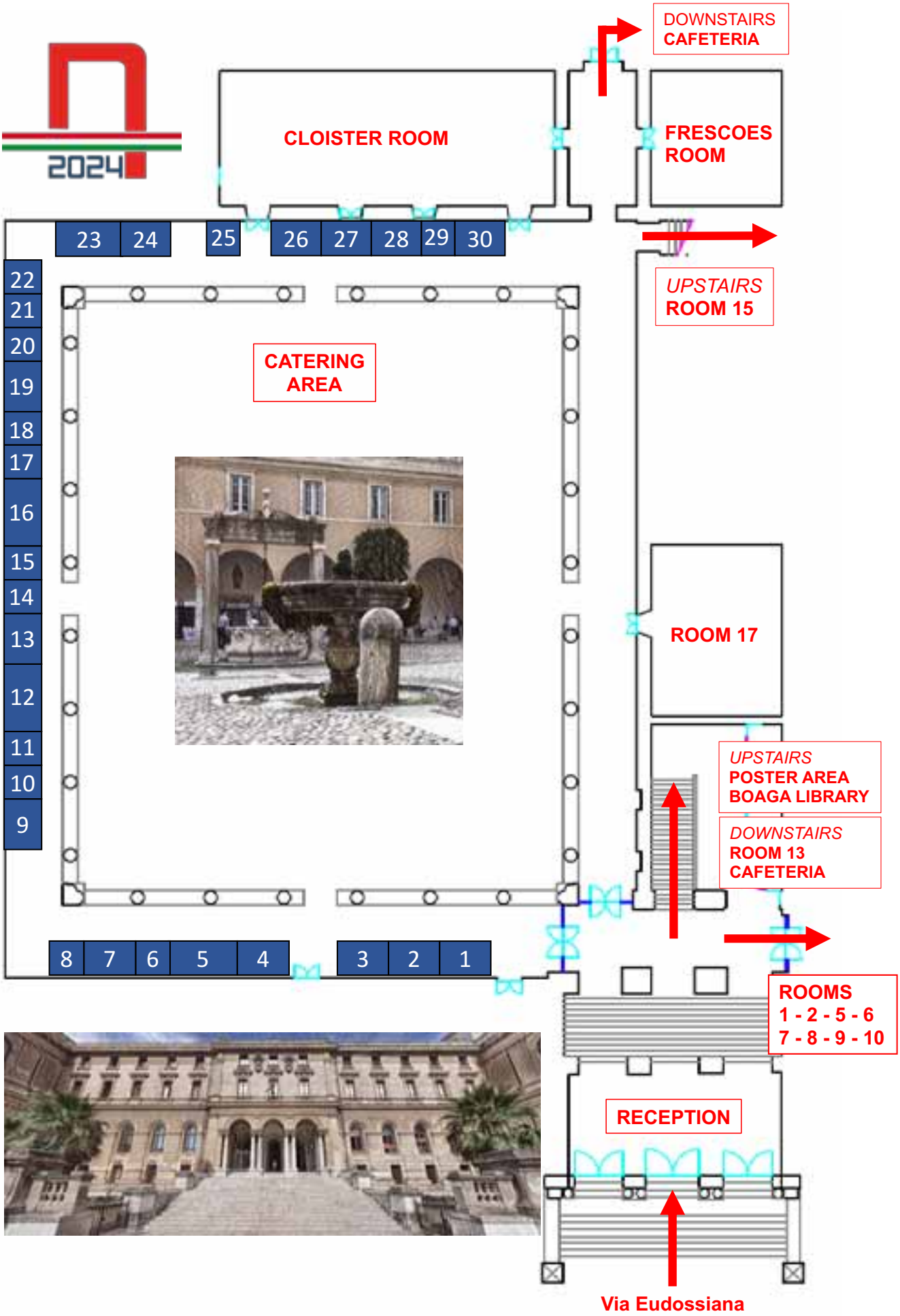
28	ZEISS
29	NIPPON GASES *(day 09,10)*
29	iENTRANCE *(day 11,12,13)*
30	THERMO FISHER SCIENTIFIC


DOWNSTAIRS
CAFETERIA
CLOISTER ROOM
FRESCOES ROOM
23 24 25 26 27 28 29 30
22 21 20 19 18 17 16 15 14 13 12 11 10 9
UPSTAIRS
ROOM 15
CATERING AREA
ROOM 17
UPSTAIRS
POSTER AREA
BOAGA LIBRARY
DOWNSTAIRS
ROOM 13
CAFETERIA
8 7 6 5 4 3 2 1
ROOMS
1 - 2 - 5 - 6
7 - 8 - 9 - 10
RECEPTION
Via Eudossiana

BOOTH 21

AIRI

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e-mail: info@airi.it

Airi is celebrating its 50 years of activities, acting since 1974 as a reference to sustain and promote Industrial Research. We work with our members in promoting industrial R&I, and co-operation between the private and public sectors. Our actions focus on technology foresight, advocacy on R&I policies and incentives, STEM skills and education, and cooperative R&S projects on enabling technologies.
Ongoing activities relate to new bio-based, high performing and Safe-and-Sustainable-by-Design (SSbD) solutions, combining advanced materials, digital techs and other KETs for diverse industrial sectors:

- REPOXYBLE (Horizon Europe): new generation of multifunctional, safe and sustainable epoxy-based composites, with case studies in automotive and aerospace.
- BIORING (HE, Joint Biobased Undertaking): novel portfolio of biodegradable and recyclable, bio-based coatings with enhanced thermo-mechanical performance, with case studies in construction, furniture and automotive.
- SURFTOGREEN (HE, Joint Biobased Undertaking, start in October 2024): innovation action to demonstrate robust and scalable solution for fully bio-based surfactants for industrial applications, with case studies in home/personal care, textile, and agriculture.
- UMARI (NODES innovation ecosystem): valorising plant and agriculture waste, to develop nutraceuticals, cosmetics products, and biostimulants and biocides for a sustainable agriculture.
- INNOVATION OF THE NEXT FUTURE: a unique foresight analysis of Italian capacities and competences on enabling technologies for industrial research. The next edition will soon be published!
- RENATO UGO SCHOLARSHIPS: A prize of 5000 euro for the best industrial thesis. The application is open in the following STEM discipline: Ingegneria Civile, Architettura e Ingegneria Edile-Architettura, dell'Ambiente e territorio, Chimica e Chimica Industriale, Scienze dei Materiali, Biotecnologie Industriali, Farmacia, Scienza dei materiali. Apply now!

Visit the Airi stand to get in touch with us and learn more on our members and activities.

BOOTH 7

ASSING SPA

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ASSING S.p.A is an Italian Company Founded in 1971, with ambitious ideas: to develop Responsible Innovation and Internationalization. Our goal is to produce technological innovation by collaborating with the most important European public and private sector Researchers Assing 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.

Scientific Instruments Division
Assing is the exclusive distributor of brands TESCAN, RIGAKU, NU INSTRUMENTS, RIBER, PHYSICAL ELECTRONICS, BRUKER, NANOSURFACES AND METROLOGY, NENOVISION and AGAR SCIENTIFIC
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.

Automotive Division: We design and manufacture turnkey solutions and equipment for Automotive Powertrain Test Systems. Our skills include EOL test solutions for components of innovative powertrain for electric and hybrid vehicles (BEV, PHEV, Fuel Cell EV), as well as test benches for traditional applications such as Hot and Cold engine test benches, Automatic and Manual Transmissions, DCT Module

BOOTH 23

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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.

QUANTAX FlatQUAD - Where Conventional SDDs Reach Limitations

QUANTAX FlatQUAD is the EDS microanalysis system based on the revolutionary XFlash® FlatQUAD. This annular four-channel silicon drift detector is inserted between SEM pole piece and sample, achieving maximum solid angle in EDS. In combination with the ESPRIT analytical software suite, QUANTAX FlatQUAD provides unrivaled mapping performance, even for the most difficult samples.

BOOTH 18

CINQUEPASCAL S.r.l.
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Tel. 02.4455913

website: www.5pascal.it
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e-mail: info@5pascal.it

5Pascal stands out as a versatile company in the vacuum technology market, offering custom systems and dedicated solutions. Our unique approach involves skillfully guiding our valued customers through the entire selection process, ensuring the most appropriate solution to their needs is created quickly and flexibly. Since 1999, 5Pascal has been the exclusive Italian partner distributor of Edwards, a global leader in the vacuum world. This long-standing partnership is a testament to our reliability. Edwards provides the broadest range of dry and oil-sealed pumps, distinguished by top-level reliability, performance capability, and serviceability. To comprehensively accomplish the requests of the constantly evolving material science field, 5Pascal has enlarged its portfolio with cryogenic products, coating systems and components, and surface analysis devices by the most innovative companies.

Our portfolio at a glance

Vacuum world. Vacuum products, repair kits and consumables, UHV chambers, flanges and viewports, vacuum fittings, valves and manipulators, feedthroughs and ceramic isolators, equipment for RGA applications, customized components and systems. Main partners: Edwards and Gamma Vacuum, CeramTec, VacGen, Atlas UHV, Thyracont, Torr Scientific, ESS, Precision plus

Cryogenics. Complete cryogenic solutions, probe stations, custom equipment, temperature sensors and controllers. Main partners: Advanced Research Systems, Scientific Instruments

Surface science equipment. Design of custom deposition systems, sputter deposition products, substrate heaters, high-purity materials, surface analysis equipment, and tribology solutions. Main partners: MeiVac, Noivion, Testbourne, Tribotechnic, LK Technologies

Freeze-drying. 5Pascal develops and delivers under its own brand freeze-dryers and vacuum ovens.

Furthermore, 5Pascal is an Edwards Authorised Service Distributor in Italy. We have a complete portfolio of service offerings, from the fast provision of genuine spare parts to preventative maintenance programs to precisely match our customers' needs. Choose 5Pascal: **ONE SUPPLIER, ALL SOLUTIONS**

BOOTH 14

COST

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website: www.cost.eu
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COST, European Cooperation in Science and Technology
COST is an EU-funded programme that enables researchers to set up their interdisciplinary research networks in Europe and beyond, called COST Actions. We provide funds for organising conferences, meetings, training schools, short scientific exchanges or other networking activities in a wide range of scientific topics. By creating open spaces where people and ideas can grow, we unlock the full potential of science.
www.cost.eu - www.cost.eu/what-do-we-fund

The COST Actions
COST Actions bring together researchers and innovators to investigate a topic of their choice for 4 years. COST Actions are typically made up of researchers from academia, SMEs, public institutions and other relevant organisations or interested parties. Open to all science and technology fields, including new and emerging fields, COST Actions offer an inclusive, pan-European environment for individuals of all levels of seniority to grow their professional research networks and boost their careers. COST Actions can also pave the way to or establish synergies with EU-funded research projects. Moreover, collaboration within research projects can also lead to new Actions, thus enhancing the networking potential of such consortia.
www.cost.eu/cost-actions/what-are-cost-actions - www.cost.eu/cost-actions-event/browse-actions

Our vision and mission
At COST, we stress the importance of people in science, which is why we fund the networks connecting people. COST funds the building of bridges between nationalities, cultures and generations, and the empowerment of individuals. This is reflected in the open, bottom-up and inclusive character of COST networks. COST is dedicated to providing the freedom and diversity that science needs in order for it to unleash its full potential.
www.cost.eu/about/members - www.cost.eu/about/strategy

BOOTH 16

D^{3}4 HEALTH

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https://sites.google.com/uniroma1.it/d3forhealth/home
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email: fondazione@d34health.it

The project ***Digital Driven Diagnostics, prognostics and therapeutics for sustainable Health care*** originated as part of the **Complementary National Plan (CNP)**, which has a specific focus on Health, Environment, Biodiversity and Climate.
D^{3}4Health, in particular, promotes research in the area of Health, through the development of digital technologies and data mining approaches, applied to the treatment of **5 main diseases** with the greatest impact on the population and health system: metastatic colon cancer, liver and bile duct cancer, central nervous system cancer, diabetes type I and multiple sclerosis.
Specifically, the project aims to develop **digital and biological twins** for the diagnosis, monitoring and treatment of five benchmark diseases, through the collection of health data analysed by artificial intelligence-based algorithms, collected on a multilayer platform and also obtained through the development and use of innovative technologies such as wearable devices, sensors and biomarkers.
The D^{3}4 Health Foundation, established to manage the project, consists of **28 partners** including public and private universities, research institutes and companies.
Sapienza University of Rome is the project leader and the scientific contact person is Prof. Carlo Catalano (direzionescientifica@d34health.it).
The project is also a great opportunity for **young researchers** to be part of an R&D program aimed at health system innovation through the digital technology transition, where Research and Business come together to jointly promote and support high-level research, technology transfer and higher education.

BOOTH 17

DPI SMART

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The DPI SMART project "Individual Protection Devices, Active Intelligent for Sustainable Multifunctional Reliable Resilient Protection Clusters" is promoted and supported by INAIL and involves the collaboration of highly qualified public and private partners.

Objective: The DPI SMART project involves the creation of a cluster of active and intelligent protective devices aimed at reducing risk exposure and improving worker health and safety.

System features: Sustainability in terms of cost and life cycle of PPE; Multifunctionality with respect to different types of detectable risk; Reliability in reporting critical events in Occupational Health and Safety; Resilience with reference to changes in technology and workers' conditions during the performance of activities and possible implementation of new work processes; The project contributes to the achievement of the objectives of the core area of INAIL's Institutional Mission, specifically the programmatic theme P6 "Innovative systems of health and safety management for risks related to the evolution of production processes, with particular reference to Industry 4.0"

Fields of application
These devices can be used: In the workplace to signal potential hazards due to manual handling of loads, exposure to excessive levels of chemicals with the purpose of a "Protection Cluster" that, when applied to current passive PPE (body, face and eye protection, APVR, helmets, footwear and gloves), adds "active" functionality while not affecting Certification, ensuring resilience, reliability and economic and production sustainability.

BOOTH 25

CdE DTC Lazio

c/o Area Servizi di Supporto alla Ricerca e al Trasferimento Tecnologico - Palazzo del Rettorato
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The Centre of Excellence of the Lazio Technological District for Cultural Heritage and Activities (CdE 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 CdE DTC Lazio is a Research Infrastructure 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 productivit 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 CdE 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; 220 members of the Stakeholder Board; more than 200 highly qualified laboratories equipped with advanced scientific instrumentation. The CdE DTC Lazio 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 1

EMME 3 S.R.L.

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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 (**EMS, Diatome**).
- works under controlled atmosphere (glovebox for chemists, new materials research, lithium research etc, **Vigor**)

BOOTH 20

European Technology Platform on Nanomedicine (ETPN)

ETPN Association
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Tel. +33 6 13 08 07 80

website: www.etp-nanomedicine.eu
Contact Person: **Alexandre CECCALDI**
e-mail: secretariat@etp-nanomedicine.eu

The European Technology Platform on Nanomedicine (ETPN) is Europe's leading organization dedicated to advancing nanotechnology in healthcare. Founded in 2005, ETPN is a non-profit association that unites over 120 member institutions from 27 countries, forming a dynamic network across academia, industry, and healthcare. Our mission is to address unmet clinical needs through pioneering nanotechnology solutions, including advanced nanotherapeutics, nanodiagnostics, and nano-enabled regenerative medicine.
Why we're at NanoInnovation 2024 and you should visit us: Our primary objective at NanoInnovation 2024 is to connect the Italian nanomedicine community with our extensive European network. We aim to identify new members and facilitate their growth through R&D partnerships and EU funding access. This event offers a unique platform to engage with local experts, foster collaborations, and expand the reach of innovative projects.

- **Expand Your Network & Join a Vibrant Community**: Connect with leading experts in nanomedicine and increase your visibility within the EU, become part of a dynamic network shaping the future of healthcare through nanotechnology.
- **Collaborate on Innovative Projects & Access EU Funding**: Explore R&D partnership opportunities and. Discover how ETPN can support your projects with strategic EU funding opportunities.

Highlighted Projects:

- **METRINO**: Enhancing metrology for nanomedicine by advancing measurement standards and precision.
- **NANOSPRESSO**: Revolutionizing personalized medicine through the local production of nucleic acids nanomedicines.

We are committed to supporting the integration of multidisciplinary knowledge driving healthcare

BOOTH 11

FBK - BRUNO KESSLER FOUNDATION

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The Bruno Kessler Foundation is the top research foundation in Italy, ranked n. 1 for scientific excellence in three different thematic areas and for economic and social impact according to the results of the latest ANVUR research quality assessment.

With its 3,500 square meters of laboratories and scientific infrastructures and a strong community of more than 400 researchers, 140 PhD students, 200 visiting and thesis students, 700 affiliates and accredited students, the Bruno Kessler Foundation operates as a true scientific and technological district, hosting a lively ecosystem of co-located realities, spin-offs, projects and training opportunities on its premises and platforms.

The result of a history spanning more than half a century, through 11 centres dedicated to technology and innovation and to the human and social sciences, FBK aims for excellence in science and technology with a focus on interdisciplinary approaches and the application dimension, where Radiation sensors, Photonics, MEMS, Cybersecurity, Digital society, and Digital industry, represent the main fields of research.

This is achieved through a constant focus on collaborations and exchange activities between public administration and agencies; small, medium, and multinational companies; European and international institutions, which broaden its capacity for innovation and involve the local community and economy in the circulation of knowledge and technologies.

Wanting to sum up the highlights of the Foundation's work, the Bruno Kessler mission can be summed up in two essential points: Scientific Excellence and Impact on Society. Indeed, FBK strives for excellence both in fundamental research for the advancement of knowledge, and in the more mature fields of science and technology that allow for greater and more immediate economic and social impact.

BOOTH 5

GAMBETTI KENOLOGIA SRL

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Gambetti Kenologia stands out as esteemed presence in the realm of surface characterization, micro and nano fabrication, surface treatment systems, and vacuum and ultra-vacuum components, for nearly five decades.

This year marks a truly remarkable milestone in **our company's legacy! The 50th anniversary** since we embarked on our mission to bring the most cutting-edge techniques and technologies to Italy, by partnering with the best international experts.

Today, we proudly represent a robust and reputable business entity, offering expert technical guidance, an extensive range of solutions and products, and unparalleled pre- and post-sales support.

Driven by a philosophy rooted in continuous innovation, we have forged significant collaborations and synergies with esteemed global organizations such as Ferrotec/Temescal, Politeknik, Heidelberg Instruments, Osiris, Molecular Vista, and ForgeNano.

We are delighted to distribute groundbreaking instruments and systems, alongside our longstanding partners, produced by Park Systems, KLA, Oxford Instruments Plasma Technology, Stoe, and others, showcasing a blend of tradition and cutting-edge advancements.

BOOTH 5

HEIDELBERG INSTRUMENTS

website: heidelberg-instruments.com

About Heidelberg Instruments
Established in 1984, trusted in more than 50 countries with over 1,400 systems installed worldwide, Heidelberg Instruments is a global leader in design, development, and production of high-precision laser lithography systems, maskless aligners, and nanofabrication systems. Our tools range from tabletop solutions to high-end photomask manufacturing equipment and cater to a variety of needs.

Our systems enable a broad spectrum of surface structuring on the micro- and nanoscale, including 2D-patterning, the creation of 2.5D features by Grayscale lithography, and 3D structuring through Two-Photon Polymerization. Due to their flexibility, our systems are valuable assets to the most renowned universities and R&D institutes worldwide, as well as industry production facilities. Typical fields of applications are in micro-optics and photonics, electronics, advanced packaging, quantum devices, MEMS, microfluidics, 2D materials, photomask production, and many others.

Further information: heidelberg-instruments.com

BOOTH 29

(day 12,13)

iENTRANCE

websites: www.ientrance.eu
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e-mail: vittorio.morandi@cnr.it

The "Infrastructure for Energy Transition and Circular Economy @ EuroNanoLab" (iENTRANCE@ENL) is a key initiative under Italy's National Recovery and Resilience Plan (NRRP), within Mission 4: Education and Research, Component 2: From Research to Enterprise, Investment 3.1. This initiative aims to promote innovation, facilitate technology diffusion, enhance skills, and support the transition to a circular economy. The primary goal of iENTRANCE@ENL is to become Italy's leading research infrastructure in the following areas:1.Nanomaterials for Energy: developing advanced nanomaterials to improve energy efficiency and sustainability.; 2.Processes and Devices for Green Energy Production, Storage, and Management: innovating technologies that support renewable energy generation, efficient storage solutions, and effective energy management; 3.Micro- and Nanoscale Characterization and Metrology: enhancing techniques for measurement and analysis at the micro and nanoscale to support advanced research and development; 4.Technologies for Device and System Realization: creating and implementing new technologies for the development of advanced devices and systems.
The infrastructure is coordinated by the National Research Council (CNR). Several CNR institutes are involved: IMM Bologna (coordinator) and Catania, ISMN Bologna, NANO Modena, IMEM Parma, ISM Roma and Potenza, iPCB Pozzuoli, and STEMS Napoli.The other partners are: the National Metrology Institute of Italy (INRIM), the Polytechnic University of Turin, the University of Bologna, Sapienza University of Rome, and the University of Roma Tre. CNR's representation spans several institutes: IMM Bologna (coordinator of the Research Infrastructure) and Catania, ISMN Bologna, NANO Modena, IMEM Parma, ISM Roma and Potenza, iPCB Pozzuoli, and STEMS Napoli. The consortium is organized into six geographical nodes: Bologna, Turin, Rome, Naples, Potenza, and Catania. The initiative will be developed along three main project phases: (I) Design and Implementation (2022-2024): establishing the operational and management backbone of the Research Infrastructure. A key component will be the digital infrastructure, based on FAIR principles. (II) Ramp-Up (2024-2025): opening the facilities to users from academia and industry. New instrumentation will be acquired and commissioned to enable cutting-edge research. Access policies will incorporate Open Science best practices, emphasizing the importance of excellent science. In-house research will drive technologies beyond the current state-of-the-art to ensure long term-sustainability. (III) Full Operation: for at least the successive 10 years, Italy will have a distributed, integrated, and fully interoperable structure for Clean Energy Transition research up to Technology Readiness Level (TRL) 4.

BOOTH 19

INRiM
Istituto Nazionale di Ricerca Metrologica

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The National Metrology Research Institute - **INRiM** - is a **public scientific research body** established by Legislative Decree No. 38 of 21 January 2004. **INRiM** was born in 2006, merging the Gustavo Colonnetti Metrological Institute of CNR and the Galileo Ferraris National Electrotechnical Institute. INRiM carries out and promotes **research in metrology** and develops the most advanced measurement standards and methods and related technologies, fulfilling the functions of a primary metrological institute according to Law No. 273 of 11 August 1991. To this end, as a signatory to international agreements on metrology, upon delegation of the competent institutions, and similarly to the metrological institutes of other countries, INRiM **creates and maintains the national standards for units of measurement**. The existence of such standards is necessary for the **traceability and legal value of measures** in the sectors of industry commerce, scientific research, health and environmental protection, as well as for measurement needs in the judicial field and for any other area in which the high scientific-technological content of metrological research is crucial. INRiM also **enhances, disseminates and transfers knowledge and results** in measurement science and materials research to promote national technological development and improve citizens' quality of life and services. INRiM also transfers knowledge and research results in order to promote the development of the country in its various components. INRiM has a unique position with respect to the European metrological institutes: by virtue of its position within the national research system, it is called upon to measure itself against other public research bodies in terms of scientific excellence and, at the same time, is invested by the law to carry out its mission as a primary metrological institute, to accompany and support the technological development of the country.

BOOTH 13

JEOL (ITALIA) S.p.A.

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JEOL (ITALIA) S.p.A. 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 (ITALIA) S.p.A. helps its customers make significant breakthroughs in product development and scientific research.

JEOL (ITALIA) S.p.A. 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.

This year JEOL celebrate **75th anniversary** of its founding.

BOOTH 10

MALVERN PANALYTICAL S.r.l.

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website: https://www.malvernpanalytical.com/en
contact person: **Andrea GNISCI**
e-mail: andrea.gnisci@malvernpanalytical.com

We draw on the power of our analytical instruments and services to make the invisible visible and the impossible possible. Through the chemical, physical and structural analysis of materials, our high precision analytical systems and top-notch services support our customers in creating a better world. We help them improve everything from the energies that power us and the materials we build with, to the medicines that cure us and the foods we enjoy. We partner with many of the world's biggest companies, universities and research organizations.
They value us not only for the power of our solutions, but also for the depth of our expertise, collaboration and integrity. Visit our booth for the latest innovative product launches for XRD and XRF and more. Ask us how our compact and floorstanding solutions can support your research activities in additive manufacturing, advanced materials, energy, cultural heritage and other topics.

We are Malvern Panalytical. We're BIG on small.™

BOOTH 27

MEDIA SYSTEM LAB S.r.l.

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e-mail: matteo.mariani@m-s.it

Media System Lab has been a reference for microscopists since 1998 and today we have grown to occupy two locations with a total of over one thousand square meters.
We have always been passionately and professionally committed to supporting microscopists in Italy and Europe in both Material Science and Biotechnology. Our range of services covers every need of an electron microscopy laboratory, from the preliminary assessment of the room by site survey, to the maintenance and repair of installed instruments, to the supply of advanced scanning and transmission electron microscopes, accessories and consumables.
Our problem-solving capabilities are backed by advanced technical expertise and innovative instruments. We offer a wide range of electron microscopes with tungsten filament or Field Emission Gun. From the small tabletop to the highest performing SEM FEG, from the most compact and innovative TEM to the Dual Beam FIB, we provide customized solutions for every budget and application.

Training is an essential part of our proposition, we offer courses and webinars through the online platform **MS Academy Lab**, and our team of experts provides technical training on topics related to electron microscopy at all levels, both in our facilities and in our customers' laboratories.

Media System Lab is much more than a company, it is the microscopists' place. Our team is passionate, professional and reliable. We are proud to serve the scientific community, contributing to the advancement of research and technology in every field.
Media System Lab is the microscopists' partner. Visit our website Media System Lab and on LinkedIn. Media System Lab is the place for microscopists.

BOOTH 24

NFFA

headquarter localisation: AREA Science Park - Basovizza S.S. 14 Km 163.5, 34149 Trieste, Italy
Tel:+39 040 375 644
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The NFFA-Europe Distributed Research Infrastructure is a pan-European network that provides open access to advanced research facilities for nanoscience and nanotechnology. It integrates 31 service providers across Europe, offering a wide range of state-of-the-art tools and expertise in areas such as nano-characterization, synthesis, theory, and simulation. The infrastructure is organized into six interconnected nodes, which include capabilities for material growth, characterization, lithography, fine analysis, and device integration.

Researchers from both academia and industry can apply for access through a centralized online portal, which streamlines proposal submission and evaluation. Approved projects receive access to high-end equipment and collaboration opportunities with leading scientists. NFFA-Europe emphasizes interdisciplinary research and training, particularly for early-career scientists, ensuring the advancement of nanoscience by providing unparalleled resources and fostering innovation across Europe.

BOOTH 29

(day 09,10)

NIPPON GASES

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Nippon Gases is a historic company, one of the first in Italy to operate in the industrial gases sector. Founded in1920, today it is part of Nippon Gases Europe, a company that belongs to Nippon Sanso Holdings Corporation (NSHD), a major international player with more than 100 years' experience in the gas industry. The Group provides essential support to various industrial sectors including metallurgy, chemicals, electronics, automotive, construction, shipbuilding and food, with a major presence in Japan, South-East Asia, Canada, the United States, Australia and Europe.

Through the successful integration of European and Japanese cultures, Nippon Gases is able to ensure the development of new technologies and the improvement of existing ones. It holds numerous patents, both in its traditional areas of operation and in alternative sectors, and invests in research, guaranteeing its support to bodies, institutions and universities in order to create and develop new applications and new uses for gases. In this manner, it enables an ever greater number of customers to achieve their quality, production, economic and environmental improvement goals.Together we are "The Gas Professionals" and we have one goal: "Making life better through the technological applications of our gases.

BOOTH 9

NORDTEST S.r.l.

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website: www.nordtest.com
Contact Person: **Andrea PINTO**
Email: apinto@nordtest.it

NORDTEST srl operates in the field of high-tech scientific instruments and equipment since 1989 with growing success.

Supplying analysers for either chemical or physical testing, rather than environmental control, or equipment for selected process applications, represent Nordtest core business. Main applications are Quality Control in industrial environment, Sterile Process Systems and Surface Science Systems for R&D. Our offer of state-of-the-art systems for study of molecular interactions (QCM and SPR) and surface properties (contact angle, surface free energy and surface tension) find wide application in development and study of nanomaterials.

Our 35 years of experience in analytical laboratory instrument, in automation of analysis and the strong collaboration with international priors can ensure state of the art and innovative solution with high reliability. Since the inception Nordtest is focused in providing innovative solution, qualified support and a continuous improvement process in order to fulfil customer expectations.

BOOTH 6

OXFORD INSTRUMENTS NANOANALYSIS

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Celebrating over 60 years of scientific excellence and innovation, Oxford Instruments is committed to supporting research and industrial applications to develop a deeper understanding of the world through Science & Technology.

Oxford Instruments Electron Microscopy products **EDS, EBSD, WDS, BeX** enable you to accurately analyse and characterise materials down to the nanoscale level more rapidly, by combining superior detection and analysis instruments with software platforms that interpret the resulting data in the context of your research.

You are welcome to the Oxford Instruments booth!
We'd love to talk about your application and how we can support you!

BOOTH 22

PLATINUM "Aziende&Protagonisti"

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BOOTH 2

QUANTUM DESIGN ITALY

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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**), different solutions for **Correlative Microscopy** like the Raman/confocal/AFM systems (**WITec**), In Situ TEM Solutions (**DENSsolutions**), the AFSEM, that combines AFM with SEM (**Quantum Design microscopy**) and our brand new instrument **FusionScope**, an easy-to-use correlative microscopy platform designed from the ground up to add the benefits of SEM imaging to a wide range of AFM measurement techniques!

Don't miss **our satellite forum focused on the DriveAFM**, **the high-end platform from Nanosurf**! The system will be available for dedicated demos for the entire duration of the conference: stop by our booth to learn more!

BOOTH 8

RAITH

website: raith.com

RAITH is the global market and technology leader in maskless nanofabrication systems and characterization solutions. With our unique combination of high-precision products, integrated solutions, and proprietary technologies, we drive innovation and accompany a wide variety of industries and applications.

RAITH empowers innovation in connectivity, mobility, green energy, and healthcare with cutting-edge, high-precision tools for research and industry.

Raith tackles complex challenges with precision and innovation in nanofabrication: From integrating complex lithography steps and Mix and Match solutions to stitch-free Patterning and advanced Process Control, our expertise and state-of-the-art technology ensure unparalleled quality. Discover our intuitive software and advanced Material Characterization techniques, designed to meet the evolving needs of diverse industries and research domains.

BOOTH 26

RENISHAW

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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 15

RHP-Technology GmbH

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At RHP Group you will find the right partners for nano-, sensor- and surface- technology.
RHP produces **ultra-pure nanoparticles** from a wide range of materials (e.g. Au, Ag, Pt, Pd, Cu, Zn, Mg, Ru, Rh, In, Ir) in freely selectable liquids. Our laser-based production method ensures the absence of chemical impurities and electrostatically stabilizes the colloids, enabling **exceptional particle stability** over time.

Our product portfolio includes:

- **Ultra-pure nanoparticle colloids** (metals, ceramics, alloys, non-stoichiometric compounds and exotic materials) with the possibility to select liquid carrier and capping agent.
- **Nano-composites**: nano-functionalized polymers and ceramics with improved properties.
- Water-based ultra-pure **nano-inks** for inkjet and aerosol printing.

We have significant experience in the synthesis of high-performance, customizable nanomaterials and nanocomposites for a variety of applications, including **catalysis, antimicrobial, coatings, medical, food supplements, electronics, automotive,** and other industrial applications.

RHP Group also develops and manufactures sensor components and systems for biotechnological and chemical analysis, intelligent packaging, and **smart surfaces** equipped with innovative functions such as **self-cleaning, antibacterial effect, anti-icing** or **superoleophobicity**. Other application fields of nanostructured surfaces include laser-sensitive materials and laquers for corrosion protection and novel strategies for chromium-free systems.

BOOTH 12

ROME TECHNOPOLE

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contact person: **Camilla ARCANGIOLI**
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Rome Technopole is an R&D project proposed by the regional system of public and private universities and EPRs, industrial associations, industries and enterprises, the Lazio Region, the Municipality of Rome, and the regional Chambers of Commerce, aimed at generating a qualitative leap forward in the Lazio Region in all innovation processes geared to sustainable development, 'smart specialisation', and the upgrading and revitalisation of the industrial sector, with a specific focus on three thematic areas characterised by the highest qualification and most robust industrial presence in the region: **Energy Transition, Digital Transition, and Health & Biopharma.**

The Rome Technopole project aims to create a **regional innovation ecosystem** through which can achieve the three macro-priority objectives for Lazio:

1. to foster a repositioning process of regional industrial and production realities towards higher value-added segments and markets through processes of adaptation of know-how and technologies of excellence;
2. to make Lazio a "great European innovation region" with an international dimension
3. to guide Lazio along internationalisation paths that orient the renewed competitive capacity of the industrial sector towards markets of strategic interest.

BOOTH 3

SCHAEFER SEE Srl

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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:

- 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.

Instruments portfolio:

- Tabletop SEM microscopes;
- 3D Optical profilers and optical 3D microscopes & cameras;
- Benchtop instruments for X-ray microtomography;
- Customized Bioprinting systems and Bioreactors;
- 3D/4D label free microscopes developed specifically for life sciences;
- Microscopy-based cell counters, also with recognition capabilities;
- Extracellular nanovesicles/Exosomes separation and characterization tools;
- Next-generation light scattering technologies for particle sizing and contact-free rheology;
- AFM/SPM microscopes for operation in: air, environments or vacuum, and related accessories;
- Measurement and 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 30

THERMO FISHER SCIENTIFIC

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BOOTH 4

VERDER Scientific S.r.l.

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This is what we mean when we say: we enable progress. Progress for the better.

Verder Scientific is a division of the **VERDER GROUP**, a worldwide technology leader, which not only provides state-of-the-art analytical equipment, but also advanced pumping solutions and more.

BOOTH 28

CARL ZEISS SPA con socio unico

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website: www.zeiss.it/microscopia/home.html

contact person: **MarComm Office**
Tel. 0293773249
e-mail: marketing.czi@zeiss.com

ZEISS is an internationally leading technology enterprise operating in the fields of optics and optoelectronics. In the previous fiscal year, the ZEISS Group generated annual revenue totaling more than 10.1 billion euros (FY 2022/23) in the four ZEISS segments Industrial Quality & Research, Medical Technology, Consumer Markets and Semiconductor Manufacturing Technology.

ZEISS develops, produces and distributes highly innovative solutions for industrial metrology and quality assurance, microscopy solutions for the life sciences and materials research, and medical technology solutions for diagnostics and treatment in ophthalmology and microsurgery. The name ZEISS is also synonymous with the world's leading lithography optics, which are used by the chip industry to manufacture semiconductor components. There is global demand for trendsetting ZEISS brand products such as eyeglass lenses, camera lenses and binoculars.

Today, about 43,000 employees globally in around 50 countries work hard to fulfill and exceed customer expectations. 15 percent of revenues is invested in science and R&D. ZEISS believes that innovation and technology are the key to a sustainable future and solutions for global challenges.

Research Microscopy Solutions
ZEISS Microscopy is the world's only one-stop manufacturer of light, electron, X-ray and ion microscope systems and offers solutions for correlative microscopy. The portfolio comprises of products and services for life sciences, materials and industrial research, as well as education and clinical practice.

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ZEISS

Seeing beyond

Media System Lab è il posto dei microscopisti

HEM6000 High Speed SEM
1,3nm @3kV 2.2nm @1 kV

DB500 FIB Dual Beam
1,2nm @15kV 3nm @30 kV

TH-F120 TEM FEG 120kV
Point resolution 0,3nm

SEM4000 FEG
1nm @30kV

SEM5000 FEG
0,8nm @30kV 3nm @1 kV

SEM5000X UHR FEG
0,6nm @15kV 1nm @1 kV

SEM2000 Tungsteno
3.9nm @ 20kV

SEM3200 Tungsteno
3nm @30kV 8nm @3 kV

Conosci Media System Lab

MEDIA SYSTEM LAB

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