

ORGANIZERS



SAPIENZA  
UNIVERSITÀ DI ROMA

Renaissance Cloister by Sangallo  
Faculty of Civil and Industrial Engineering

SEPTEMBER 9-13 2024



# Nano 2024 Innovation

## Rome, 9-13 September

### Conference & Exhibition



SAPIENZA  
UNIVERSITÀ DI ROMA



Politecnico  
di Torino



UNIVERSITÀ  
DEGLI STUDI  
DI MILANO



SCUOLA  
NORMALE  
SUPERIORE



UNIMORE  
UNIVERSITÀ DEGLI STUDI DI  
MODENA E REGGIO EMILIA



INSTITUTIONAL  
PARTNERS



SCIENTIFIC PARTNERS



EDITORIAL PARTNERS



www.nanoinnovation2024.eu

# index

|                  |                                                                                 |
|------------------|---------------------------------------------------------------------------------|
| <b>01 - 07</b>   | welcome & committees                                                            |
| <b>08</b>        | supporters                                                                      |
| <b>09 - 11</b>   | about us                                                                        |
| <b>12</b>        | masterplan                                                                      |
| <b>13 - 25</b>   | guest events                                                                    |
| <b>26 - 29</b>   | plenary sessions<br>(10 sept)                                                   |
| <b>30 - 39</b>   | daily plans with symposia list<br>(11-12-13 sept)                               |
| <b>40 - 80</b>   | technical multi-tracks TT.I-XII:<br>with symposia programmes<br>(11-12-13 sept) |
| <b>81</b>        | parallel lectures sessions<br>(11-12-13 sept)                                   |
| <b>82 - 85</b>   | breakout sessions<br>(11-12 sept)                                               |
| <b>86 - 98</b>   | YoungInnovation<br>(special event 11-12-13 sept)                                |
| <b>99 - 101</b>  | Rome Technopole<br>(special event 11-12 sept)                                   |
| <b>102 - 106</b> | poster session<br>(9-10-11-12-13 sept)                                          |
| <b>107 - 141</b> | wokshops                                                                        |
| <b>142 - 143</b> | school on nanotechnologies<br>(11-12-13 sept)                                   |
| <b>144 - 152</b> | joint events<br>(11-13 sept)                                                    |
| <b>153 - 154</b> | satellite forum & demo events<br>(9-13 sept)                                    |
| <b>155 - 157</b> | iENTRANCE@ENL event<br>(10-11-12-13 sept)                                       |
| <b>158</b>       | exhibitors list                                                                 |
| <b>159</b>       | meeting area map                                                                |
| <b>160 - 176</b> | exhibitors' profiles                                                            |

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

PROGETTO GRAFICO E SITO WEB: AZIMUTH DI PATRIZIA DE CASTRO

## Institutional Patronages



**DIPARTIMENTO**  
PER LA TRASFORMAZIONE  
DIGITALE



MINISTERO DELL'AMBIENTE  
E DELLA SICUREZZA ENERGETICA

Under the Patronage of the  
Ministry of Defense



REGIONE  
LAZIO



REGIONE  
PIEMONTE



REGIONE  
PUGLIA

## Scientific Patronages



Società  
Chimica  
Italiana



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.

| 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                                                                                                                                                                                                                     |
| <b>Guest Event I</b><br>Nano-enabled Agriculture<br><br><b>Guest Event II</b><br>S for sustainability: reuse, recycling and environmental impact for sustainable development<br><br><b>Guest Event III</b><br>Aspetti della proprietà intellettuale: dalla tutela alla condivisione della conoscenza<br><br><b>Guest Event IV</b><br>National Quantum Science and Technology Institute - Spoke 5 Workshop<br><br><b>NEST PRICE 2023</b><br>& Announcement NEST PRIZE 2024<br><br><b>Guest Event V</b><br>D <sup>3</sup> 4 HEALTH - Digital Driven Diagnostics, prognostics and therapeutics for sustainable health care<br><br><b>Guest Event VI</b><br>Innovazione e futuro: frutti e prospettive della collaborazione tra Ricerca e Impresa per il Patrimonio Culturale del Lazio<br><br><b>Guest Event VII</b><br>Tech 4 You Convergenze negli Ecosistemi di Innovazione<br><br><b>Guest Event VIII</b><br>COST Actions Inclusive Networking for Excellence and Innovation | Welcome Session & Opening Session<br><br><br>11:00 - 11:30<br><br>11:30 - 13:00<br><br>Round table | Multi-track sessions & Workshops<br><br>Joint Events, Special Events & more<br><br>10:30 - 10:50<br><br>10:50 - 11:30<br><br>Parallel Lectures<br><br>11:30 - 13:00<br><br>Multi-track sessions & Workshops<br><br>Joint Events, Special Events & more | Multi-track sessions & Workshops<br><br>Joint Events, Special Events & more<br><br>10:30 - 10:50<br><br>10:50 - 11:30<br><br>Parallel Lectures<br><br>11:30 - 13:00<br><br>Multi-track sessions & Workshops<br><br>Joint Events, Special Events & more | Multi-track sessions & Workshops<br><br>Joint Events, Special Events & more<br><br>10:50 - 11:30<br><br>Parallel Lectures<br><br>11:30 - 13:00<br><br>Multi-track sessions & Workshops<br><br>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<br><br>Joint Events, Special Events & more                                                                                                                                                                            | Multi-track sessions & Workshops<br><br>Joint Events, Special Events & more                                                                                                                                                                            | Multi-track sessions & Workshops<br><br>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<br><br>Joint Events, Special Events & more                                                                                                                                                                            | Multi-track sessions & Workshops<br><br>Joint Events, Special Events & more                                                                                                                                                                            | Multi-track sessions & Workshops<br><br>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 NanolInnovation 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, NanolInnovation 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.

NanolInnovation 2024 acronyms are:

**WS** = Workshop  
**GE** = Guest Event

**BO** = BreakOut sessions  
**DE** = Demo Event

**SE** = Special Event  
**SF** = Satellite Forum

**JE** = Joint Event

## GUEST EVENT I

11:30 - 17:30

**Session I**  
**Research projects**
Chair: Daniele SCHIAVI, *University of Tuscia*

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

**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, <i>University of Udine</i>             |
| Giuseppe CIUFFREDA, <i>FCP Cerea, NANO.T</i>          |
| Stefania BOI, <i>NANOMNIA</i>                         |
| Silver GIORGINI, <i>OROGEL</i>                        |
| Manuel ISCERI, <i>Federchimica, Assofertilizzanti</i> |

**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, <i>University of Perugia</i><br><b>Functional nanostructured cellulose as potential carrier system for bioactive compounds</b>                                                        |
| 16:20 - 16:50 | Davide PICCININO, <i>University of Tuscia – GentoxChem</i><br><b>Lignin chemistry as natural starting platform to design innovative replacing multifunctional ingredients: a green chemistry approach</b> |
| 16:50 - 17:10 | Sara Paola NASTASI, <i>University of Milano</i><br><b>Bioinspired Pest Control: Sustainable Formulations for Bioactive Molecule Delivery in Plants</b>                                                    |
| 17:10 - 17:30 | Michele RICUPERO, <i>University of Catania</i><br><b>Nanoformulated essential oil-based insecticides: an ongoing scenario for greenhouse pest control</b>                                                 |

09:00 - 10:30

TT.IX

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

11:30 - 13:00

TT.X

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

**TT.XI****14:00 - 15:30**

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

**TT.XII****16:00 - 17:30**

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

**13 SEPT AFTERNOON**

## 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 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**  
**RELANCE 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.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 RITAROSSO, *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**

## 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 characterization 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, Italtollina-Hello Nature, Verona  
**The evolution from Italtollina 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**

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

| 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<br><b>Nanomaterials from waste for a sustainable nano-circular economy. Biostimulant effect of nanoscaled lignin and biogenic nanoparticles</b> |          |
| 2                                                                                     | Fabrizio DE CESARE, DIBAF-University of Tuscia<br><b>Microbial biostimulants: From traditional to nanomaterial-based formulations</b>                                                         |          |
| 3                                                                                     | Giuseppina LUCIANI, DICMAPI-University of Naples "Federico II"<br><b>Nanotechnology meets sustainable agriculture: Nanohybrids from biowaste</b>                                              |          |
| 4                                                                                     | Antonella MACAGNANO, IIA-CNR, Rome<br><b>Transforming agriculture: Electrospinning nanobiostimulants for sustainable grow</b>                                                                 |          |

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