



INTERNATIONAL CONFERENCE

# Nanotech ITALY 2015

Cross-Cutting KETs for Responsible Innovation

BOLOGNA, 25-27 NOVEMBER 2015

## Program



**CONFERENCE VENUE**  
 CNR Bologna Research Area  
 Via P. Gobetti 101 | Bologna

### ORGANIZERS



### IN COLLABORATION WITH



### SPONSOR



### INFO

[www.nanotechitaly.it](http://www.nanotechitaly.it)  
[info@nanotechitaly.it](mailto:info@nanotechitaly.it)  
 tel +39 06 8848831

### FOLLOW US

facebook    twitter    LinkedIn    flickr



INTERNATIONAL CONFERENCE

# Nanotech ITALY 2015

Cross-Cutting KETs for Responsible Innovation

BOLOGNA, 25-27 NOVEMBER 2015

# CONFERENCE OVERVIEW

WEDNESDAY  
25<sup>th</sup> November  
2015

THURSDAY  
26<sup>th</sup> November  
2015

FRIDAY  
27<sup>th</sup> November  
2015

MORNING

9.30 HALL 105  
Opening Remarks

10.00 HALL 105  
Plenary Lectures

9.00 HALL 215  
Healthcare - Smart Treatments

9.00 HALL 105  
Materials & Graphene -  
Based Innovation (1)

9.15 HALL 216  
WORKSHOP  
Bioinspired Soft Robotics

9.00 HALL 105  
Cultural Heritage

9.00 HALL 215  
Food Packaging

11.30 HALL 215  
Bio-inspired and  
Bio-based Technologies

11.30 HALL 216  
Anti-counterfeiting  
& Security Applications

9.15 HALL 216  
WORKSHOP  
Nanoscale Metrology

AFTERNOON

13.45 HALL 105  
Smart Manufacturing

16.15 HALL 105  
Soft Robotics

13.45 HALL 215  
Aerospace Related Applications

13.45 HALL 216  
WORKSHOP  
H2020 Opportunities

16.15 HALL 216  
WORKSHOP  
Smart Hybrid Devices

14.00 HALL 215  
Healthcare-Biophotonics  
& Medical Devices

14.00 HALL 105  
Materials & Graphene  
Based Innovation (2)

14.00 HALL 216  
WORKSHOP  
NanoSafety

16.15 HALL 216  
WORKSHOP  
Safe Working

14.30 HALL 105  
Side Events  
SPAZIO... AI GIOVANI, E NON SOLO!  
Engaging in Science & Technology

POSTER SESSION

- Smart Manufacturing & Soft Robotics
- Aerospace Related Applications
- Healthcare
- Materials & Graphene -Based Innovation
- Horizontal Issues (EHS, Metrology)

- Healthcare
- Materials & Graphene -Based Innovation
- Smart Manufacturing & Soft Robotics
- Aerospace Related Applications
- Cultural Heritage
- Bio-inspired and Bio-based Technologies
- Horizontal Issues (EHS, Metrology)

- Bio-inspired and Bio-based Technologies
- Cultural Heritage
- Food Packaging
- Materials & Graphene-based Innovation
- Horizontal Issues (EHS, Metrology)

BROKERAGE EVENT (Thursday 26<sup>th</sup>, 10.00-17.30)



## NANOTECHITALY 2015 – PROGRAM

### AGENDA:

#### **Wednesday 25<sup>th</sup>**

Conference Opening.....	2
Aerospace Related Applications .....	3
Smart Manufacturing .....	4
Soft Robotics.....	5
H2020 Opportunities.....	6
Smart Hybrid Devices .....	7

#### **Thursday 26<sup>th</sup>**

Healthcare 1: Smart Treatments .....	8
Healthcare 2: Biophotonics and Medical Devices .....	9
Materials & Graphene-Based Innovation (1) .....	10
Materials & Graphene-Based Innovation (2) .....	11
New Trends in Bioinspired Soft Robotics .....	12
NanoSafety .....	13
Safe Working.....	14

#### **Friday 27<sup>th</sup>**

Cultural Heritage .....	15
Food Packaging.....	16
Bio-Inspired and Bio-Based Technologies.....	17
Anti-Counterfeiting and Security Applications.....	18
Nanoscale Metrology.....	19

<b>Side Event:</b> Spazio ai Giovani....e non solo!.....	20
--	----

Hall 105

Wednesday 25<sup>th</sup> – Morning

## Conference Opening

### *Opening Remarks and Introduction (9.30-10.00)*

<b>ROBERTO ZAMBONI</b>	President, CNR Research AREA
<b>RENATO UGO</b>	President of AIRI – Italian Association for Industrial Research
<b>PATRIZIO BIANCHI</b>	Regional Minister of Education, Vocational Education, University and Research, Employment of the Emilia-Romagna Region

### *Plenary Lectures (10.00-12.00)*

<b>CHRISTOS TOKAMANIS</b>	Head, Nanoscience and Nanotechnologies Unit DG Research, European Commission	Integrative Role of Nanotechnologies and Advanced Materials
<b>FRANCESCO DE ANGELIS</b>	Coordinator of Nanostructure Facility, Head of the Plasmon Technology Unit, Italian Institute of Technology (IIT)	3D Nanodevices for Bio-Photonics
<b>LUIGI COLOMBO</b>	TI Analog Technology Fellow, Research Strategy & Consortia, Texas Instruments Inc., USA	Future Device Materials for the Semiconductor Industry

### *Short Reports (12.00-12.15)*

<b>ITALIAN TRADE AGENCY</b>	The Italian Trade Agency Strategy for Nanotechnologies. Focus on Far East Asia
<b>NEST PRIZE 2014</b>	Fabio Beltram, Director, Scuola Normale Superiore of Pisa will award the NEST PRIZE 2014

### *Lunch & Poster Session*



## Aerospace Related Applications

The aerospace missions entail leading edge research in which KETs have an important role. Most of the activities, done in harsh and demanding environments, can find their way to enable the development of highly innovative products and processes in more conventional industrial sectors. Representative examples of these R&D activities will be presented, carried out within both industries and research organizations.

As a follow-up, on Friday afternoon there will be the NanotechItaly side event “Spazio ai Giovani...e non solo!”. An open, public dialogue among NanotechItaly delegates, students, teachers and other participants curious about Space Missions and their challenges and implications.

13.45	<b>CHAIRS: PIERLUIGI BELLUTTI, FONDAZIONE BRUNO KESSLER - INAF NATIONAL INSTITUTE FOR ASTROPHYSICS (TBC)</b>		
13.50	<b>LAURENT MARCHAND</b>	European Space Research and Technology Centre, European Space Agency (ESTEC)	Nanotechnologies and the Evolution of Space Systems
14.15	<b>NICOLA PUGNO</b>	University of Trento and Fondazione Bruno Kessler	Aerospace – Related Materials
14.35	<b>ALESSANDRO PACCAGNELLA</b>	University of Padova (DEI)	Reliability of Electronics in an Electronic-Pervasive Society: Translational Experiences from the Space to Ground-Level Applications
14.55	<b>MARCO BALUCANI</b>	Rise Technology SrL	Nanoporous Structures a Route to MEMS Microvalves Applied in Space Propulsion
15.15	<b>STEFANO SANGUINETTI</b>	University of Milano, L-NESS and Department of Physics	COSMOS: Compact Optical System for Multispectral Imaging
15.35	<b>ANTONIA SIMONE</b>	Thales Alenia Space	Nanostructured Layers for Biodegradation Reduction in Space Structures
15.45	<i>Coffee Break &amp; Poster Session</i>		
16.15	<b>MARCO VUKICH</b>	Kayser Italia	Experiment Unit to Test Nanoparticles Based Cell Culture Protocols in Space
16.35	<b>LIVIA VISAI</b>	University of Pavia, Department of Molecular Medicine	In Vitro Effects of Nanoparticles on Bone Remodelling in Microgravity
16.55	<b>ALESSANDRO PROIETTI</b>	University of Roma “La Sapienza”, Research Center for Nanotechnology Applied to Engineering	Strain Sensing Capabilities of Polyvinyl Alcohol/Graphite Nano Platelets Film
17.15	<i>Questions &amp; Answers</i>		
17.25	<i>Closing &amp; Poster Session</i>		

## Poster Session

> Smart Manufacturing & Soft Robotics  
 > Aerospace Related Applications  
 > Healthcare

> Materials & Graphene –Based Innovation  
 > Horizontal Issues

Hall 105

Wednesday 25<sup>th</sup> – Afternoon

## Smart Manufacturing

*Optimizing manufacturing processes is paramount to succeed in an ever more competitive world. Resources and materials saving, process efficiency, flexibility, customization, and rapid manufacturing, are amongst the key drivers to develop advanced production systems. The Key Enabling Technologies (KETs) can play a pivotal role to achieve these goals: the session will present examples of smart manufacturing pursued in different industrial settings highlighting the relevance of this approach on modern manufacturing.*

13.45	<b>CHAIRS: FABRIZIO PIRRI, CENTER FOR SPACE HUMAN ROBOTICS OF IIT@POLITO LUDOVICO CIFERRI, GRADUATE SCHOOL OF MANAGEMENT, INTERNATIONAL UNIVERSITY OF JAPAN</b>		
13.50	<b>PAOLO GREGORI</b>	Trentino Sviluppo and Bruno Kessler Foundation	A New Facility for Mechatronic Prototyping at Polo Meccatronica Trentino
14.10	<b>EURO BEINAT</b>	Zebra Technologies Corp, USA	The Internet of Things in Data Times
14.30	<b>MARCO CARRER</b>	Eurotech SpA	Brownfield IoT: Technologies for Retrofitting the Industrial IoT
14.50	<b>LUIGI ARDITO</b>	Qualcomm Europe	Realizing the Internet of Things: Forward Looking Policies for the Digital Single Market
15.10	<b>TOMMASO DAL NEGRO</b>	Luxottica SpA	Smart Manufacturing in the Eyewear Industry
15.30	<i>Questions &amp; Answers</i>		
15.40	<i>Coffee Break &amp; Poster Session</i>		

## Poster Session

> *Smart Manufacturing & Soft Robotics*  
 > *Aerospace Related Applications*  
 > *Healthcare*

> *Materials & Graphene –Based Innovation*  
 > *Horizontal Issues*

Hall 105

Wednesday 25<sup>th</sup> – Afternoon

## Soft Robotics

*Soft robotics is a growing field of research based on the analysis of the design and dynamics of biological systems to develop robots (soft robots) and novel manufacturing systems. Learning from nature promises breakthrough innovations in fields quite different from each other such as 3D additive manufacturing, wearable rehabilitation/assistive devices or soft surgical/interventional tools. Leading scientists involved in this exciting research will present their state-of-the-art work.*

16.15 **CHAIRS: BARBARA MAZZOLAI, ISTITUTO ITALIANO DI TECNOLOGIA , CENTER FOR MICRO-BIOBOTANICS (IIT)**

16.25 **YONG – LAE PARK** Carnegie Mellon University, The Robotics Institute, U.S. Soft Robotic Skin: Highly Deformable Sensing Materials for Future Robots

16.50 **GEORGE JERONIMIDIS** University of Reading, UK Functional Hierarchies in Biology from the Nanoscale to Organism

17.10 **MATTEO CIANCHETTI** Scuola Superiore Sant'Anna, BioRobotics Institute Soft Robots Manufacturing: Key Enabling Technologies and Open Challenges

17.30 **NIKOS G. TSAGARAKIS** Istituto Italiano di Tecnologia, Humanoids & Human Centred Mechatronics Compliant Actuation Technologies for Emerging High Performance Proprioceptive and Energy Efficient Robots: Application to COMAN and WALK-MAN Humanoids

17.50 *Questions & Answers*

18.00 *Closing & Poster Session*

## Poster Session

> Smart Manufacturing & Soft Robotics  
 > Aerospace Related Applications  
 > Healthcare

> Materials & Graphene –Based Innovation  
 > Horizontal Issues

Hall 216

Wednesday 25<sup>th</sup>- Afternoon

## H2020 Opportunities: HORIZON 2020: First Successful Cases Paving the Way to Future Projects

**WORKSHOP**

*Horizon 2020 programme focuses on the ambitious goal to ensure Europe's competitiveness. Nanotechnologies, advanced materials, and advanced manufacturing and processing are key areas that determine Europe's position in the global market. Investing in these areas will allow European industries to retain competitiveness and capitalise on new markets.*

*The aim of the workshop is to explore specific opportunities that may arise for Industry and SMEs from the forthcoming 2016-2017 H2020 calls for proposals, and to develop and discuss concrete ideas also by drawing on various best practices and experiences coming from some successful cases of projects funded by H2020 previous calls.*

13.45	<b>CHAIR: ISELLA VICINI, WARRANT GROUP - ANDREA CANESCHI, INSTM, NATIONAL INTERUNIVERSITY CONSORTIUM OF MATERIALS SCIENCE AND TECHNOLOGY</b>		
13.50	<b>DONATA MEDAGLINI</b>	University of Siena and Italian Representative H2020 Programme Committee NMPB	First Results about Italian Participation to H2020 and Future Opportunities
14.05	<b>ISELLA VICINI</b>	Warrant Group	Successful Cases Alongside Italian Companies
14.20	<b>ANDREA CANESCHI</b>	INSTM	When the Union is Strength
14.35	<b>PAPPAS PANAGIOTIS-NEKTARIOS</b>	University of Patras and National Representative, Greece	Research Activities and Ppportunities for NMBP Collaboration at FORTH/U. Patras
14.50	<b>PIERO BAGLIONI</b>	University of Florence and Center for Colloids and Surface Science (CSGI)	High-Tech New Processes Working for Growth
15.05	<b>ANE IRAZUSTABARRENA</b>	Tecnalia	Transforming Nanotechnology knowledge into business opportunities through the new NMBP topics
15.20	<b>SILVANO BERTINI</b>	Emilia Romagna Region	Smart Specialisation Strategies for Economic Development
15.40	<i>Questions &amp; Answers</i>		
15.45	<i>Coffee Break &amp; Poster Session</i>		

### ORGANIZING PARTNERS

- Warrant Group SrL
- Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali (INSTM)



Hall 216

Wednesday 25<sup>th</sup> - Afternoon

## Smart Hybrid Devices, Smiley Project: Hierarchical Assembly of Nano-scale Building Blocks towards Flexible Generation of Hybrid Devices for Multifunctional Applications in Health, Energy, Environment

**WORKSHOP**

*The workshop illustrates conceptual and experimental aspects treated in the EU project SMILEY, that is pioneering a new manufacturing platform, based on a bio-inspired assembling/mineralization process, directed to the synthesis of hybrid constructs with properties tailored for: high mimesis of dental tissues; high filtration efficiency and ability to heat/exchange moisture; photovoltaic effect. The platform can enable flexible production of new smart devices for high-impact applications such as: scaffolds for dental regeneration, filtering devices for sanitary use, and fibrous photovoltaics for energy production.*

16.15	<b>CHAIR: ANNA TAMPIERI AND SIMONE SPRIO, NATIONAL RESEARCH COUNCIL, INSTITUTE OF SCIENCE AND TECHNOLOGY FOR CERAMICS</b>		
16.20	<b>ANNA TAMPIERI</b>	National Research Council, Institute of Science and Technology for Ceramics	Bio – Inspired Processes as a New Flexible Tool for Future Development of Smart Devices
16.35	<b>SIMONE SPRIO</b>	National Research Council, Institute of Science and Technology for Ceramics	New Biomimetic Hybrid Scaffolds for Dental Regeneration
16.50	<b>BARTOSZ MARZEC</b>	University of Leeds, School of Chemistry, UK	Staining Crystals: the Case of Rainbow Calcite
17.05	<b>FRANK A MUELLER</b>	Friedrich Schiller University of Jena (OSIM – CSI), Germany	Laser – induced Gas Phase Condensation
17.20	<b>ALESSANDRA SANSON</b>	National Research Council, Institute of Science and Technology for Ceramics	Future and Perspectives of Biomineralization for Photovoltaic Applications
17.35	<b>ROLAND KRÖGER</b>	University of York, Department Physics, UK	Structure and Properties of Natural and Artificial Bone Studied by ex and in Situ Electron and Raman Microscopy
17.50	<b>DOROTHÉE PIERRON</b>	Laboratoire d'Evaluation des Materiels Implantables (LEMI), France	Cytocompatibility of scaffolds for human periodontalregeneration
18.05	<b>ELISA FIGALLO</b>	Finceramica SpA	From a Prototype to a Product for the Regeneration of the Periodontium: Focus on the Manufacturing
18.20	<b>PAOLO MONTICELLI</b>	Pollution Srl	3D Porous Biodegradable Structures to be Used as HME Devices with Antimicrobial Properties
18.35	<i>Questions &amp; Answers</i>		
18.45	<i>Closing &amp; Poster Session</i>		

### ORGANIZING PARTNERS

- Consiglio Nazionale delle Ricerche - Istituto di Scienza e Tecnologia dei Materiali Ceramici
- University of Leeds
- Friedrich-Schiller University of Jena
- Institute of Natural Fibres & Medicinal Plants
- Fin-Ceramica Faenza Spa
- Laboratoire d'Evaluation Des Materiels Implantables
- University Of York
- Pollution Srl

Hall 215

Thursday 26<sup>th</sup> – Morning

## Healthcare 1: Smart Treatments

*Nanotechnologies and the other KETs can bring about innovative, sometimes disruptive solutions in healthcare and medical practices. Acknowledged international experts will illustrate the latest advancements in diagnostics, drug delivery, tissue engineering, highlighting unprecedented opportunities to effectively address a variety of severe and disabling diseases. Main themes are: Smart Treatment, Biophotonics and Medical Devices.*

9.00	<b>CHAIRS: FURIO GRAMATICA, DON CARLO GNOCCHI FOUNDATION - FULVIO UGGERI, BRACCO IMAGING</b>		
9.10	<b>SCOTT McNEIL</b>	National Cancer Institute, Nano Characterization Lab, USA	Nanotechnology for Cancer
9.35	<b>JACKIE Y. YING</b>	Institute of Bioengineering and Nanotechnology, Singapore	Advanced Nanosystems for Diagnostic Application
9.55	<b>MICHELE DE LUCA</b>	Holostem Terapie Avanzate and University of Modena and Reggio Emilia	Tissue Engineering for Advanced Therapies
10.15	<b>ALESSANDRO PODESTA</b>	University of Milano, Department of Physics - CIMAINA	Nanomechanical and Topographical Imaging of Living Cells, ECMs and Tissues: a Promising Tool for the Early Diagnostics of Cancer and Inflammatory Diseases
10.35	<b>CARLO MORASSO</b>	Fondazione Don Carlo Gnocchi Onlus, Laboratory of Nanomedicine and Clinical Biophotonics	Simultaneous Detection of Multiple Biomarkers by Means of Polymer Nanopillar–Gold Arrays
10.55	<i>Questions &amp; Answers</i>		
11.00	<i>Coffee Break &amp; Poster Session</i>		
11.30	<b>FRANCESCO BALDINI</b>	National Research Council, Institute of Applied Physics “N. Carrara” (CNR-IFAC)	Optical Theranostics with Molecular Beacons
11.45	<b>MARCO ORECCHIONI</b>	University of Sassari	Graphene Oxide with Different Shape Dimensions Impact on Immune Cells
12.00	<b>GIUSEPPE CAPUTO</b>	University of Torino	Nano Core/Shell Droplets as Oxygen and Antimicrobial Delivery System Based on Polysaccharides and Fluorocarbons for the Effective Treatment of Hypoxia Related Pathologies
12.15	<b>FABIO SONVICO</b>	University of Parma	Biodegradable Lecithin/Chitosan Nanoparticles: a Pharmaceutical Nanotechnology Platform for the Delivery of Poorly Soluble Drugs
12.30	<i>Questions &amp; Answers</i>		
12.40	<i>Lunch &amp; Poster Session</i>		

Hall 215

Thursday 26<sup>th</sup> – Afternoon

## Healthcare 2: Biophotonics and Medical Devices

*Nanotechnologies and the other KETs can bring about innovative, sometimes disruptive solutions in healthcare and medical practices. Acknowledged international experts will illustrate the latest advancements in diagnostics, drug delivery, tissue engineering, highlighting unprecedented opportunities to effectively address a variety of severe and disabling diseases. Main themes are: Smart Treatment, Biophotonics and Medical Devices.*

14.15 **CHAIRS: ELISABETTA TOSCHI, ASTER - EMILIANO DESCROVI, POLYTECHNIC OF TURIN**

14.25	<b>ANTONELLA BATTISTI</b>	National Research Council, Institute of Nanosciences (CNR – Nano Pisa)	New Optical Probes and Imaging Strategy for Biology and Biomedicine
14.50	<b>ROBERTO PINI</b>	National Research Council, Institute of Institute of Applied Physics “Nello Carrara” (CNR - IFAC)	Opportunities with Laser-Excited Plasmonics Nanoparticles for Biomedical Applications
15.10	<b>RAFFAELE VECCHIONE</b>	Istituto Italiano di Tecnologia (IIT)	Engineered Biodegradable and Multifunctional Lipophilic Nanocarriers
15.30	<b>CIRO CHIAPPINI</b>	Imperial College, Faculty of Engineering, Department of Materials, UK	Biodegradable Nanoneedles for Intracellular Delivery and Sensing in Pre-Clinical Models.
15.50	<b>HELDER SANTOS</b>	University of Helsinki, Faculty of Pharmacy, Division of Pharmaceutical Chemistry and Technology, Finland	Pre-Clinical Development of Micro- and Nano Composites for Translational Medicine
16.00	<i>Coffee Break &amp; Poster Session</i>		
16.30	<b>PIERPAOLO POMPA</b>	Istituto Italiano di Tecnologia, Center for Bio-Molecular Nanotechnology	Colorimetric Nanosensors for Naked-eye POC Diagnostics
16.50	<b>ALESSANDRA CAMPANA</b>	University of Bologna	Organic Transistors on Resorbable Bioscaffold for Bioelectric Recording and Stimulation: from in-Vitro to in-Vivo
17.10	<b>MARIANORA GORNI</b>	Rimos Srl	Biomimetic and Nanostructured Scaffold for Skin Wound Healing
17.30	<i>Questions &amp; Answers</i>		
17.40	<i>Closing &amp; Poster Session</i>		

## Poster Session

- |  |   |
|--|---|
| > Healthcare                             | > Aerospace Related Applications          |
| > Materials & Graphene –Based Innovation | > Cultural Heritage                       |
| > Smart Manufacturing & Soft Robotics    | > Bio-inspired and Bio-based Technologies |
|  | > Horizontal Issues                       |

Hall 105

Thursday 26<sup>th</sup> – Morning

## Materials & Graphene-Based Innovation (1)

Functional and structural novel advanced materials are the option of choice to substitute critical raw materials and conventional ones for characteristics / performances driven innovation. Graphene promises to revolutionize physics and electronics thanks to its exceptional strength and flexibility, electrical conductivity and optical and thermal properties. Relevant industrial sectors, such as energy, transportation, construction, electronics, ICT, will benefit from the use of these materials. The sessions will highlight key EU initiatives, activities from research institutes and the vision of industries in this area.

9.00	<b>CHAIRS: ROBERTO ZAMBONI, NATIONAL RESEARCH COUNCIL - DARIO DELLA SALA, ENEA, ITALIAN NATIONAL AGENCY FOR NEW TECHNOLOGIES, ENERGY AND SUSTAINABLE ECONOMIC DEVELOPMENT</b>		
9.10	<b>JAN MENEVE</b>	Vision on Technology (VITO), Belgium	Advanced Material Technologies to Tackle Raw Materials Supply Risks and Create Opportunities for the EU Manufacturing Industry
9.35	<b>PIETER VAN BROEKHUIZEN</b>	IVAM UvA BV, Netherlands	Considerations for a Precautionary Approach for Safe Working with Nanomaterials
9.55	<b>MARCO GOISIS</b>	Italcementi SpA	Nanostructured Cement – Based Materials for the Construction Industry
10.15	<b>CHRISTOPH STANGL</b>	Micro Innovation GmbH (VARTA), Austria	Nanostructured Materials for Energy Storage Applications
10.35	<b>BRUNETTO MARTORANA</b>	Centro Ricerche Fiat (CRF) ScpA, Materials Labs Polymers and Glass Group	Graphene-Based Materials: Opportunities for Multifunctional Lightweight Structures in Automotive Sector
11.05	<i>Coffee Break &amp; Poster Session</i>		
11.35	<b>VITTORIO BASSO</b>	National Institute of Metrological Research (INRIM)	Novel Materials for Magnetic Refrigeration around Room Temperature
11.50	<b>ROBERTO PASTORE</b>	University Sapienza of Rome	CNT reinforced concrete materials for EMI issue applications
12.05	<b>VALENTINA BEGHETTO</b>	University of Venice "Ca Foscari", Dept. of Molecular Sciences and Nanosystems and Crossing Srl	Innovative Technology for Sustainable New Materials
12.20	<b>ELENA MESSINA</b>	National Research Council, Institute for Chemical and Physical Processes (CNR – IPCF)	Improved Thermal and Electrical Conductivity of Silver Filled-Epoxy Resin Added with Carbon Nanotubes and Graphene Nanoplatelets
12.35	<i>Questions &amp; Answers</i>		
12.45	<i>Lunch &amp; Poster session</i>		

## Poster Session

- > Healthcare
- > Materials & Graphene –Based Innovation
- > Smart Manufacturing & Soft Robotics
- > Aerospace Related Applications
- > Cultural Heritage
- > Bio-inspired and Bio-based Technologies
- > Horizontal Issues

## Materials & Graphene-Based Innovation (2)

*Functional and structural novel advanced materials are the option of choice to substitute critical raw materials and conventional ones for characteristics / performances driven innovation. Graphene promises to revolutionize physics and electronics thanks to its exceptional strength and flexibility, electrical conductivity and optical and thermal properties. Relevant industrial sectors, such as energy, transportation, construction, electronics, ICT, will benefit from the use of these materials. The sessions will highlight key EU initiatives, activities from research institutes and the vision of industries in this area.*

14.00	<b>CHAIRS: ROBERTO ZAMBONI, NATIONAL RESEARCH COUNCIL - DARIO DELLA SALA, ENEA, ITALIAN NATIONAL AGENCY FOR NEW TECHNOLOGIES, ENERGY AND SUSTAINABLE ECONOMIC DEVELOPMENT</b>		
14.05	<b>PAOLO SAMORI</b>	University of Strasbourg (UdS) and Nanochemistry Laboratory, France	Taming Functional Complexity in Graphene Based Materials Mastering the Supramolecular Approach
14.25	<b>ANA HELMAN</b>	European Programmatic Coordination and Alignment European Science Foundation	Graphene and Related Materials Research Funding in Europe
14.45	<b>VINCENZO PALERMO</b>	National Research Council, Institute for Organic Synthesis and Photoreactivity (CNR – ISOF)	Graphene Production and Characterization, the Route to Industrial Applications
15.05	<b>MARCO POLINI</b>	Istituto Italiano di Tecnologia, Graphene Labs	Graphene Ultimate Properties and Limits in Electronics
15.25	<b>STEPHAN ROCHE</b>	Catalan Institute of Nanoscience Nanotechnology, Spain	Spin Transport in Graphene: from Fundamental Relaxation Mechanism to Spin Manipulation
15.45	<i>Questions &amp; Answers</i>		
15.50	<i>Coffee Break &amp; Poster Session</i>		
16.20	<b>SEBASTIANO RAVESI</b>	STMicroelectronics (STM)	Graphene as Enabler Material for the Fabrication of Smart Systems on Flexible Substrate for Sensing Applications
16.40	<b>FILIPPO GIANNAZZO</b>	National Research Council, Institute for Microelectronics and Microsystems	Graphene Integration with Wide Bandgap Semiconductors as a Scalable Route to Energy Efficient and High Frequency Electronics
17.00	<b>GIUSEPPE VALERIO BIANCO</b>	National Research Council, Institute of Nanotechnology (CNR- NANOTEC)	How Does Chemistry Help in New Developments in Graphene and Graphene- Like 2D Materials Production
17.20	<b>FRANCESCA CLERICI</b>	Microla Optoelectronics SrL	Graphene-Based 3D Network by Direct Laser Writing of Polyimide for Flexible Supercapacitor Electrodes
17.35	<b>MARIACRISTINA GHERPELLI</b>	GHEPI SrL	Processing of Graphene in High-Performing Thermoplastic Polymers
17.50	<i>Questions &amp; Answers</i>		
18.00	<i>Closing &amp; Poster Session</i>		

## Poster Session

- > Healthcare
- > Materials & Graphene –Based Innovation
- > Smart Manufacturing & Soft Robotics
- > Aerospace Related Applications
- > Cultural Heritage
- > Bio-inspired and Bio-based Technologies
- > Horizontal Issues



## New Trends in Bioinspired Soft Robotics

**WORKSHOP**

*Robotics evolved significantly from its recent birth in the '50s and is today a solid discipline with a good wealth of knowledge and technologies. Though robotics basically evolved in the field of industrial manufacturing, bioinspired soft robotics has been recently investigated by researchers for opening to new applicative scenarios, specifically in unstructured scenarios. For this reason, soft robotics brought to bioinspiration, as investigating the living beings that evolved and successfully live in these environments is definitely a good starting point for building like-wise successful robots. The goal is to build new classes of robotic systems that are expected to interact more safely with the natural, unstructured, environment and with humans, and that better deal with un-certain and dynamic tasks (i.e. grasping and manipulation of unknown objects, locomotion on rough terrains, physical contacts with human bodies, etc.).*

9.15	<b>CHAIRS: BARBARA MAZZOLAI, ISTITUTO ITALIANO DI TECNOLOGIA , CENTER FOR MICRO-BIOROBOTICS (IIT) - CECILIA LASCHI, ISTITUTO ITALIANO DI TECNOLOGIA , CENTER FOR MICRO-BIOROBOTICS (IIT)</b>		
9.20	<b>BARBARA MAZZOLAI</b>	Istituto Italiano di Tecnologia, Center for Micro-BioRobotics (IIT)	Nature-inspired Innovation: from Plants and Animals to soft robots
9.40	<b>BARBARA WEBB</b>	Edinburgh University, UK	Mimicking the Maggot: Multilevel Inspiration for Technology
10.00	<b>ANTONIO DE SIMONE</b>	International School for Advanced Studies (SISSA)	Reverse Engineering the Euglenoid Movement: from Unicellular Swimmers to Bio-inspired Micro-machines?
10.20	<b>JAMIE PAIK</b>	École polytechnique Fédérale de Lausanne (EPFL), Switzerland	Soft Components for Soft Wearable Robotic Challenges
10.40	<b>CECILIA LASCHI</b>	Scuola Superiore Sant'Anna, BioRobotics Institute	Soft Robotics: from Bioinspiration to Scientific Challenges and Technological Applications
11.00	<b>MARCO URBANO</b>	SAES Group	SMA Actuators: is the Technology Mature enough for Soft Robotics?
11.20	<i>Questions &amp; Answers</i>		
11.30	<i>Coffee Break &amp; Poster Session</i>		

**ORGANIZING PARTNERS**

- Scuola Superiore Sant'Anna
- Istituto Italiano di Tecnologia

Hall 216

Thursday 26<sup>th</sup>- Afternoon

## NanoSafety: State of Art of Italian Partnership in NANoREG Project and the Link with ProSafe Coordination Action

**WORKSHOP**

*The Italian partnership within the FP7 NANoREG project encompasses 5 partners (CNR, ENEA, IIT, ISS, VN) and 3 third parties (UniTO, UniTorVergata, INAIL), committed in different activities that cover all the project pillars. The Ministero della Salute acts as National Coordinator. We present here some results obtained and the challenges encountered during the first 24 months. ISS and VN are also involved in the ProSafe Coordination Action that will utilize many of the results produced by NANoREG and other NanoEuropean activities (FP7 projects and OECD Sponsor Programme).*

14.00	<b>CHAIRS: FLAVIA BARONE, ISTITUTO SUPERIORE DI SANITÀ - FEDERICO BENETTI, VENETO NANOTECH</b>		
14.05	<b>SIMONA SCALBI</b>	ENEA, Department for Sustainability, Division for Resource Efficiency	Life Cycle Assessment as a Tool for Environmental Sustainability of Nanomaterials and Nanotechnologies
14.25	<b>ALESSANDRO PONTI</b>	National Research Council, Institute of Science and Technology for Ceramics (CNR-ISTEC)	Nanomaterial Characterization in NANoREG: Results and Challenges
14.40	<b>FRANCESCA MARANGHI</b>	Istituto Superiore di Sanità (ISS)	Toxicological Effects of Synthetic Amorphous Silica Nanoparticles Following Repente-Dose Oral Administration in Rat: the EFSA Approach
14.55	<b>STEFANIA SABELLA</b>	Istituto Italiano di Tecnologia, Center for Bio-Molecular Nanotechnologies@UniLe	Nanoparticles Fate in Synthetic Matrices Relevant for Human Exposure
15.10	<b>DIANA BORASCHI</b>	National Research Council, Institute of Protein Biochemistry (CNR – IBP)	Contamination with LPS: an Issue in Nanomaterial Toxicity Testing in NANoREG
15.25	<b>CHRISTIAN MICHELETTI</b>	Veneto Nanotech, European Center for the Sustainable Impact of Nanotechnology	NANoREG Safe by Design Approach
15.40	<b>MARIA LETIZIA POLCI, MARIA ALESSANDRELLI</b>	Istituto Superiore di Sanità (ISS), Center for Chemical Substances and Ministry of Health	ProSafe _ Promoting the Implementation of Safe by Design: Main Aims, Activities and Links to NANoREG
15.55	<i>Coffee Break &amp; Poster Session</i>		

### ORGANIZING PARTNERS

- Istituto Superiore di Sanità
- NanoReg and ProSafe Projects

Hall 216

Thursday 26<sup>th</sup>- Afternoon

## Safe Working: a Straightforward Precautionary Approach for Safe Working with Nanomaterials, Comprehensible and Acceptable for Labor Inspection, with a Focus on Needs of SMEs

**WORKSHOP**

*The overall objective of the workshop is to discuss initiatives taken in some European Member States, to make precaution operational for handling nanomaterials at the workplace, and to work safely with products containing nanomaterials. A straightforward use of reference values, comprehensible exposure assessment and risk management measures, will allow industries, in particular SMEs, to use manufactured nanomaterials in a responsible way. A precautionary approach may give content to the employers' mandatory 'duty of care' for a safe workplace, which may be also acceptable for the labour inspectorate. A broader adoption of the presented principles, may be used in Europe to support a way for effective risk governance. The workshop is organized in the framework of the EU NanoDiode Project.*

16.15 **CHAIRS: HILDO KROP AND PIETER VAN BROEKHUIZEN, IVAM UvA BV AND NANODIODE PROJECT**

16.20	<b>HILDO KROP</b>	IVAM UvA BV, The Netherlands	Setting the Scene for a Precautionary Approach for OHS when Dealing with Nanomaterials
-------	-------------------	------------------------------	--

16.35	<b>CAROLINE VERDOOT</b>	Fédération Générale du Travail de Belgique (FGTB – ABVV) and European Trade Union Institute (ETUI)	Needs for Workers to Assure a Safe Nano-workplace
-------	-------------------------	--	---

16.50	<b>MARIA ADA MALVINDI</b>	HiQ-Nano	Needs for SMEs to Assure a Safe Nano-Workplace
-------	---------------------------	----------	--

17.05	<b>PIETER VAN BROEKHUIZEN</b>	IVAM UvA BV NanoDiode Project Coordinator	Initiatives for Making Precaution Operational for Workers Exposed to Nanomaterials
-------	-------------------------------	--	--

17.25 **PANEL DISCUSSION AMONGST SPEAKERS AND PARTICIPANTS**

18.10 *Closing & Poster Session*

### ORGANIZING PARTNERS

- IVAM UvA BV
- The Nanodiode Project

Hall 105

Friday 27th – Morning

## Cultural Heritage

*Italy has the largest cultural heritage in the world and it is at forefront in the application and use of nanotechnologies in addressing the challenges faced for restoring and preserving this heritage. The research actives in this field have a relevant role both at national level and in key EU projects. They refer to materials, preservation /restoration methods, diagnostics tools and systems. The state-of-the-art of the research (in Italy and Europe) will be presented in the session, with inputs from researchers and industry (suppliers, as well as conservator-restorer).*

9.00	<b>CHAIR: MAURO MATTEINI, FORMER DIRECTOR, LABORATORI SCIENTIFICI DELL'OPIFICIO DELLE PIETRE DURE</b>		
9.10	<b>PIERO BAGLIONI</b>	University of Florence and Center for Colloids and Surface Science (CSGI)	NANORESTART: an Overview and a Perspective of Materials for the Conservation of Contemporary Art
9.30	<b>MARIA MOSQUEIRA</b>	University of Cadiz, Spain	Surfactant-Synthesized Nanomaterials for Preserving Stones: Consolidants, Hydrophobic and Superhydrophobic Agents, Self-Cleaning and Biocide Photocatalysts
9.50	<b>ANDREA LAZZERI</b>	University of Pisa	The Nanocathedral Project
10.10	<b>FRANCESCA CAPITELLI</b>	University of Milano, Department Food, Environmental and Nutritional Sciences	Microbiological Methods for Cultural Heritage Conservation
10.30	<b>MARCO GAIANI</b>	University of Bologna, Department of Architecture	Cultural Heritage and Microtechnologies: from Digitization to Active Cultural Object
10.50	<b>MARCO CERRA</b>	Vinavil SpA	Nanotechnology Leads to New Developments in Architectural and Restoration Applications
11.10	<b>CECILIA MONTICELLI</b>	University of Ferrara, Corrosion and Metallurgy Study Centre "A. Daccò" and Teknehub	Preventive Measures Against Bronze and Gilded Bronze Degradation During Indoor and Outdoor Exposures: Surface Treatments, Corrosion Monitoring Sensors and Development of a Controlled-Microclimate Open Showcase
11.30		<i>Questions &amp; Answers</i>	
11.40		<i>Coffee Break and Poster Session</i>	

## Poster Session

> *Bio-inspired and Bio-based Technologies*  
 > *Cultural Heritage*  
 > *Food Packaging*

> *Materials & Graphene-Based Innovation*  
 > *Horizontal Issues*

Hall 215

Friday 27<sup>th</sup>- Morning

## Food Packaging

*In modern agri-food industry, food packaging represents a big opportunity for innovation. The need to assure quality and safety of foods, information about additives and nutrient properties, traceability, easy and safe transportation, long shelf life require innovative approaches. Nanotechnologies and the other enabling technologies can offer the correct answer to these challenges providing effective solutions for active and intelligent packaging. The session will shed a light on this world.*

9.15 **CHAIR: DIEGO BASSETT, VENETO NANOTECH**

9.25	<b>CRISTINA NERIN</b>	Universidad Zaragoza, Instituto Universitario de Investigacion en Ingenieria de Aragon GUIA, Spain	New Approaches in Antioxidant Food Packaging
9.50	<b>GIOVANNA BUONOCORE</b>	National Research Council (CNR)	Nanostructured Polymers as Innovative Materials for Active Food Packaging
10.10	<b>MARCO MONTI AND CHIARA PAVAN</b>	Consorzio Proplast and Grinp Srl	Nanotechnologies and Plasma Technology: a Successful Approach for Plastic Packaging
10.30	<b>ERIKA MASCHERONI</b>	University of Milano – Department of Food, Environmental and Nutritional Sciences (Defens)	Bio-based Solutions to Improve Oxygen Barrier of Food Packaging aterials
10.50	<b>LUIGI GARAVAGLIA</b>	ILPA SpA, ILIP division	New Performances in Packaging
11.10		<i>Questions &amp; Answers</i>	
11.20		<i>Coffee Break and Poster Session</i>	

## Poster Session

> *Bio-inspired and Bio-based Technologies*  
 > *Cultural Heritage*  
 > *Food Packaging*

> *Materials & Graphene-Based Innovation*  
 > *Horizontal Issues*



Hall 215

Friday 27<sup>th</sup>- Morning

## Bio-Inspired and Bio-Based Technologies

*Environmental friendly products and processes are the answer to the rising demand of the society for a sustainable growth. Bio-based and bio-inspired technologies can provide a solution to this challenge in a variety of sectors spanning from fuels and chemicals to agri-food. The conference will showcase results and trends of R&D activities in this strategic sector in which Italy can boast a front edge position.*

11.40 **CHAIR: GUIDO SARACCO, POLYTECHNIC OF TORINO**

11.50	<b>FABIO FAVA</b>	University of Bologna and Environmental Biotechnology Section of the European Federation of Biotechnology (EFB)	Biobased industry and Bioeconomy in the Frame of Horizon2020 and the BBI JU
-------	-------------------	---	---

12.10	<b>SIMON RITTMANN</b>	Archaea Biology and Ecogenomics and Systems Biology University of Vienna, Austria	Archaea Biotechnology – Biomethanation of H <sub>2</sub> and CO <sub>2</sub> to CH <sub>4</sub>
-------	-----------------------	---	---

12.30	<b>FABRIZIO SIBILLA</b>	Krajete GmbH, Austria	CO <sub>2</sub> as Carbon Source for a Bio-Based Economy: Renewable Methane through Biotechnology
-------	-------------------------	-----------------------	---

12.50	<b>CINZIA CHIAPPE</b>	University of Pisa and Processi Innovativi Srl	Biodiesel from Microalgae: the Role of a New Class of Ionic Liquids
-------	-----------------------	--	---

13.10	<b>SIGLINDA PERATHONER</b>	University of Messina	The New Sustainable Model of Biorefineries: Biofactories and the Challenge of Integrating Bio- and Solar-refineries
-------	----------------------------	-----------------------	---

13.30	<i>Questions &amp; Answers</i>		
-------	--------------------------------	--	--

13.40	<i>Lunch &amp; Poster session</i>		
-------	-----------------------------------	--	--

## Poster Session

- > *Bio-inspired and Bio-based Technologies*
- > *Cultural Heritage*
- > *Food Packaging*

- > *Materials & Graphene-Based Innovation*
- > *Horizontal Issues*

Hall 216

Friday 27<sup>th</sup>- Morning

## Anti-Counterfeiting and Security Applications

The contrast to counterfeiting is becoming ever more important and refer not only to money. With globalization and novel ways / tools of commerce there is, practically, no sector immune of this treat. At stake there is the false origin and trade mark of the goods, often their safety, e-commerce,....

11.40 **CHAIR: ANDREA PORCARI, ITALIAN ASSOCIATION FOR INDUSTRIAL RESEARCH (AIRI)**

11.45	<b>MARCO VITICOLI</b>	Banca d'Italia, Banknotes Directorate	Nanomaterials on Banknotes: the Main Challenges for a Smart Integration
12.05	<b>ETTORE TOSCANO</b>	STMicroelectronics	Review of Smart Card Security Systems and Applications
12.25	<b>GIULIA FOSCHI</b>	Scriba Nanotecnologie	Nu-CODE™ Technology: a Platform for Complete Traceability, Security, Brand Protection and Anticounterfeit
12.45	<b>ANTONIO PALUCCI</b>	Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA)	Agro-alimentary Diagnostics to Safeguard and Protect "Made in Italy" Foodstuffs
13.05		<i>Questions &amp; Answers</i>	
13.15		<i>Lunch &amp; Poster session</i>	

## Poster Session

> *Bio-inspired and Bio-based Technologies*  
 > *Cultural Heritage*  
 > *Food Packaging*

> *Materials & Graphene-Based Innovation*  
 > *Horizontal Issues*

Hall 216

Friday 27<sup>th</sup>- Morning

## Nanoscale Metrology: European Metrology Research at the Nanoscale

**WORKSHOP**

*The workshop is focused on European Metrology Research at the nanoscale and aims to disseminate the results of the EMRP and EMPIR Projects. The two Programmes have been launched and developed by EURAMET, the consortium of European National Metrology Institutes, in conjunction with the European Commission between 2009 and 2020. These Joint Research Projects (JRPs) focus on priority areas, known as Targeted Programmes (TPs), to address the EU's Grand Challenges in Health, Energy, Environment and Industry, and to progress fundamental measurement science.*

9.15 **CHAIR: LUCA BOARINO, NATIONAL INSTITUTE OF METROLOGICAL RESEARCH (INRIM)**

9.25 **INGO BUSCH**      Physikalisch-Technische Bundesanstalt (PTB - National Metrology Institute), Germany      Novel Approach for Dimensional Standards at Nanoscale by Self Organisation of Nature

9.45 **ALEX SHARD**      National Physical Laboratory (NPL), Surface and NanoAnalysis, Group, UK      The EMPIR Project Innanopart

10.05 **FRANCESCO MINARDI**      National Research Council, National Institute of Optics (CNR-INO) and European Laboratory for Non-Linear Spectroscopy (LENS)      New Frontiers in Physics and Metrology: Correlated Atoms in Near-Field Lattices

10.25 **FEDERICO FERRARESE LUPI**      INRIM Nanofacility, Nanosciences and Materials Division      Toward Diblock Copolymer based Metrology Standard

10.45 **ANDREA GIOVANNONZI**      INRIM, Surface Science and Food Quality Division      The EU Project SetNanoMetro

11.05 *Questions & Answers*

11.15 *Coffee Break & Poster Session*

### ORGANIZING PARTNERS

- Istituto Nazionale di Ricerca Metrologica (INRIM)

Hall 105

Friday 27th- Afternoon (14.30)

## Spazio ai giovani...e non solo! Engaging in Science and Technology

**SIDE EVENT**

An open, public dialogue among NanotechItaly delegates, students, teachers and other participants curious about Space Challenges with respect to: research activities taking place in the space, technologies used and developed in the space and their impact in every days life, the "job" of an astronaut. Part of the event will also be devoted to the results of the Sperimestate Project, involving every year hundreds of students in a summer experience within the CNR/INAF research area.

**The event is in Italian**

*Saluti di benvenuto (14.30)*

**ROBERTO ZAMBONI**      Presidente dell'Area della Ricerca CNR-INAF

**ELVIO MANTOVANI**      AIRI e chair NanotechItaly 2015

*Prima parte, incontro con il pubblico (14.40-16.00)*

**UMBERTO GUIDONI, GIÀ ASTRONAUTA DELL'AGENZIA SPAZIALE EUROPEA, E RICERCATORI CNR ED INAF**

**MODERA L'INCONTRO: PIERLUIGI BELLUTTI, FONDAZIONE BRUNO KESSLER**

*Seconda parte, il progetto Sperimestate (16.00-17.30)*

**INTRODUZIONE AL PROGETTO SPERIMESTATE**

**PROIEZIONE DEI VIDEO DEGLI STAGISTI-REPORTER DI SPERIMESTATE**

*Conclusioni*

**STEFANO VERSARI**      Direttore Generale dell'Ufficio Scolastico dell'Emilia-Romagna

**ORGANIZING PARTNERS**

- Area della Ricerca CNR/INAF
- NanotechItaly 2015
- INAF/IASF-Bologna
- Associazione Italiana per la Ricerca Industriale (AIRI)
- Veneto Nanotech
- Fondazione Bruno Kessler
- Progetto SperimEstate