9th World Congress on

Materials Science and Engineering

June 12-14, 2017   Rome, Italy
Day 1 June 12, 2017

Olimpica 1

**Conference Series.com 08:30-09:00**

**Opening Ceremony**

**Keynote Forum**

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>09:00-09:30</td>
<td><strong>Introduction</strong></td>
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<tr>
<td>09:00-09:30</td>
<td><strong>New ways of vision: Protein structures in translational medicine and business development - My experience</strong></td>
<td><em>Robert Huber</em>, Nobel Laureate, Chemistry 1988</td>
</tr>
<tr>
<td>09:30-09:55</td>
<td><strong>Nanogenerators for self-powered systems and piezotronics for artificial intelligence</strong></td>
<td><em>Zhong Lin Wang</em>, Georgia Institute of Technology, USA</td>
</tr>
</tbody>
</table>

**Sessions: Materials Science and Engineering | Metals, Metallurgy and Materials**

**Session Chair:** Nekane Guarrotxena, Spanish National Research Council (CSIC), Spain  
**Session Co-Chair:** Augusto Di Gianfrancesco, Consultant, Rome Area, Italy

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>09:55-10:15</td>
<td><strong>Title: Building up smart optical “organic-inorganic” nanosystems</strong></td>
<td><em>Nekane Guarrotxena</em>, Spanish National Research Council (CSIC), Spain</td>
</tr>
<tr>
<td>10:15-10:35</td>
<td><strong>Title: Materials for advanced ultra-super critical power plants</strong></td>
<td><em>Augusto Di Gianfrancesco</em>, Consultant, Rome Area, Italy</td>
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**Networking & Refreshments Break 10:35-10:50 @ Foyer**

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<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker</th>
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</thead>
<tbody>
<tr>
<td>10:50-11:10</td>
<td><strong>Title: Helical light induced chiral surface relief in azo-polymer thin film</strong></td>
<td><em>Takashige Omatsu</em>, Chiba University, Japan</td>
</tr>
<tr>
<td>11:10-11:30</td>
<td><strong>Title: Multi-scale deformation analysis in a thermoplastic polyurethane</strong></td>
<td><em>Alexander M Korsunsky</em>, University of Oxford, UK</td>
</tr>
<tr>
<td>11:30-11:50</td>
<td><strong>Title: Proposed link between the periodic table and the standard model</strong></td>
<td><em>John Roberts</em>, University of Liverpool, UK</td>
</tr>
<tr>
<td>11:50-12:10</td>
<td><strong>Title: Fine-controlled subano-metal particles in a dendrimer reactor</strong></td>
<td><em>Kimihisa Yamamoto</em>, Tokyo Institute of Technology, Japan</td>
</tr>
<tr>
<td>12:10-12:30</td>
<td><strong>Title: Structure and dynamics of polymer materials at the single molecule scale studied by novel fluorescence microscopy techniques</strong></td>
<td><em>Hiroyuki Aoki</em>, Japan Atomic Energy Agency, Japan</td>
</tr>
<tr>
<td>12:30-12:50</td>
<td><strong>Title: Development of highly stretchable conductive fiber and fiber-based electronic sensors for textile electronics</strong></td>
<td><em>Taeyoon Lee</em>, Yonsei University, Republic of Korea</td>
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</tbody>
</table>

**Lunch Break 12:50-13:30 @ Hotel Restaurant**

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<tr>
<th>Time</th>
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<th>Speaker</th>
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<tbody>
<tr>
<td>13:30-13:50</td>
<td><strong>Title: Finite-element analysis of velocity mode transition of crack propagation in rubber materials</strong></td>
<td><em>Atsushi Kubo</em>, University of Tokyo, Japan</td>
</tr>
<tr>
<td>13:50-14:10</td>
<td><strong>Title: Light driven directional mass transport of azo-benzene containing materials for complex tri-dimensional structures on surfaces</strong></td>
<td><em>Stefano L. Oscurato</em>, University of Naples Federico II, Italy</td>
</tr>
<tr>
<td>14:10-14:25</td>
<td><strong>Title: Enhancing the photocatalytic activity for pollutant degradation and H₂ evolution by modifying ZrO₂ with nanoclusters of BiVO₅, Ag₃PO₄, SrTiO₃ and WO₃: A first-principles study</strong></td>
<td><em>Francis Opoku</em>, University of Johannesburg, South Africa</td>
</tr>
</tbody>
</table>
Sessions: Nanomaterials

Session Chair: Hikaru Kobayashi, Osaka University, Japan
Session Co-Chair: Marzia Quaglio, Italian Institute of Technology, Italy

14:25-14:45
Title: Si nanopowder for internal hydrogen generation materials
Hikaru Kobayashi, Osaka University, Japan

14:45-15:05
Title: N-doped carbon-based nanofibers as oxygen reduction reaction catalysts
Marzia Quaglio, Italian Institute of Technology, Italy

15:05-15:25
Title: Controlled synthesis of vertical and planar graphenes using plasma-enhanced chemical vapor deposition
Mineo Hiramatsu, Meijo University, Japan

15:25-15:45
Title: Rational clustering and fractionation of “SERS hot-spot” plasmonic nanoparticles
Nekane Guarrotxena, Spanish National Research Council (CSIC), Spain

Networking & Refreshments Break 15:45-16:00 @ Foyer

16:00-16:20
Title: The nanophotonic behaviors of wideband diluted magnetic semiconductor nanostructures
Bing Suo, Beijing institute of Technology, China

16:20-16:40
Title: Fabrication of nanoporous graphene membranes for nanofiltration applications
Marco Laurenti, Politecnico di Torino, Italy

16:40-17:00
Title: Noble metal nanostructures
Sarmiza Elena Stanca, Leibniz Institute of Photonic Technology, Germany

17:00-17:20
Title: Fabrication and characterization of carbon nanotube–recycled polyethylene terephthalate nanocomposites
Ravindra Reddy Chowreddy, Norner AS, Norway

17:20-17:40
Title: Adatom’s Berry phase as a classification toolkit and responsible for enhanced lifetimes of degenerated ground states
Marta Prada, University of Hamburg, Germany

17:40-18:00
Title: Nanostructured Mn\textsubscript{x}O\textsubscript{y} as catalyst for oxygen reduction reaction
Angelica Chiodoni, Italian Institute of Technology, Italy

Panel Discussion

Day 2  June 13, 2017

Olimpica 1

Keynote Forum

09:00-09:25
An approximate semi-classical method that uses real valued trajectories for time dependent tunneling calculations
Michael F. Herman, Tulane University, USA

09:25-09:50
Implementation of new magnesium sheets into application from laboratory to service
Karl Ulrich Kainer, Helmholtz-Zentrum Geesthacht, Germany

09:50-10:15
Towards the growth of 3D forests of carbon nanotubes: Selective height control using reservoirs and overlayers
Gilbert Daniel Nessim, Bar Ilan University, Israel
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<tr>
<td>10:15-10:35</td>
<td><strong>Title: Photoelectron spectra of GexSb20Se80-x Glasses</strong></td>
<td>Li Wang, Beijing University of Technology, China</td>
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<td>10:35-10:55</td>
<td><strong>Title: Nanocellulose based flexible, environment-friendly nonvolatile resistive switching memory</strong></td>
<td>Kazuki Nagashima, IMCE Kyushu University, Japan</td>
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<tr>
<td>10:55-11:20</td>
<td><strong>Networking &amp; Refreshments Break 10:55-11:20 @ Foyer</strong></td>
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<tr>
<td>11:20-11:40</td>
<td><strong>Title: 2D material fluid nanocomposites for reconfigurable integrated optoelectronics and Si photonics</strong></td>
<td>Anna Baldycheva, University of Exeter, UK</td>
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<tr>
<td>11:40-12:00</td>
<td><strong>Title: Supporting titanium on silica, graphene, epoxy graphene and carbon nanotubes: A first-principles study</strong></td>
<td>Penny Govender, University of Johannesburg, South Africa</td>
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<tr>
<td>12:00-12:20</td>
<td><strong>Title: Nanostructure Layered Double Hydroxides (LDH): synthesis, characterization and possible applications</strong></td>
<td>Maria Richetta, University of Rome “Tor Vergata”, Italy</td>
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<tr>
<td>12:20-12:40</td>
<td><strong>Title: Nanocrystalline cellulose from abaca fibers</strong></td>
<td>Anniver Ryan P. Lapuz, Forest Products Research and Development Institute, Philippines</td>
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<tr>
<td>12:40-13:00</td>
<td><strong>Title: A high resolution, multi-purpose scanning I/Q-interferometer scheme for material diagnostics</strong></td>
<td>Kyuman Cho, Sogang University, South Korea</td>
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<tr>
<td>13:00-13:20</td>
<td><strong>Title: Coupling diffusion and mechanics modeling for hydrogen embrittlement (HE)</strong></td>
<td>Natalie German, Technical University of Munich, Germany</td>
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<tr>
<td>13:20-13:40</td>
<td><strong>Lunch Break 13:20-14:00 @ Hotel Restaurant</strong></td>
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<tr>
<td>14:00-14:20</td>
<td><strong>Title: Effects of plasticity and pressure on the morphology and propagation of blisters: formation of croissant and donut-like buckles</strong></td>
<td>Jérôme Colin, University of Poitiers, France</td>
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<tr>
<td>14:20-14:40</td>
<td><strong>Title: Rational design of organic electrode materials: New advances and tools</strong></td>
<td>Christine Frayret, Université de Picardie Jules Verne, France</td>
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<tr>
<td>14:40-15:00</td>
<td><strong>Title: Computational investigation of the kneading process of bread dough</strong></td>
<td>Natalie German, Technical University of Munich, Germany</td>
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<tr>
<td>15:00-15:20</td>
<td><strong>Title: Materials characterization by X ray diffraction techniques</strong></td>
<td>Aitor Larrañaga Varga, University of the Basque Country, Spain</td>
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<tr>
<td>15:20-15:40</td>
<td><strong>Title: Internal stress and friction measurements during MoS2-nickel electrodeposition</strong></td>
<td>Ebru Saraloglu Güler, Baskent University, Turkey</td>
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<tr>
<td>15:40-16:00</td>
<td><strong>Title: In-situ measurement for ablation geometry during impinging of plume with laser triangulation method</strong></td>
<td>Juhwan Lim, Agency for Defense Development, South Korea</td>
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<tr>
<td>16:00-16:25</td>
<td><strong>Networking &amp; Refreshments Break 16:00-16:25 @ Foyer</strong></td>
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<td>16:25-16:45</td>
<td><strong>Title: Chemically bonded aramid-MWCNTs nano-composites: Morphology and thermal-mechanical properties</strong></td>
<td>Zahoor Ahmad, Kuwait University, Kuwait</td>
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<tr>
<td>16:45-17:00</td>
<td><strong>Title: The fate, behaviour and effect of WO3 nanoparticles on the functionality of an aerobic treatment unit</strong></td>
<td>Sandile Simelane, University of Johannesburg, South Africa</td>
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<tr>
<td>17:00-17:15</td>
<td><strong>Title: Flexible synthesis of anatase TiO2 nanocrystallines for dye-sensitized solar cells applied at regular sunlight and room light conditions</strong></td>
<td>Yu-Ling Guo, National Cheng Kung University, Taiwan</td>
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</tbody>
</table>
17:15-17:30  
**Title:** Single particle spectroscopic studies on two-photon photoluminescence of plasmon coupled gold nanotriangle dimers  
**Monalisa Garai,** National University of Singapore, Singapore

17:30-17:45  
**Title:** Fiber networks modified with graphene for durable and versatile flexible electronics  
**Pietro Cataldi,** Italian Institute of Technology, Italy

17:45-18:00  
**Title:** Mechanical and thermal properties of propylene glycol extended and paper waste sludge modified polyurethane foams  
**Agne Kairytė,** Vilnius Gediminas Technical University, Lithuania

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### Break-out Session Day 2 @ Olimpica 3

**Sessions:** Biomaterials and Medical Devices | Polymer Science and Technology | Ceramics and Composite Materials

**Session Chair:** Bing Lu, Wanhua Chemical Group Co. Ltd., China  
**Session Co-Chair:** Loubat Cédric, Specific Polymers, France

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11:20-11:40  
**Title:** New development and applications of polyurethane materials  
**Bing Lu,** Wanhua Chemical Group Co. Ltd., China

11:40-12:00  
**Title:** Specific Polymers – Alkoxy silane and phosphonic acid functional groups to improve compatibility between inorganic surfaces and polymers  
**Loubat Cédric,** Specific Polymers, France

12:00-12:20  
**Title:** Improving separation of polymers by size-exclusion and liquid chromatography on the background of the theoretical model  
**Miloš Netopilík,** Academy of Sciences of the Czech Republic, Czech Republic

12:20-12:40  
**Title:** Sticky degradable bioelastomers  
**Richard Vendamme,** Flemish Institute for Technological research, Belgium

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**Special Session on:**

12:40-13:20  
**Title:** Physics versus non-physical ISO/NIST standards in nano, micro and the numerous macro-techniques are detrimental for daily life: what can be done?  
**Gerd Kaupp,** University of Oldenburg, German

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**Lunch Break 13:20-14:00 @ Hotel Restaurant**

14:00-14:20  
**Title:** Fabrication of Co-Cr alloys for biomedical applications by implementing rapid solidification  
**Julio Juarez Islas,** Instituto de Investigaciones en Materiales, Mexico

14:20-14:40  
**Title:** An enzymatic-based process for the extraction of fibers from diss stems with for composites reinforcement  
**Antonio Zuorro,** Sapienza” University of Rome, Italy

14:40-15:00  
**Title:** Flexible and soft bioelectronics for the biotic/abiotic interface  
**Damia Mawad,** University of New South Wales, Australia

15:00-15:20  
**Title:** Strategies for enhancing interfacial adhesion between chicken feather filler and thermoplastic matrices in biocomposites  
**Jorge Macanás de Benito,** Universitat Politècnica de Catalunya, Spain

15:20-15:40  
**Title:** Geometry and size dependent structural reversibility of sub-micrometer polymer structures  
**Hong Yee Low,** Singapore University of Technology and Design, Singapore

15:40-16:00  
**Title:** Perlite metal syntactic foam (PMSF) in impact engineering  
**Thomas Fiedler,** University of Newcastle, Australia

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**Networking & Refreshments Break 16:00-16:25 @ Foyer**

16:25-16:45  
**Title:** Synthesis and characterization of titanium carbide nanofibers using a modified carbothermal reduction process  
**Kanchan Mondal,** Southern Illinois University, USA
16:45-17:05  Title: Highly dispersed zinc based sorbents for hot gas desulphurization: Synthesis and application  
David Lokhat, University of KwaZulu-Natal, South Africa

17:05-17:25  Title: Melt infiltration casting of alumina, silicon carbide and boron carbide reinforced aluminium matrix composites  
Ali Kalkanli, Middle East Technical University, Turkey

17:25-17:40  Title: Biomaterial surface modification to control inflammation: Effect of nanotopography and surface chemistry on protein adsorption and cell response  
Rahul Madathiparambil Visalakshan, University of South Australia, Australia

17:40-17:55  Title: High performance rubber concrete  
Samaneh Pourmohammadimojaveri, Western Sydney University, Australia

17:55-18:10  Title: Investigation of the microstructure and oxidation properties of NbB2-SiC-GNP composites  
Burak Cagri Ocak, Istanbul Technical University, Turkey

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**Poster Presentations (Session 1) 10:55-11:20 @ Foyer**

- **MSE01**  
  Title: Optoelectronic studies on hybrid perovskites films for solar cells applications  
  Mauricio Solis de la Fuente, Lawrence Berkeley National Laboratory, USA

- **MSE02**  
  Title: Valorization of feather wastes as useful and environmental friendly materials  
  Marta Casadesús, Universitat Politècnica de Catalunya, Spain

- **MSE03**  
  Title: Manufacturing of gasket sheet using paper manufacturing process without organic solvent  
  Yoonjung Yoo, Korea Institute of Energy Research, Republic of Korea

- **MSE04**  
  Title: Visible light driven photo-active nano Ag-TiO₂ for coating applications  
  Jia Liang Cheng, Temasek Polytechnic, Singapore

- **MSE05**  
  Title: Preparation of leucite from analcime by ion exchange process: An experimental study  
  Qianqian Chang, China University of Geosciences, China

- **MSE06**  
  Title: Preparation and luminescent properties of orange reddish emitting phosphor KCaBi(PO₄)₂:Sm³⁺  
  Mi Ruiyu, China University of Geosciences, China

- **MSE07**  
  Title: Synthesis of nano-analcime with potassic hornblende syenite by direct alkali-hydrothermal treatment  
  Yuxiang Qi, China University of Geosciences, China

- **MSE08**  
  Title: Angle-insensitive multicolor display device based on phase change materials  
  Hongkai Ji, University of Science and Technology, China

- **MSE09**  
  Title: Gate-tunable Schottky junction solar cells with light transparent and electric-field permeable graphene mesh on n-Si  
  Won Il Park, Hanyang University, South Korea

- **MSE10**  
  Title: Characterization and stability of TiO₂ nanoparticles in industrial dye stuff effluent  
  Langelihihle Nsikayezwe Dlamini, University of Johannesburg, South Africa

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**Poster Presentations (Session 2) 16:00-16:25 @ Foyer**

- **MSE11**  
  Title: Effect of binder on adsorption of cesium on silica gel containing embedded phosphotungstic acid  
  Aleksey Vasiliev, East Tennessee State University, USA

- **MSE12**  
  Title: A highly efficient photoanode for enhancing degradation of the azo dye and electricity generation of dual-photoelectrode photocatalytic fuel cell  
  He Yun, City University of Hong Kong, China
Title: Preparation of zeolite for slow-release fertilizer using K-feldspar powder
Jiangyan Yuan, China University of Geosciences, China

Title: Raman microspectroscopy in dental research
Tomasz Buchwald, Poznan University of Technology, Poland

Title: Inverse gas chromatography - A novel method for the examination of bond strength between tooth hard tissues and restorative materials
Zuzanna Okulus, Poznan University of Technology, Poland

Title: Study on deposition rate and microstructure of niobium coating prepared by CVD from niobium pentfluoride
Mingmin Zheng, State Power Investment Corporation Science and Technology Research Institute, China

Title: Effect of reduced graphene oxide on the mechanical, thermal and electrical properties of epoxy
Ahmed Alzahrany, University of Sheffield, United Kingdom

Title: Solar cell: Photochemical cells based on dye sensitization of titanium dioxide and with indium tin oxide as a conductor
Ari A Mohammed, University of Zakho, Iraq

Title: Preparation and properties of protective coating on inner surface of nickel-based alloy tube
Yanhong Liu, State Power Investment Corporation Science and Technology Research Institute, China

Title: Specific Polymers – Alkoxysilane and phosphonic acid functional groups to improve compatibility between inorganic surfaces and polymers
Loubat Cédric, Specific Polymers, France

Title: Response of S-phase to rapid annealing
Yana Liang, University of Birmingham, UK

Panel Discussion
Day 3 June 14, 2017

Olimpica 1

Sessions: Electronic, Optical and Magnetic Materials
Session Chair: Henri Jaffres, Unité Mixte de Physique CNRS, France
Session Co-Chair: Alessandra Vitale, Politecnico di Torino, Italy

Session Introduction

09:00-09:20
Title: Electrical spin injection and detection in molybdenum disulfide multilayer channel
Henri Jaffres, Unité Mixte de Physique CNRS, France

09:20-09:40
Title: Microscopic background in metal-insulator criterion for doped Mott-Hubbard materials
Vladimir A Gavrichkov, Kirensky Institute of Physics, Russia

09:40-10:00
Title: An electromagnetic-thermal model for heating patterns prediction of microwave treated palm to contrast the Red Palm Weevil
Rita Massa, University Naples Federico II, Italy

10:00-10:20
Title: Study on chemical reaction under microwave irradiation
Satoshi Fujii, Tokyo Institute of Technology, Japan

10:20-10:40
Title: L1₀-FePt based systems for ultra high-density magnetic recording
Gaspare Varvaro, ISM-CNR, Italy

10:40-11:00
Title: Photoluminescent crystalline magnetic materials based on trivalent lanthanide ions and polycyanidometallates
Szymon Chorazy, Jagiellonian University, Poland

Networking & Refreshments Break 11:00-11:15 @ Foyer

11:15-11:35
Title: Rare-metal-free supermagnet L1₀-type FeNi ordered alloy
Masato Kotsugi, Tokyo University of Science, Japan
Title: Rare-metal-free high-performance Ga-Sn-O thin film transistor
Tokiyoshi Matsuda, Ryukoku University, Japan

Title: Ferroelectricity and magnetism in the organic charge transfer salts k-(ET)_2X
Luca Fausto Tocchio, Politecnico di Torino, Italy

Title: Materials by design for thermodynamically stable electrodes
Mina Yoon, University of Tennessee, USA

Title: Intrinsic charge transport in stanene: Role of buckling and electron-phonon coupling
Yuma Nakamura, Tsinghua University, China

Lunch Break 12:50-13:30 @ Hotel Restaurant

Sessions: Emerging Smart Materials | Materials for Energy and Environmental Sustainability
Session Chair: Tsvetanka Zheleva, US Army Research Lab, USA
Session Co-Chair: Antonina Pirrotta, University of Palermo, Italy

Title: Materials research in energy and power for defense
Tsvetanka Zheleva, US Army Research Lab, USA

Title: A new perspective for analyzing experimental tests on biomaterials
Antonina Pirrotta, University of Palermo, Italy

Title: Solar cells efficiency enhancement by plasmons generation
Alexander Axelevitch, Holon Institute of Technology, Israel

Title: Sustainable solutions for industrial waste minimization: Environmental and material applications
Shivani Bhardwaj Mishra, University of South Africa, South Africa

Title: Quasiparticle approach to study the kinetics of self-assembly in complex material
Helena Zapolsky, University of Normandy, France

Title: Screen printable molecular copper ink for printed electronics
Bhavana Deore, National Research Council, Canada

Networking & Refreshments Break 15:30-15:45 @ Foyer

Title: Relation between nanoscale structures and transport phenomena in materials of polymer electrolyte fuel cell
Takashi Tokumasu, Tohoku University, Japan

Title: Siloxane photopolymers for PCR microfluidics
Alessandra Vitale, Politecnico di Torino, Italy

Title: The quantum Hall effect, the theta angle, instantons and all that
Adrianus M M Pruisken, University of Amsterdam, Netherlands

Title: CO_2 adsorption equilibria on calcium exchanged bentonite modified by mono-, di- and triethanolamines
Ali Elkhalifah, Al-Neelain University, Sudan

Title: Structural features and functions of ZIF crystals made via a reaction diffusion process at room temperature
Mohamad Hmadeh, American University of Beirut, Lebanon

Title: Influence of grain size on super elasticity and actuation properties of Cu-Al-Mn shape memory alloys
Nazim Babacan, Ghazi University, Turkey

Panel Discussion
Award Ceremony