

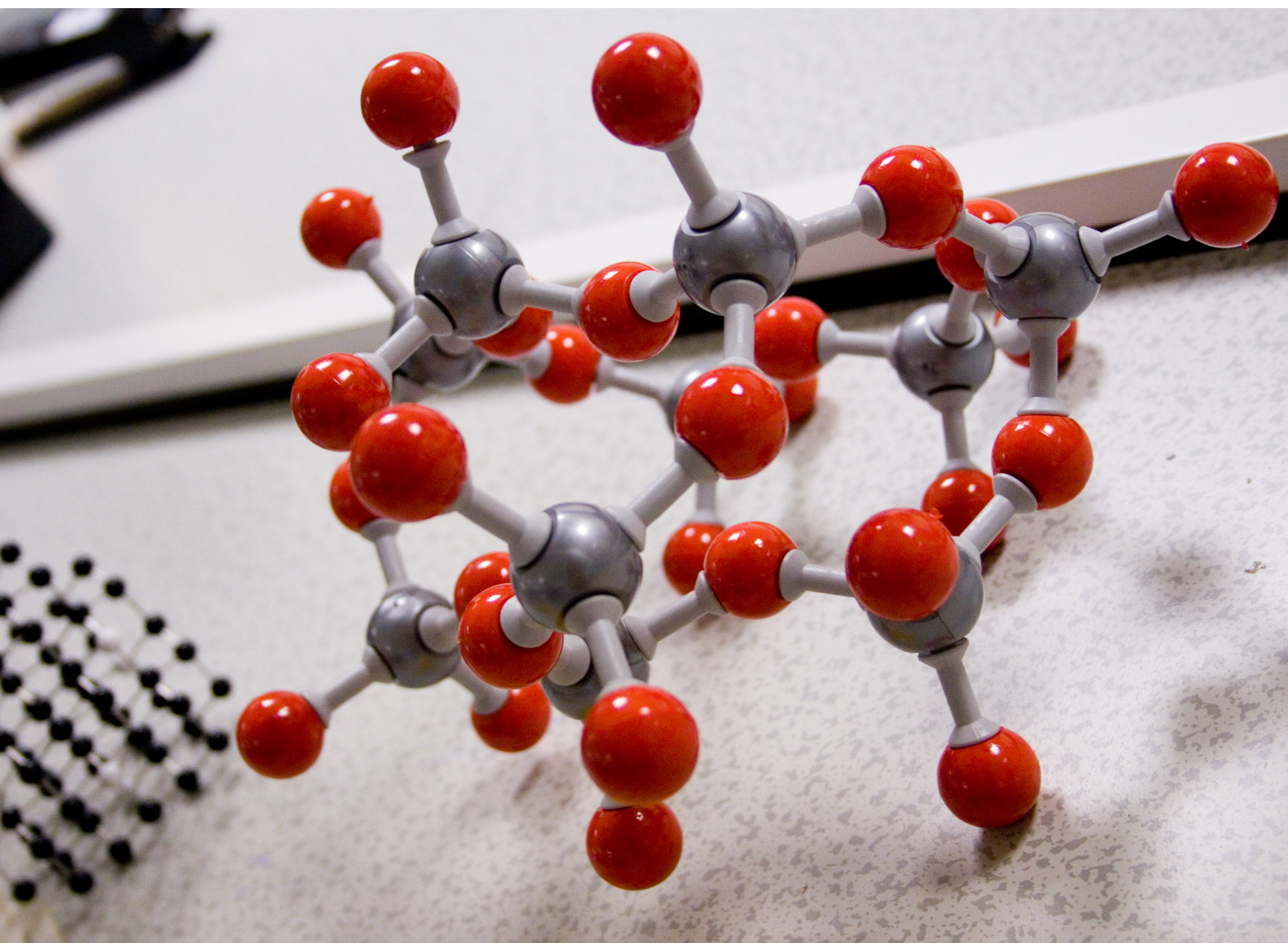
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976th Conference

Scientific Program

9th World Congress on

Materials Science and Engineering

June 12-14, 2017 Rome, Italy



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Olimpica 1

conference**series**.com 08:30-09:00

Opening Ceremony

Keynote Forum

Introduction

09:00-09:30 **New ways of vision: Protein structures in translational medicine and business development - My experience**

Robert Huber, Nobel Laureate, Chemistry 1988

09:30-09:55 **Nanogenerators for self-powered systems and piezotronics for artificial intelligence**

Zhong Lin Wang, Georgia Institute of Technology, USA

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

Session Introduction

09:55-10:15 **Title: Building up smart optical "organic-inorganic" nanosystems**

Nekane Guarrotxena, Spanish National Research Council (CSIC), Spain

10:15-10:35 **Title: Materials for advanced ultra-super critical power plants**

Augusto Di Gianfrancesco, Consultant, Rome Area, Italy

Networking & Refreshments Break 10:35-10:50 @ Foyer

10:50-11:10 **Title: Helical light induced chiral surface relief in azo-polymer thin film**

Takashige Omatsu, Chiba University, Japan

11:10-11:30 **Title: Multi-scale deformation analysis in a thermoplastic polyurethane**

Alexander M Korsunsky, University of Oxford, UK

11:30-11:50 **Title: Proposed link between the periodic table and the standard model**

John Roberts, University of Liverpool, UK

11:50-12:10 **Title: Fine-controlled subnano-metal particles in a dendrimer reactor**

Kimihisa Yamamoto, Tokyo Institute of Technology, Japan

12:10-12:30 **Title: Structure and dynamics of polymer materials at the single molecule scale studied by novel fluorescence microscopy techniques**

Hiroyuki Aoki, Japan Atomic Energy Agency, Japan

12:30-12:50 **Title: Development of highly stretchable conductive fiber and fiber-based electronic sensors for textile electronics**

Taeyoon Lee, Yonsei University, Republic of Korea

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

13:30-13:50 **Title: Finite-element analysis of velocity mode transition of crack propagation in rubber materials**

Atsushi Kubo, University of Tokyo, Japan

13:50-14:10 **Title: Light driven directional mass transport of azo-benzene containing materials for complex tri-dimensional structures on surfaces**

Stefano L. Oscurato, University of Naples Federico II, Italy

14:10-14:25 **Title: Enhancing the photocatalytic activity for pollutant degradation and H₂ evolution by modifying ZrO₂ with nanoclusters of BiVO₃, Ag₃PO₄, SrTiO₃ and WO₃: A first-principles study**

Francis Opoku, University of Johannesburg, South Africa

Sessions: Nanomaterials

Session Chair: Hikaru Kobayashi, Osaka University, Japan

Session Co-Chair: Marzia Quaglio, Italian Institute of Technology, Italy

Session Introduction

- 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_xO_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

Sessions: Nanomaterials | Mechanics, Characterization Techniques and Equipments

Session Chair: Kyuman Cho, Sogang University, South Korea

Session Co-Chair: Olga Barrera, University of Oxford, UK

- 10:15-10:35** Title: **Photoelectron spectra of $GexSb_{20}Se_{80-x}$ Glasses**
Li Wang, Beijing University of Technology, China
- 10:35-10:55** Title: **Nanocellulose based flexible, environment-friendly nonvolatile resistive switching memory**
Kazuki Nagashima, IMCE Kyushu University, Japan

Networking & Refreshments Break 10:55-11:20 @ Foyer

- 11:20-11:40** Title: **2D material fluid nanocomposites for reconfigurable integrated optoelectronics and Si photonics**
Anna Baldycheva, University of Exeter, UK
- 11:40-12:00** Title: **Supporting titanium on silica, graphene, epoxy graphene and carbon nanotubes: A first-principles study**
Penny Govender, University of Johannesburg, South Africa
- 12:00-12:20** Title: **Nanostructure Layered Double Hydroxides (LDH): synthesis, characterization and possible applications**
Maria Richetta, University of Rome "Tor Vergata", Italy
- 12:20-12:40** Title: **Nanocrystalline cellulose from abaca fibers**
Anniver Ryan P. Lapuz, Forest Products Research and Development Institute, Philippines
- 12:40-13:00** Title: **A high resolution, multi-purpose scanning I/Q-interferometer scheme for material diagnostics**
Kyuman Cho, Sogang University, South Korea
- 13:00-13:20** Title: **Coupling diffusion and mechanics modeling for hydrogen embrittlement (HE)**
Olga Barrera, University of Oxford, UK

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

- 14:00-14:20** Title: **Effects of plasticity and pressure on the morphology and propagation of blisters: formation of croissant and donut-like buckles**
Jérôme Colin, University of Poitiers, France
- 14:20-14:40** Title: **Rational design of organic electrode materials: New advances and tools**
Christine Frayret, Université de Picardie Jules Verne, France
- 14:40-15:00** Title: **Computational investigation of the kneading process of bread dough**
Natalie German, Technical University of Munich, Germany
- 15:00-15:20** Title: **Materials characterization by X ray diffraction techniques**
Aitor Larrañaga Varga, University of the Basque Country, Spain
- 15:20-15:40** Title: **Internal stress and friction measurements during MoS_2 -nickel electrodeposition**
Ebru Saraloglu Güler, Baskent University, Turkey
- 15:40-16:00** Title: **In-situ measurement for ablation geometry during impinging of plume with laser triangulation method**
Juhwan Lim, Agency for Defense Development, South Korea

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

- 16:25-16:45** Title: **Chemically bonded aramid-MWCNTs nano-composites: Morphology and thermal-mechanical properties**
Zahoor Ahmad, Kuwait University, Kuwait
- 16:45-17:00** Title: **The fate, behaviour and effect of WO_3 nanoparticles on the functionality of an aerobic treatment unit**
Sandile Simelane, University of Johannesburg, South Africa
- 17:00-17:15** Title: **Flexible synthesis of anatase TiO_2 nanocrystallines for dye-sensitized solar cells applied at regular sunlight and room light conditions**
Yu-Ling Guo, National Cheng Kung University, Taiwan

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 Kairyte, Vilnius Gediminas Technical University, Lithuania

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

Session Introduction

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 – Alkoxysilane 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

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

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 Zuurro, 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 biocompositess**

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

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 Univeristy, 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

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**
Yoonjong 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**
Langelihle Nsikayezwe Dlamini, University of Johannesburg, South Africa

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**
Aleksy 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

- MSE13** **Title: Preparation of zeolite for slow-release fertilizer using K-feldspar powder**
Jiangyan Yuan, China University of Geosciences, China
- MSE14** **Title: Raman microspectroscopy in dental research**
Tomasz Buchwald, Poznan University of Technology, Poland
- MSE15** **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
- MSE16** **Title: Study on deposition rate and microstructure of niobium coating prepared by CVD from niobium pentafluoride**
Mingmin Zheng, State Power Investment Corporation Science and Technology Research Institute, China
- MSE17** **Title: Effect of reduced graphene oxide on the mechanical, thermal and electrical properties of epoxy**
Ahmed Alzahrany, University of Sheffield, United Kingdom
- MSE18** **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
- MSE19** **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
- MSE20** **Title: Specific Polymers – Alkoxysilane and phosphonic acid functional groups to improve compatibility between inorganic surfaces and polymers**
Loubat Cédric, Specific Polymers, France
- MSE21** **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

- 11:35-11:55 **Title: Rare-metal-free high-performance Ga-Sn-O thin film transistor**
Tokiyoshi Matsuda, Ryukoku University, Japan
- 11:55-12:15 **Title: Ferroelectricity and magnetism in the organic charge transfer salts $k\text{-(ET)}_2\text{X}$**
Luca Fausto Tocchio, Politecnico di Torino, Italy
- 12:15-12:35 **Title: Materials by design for thermodynamically stable electrides**
Mina Yoon, University of Tennessee, USA
- 12:35-12:50 **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

Session Introduction

- 13:30-13:50 **Title: Materials research in energy and power for defense**
Tsvetanka Zheleva, US Army Research Lab, USA
- 13:50-14:10 **Title: A new perspective for analyzing experimental tests on biomaterials**
Antonina Pirrotta, University of Palermo, Italy
- 14:10-14:30 **Title: Solar cells efficiency enhancement by plasmons generation**
Alexander Axelevitch, Holon Institute of Technology, Israel
- 14:30-14:50 **Title: Sustainable solutions for industrial waste minimization: Environmental and material applications**
Shivani Bhardwaj Mishra, University of South Africa, South Africa
- 14:50-15:10 **Title: Quasiparticle approach to study the kinetics of self-assembly in complex material**
Helena Zapolsky, University of Normandy, France
- 15:10-15:30 **Title: Screen printable molecular copper ink for printed electronics**
Bhavana Deore, National Research Council, Canada

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

- 15:45-16:05 **Title: Relation between nanoscale structures and transport phenomena in materials of polymer electrolyte fuel cell**
Takashi Tokumasu, Tohoku University, Japan
- 16:05-16:25 **Title: Siloxane photopolymers for PCR microfluidics**
Alessandra Vitale, Politecnico di Torino, Italy
- 16:25-16:45 **Title: The quantum Hall effect, the theta angle, instantons and all that**
Adrianus M M Pruisken, University of Amsterdam, Netherlands
- 16:45-17:05 **Title: CO₂ adsorption equilibria on calcium exchanged bentonite modified by mono-, di- and triethanolamines**
Ali Elkhalfah, Al-Neelain University, Sudan
- 17:05-17:25 **Title: Structural features and functions of ZIF crystals made via a reaction diffusion process at room temperature**
Mohamad Hmadeh, American University of Beirut, Lebanon
- 17:25-17:40 **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