



Oral Program

Monday 23rd October 2017

- 14:00 - 15:00 Registration
- 15:00 - 15:20 Welcome and workshop opening by Prof. Rodolfo Miranda, IMDEA Nanoscience Director & Prof. Jose María de Teresa, Nanolito Network Coordinator

Session 1: MEMS-NEMS

Session Chair: **Daniel Granados**, IMDEA Nanoscience

- 15:20 16:00 *INVITED LECTURE*
Nanostenciling, t-SPL and self-assembly: a triumvirate for nanofabrication
Juergen Brugger, EPFL, Swiss Federal Institute of Technology Lausanne, Switzerland
- 16:00 16:20 e-beam fabrication of diffraction gratings
Mauricio Moreno-Sereno, Institute of Nanoscience and Nanotechnology, University of Barcelona (IN2UB)
- 16:20 16:40 e-beam lithography on Si-N membranes:
José Ignacio Martín, Physics Department, University of Oviedo

16:40 17:10 *Networking & Refreshment*

- 17:10 17:30 "Ordered arrays of Si-based nanocrystal pyramids
María Alonso, Institute of Materials Science of Madrid, CMM- CSIC
- 17:30 17:50 Plasmonic response of a triangular array of nanogaps: high absorption and extended temporal response
Ana Conde-Rubio, Institute of Nanoscience and Nanotechnology, University of Barcelona (IN2UB)
- 17:50 18:10 **Peter Gnauck**, Zeiss
High resolution imaging and sub 10nm nano-structuring with He and Ne Ions
- 18:15 19:30 **Raith** User Meeting

Tuesday 24rd October 2017

Session 2: Scanning Probe Lithography

Session Chair: **José María de Teresa**, Institute of Nanoscience of Aragon

- 9:00 9:40 *INVITED LECTURE*
Thermal Scanning Probe Lithography
Armin W. Knoll, IBM Research, Switzerland
- 9:40 10:00 Sub-5 nm patterns on graphene generated by scanning probe lithography:
Chemical and structural analysis
Arancha Dago, Institute of Materials Science of Madrid, ICMM- CSIC
- 10:00 10:20 FinFET fabrication by the combination of electron beam lithography and
directed self-assembly of block copolymers
Christian Pinto Gómez, Institute of Microelectronics of Barcelona IMB-CNM-
CSIC
- 10:20 10:40 **Frank Nouvertné**, Raith
Large Area Image Mapping and Automated Metrology for Improving Yield in
Nanofabrication, Data Preparation and Process Control.

10:40 11:30 *Poster flash presentations*

11:30 12:00 *Networking & Refreshment*

Session 3: Nanopatterning for electronic applications

Session Chair: **Jose Luis Prieto Martin**, Polytechnic University of Madrid

- 12:00 12:40 *INVITED LECTURE*
Focused Ion Beam microstructuring in quantum matter research
Philip Moll, Max-Planck-Institute for Chemical Physics of Solids, Dresden,
Germany
- 12:40 13:00 Exploring Novel Patterning Routes on 2D Materials
Daniel Granados, IMDEA Nanoscience
- 13:00 13:20 All-Carbon Electrode Molecular Electronic Devices based on Langmuir-
Blodgett Monolayers
Pilar Cea, Institute of Nanoscience of Aragon (INA), University of Zaragoza

13:20 14:50 *Lunch - Poster Session and Exhibition*

- 14:50 15:10 Magnetic properties of optimized cobalt nanospheres grown by Focused
Electron Beam Induced Deposition on cantilever tips
Soraya Sangiao, Institute of Nanoscience of Aragon (INA), University of
Zaragoza
- 15:10 15:30 Domain wall pinning at chemical notches in NiFe nanowires
Lucas Pérez, Materials Physics Department, Complutense University of
Madrid
- 15:30 15:50 An overview of recently obtained purification methods for beam chemistry
Daniel W. Phifer, Thermo Fisher Scientific

15:50 16:20 *Networking & Refreshment*

Session 4: Nanomagnetism and superconductivity

Session Chair: **Jose Luis Vicent**, Complutense University of Madrid

- 16:20 17:00 *INVITED LECTURE*
Development of Lumped Element Kinetic Inductance Detectors
Alicia Gómez, Astrobiology Center, Center, INTA-CSIC, Madrid

- 17:00 17:20 Two novel approaches to enhance the magnetic properties of 3D ferromagnetic nanowires grown by FEBID
Javier Pablo-Navarro, Institute of Nanoscience of Aragon (INA), University of Zaragoza
- 17:20 17:40 Three-dimensional superconducting crystalline nanotubes grown by He+ focused ion beam induced deposition
Rosa Córdoba, Aragón Materials Science Institute (ICMA-CSIC) University of Zaragoza
- 17:40 18:00 Magnetic properties of individual cylindrical nanowires micro-contacted by e-beam lithography
Mariana P. Proença, Institute of Optoelectronics Systems and Microtechnology (ISOM), Polytechnic University of Madrid
- 18:00 18:20 Ferromagnetic/ nonferromagnetic nanostructures for the local measurements of spin Hall effect
Van Tuong Pham, CIC nanoGUNE
- 18:20 18:40 **Pilar Cea**, ELECOMI
Integrated Infrastructure for Electron Microscopy of Materials, a Unique Scientific and Technical Infrastructure (ICTS) within the current Map of National Facilities in Spain
- 18:40 19:00 Vortex pinning in thickness-modulated W-C films grown by Ga+ focused ion beam induced deposition (FIBID)
José María de Teresa, Institute of Materials Science of Aragón, CSIC – University of Zaragoza

Workshop Dinner

Wednesday 25th October 2017

Session 5: Nanoimprint Lithography

Session Chair: Isabel Rodríguez, IMDEA Nanoscience

- 9:00 9:40 *INVITED LECTURE*
Nanolithography and replication: from 3D nanoimprint to ultrasmooth surfaces
Helmut Schift, Paul Scherrer Institut ,Switzerland
- 9:40 10:00 Facilitation of neuronal differentiation and directional cell growth in a human in vitro neuronal cell culture model using patterned graphene
Jorge Ramiro, IK4-TEKNIKER
- 10:00 10:20 Nanoimprinted Structures with Enhanced Mechanical Resistance
Jaime Hernández, IMDEA Nanoscience
- 10:20 10:40 Nanostructured coatings made by oblique deposition with sputtering
María Ujué González, IMN-Instituto de Micro y Nanotecnología (CNM-CSIC)
- 10:40 11:00 Synchrotron radiation based techniques for confinement and nanostructures investigation
Mari-Cruz García-Gutiérrez, Institute for the Structure of Matter, IEM-CSIC
- 11:00 11:20 Nanofabrication of functional polymer gratings by Laser Induced Periodic Surface Structures
Tiberio A. Ezquerro, Institute for the Structure of Matter, IEM-CSIC
- 11:20 12:00 *Networking & Refreshment*

Session 6: Nanomanufacturing

Session Chair: Santos Merino, IK4-TEKNIKER

12:00 12:40 *INVITED LECTURE*
Roll-to-roll products in lighting, biomedicine and health care applications
Thomas Bastuck, Fraunhofer Institute for Production Technology, Germany

12:40 13:00 Thermal roll to roll nanoimprinting of thermoplastic polymers
Aritz Retolaza, IK4-TEKNIKER,

13:00 13:20 Nanoimprinting of antireflective surfaces
Iván Navarro, IMDEA Nanoscience

13:20 13:40 Fabrication and demonstration of bio-mimicking surfaces, featuring self-cleaning, oleophobic and antibacterial properties over large area
Achille Francone, Catalan Institute of Nanoscience and Nanotechnology, ICN2

13:40 14:40 *Lunch*

14:00 15:00 *Nanoimprinting pilot plant open house*

COMERCIALIZATION INVITED TALKS

15:00 15:20 Gnanomat industrialization of graphene production
Íñigo Larraza, Gnanomat, SL

15:20 15:40 Entrepreneurial ecosystems
Aristides Senra, UPM Technology Innovation Center, EIT - European Institute of Innovation and Technology, UPM (R&D Dept)

15:40 16:00 *End of workshop concluding remarks*



Poster Program

1. Innovative patterning method for modifying few-layer MoS₂ device geometries
Fernando J. Urbanos, IMDEA Nanociencia
2. Label-Free picomolar protein detection by silicon nanowire field effect transistors
Francisco M. Espinosa, Institute of Materials Science of Madrid, CMM- CSIC
3. Sapphire substrates for Spin-Transfer-Torque applications
Cristina López, Institute of Optoelectronics Systems and Microtechnology, Polytechnic University of Madrid
4. Nanolithographic processing of straintronics devices on ScAlN piezoelectric
David Castilla Institute of Optoelectronics Systems and Microtechnology, Polytechnic University of Madrid
5. Focused ion and electron beam electrical contacts on individual metal oxide nanowires for gas sensing.
Guillem Domènech-Gil, Institute of Nanoscience and Nanotechnology, Barcelona University, (IN2UB)
6. Simulations and testing of polymer replication on nanoscale
Olga Muntada-López, Institute of Microelectronics of Barcelona IMB-CNM-CSIC
7. Large room temperature spin-to-charge conversion signals in a few-layer graphene/Pt lateral nanostructure
Eduarne Sagasta, CIC nanoGUNE
8. Superconducting W-C nanostructures grown by Focused Ion Beam Induced Deposition
Pablo Orús, Aragón Materials Science Institute (ICMA-CSIC) University of Zaragoza
9. Magnetic field probe at the nanoscale using the superconducting vortex lattice
Victor Rollano, IMDEA Nanoscience
10. Interplay between two type II superconductors at the nanoscale
Victor Rollano, IMDEA Nanoscience.
11. Domain Wall magnetoresistance in La_{0.7}Sr_{0.3}MnO₃ nanowires
Gloria Orfila, GFMC, Materials Physics Department, Complutense University of Madrid
12. Influence of fabrication process on Kinetic Inductance Detectors' performance
María Teresa Magaz Pérez, Centro de Astrobiología (INTA-CSIC)

13. Low-cost, large-size nanoplasmonic sensor based on Fano resonances with fast response and high sensitivity fabricated by soft-lithography and plasma etching
Estela Baquedano, IMM-Instituto de Microelectrónica de Madrid (CNM-CSIC)
14. hBN/graphene devices: Fabrication and characterization
Vito Clericó, Fundamental Physics Department, University of Salamanca
15. Hierarchical micro-nano surface topographies by photo and nanoimprinting lithography
Manuel R. Osorio, IMDEA Nanoscience