

SCIENTIFIC PROGRAM

Tuesday, 10th September

18:30-19:15 Faraday lecture theatre. Welcome Lecture. David Bhella. *Scottish Centre for Macromolecular Imaging. Glasgow. UK.* "The Scottish Centre for Macromolecular Imaging - a national structural biology centre built around JEOL's CryoARM 300".

Chair: Carmen San Martín. *CNB-CSIC. Madrid. Spain.*

19:15-21:00 La cabaña. Welcome Reception "Tapas" Granada's style.

Wednesday, 11th September

8:30-9:00 Main Hall of Parque de las Ciencias. Registration.

9:00-9:20 Faraday lecture theatre. Opening ceremony.

- Jordi Arbiol. *President of the SME*
- Bruno Trindade. *President of the SPMicros*
- Luis Salvador. *Mayor of the city of Granada.*
- Pilar Aranda. *Rector of the University of Granada.*
- Matilde Barón. *Director of the EEZ-CSIC.*
- Fco. Javier Huertas. *Director of the IACT-CSIC-UGR.*

9:20-10:20 Faraday lecture theatre. Plenary Lecture. José L. Carrascosa. *CNB-CSIC. Madrid. Spain.* Phage T7 viral tail machinery characterization: A model for DNA retention and ejection from the capsid.

Chair: Juan de Dios Alché. *EEZ-CSIC. Granada. Spain.*

10:20-11:00 Hall cines and Gardens. Coffee break. Posters. Commercial exposition.

11:00-13:00 Faraday lecture theatre. Session MS-1: Catalysis-Materials for Energy.

Chairs: Raúl Arenal and Gabriel Sánchez Santolino

-11:00-11:30 **Álvaro Mayoral (Invited Speaker)**

"Evolution of EM applied to nanoporous solids".

-11:30-11:45 M.C. Spadaro. "Cluster beam deposition for precise heterogenous catalysts".

-11:45-12:00 R. Manzorro. "Submonolayer ceria addition as a mechanism to stabilize Au nanoparticles: electron microscopy characterization".

12:00-12:15 A.J.J. Benitez. "Study of location of AuPd nanoparticles supported on ceria nanocubes by analytical electron tomography".

12:15-12:30 J. Blanco-Portals. "Doped cerium oxide mesoporous structure: a complete analytical TEM characterization based on MVA, clustering and X-EDS electron tomography".

-12:30-12:45 J. M. Montes-Monroy. "Preparation and Characterization of NaBH₄ modified CeO₂/TiO₂ nanostructured photocatalysts".

11:00-13:00 Gutenberg lecture theatre. Session LS-1: Macromolecular Analysis. Chairs: José Ruiz Castón and Jorge Cuellar

-11:00-11:40 **Ernesto Arias-Palomo (Invited Speaker)**

"Unraveling bacterial DNA replication initiation using cryo-EM".

-11:40-12:00 Jorge Cuéllar. "Structural and functional analysis of the role of the chaperonin CCT in mTOR complex assembly".

-12:00-12:20 M^a Teresa Bueno-Carrasco. "Structural characterization of human Tyrosine Hydroxylase".

-12:20-12:40 J.P. López-Alonso. "Mechanism of action of pyruvate carboxylase".

-12:40-13:00 Melisa Lázaro. "De novo structure determination of Glutamate Dehydrogenase".

-12:45-13:00 C.M. Almeida Alves. "Phase and compositional mapping of polycrystalline Li-ion NCM cathodes".

13:00-14:30 Hall cines and Gardens. Buffet lunch. Posters. Commercial exposition.

14:30-16:30 Faraday lecture theatre. Session MS-2. Oxides.

Chairs: Javier Garcia and Alvaro Mayoral

-14:30-15:00 **Ana Sánchez. (Invited Speaker).** "La_{0.7}Sr_{0.3}MnO₃/PbTiO₃ ferroelectric tunnel junctions: Domain configuration and interface characterization".

-15:00-15:15 D. del Pozo. "Study of magnetic iron oxide core/shell nanocubes using electron magnetic circular dichroism"

-15:15-15:30 S. Hettler, "STEM-EELS analysis of Fe₃O₄@CoFe₂O₄@Fe₃O₄ core - shell - shell nanoparticles"

-15:30-15:45 C. D. Amos "Understanding the Cubic-to-Tetragonal Transition of Mn₃O₄ as a Surface Layer of Li_{1-x}[Mn₂]O₄"

-15:45-16:00 C. Coll. "Verwey Transition on iron oxide nanocubes elucidated by Electron Energy Loss Spectroscopy and Density Functional Theory simulations"

-16:00-16:15 M. López-Haro. "Accurate Determination of the Oxygen Stoichiometry in Complex Nanostructured Oxides by Combining STEM-HAADF Tomography and STEM-XEDS quantification".

-16:15-16:30 J.M. Muñoz-Ocaña. "Optimization of STEM-HAADF electron tomography reconstructions by smart parameters selection in Compressed-Sensing based algorithms".

14:30-16:30 Gutenberg lecture theatre. Session LS-2 Microbial/Virus Analysis.

Chairs: Ignacio Arechaga and Jose Ruiz Castón

-14:30-14:45 Rebeca Cuesta. "Structural studies of filamentous plant viruses by cryoEM".

-14:45-15:00 Carolina Allende. "Near-atomic resolution cryo-EM structure of *Brevibacterium linens* encapsulin".

-15:00-15:15 I. Arechaga. "Bacterial conjugation directly observed by optical microscopy".

-15:15-15:30 M. Pérez Ruiz. "Understanding the mechanism of phage T7 DNA delivery to the bacterial cytoplasm".

-15:30-15:45 David G. Cantero. "Cryo-EM for the study of genome and viral polymerase within the capsid of dsRNA viruses".

-15:45-16:00 G.N. Condezo. "Structure of a polinton-like virus, the missing link between bacteriophage and eukaryotic viruses of the PRD1-like lineage".

-16:00-16:15 Carmen San Martin. "Structural surprises in reptilian adenoviruses".

16:30-17:00 Hall cines and Gardens. Coffee break. Posters. Commercial exposition.

17:00-18:00 Faraday lecture theatre. Session TD-1. Technical Developments in Material Sciences.

-17:00-17:20 S. Plana-Ruiz. "Fast and automated diffraction tomography: how to acquire 3D electron diffraction in a systematic and accurate way"

-17:20-17:40 M. López-Haro "Quantitative evaluation of the accuracy of compressed sensing electron tomography reconstructions using material-realistic 3D-phantoms."

-17:40-18:00 S. Trasobares. "Scanning Transmission Electron Microscopy as a tool to optimise and characterise encapsulated agrochemicals in fully-organic reservoirs".

18:00-19:00 Faraday lecture theatre. Flash company presentations.

-18:00-18:15 "Connecting Imaging Modalities of All Kind – Zeiss Correlative Microscopy Workflows". Joerg Lindenau. *Carl Zeiss*.

-18:15-18:30 "Lastest developments on cryo electron microscopy and its workflows". Ben Lich. *Thermo Fisher Scientific*.

-18:30-18:45 Intelligent Illumination for Super Resolution in living cells. Jordi Recasens. *IZASA Scientific*.

-18:45-19:00 Array tomography with Leica's new Ultramicrotome ARTOS 3D. Jan De Weert. *Leica Microsystems*.

19:00- Via lactea Gardens. Parque de las Ciencias. Refreshments.

Thursday, 12th September

9:00-10:00 Faraday lecture theatre. Plenary Lecture. Joke Hadermann. *University of Antwerp, Belgium.* "Electron diffraction tomography for atomic structure determination, ex and in situ".

Chair: Raúl Arenal. *ARAID Researcher. University of Zaragoza. Zaragoza. Spain.*

10:00-10:30 Hall cines and Gardens. Coffee break. Posters. Commercial exposition.

10:30-13:00 Faraday lecture theatre. Session MS-3. Semiconductors – In-situ –Hybrid Nanostructures
Chairs: Francesca Peiró and Ana Sánchez

-10:30-10:45 N. Fernández Delgado, "Estructural characterization of small colloidal CdSe-ZnS core-shell QDs through HAADF-STEM"

-10:45-11:00 S. Martí-Sánchez. "Morphology driven electronic band modulation in semiconductor core-shell nanowires"

-11:00-11:15. N. Ruiz-Marín. "Formation of agglomerations in high-density multilayer InAs/GaAs quantum dot structures: the role of Sb in the capping layer".

-11:15-11:30 V. Braza. "Sb and N incorporation interplay in GaAsSbN/GaAs epilayers".

- 11:30-11:45 S. Flores. "Comparative analyses of the In exchange in the InAs/GaAs system during the capping process with GaAs(Sb) at different growth rates".

-11:45-12:00 B. Ballesteros. "Synthesis and electron microscopy of tubular van der Waals heterostructures".

-12:00-12:15 R. Arenal "Detailed atomic structure analyses of N-doped nanodiamonds".

-12:15-12:30 J. Pablo-Navarro. "In situ real-time annealing of 3D ferromagnetic nanowires fabricated by focused electron beam induced deposition".

-12:30-12:45 M. Rosado. "High Spatial Resolution, Low Voltage and Ultra-fast Energy Dispersive X-Ray Spectroscopy on a Scanning Electron Microscope".

10:30-13:00 Gutenberg lecture theatre. Session LS-3 Plant/Animal Biology. Chairs: Antonio Jesús Castro and Jose Carlos Jimenez-Lopez

-10:30-11:00. **J.M. Losada. Invited Speaker.** "Bringing light onto hidden complex interactions: microscopy as a tool to study sexual reproduction in trees".

-11:00-11:20 A.L. Sousa. "It is not easy being Green - Electron Microscopy Techniques for the Study of Moss".

-11:20-11:40 R.P. Louro. "Ultrastructural analysis of Carotenoid Storage Cells in aril of *Bixa orellana* L".

-11:40-12:00 J.D. Alché. "Developmental analysis of glutathione reductase localization in the olive (*Olea europaea* L.) seed tissues".

-12:00-12:20 M. M'rani-Alaoui. "Localization of Seed Storage Proteins (SSPs) in seeds of olive and nuts of agricultural/alimentary interest".

-12:20-12:40 R. Nisa. "What's a protein like you doing in a place like this?: Localization of a bacterial group II intron encoded protein in *Arabidopsis thaliana* protoplasts".

-12:40-13:00 A.J. Castro. "Live-cell imaging of storage lipid dynamics in pollen tubes".

13:00-14:30 Hall cines and Gardens. Buffet lunch. Posters. Commercial exposition.

14:30-16:00 Faraday lecture theatre. Session TD-2. Technical Developments in Life Sciences. Chair: Jose Carlos Jimenez-Lopez

-14:30-14:45 S. Bonucci. Negative-staining: a simple technique with modern applications in biological research.

-14:45-15:00 M. Zuzarte. Applications and challenges of SEM in Biomedicine

-15:00-15:30 R. Melero. The Instruct Image Processing Center (I2PC): support to structural biologists.

-15:30-16:00 J.D. Alché. Microscopical detection of ROS and RNS in plant samples by using chromogenic and fluorescent probes.

16:00-16:30 Hall cines and Gardens. Coffee break. Posters. Commercial exposition.

16:30-18:30 Faraday lecture theatre. SME Best Ph.D. Awards. Chairs: Jordi Arbiol and Carmen San Martín.

-16:30-17:10 (Ph.D. award in Biological Sciences. To be announced)

-17:10-17:50 (Ph.D. award in Technological Advances. To be announced)

-17:50-18:30 (Ph.D. award in Material Sciences. To be announced)

18:30-19:30 Faraday lecture theatre. SME General Assembly

20:00-23:30 Carmen de los Mártires. Gala Buffet.

Friday, 13th September

9:00-10:00 Faraday lecture theatre. Plenary Lecture. Paul Midgley. *University of Cambridge. U.K.* "Low-dose scanning electron diffraction of 'soft' materials – application to polymers and pharmaceuticals".

Chair: Jordi Arbiol.

10:00-10:30 Hall cines and Gardens. Coffee break. Posters. Commercial exposition.

10:30-13:00 Faraday lecture theatre. Session MS-4. Functional Materials & Metals

Chairs: Jordi Arbiol and Kimberly Dick-Thelander

-10:30-11:00 **Gabriel Sánchez Santolino (Invited Speaker).** "Direct visualization of electric and magnetic field structures in materials using differential phase contrast STEM".

-11:00-11:15 O. Emadina. "Microstructural characterization of Ti6Al4V/Al2O3 joints produced using Ag-Cu sputtered coated Ti foil".

-11:15-11:30 L. Lajaunie. "Atomic structure and optoelectronic properties of inorganic nanotubes".

-11:45-12:00 C.E. Castillo. "Chemical Discrimination of single atom species in a Heterobinuclear Au(III)-Pd(II) complex with an Hexa-aza Macrocycle by Advanced Electron Microscopy"

-12:00-12:15 L. M. Valencia. "Effect of the annealing temperature on the growth and properties of (Au)-NiOx films for electrochemical applications"

-12:15-12:30 P. C. Ryan. "Arsenic speciation in trioctahedral clays: insights from a serpentine synthesis study".

-12:30-12:45 M. De la Mata. "(S)TEM Characterization of plasmonic UV nanoparticles".

-12:45-13:00 C. E. Carlton. "In-Situ Aberration-Corrected

TEM Nanoindentation of Silver Nanoparticles".

10:30-13:00 Gutenberg lecture theatre. Session LS-4 Biomedical Applications. Chairs: Juande Alché and Erin Tranfield

- 10:30-11:00 **Erin M. Tranfield. Invited Speaker.** The Art of Selecting and Applying Electron Microscopy Techniques to Understanding Biomedical Research Questions.

-11:00-11:20 G. Ciasca. Searching for mechanical biomarkers of pathologies: some applications of Atomic Force Microscopy to tissue and cell mechanics.

-11:20-11:40 M. Lopes-da-Silva. Using CLEM to unravel intracellular membrane trafficking defects.

-11:40-12:00 E. Lima-Cabello. Imaging induced antiinflammatory response in human cell cultures and *ex vitro* blood cultures.

-12:00-12:20 A.J. Castro. Live cell imaging of soybean BBI proteins internalization in HT29 colorectal cancer cells.

-12:20-12:50 **Rosario M. Fernández. Invited Speaker.** Exploring neuronal subcellular architecture in the mouse brain

13:00-13:30 Faraday lecture theatre. Closing Remarks.

POSTER COMMUNICATIONS MATERIAL SCIENCES:

MS-P1 A. Ruiz, A. Nuñez, A. Vargas, J.F. Almagro. Characterization of brittle phases in EN 1.4462, 1.4482 and 1.4410 duplex stainless steels in heat treatments.

MS-P2 S. Xu, J. Pons, R. Santamarta, I. Karaman, R.D. Noebe. Strain glass state in Ni-rich Ni-Ti-Zr shape memory alloys.

MS-P3 A. Ibarra, R. Córdoba, D. Mailly, J.M. De Teresa. Characterization of 3D superconducting WC nanotubes fabricated by a novel Focused Ion-Beam Induced Deposition direct-write method.

MS-P4 T. Zhang, K. Wan, J. Luo, Ch. Zhou, X. Lu, B.W. Mao, X. Zhang, J. Fransaer, J. Arbiol. Hierarchical Porous Ni₃S₄ with Enriched High-Valence Ni Sites as a Robust Electrocatalyst for Efficient Oxygen Evolution Reaction.

MS-P5 K. Barragán Sanz, S. Irsen. The Rocking Phase Plate – another step towards improved stability.

MS-P6 M. Navarro M, L. Pasetta, C. Echaide, J. Benito, I. Gascón, J. Coronas, C. Téllez. TEM characterization of nanocomposite polymer membranes with MOF fillers for nanofiltration.

MS-P7 Ch. Koch, Y. Liu, S. Martí-Sánchez, P. Krogstrup, J. Arbiol. Study of Epitaxy in Proximity Coupled Semiconductor - Ferromagnetic Insulator - Superconductor Heterostructures for Majorana-based Topological Quantum Computing.

MS-P8 J. García-Fernández, M. García-Carrión, A. Torres-Pardo, R. Martínez-Casado, J. Ramírez-Castellanos, E. Nogales, B. Méndez, J.M. González-Calbet. Study of structural variations in the homologous series Na_xGa_{4+x}Ti_{n-4}O_{2n-2} by electron microscopy techniques: influence on its luminescent properties.

MS-P9 S. Hettler, D. Valenzuela, R. Arenal. Transmission electron microscopy investigation of graphene oxide flakes.

MS-P10 M. Botifoll, S. Martí-Sánchez, E. Yücelen, Ph. Caroff, J. Arbiol. Comparative characterization of selective-area growth and vapour-liquid-solid III-V semiconductor-superconductor nanowire networks for topological quantum computing.

MS-P11 X. Han, T. Zhang, Y. Zuo, Y. Liu, K. Sivula, A. Cabot, J. Arbiol. The characterization of the process of electrochemical oxidation of Cu₂S into CuO nanowires by using transmission electron microscopy.

MS-P12 M.L. Ruiz-González, R. Cortés-Gil, K. Sigcho Villacís, A. Azor Lafarga, J. Alonso, J.M. González-Calbet. Atomically resolved La-Mn-O nanomanganites.

MS-P13 A. Ibarra, M. Ciria, M. G. Proietta, E.C. Corredor, D. Coffey, A. Begué, C. de la Fuente, J.I. Arnaudas. Crystal structure and local ordering in epitaxial Fe_{1-00-x}Ga_x/MgO (001) films.

MS-P14 J. Grzonka J, M. Claro, S. Sadewasser, P.J. Ferreira. Atomic structure of defects in GaSe/InSe heterostructure.

POSTER COMMUNICATIONS LIFE SCIENCES:

LS-P1 J.C. Jimenez-Lopez. Cytoskeletal scaffolding proteins as modulators of the functional responses of thylakoid membranes.

LS-P2 E. Lima-Cabello, A.M. Rodriguez-Pöhnlein, F. Molina-Borrego, J.D. Alché, J.C. Jimenez-Lopez. Functional association between storage proteins mobilization and redox metabolism signalling in narrow-leafed lupin (*Lupinus angustifolius*) cotyledons driving seed germination and seedling development.

LS-P3 D. Porcel. How three enzymes play during the long famine in terrestrial snails.

LS-P4 C. Capel, R. Micol-Ponce, M. García-Alcázar, F.J. Yuste-Lisbona, B. Pineda, J. Capel, V. Moreno, R. Lozano. *VIPP1* develops a crucial function in the maintenance of chloroplast membrane integrity and survival of tomato plants.

LS-P5 S. Hafidh S1, E. Lima-Cabello, J.D. Alché. Establishing TCTP1 secretion pathway using TEM immunocytochemistry.

LS-P6 A. Kućko, E. Wilmowicz, T. Przywieczerski, J.D. Alché. ABA and ET involvement in the nodule-specific response on drought in yellow lupine.

LS-P7 E. Wilmowicz, A. Kućko, K. Panek, S. Burchardt, J.D. Alché. The EPIP peptide as a crucial component of phytohormonal-dependent pathway regulating flower shedding in yellow lupine.