

# NanoSpain Conf 2022

May 17 - 20, 2022 • Madrid (Spain)

MAIN ORGANISERS

PHANTOMS  
foundation



IFN-GV



TENTATIVE PROGRAM (as of 17/05/2022)

## Tuesday (May 17, 2022)

08:00-08:45 Registration

08:45-09:00 Opening Ceremony

**Chairperson: Fernando Herranz (IQM-CSIC, Spain)**

09:00-09:30 **Jesús Martínez De la Fuente** (INMA, Spain) K

*Nanoactuators for Therapy and Diagnosis*

09:30-10:00 **María Rosa Aguilar** (ICTP-CSIC, Spain) K

*Cationic Polymeric Nanoparticles for Biomedical Applications*

10:00-10:30 **Dorleta Jimenez de Aberasturi** (biomaGUNE, Spain) K

*Hybrid materials for 3D cell model fabrication*

**10:30-11:00 Coffee Break / Exhibition & Poster Session**

**Chairperson: Jesús Martínez De la Fuente (INMA, Spain)**

11:00-11:30 **Josep Samitier Martí** (IBEC, Spain) K

*Personalized in vitro extracellular matrix models using nanoparticles or cell-derived matrices*

11:30-11:50 **Carlos Molpeceres** (Universidad Politécnica de Madrid, Spain) I

*Laser bioprinting using BA-LIFT: from single cell to tissue engineering*

11:50-12:05 **Juan Antonio Ruiz Fuentes** (Nadotech Innovations, Spain) O

*Developing tools for advanced bio printing*

12:05-12:35 **Fernando Herranz** (IQM-CSIC, Spain) K

*Multimodal nanotracers for molecular imaging of cardiovascular diseases*

12:35-13:05 **María J. Vicent** (Centro de Investigación Príncipe Felipe, Spain) K

*Polypeptide-based Nanoconjugates as Versatile Therapeutics*

13:05-13:20 **Anna Laromaine** (ICMAB-CSIC, Spain) O

*Stimuli responsive Bacterial Cellulose composites*

13:20-13:35 **Jose Javier Serrano Olmedo** (UPM, Spain) O

*First results on improving the efficacy of magnetic hyperthermia using non-sinusoidal alternating magnetic field waveforms*

**13:35-14:30 Cocktail Lunch offered by Nanospain 2022 / Exhibition & Poster Session**

**14:30-15:00 Poster session I**

**Chairperson: Stephan Roche (ICREA/ICN2, Spain)**

15:00-15:30 **Juan Jose Garcia-Ripoll** (IFF / CSIC, Spain) K

*Quantum links between quantum computers*

15:30-16:00 **Celia Rogero** (CFM/CSIC, Spain) K

*Exploring new 2D halides materials for quantum devices*

16:00-16:30 **Ruben Esteban** (CFM/CSIC, Spain) K  
*Scattering of classical and quantum states of light with angular momentum by dielectric micro/nanoresonators*

#### 16:30-17:00 Coffee Break / Exhibition & Poster Session

**Chairperson: Jose Manuel Perlado Martin (IFN-GV & ETSII/UPM, Spain)**

17:00-17:30 **Felix Zamora** (UAM, Spain) K  
*State-of-the-art in imine-based covalent organic frameworks processability*

17:30-18:00 **Fernando Rey** (ITQ / CSIC-UPV, Spain) K  
*Charge Matching of occluded Organic Structure Directing Cations in Zeolites*

18:00-18:20 **Gabriel Sanchez Santolino** (UCM, Spain) I  
*Harnessing the structural modulations in van der Waals heterostructures by 4D-STEM nanodiffraction*

18:20-18:35 **Javier Navas** (University of Cádiz, Spain) O  
*Linking the macroscopic properties of nanofluids with the interfaces configuration*

18:35-18:50 **Marketa Zukalova** (J. Heyrovský Inst. of Physical Chemistry, Czech Acad. Sci., Czech Republic) O  
*Composite cathode for Li-sulfur system: Effect of inorganic additives on electrochemical performance*

18:50-19:20 **Daniel Sharon** (The Hebrew University of Jerusalem, Israel) K  
*Intrinsic Properties of Multiphase Nanostructured Ionic Conductors*

### Wednesday (May 18, 2022)

**Chairperson: Zeila Zanolli (Utrecht University, The Netherlands)**

09:00-09:20 **Jose Lado** (Aalto University, Finland) I  
*Design and realization of heavy-fermion quantum matter in van der Waals materials*

09:20-09:50 **Rodolfo Miranda** (IMDEA Nanociencia, Spain) K  
*Exploring the Zoo of Layered Quantum Materials*

09:50-10:10 **Jorge Pedros** (ISOM-UPM, Spain) I  
*Surface acoustic waves in graphene & 2D materials for manipulating light-matter interactions*

10:10-10:25 **Marcelo Ambrosio** (Universidad Autónoma de Madrid, Spain) O  
*Progressive cluster approach to photoemission in transition metal dichalcogenides*

#### 10:25-11:00 Coffee Break / Exhibition & Poster Session

**Chairperson: Jorge Pedros (ISOM-UPM, Spain)**

11:00-11:30 **Peter Bøggild** (Technical University of Denmark, Denmark) K  
*A closer look at graphene bandgap engineering*

11:30-12:00 **Andres Castellanos-Gomez** (ICMM-CSIC, Spain) K  
*Integrating van der Waals materials on paper-electronics*

12:00-12:20 **Zeila Zanolli** (Utrecht University, The Netherlands) I  
*Moiré physics in 1D and 2D*

12:20-12:35 **Fernando Jiménez Urbanos** (Fondation ciRFC, France) O  
*Exploiting intrinsic defectiveness in MoS<sub>2</sub>-based field-effect transistors for sensing applications: from polycyclic aromatic hydrocarbons to heavy metal ions*

12:35-12:50 **Pedro Alpuim** (INL-International Iberian Nanotechnology Laboratory, Portugal) O  
*The effect of the linker on graphene biosensing chips' performance*

12:50-13:05 **Pablo Ares** (Universidad Autónoma de Madrid, Spain) O  
*Piezoelectricity in monolayer hexagonal boron nitride*

13:05-13:20 **Fabian Calleja** (IMDEA Nanociencia, Spain) O  
*Electronic properties of a 1H/1T/2H-TaS<sub>2</sub> polymorphic vdW heterostructure*

**13:20-14:45 Lunch****Chairperson: Andres Castellanos-Gomez (ICMM-CSIC, Spain)**

14:45-15:15 <b>Rafael Gutierrez</b> (TU Dresden, Germany)	K
<i>Atomistic Studies of Thermal Transport at the Nanoscale</i>	
15:15-15:45 <b>Stephan Roche</b> (ICREA/ICN2, Spain)	K
<i>Amorphous Materials for Applications in Nanoelectronics and Neuromorphic Computing</i>	
15:45-16:15 <b>Ricardo Diez Muiño</b> (DIPC / CFM-CSIC, Spain)	K
<i>Electronic excitations and energy dissipation of atoms and molecules approaching metallic surfaces</i>	
16:15-16:30 <b>Marta I. Hernández</b> (Instituto de Física Fundamental, Spain)	O
<i>Permeation and Recombination of Hydrogen Chemisorbed on Graphene: Insights from Computations</i>	
16:30-16:45 <b>Jorge Kohanoff</b> (Universidad Politécnica de Madrid, Spain)	O
<i>Thermal Conductivity in Nanostructured Thermoelectric PbTe</i>	

**16:45-17:15 Coffee Break / Exhibition & Poster Session****Chairperson: Rafael Gutierrez (TU Dresden, Germany)**

17:15-17:30 <b>Fernando de Juan</b> (Donostia International Physics Center, Spain)	O
<i>Collective modes of superconducting monolayer NbSe<sub>2</sub></i>	
17:30-17:45 <b>Wynand Dednam</b> (University of South Africa, South Africa)	O
<i>Mechanically-induced spin-polarization in non-magnetic metal nanocontacts</i>	
17:45-18:00 <b>Hugo Perez Garza</b> (DENS Solutions, The Netherlands)	O
<i>Advanced In Situ Transmission Electron Microscopy: A powerful tool for materials science, catalysis, energy storage &amp; life science applications</i>	

**PARALLEL SESSION (Seniors) – TRACK A****Chairperson: Pedro Alpuim (INL-International Iberian Nanotechnology Laboratory, Portugal)**

18:00-18:10 <b>Benito Santos</b> (Universidad de Castilla-La Mancha, Spain)	O
<i>Structure and magnetism in ultra-thin Fe films on Re (0001)</i>	
18:10-18:20 <b>Alberto Rivera-Calzada</b> (Universidad Complutense de Madrid, Spain)	O
<i>Optically induced sensing of memristors based in LSMO/BTO/ITO ferroionic tunnel junctions</i>	
18:20-18:30 <b>Stanislav Čampelj</b> (Jozef Stefan Institute, Slovenia)	O
<i>The influence of pH during the adsorption of catechols on the magnetic properties of superparamagnetic iron oxide nanoparticles</i>	
18:30-18:40 <b>Giannini Vincenzo</b> (CSIC, Spain)	O
<i>Extraordinarily transparent compact metallic metamaterials</i>	
18:40-18:50 <b>Cristina Vicente Manzano</b> (IMN-CSIC), Spain)	O
<i>Three-dimensional interconnected anodized aluminum oxide (3D-AAO) metamaterials using different waveforms and metal layers for RGB display technology applications</i>	
18:50-19:00 <b>Emilio Nogales</b> (Universidad Complutense de Madrid, Spain)	O
<i>Thermometry with optical cavities made of luminescent Ga<sub>2</sub>O<sub>3</sub>:Cr nanowires</i>	
19:00-19:10 <b>María E. Dávila</b> (ICMM-CSIC, Spain)	O
<i>Novel 1D silicon nanoribbons</i>	

**PARALLEL SESSION (Seniors) – TRACK B****Chairperson: Jose Lado (Aalto University, Finland)**

18:00-18:10 <b>Olga Caballero-Calero</b> (IMN-CNM, CSIC, Spain)	O
<i>Nanostructured bismuth telluride electrochemically grown inside flexible templates</i>	

- 18:10-18:20 **Albert Figuerola** (Universitat de Barcelona, Spain) O  
*Synthesis and Applications of Group 11-Based Ternary Chalcogenide Nanocrystals with Tunable Morphology and Composition*
- 18:20-18:30 **Valle Palomo** (IMDEA Nanociencia, Spain) O  
Quantification of TDP-43 in lymphoblasts from ALS patients and their exovesicles with QD-based multiplexing approach
- 18:30-18:40 **Jordi Faraudo** (ICMAB-CSIC, Spain) O  
*Nanoscience and Covid-19: MD simulations of the interaction of the SARS-CoV-2 virus with materials and chemical agents*
- 18:40-18:50 **Sónia Fraga** (National Institute of Health Dr. Ricardo Jorge, Portugal) O  
*Toxicity Assessment of a Panel of Nanomaterials in Placental Barrier BeWo b30 Cells*
- 18:50-19:00 **Eduardo Gil Santos** (IMN-CNM, CSIC, Spain) O  
*Optomechanical detection of single bacterium mechanical modes*
- 19:00-19:10 **Alberto Martín-Pérez** (ICMM-CSIC, Spain) O  
*Hybrid nanomechanical-microfluidic devices for stiffness and compressibility characterization of in-flow cells*

## Thursday (May 19, 2022)

**Chairperson: Jose Manuel Perlado Martin (IFN-GV & ETSII/UPM, Spain)**

- 09:00-09:30 **Andres Guerrero Martinez** (Universidad Complutense de Madrid, Spain) K  
*Advances in Ultrafast Pulse Laser Irradiation of Metal Nanoparticles*
- 09:30-10:00 **Mattia Cipriani** (ENEA, Italy) K  
*High-power laser interactions with structured materials and applications*
- 10:00-10:15 **Juan José Moreno Labella** (Universidad Politécnica de Madrid, Spain) O  
*Laser Induced Forward Transfer (LIFT) printing of conductive and dielectric materials*

### 10:15-10:50 Coffee Break

**Chairperson: Manuel Marques (UAM, Spain)**

- 10:50-11:10 **Frank Nouvertne** (Raith, Germany) I  
*A new Formula based EBL Nanopatterning Approach for large Metalens Fabrication*
- 11:10-11:25 **Clyde Chmielinski** (Horiba, France) O  
*NanoGPS Suite: New advanced solution for correlative optical & electromicroscopy*
- 11:25-11:40 **Abel Sainz** (Carl Zeiss Iberia S.L., Spain) O  
*Imaging and understanding metal organic frameworks using advanced scanning electron microscopy techniques*
- 11:40-12:10 **Elad Gross** (The Hebrew University of Jerusalem, Israel) K  
*What makes a catalyst active? Insights from IR nanospectroscopy measurements on single nanoparticles*
- 12:10-12:40 **Ruben Perez** (UAM, Spain) K  
*Atomic force microscopy images carry chemical information: Halogen bonds, Tautomerization, and molecular identification with deep learning*
- 12:40-13:00 **Video documentary - "40 years looking atoms"**

### 13:00-14:00 Cocktail Lunch offered by Nanospain 2022 / Exhibition & Poster Session

### 14:00-14:30 Poster session II

## PARALLEL SESSION (PhD Students) – TRACK A- Graphene, Nanomagnetism, NEMS/MEMS

**Chairperson: Mattia Cipriani (ENEA, Italy)**

- 14:30-14:40 **Nassima Benschtaber** (Ifisc institute, Spain) O  
*Topological confinement and geometry dependence in bilayer graphene*

14:40-14:50 <b>Onur Cakiroglu</b> (ICMM-CSIC, Spain)	O
<i>An Automated System for Strain Engineering and Straintronics of Single-Layer MoS<sub>2</sub></i>	
14:50-15:00 <b>Begümnur Küçükcan</b> (İzmir University of Economics, Turkey)	O
<i>Fabrication of 2D Oxide Nanosheets Structured Ultrathin Capacitors</i>	
15:00-15:10 <b>Beatriz Muñoz Cano</b> (IMDEA Nanociencia, Spain)	O
<i>Engineering bandgap opening in Dirac cone on Graphene/Te heterostructure</i>	
15:10-15:20 <b>David Saleta Reig</b> (Institut Català de Nanociència i Nanotecnologia, Spain)	O
<i>Influence of Flake Thickness and Environment on Heat Dissipation Capabilities of Suspended MoSe<sub>2</sub> Single Crystals</i>	
15:20-15:30 <b>Khalid Nowaz Anindya</b> (Polytechnique Montréal, Canada)	O
<i>Electronic and Magnetic Properties of Organic Kagome Polymers</i>	
15:30-15:40 <b>Alonso Jose Campos-Hernandez</b> (IMDEA Nanociencia, Spain)	O
<i>Analysis of the magnetic interactions in arrays of FeNi nanowires by means of angular hysteresis loops and FORC measurements</i>	
15:40-15:50 <b>Jimena Soler</b> (IMDEA Nanociencia, Spain)	O
<i>Tuning the nanoscale architecture in NdFeB ultrathin films with varying buffer layer</i>	
<i><math>\pi</math>-Magnetism in Engineered Graphene Nanostructures</i>	
15:50-16:00 <b>Alicia Aparicio</b> (IMN-CNM, CSIC, Spain)	O
<i>In air characterization of the mechanical properties of single bacteria base don multimode tracking of squared nanomechanical resonators</i>	

#### PARALLEL SESSION (PhD Students) – TRACK B NanoBiotechnology, Simulation at the nanoscale, SPM

**Chairperson: Lluís F. Marsal (URV, Spain) - TBD**

14:30-14:40 <b>Marc Martínez-Miguel</b> (ICMAB - CSIC, Spain)	O
<i>Impact of hierarchical Quatsome-RGD nanoarchitectonic surfaces on integrin-mediated cell adhesion</i>	
14:40-14:50 <b>Amanda Muñoz-Juan</b> (ICMAB, Spain)	O
<i>Smart bioevaluation of chemicals and biopolymers using <i>C. elegans</i>.</i>	
14:50-15:00 <b>María Jesús Rodríguez Espinosa</b> (UAM, Spain)	O
<i>Mechanical disassembly of viral cages probes the interaction of single stranded RNA and the coat proteins</i>	
15:00-15:10 <b>Jorge Ruiz del Rio</b> (Universidad de Cantabria, Spain)	O
<i>Targeting Myocardial Fibrosis with a Novel Nanotherapeutic System</i>	
15:10-15:20 <b>Noelia Santander Acerete</b> (CNB-CSIC, Spain)	O
<i>Functionalization of T-cells with microwave synthesized magnetic nanoparticles for their magnetic retention</i>	
15:20-15:30 <b>Srinivasan Sumithra</b> (ICMAB-CSIC, Spain)	O
<i>Bacterial Nanocellulose-Polypyrrole (BC-Ppy) composites as scaffolds for cardiac resynchronization</i>	
15:30-15:40 <b>Marta Toldos Torres</b> (ICMM, Spain)	O
<i>Magnetic responsive hydrogels for neural regeneration</i>	
15:40-15:50 <b>Esther García Arroyo</b> (IFF-CSIC), Spain)	O
<i>Quantum-mechanical simulations of hydrogen isotopic separation by graphyne-based membranes</i>	
15:50-16:00 <b>Cosme Gonzalez Ayani</b> (UAM / IMDEA Nanociencia, Spain)	O
<i>Kondo lattice development in a TaS<sub>2</sub> van der Waals heterostructure</i>	

#### 16:00-16:45 Coffee Break / Exhibition & Poster Session

**Chairperson: Lluís F. Marsal (URV, Spain)**

16:45-17:05 <b>Lluís F. Marsal</b> (URV, Spain)	I
<i>Designing of nanoporous anodic alumina photonic structures and applications</i>	
17:05-17:35 <b>Ester Segal</b> (Technion, Israel)	K
<i>Title to be defined</i>	
17:35-18:05 <b>Frederique Cunin</b> (CNRS-ENSCM, France)	K
<i>Porous silicon, a biodegradable semiconductor for nanomedicine</i>	

18:05-18:25 <b>Paula Ferreira</b> (University of Aveiro, Portugal) <i>Design of functional nanopatterned porous ferroic metal oxides</i>	I
18:25-18:40 <b>Isaac Alcon</b> (ICN2, Spain) <i>Engineering of Charge Current Flow in Nanoporous Graphenes</i>	O
18:40-18:50 <b>Alba Díaz-Lobo</b> (Instituto de Micro y Nanotecnología, Spain) <i>Metamaterials based on nanoporous anodic aluminium oxide for passive radiative cooling applications</i>	O
18:50-19:00 <b>Mariana Rodrigues</b> (University of Aveiro, Portugal) <i>Piezoelectric flexible materials supported by hierarchically porous graphite for sensor applications</i>	O

## Friday (May 20, 2022)

### Chairperson: Raquel González Arrabal (Universidad Politécnica de Madrid / IFN, Spain)

09:00-09:30 <b>Efrén Navarro Moratalla</b> (ICMol - Universitat de València, Spain) Magnetic 2D materials: studying and manipulating ordered spins in flatland	K
09:30-10:00 <b>Nacho Pascual</b> (CIC nanoGUNE, Spain) <i><math>\pi</math>-Magnetism in Engineered Graphene Nanostructures</i>	K
10:00-10:15 <b>Rodrigo Aguilera</b> (DIPC: Donostia International Physics Center, Spain) <i>Magnetism in Transition Metal Ilmenenes</i>	O
10:15-10:30 <b>Cristina Navío</b> (Imdea Nanociencia, Spain) <i>Hexagonal MnBi islands with tunable magnetic anisotropy</i>	O
10:30-10:45 <b>Saul Velez</b> (Universidad Autónoma de Madrid, Spain) <i>Current-induced control of chiral magnetic textures in magnetic insulators</i>	O
10:45-11:05 <b>Sonia Conesa Boj</b> (TU Delft, The Netherlands) <i>Living on the edge: 1D van der Waals materials by design for nanophotonic applications</i>	I

### 11:05-11:30 Coffee Break / Exhibition & Poster Session

## PLENARY SESSION

### Chairperson: Nacho Pascual (CIC nanoGUNE, Spain)

11:30-12:00 <b>Raquel González Arrabal</b> (Universidad Politécnica de Madrid / IFN, Spain) <i>Nanostructured materials under irradiation: their capabilities as plasma facing materials in fusion reactors</i>	K
12:00-12:30 <b>Antonio Rivera de Mena</b> (Universidad Politécnica de Madrid / IFN, Spain) <i>Hollow nanoparticles: applications in nuclear fusion power plants</i>	K

## PARALLEL SESSION (PhD Students) – TRACK C SPM, nanophotonics

### Chairperson: Nacho Pascual (CIC nanoGUNE, Spain)

12:30-12:40 <b>Klara Strobl</b> (UAM, Spain) <i>Electromechanical photophysics of protein fluorophores packed inside individual viral protein cages</i>	O
12:40-12:50 <b>Emiliano Ventura-Macias</b> (Universidad Autonoma de Madrid, Spain) <i>Frequency shift approximation in simulations of HR-AFM images with a CO-functionalized tip</i>	O
12:50-13:00 <b>Mikel Arruabarrena</b> (Centro de Física de Materiales, Spain) <i>Truncated TDDFT Approach for the Calculation of Exciton Binding Energies in Solids</i>	O
13:00-13:10 <b>Álvaro Buendía Gallego</b> (IEM-CSIC, Spain) <i>Exploiting orientation of anisotropic nanoparticles in topological plasmonic arrays</i>	O
13:10-13:20 <b>Elena Sentre Arribas</b> (IMN-CNM, CSIC, Spain) <i>Simultaneous optical and mechanical sensing based on nano-optomechanical disks</i>	O



## PARALLEL SESSION (PhD Students) – TRACK D Nanomaterials

**Chairperson: Jose-Miguel Garcia-Martin (IMN-CNM, CSIC, Spain)**

- 12:30-12:40 **Pablo Cerviño Solana** (IMN-CNM, CSIC, Spain) O  
*Bismuth telluride thin films with intrinsic nanostructured morphology*
- 12:40-12:50 **Gülsüm Ersü** (Instituto de Ciencia de Materiales de Madrid, Spain) O  
*Improving Electrical Conductivity of Films of Interconnected Graphite Flakes by Laser-Induced Annealing*
- 12:50-13:00 **Joseba Gómez Hermoso de Mendoza** (Universidad del País Vasco, Spain) O  
*TiO<sub>2</sub>-EPE/CTA nanocomposites: solvent casting vs solvent vapour annealing*
- 13:00-13:10 **Joana Goncalves** (University of Aveiro, Portugal) O  
*Incorporation of magnetite nanoparticles in chitosan-based scaffolds for magnetic hyperthermia therapy and bone regeneration*

**13:20-14:30 Lunch**

## PLENARY SESSION

**Chairperson: Jose Manuel Perlado Martin (IFN-GV & ETSII/UPM, Spain)**

- 14:30-15:00: **Jose-Miguel Garcia-Martin** (IMN-CNM, CSIC, Spain) K  
 Nanocolumnar films: sustainable manufacturing and applications in medicine, energy and aerospace industry
- 15:00-15:15: **Ester M. Palmero** (IMDEA Nanociencia, Spain) O  
 Novel and Sustainable Manufacturing of Nanocrystalline Ferrite Permanent Magnets through Recycling and Additive Manufacturing
- 15:15-15:30 **Sergio Catalán Gómez** (UPM, Spain) O  
*Gallium nanoparticles for improved III-V solar cells*
- 15:30-16:00 **Ido Hadar** (The Hebrew University of Jerusalem, Israel) K  
*White Light Emission from Low Dimensionality Halide Perovskites*

**16:00 Closing remarks**