

nanoscience and nanotechnology: small is different



institute
idea
nanoscience

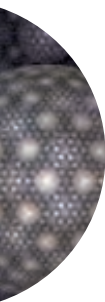


EXCELENCIA
SEVERO
OCHOA

dos mil 19

a n n u a l
r e p o r t

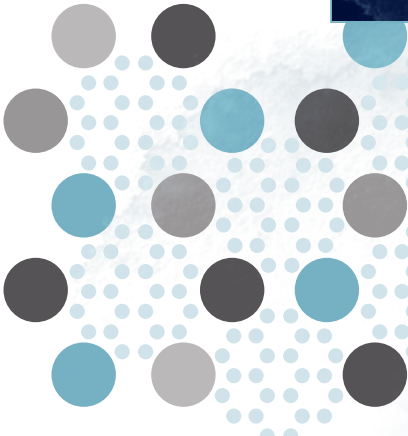
nanoscience and nanotechnology: small is different



 **institute**
idea
nanoscience

 EXCELENCIA
SEVERO
OCHOA

dos mil 19



a n n u a l
r e p o r t

foreword

dosmil
19
annual
report



Rodolfo Miranda

Director, IMDEA Nanociencia Institute

June 2020

We may say that in 2019 IMDEA Nanociencia has achieved the status of international reference in the field of nanotechnology. The Severo Ochoa Center of Excellence Award that we received in 2017 has facilitated enormously the development of the Institute in these years by giving us a certain independence of the year-by-year basis of the standard budget that we had so far.

New facilities have been installed and new labs are now operational: a lab for the fabrication of photovoltaic energy devices, new techniques of TeraHertz spectroscopy, a liquefier plant to produce liquid Helium from the recovered gas, a new STEM microscope, a new X-ray diffractometer, a roll to roll nanoimprint pilot plant for the production of nanostructured functional surfaces and new STMs which can go down to temperatures of 800 mK with 3 Teslas applied magnetic field or perform non-contact AFM in UHV.

The development of the Severo Ochoa Programme has required a reorganization of our research lines and the creation of new ones, as well as changes in the internal governance structure, which is now in the hands of the Executive Commission composed of three Deputy Directors (Scientific Strategy, Dr. Julio Camarero; Outreach, Dr. Emilio Pérez and Infrastructure, Dr. Daniel Granados), the Executive Manager (Bonifacio Vega), the Vicedirector (Prof. Nazario Martín) and the Director.

In terms of financial support we get 2/3 of our budget from external, competitive sources, with only 1/3 coming directly from the administration. In 2009 the fraction of competitive funds that we obtained was only 1/3 of the total. The present figure, unprecedented for research institutions, demonstrates that we are very competitive, but at the same time, places us in a fragile situation, since we are too dependent on continuing this extraordinary success rate in external projects. Obviously, there is a clear need of increasing in the future the basal financial support to ensure the long-term competitiveness of the Institute.

The researchers of the Institute have published of the order of 200 papers in 2019 (83% in Q1 and 32% in D1 journals). The accumulated number of citations of the papers by IMDEA Nanociencia was more than 46000 by the end of the year (more than 8800 only in 2019). The institutional h index was 93. All of this has placed IMDEA Nanociencia among the highest-ranked organizations in Spain in the prestigious Nature Index.

Contemplating the evolution of the Institute in 2019 I am certain that we are on the right track, thanks to the talent and commitment of everyone at the Institute. It is an honor for me to be still part of this adventure.

A handwritten signature in white ink, reading 'Rodolfo Miranda', with a stylized flourish at the end.

d o s m i l
19

a n n u a l
r e p o r t

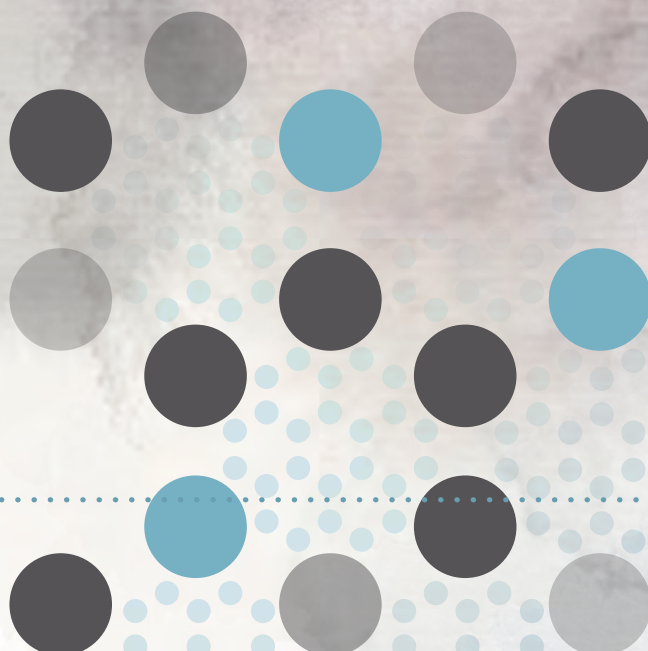


table of contents

1	Overview [6]
2	Research programmes and scientists [14]
3	Scientific report [90]
4	Projects Offices [144]
5	Annex [150]

1

overview

1. Legal Status [7]
2. Strategic Goals [7]
3. Management Structure [8]
4. Severo Ochoa [10]
5. Board of Trustees [11]
6. Scientific Advisory Committee [11]
7. IMDEA Nanociencia At a glance [12]



1. Legal Status

IMDEA Nanociencia is a private non profit Foundation created by initiative of the Madrid Regional Government in November 2006, in order to shorten the distance between the research and society in the Madrid region and provide new capacity for research, technological development and innovation in the field of Nanoscience, Nanotechnology and Molecular Design. In 2007 the former Ministry of Education and Science of the Government of Spain decided to also fund part of the creation and equipment of an institute of Nanoscience in the Madrid autonomous region.

The Foundation is governed by a Board of Trustees, which has representatives of the national and regional administration, the Academic Institutions (Complutense, Autónoma and Politécnica Universities, Consejo Superior de Investigaciones Científicas), industries, members of the Scientific Advisory Council, and experts in societal implications of nanoscience and technology transfer.

The Foundation governs the IMDEA Nanociencia Institute, a new interdisciplinary research centre dedicated to the exploration of basic nanoscience and the development of applications of nanotechnology in connection with innovative industries. The IMDEA Nanociencia Institute is part of one of the strategic lines of the Campus of International Excellence (CEI) UAM+CSIC.

2. Strategic Goals

In the Madrid region there is a large community of physicists, chemists and biologists working actively on diverse aspects of Nanoscience. Many of these groups have a recognized international prestige in their respective fields.

In spite of this, a new step forward is needed for the future international competitiveness of R+D in Nanoscience and Nanotechnology. A suitable organizational and working environment needs to be created with the aim to promote the continuous interdisciplinary interaction between specialists in physics, chemistry, molecular biology, computer sciences, etc., that the very nature of this new discipline demands.

Most importantly, it is essential to be able to recruit and retain new talent and to repatriate young scientists working abroad, to train a new generation of technicians and scientists in a genuine interdisciplinary field, and to create and maintain new experimental equipment and advanced infrastructures.

All this must be done by coordinating efforts with the groups and institutions that already exist, thanks to a flexible structure based on research programmes, which will have to undergo periodic evaluations. IMDEA Nanociencia aims at becoming an internationally recognized research centre, whilst maintaining a clear support from the existing scientific community in Madrid.

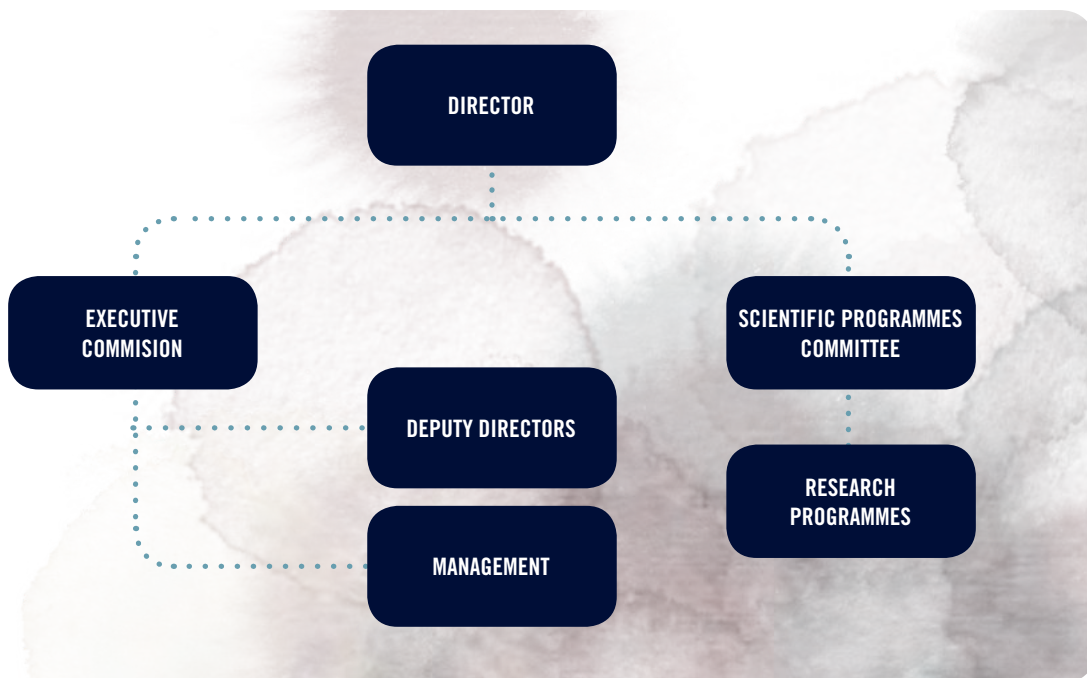


3. Management Structure

Legally Binding Governing Structure



Internal Governing Structure





Research Programmes Committee



Prof. Rodolfo Miranda



**Prof.
Francisco Guinea**



**Prof.
J.L. Carrascosa**



**Prof.
José Luis Vicent**



**Prof.
Julio Camarero**



**Prof.
Isabel Rodríguez**



**Prof.
Daniel Granados**



**Prof.
Nazario Martín**



**Prof.
J. Gierschner**



**Prof.
Alberto Bollero**



**Prof.
Cristina Flors**



**Prof.
Emilio Pérez**



4. Severo Ochoa

IMDEA Nanociencia became an accredited Severo Ochoa Centre of Excellence in 2017 (Spanish Ministry of Economy, Industry and Competitiveness) contributing towards the national and international leadership of the Institute in the areas of Nanoscience and Nanotechnology. This award is the highest national recognition for centres in Spain, granted after a rigorous evaluation process carried out by an international scientific committee.

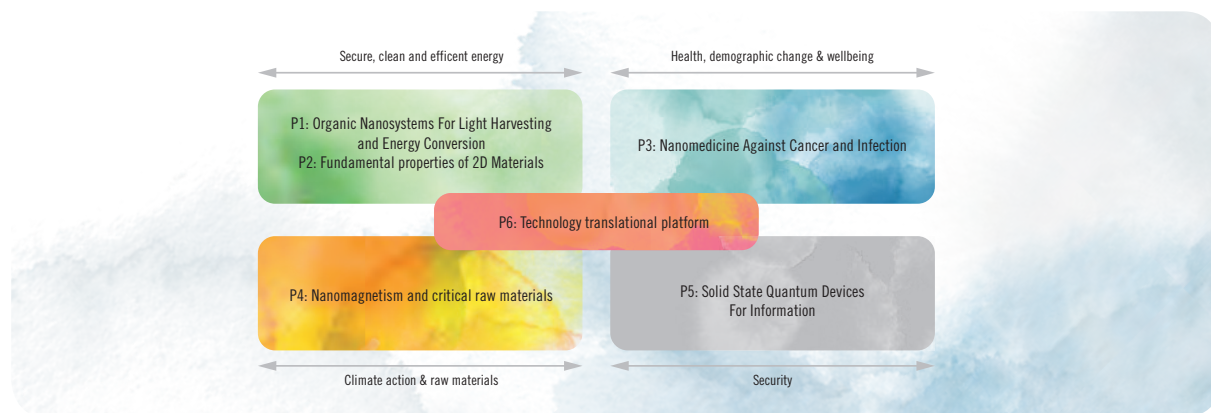
The funding provided by the Severo Ochoa award supports the strengthening of the existing interdisciplinary character of the centre and combines different types of expertise to find innovative solutions for social and economic challenges.

The focus under the Severo Ochoa programme are shown below where the research groups can make real contributions to the advancement of knowledge and technology innovation. The creation of a Translational Platform to encourage cross-programme collaboration for prototyping, proof-of-

concept testing, scaling-up and implementation of technologies developed in order to bridge the gap between our labs and society.

In terms of the support provided for our researchers, a key part of the project allows the strengthening of both the Competitive Projects and Dissemination and Communication offices. Additionally the opening of two new offices for Research Support and Strategic International Partnerships has greatly strengthening the Institute on an international platform.

IMDEA Nanociencia is part of the SOMM alliance (<https://www.somma.es/>) and supports its goals and objectives. The SOMM mission is to internationally promote, strengthen and maximise the value of the groundbreaking research produced by the Spanish 'Severo Ochoa' Centres and 'María de Maeztu' Units of Excellence and the scientific, social and economic impact it generates.





5. Board of Trustees

PRESIDENT OF THE BOARD OF TRUSTEES

Prof. Ivan K. Schuller

Expert on transfer of knowledge and nanotechnology.
Advisor of the State of California and the National Nanotechnology Initiative, USA

MADRID REGIONAL GOVERNMENT

Mr. Eduardo Sicilia Cavanillas

Counselor of Science, Universities and Innovation, Madrid Regional Government, Spain

Ms. Sara Gómez Martín

General Director of Universities and Higher Artistic Teachings, Madrid Regional Government, Spain

Ms. M^a Luisa Castaño Marín

General Director of Research and Innovation, Madrid Regional Government, Spain

Ms. Bárbara Fernández-Revuelta Fernández-Durán

Deputy Director General for Research, Madrid Regional Government, Spain

Mr. José de la Sota Rius

Deputy Director of the Madrimas Foundation

SPAIN NATIONAL GOVERNMENT

General Direction of Research, Ministry of Science

Dr. Ángela Fernández Curto

General Subdirector for Scientific and Technical Facilities

IMDEA INSTITUTES TRUSTEES

Dr. Fernando Temprano Posada

Appointed by IMDEA Software

Dr. Jerry B. Torrance

Appointed by IMDEA Materiales

SCIENTISTS

Prof. Ivan K. Schuller

Expert on transfer of knowledge and nanotechnology. Advisor of the State of California and the National Nanotechnology Initiative, USA

Prof. Cayetano López

CIEMAT, Madrid, Spain

Prof. Luis Echegoyen

University of Texas El Paso, USA

Prof. Hector Abruña

Ithaca Cornell University New York, USA

Prof. Miquel Salmerón

University of California, Berkeley, USA

UNIVERSITIES AND PUBLIC RESEARCH ORGANIZATIONS

Prof. Carlos Andrés Prieto de Castro

Spanish National Research Council (CSIC), Spain

Prof. Ignacio Lizasoain Hernández

Complutense University of Madrid. Spain

Prof. José Manuel González Sancho

Autónoma University of Madrid. Spain

Prof. Fernando Calle

Polytechnic University of Madrid. Spain

INDUSTRY

Mr. Emilio Ramiro Arcas

(substitute: Mrs. Silvia Cristina López Vidal)
Ramem, S.A

Mr. Manuel Pérez Cortes

(substitute: Mr. Pedro Gólmayor)
GMV Aerospace and Defense

6. Scientific Advisory Committee

Chairman: Prof. Ivan Schuller

Center for Advanced Nanoscience, University of California-San Diego, USA

Prof. Héctor Abruña

Department of Chemistry & Chemical Biology, Baker Laboratory, Cornell University, USA

Prof. Miquel Salmerón

Department of Materials Science and Engineering, University of California, Berkeley, USA

Prof. Harald Brune

Ecole Polytechnique Fédérale de Lausanne (EPFL). Switzerland

Prof. Luis Echegoyen

University of Texas at El Paso, USA

Prof. Johannes Barth

Department of Physics, Technische Universität München, Germany

Prof. Maurizio Prato

Dipartimento di Science Farmaceutiche. Università di Trieste, Italy

Prof. Rasmita Raval

Department of Chemistry, University of Liverpool, United Kingdom

Prof. Dr. Christoph Gerber

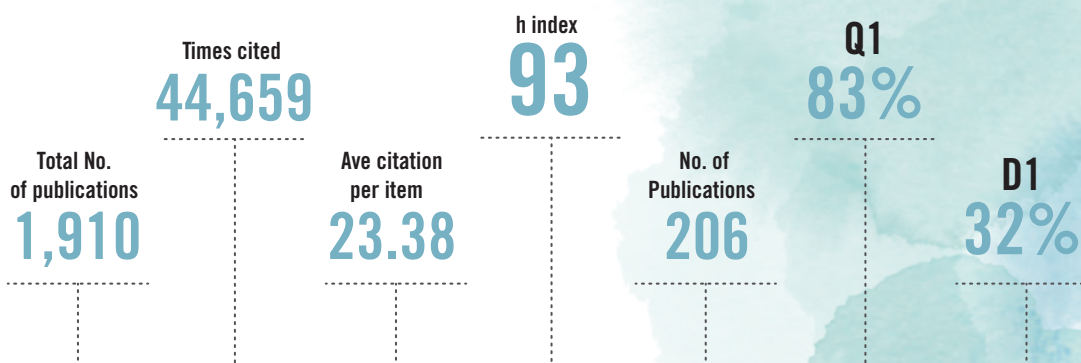
Department of Physics, University of Basel. Switzerland

Prof. Yvan Bruynserade

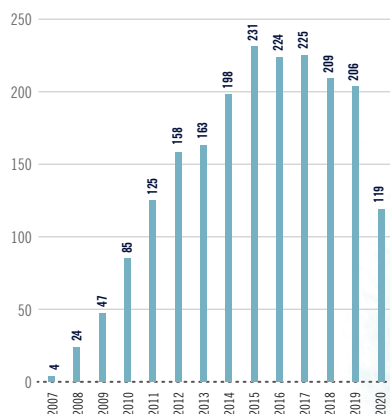
Department of Physics and Astronomy, Katholieke Universiteit Leuven, Belgium

7. IMDEA Nanociencia at a Glance

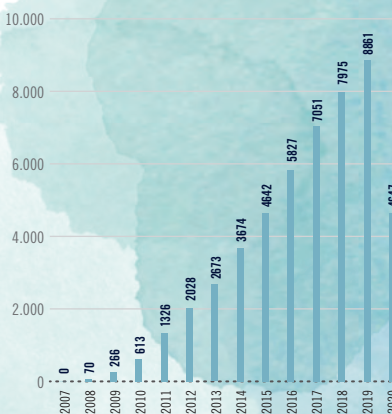
Scientific Production



Publications in each year



Citations in each year



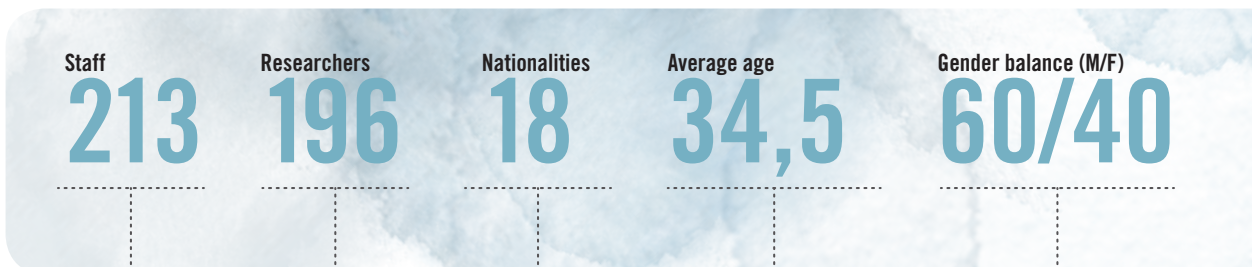
Highly cited researchers

Prof F Guinea named as one of 2019's Highly Cited Researchers by the Web of Science Group.

This honour recognises the most influential researchers, and is demonstrated by the production of multiple highly-cited papers that rank in the top 1% by citations for field and year in Web of Science.

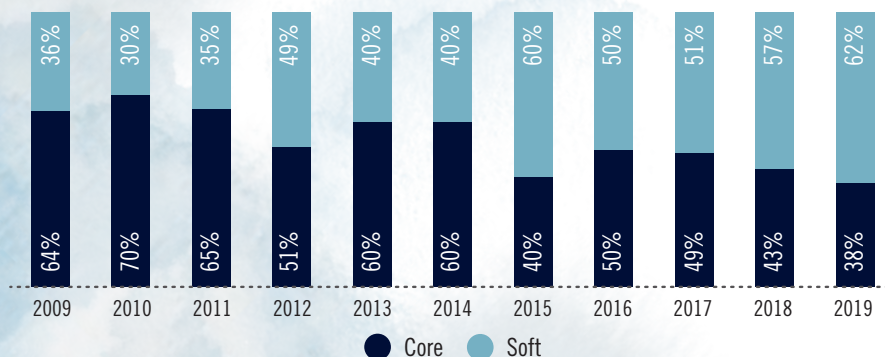


Talent



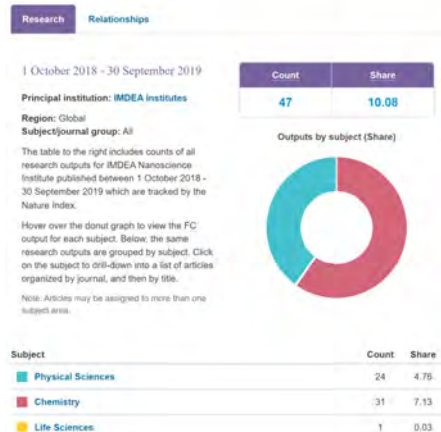
Percentage of Funding from Core vs Competitive sources

CORE funding is from trustees, SOFT funding includes competitive projects (EU's H2020 programme, the Spanish Ministry of Science and the Madrid Regional Government), industry contracts, and funding from private institutions (La Caixa, etc.)



Nature index

IMDEA Nanoscience Institute
Spain



For a national picture, IMDEA Nanociencia is ranked third by Share in the Nature Index for Governmental funded (non-University) Research Institutions in Spain:

INSTITUTION	COUNT	SHARE
Spanish National Research Council (CSIC)	1130	191.80
Institute of Health Carlos III (ISCIII)	190	22.05
IMDEA Nanociencia	47	10.08
Spanish National Center for Cardiovascular Research (CNIC)	29	8.35
ALBA Synchrotron	29	4.50
Centre for Energy, Environment and Technology (CIEMAT)	100	3.86
Basque Center for Macromolecular Design and Engineering	20	3.78
National Institute for Aerospace Technology (INTA)	32	3.09
Catalan Institute for Water Research (ICRA)	5	2.81

2

research programmes and scientists



Nanochemistry
[16]



Time Resolved
Spectroscopies
[28]

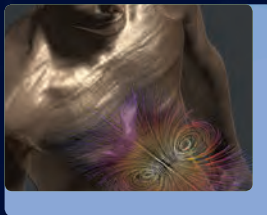


Atomic Scale
Quantum Materials
[38]

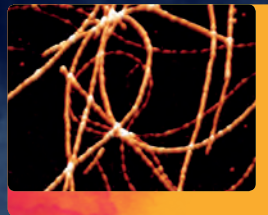
d o s m i l
20
19
a n n u a l
r e p o r t



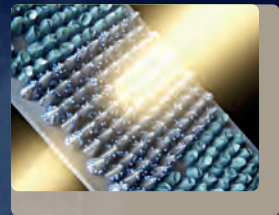
NanoMagnetism
[50]



Nanomedicine
[60]



Nanobiosystems
[72]



Nanofabrication
[80]

programme

Nanochemistry

Programme Manager: Prof. Nazario Martín

Research lines

Nanocarbons and Organic Photovoltaics

Prof. Nazario Martín

Catalysis and Systems Chemistry

Dr. Ignacio Colomer

Covalent Organic Frameworks

Prof. Félix Zamora

Chemistry of Low-Dimensional Materials

Prof. Emilio M. Pérez

Electrochemical Biosensors

Prof. Encarnación Lorenzo

Biosensors

Prof. José Manuel Pingarrón

Switchable Nanomaterials

Dr. José Sánchez-Costa

Functional Organic Materials

Prof. Tomás Torres

Functional Organic Materials Hybrid Nanomaterials

Dr. Beatriz H. Juárez

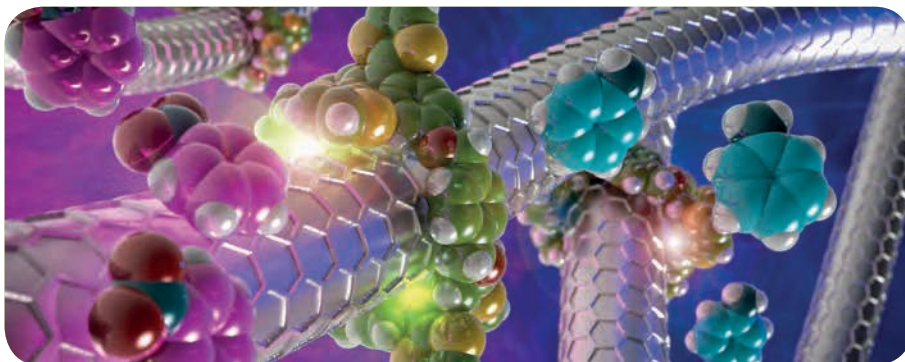
Functional Nanoscale Materials and Devices

Dr. Enrique Burzuri



About the programme

This programme deals with the design and synthesis of molecular nanostructures and nanomaterials, their spectroscopic characterization, in particular, their time-resolved optical response, and their self-assembly at surfaces. The expertise required includes the functionalization of different nanoforms of carbon, namely fullerenes, carbon nanotubes and graphene, metal-organic frameworks, spin-cross over architectures, organometallic compounds and semiconducting quantum dots to be self-organized on surfaces by means of covalent or supramolecular approaches and the implementation of various spectroscopic techniques, including spectroscopy of single molecules. Among the objectives of the Programme in basic science one may cite the characterization (and understanding) of the interaction light-organic molecules at the time scale of femtoseconds (both theoretically and experimentally at IMDEA) and the exploration of the time scale of the few femtoseconds into the attosecond (at least theoretically). The properties of prototype solar cells at very long time scales (ms) will be also explored experimentally. The practical objective is the use of this information, if possible, for the corresponding optimization of functional organic devices, such as organic solar cells, as well as the preparation of a variety of materials for hole and electron transport, respectively, in perovskite- based solar cells.



Nanocarbons and Organic Photovoltaics

Webpage: <http://www.nazariomartingroup.com>

GROUP LEADER

Prof. Nazario Martín

Research Professor

PhD: Universidad Complutense de Madrid, Spain

Double Affiliation: Universidad Complutense de Madrid, Spain

ORCID:

0000-0002-5355-1477

Researcher ID:

B-4329-2008



POSTDOCS

Dr. Agustín Molina

Ontoria

University of Texas at El Paso, USA

Dr. José Santos

Durham University, UK

PhD STUDENTS

Javier Urieta

Eider Sánchez

Jesus Galán

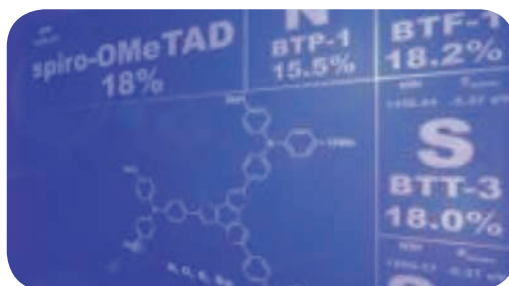
Luis Manuel Mateo

Research lines

1. Fullerenes as a singular curved scenario: Discovering new reactions on Fullerenes!
2. Supramolecular Chemistry of Fullerenes. Concave-convex Supramolecular Interactions.
3. On-Surface Chemistry. Exploring the 2D World Wonders.
4. Hole and Electron Transport Materials for Photovoltaic Applications.

I. García-Benito, I. Zimmermann, J. Urieta-Mora, J. Aragón, J. Calbo, J. Perles, A. Serrano, A. Molina-Ontoria, E. Ortí, N. Martín, M. K. Nazeeruddin. **Heteroatom Effect on Star-shaped Hole-Transporting Materials for Perovskite Solar Cells**, *Adv. Funct. Mater.*, **2018**, DOI: 10.1002/adfm.201801734.

A systematic study of the effect that heteroatom-containing central scaffold (N, O, or Se) yields on the photovoltaic efficiency is investigated and compared with their sulfur analogue. The new star-shaped derivatives endowed with three-armed triphenylamine moieties show C₃ symmetry and a remarkable performance. This work highlights that chalcogenide-based derivatives are promising hole-transporting material candidates to compete efficiently with spiro-OMeTAD.





Chemistry of Low-Dimensional Materials

Webpage: <http://nanociencia.imdea.org/chemistry-of-low-dimensional-materials/home>

GROUP LEADER

Prof. Emilio M. Pérez

Senior Research Prof.

PhD: University of Edinburgh, UK

Previous Position: Universidad Complutense de Madrid, Spain

ORCID:

0000-0002-8739-2777

Researcher ID:

B-1870-2008



POSTDOCS

Dr. Manuel Vazquez

University of Trieste, Italy

Dr. Xu Wei

The Hong Kong Polytechnic University, Hong Kong

Dr. Zhang Wanzheng

University of Erlangen-Nürnberg, German

PhD STUDENTS

Sofía Mena

Sara Moreno

Alicia Naranjo

Tomas Nicolás

Ramiro Quirós

Mariano Vera

Julia Villalva

TECHNICIANS

Christine Marie Arenas

Silvia Miranda

VISITOR

Dr. Eric Anglaret

University of Montpellier, France

Research lines

Our group has interests in three main research lines:

1. Novel methods for the chemical modification of carbon nanotubes: We have developed methods for the synthesis of rotaxane-type derivatives of SWNTs, the first example of mechanically interlocked derivatives of SWNTs. MINTs show fundamentally different properties from other types of SWNT derivatives, which might have implications in the reinforcement of polymers, catalysis, and sensing.
2. Chemistry of 2D materials: We are developing improved methods for production of ultrathin 2D materials and van der Waals heterostructures through liquid phase exfoliation from their bulk sources. From these suspensions, we build functioning (opto)electronic devices using dielectrophoresis. Finally, we are interested in fundamental problems in the chemistry of 2D materials, such as chemoselectivity.
3. Fundamental principles of supramolecular chemistry: Lastly, we are very interested in measuring and understanding noncovalent forces, which underlie all the results of the previous two lines. For example, we have developed a method for the determination of association constants of small molecules towards SWNTs and unveiled the different contributions to the stability of the complexes. Optical tweezers (OT) are one of the most successful single-molecule force spectroscopy techniques, to the point of Arthur Ashkin being awarded with the Nobel Prize for Physics 2018, for their use to study biophysics. In these two papers, we use OT to study synthetic supramolecular systems for the first time.

Switchable nanomaterials

Webpage: <http://www.nanociencia.imdea.org/switchable-nanomaterials-group/group-home>

GROUP LEADER

José Sánchez Costa

Assistant Research Prof.
(tenure track)

PhD: University of Bordeaux 1,
France

Previous Position: LCC-CNRS,
Toulouse, France

ORCID:

0000-0001-5426-7956

Research ID:

N-9085-2014



POSTDOCS

Dr. Arturo Gamonal

Federal University of
Pernambuco, Brasil

Dr. Lucia Piñeiro

PhD STUDENTS

Estefanía Fernandez

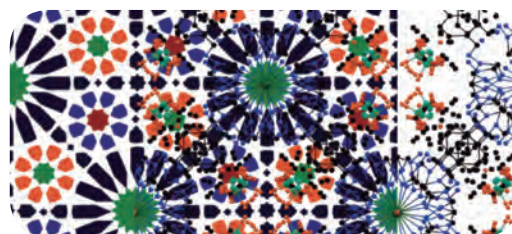
Esther Resines

Research lines

At the Switchable NanoMaterials group (SNM) we are mainly focused on the development of metal-based coordination complexes at the macro- and nanoscopic scale for their technological application in the fields of quantum computing, spintronic and sensing devices. Besides, we are interested in developing novel dynamic molecules sticker by soft interactions capable to act as porous materials for energy storage. Our multidisciplinary approach is based on three major themes:

1. Iron-based Spin Crossover (SCO) Switchable coordination complexes.
2. Functional Metal-Organic Frameworks, MOFs.
3. Non-porous architectures acting as porous compounds.

A novel extended triazole-based ligand (PM-Tria) has been synthesized and an unprecedented MOF 3D architecture has serendipitously been formed by assembling iron(II), PM-tria ligand and fluoride anions. This MOF contains a perfectly linear one-dimensional $[Fe(II)-F]_n$ bridging chain that shows an antiferromagnetic behaviour. Furthermore, the structure is compared with a 14th century mosaic found in the Alhambra Palace in Granada showing a surprising symmetry resemblance See *Chem. Commun.*, **2018**, 54, 5526.





Functional Nanoscale Materials and Devices

Webpage: <http://nanociencia.imdea.org/functional-nanoscale-materials-and-devices/home>

GROUP LEADER

Dr. Enrique Burzurí

Position: Assistant Research
Prof. (tenure track)

PhD: Universidad de Zaragoza

Previous Position: TU Delft, The Netherlands.

ORCID:

0000-0001-7906-7192

Researcher ID:

M-3501-2015

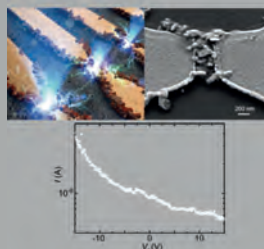


PhD STUDENT

Aysegul Develioglu

Research lines

- 2D and 1D materials:** We are interested in the fundamental properties of 2D materials and their integration into (opto)electronics and spintronics devices. We have assembled scalable nano-transistors based on frangeite heterostructures obtained by liquid-phase exfoliation. We are also involved in the controlled positioning of 1D SWNTs in complex devices. We have fabricated Physically Unclonable Functions (PUFS) and field-effect transistors with chemically modified SWNTs selectively positioned by dielectrophoresis.
- Magnetism of molecular materials:** We are also very interested in fundamental studies of the magnetism of molecules and other nanoscale materials (coordination polymers, 2D materials, mechanically interlocked magnetic molecules). For example, we have studied the magnetism of cylindrite van der Waals heterostructures down to the 2D limit. We have also studied the magneto-electronic response of Fe-based coordination polymers to volatile organic molecules.
- Molecular spin QBits:** Finally, we are exploring the incorporation of SWNT-magnetic molecule hybrids into superconducting circuits as spin QBits for quantum computation.



Catalysis and systems chemistry

Webpage: <https://colomerlab.com>

GROUP LEADER

Dr. Ignacio Colomer

Assistant Research Prof.
(tenure track)

PhD: Universidad Complutense de Madrid, Spain

Previous Position: University of Oxford, UK

ORCID:

0000-0001-5542-7034

Researcher ID:

AAB-2389-2020

Scopus:

38562666400



POSTDOCS

Dr. Laura Trulli

University of Rome
"La Sapienza"

PhD STUDENTS

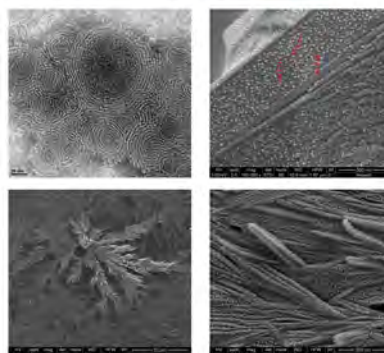
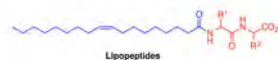
César Vicente

Carlos Corral

Research lines

Our group has focused on three main research lines:

1. The long-term goal of **building a synthetic protocell** based on chemical reactivity principles. This challenging bottom-up project intends to generate a toolbox of chemical reactions that can be used to build increasingly complex dynamic systems that operate far-from-equilibrium.
2. We are particularly interested in **designing and using small lipopeptides**, studying their supramolecular behaviour to understand their properties and apply them in different areas, such as catalysis, antibacterial, drug delivery or as privileged scaffolds in systems chemistry.
3. The use of **Hexafluoroisopropanol (HFIP)** as a **privileged solvent** (*Nat. Rev. Chem.* **2017**, 1, 0088) in the selective synthesis and functionalization of organic molecules with medical and biological interest (*ACS Catal.* **2020**, 10, 6023), with interesting applications in the fields of chemical biology and polymer science.





Electrochemical Nanobiosensors

Webpage: <http://www.uam.es/gruposinv/biosens>

GROUP LEADER

Prof. María Encarnación Lorenzo Abad

Associate Research Professor

PhD: Universidad Autónoma de Madrid, Spain

Double Affiliation: Universidad Autónoma de Madrid, Spain

ORCID:

0000-0001-8432-9652

Researcher ID:

K-9825-2014



Research lines

- 1. Nanomaterials for Biosensor development:** We have developed amperometric (bio)sensors with improved performance by the inclusion of nanomaterials, such as nanodiamonds, graphene, carbon nanotubes, carbon dots and gold nanoparticles. These nanomaterials have also been chemically modified.
- 2. Electrochemical indicators for DNA biosensors:** the group has pioneering works in Spain concerning the development of redox indicators of hybridization event. These indicators have been successfully applied in the development of very selective DNA biosensor and of biosensor for the detection of gene mutations associated to important human diseases, such as CF. In particular we have recently employed successfully metalacarboranes as redox indicators in DNA biosensor for the detection of different gene mutations.
- 3. Nanomaterials for the development of supercapacitors:** Lastly, we are very interested in the application of 2D nanomaterials for the fabrication of energy storage devices. For example, graphene decorated SiC nanomaterial (graphene@SiC) (fabricated via an adiabatic process), has been physicochemically characterised then applied as a supercapacitor material and as an anode within a Li-ion battery (LIB).
- 4. Use of operando methods (Raman-electrochemistry, UV-V- electrochemistry) for the mechanistic elucidation of electrochemically driven structural transformation or nanomaterial chemical modification.**

Functional Organic Materials

Webpage: <http://www.phthalocyanines.es>

GROUP LEADER

Prof. Tomás Torres Cebada

Associate Senior Scientist

PhD: Universidad Autónoma de Madrid, Spain

ORCID:
0000-0001-9335-6935

Research ID:
H-9796-2014



ASSOCIATE SCIENTIST

Dr. Giovanni Bottari
Associate Researcher
PhD: University of Edinburgh, United Kingdom
Double Affiliation: Universidad Autónoma de Madrid, Spain
ORCID:
0000-0001-6141-7027
Researcher ID:
A-8957-2013

POSTDOCS

Dr. Maxence Urbani
University of Toulouse, France

Dr. Miguel García Iglesias
Universidad Autónoma de Madrid, Spain

PhD STUDENT

Álvaro Corrochano
Luis M. Mateo
Nicolás Muñoz

Research lines

Our research focuses on the preparation and study of molecular materials based on porphyrinoids like, phthalocyanines (Pcs), sub-phthalocyanines (SubPcs), and porphyrins (Pors), among others.

1. One research line deals with the use of Pcs as active components in solar cells. We have made significant progresses in the use of Pcs as photosensitizers in inverted dye sensitized solar cells (*Angew. Chem. Int. Ed.*, **2019**, 58, 4056), in non-fullerene acceptors (*Angew. Chem. Int. Ed.* **2019**, 58, 14644, *J. Am. Chem. Soc.* **2020**, 142, 7920) and in light-harvesting porphyrazines (Pzs) for intramolecular singlet fission (*Nanoscale* **2019**, 11, 22286). We have also reviewed the use of Pcs as hole-transporting materials in perovskite-sensitized solar cells (*Chem. Soc. Rev.*, **2019**, 48, 2738).
2. Our group is also active in the area of photodynamic therapy (PDT), and have reviewed recently on the unique features of Pcs as advanced photosensitisers for PDT of cancer (*Chem. Soc. Rev.* **2020**, 49, 1041). We have also successfully used Pcs in antimicrobial PDT (*Eur. J. Med. Chem.* **2020**, 187, 111957).
3. Finally, our group is investigating the use of porphyrinoids in nanotechnological spaces. In this context, we have recently described the use of Pcs-virus nanofibers as heterogeneous catalysts for continuous-flow photooxidation processes (*Adv. Mater.* **2019**, 31, 1902582), and the on-surface synthesis and characterization of triply-fused Por-graphene nanoribbon hybrids (*Angew. Chem. Int. Ed.* **2020**, 59, 1355).



Covalent Organic Frameworks

Webpage: <https://www.nanomater.es>

GROUP LEADER

Prof. Félix Zamora
Associate Research Professor

PhD: Universidad Autónoma
de Madrid, Spain

ORCID:
0000-0001-7529-5120

Researcher ID:
E-6265-2014



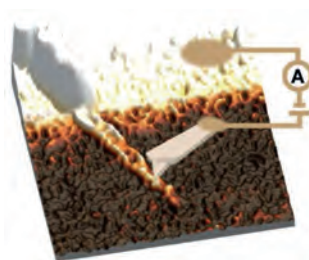
PhD STUDENTS

David Rodríguez
Carlos Gibaja

Research lines

Our research group is developing the chemistry of low dimensional materials. The research activity deals with the preparation and characterization of nanomaterials with multifunctional properties:

1. One-dimensional coordination polymers with electrical properties, and their potential use as “molecular wires”, and the use of coordination polymers of lamellar structure to produce nanometric films and monomolecular thickness.
2. Two-dimensional materials with a rational chemical design using Covalent Organic Frameworks and Metal-Organic Frameworks: It aims to provide alternative two-dimensional materials using chemical synthesis for a rational design of structures and properties.
3. Two-dimensional materials based on inorganic crystals such as graphene, boron nitride and antimonene: Our aim is to provide novel synthetic routes for the production of suspensions and the characterization of these materials on surfaces.
4. Design and synthesis of porous Materials with potential applications in water and energy based on Covalent Organic Frameworks.



Biosensors

Webpage: <http://www.imdeananociencia.org/home-en/people/item/dr-jose-manuel-pingarron>

GROUP LEADER

**Prof. José Manuel
Pingarrón**

Associate Research Professor

PhD: Universidad Complutense
de Madrid, Spain

Double Affiliation: Universidad
Complutense de Madrid, Spain

ORCID:

0000-0003-2271-1383

Researcher ID:

M-9402-2014

Scopus Author ID:

7005489861



Research lines

1. **Fundamental Research:** Synthesis, characterization and application of latest generation nanomaterials, redox polymers/electronic conductors and modern electroanalytical techniques in electrochemical (bio)sensing.
2. **Applied Research:** Development and application of advanced electrochemical (bio)sensors for the determination of relevant (bio)markers in the environmental, clinical and food fields in response to current demands of society.



Functional Organic Materials Hybrid Nanomaterials

Webpage: <http://nanociencia.imdea.org/semiconductor-nanoparticles-group/group-home>

GROUP LEADER

Dr. Beatriz H. Juárez

Associate Researcher

PhD: Universidad Autónoma de Madrid, Spain

Double Affiliation: Universidad Autónoma de Madrid, Spain

ORCID:

0000-0003-1704-060X

Researcher ID:

G-7066-2011

L-5896-2017

PhD STUDENTS

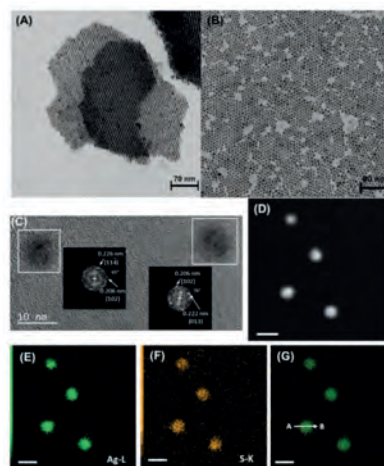
Héctor Rodríguez

Diego Ruiz

Andrés Solana

Research lines

1. The main research line includes the synthesis of colloidal nanocrystal (mainly semiconductor nanocrystals or quantum dots in 0, 1, and 2D as well as hybrid systems) with the aim to design rules for optimal nanocrystals performance. Special emphasis is given to surface chemistry studies by X-ray Photoelectron Spectroscopy and X-ray absorption Spectroscopy and characterization by advanced optical and microscopical techniques.
2. Functional materials for nanothermometry based on semiconductor nanocrystals. Among the fabricated systems for nanoscale thermal monitoring we focus on the synthesis of nanocrystals with adequate size and surface treatment for luminescence nanothermometry in the NIR range, where light attenuation in tissues is minimized and higher sensitivity can be achieved.



programme

Time Resolved Spectroscopies

Programme Manager: Prof. Johannes Gierschner

Research lines

Photophysics of
Organic and Hybrid
Supramolecular
Nanosystems
Prof. Johannes Gierschner

Femtosecond
Spectroscopy on
Molecular Systems
Prof. Larry Luer

Nanooptics
and Nanoacoustics
Prof. Reinhold Wannemacher

Pump-probe
Photoinduced Absorption
Spectroscopy
Dr. Juan Cabanillas González

Nanostructured
Photovoltaics
Dr. Enrique Cánovas

Time-resolved X-ray
Spectroscopy in
Biological and Chemical
Catalysis
Dr. Dooshaye Moonshiram

Modelling Physical
Properties of
Nanostructures
Prof. Fernando Martín

Femtochemistry
Prof. Luis Bañares



About the programme

The programme deals with phenomena in which either the (acoustic or optical) radiation or the matter are confined at sub-micrometre dimensions. In nanoacoustics, phase-sensitive acoustic microscopy, imaging, and non-destructive testing are developed, while the field of nanophotonics is both a Nobel Prize-winning science and a multibillion-dollar industry, underpinning applications such as telecommunications, data storage, and materials processing. Nanostructures and nanostructured materials exhibit fascinating optical response, and nanoscale optics have already shown many surprises, such as extraordinary optical transmission, superlensing, giant field enhancement, optical trapping, and imaging with resolution far beyond the diffraction limit. Researchers in this Programme have also explored semiconductor materials as advantageous candidates to be the physical basis of storage and manipulation of quantum information. The growth and characterisation of semiconductor nanostructures, and photonic devices, such as LEDs, Lasers, pillars and photonic crystal cavities is also relevant for activities in Programme 1). The scientists in this Programme have also developed optical microscopy in the near and far field, optical spectroscopy with coherent and nonlinear techniques, Raman and FTIR spectroscopy and spectroscopic SNOM.



Photophysics of Organic & Hybrid Supramolecular Nanosystems

Webpage: <http://www.nanociencia.imdea.org/photophysics-of-organic-and-hybrid-supramolecular-nanosystems/group-home>

GROUP LEADER

Prof. Johannes Gierschner

Senior Research Professor

PhD: University of Tübingen, Germany

Previous Position: Univ. Mons, Belgium

ORCID:

0000-0001-8177-7919

Researcher ID:

K-7938-2014



POSTDOCS

Dr. Junqing Shi

IMDEA Nanociencia, Spain

Dr. Kumar Behera

Santosh

Indian Institute of Science
Bangalore, India

VISITING RESEARCHER

Dr. Begoña Milian

Universidad de Valencia,
Spain

PhD STUDENTS

Juan Carlos Roldao

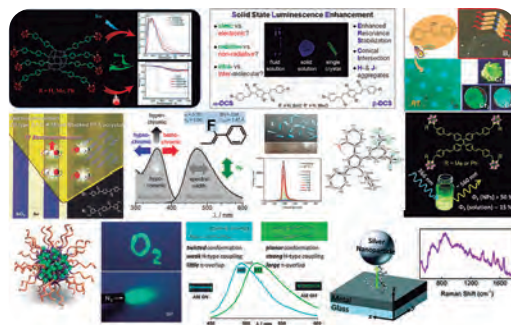
MSC STUDENT

Liangxuan Wang

Research lines

Our research is dedicated to the understanding of the photophysics of organic and hybrid supramolecular nanosystems. The ultimate goal, i.e. unbiased, targeted design of tailor-made systems for optoelectronics or life science, can only be reached in an interdisciplinary manner, which we tackle in an integrative spectroscopic & computational approach, based on a strong background in chemistry & materials science.

- 1. Energy Conversion:** The use of organics in solar cells and as photocatalysts for water-splitting or polymerization reactions requires a profound understanding of the generation and fate of excited states; i.e. singlet and triplet state manifolds, charge transfer and localized excitons.
- 2. Luminescent Organic Materials:** The understanding or even prediction of non-/occurrence of luminescence in solution and in the crystalline state is of crucial importance for targeted molecular design, where we achieve a systematic understanding using libraries of well-defined materials.
- 3. Artificial Light-Harvesting** in Supramolecular Polymers for light harvesting applications requires understanding and control of molecular localized and charge-transfer excitons and their dynamics, in particular investigated by polarized techniques.





Femtosecond Spectroscopy on Molecular Systems

Webpage: <http://www.imdeananociencia.org/larry-s-group/group-home>

GROUP LEADER

Prof. Larry Lüer
Senior Research Professor

PhD: University of Tübingen, Germany

Previous Position: Senior Researcher. CNR/INFM Politecnico di Milano

ORCID:

0000-0001-9952-4207



POSTDOCS

Dr. Abasi Abudulimu
Universidad Autónoma de Madrid, Spain

Research lines

1. **Transient absorption spectroscopy** across all relevant time scales in organic optoelectronic devices and their components.
2. Advanced matrix based methods for spectral decomposition to quantify **complex photophysical pathways**.
3. Main goal: Finding **dominant loss pathways** giving industrial and academic partners **design rules** to improve their devices.
4. Main topics: **organic photovoltaics, photocatalysis**.

Highly efficient organic photocatalyst found by computer modeling. A collaboration with University of Ulsan (South Korea). (*Nature Catalysis* 1(10), 794-804 (2018))

All-organic self-assembling nanoparticles allow stable, efficient, and easily controllable photocatalytic water splitting. In a collaboration with Seoul National University, we showed that the high efficiency is due to ultrafast triplet generation, outperforming charge separation, a prominent parasitic process in the catalytic cycle (Submitted, 2019).

Geminate recombination losses can be predicted by simple experiments. In an in-house collaboration with Prof. Nazario Martin and with the University of Würzburg, we showed that in photovoltaic donor-acceptor blends, geminate recombination losses, that require femtosecond spectroscopy to be determined, can be predicted by Marcus theory using simple experiments. This has been shown in a class of donor materials prepared by R. Sandoval-Torrientes, group of N. Martin. (*J Mat Chem. C*, 2019, DOI: 10.1039/C9TC00862D)



Nanooptics and Nanoacoustics

Webpage: <http://www.imdeananociencia.org/home-en/people/item/reinhold-wannemacher>

GROUP LEADER

Prof. Reinhold Wannemacher

Senior Research Professor

PhD: University of Darmstadt, Germany

Previous Position: University of Leipzig, Germany

ORCID:

0000-0001-7192-3556

Researcher ID:

F-7108-2011



PhD STUDENTS

Sergio Ramírez

Yansheng Liu

(co-supervised with Dr. Luo Feng)

RESEARCH ASSISTANT

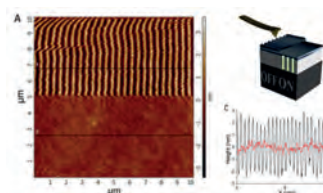
Sergio Iglesias

(co-supervised with Dr. J. Cabanillas)

Research lines

1. We are studying the photocatalytic, charge and energy transfer properties of carbon-based nanomaterials (carbon dots, nanographenes, graphene) in close collaboration with the groups of Isabel Rodríguez, Feng Luo, Johannes Gierschner and Nazario Martin, IMDEA Nanociencia
2. We study amplified spontaneous emission and lasing and perform low-temperature spectroscopy down to 1.5 K of crystalline and amorphous conjugated organic and hybrid organic/inorganic materials in close collaboration with the groups of Juan Cabanillas, José Sánchez Costa and Johannes Gierschner, IMDEA Nanociencia. We also investigate the low-temperature homogeneous linewidth of carbon nanomaterials.
3. We investigate fluorescent and electrochemical sensors in close collaboration with the groups of Encarnación Lorenzo and Juan Cabanillas, IMDEA Nanociencia
4. We employ high-frequency ultrasonic waves (20-500MHz) for sensing using coaxial probes and combine ultrasonic vibrations (100 kHz-6 MHz) with force microscopy for imaging and manipulation of friction on the nanoscale.

Mechanical wear is often evidenced by the formation of ripples on surfaces of contacting bodies. Using an atomic force microscope (AFM) we have shown that, on the nanoscale, this wear process can be suppressed by the application of ultrasonic vibrations. At the same time the friction coefficient is strongly reduced compared to its value without applying any vibrations. See: *ACS Nano* **2015**, 9, 8859-8868





Pump-probe Photoinduced Absorption Spectroscopy

Webpage: <http://nanociencia.imdea.org/organic-photophysics-and-photonics/group-home>

GROUP LEADER

Dr. Juan Cabanillas Gonzalez

Assistant Research Prof.
(tenure track)

PhD: Imperial College London, UK
Previous Position: Politecnico di Milano, Italy

Orcid:
0000-0002-9926-3833

ResearcherID:
M-1026-2014



POSTDOC

Dr. Zhang Qi

Nanjing University of Posts and telecommunications, China

PhD STUDENTS

Chen Sun

Ahmad Sousaraei

Javier Álvarez

Sergio Iglesias

(co-supervised with Dr. R. Wannemacher)

Research lines

1. **Conjugated polymers for photonics:** relation between structure and light amplification properties. We study the optical gain and stimulated emission properties of conjugated polymers with femtosecond transient absorption spectroscopy. We focus on chemical structures designed to promote optical gain upon reducing inter-chain interactions. Suppression of loss mechanisms like exciton-exciton annihilation, or polaron absorption and promotion of strong host:guest interactions on polymer mixtures are crucial for outstanding light amplifying properties.
2. **Conjugated polymer waveguides and laser resonators.** We use soft nanoimprint lithography to transfer patterns onto flexible substrates subsequently coated with conjugated polymer. Upon choosing the appropriate pitch for the periodic pattern we can achieve confinement of the emission in the conjugated polymer film and amplification of the optical cavity modes. This research line is carried out in collaboration with the group of Nanostructured Functional Surfaces at IMDEA Nanociencia.
3. **Fluorescent chemosensors.** We investigate the use of fluorescence, amplified spontaneous emission and laser action in cavity resonators as transduction signal for sensing analytes with high sensitivity in the gas or liquid phase. For this purpose we exploit the luminescent properties of conjugated polymers, organic dyes and porous metal-organic frameworks processed in films and composites.

Nanostructured Photovoltaics

Webpage: <https://ecanovas6.wixsite.com/nanopv>

GROUP LEADER

Dr. Enrique Cánovas

Assistant Research Prof.
(tenure track)

PhD: Universidad Politécnica de Madrid (UPM)

Previous Position: Group Leader at Max Planck for Polymer Research (MPIP).

ORCID:

0000-0003-1021-4929



PhD STUDENTS

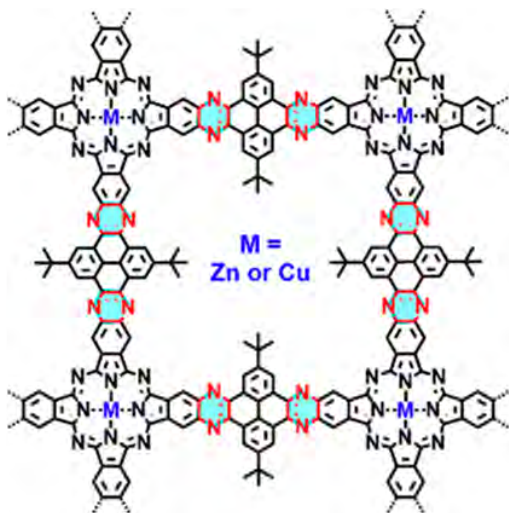
Sergio Revuelta

Miguel Ángel Pulido

Research lines

1. Charge carrier dynamics at interfaces.
2. Charge carrier transport in organic, inorganic and hybrid materials and heterostructures Time resolved THz spectroscopy Solar Energy conversion: photovoltaics and photocatalysis Nanoscience and Nanotechnology.

Unveiling Electronic Properties in Metal-Phthalocyanine-Based Pyrazine-Linked Conjugated Two-Dimensional Covalent Organic Frameworks.
J. Am. Chem. Soc. **2019**, 141, 42, 16810–16816, <https://pubs.acs.org/doi/abs/10.1021/jacs.9b07644>





Time-resolved X-ray Spectroscopy in Biological and Chemical Catalysis

Webpage: <http://www.nanoscience.imdea.org/home-en/people/item/moonshiram>

GROUP LEADER

Dr. Dooshaye Moonshiram

Assistant Research Prof.
(tenure track)

PhD: Purdue University, U.S.A

Previous Position: Alexander Humboldt Fellow at Max Planck Institute for Chemical Energy Conversion, Mulheim, Germany

ORCID:

0000-0002-9075-3035

Researcher ID:

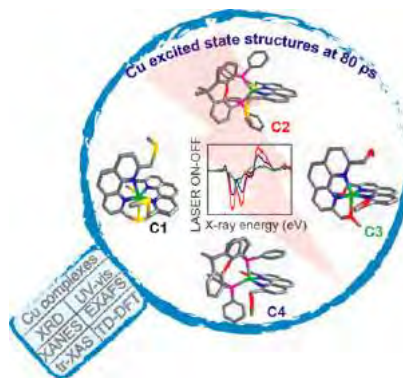
J-5138-2014



Research lines

1. Mapping the electronic and energetic requirements for the design of efficient and economical catalysts through synchrotron-based steady-state and time-resolved spectroscopy.
2. Developing molecular approaches to enable catalysts' designs on electrode surfaces for realization of practical hybrid devices.
3. Investigating the time-resolved intramolecular electron transfer dynamics, kinetics, and geometric changes in homogeneous and surface-anchored modules for water oxidation, proton reduction and methane to methanol oxidation reactions.

M. Rentschler, S. Iglesias, M.-A. Schmid, C. Liu, S. Tschierlei, W. Frey, X. Zhang, M. Karnahl, D. Moonshiram*, "The coordination behaviour of Cu(I) photosensitizers bearing multidentate ligands investigated by X-ray absorption spectroscopy", *Chem. Eur. J.*, 2020, <https://doi.org/10.1002/chem.201905601> (doi.org/10.1002/chem.201905601)



Modelling Physical Properties of Nanostructures

Webpage: <http://nanociencia.imdea.org/fernando-martin-s-group/group-home>

GROUP LEADER

Prof. Fernando Martín
Associate Research Professor

PhD: Universidad Autónoma de Madrid. Spain

Double affiliation: Universidad Autónoma de Madrid. Spain

Código Orcid:
0000-0002-7529-925X

Researcher ID:
C-3972-2014



POSTDOCS

Dr. Michele Pisarra
University of Calabria, Italy

Dr. Alberto González Castrillo

Dr. Juan José Omiste
University of Toronto, Canada

PhD STUDENTS

Kilian Arteaga

Jorge Delgado

Francisco Fernández

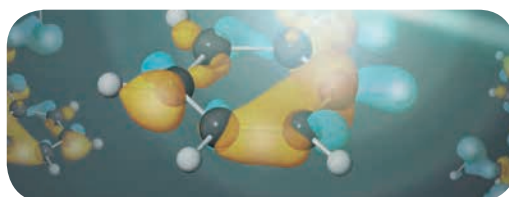
Joel Gabriel Fallaque

Research lines

The research carried out by the group has mainly focused on:

1. The theoretical and computational modeling of photoexcitation and photoionization processes in atomic, molecular and solid-state systems induced by synchrotron radiation and ultrashort laser pulses with femto- and attosecond duration, with the aim, of imaging and controlling ultrafast electron and nuclear dynamics occurring in these systems.
2. The study and theoretical prediction of properties of materials and nano-objects of complex molecular systems, aggregates and fullerenes, isolated or deposited on metallic and nonmetallic surfaces, with emphasis on problems with potential interest in chemistry and biology and the design of novel two-dimensional materials, including graphene.

Advances in attosecond science have led to a wealth of important discoveries in atomic, molecular, and solid-state physics and are progressively directing their footsteps toward problems of chemical interest. In this review, we detail the application of attosecond methods to the investigation of ultrafast processes in molecules, with emphasis in molecules of chemical and biological interest. The measurement and control of electronic motion in complex molecular structures is a formidable challenge, for both theory and experiment, but will indubitably have a tremendous impact on chemistry in the years to come. *Chemical Reviews* 117, 10760. DOI: 10.1021/acs.chemrev.6b00453





Femtochemistry

Webpage: <http://webs.ucm.es/info/dinalaser>

GROUP LEADER

Prof. Luis Bañares

Associate Research Professor

PhD: Universidad Complutense de Madrid, Spain

Double Affiliation: Universidad Complutense de Madrid, Spain

ORCID:

0000-0002-0777-2375

Researcher ID:

B-7922-2014



POSTDOCS

Dr. Sonia Marggi Poullain

Dr. Sanat Ghosh

Dr. David Chicharro

Dr. Hugo Dacasa

PhD STUDENTS

Marta Murillo

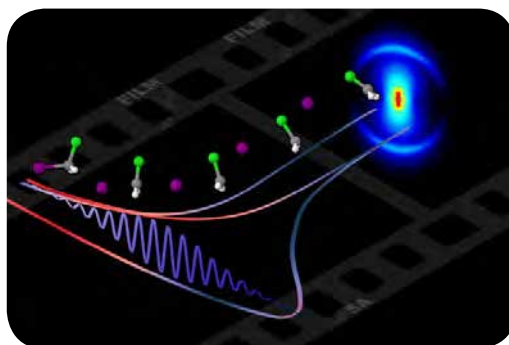
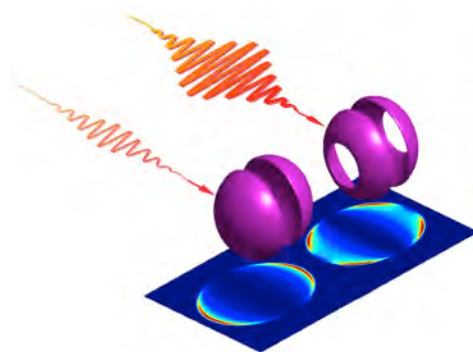
Olivia Borrell

TECHNICIANS

Dr. Jesús Gonzalez Izquierdo

Research lines

1. Dynamics of Photodissociation of Molecules and Radicals.
2. Femtosecond Time-resolved Photodissociation Dynamics.
3. Imaging of Chemical Reactions.
4. Strong Laser Field Control of Reaction Dynamics.



programme

Atomic Scale Quantum Materials

Programme Manager: Prof. Rodolfo Miranda

Research lines

Scanning Probe
Microscopies and
Surfaces
Prof. Rodolfo Miranda

Theoretical Modelling
Prof. Francisco Guinea

Nanoarchitectures
at surfaces
Dr. David Écija

Spin-Polarized low T STM
Dr. Fabián Calleja

Topological surfaces
states in quantum
materials
Dr. Manuela Garnica

Molecular Electronics
Dr. Edmund Leary

Imaging of 2D Materials
Prof. Amadeo L.
Vázquez de Parga

Photonic STM
Dr. Roberto Otero

Thermopower
at the Nanoscale
Prof. Nicolas Agrait

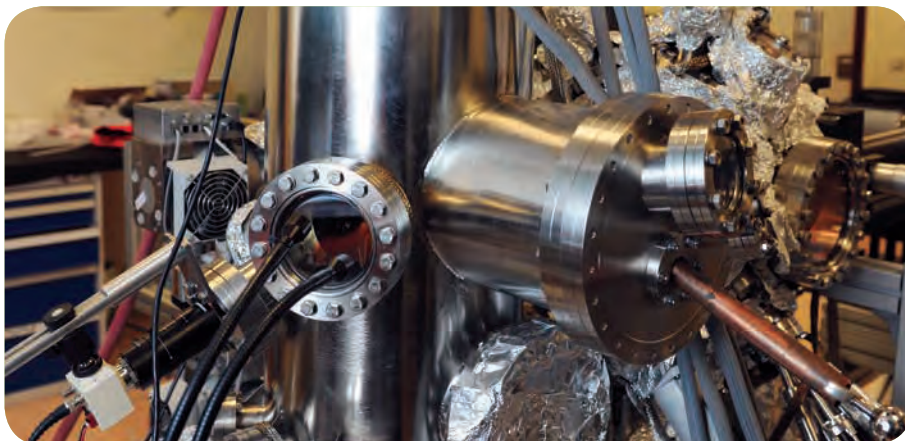
Theoretical Study of
Molecules on Surfaces
Prof. Manuel Alcamí

Surface Reactivity
Prof. Juan M. Rojo



About the programme

The use of advanced microscopies and spectroscopies with atomic resolution is essential to characterize matter at the nanoscale. The scientists involved in this programme develop at IMDEA advanced Scanning Probe Microscopes, mostly STM, AFM and Photoelectron Microscopy to investigate problems such as the epitaxial growth of graphene, the chemical functionalization of graphene, the design of metal-intercalated graphene heterostructures, the characterization of topological insulators, the self-assembly of molecules at surfaces, the on-surface synthesis of nanomaterials from molecular precursors, the design of surface-confined metal-organic architectures, the in-situ fabrication and response of nano-catalysts, the realization of scanning tunnelling spectroscopy and inelastic scanning tunnelling spectroscopy at the level of single molecules, the investigation of tip-induced electroluminescence or the spin polarized imaging of magnetic nanostructures. Friction at the nanoscale and theoretical modelling are also involved. Activities of this programme have implications for aeronautics, electronic, magnetic, sensory, and energy applications.



Scanning Probe Microscopies and Surfaces

Webpage: <http://nanociencia.imdea.org/rodolfomiranda/index.php/en>

GROUP LEADER

Prof. Rodolfo Miranda
Associate Research Professor

PhD: Universidad Autónoma de Madrid, Spain

Double Affiliation: Universidad Autónoma de Madrid, Spain

ORCID:

0000-0002-1064-6724

Researcher ID:

7102041777



Dr. Amjad al Taleb
Universidad Autónoma de Madrid, Spain

Dr. Miguel Ángel Valbuena
ICN2, Barcelona, Spain

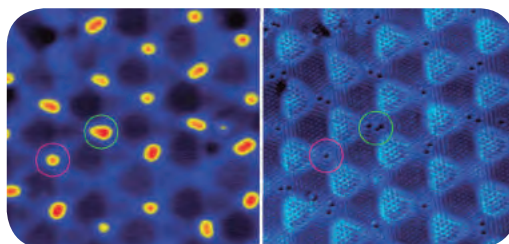
Dr. Mariona Cabero
Universidad Complutense de Madrid, Spain

Research lines

The use of advanced microscopies and spectroscopies with atomic resolution is essential to characterize matter at the nanoscale. Our main tool for studying nanostructures at the atomic scale is low temperature scanning probe microscopy. The microscopes enable us to image, manipulate, and detect the local properties of nanoscale objects with picometer resolution under extreme conditions, i.e. in ultra-high vacuum, at temperatures down to 700mK and in magnetic fields up to 3T. We measure electronic, vibrational and optical excitations, magnetic interactions and forces, manipulate single atoms and molecules to assemble functional nanostructures.

We investigate problems such as the epitaxial growth of graphene, its spatially-resolved electronic structure or its chemical functionalization, the investigation of tip-induced electroluminescence of molecules, its Kondo response or the spin polarized imaging of magnetic nanostructures.

- Atomic scale tunneling microscopy and spectroscopy.
- Dynamics at surfaces.
- Fundamental properties of low dimensional systems and quantum materials.
- Magnetism of nanostructures.
- Molecular nanoscience at surfaces.





Theoretical Modelling

Webpage: <http://www.imdeananociencia.org/graphene/group-home>

GROUP LEADER

Prof. Francisco Guinea

Senior Research Prof.

PhD: Universidad Autónoma de Madrid

Previous Position: Instituto de Ciencia de Materiales de Madrid-CSIC, Spain

Researcher ID:
A-7122-2008



POSTDOCS

Dr. Luca Chirolli

Scuola Normale Superiore, Pisa, Italy & ICMM-CSIC, Spain

Dr. Tommaso Cea

University of Rome, Italy

Dr. Yago Ferreiros

KTH Royal Institute of Technology, Stockholm, Sweden

Dr. Pierre A. Pantaleón

University of Manchester, UK

PHD STUDENTS

Ignacio Vicent

Alejandro Jimeno

Héctor Sainz

Research lines

The main goal of the research done within the group is the development of models which describe the properties of novel two dimensional materials. The best known case is graphene, which permits the fabrication of films of widths comparable to the radius of a single atom. After the synthesis of graphene, many other two dimensional materials have been fabricated, with a broad range of properties.

Finally, layers of different materials can be combined, leading to “metamaterials” with pre-designed features.

The models developed in the group emphasize those properties which are unique to these materials, and they include geometrical and structural features, electronic properties, and the possible formation of superconducting and magnetic phases. The group also considers devices based on these materials, highlighting those with functionalities which cannot be achieved in devices fabricated using other materials.

The research being carried out is expected to be useful for descriptions of these materials at the atomic scale, and also in samples of sizes much larger than the separation between atoms. A wide variety of techniques in theoretical physics are applied, from numerical calculations to the use of topological arguments, or methods based on the renormalization group.

The models developed in the group are checked against experimental results, and they attribute to their interpretation. A significant fraction of the research done by the group is carried out in collaboration with experimental teams.

Nanoarchitectures at Surfaces

Webpage: <http://ecija.hol.es>

GROUP LEADER

Dr. David Écija

Senior Research Prof.
(tenure track)

PhD: Universidad Autónoma de Madrid, Spain

Previous Position: Technical University of Munich, Germany

Researcher ID:
I-2207-2012



Dr. Koen Lauwaet

Researcher
ICMM-CSIC, Spain

Dr. Jose Ignacio Urgel

Dr. Sofia de Oliveira

POSTDOCS

Borja Cirera

IMDEA Nanociencia, Spain

Dr. Esther Carrasco

ICMM-CSIC, Spain

PhD STUDENTS

Ana Sánchez Grande

Daniel Moreno

Cristina Martin

Kalyan Biswas

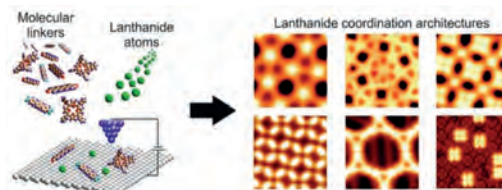
TECHNICIAN

Isabel Ortiz

Research lines

Our group is focused on the visualization and understanding of physico-chemical processes on surfaces, including three main lines of research:

1. **Surface-confined metal-organic materials.** Our main interest is to rationalize the coordination chemistry of functional metals like lanthanides on surfaces, creating unique architectures with advanced functionalities for sensing, catalysis, light emission and nanomagnetism.
2. **On-surface synthesis of functional nanomaterials.** Here we focus on the exploration of unprecedented chemical aiming at the design of novel 2D soft materials.
3. **Nanocatalysis for energy applications.** We pursue the on-surface design and atomistic characterization of metal-oxide nanocatalysts of relevance for water splitting and CO₂ reduction.





Spin-Polarized low T STM

Webpage: <http://www.imdeananociencia.org/nanoscale-imaging-of-2d-materials/group-home>

GROUP LEADER

Dr. Fabián Calleja

Assistant Research Prof.
(tenure track)

PhD: Universidad Autónoma
de Madrid, Spain

Previous Position: Ecole
Polytechnique Federale de
Lausanne (EPFL), Switzerland

Researcher ID:

I-7964-2012

PhD STUDENTS

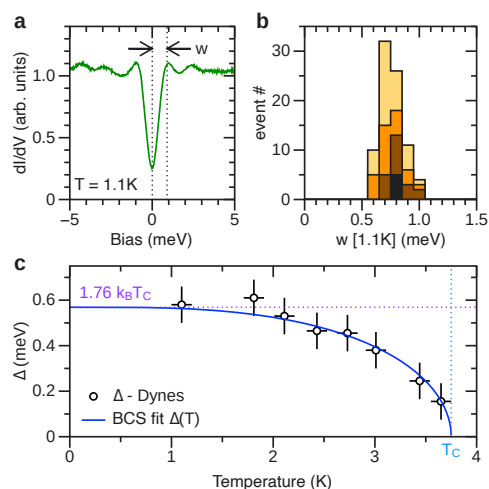
Cosme González

(co-supervised with
Dr. L.Vazquez de Parga)

Research lines

1. Electronic and magnetic properties of graphene-based systems at the atomic level.
2. Modification, functionalization and development of chemical reactions on graphene.
3. Extrapolation to other novel 2D materials.

We have created and characterized a superconducting (SC) nanostructure at the apex of a tungsten STM tip. The resulting SC gap width at 1 K (panel a) was reproduced in over 80 different tips (panel b), with a critical temperature around 3.5 K (panel c). *Appl. Phys. Lett.* 115, 073108 (2019); doi: 10.1063/1.5097694



Topological surfaces states in quantum materials

Webpage: <http://nanociencia.imdea.org/nanoscale-imaging-of-2d-materials/group-home>

GROUP LEADER

Dr. Manuela Garnica

Assistant Research Prof.
(tenure track)

PhD: Universidad Autónoma de Madrid, Spain

Previous Position: Technical University of Munich, Germany

ORCID:

0000-0002-7861-9490

Researcher ID:

AAG-8254-2019



PhD STUDENT

Pablo Casado

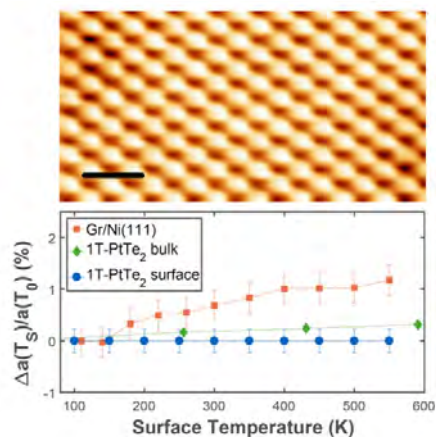
(co-supervised with Dr. Amadeo L. Vázquez de Parga)

Research lines

Our research interests deal with 2D materials and new topological states of matter. In recent years, topological materials have attracted a wide range of attention not only for the possibility to study many aspect of fundamental physics but also because of their potential applications.

- Epitaxial growth.
- Graphene.
- Topological materials.
- Low-Temperature Scanning Tunnelling Microscopy.

“Experimental determination of surface thermal expansion and electron–phonon coupling constant of 1T-PtTe₂” Gloria Anemone, Manuela Garnica *et al.* 2D Materials 7, 025007





Molecular Electronics

GROUP LEADER

Dr. Edmund Leary

Assistant Research Prof.
(tenure track)

PhD: University of Liverpool, UK

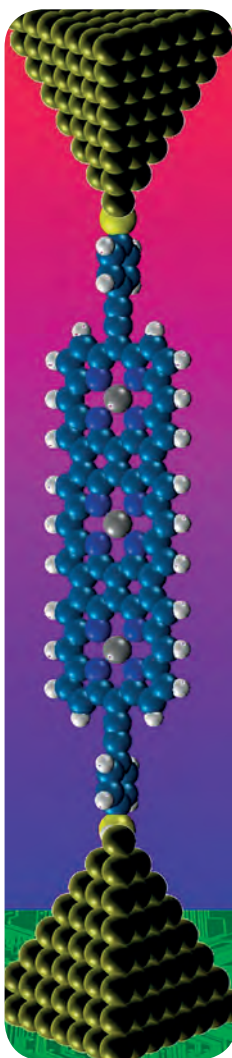
Previous Position: University of
Liverpool, UK

ORCID:

0000-0001-7541-5997

Researcher ID:

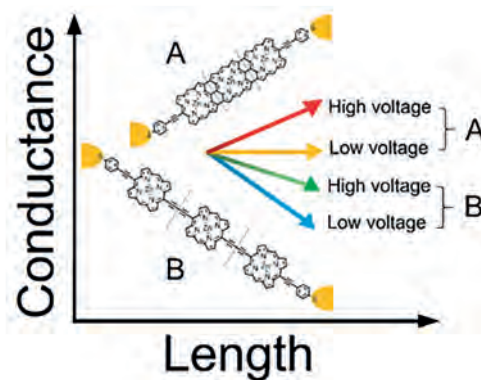
L-1066-2018



Research lines

1. Structure-property relationships in electron transport through single molecules.
2. Effective binding groups for the robust attachment of molecules to electrodes.
3. Aromaticity and anti-aromaticity and their effects on molecular transport.
4. Quantum Interference.

Bias-Driven Conductance Increase with Length in Porphyrin Tapes; *J. Am. Chem. Soc.* **2018**, 140, 40, 12877–12883 (Open access article).



Imaging of 2D Materials

Webpage: <http://www.imdeananociencia.org/nanoscale-imaging-of-2d-materials/group-home>

GROUP LEADER

Prof. Amadeo L. Vázquez de Parga

Associate Research Professor

PhD: Universidad Autónoma de Madrid, Spain

Double Affiliation: Universidad Autónoma de Madrid, Spain

Researcher ID:

L-2418-2013



PhD STUDENTS

Pablo Casado

(co-supervised with Dr. Garnica)

Cosme González

(co-supervised with Dr. Calleja)

Iván Martínez

Research lines

We are exploring the properties of 2D materials by means of low temperature scanning tunnelling microscopy and spectroscopy (LT-STM/STS) in ultra-high vacuum conditions. We grow the 2D materials by means of molecular beam epitaxy (MBE). and we are focused on the following research lines:

- 1. Chemistry of 2D materials.** We are exploring the chemistry of 2D materials in ultra-high vacuum conditions.
- 2. Tuning the electronic structure of 2D materials.** We are interested in the influence of the substrate on the electronic properties of the 2D materials.
- 3. Superconductivity.** We are interested in the superconductivity on 2D materials, the influence of the substrate, doping level and strain.
- 4. Integration of 2D material in devices.** Taking advantage of the clean room facilities of the Campus of Excellence UAM-CSIC located in the building of IMDEA Nanoscience, we are exploring the integration of 2D materials on electronic devices.



Photonic STM

Webpage: <http://www.imdeananociencia.org/home-en/people/item/roberto-otero-martin>

GROUP LEADER

Prof. Roberto Otero

Associate Researcher

PhD: Universidad Autónoma de Madrid, Spain

Double Affiliation: Universidad Autónoma de Madrid, Spain

ORCID:

0000-0001-6936-4003

Researcher ID:

E-4516-2011



PhD STUDENTS

Dr. Christin David

DTU, Denmark

Alberto Martín

Juan Ortiz

Óscar Jover

VISITOR

Dr. José María Gallego

ICMM-CSIC, Spain

Research lines

In our group we fabricate low-dimensional materials and quantum systems by deposition of organic and inorganic materials on solid surfaces, and investigate their unique properties by Low-Temperature Scanning Tunnelling Microscopy, Spectroscopy and Luminescence. In particular, we are interested in:

1. Effects of quantum confinement within nanostructures (discretization of energy levels, quantization of effective masses). Our recent investigations have unraveled the discretization of energy levels in graphene quantum boxes and the origin of the finite mass of electrons confined in such nanostructures.
2. Luminescence of single molecules excited by STM. We have added to our STM a system to collect the light emitted from the tunneling junction due to the injection of hot carriers. The experimental setup has already been tested with individual fullerene nanocrystals (*in preparation*), and we are now moving to individual molecules.
3. Interaction of spin polarized electrons with organic nanostructures. The interaction between organic molecules and the electron sea at solid surfaces leads to interesting electronic phenomena such as the existence of Kondo resonances or the existence of 1D electronic channels for interfacial electrons. We intend to explore the new effects that be expected when such organic molecules are supported by substrates with a non-trivial spin texture.

Thermopower at the Nanoscale

Webpage: <http://www.nanociencia.imdea.org/home-en/people/item/nicolas-agrait-de-la-puente>

GROUP LEADER

Prof. Nicolás Agrait
Associate Research Professor

PhD: UNED, Spain

Double Affiliation: Universidad
Autónoma de Madrid. Spain

ORCID ID:

0000-0001-8177-7919

Researcher ID:

I-2207-2012

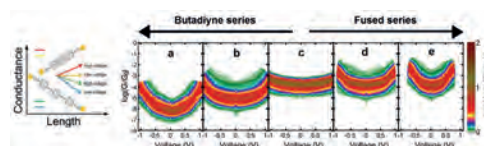


Research lines

Using scanning tunneling microscopes (STMs) made in house, we assemble and study circuits formed by a single organic molecule chemically bond to two metallic electrodes. We work mainly in ambient conditions, and explore the electrical properties of these molecular circuits, including their thermopower, this is the electrical voltage created between the extremes of the molecule under a thermal gradient.

More specifically, we study:

1. Electrical properties of organic molecule families: oligo(phenyl ethynylene)s, oligoynes, phthalocyanines, porphyrins... (*JACS* **2013**, *JACS* **2014**, *JACS* **2015**, *JACS* **2018**).
2. Thermo power of single-molecule junctions: we explore the ability of a single molecule of different compounds to generate an electrical potential when they are under a thermal gradient (*Nano Lett.* **2013**, *Nature Mater.* **2016**, *Chem. Soc. Rev.* **2016**).
3. Key factors involved in the formation and stability of molecular junctions (*J. Chem. Phys. C* **2013**, *J. Am. Soc.* **2013**, *Chem. Soc. Rev.* **2015**, *J. Phys. Chem. C* **2018**).
4. Graphene-like molecules containing non-hexagonal rings (*Chem. Sci.* **2017**).
5. Other electrode materials different from gold.





Theoretical Study of Molecules on Surfaces

Webpage: <http://www.imdeananociencia.org/home-en/people/item/manuel-alcami-pertejo>

GROUP LEADER

Prof. Manuel Alcamí
Associate Research Professor

PhD: Universidad Autónoma de Madrid, Spain

Double Affiliation: Universidad Autónoma de Madrid, Spain



Research lines

His field of expertise is the theoretical study of molecules both in gas phase and deposited on surfaces.

His current research lines are:

1. Theoretical study of self-assembly and charge transfer processes of molecules deposited on surfaces. We have focused our research in this topic in donor or acceptor organic molecules as TCNQ or TTF deposited on metal surfaces.
2. Carbon nanostructures (fullerenes, nanotubes and graphene), in the last years we have developed simplify models to understand the stability of charged fullerenes, fullerene derivatives (*J. Am. Chem. Soc.* 139, 1609, **2017**) or He-decorated fullerenes.
3. Fragmentation and stability of highly charged and highly excited molecules, in his field we have performed Molecular Dynamic simulations on excited states to describe the coupling between nuclear and electronic dynamics, or to determine the energy deposit in ion collisions with biomolecules.

programme

NanoMagnetism

Programme Manager: Prof. Julio Camarero

Research lines

Advanced
Magneto-Optics
Prof. Julio Camarero

Rare-Earth free
Permanent Magnets
Dr. Alberto Bollero

Growth &
Nanostructuring
Dr. Feng Luo

Technological
and biomedical
applications of magnetic
nanoparticles
Dr. Francisco Terán

SpinOrbitronics
Dr. Paolo Perna

Epitaxial Growth
Dr. Miguel Ángel Niño

Photo-Magnetothermia
Dr. A. Espinosa

Electrodeposited
nanowires
Dr. Lucas Pérez

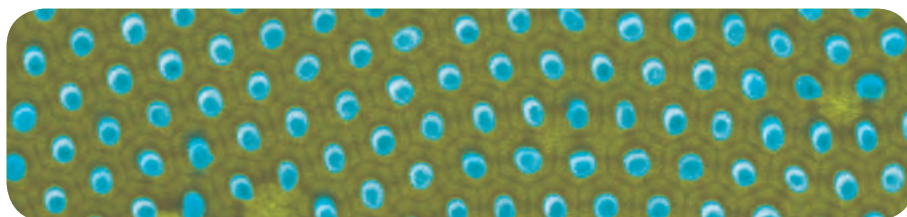


About the programme

The scientific activity of the Nanomagnetism Programme is at the forefront of both fundamental and applied research on magnetic nanostructures, dealing with the preparation and characterization of advanced multifunctional magnetic nanomaterials with enormous impact for our society, including sensing & information storage (spintronic & spin-orbitronic), energy production & conversion (permanent magnets), and biomedical (magnetic nanoparticles) applications.

We are equipped with a powerful battery of techniques that enable the investigation of many properties of multifunctional magnetic nanostructures, including both inorganic and organic materials, grown by Molecular Beam Epitaxy (MBE) or sputtering in ultra-high vacuum environment, as well as by chemical synthesis routes. These are ultrathin films, superlattices, or nanoparticles and their properties are characterized by morphological, chemical, structural, electronic, transport, and (mostly optic-based) advanced vectorial magnetometry techniques. Particular emphasis is paid to the growth, the magnetization reversal processes (in both quasi-static and dynamic regimes), and their magnetoresistance responses. Additionally, external large scale experimental facilities (i.e., synchrotron, neutron, or ion-accelerator sources) are often used to elucidate some fundamental aspects.

We aim at a better understanding of fabrication processes and physical properties of new materials and functionalities as a first step towards the development of devices with custom-chosen properties, with potential for sensing, information storage, energy, and biomedical technologies.



Advanced Magneto-Optics

Webpage: <http://www.nanociencia.imdea.org/research/research-programs/nanomagnetism/group-of-advanced-magneto-optics>

GROUP LEADER

Prof. Julio Camarero
Associate Research Professor

PhD: Universidad Autónoma de Madrid, Spain

Double Affiliation: Universidad Autónoma de Madrid, Spain

ORCID:
0000-0003-0078-7280

Researcher ID:
C-4375-2014



POSTDOCS

Dr. José Luis F. Cuñado
Universidad Autónoma de Madrid, Spain

Dr. F. Javier Pedrosa
IMDEA Nanociencia, Spain

Dr. Rubén Guerrero
Institut d'Electronique Fondamentale (IEF)
Universite Paris- Sud, France
(co-supervised with Dr. P. Perna)

PhD STUDENTS

José Manuel Díez
Adrián Gudín

Research lines

We design and take use of advanced magneto-optic based instrumentation for nanotechnology research and development. Research is focused on low-dimensional artificial magnetic structures, such as ultrathin magnetic films and multilayers, magnetic nanostructures, magnetic nanoparticles and adsorbed molecules, with a particular emphasis on magnetization reversal processes and magnetoresistive responses.

We aim at probing and understanding both magnetization reversal and transport properties of magnetic nanostructures by systematically tuning intrinsic parameters, such as magnetic anisotropy and magnetic coupling, and extrinsic ones, like temperature and external fields (including dynamic effects). The current activities are focused on:

Magnetization reversal and magnetoresistive studies:

- Influence of anisotropies (in-plane vs. perpendicular) & nanostructuration.
- Static vs. dynamic and thermal effects; superparamagnetism.
- Exchange bias, spin-valves, tunnel-junctions, multiferroics, nanoparticles, molecules.

Polarization dependent element-resolved x-ray spectroscopy and microscopy studies:

- X-ray magnetic circular/linear dichroism, (XMCD/XMLD).
- X-ray photoemission electron microscopy, X-PEEM.
- Soft x-ray resonant magnetic scattering & Magnetic holography imaging.



Rare-Earth free Permanent Magnets

Webpage: <http://nanociencia.imdea.org/division-permanent-magnets-applications>

GROUP LEADER

Prof. Alberto Bollero

Senior Researcher Professor

PhD: Technical University of Dresden

Previous Position: SPINTEC-CEA, France

ORCID:

0000-0002-3282-0981

Researcher ID:

C-3217-2017



POSTDOCS

Dr. Ester M. Palmero

ICMM-CSIC, Spain

Dr. Cristina Navío

Universidad Autónoma de Madrid, Spain

Dr. Javier Rial

IMDEA Nanociencia

Dr. Clémentine Bidaud

Université de Haute-Alsace, France

PhD STUDENTS

Melek Villanueva

Daniel Casaleiz

Carla Muñoz

Jimena Soler

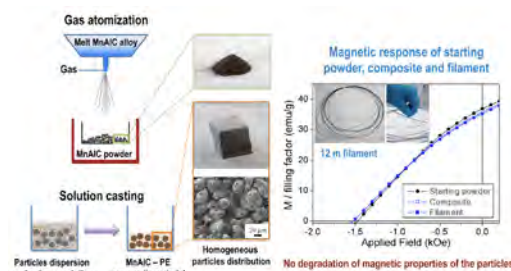
TECHNICIANS

Javier de Vicente

Research lines

1. Fundamental and applied aspects of permanent magnets (PMs) with no or reduced content of rare-earths: MnAl-based, MnBi, L10-FeNi, ferrites, hybrid ferrite/NdFeB.
 - (a) Industrial collaborations: Höganäs (Sweden), IMA (Barcelona), RAMEM (Madrid)...
 - (b) Projects under international Calls: H2020 FET-OPEN, M-ERA.NET.
2. Nanostructured PMs (powders and bulk).
3. Additive manufacturing of PMs.
4. Growth of magnetic thin films.
5. Nanoparticle engineering, and electrochemical synthesis of PM nanostructures.
6. Development of micromagnets for microdevices (e.g. micro-robots in microsurgery).
7. Recycling of PMs.

Development of permanent magnet MnAlC/polymer composites and flexible filament for bonding and 3D-printing technologies. *Sci. Technol. Adv. Mater.* **2018**, 19, 465 (Open Access)



Growth & Nanostructuring

Webpage: <http://www.imdeananociencia.org/home-en/people/item/feng-luo>

GROUP LEADER

Prof. Feng Luo

Senior Research Professor

PhD: Peking University, China

Previous Position: Peking University, China

Researcher ID:

E-3683-2012



PhD STUDENT

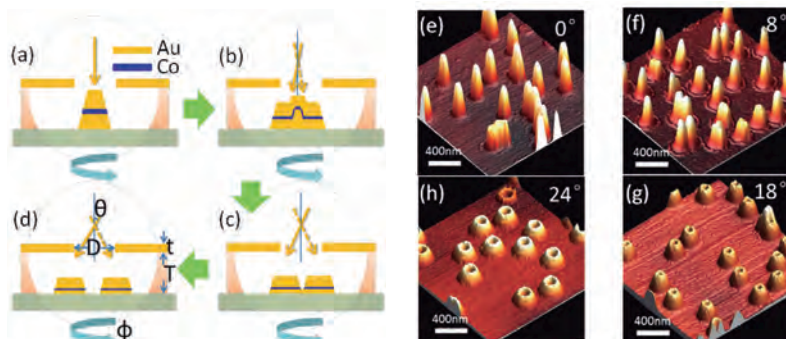
Yansheng Liu

(co-supervised with Dr. R. Wannemacher)

Research lines

1. Micro/Nano Fabrication and Ultra-Precision Manufacturing for Applications in Magnetic Hard Disk Storage, Magnetic Random Access Memory (MRAM) and Magneto-Optical Sensors.
2. Tuning Physical Properties by Design and Controlling: Interface Engineering at Atomic Scale and Lithography Patterning.
3. Advanced Characterization Techniques Based on X-ray and Electrons.

Morphology tuning of a series of Au/Co/Au nanostructures which gradually evolve from disk to ring allows controlling their optical and magneto-optical spectral responses in the visible and near infrared ranges. Bimodal resonant behavior in the optical and MO activity is observed, and by either tuning the morphological parameters, or the distribution of the ferromagnetic constituent, the spectral response of MO activity shows a good tunability and fine control, not only in a wide wavelength range, but also in the relative ratio of the Low-energy and High-energy modes, which has great potential in detailed design for telecommunication and sensor devices.





Technological and biomedical applications of magnetic nanoparticles

Webpage: <http://www.nanociencia.imdea.org/nanomagnetics-for-biomedical-and-tecnological-applications/group-home>

GROUP LEADER

Dr. Francisco J. Terán

Assistant Research Prof.
(tenure track)

PhD: Université Joseph Fourier -
Grenoble 1, France

Previous Position: Fundación
Gaiker, Spain

ORCID:

0000-0002-2466-6208

Researcher ID:

F-1285-2010



PhD STUDENTS

Lucia Cremades

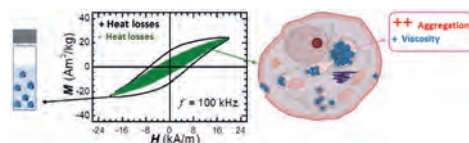
Diego Gómez

RESEARCH ASSISTANT

Claudia Lozano

Research lines

1. The study of the influence of intrinsic (size, chemical composition) and extrinsic (field conditions, aggregation, concentration, viscosity, etc..) parameters on the AC magnetic response (including magnetic heating) of magnetic nanoparticles.
2. The study of the influence of biological matrices and fluids on the AC magnetic response of magnetic nanoparticles. We are highly interested on understanding the effects of cell processing on the intracellular magnetic response of magnetic nanoparticles in order to find solutions for its preservation.
3. The use of magnetic nanoparticles as magnetic transducer for sensing molecular markers in biological fluids. We have developed a novel methodology for detection of biomolecules dispersed in blood based on variation of AC hysteresis loops of magnetic nanoparticles after interacting with the targeted biomolecule.
4. Heating losses of iron oxide nanoparticles activated by optical means. We are interested on probing the parameters that influence the heat losses of magnetic nanoparticles subjected to laser irradiation.
5. The development and validation of instrumentation for advanced magnetic measurements. In the last 5 years, the Advanced Instrumentation Unit has developed high-tech instrumentation for reliable characterization of magnetic nanoparticles in colloidal dispersions or inside biological matrices.



Spinorbitronics

Webpage: <http://nanociencia.imdea.org/spinorbitronics/group-home>

GROUP LEADER

Dr. Paolo Perna

Assistant Research Prof.
(tenure track)

PhD: University of Caen Basse-Normandie, France & University of Cassino, Italy

Previous Position: CNR-SPIN, Italy

Researcher ID:
C-3862-2012



POSTDOCS

Dr. Rubén Guerrero

Institut d'Electronique
Fondamentale (IEF)
Universite Paris- Sud, France
(co-supervised with
Dr. J. Camarero)

Dr. Alberto Anandon

Universidad de Zaragoza, Spain

PhD STUDENTS

Leticia de Melo

Pablo Olleros

TECHNICIAN

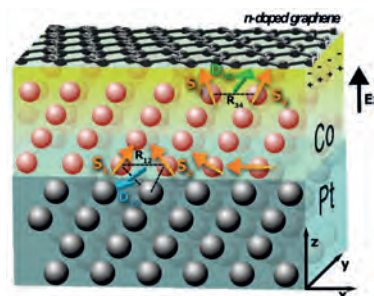
Sergio de las Heras

Research lines

The group focuses the interests on solid-state physics and material science of low dimensional magnetic materials, covering epitaxial growth, surface/interface and magnetotransport characterization, as well as nanofabrication.

The main research lines of the group are:

1. **Spin-Orbitronics functional interfaces:** investigating the growth and the structural, surface and magneto-transport properties of heterostructures in which spin-orbit coupling plays an important role. These include thin films and multilayer stacks, combining ferromagnetic (FM), antiferromagnetic (AFM); perpendicular magnetic anisotropy (PMA) systems with antisymmetric Dzyaloshinskii-Moriya interaction (DMI), as well as molecules and graphene.
2. **Oxide-Spintronics:** engineering artificially the surface/interface of nanostructures based on perovskite oxides (which show a wide variety of properties as half-metallicity, dielectricity, ferroelectricity, multiferroicity), with the aim to tailor their spin-dependent transport characteristics and merge in a single device the functionalities of their individual constituents.





Epitaxial Growth

Webpage: <http://www.imdeananociencia.org/research/research-programs?view=article&id=330:nanomagnetism>

GROUP LEADER

Dr. Miguel Ángel Niño

Assistant Research Prof.
(tenure track)

PhD: Universidad Autónoma de Madrid, Spain

Previous Position: Elettra
Synchrotron Radiation Facility
(Trieste), Italy

Researcher ID:
M-2571-2014



PhD STUDENT

Juan Carlos Martin

Research lines

1. **Surface reactivity:** We investigate the role of different surfaces in the synthesis of organic molecules in prebiotic chemistry, as well as polymerization processes on metallic and oxide surfaces ("Reactivity of a FeS Surface under Room Temperature Exposure to Nitrogen and H₂S"). As well we are interested in catalytic processes, like water splitting and OER reaction at FeNi oxide surfaces.
2. **Chirality:** We study the interplay between the chirality and spin filtering effects of thin molecular films, with the aim to develop new magnetic materials for organic spin valves and sensors ("Enantiosensitive nonbonding of chiral molecules on a magnetic substrate investigated by means of electron spectroscopies").
3. **Magnetism:** As part of the Nanomagnetism programme we are interested in magnetic effects of metallic and organic thin films, in particular studying the influence of the magnetic anisotropy on properties of interest for device applications ("Magnetic ordering in an (Fe_{0.2}Cr_{0.8})_{1.5}[Cr(CN)₆] Prussian blue analogue studied with synchrotron radiation based spectroscopies").
4. **Growth of molecular films:** We study the improvement of surfaces and interfaces of thin films of organic materials for solar cell ("Combinatorial optimization of evaporated bilayer small molecule organic solar cells through orthogonal thickness gradients").

Photo-Magnetothermia

GROUP LEADER

Dr. Ana Espinosa

Assistant Research Prof.
(tenure track)

PhD: Universidad Complutense de Madrid, Spain

Previous Position: Université Paris VII, France (MSCA Fellow) and ICMM-CSIC, Madrid

ORCID:

0000-0002-5626-6129

Researcher ID:

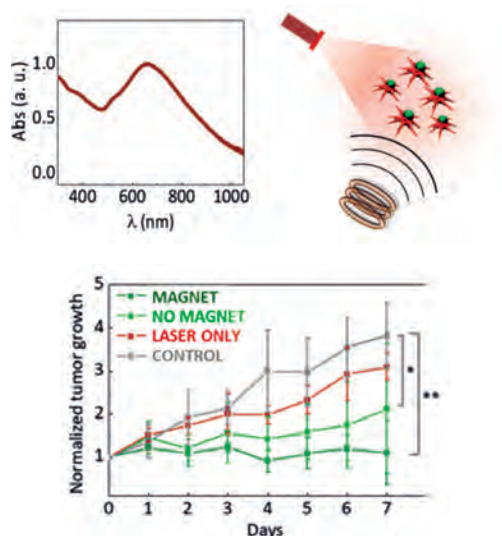
G-9162-2011



Research lines

1. New nanothermal strategies based on multifunctional materials for cancer treatment.
2. Physical biotransformations of therapeutic nanoparticles.
3. Combined synergy of thermal nanotherapies and other nano-based multi-modal associations.

Janus Magnetic-Plasmonic Nanoparticles for Magnetically Targeted and Thermally Activated Cancer Therapy. Espinosa A, Reguera J, Curcio A, Muñoz-Noval A, Liz-Marzán L, Wilhelm C (2020). *Small* 16, 1904960.





Electrodeposited nanowires

Webpage: <http://nanociencia.imdea.org/electrodeposited-nanowires/group-home>

GROUP LEADER

Dr. Lucas Pérez

Associate Researcher

PhD: Universidad Complutense de Madrid

Previous Position: Paul-Drude-Institut für Festkörperelektronik, Berlin

ORCID:

0000-0001-9470-7987

Researcher ID:

C-2362-2011



PhD STUDENTS

Belén Cortes

Beatriz L. Rodilla

Claudia Fernández

Sandra Ruiz

Research lines

We have interests in three main research lines, mainly focused on the study of the fundamental properties and applications of electrodeposited nanowires.

- 1. Domain wall spintronics.** We study the domain wall structure and the magnetization processes of low dimensional systems – mainly cylindrical nanowires. We are interested in stabilizing domain walls in artificially created defects and in controlling the depinning of the different domain walls, induced by magnetic fields and by spin-polarized currents. Understanding the dynamics of the domain walls in individual nanowires as well as the global magnetization dynamics in arrays of nanowires would allow us to incorporate these nanostructures in spintronics devices. Part of this research is carried out in synchrotron radiation facilities.
- 2. Transport properties of Bi-based materials.** Bi-based metallic nanowires provide an attractive scenario for fundamental investigation of finite-size effects due to the unusual electronic structure of Bi and the large spin-orbit coupling of Bi atoms. We have already synthesized single-crystal Bi nanowires and reported weak antilocalization effects in the magnetotransport properties. Now, we focus our interest on the synthesis of Bi-doped metallic nanowires. This system is expected to show large spin mixing conductance, as we have already reported in thin films.
- 3. Nanowires for applications.** We prepare nanowires in solution for different applications, from chemical sensors to biomedical applications. We are also developing arrays of metallic nanowires that can be used as active part of nanostructured electrodes in neural interfaces.

programme

Nanomedicine

Programme Manager: Prof. Rodolfo Miranda

Research lines

Neural Interfaces

Dr. M^a Teresa González

Metallodrugs

Dr. Ana Pizarro

Hyperthermia

Dr. Daniel Ortega

Nucleic Acids and Nanoparticles in Nanomedicine

Prof. Álvaro Somoza

Synthesis of magnetic nanoparticles

Dr. Gorka Salas

Intracellular temperature measurements

Dr. S. Thompson

Engineering Biofunctional Nanostructures

Dr. Aitziber L. Cortajarena

NanoOncology

Dr. Cristóbal Belda M.D.

Dr. Ángel Ayuso

Magnetic Nanoparticles in Biomedicine. Cell-particle Interactions

Prof. Ángeles Villanueva



About the programme

The Nanomedicine Programme is focused on the development of novel nanotechnologies for medical applications that will result in better, more efficient, and cost-effective therapeutic and diagnostic tools. One of the important areas is the preparation and use of magnetic nanoparticles (MNPs) in medicine, in particular for cancer treatment and diagnosis. MNPs selectively target tumours for multimodal treatment as drug nanocarriers and heating inductors. This research is highly interdisciplinary, combining the range of expertise necessary to successfully develop this research from the nanoparticle synthesis to the pre-clinical applications. In search of efficiency in the fight against cancer, another area within Nanomedicine is addressing the need to reduce toxic side effects associated with cancer therapies using different strategies, (i) self-immolative linkers that attach drugs to nanoparticles and release a drug once in target cells and (ii) design of new pH-sensitive chemotherapeutic agents that can be activated by the tumor micro-environment. The development and utilisation of nanotechnology can further the search for new cancer therapies and this knowledge will impact across this multidisciplinary community.

The generation of sensors based on nanoparticles for detection of targets of medical interest is a research area that aims to exploit the higher sensitivity and specificity of nanostructure-based diagnostics platforms. Researchers at IMDEA Nanociencia are developing distinct diagnostic tools able to detect biological targets. One example is the use of nucleic acid conjugated gold nanoparticles to detect different biomarkers involved in diseases such as uveal melanoma, pancreatic cancer and Duchenne muscular dystrophy. Another area of interest is the use of nanotechnology-based solutions to the growing problem of antibiotic-resistant bacteria. Nanostructures and nanoparticles with antibacterial properties that rely on different antibacterial mechanisms are being investigated as promising alternatives to antibiotics. Selective bacterial entrapping nanotextures are also under development as bacteria sensor platforms.

Neural Interfaces

Webpage: <http://nanociencia.imdea.org/molecular-electronics-laboratory/group-home>

GROUP LEADER

Dr. M. Teresa González

Assistant Research Prof.
(tenure track)

PhD: University of Santiago de
Compostela, Spain

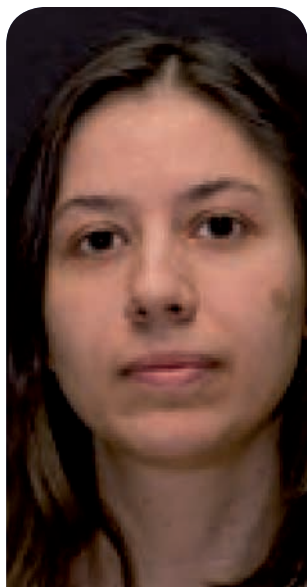
Previous position: Basel
University

ORCID:

0000-0002-7253-797X

Researcher ID:

H-5527-2012



POSTDOC

Dr. Isidoro Martínez

Universidad Autónoma
de Madrid, Spain

PhD STUDENTS

Vicente Muñoz

Lucia Palomino

Ana Arché

Research lines

We fabricate and characterize nanostructured devices to be used as neural interfaces of enhanced performance respect to classic neural electrodes. We follow two parallel lines:

1. Electrical electrodes covered by vertical conducting nanowires for electrical stimulation of the neural activity.
2. Sensors of neural activity base on magnetoresistive materials. We aim to demonstrate that magnetoresistive materials can be used to sense the neural activity without the use of cryogenic liquids (as SQUIDS detectors need).

The magnetoresistance (MR) effect is widely used in technologies that pervade the world, from magnetic reading heads to sensors. Diverse contributions to MR, such as anisotropic, giant, tunnel, colossal, and spin-Hall, are revealed in materials depending on the specific system and measuring configuration. Half-metallic manganites hold promise for spintronic applications but the complexity of competing interactions has not permitted the understanding and control of their magnetotransport properties to enable the realization of their technological potential. This study reports on the ability to induce a dominant switchable magnetoresistance in $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$ epitaxial films at room temperature (RT). By engineering an extrinsic magnetic anisotropy, a large enhancement of anisotropic magnetoresistance (AMR) is achieved which at RT leads to signal changes much larger than the other contributions such as the colossal magnetoresistance. The dominant extrinsic AMR exhibits large variation in the resistance in low field region, showing high sensitivity to applied low magnetic fields. These findings have a strong impact on the real applications of manganitebased devices for the high-resolution low field magnetic sensors or spintronics. See: *Adv. Funct. Mater.* **2017**, 1700664



Metallodrugs

Webpage: <http://nanociencia.imdea.org/metallodrugs-to-modulate-cancer-cell-machinery/group-home>

GROUP LEADER

Dr. Ana M. Pizarro

Assistant Research Prof.

PhD: Universidad Autónoma de Madrid, Spain

Previous Position: University of Warwick, UK

ORCID:

0000-0003-3037-9835

Researcher ID:

L-8348-2014



POSTDOC

Dr. Federica Battistin

University of Trieste, Italy

PhD STUDENTS

Ana Cristina Carrasco

Sonia Infante

Adrian Lugera

Arturo Villechenous

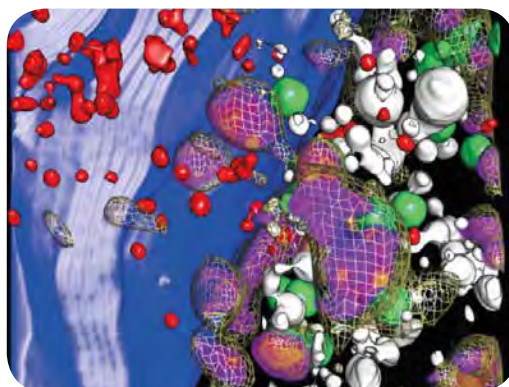
TECHNICIAN

Rosa María Martínez

Research lines

1. Exploit metal coordination and organometallic chemistry principles to design novel potent metallodrugs.
2. Development of new methods to describe the chemical interactions of our systems with the intracellular components at the nanoscale.
3. Use of recent developments in nanomedicine to load our metallodrugs to a variety of nano-systems to provide, for example, heat-mediated amplified artificial catalysis.

A new family of iridium half-sandwich drug candidates has been designed that are exceptionally potent in a number of cancer cell lines. By using 3D cryo soft X-ray and fluorescence tomographies, correlatively on the same cryopreserved cell, we have localized and quantified our new iridium anticancer agent exclusively in the cell mitochondria. See: **Unambiguous Intracellular Localization and Quantification of a Potent Iridium Anticancer Compound by Correlative 3D Cryo X-Ray Imaging.** 2020, *Angew. Chem. Int. Ed.*, 59, 1270-1278.



3D section of a breast cancer cryopreserved cell showing iridium density (colour palette) inside the mitochondria (yellow mesh).

Hyperthermia

Webpage: <http://nanociencia.imdea.org/applied-nanomagnetics-group/group-home>

GROUP LEADER

Dr. Daniel Ortega

Assistant Research Prof.
(tenure track)

PhD: University of Cadiz, Spain

Previous Position: University
College London. United Kingdom

ORCID:

0000-0002-7441-8640

Researcher ID:

D-7940-2012



PhD STUDENT

Irene Rubia

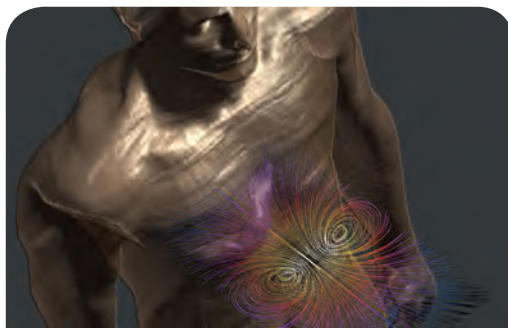
RESEACH ASSISTANTS

Antonia Santana

Javier Ortega

Research lines

1. Computational electromagnetism for *in silico* testing. Starting from animal and human computable phantoms, we perform computer simulations of therapies and diagnostic techniques based on the interaction of electromagnetic fields and magnetic and optical nanomaterials in the frequency range of kHz. Our mission is to provide clinicians with powerful tools to choose the best therapeutical conditions by predicting body response. The group collaborates closely with hospitals and medical devices manufacturers within the remit of the European project *NoCan-Ther* focused on treating pancreatic cancer through magnetic hyperthermia, and is involved in the preparation of the clinical studies. We also aim to a wider validation of *in silico* temperature predictions with dedicated experimental measurements at the nanoscale in the NANOLICO project.
2. Design of multifunctional magnetic nanomaterials. We design and synthesise a wide range of magnetic nanomaterials applied to biomedicine; for example, magnetic hyperthermia (MH), brain imaging contrasts, and magnetic particle imaging (MPI) tracers. Within this research line, the combination of magnetic hyperthermia and MPI is our current priority. These lines are embodied in the international collaborative networks we participate/coordinate: *MyWAVE*, *RADIOMAG*, *NanoBioAp*, *NANO*.





Nucleic Acids and Nanoparticles in Nanomedicine

Webpage: www.nanobioimdea.com

GROUP LEADER

Prof. Álvaro Somoza

Senior Research Prof.

PhD: Universidad Autónoma de Madrid, Spain

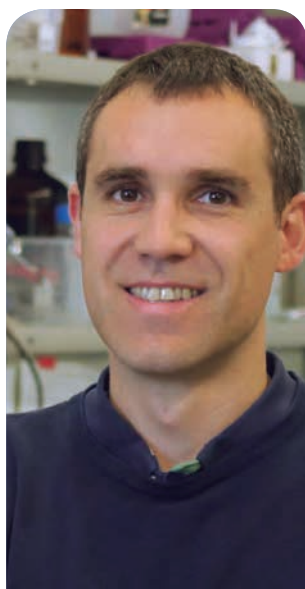
Previous Position: Instituto de Investigación Biomédica Barcelona (IRB Barcelona), Barcelona. Spain

Orcid

0000-0001-9873-435X

Research ID

F-8781-2010



POSTDOC

Dr. Milagros Castellanos

IMDEA Nanociencia, Spain

PhD STUDENTS

Ana Belén Latorre

Paula Milán

Eduardo García

Ciro Rodríguez Díaz

Demian Pardo

Nuria Lafuente Gómez

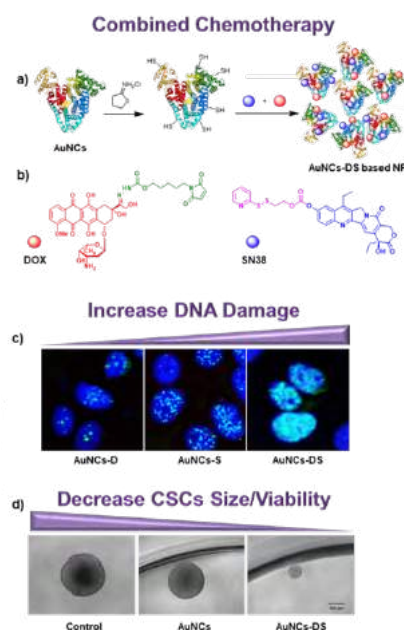
Catarina Castanheira

Rama Prajapati

Research lines

1. Nanocarriers of bioactive molecules.
2. Sensors of nucleic acids based on nanomaterials.
3. CRISPR-based gene editing systems.
4. Diseases addressed: Uveal Melanoma, Pancreatic Cancer, Breast Cancer, Duchenne Muscular Dystrophy.

Multifunctional Albumin-Stabilized Gold Nanoclusters for the Reduction of Cancer Stem Cells. *Cancers (Basel)*. 2019, 11 (7), 969. <https://doi.org/10.3390/cancers11070969>. Open Access



Synthesis of Magnetic Nanoparticles

Webpage: <http://www.imdeananciencia.org/magnetic-nanoparticles/group-home>

GROUP LEADER

Dr. Gorka Salas

Assistant Research Prof.
(tenure track)

PhD: Universidad de Valladolid,
Spain

Previous Position: CNRS, France

ORCID:

0000-0002-1196-8813

Researcher ID:

F-6503-2011



POSTDOC

Dr. Yurena Luengo

ICMM-CSIC, Spain

PhD STUDENTS

David García

Laura González

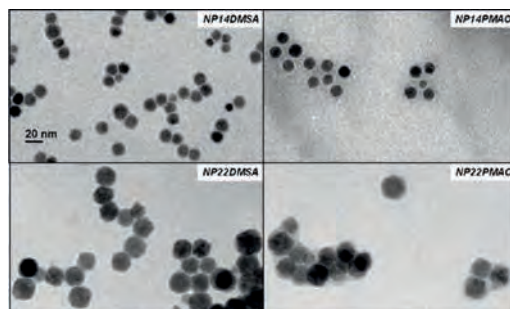
RESEARCH ASSISTANT

Monica Dhanjani

Victoria López

Research lines

1. Our research is mainly focused in the preparation of magnetic hybrid nanostructures that could be used for medical imaging and treatment of tumors. That includes understanding the procedures that lead to well controlled inorganic hybrids that can respond different stimuli and developing general synthetic routes for different magnetic materials. Magnetic nanoparticles are being extensively studied worldwide as contrast agents for medical imaging and as nanoheaters under alternating magnetic fields. Many intrinsic and extrinsic factors (e. g. size, crystallinity, magnetism, aggregation, colloidal stability, dispersion medium, applied field, interactions with biological media) can influence the efficiency of nanoparticles in biomedicine. Another topic of interest, also for biomedical applications, is the use of hybrid magnetic nanocomposites as antibacterial agents, given the growing concerns about bacterial resistance and the lack of alternatives to antibiotics.
2. We are also exploring the use of magnetically recoverable nanocatalysts for environmental applications. Magnetic nanostructures offer the possibility of acting as catalysts or as platforms that allow the recovery of a bound catalyst.





Intracellular temperature measurements

GROUP LEADER

Dr. Sebastian A. Thompson

Assistant Research Prof.
(tenure track)

PhD: City University of New York, USA

Previous Position: Marie Curie
Fellow, CNC, Coimbra, Portugal

ORCID:

0000-0002-0196-1124

Scopus Author ID:

55937663100

Researcher ID:

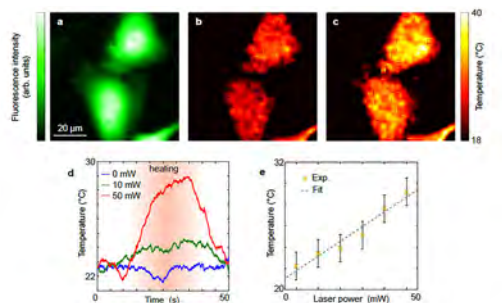
P-4606-2017



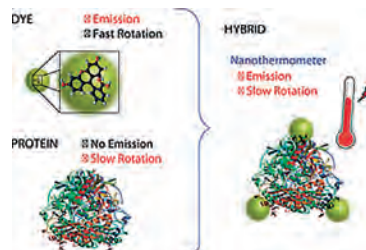
Research lines

1. Intracellular temperature measurements for cancer theranostics.
2. Next-generation of nanothermometers.
3. Photothermal & Photodynamic therapies.

Mapping Intracellular Temperature Using Green Fluorescent Protein
Nano Letters. American Chemical Society, 2012, 12, pp.2107 - 2111.



Plug and play anisotropy-based nanothermometers. *ACS Photonics* 2018, 5, 7, 2676–2681.



Engineering Biofunctional Nanostructures

Webpage: <http://www.nanociencia.imdea.org/research/research-programs/nanomedicine/engineering-biofunctional-nanostructures>

GROUP LEADER

Prof. Aitziber L. Cortajarena

Associate Research Professor

PhD: Universidad del Pais Vasco, Spain

Previous Position: Yale University, USA

ORCID:

0000-0002-5331-114X

Researcher ID:

J-6202-2012



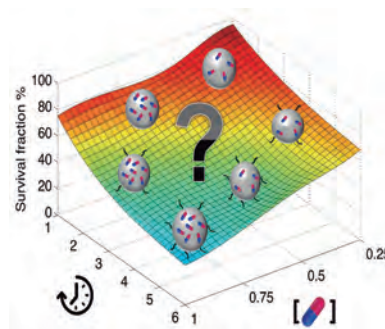
RESEARCH ASSISTANT

Elena Sanz de Diego

Research lines

The group has varied interests at the interface of biochemistry, bioconjugation, functional materials and nanomedicine. The two main research lines of the group are:

1. Bio-functionalization of nanoparticles for biomedical applications The objective of this research line is the generation of versatile functional nanoparticles with a selection of biomolecules and optimized properties for targeting and diagnosis of several diseases. In this context, multifunctional nanoparticles are utilized as drug carries and as sensors for in vivo and ex-vivo applications (*Sci Reports* **2016** doi: 10.1038/srep35786; *Chem-NanoMat* **2017** doi: 10.1002/cnma.201600333; *Nanoscale* **2017** doi: 10.1039/c7nr04475e).
2. Biomolecular design for functional nanostructures and biomaterials In this research line we use mainly proteins as platforms for the fabrication of multiple protein-based hybrid functional nanostructures and biomaterials for their use in different technological and biomedical applications. (*Nanoscale* **2014** doi: 10.1039/c4nr01210k, *Biomacromolecules* **2015** doi: 10.1021/acs.biomac.5b01147; *ACS Applied Mat Interfaces* **2017**).





NanoOncology

Webpage: <http://www.imdeananociencia.org/home-en/people/item/angel-ayuso-sacido>

GROUP LEADER

Dr. Ángel Ayuso-Sacido

Associate Researcher

PhD: Merck Sharp and Dhome

Double Affiliation: Fundacion
Hospitales de Madrid, Madrid,
Spain

Spain Double Affiliation: Hospital
de Madrid Foundation, Spain



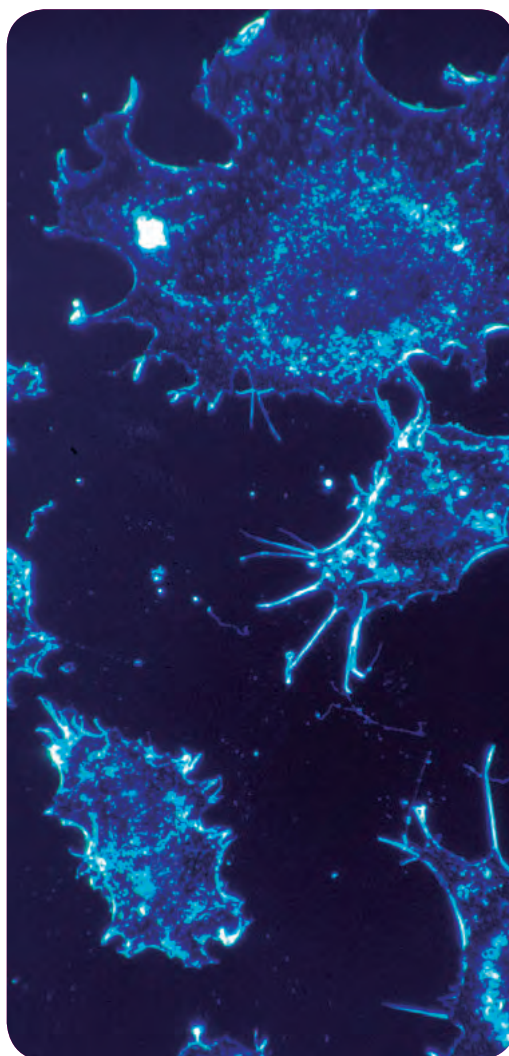
POSTDOCS

Dr. Gorjana Rackov

CNB-CSIC, Madrid, Spain

Dr. Rodrigo Madurga

Universidad Politécnica
de Madrid, Spain



Magnetic Nanoparticles In Biomedicine. Cell-Particle Interactions

Webpage: <http://www.imdeananociencia.org/home-en/people/item/angeles-villanueva>

GROUP LEADER

Prof. Ángeles Villanueva

Associate Research Professor

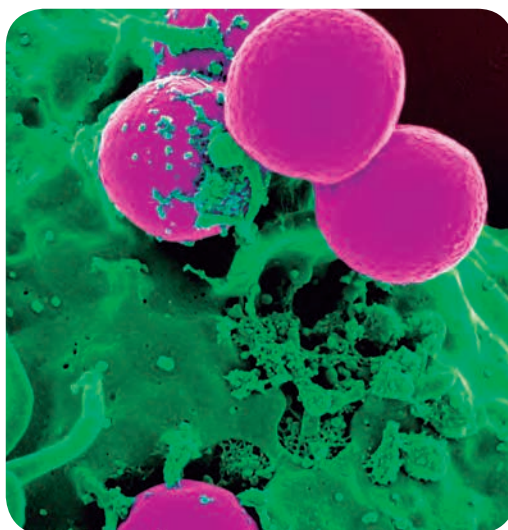
PhD: Universidad Autónoma de Madrid, Spain

Double Affiliation: Universidad Autónoma de Madrid, Spain



Research lines

1. Medical applications of nanoparticles. Cell cultures.
2. Biocompatibility of magnetic nanoparticles.
3. Mechanisms of cell death.
4. Alterations in adhesion and cytoskeletal proteins.
5. Liposomal drug delivery.
6. Evaluation in cell cultures and in vivo experimental models of new antitumor agents.
7. Signaling pathways involved in cell death.





programme

Nanobiosystems

Programme Manager: Prof. J.L. Carrascosa

Research lines

Nanobiosystems
Prof. J.L. Carrascosa

Protein Engineering
Dr. Begoña Sot

**Mechanical properties
of Biostructures**
Dr. Johann Mertens

**Photosensitizing
fluorescent proteins
for advanced
microscopy**
Dr. Cristina Flors

**Molecular Motors
Manipulation Lab**
Dr. Borja Ibarra



About the programme

This programme aims at studying biological nanomachines, their assembly, structure and functional properties, as well as their interaction with defined substrates to build synthetic tools. In the area of single molecule analysis of macromolecular aggregates, there are groups working on protein engineering, computational chemistry, AFM analysis of macromolecular complexes, force spectroscopy analysis and manipulation of macromolecules and their aggregates, the study of nanomechanical properties of biological complexes of different complexities and optical trapping-based approaches to study the behaviour of single biological nanomotors. Other systems under study are tailor-made polypeptides of increasing complexity designed to dissect relationships between molecular structure and functional properties. A second area of interest in this Programme is the organization of macromolecular complexes on well-defined substrates. Biological membranes, the protein folding and viral assembly pathways, the bacterial cytoskeleton and the DNA structure are examples of self-organizing systems under study with highly specialized functions and properties.



Nanobiosystems

Webpage: <http://macromolassembles.wixsite.com/carrascosalab>

GROUP LEADER

Prof. José L. Carrascosa

Associate Research Professor

PhD: Universidad Complutense de Madrid, Spain

Double Affiliation: Unidad de Nanobiotecnología. Joint Unit IMDEA Nanociencia-CNB-CSIC

Researcher ID:

35481302900



Research lines

Our group studies viral macromolecular complexes combining genetic, biochemical and structural approaches. Viruses are classical experimental systems to study basic biological principles and mechanisms. We use cryoelectron microscopy and computer three-dimensional image processing to obtain structures, at near atomic resolution, involved in bacteriophage T7 assembly and infection. With this technique, in combination with X-ray crystallography, we solved the structure of the portal protein that serves as a channel for DNA entry in the capsid in two different conformations allowing to decipher the mechanism of DNA retention during packaging. We studied also the tail machinery and other protein ejection complexes involved in different steps of the DNA delivery into the bacterial host. The study of bacteriophages has increased in the present days due to the bacterial antibiotic resistance. The understanding of the mechanism of infection of bacterial viruses could be essential to take advantage of their bacterial weapon efficacy for the implementation of new methods to fight against bacteria.





Photosensitizing fluorescent proteins for advanced microscopy

Webpage: <http://imdeananotools.wix.com/flors>

GROUP LEADER

Prof. Cristina Flors

Senior Research Prof.

PhD: Institut Químic de Sarrià, Spain

Previous Position: University of Edinburgh, Edinburgh, UK

ORCID:

0000-0001-5688-9150

Researcher ID:

C-2123-2017



POSTDOCS

Dr. Caterina Tone

University of Calabria, Italy

Dr. Joaquim Torra

Institut Químic de Sarrià, Barcelona, Spain

PhD STUDENTS

Patricia Bondia

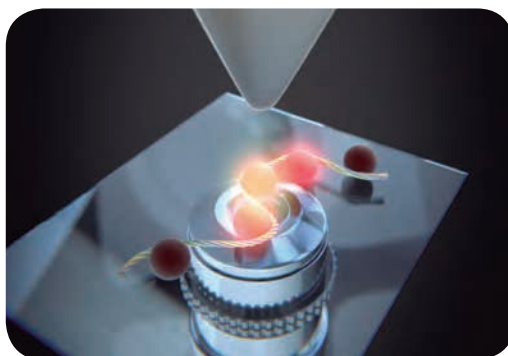
Adrián del Valle

Ingrid Ortega

Research lines

1. Novel methods for super-resolution fluorescence imaging.
2. Advanced correlative fluorescence and atomic force microscopy.
3. Photosensitizing fluorescent proteins for advanced microscopy.

The combination of complementary techniques to characterize materials at the nanoscale is crucial to gain a more complete picture of their structure, a key step to design and fabricate new materials with improved properties and diverse functions. Correlative atomic force microscopy and localization-based super-resolution microscopy is a useful tool that provides insight into the structure and emissive properties of fluorescent β -lactoglobulin (β LG) amyloid-like fibrils. These hybrid materials were made by functionalization of β LG with organic fluorophores and quantum dots. Simultaneous labelling of β LG fibers by QD655 and QD525 allowed us to achieve correlative AFM and two-color super-resolution fluorescence imaging of these hybrid materials. These experiments allow combining information about the topography and number of filaments that compose a fibril, as well as the emissive properties and nanoscale spatial distribution of the attached fluorophores. This study represents an important step forward in the characterization of multi-functionalized hybrid materials, a key challenge in nanoscience. *Small* **2017**, 13, 1603784.



Protein Engineering

Webpage: www.nanociencia.imdea.org/protein-engineering-and-nanobiotechnology/group-home

GROUP LEADER

Dr. Begoña Sot

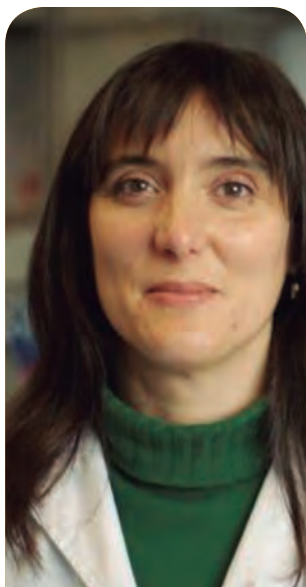
Assistant Research Prof.
(tenure track)

PhD: Universidad del País Vasco,
Spain.

Previous position: CNB, Spain

Researcher ID:

H-2882-2015



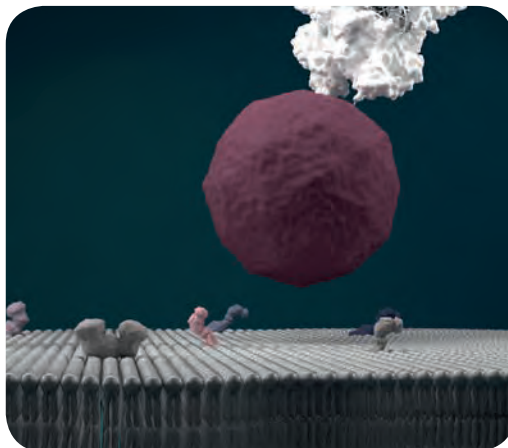
PhD STUDENT

Carmen Escalona

María López Valls

Research lines

1. The design of new strategies for an efficient delivery of CRISPR proteins. CRISPR/Cas system is a promising therapeutic tool. But its efficient delivery is a bottle neck of this strategy. We combine protein engineering and nanotechnology to deliver CRISPR proteins (Cpf1, Cas9 or Cas13) to specific tissues.
2. Antibacterial activity of Ag-Fe inorganic nanoparticles. The bacterial antibiotic resistance makes essential the design of new bactericides.
3. Characterization of α -synuclein amyloid assembly, responsible of Parkinson's Disease.





Molecular Motors Nanomanipulation Lab

Webpage: www.borjaibarralab.com

GROUP LEADER

Dr. Borja Ibarra

Assistant Research Prof.
(tenure track)

PhD: Universidad Autónoma Madrid

Previous Position: UC Berkeley,
USA

ORCID:

0000-0001-6597-797X

Researcher ID:

H-5840-2015



ASSOCIATE RESEARCHER

Dr. Francisco Javier Cao García

PhD: Universidad
Complutense de Madrid

Double Affiliation:
Universidad Complutense
de Madrid

Dr. Rocío Coloma
CNB-CSIC, Spain

PhD STUDENTS

Fernando Cerrón

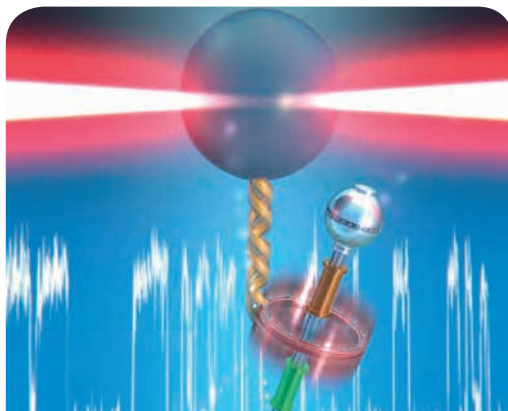
Katerina M. Lemishko

Carlos Rodríguez

Ismael Plaza

Research lines

1. Biological machinery involved in nucleic acids metabolism. We are measuring the operational dynamics of the biological machinery involved in: i) mitochondrial DNA replication (*NAR* 2020; *NAR* 2019; *NAR* 2017) and ii) transcription of Influenza A viral genome.
2. Cell membrane nanomechanics. We have developed a single-molecule method to measure the dynamics of motor proteins involved in remodeling of cell membranes (*Nature Comms* 2019).
3. Synthetic molecular motors: We have developed new methods to measure the mechanical strength of non-covalent interactions (*Chem. Science* 2017) and the dynamics and mechanistic principles of operation of individual synthetic molecular switches (*Nature Comms* 2018).
4. Technology development. We are working to combine optical manipulation with temperature control systems. This exciting marriage of techniques will open up a wealth of new promising applications.



Mechanical properties of Biostructures

Webpage: <http://www.imdeananociencia.org/home-en/people/item/johann-mertens>

GROUP LEADER

Dr. Johann Mertens

Assistant Research Prof.
(tenure track)

PhD: University of Burgundy,
France

Previous Position: Madrid
Microelectronics Institute, Spain

ORCID:
0000-0002-1312-8914

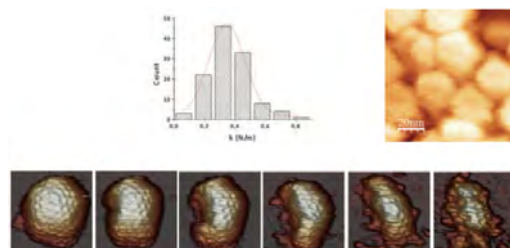
Researcher ID:
I-4208-2015



Research lines

The group has varied interests in the mechanical properties of macromolecular assembly of proteins.

1. We have implemented Atomic Force Microscopy (AFM) measurements in physiological conditions to study both structural and mechanical properties of individual viral particles. We have recently showed that ribonucleoprotein complexes establish strong interactions with the inner surface of the viral shell in IBDV mature virions (Scientific Reports 2015). We are also developing news tools for the combined study of the nano-mechanical properties of biomolecules using atomic force microscopy and spectroscopy.
2. We use microcantilevers as tools in biomedical applications of biosensor technology or molecular biophysics. In relation with our previous work in the field, we are developing a line related to protein and DNA biosensors as well as the study of mechanical properties 2D-systems (Nature Nanotechnology 2008, Nanotechnology 2012).





programme

Nanofabrication

Research lines

Functional Surfaces
Prof. Isabel Rodríguez

Transport in 2D Systems
Prof. José Luis Vicent

**Quantum Devices
and Photonics**
Dr. Daniel Granados

2D Materials
Dr. David Pérez de Lara

Applied Nanoelectronics
Dr. Ramón Bernardo



Functional Surfaces

Webpage: <http://nanociencia.imdea.org/nanostructured-functional-surfaces-program/group-home>

GROUP LEADER

Prof. Isabel Rodríguez
Senior Research Prof.

PhD: National University of
Singapore

Previous Position: Institute
of Materials Research and
Engineering (IMRE), Singapore

ORCID:
0000-0002-7178-8275

Researcher ID:
G-3178-2016



POSTDOCS

Dr. Jaime J. Hernández
Materials Science Institute of
Mulhouse, France

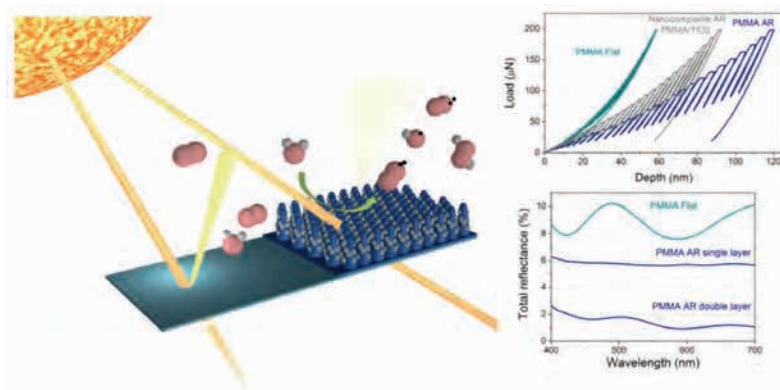
Dr. Jean Philippe Cacheux
Université de Toulouse,
CNRS, Toulouse, France

PhD STUDENTS

María Teresa Alameda
Alejandra Jacobo
Sergio Dávila
Miguel Esteban

Research lines

1. Nano-engineered functional surfaces for medical applications, particularly the development of biomimetic bactericidal functionalities and cell culture platforms for cell biomechanical assays.
2. Multifunctional surfaces. The programme is developing the methodology to impart onto polymer nanocomposites additional surface properties, particularly those of super-hydrophobicity and self-cleaning based on bio-inspired surface nanotexturing. The programme is also focused on up-scaling the methodology using Roll to roll nanoimprint technology.
3. Polymer nanoimprinting for optical applications such as polymer lasers and waveguides, antireflective surfaces and optical sensors in collaboration with the Organic Photophysics and Photonics group.





Quantum Devices and Photonics

Webpage: <http://www.nanoscience.imdea.org/quantum-nanodevices/group-home>

GROUP LEADER

Prof. Daniel Granados

Senior Research Prof.

PhD: Universidad Autónoma de Madrid. Spain and IMM-CNM-CSIC

Previous Position: Toshiba Research Europe Ltd. (TREL), Cambridge, UK

ORCID:

0000-0001-7708-9080

Researcher ID:

A-4090-2011

Scopus Author ID:

55911667100



POSTDOCS

Dr. Jorge Trasobares

National University of Singapore

Dr. Fernando Jiménez

IMDEA Nanociencia, Spain

PhD STUDENTS

Victor Marzoa

Marina Calero

(co-supervised with Prof. Vicent)

Cristina García

RESEARCH ASSISTANT

María Teresa Magaz

Research lines

The information society is experiencing a global challenge, with the amount of information to be stored, transmitted or processed growing continuously every year. Quantum technologies are expected to become crucial to address this challenge, with the second quantum revolution blasting off. The Quantum nano-Devices Group (QnDG) was created in 2015 with the purpose of contributing to this revolution. It focuses on micro and nanofabrication of electronic and photonic hybrid devices for quantum information technologies. A solid-state approach is fostered towards the realization of single photon emitters (SPEs), cavity quantum electrodynamics (CQED), single photon detectors (SPDs), random number generators (RNDs) and physically unclonable functions (PUFs). The Quantum Nano Devices Group also collaborates tightly with the Centre of Astrobiology (CAB-INTA-CSIC) in the development of Kinetic Inductance Superconducting Detectors (KIDs) for space exploration. KIDs are expected to become the next generation technologies for the forthcoming missions in the GHz to THz bands. Recently (2018) we have also started working together on the development of hybrid superconducting devices for quantum technologies mixing traditional superconductors with low dimensional quantum confined materials. The group has a long tradition on the development of novel micro and nanofabrication techniques, with emphasis on the tailoring and engineering of low dimensional material via direct nano-patterning methods.

Applied Nanoelectronics

GROUP LEADER

Prof. Ramón Bernardo

Assistant Research Prof.
(tenure track)

PhD: Universidad Autónoma
de Madrid, Spain

Previous Position: Lancaster
University, UK

ORCID:

0000-0001-6881-2599

Researcher ID:

N-3945-2019

Scopus Author ID:

55922273000



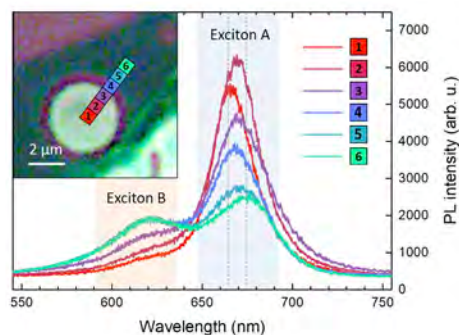
PhD STUDENTS

Víctor Marzoa Camarero

Cristina García Pérez

Research lines

1. We are focused on the development of practical electronic and optical devices by exploring new routes to exploit physical phenomena traditionally difficult to harness.
2. Physical cryptoprimitives from non-linear electronic devices. Information security is crucial in an interconnected society. We are developing cryptographic primitives based on the atomic imperfections in the interfaces of semiconductor devices for unique identification in local and network authentication schemes.
3. Lateral two-dimensional and hybrid devices. We are working on band-gap engineering via high-vacuum chemical etching of two dimensional materials to fabricate in-plane junction field effect transistors and designing hybrid tunneling devices combining 2D semiconductors with the quantum confined electronic structures of colloidal nanocrystals.
4. Two-dimensional optomechanical resonators. We are fabricating single- and few-layer electro-mechanical resonators from two-dimensional semiconductors to obtain tunable and spatially modulated light emitters.





Transport in 2D Systems

Webpage: <http://www.imdeananociencia.org/home-en/people/item/jose-luis-vicent-lopez>

GROUP LEADER

Prof. José Luis Vicent

Associate Research Professor

Double Affiliation: Universidad Complutense de Madrid

ORCID:

0000-0001-9343-7671

Researcher ID:

7006735519



Dr. Mariela Menghini

Researcher

PhD: Insituto Balseiro, Universidad Nacional de Cuyo, Argentina

Previous position:

Department of Physics and Astronomy, KU Leuven, Leuven, Belgium

POSTDOC

Dr. Victor Rollano

IMDEA Nanociencia, Spain

ASSOCIATE RESEARCHERS

Prof. Elvira M. González

PhD: Universidad Complutense de Madrid

Double Affiliation:

Universidad Complutense de Madrid

ORCID: 0000-0001-9360-3596

Dr. Alicia Gómez

PhD: Universidad Complutense de Madrid

Double Affiliation: CSIC-INTA, Torrejón de Ardoz

PhD STUDENTS

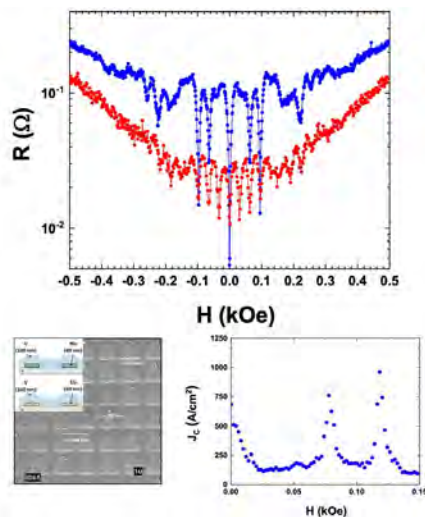
Marina Calero

(co-supervised with Dr. Granados)

Research lines

1. Nanostructured superconductors.
2. Magnetic nanostructures.
3. Vortex dynamics in superconductors.

Vortex dynamics controlled by local superconducting enhancement; *New J. Phys.* 21, 113059 (2019); <https://doi.org/10.1088/1367-2630/ab5994>; Open Access



2D Materials

Webpage: <http://www.imdeananociencia.org/2d-materials-devices/group-home>

Dr. David Pérez de Lara

Assistant Research Prof.
(tenure track)

PhD: Istituto di Cibernetica
del CNR, Italy / Universidad
Autónoma de Madrid

Previous Positions: Universidad
Complutense de Madrid, Spain.
Istituto di Cibernetica del CNR,
Italy. ESTEC, European Space
Agency, The Netherlands

ORCID:
0000-0002-9839-3409



Research lines

1. Isolation and characterization of novel and unexplored 2D materials. We mechanically exfoliate and investigate 2D materials (see (*Nanotechnology* 28 455703 (2017))) and novel layered materials as naturally occurring van de Waals heterostructures like francite (see *Beilstein Journal of Nanotechnology* (2017), 8, 2357-2362, doi:10.3762/bjnano.8.235). We developed a differential reflectance and transmittance spectroscopy setup with a lateral resolution of $\sim 1 \mu\text{m}$ in the visible and near-infrared part of the spectrum to determine the number of layers of 2D materials and characterize the fundamental optical properties, such as excitonic resonances (see *Journal of Physics D: Applied Physics* 50(7) 074002 (2017)).
2. Optoelectronic devices based on 2Ds: we study the physical properties of photodetectors, photodiodes and solar cells based on atomically thin materials. We have fabricated and characterized 2D materials based devices like hybrid stacks between 2D materials and other functional materials with different dimensionality (see *2D Materials* 4, (2017) 034002, (DOI:10.1088/2053-1583/aa797b) or purely 2D devices like vertical homojunctions made by stacking few-layer flakes of MoS₂ (*Journal of Materials Chemistry C* 5(4) 854-861 (2017))).
3. Strain engineering: we are very interested in tailoring the optical and electronic properties of 2D materials by means of mechanical deformations. Strain engineering provides a powerful route to modify the electrical and optical properties in 2D materials and thus it is an excellent candidate to be used as an external tuning knob. (see *NPJ 2D Materials and Applications* 1, 10 (2017) DOI:10.1038/s41699-017-0013-7).



Services

RMN and Mass Spec.Services



Dr. Zulay Pardo
PhD: Universidad Complutense de Madrid, Spain

Optical Tweezers



Dr. Rebeca Bocanegra
PhD: Universidad Autónoma de Madrid, Spain

AFM Service



Dr. Patricia Pedraz
PhD: Universidad Autónoma de Madrid, Spain

Cell Cultures



Dr. Adriana Arnaiz
PhD: Cambridge University, UK



Dr. Vanessa Rodríguez
PhD: Universidad Autónoma de Madrid, Spain

Workshop



Mr. Warren Smith
Technician



Ms. Fabiola Mogollón
Assistant

Nanofabrication Services



Dr. Manuel Rodríguez
PhD: Universidad de Santiago de Compostela, Spain



Dr. Maria Acebrón
PhD: Universidad Autónoma de Madrid, Spain



Mr. Andrés Valera
Technician



Ms. Andrea Martín
Assistant



Ivan Redondo
Technician



Management



Mr. Bonifacio Vega
General Manager



Ms. Isabel Rodríguez
Administration
and Finance Manager



Dr. María Jesús Villa
Projects, Institutional Relations
and HR Manager



Dr. José Luis Casillas
Facilities & Infrastructure
Manager



Dr. Mark William Davies
Industrial Liaison Manager



Dr. Héctor Guerrero
Strategic Industrial
Partnerships



Dr. Elena Alonso
CDO, Project Manager



Mr. Ignacio Torres
Projects Manager



Ms. Mireia Gracia
Projects Manager



Ms. Patricia López
RSO Project Manager



Ms. Laura Lorente
Project Assistant



Ms. Paloma Macua
Administrative Assistant



Ms. Elena Pérez
Administrative Assistant



Ms. Juana Hemoso
Administrative Project
Assistant



Ms. Margarita Gil
A3/ER System Technician



Ms. Paloma Castillo
Director's Assistant



Mr. Gonzalo Hidalgo
Network and Systems Manager

3

scientific report

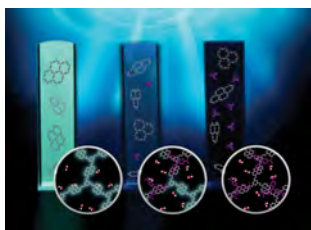
1. **Publications** [91]
2. **Patents** [106]
3. **Congresses** [108]
4. **Funding** [110]
5. **Training** [122]
6. **Internationalization** [132]
7. **High-quality research infrastructure** [134]
8. **Awards and honours** [138]
9. **Communication and Outreach** [139]



1. Publications (as of 15-6-2020)

1. **A near infrared light emitting electrochemical cell with a 2.3 V turn-on voltage**; Nemati Bideh, B., Shahroosvand, H., Sousaraei, A., Cabanillas-Gonzalez, J.; *Sci Rep* 9, 228 (2019); [10.1038/s41598-018-36420-1](https://doi.org/10.1038/s41598-018-36420-1); Open Access
2. **Geometrically designed domain wall trap in tri-segmented nickel magnetic nanowires for spintronics devices**; Nasirpour, F., Peighambari-Sattari, S.-M., Bran, C., Palmero, E.M., Berganza Eguarte, E., Vazquez, M., Patsopoulos, A., Kechrakos, D.; *Sci Rep* 9, 9010 (2019); [10.1038/s41598-019-45553-w](https://doi.org/10.1038/s41598-019-45553-w); Open Access
3. **Time-resolved molecular dynamics of single and double hydrogen migration in ethanol**; Kling, N.G., Díaz-Tendero, S., Obaid, R., Disla, M.R., Xiong, H., Sundberg, M., Khosravi, S.D., Davino, M., Drach, P., Carroll, A.M., Osipov, T., Martín, F., Berrah, N.; *Nat Commun* 10, 2813 (2019); [10.1038/s41467-019-10571-9](https://doi.org/10.1038/s41467-019-10571-9); Open Access
4. **A Complex Interplay of Anionic Phospholipid Binding Regulates 3'-Phosphoinositide-Dependent-Kinase-1 Homodimer Activation**; Heras-Martínez, G., Calleja, V., Bailly, R., Dessolin, J., Larijani, B., Requejo-Isidro, J.; *Sci Rep* 9, 14527 (2019); [10.1038/s41598-019-50742-8](https://doi.org/10.1038/s41598-019-50742-8); Open Access
5. **Membrane curvature induces cardiolipin sorting**; Beltrán-Heredia, E., Tsai, F.-C., Salinas-Almaguer, S., Cao, F.J., Bassereau, P., Monroy, F.; *Commun Biol* 2, 225 (2019); [10.1038/s42003-019-0471-x](https://doi.org/10.1038/s42003-019-0471-x); Open Access
6. **A semiconducting layered metal-organic framework magnet**; Yang, C., Dong, R., Wang, M., Petkov, P.S., Zhang, Z., Wang, M., Han, P., Ballabio, M., Bräuninger, S.A., Liao, Z., Zhang, J., Schwotzer, F., Zschech, E., Klaus, H.-H., Cánovas, E., Kaskel, S., Bonn, M., Zhou, S., Heine, T., Feng, X.; *Nat Commun* 10, 3260 (2019); [10.1038/s41467-019-11267-w](https://doi.org/10.1038/s41467-019-11267-w); Open Access
7. **Tailing miniSOG: structural bases of the complex photophysics of a flavin-binding singlet oxygen photosensitizing protein**; Torra, J., Lafaye, C., Signor, L., Aumonier, S., Flors, C., Shu, X., Nonell, S., Gotthard, G., Royant, A.; *Sci Rep* 9, 2428 (2019); [10.1038/s41598-019-38955-3](https://doi.org/10.1038/s41598-019-38955-3); Open Access
8. **Tetracyano-substituted spiro[fluorene-9,9'-xanthene] as electron acceptor for exciplex thermally activated delayed fluorescence**; Cao, H.-T., Hong, C.-S., Ye, D.-Q., Liu, L.-H., Xie, L.-H., Chen, S.-F., Sun, C., Wang, S.-S., Zhang, H.-M., Huang, W.; *Journal of Molecular Structure* 1196 (2019) 132e138; [10.1016/j.molstruc.2019.06.003](https://doi.org/10.1016/j.molstruc.2019.06.003);
9. **Synthesis and crystal structures of ion-pairs based on anionic iron-dithiolenes and alkylammonium as counteranion**; Castillo, O., Delgado, E., Hernández, D., Hernández, E., Martín, A., Pérez, M., Zamora, F.; *Journal of Molecular Structure* 1196 (2019); [10.1016/j.molstruc.2019.06.051](https://doi.org/10.1016/j.molstruc.2019.06.051);
10. **Evidence of anomalous switching of the in-plane magnetic easy axis with temperature in Fe_3O_4 film on SrTiO_3/Nb by v-MOKE and ferromagnetic resonance**; Cunãdo, J.L.F., Camarero, J., Pedrosa, F.J., Nemes, N.M., Sanz, M., Oujja, M., Rebollar, E., Marco, J.F., De La Figuera, J., Monti, M., Castillejo, M., Feher, T., Nafradi, B., Forró, L., Bollero, A.; *Nanoscale*, 2019, 11, 19870; [10.1039/c9nr04198b](https://doi.org/10.1039/c9nr04198b);
11. **Combining Zinc Phthalocyanines, Oligo(p-Phenylenevinyls), and Fullerenes to Impact Reorganization Energies and Attenuation Factors**; Krug, M., Stangel, C., Zieleniewska, A., Clark, T., Torres, T., Coutsolelos, A.G., Guldí, D.M.; *ChemPhysChem* 2019, 20, 2806–2815; [10.1002/cphc.201900780](https://doi.org/10.1002/cphc.201900780);

12. **Anion- π Catalysis on Carbon Nanotubes**; Bornhof, A.-B., Vázquez-Nakagawa, M., Rodríguez-Pérez, L., Ángeles Herranz, M., Sakai, N., Martín, N., Matile, S., López-Andarias, J.; *Angew.Chem. Int.Ed.* **2019**, 58,16097–16100; [10.1002/anie.201909540](https://doi.org/10.1002/anie.201909540);
13. **Large-scale highly ordered periodic Au nano-discs/graphene and graphene/Au nanoholes plasmonic substrates for surface-enhanced Raman scattering**; Liu, Y., Luo, F.; *Nano Res.* **12**, 2788–2795 (2019); [10.1007/s12274-019-2514-5](https://doi.org/10.1007/s12274-019-2514-5);
14. **Enhanced electrochemiluminescence by ZnO nanowires for taurine determination**; Guerrero-Esteban, T., Gutiérrez-Sánchez, C., Revenga-Parra, M., Pau, J.L., Pariente, F., Lorenzo, E.; *Talanta* **204** (2019) 63–69; [10.1016/j.talanta.2019.05.090](https://doi.org/10.1016/j.talanta.2019.05.090);
15. **Alkyl-chain branched effect on the aggregation and photophysical behavior of polydiarylufluorenes toward stable deep-blue electroluminescence and efficient amplified spontaneous emission**; Sun, L., Sun, N., Bai, L., An, X., Liu, B., Sun, C., Fan, L., Wei, C., Han, Y., Yu, M., Lin, J., Lu, D., Wang, N., Xie, L., Shen, K., Zhang, X., Xu, Y., Cabanillas-Gonzalez, J., Huang, W.; *Chinese Chemical Letters* **30** (2019) 1959–1964 ; [10.1016/j.cclet.2019.08.048](https://doi.org/10.1016/j.cclet.2019.08.048);
16. **Crossed 2D versus Slipped 1D π -Stacking in Polymorphs of Crystalline Organic Thin Films: Impact on the Electronic and Optical Response**; Aliaga-Gosalvez, M.J., Demitri, N., Dohr, M., Roldao, J.C., Park, S.K., Oh, S., Varghese, S., Park, S.Y., Olivier, Y., Milián-Medina, B., Resel, R., Gierschner, J.; *Adv. Optical Mater.* **2019**, 7, 1900749; [10.1002/adom.201900749](https://doi.org/10.1002/adom.201900749);
17. **An XPS investigation on the influence of the substrate and growth conditions on pyrite thin films surface composition**; Morales, C., Flores, E., Yoda, S., Niño, M.A., Martín y Marero, D., Soriano, L., Rojo, J., Ares, J.R., Ferrer, I.J., Sánchez, C.; *Applied Surface Science* **492** (2019) 651–660; [10.1016/j.apsusc.2019.06.214](https://doi.org/10.1016/j.apsusc.2019.06.214);
18. **Unveiling Electronic Properties in Metal-Phthalocyanine-Based Pyrazine-Linked Conjugated Two-Dimensional Covalent Organic Frameworks**; Wang, M., Ballabio, M., Wang, M., Lin, H.-H., Biswal, B.P., Han, X., Paasch, S., Brunner, E., Liu, P., Chen, M., Bonn, M., Heine, T., Zhou, S., Cánovas, E., Dong, R., Feng, X.; *J. Am. Chem. Soc.* **2019**, 141, 42, 16810–16816; [10.1021/jacs.9b07644](https://doi.org/10.1021/jacs.9b07644);
19. **Synthesis and Aggregation Studies of Functional Binaphthyl-Bridged Chiral Phthalocyanines**; Revuelta-Maza, M.Á., Torres, T., Torre, G.D.L.; *Org. Lett.* **2019**, 21, 20, 8183–8186; [10.1021/acs.orglett.9b02718](https://doi.org/10.1021/acs.orglett.9b02718);
20. **Theory of coherent-oscillations generation in terahertz pump-probe spectroscopy: From phonons to electronic collective modes**; Udina, M., Cea, T., Benfatto, L.; *Phys. Rev. B* **100**, 165131 (2019); [10.1103/PhysRevB.100.165131](https://doi.org/10.1103/PhysRevB.100.165131);
21. **A Comparative Computational Study of the Adsorption of TCNQ and F4-TCNQ on the Coinage Metal Surfaces**; Otero, R., Miranda, R., Gallego, J.M.; *ACS Omega* **2019**, 4, 16, 16906–16915; [10.1021/acsomega.9b02154](https://doi.org/10.1021/acsomega.9b02154); Open Access
22. **Nanomechanical detection of: Escherichia coli infection by bacteriophage T7 using cantilever sensors**; Mertens, J., Cuervo, A., Carrascosa, J.L.; *Nanoscale*, **2019**, 11, 17689; [10.1039/c9nr05240b](https://doi.org/10.1039/c9nr05240b);
23. **Interfacial ferromagnetism and atomic structures in high-temperature grown Fe304/Pt/Fe304 epitaxial trilayers**; Kikkawa, T., Suzuki, M., Ramos, R., Aguirre, M.H., Okabayashi, J., Uchida, K., Lucas, I., Anadón, A., Kikuchi, D., Algarabel, P.A., Morellón, L., Ibarra, M.R., Saitoh, E.; *J. Appl. Phys.* **126**, 143903 (2019); [10.1063/1.5125761](https://doi.org/10.1063/1.5125761);
24. **Photodissociation dynamics and stereodynamics of methyl mercaptan and dimethylsulfide from the second absorption band at 201 and 210 nm**; Chicharro, D.V., Poullain, S.M., Rubio-Lago, L., Banãres, L.; *J. Phys. Chem. A* **2019**, 123, 40, 8552–8561; [10.1021/acs.jpca.9b07242](https://doi.org/10.1021/acs.jpca.9b07242);
25. **Quadrupolar Cyclopenta[hi]aceanthrylene-Based Electron Donor-Acceptor-Donor Conjugates: Charge Transfer versus Charge Separation**; Schierl, C., Alex, W., Mateo, L.M., Ballesteros, B., Shimizu, D., Osuka, A., Torres, T., Guldi, D.M., Bottari, G.; *Angew.Chem. Int.Ed.* **2019**, 58,14644–14652; [10.1002/anie.201906206](https://doi.org/10.1002/anie.201906206);
26. **Photodetecting Heterostructures from Graphene and Encapsulated Colloidal Quantum Dot Films**; Black, A., Urbanos, F.J., Roberts, J., Acebrón, M., Bernardo-Gavito, R., Juárez, B.H., Robinson, B.J., Young, R.J., Vázquez De Parga, A.L., Granados, D.; *ACS Omega* **2019**, 4, 14, 15824–15828; [10.1021/acsomega.9b01449](https://doi.org/10.1021/acsomega.9b01449); Open Access



Showing research from Professor Zamora's laboratory,
Faculty of Science, Universidad Autónoma de Madrid,
Madrid, Spain

Chemical sensing of water contaminants by a coil of a
fluorescent carbon-nitrogen covalent organic framework
bearing quaternary ammonium cations and alcohols in water as
nanoparticles to produce a stable water coil. As a
proof of concept, the COF-coiled helix could be used to detect
the presence of several organic dyes and polycyclic aromatic
hydrocarbons.



rsc.li/chemcomm



27. Supercontinuum generation in OHQ-N2S organic crystal driven by intense terahertz fields; Giorgianni, F., Puc, U., Jazbinsek, M., Cea, T., Koo, M.-J., Han, J.-H., Kwon, O.-P., Vicario, C.; *Opt. Lett.* **44**, 4881–4884 (2019); [10.1364/OL.44.004881](https://doi.org/10.1364/OL.44.004881);

28. Can one define the conductance of amino acids?; Zotti, L.A., Bednarz, B., Hurtado-Gallego, J., Cabosart, D., Rubio-Bollinger, G., Agrait, N., van der Zant, H.S.J.; *Biomolecules* **2019**, 9(10), 580; [10.3390/biom9100580](https://doi.org/10.3390/biom9100580); Open Access

29. Synthesis of Highly Efficient Multivalent Disaccharide/[60]Fullerene Nanoballs for Emergent Viruses; Ramos-Soriano, J., Reina, J.J., Illescas, B.M., De La Cruz, N., Rodríguez-Pérez, L., Lasala, F., Rojo, J., Delgado, R., Martín, N.; *J. Am. Chem. Soc.* **2019**, 141, 38, 15403–15412; [10.1021/jacs.9b08003](https://doi.org/10.1021/jacs.9b08003);

30. Synergistic Effect of Covalent Bonding and Physical Encapsulation of Sulfur in the Pores of a Microporous COF to Improve Cycling Performance in Li-S Batteries; Royuela, S., Almaraz, J., Mancheño, M.J., Pérez-Flores, J.C., Michel, E.G., Ramos, M.M., Zamora, F., Ocón, P., Segura, J.L.; *Chem. Eur.J.* **2019**, 25, 12394–12404; [10.1002/chem.201902052](https://doi.org/10.1002/chem.201902052);

31. In-Situ Growth of Gadolinium Phthalocyaninato Sandwich Complexes on the Ag(111) Surface; Urgel, J.I., Écija, D., Vijayaraghavan, S., Pörtner, M., Bocquet, M.-L., Auwärter, W., Barth, J.V.; *ChemPhysChem* **2019**, 20, 2301–2304; [10.1002/cphc.201900253](https://doi.org/10.1002/cphc.201900253);

32. Dibenzoquinethiophene- And Dibenzosexithiophene-Based Hole-Transporting Materials for Perovskite Solar Cells; Urieta-Mora, J., Zimmermann, I., Aragón, J., Molina-Ontoria, A., Ortí, E., Martín, N., Nazzeeruddin, M.K.; *Chem. Mater.* **2019**, 31, 17, 6435–6442; [10.1021/acs.chemmater.8b04003](https://doi.org/10.1021/acs.chemmater.8b04003);

33. Composites based on metallic particles and tuned filling factor for 3D-printing by Fused Deposition Modeling; Palmero, E.M., Casaleiz, D., de Vicente, J., Hernández-Vicen, J., López-Vidal, S., Ramiro, E., Bollero, A.; *Composites Part A* **124** (2019) 105497; [10.1016/j.compositesa.2019.105497](https://doi.org/10.1016/j.compositesa.2019.105497);

34. Phthalocyanine–Virus Nanofibers as Heterogeneous Catalysts for Continuous-Flow Photo-Oxidation Processes; Anaya-Plaza, E., Aljarilla, A., Beaune, G., Nonappa, Timonen, J.V.I., de la Escosura, A., Torres, T., Kostianinen, M.A.; *Adv. Mater.* **2019**, 31, 1902582; [10.1002/adma.201902582](https://doi.org/10.1002/adma.201902582);

35. Mode splitting induced by mesoscopic electron dynamics in strongly coupled metal nanoparticles on dielectric substrates; Kluczyk-Korch, K., David, C., Jacak, L., Jacak, W.A.; *Nanomaterials* **2019**, 9(9), 1206; [10.3390/nano9091206](https://doi.org/10.3390/nano9091206); Open Access

36. Full-dimensional theoretical description of vibrationally resolved valence-shell photoionization of H₂O; Engin, S., González-Vázquez, J., Maliyar, G.G., Milosavljević A.R., Ono, T., Nandi, S., Iablonskyi, D., Kooser, K., Bozek, J.D., Decleva, P., Kukk, E., Ueda, K., Martín, F.; *Structural Dynamics* **6**, 054101 (2019); [10.1063/1.5106431](https://doi.org/10.1063/1.5106431); Open Access

37. Oxidation of Monolayer WS₂ in Ambient Is a Photoinduced Process; Kotsakidis, J.C., Zhang, Q., Vazquez De Parga, A.L., Currie, M., Helmersson, K., Gaskill, D.K., Fuhrer, M.S.; *Nano Lett.* **2019**, 19, 8, 5205–5215; [10.1021/acs.nanolett.9b01599](https://doi.org/10.1021/acs.nanolett.9b01599);

38. Resonant photoionization of O₂ up to the fourth ionization threshold; Marggi Poullain, S., Klinker, M., González-Vázquez, J., Martín, F.; *Phys. Chem. Chem. Phys.*, **2019**, 21, 16497; [10.1039/c9cp02150g](https://doi.org/10.1039/c9cp02150g);

39. Organic photocatalyst for ppm-level visible-light-driven reversible addition-fragmentation chain-transfer (raft) polymerization with excellent oxygen tolerance; Song, Y., Kim, Y., Noh, Y., Singh, V.K., Behera, S.K., Abdulimu, A., Chung, K., Wannemacher, R., Gierschner, J., Luer, L., Kwon, M.S.; *Macromolecules* **2019**, 52, 15, 5538–5545; [10.1021/acs.macromol.9b00940](https://doi.org/10.1021/acs.macromol.9b00940);

40. Esterase-Cleavable 2D Assemblies of Magnetic Iron Oxide Nanocubes: Exploiting Enzymatic Polymer Disassembling to Improve Magnetic Hyperthermia Heat Losses; Avugadda, S.K., Materia, M.E., Nigmatullin, R., Cabrera, D., Marotta, R., Cabada, T.F., Marcello, E., Nitti, S., Artés-Ibañez, E.J., Basnett, P., Wilhelm, C., Teran, F.J., Roy, I., Pellegrino, T.; *Chem. Mater.* **2019**, 31, 15, 5450–5463; [10.1021/acs.chemmater.9b00728](https://doi.org/10.1021/acs.chemmater.9b00728);

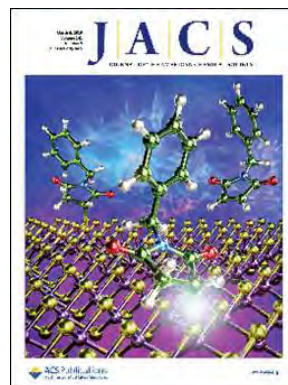
41. Robust, carbon related, superconducting nanostructure at the apex of a tungsten STM tip; Ayani, C.G., Calleja, F., Casado Aguilar, P., Norris, A., Navarro, J.J., Garnica, M., Acebrón, M., Granados, D., Vázquez De Parga, A.L., Rodrigo, J.G., Miranda, R.; *Appl. Phys. Lett.* **2019**, 115, 073108 (2019); [10.1063/1.5097694](https://doi.org/10.1063/1.5097694);

42. Roadmap on photonic, electronic and atomic collision physics: I. Light-matter interaction; Ueda, K., Sokell, E., Schippers, S., Aumayr, F., Sadeghpour, H., Burgdörfer, J., Lemell, C., Tong, X.-M., Pfeifer, T., Calegari, F., Palacios, A., Martin, F., Corkum, P., Sansone, G., Gryzlova, E.V., Grum-Grzhimailo, A.N., Piancastelli, M.N., Weber, P.M., Steinle, T., Amini, K., Biegert, J., Berrah, N., Kukk, E., Santra, R., Müller, A., Dowek, D., Lucchese, R.R., McCurdy, C.W., Bolognesi, P., Avaldi, L., Jahnke, T., Schöffler, M.S., Dörner, R., Mairesse, Y., Nahon, L., Smirnova, O., Schlathöller, T., Campbell, E.E.B., Rost, J.-M., Meyer, M., Tanaka, K.A.; **2019** *J. Phys. B: At. Mol. Opt. Phys.* **52** 171001; [10.1088/1361-6455/ab26d7](https://doi.org/10.1088/1361-6455/ab26d7); Open Access

43. Cross-conjugation increases the conductance of: Meta-connected fluorenes; Alanazy, A., Leary, E., Kobatake, T., Sangtarash, S., González, M.T., Jiang, H.-W., Bollinger, G.R., Agrait, N., Sadeghi, H., Grace, I., Higgins, S.J., Anderson, H.L., Nichols, R.J., Lambert, C.J.; *Nanoscale*, **2019**, *11*, 13720; [10.1039/c9nr01235d](https://doi.org/10.1039/c9nr01235d); Open Access

44. Early-stage dynamics of metallic droplets embedded in the nano-textured Mott insulating phase of V2 O3; Ronchi, A., Homm, P., Menghini, M., Franceschini, P., Maccherozzi, F., Banfi, F., Ferrini, G., Cilento, F., Parmigiani, F., Dhesi, S.S., Fabrizio, M., Locquet, J.-P., Giannetti, C.; *Phys. Rev. B* **2019**, 100, 075111 (2019); [10.1103/PhysRevB.100.075111](https://doi.org/10.1103/PhysRevB.100.075111);

45. The phenotype of target pancreatic cancer cells influences cell death by magnetic hyperthermia with nanoparticles carrying gemcitabine and the pseudo-peptide NucAnt; Sanhaji, M., Göring, J., Couleaud, P., Aires, A., Cortajarena, A.L., Courty, J., Prina-Mello, A., Stapf, M., Ludwig, R., Volkov, Y., Latorre, A., Somoza, Á., Miranda, R., Hilger, I.; *Nanomedicine*. **2019**; 20:101983; [10.1016/j.nano.2018.12.019](https://doi.org/10.1016/j.nano.2018.12.019); Open Access



46. Decay pathways for protonated and deprotonated adenine molecules; Giacomozzi, L., D'Angelo, G., Diaz-Tendero, S., De Ruetten, N., Stockett, M.H., Alcamí, M., Cederquist, H., Schmidt, H.T., Zettergren, H.; *J. Chem. Phys.* **2019**, 151, 044306 (2019); [10.1063/1.5109963](https://doi.org/10.1063/1.5109963);

47. Entropy-Driven Heterocomplexation of Conjugated Polymers in Highly Diluted Solutions; Wu, L., Nieto-Ortega, B., Naranjo, T., Pérez, E.M., Cabanillas-Gonzalez, J.; *J. Phys. Chem. C* **2019**, 123, 27, 16596–16601; [10.1021/acs.jpcc.9b04758](https://doi.org/10.1021/acs.jpcc.9b04758);

48. A MOF@COF Composite with Enhanced Uptake through Interfacial Pore Generation; Garzón-Tovar, L., Pérez-Carvajal, J., Yazdi, A., Hernández-Muñoz, J., Tarazona, P., Imaz, I., Zamora, F., MasPOCH, D.; *Angew. Chem. Int. Ed.* **2019**, 58, 9512–9516; [10.1002/anie.201904766](https://doi.org/10.1002/anie.201904766);

49. Scattering of microwaves by a passive array antenna based on amorphous ferromagnetic microwires for wireless sensors with biomedical applications; Moya, A., Archilla, D., Navarro, E., Hernando, A., Marín, P.; *Sensors* **2019**, 19(14), 3060; [10.3390/s19143060](https://doi.org/10.3390/s19143060); Open Access

50. Simultaneous amperometric immunosensing of the metastasis-related biomarkers IL-13R² and CDH-17 by using grafted screen-printed electrodes and a composite prepared from quantum dots and carbon nanotubes for signal amplification; Serafin, V., Valverde, A., Garranzo-Asensio, M., Barderas, R., Campuzano, S., Yáñez-Sedeño, P., Pingarrón, J.M.; *Mikrochim. Acta.* **2019**; 186(7):411; [10.1007/s00604-019-3531-5](https://doi.org/10.1007/s00604-019-3531-5);

51. A strain tunable single-layer MoS₂ photodetector; Gant, P., Huang, P., Pérez de Lara, D., Guo, D., Frisenda, R., Castellanos-Gomez, A.; **(2019)** *Materials Today*, 27, pp. 8-13; [10.1016/j.mattod.2019.04.019](https://doi.org/10.1016/j.mattod.2019.04.019); Open Access



52. **Stepwise magnetization reversal of geometrically tuned in diameter Ni and FeCo bi-segmented nanowire arrays**; Palmero, E.M., Méndez, M., González, S., Bran, C., Vega, V., Vázquez, M., Prida, V.M.; *Nano Res.* **12**, 1547–1553 (2019); [10.1007/s12274-019-2385-9](https://doi.org/10.1007/s12274-019-2385-9);
53. **Fast Yet Quantum-Efficient Few-Layer Vertical MoS₂ Photodetectors**; Maeso, D., Castellanos-Gomez, A., Agraït, N., Rubio-Bollinger, G.; *Adv. Electron. Mater.* **2019**, 5, 1900141; [10.1002/aelm.201900141](https://doi.org/10.1002/aelm.201900141);
54. **Multifunctional albumin-stabilized gold nanoclusters for the reduction of cancer stem cells**; Latorre, A., Latorre, A., Castellanos, M., Diaz, C.R., Lazaro-Carrillo, A., Aguado, T., Lecea, M., Romero-Pérez, S., Calero, M., Sanchez-Puelles, J.M., Villanueva, Á., Somoza, Á.; *Cancers* **2019**, 11(7), 969; [10.3390/cancers11070969](https://doi.org/10.3390/cancers11070969); Open Access
55. **Hierarchical Uniform Supramolecular Conjugated Spherulites with Suppression of Defect Emission**; Ou, C., Cheetham, N.J., Weng, J., Yu, M., Lin, J., Wang, X., Sun, C., Cabanillas-Gonzalez, J., Xie, L., Bai, L., Han, Y., Bradley, D.D.C., Huang, W.; *iScience* **16**, 399–409, **2019**; [10.1016/j.isci.2019.06.002](https://doi.org/10.1016/j.isci.2019.06.002); Open Access
56. **Disentangling Spectral Phases of Interfering Autoionizing States from Attosecond Interferometric Measurements**; Barreau, L., Petersson, C.L.M., Klinker, M., Camper, A., Marante, C., Gorman, T., Kieseewetter, D., Argenti, L., Agostini, P., González-Vázquez, J., Salières, P., Dimauro, L.F., Martín, F.; *Phys. Rev. Lett.* **122**, 253203 (2019); [10.1103/PhysRevLett.122.253203](https://doi.org/10.1103/PhysRevLett.122.253203);
57. **Magnetic Phase Diagram of Nanostructured Zinc Ferrite as a Function of Inversion Degree $\bar{\iota}$** ; Cobos, M.A., De La Presa, P., Llorente, I., Alonso, J.M., García-Escorial, A., Marín, P., Hernando, A., Jiménez, J.A.; *J. Phys. Chem. C* **2019**, 123, 28, 17472–17482; [10.1021/acs.jpcc.9b02180](https://doi.org/10.1021/acs.jpcc.9b02180);
58. **Photoluminescence Activation of Organic Dyes via Optically Trapped Quantum Dots**; Rodríguez-Rodríguez, H., Acebron, M., Iborra, F.J., Arias-Gonzalez, J.R., Juarez, B.H.; *ACS Nano* **2019**, 13, 6, 7223–7230; [10.1021/acsnano.9b02835](https://doi.org/10.1021/acsnano.9b02835);
59. **Electrical and geometrical tuning of MoS₂ field effect transistors: Via direct nanopatterning**; Urbanos, F.J., Black, A., Bernardo-Gavito, R., Vázquez De Parga, A.L., Miranda, R., Granados, D.; *Nanoscale*, **2019**, 11, 11152; [10.1039/c9nr02464f](https://doi.org/10.1039/c9nr02464f); Open Access
60. **Inverted energy gap law for the nonradiative decay in fluorescent floppy molecules: Larger fluorescence quantum yields for smaller energy gaps**; Shi, J., Izquierdo, M.A., Oh, S., Park, S.Y., Milián-Medina, B., Roca-Sanjuán, D., Gierschner, J.; *Org. Chem. Front.*, **2019**, 6, 1948–1954; [10.1039/c9qo00259f](https://doi.org/10.1039/c9qo00259f);
61. **Chiral Molecular Carbon Nanostructures**; Fernández-García, J.M., Evans, P.J., Filippone, S., Herranz, M.Á., Martín, N.; *Acc. Chem. Res.* **2019**, 52, 6, 1565–1574; [10.1021/acs.accounts.9b00144](https://doi.org/10.1021/acs.accounts.9b00144);
62. **Azulenocyanines immobilized on graphene: On the way to panchromatic absorption and efficient DSSC blocking layers**; Volland, M., Lennert, A., Roth, A., Ince, M., Torres, T., Guldi, D.M.; *Nanoscale*, **2019**, 11, 10709; [10.1039/c9nr02300c](https://doi.org/10.1039/c9nr02300c);
63. **Rectification Ratio and Tunneling Decay Coefficient Depend on the Contact Geometry Revealed by in Situ Imaging of the Formation of EGaIn Junctions**; Chen, X., Hu, H., Trasobares, J., Nijhuis, C.A.; *ACS Appl. Mater. Interfaces* **2019**, 11, 23, 21018–21029; [10.1021/acsami.9b02033](https://doi.org/10.1021/acsami.9b02033);
64. **Assembly-Induced Bright-Light Emission from Solution-Processed Platinum(II) Inorganic Polymers**; Perevedentsev, A., Bargardi, F.L., Sánchez-Ferrer, A., Cheetham, N.J., Sousaraei, A., Busato, S., Gierschner, J., Milián-Medina, B., Mezzenga, R., Wannemacher, R., Cabanillas-Gonzalez, J., Campoy-Quiles, M., Caseri, W.R.; *ACS Omega* **2019**, 4, 6, 10192–10204; [10.1021/acsomega.9b00942](https://doi.org/10.1021/acsomega.9b00942); Open Access
65. **Quantum Stereodynamics of H₂ Scattering from Co(0001): Influence of Reaction Channels**; Cueto, M.D., Zhou, X., Muzas, A.S., Díaz, C., Martín, F., Jiang, B., Guo, H.; *J. Phys. Chem. C* **2019**, 123, 26, 16223–16231; [10.1021/acs.jpcc.9b03470](https://doi.org/10.1021/acs.jpcc.9b03470);
66. **Exchange bias and two steps magnetization reversal in porous Co/CoO layer**; Ovejero, J.G., Godinho, V., Lacroix, B., García, M.A., Hernando, A., Fernández, A.; *Materials and Design* **171** (2019) 107691; [10.1016/j.matdes.2019.107691](https://doi.org/10.1016/j.matdes.2019.107691); Open Access
67. **Catalytically active imine-based covalent organic frameworks for detoxification of nerve agent simulants in aqueous media**; Royuela, S., Millán, R.G.-S., Mancheño, M.J., Ramos, M.M., Segura, J.L., Navarro, J.A.R., Zamora, F.; *Materials* **2019**, 12(12), 1974; [10.3390/ma12121974](https://doi.org/10.3390/ma12121974); Open Access

68. **Carbon Nanotubes Conjugated with Triazole-Based Tetrathiafulvalene-Type Receptors for C_{60} Recognition**; Mateos-Gil, J., Calbo, J., Rodríguez-Pérez, L., Ángeles Herranz, M., Ortí, E., Martín, N.; *ChemPlus-Chem* **2019**, 84, 730–739; [10.1002/cplu.201900078](https://doi.org/10.1002/cplu.201900078);
69. **Micro and nano smart composite films based on copper-iodine coordination polymer as thermochromic biocompatible sensors**; Conesa-Egea, J., Moreno-Vázquez, A., Fernández-Moreira, V., Ballesteros, Y., Castellanos, M., Zamora, F., Amo-Ochoa, P.; *Polymers* **2019**, 11(6), 1047; [10.3390/polym11061047](https://doi.org/10.3390/polym11061047); Open Access
70. **Continuum models for twisted bilayer graphene: Effect of lattice deformation and hopping parameters**; Guinea, F., Walet, N.R.; *Phys. Rev. B* **99**, 205134 (2019); [10.1103/PhysRevB.99.205134](https://doi.org/10.1103/PhysRevB.99.205134);
71. **Charge migration in photo-ionized aromatic amino acids**; Trabattini, A., Galli, M., Lara-Astiaso, M., Palacios, A., Greenwood, J., Tavernelli, I., Decleva, P., Nisoli, M., Martín, F., Calegari, F.; **2019** *Phil. Trans. R. Soc. A* **377**: 20170472; [10.1098/rsta.2017.0472](https://doi.org/10.1098/rsta.2017.0472);
72. **Mechanical and liquid phase exfoliation of cylindrite: A natural van der Waals superlattice with intrinsic magnetic interactions**; Niu, Y., Villalva, J., Frisenda, R., Sanchez-Santolino, G., Ruiz-González, L., Pérez, E.M., Garcia-Hernández, M., Burzuri, E., Castellanos-Gomez, A.; **2019** *2D Mater.* **6** 035023; [10.1088/2053-1583/ab1a4c](https://doi.org/10.1088/2053-1583/ab1a4c); Open Access
73. **On-Surface Synthesis of Gold Porphyrin Derivatives via a Cascade of Chemical Interactions: Planarization, Self-Metalation, and Intermolecular Coupling**; Cirera, B., De La Torre, B., Moreno, D., Ondráček, M., Zbořil, R., Miranda, R., Jelínek, P., Ěcija, D.; *Chem. Mater.* **2019**, 31, 9, 3248–3256; [10.1021/acs.chemmater.9b00125](https://doi.org/10.1021/acs.chemmater.9b00125);
74. **Synthesis and characterization of Ag₂S and Ag₂S/Ag₂(S,Se) NIR nanocrystals**; Ruiz, D., Mizrahi, M., Santos, H.D.A., Jaque, D., Jones, C.M.S., Marqués-Hueso, J., Jacinto, C., Requejo, F.G., Torres-Pardo, A., González-Calbet, J.M., Juárez, B.H.; *Nanoscale*, **2019**, 11, 9194; [10.1039/c9nr02087j](https://doi.org/10.1039/c9nr02087j);
75. **On-Surface Synthesis of Ethynylene-Bridged Anthracene Polymers**; Sánchez-Grande, A., de la Torre, B., Santos, J., Cirera, B., Lauwaet, K., Chutura, T., Edalatmanesh, S., Mutombo, P., Rosen, J., Zbořil, R., Miranda, R., Björk, J., Jelínek, P., Martín, N., Ěcija, D.; *Angew. Chem. Int. Ed.* **2019**, 58, 6559–6563; [10.1002/anie.201814154](https://doi.org/10.1002/anie.201814154); Open Access
76. **A Simple Approach to Design Proteins for the Sustainable Synthesis of Metal Nanoclusters**; Aires, A., Llaena, I., Moller, M., Castro-Smirnov, J., Cabanillas-Gonzalez, J., Cortajarena, A.L.; *Angew. Chem. Int. Ed.* **2019**, 58, 6214–6219; [10.1002/anie.201813576](https://doi.org/10.1002/anie.201813576); Open Access
77. **A fast synthesis route of boron-carbon-nitrogen ultrathin layers towards highly mixed ternary B-C-N phases**; Leardini, F., Jiménez-Arévalo, N., Ferrer, I.J., Ares, J.R., Molina, P., Navarro, C.G., Manzanares, Y., Granados, D., Urbanos, F.J., Garcia-Garcia, F.J., Del Campo, A., Avvisati, G., Betti, M.G., Mariani, C.; **2019** *2D Mater.* **6** 035015; [10.1088/2053-1583/ab175c](https://doi.org/10.1088/2053-1583/ab175c);
78. **Fluorescent C-NanoDots for rapid detection of BRCA1, CFTR and MRP3 gene mutations**; García-Mendiola, T., Elosegui, C.G., Bravo, I., Pariente, F., Jacobo-Martin, A., Navio, C., Rodríguez, I., Wannemacher, R., Lorenzo, E.; *Microchim Acta* **186**, 293 (2019); [10.1007/s00604-019-3386-9](https://doi.org/10.1007/s00604-019-3386-9);
79. **New photocatalytic materials obtained from the recycling of alkaline and Zn/C spent batteries**; Alcaraz, L., García-Díaz, I., González, L., Rabanal, M.E., Urbieto, A., Fernández, P., López, F.A.; *jmaterrestechol.* **2019**; 8(3):2809–2818; [10.1016/j.jmrt.2019.04.020](https://doi.org/10.1016/j.jmrt.2019.04.020); Open Access
80. **Discrete Electronic Subbands due to Bragg Scattering at Molecular Edges**; Martín-Jiménez, A., Gallego, J.M., Miranda, R., Otero, R.; *Phys. Rev. Lett.* **122**, 176801 (2019); [10.1103/PhysRevLett.122.176801](https://doi.org/10.1103/PhysRevLett.122.176801);
81. **Ultrafast folding kinetics of WW domains reveal how the amino acid sequence determines the speed limit to protein folding**; Szczepaniak, M., Iglesias-Bexiga, M., Cerminara, M., Sadqi, M., de Medina, C.S., Martínez, J.C., Luque, I., Muñoz, V.; *PNAS* **2019**, 116 (17) 8137–8142; [10.1073/pnas.1900203116](https://doi.org/10.1073/pnas.1900203116); Open Access





82. **One-Pot Synthesis of ω -Extended Fluorenone-Fused Subphthalocyanines**; Tejerina, L., Martínez-Díaz, M.V., Torres, T.; *Org. Lett.* **2019**, 21, 8, 2908–2912; [10.1021/acs.orglett.9b00944](https://doi.org/10.1021/acs.orglett.9b00944);
83. **Fully versus constrained statistical fragmentation of carbon clusters and their heteronuclear derivatives**; Aguirre, N.F., Díaz-Tendero, S., IdBarkach, T., Chabot, M., Béroff, K., Alcamí, M., Martín, F.; *J. Chem. Phys.* **2019**, 150, 144301 (2019); [10.1063/1.5083864](https://doi.org/10.1063/1.5083864);
84. **Glutton: A tool for generating structural ensembles of partly disordered proteins from chemical shifts**; He, Y., Nagpal, S., Sadqi, M., De Alba, E., Muñoz, V.; *Bioinformatics* **2019**, 35 (7), 1234–1236; [10.1093/bioinformatics/bty755](https://doi.org/10.1093/bioinformatics/bty755);
85. **Non-Planar and Flexible Hole-Transporting Materials from Bis-Xanthene and Bis-Thioxanthene Units for Perovskite Solar Cells**; Urieta-Mora, J., García-Benito, I., Zimmermann, I., Aragón, J., García-Fernández, P.D., Grancini, G., Molina-Ontoria, A., Ortí, E., Martín, N., Nazeeruddin, M.K.; *Helv. Chim. Acta* **2019**, 102, e1900056; [10.1002/hlca.201900056](https://doi.org/10.1002/hlca.201900056);
86. **Graphene quantum dots-functionalized multi-walled carbon nanotubes as nanocarriers in electrochemical immunosensing. Determination of IL-13 receptor '2 in colorectal cells and tumor tissues with different metastatic potential**; Serafin, V., Valverde, A., Martínez-García, G., Martínez-Periñán, E., Comba, F., Garranzo-Asensio, M., Barderas, R., Yáñez-Sedeño, P., Campuzano, S., Pingarrón, J.M.; *Sensors and Actuators, B: Chemical*, **2019**, 284, 711–722; [10.1016/j.snb.2019.01.012](https://doi.org/10.1016/j.snb.2019.01.012);
87. **Energy alignment and recombination in perovskite solar cells: Weighted influence on the open circuit voltage**; Gelmetti, I., Montcada, N.F., Pérez-Rodríguez, A., Barrena, E., Ocal, C., García-Benito, I., Molina-Ontoria, A., Martín, N., Vidal-Ferran, A., Palomares, E.; *Energy Environ. Sci.*, **2019**, 12, 1309; [10.1039/c9ee00528e](https://doi.org/10.1039/c9ee00528e);
88. **Phase-pure τ -MnAlC produced by mechanical alloying and a one-step annealing route**; Øygarden, V., Rial, J., Bollero, A., Deledda, S.; *Journal of Alloys and Compounds* **2019**, 776, 776e783; [10.1016/j.jallcom.2018.11.175](https://doi.org/10.1016/j.jallcom.2018.11.175);
89. **Doped-Iron Oxide Nanocrystals Synthesized by One-Step Aqueous Route for Multi-Imaging Purposes**; Luengo, Y., Roldán, M.A., Varela, M., Herranz, F., Morales, M.P., Veintemillas-Verdaguer, S.; *J. Phys. Chem. C* **2019**, 123, 12, 7356–7365; [10.1021/acs.jpcc.9b00512](https://doi.org/10.1021/acs.jpcc.9b00512);
90. **Topologically protected superconducting ratchet effect generated by spin-ice nanomagnets**; Rollano, V., Muñoz-Noval, A., Gomez, A., Valdes-Bango, F., Martin, J.I., Velez, M., Osorio, M.R., Granados, D., Gonzalez, E.M., Vicent, J.L.; *Nanotechnology* **2019**, 30, 244003; [10.1088/1361-6528/ab0923](https://doi.org/10.1088/1361-6528/ab0923);
91. **Strong modulation of optical properties in rippled 2D GaSe via strain engineering**; Maeso, D., Pakdel, S., Santos, H., Agraït, N., Palacios, J.J., Prada, E., Rubio-Bollinger, G.; *Nanotechnology* **2019**, 30, 24LT01; [10.1088/1361-6528/ab0bc1](https://doi.org/10.1088/1361-6528/ab0bc1);
92. **Controlling Interfacial Charge Transfer and Fill Factors in CuO-based Tandem Dye-Sensitized Solar Cells**; Langmar, O., Fazio, E., Schol, P., de la Torre, G., Costa, R.D., Torres, T., Guldi, D.M.; *Angew. Chem. Int. Ed.* **2019**, 58, 4056–4060; [10.1002/anie.201812397](https://doi.org/10.1002/anie.201812397);
93. **Interface-induced anomalous Nernst effect in Fe_3O_4 /Pt-based heterostructures**; Ramos, R., Kikkawa, T., Anadón, A., Lucas, I., Niizeki, T., Uchida, K., Algarabel, P.A., Morellón, L., Aguirre, M.H., Ibarra, M.R., Saitoh, E.; *Appl. Phys. Lett.* **2019**, 114, 113902 (2019); [10.1063/1.5063553](https://doi.org/10.1063/1.5063553);
94. **Polyethylene glycol improves current methods for circulating extracellular vesicle-derived DNA isolation**; García-Romero, N., Madurga, R., Rackov, G., Palacín-Aliana, I., Núñez-Torres, R., Asensi-Puig, A., Carrión-Navarro, J., Esteban-Rubio, S., Peinado, H., González-Neira, A., González-Rumayor, V., Belda-Iniesta, C., Ayuso-Sacido, A.; *J. Transl. Med.* **2019**, 17, 75 (2019); [10.1186/s12967-019-1825-3](https://doi.org/10.1186/s12967-019-1825-3); Open Access
95. **Theoretical Study of NO Dissociation on an Open Flat Ru(1011) Surface**; Lan, J., Wang, Y., Alcamí, M., Martín, F.; *J. Phys. Chem. C* **2019**, 123, 9, 5488–5494; [10.1021/acs.jpcc.8b11710](https://doi.org/10.1021/acs.jpcc.8b11710);
96. **Mild Covalent Functionalization of Transition Metal Dichalcogenides with Maleimides: A “click” Reaction for 2H-MoS₂ and WS₂**; Vera-Hidalgo, M., Giovanelli, E., Navío, C., Pérez, E.M.; *J. Am. Chem. Soc.* **2019**, 141, 9, 3767–3771; [10.1021/jacs.8b10930](https://doi.org/10.1021/jacs.8b10930);
97. **Multifunctional Copper(I) Coordination Polymers with Aromatic Mono- and Ditopic Thioamides**; Troyano, J., Zapata, E., Perles, J., Amo-Ochoa, P., Fernández-Moreira, V., Martínez, J.I., Zamora, F., Delgado, S.; *Inorg. Chem.* **2019**, 58, 5, 3290–3301; [10.1021/acs.inorgchem.8b03364](https://doi.org/10.1021/acs.inorgchem.8b03364);

98. MnBi thin films for high temperature permanent magnet applications; Villanueva, M., Navío, C., Céspedes, E., Mompeán, F., García-Hernández, M., Camarero, J., Bollero, A.; *AIP Advances* 9, 035325 (2019); [10.1063/1.5080004](https://doi.org/10.1063/1.5080004); Open Access

99. Spectroelectrochemical operando method for monitoring a phenothiazine electrografting process on amide functionalized C-nanodots/Au hybrid electrodes; Martínez-Periñán, E., Bravo, I., Mediavilla, M., Revenga-Parra, M., Mateo-Martí, E., Pariente, F., Lorenzo, E.; *Electrochimica Acta* 298 (2019) 950e959; [10.1016/j.electacta.2018.12.106](https://doi.org/10.1016/j.electacta.2018.12.106);

100. Site-selective Synthesis of β -[70]PCBM-like Fullerenes: Efficient Application in Perovskite Solar Cells; Vidal, S., Izquierdo, M., Filippone, S., Fernández, I., Akin, S., Seo, J.-Y., Zakeeruddin, S.M., Grätzel, M., Martín, N.; *Chem. Eur.J.* 2019, 25,3224 –3228; [10.1002/chem.201806053](https://doi.org/10.1002/chem.201806053);

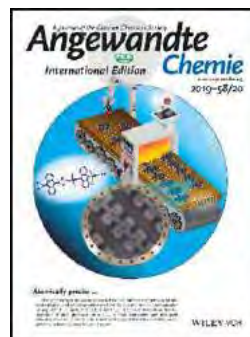
101. 3-Hydroxykynurenic acid: Physicochemical properties and fluorescence labeling; Schmidt, M.S., García Vior, M.C., Ezquerra Riega, S.D., Lázaro-Martínez, J.M., Abasolo, M.I., Lazaro-Carrillo, A., Tabero, A., Villanueva, A., Moglioni, A.G., Blanco, M.M., Stockert, J.C.; *Dyes and Pigments* 162 (2019) 552–561; [10.1016/j.dyepig.2018.10.027](https://doi.org/10.1016/j.dyepig.2018.10.027);

102. Remanence enhancement for stray field-based applications in arrays of crystalline nanomagnets; Cebollada, F., Gomez, A., Palomares, F.J., Sanchez-Agudo, M., Gonzalez, E.M., Urdiroz, U., Vicent, J.L., Gonzalez, J.M.; 2019 *J. Phys. D: Appl. Phys.* 52 095002; [10.1088/1361-6463/aaf614](https://doi.org/10.1088/1361-6463/aaf614);

103. Tunable Graphene Electronics with Local Ultrahigh Pressure; Ares, P., Pisarra, M., Segovia, P., Díaz, C., Martín, F., Michel, E.G., Zamora, F., Gómez-Navarro, C., Gómez-Herrero, J.; *Adv. Funct. Mater.* 2019, 29, 1806715; [10.1002/adfm.201806715](https://doi.org/10.1002/adfm.201806715);

104. Strained Bubbles in van der Waals Heterostructures as Local Emitters of Photoluminescence with Adjustable Wavelength; Tyurnina, A.V., Bandurin, D.A., Khestanova, E., Kravets, V.G., Koperski, M., Guinea, F., Grigorenko, A.N., Geim, A.K., Grigorieva, I.V.; *ACS Photonics* 2018, 5, 1, 126–132; [10.1021/acsp Photonics.8b01497](https://doi.org/10.1021/acsp Photonics.8b01497);

105. A Three-Dimensional Dynamic Supramolecular “Sticky Fingers” Organic Framework; Fernandez-Bartolome, E., Santos, J., Gamonal, A., Khodabakhshi, S., McCormick, L.J., Teat, S.J., Sañudo, E.C., Costa, J.S., Martín, N.; *Angew.Chem.Int. Ed.* 2018, 57,16036–16040; [10.1002/anie.201812419](https://doi.org/10.1002/anie.201812419);



106. Scanning Tunneling Microscopy of the Ordered Water Monolayer on MgO(001)/Ag(001) Ultrathin Films; Hollerer, M., Prochinig, D., Puschnig, P., Carrasco, E., Freund, H.-J., Sterrer, M.; *J. Phys. Chem. C* 2019, 123, 6, 3711–3718; [10.1021/acs.jpcc.8b12256](https://doi.org/10.1021/acs.jpcc.8b12256);

107. Electron-Phonon Coupling Constant of 2H-MoS₂ (0001) from Helium-Atom Scattering; Anemone, G., Taleb, A.A., Benedek, G., Castellanos-Gomez, A., Farias, D.; *J. Phys. Chem. C* 2019, 123, 6, 3682–3686; [10.1021/acs.jpcc.8b12029](https://doi.org/10.1021/acs.jpcc.8b12029);

108. Highly Efficient and Stable Inverted Perovskite Solar Cell Obtained via Treatment by Semiconducting Chemical Additive; Yu, J.C., Badgujar, S., Jung, E.D., Singh, V.K., Kim, D.W., Gierschner, J., Lee, E., Kim, Y.S., Cho, S., Kwon, M.S., Song, M.H.; 2019; *Advanced Materials*; 31; 6; 1805554; [10.1002/adma.201805554](https://doi.org/10.1002/adma.201805554);

109. Study of the Interface of the Early Stages of Growth under Quasi-Equilibrium Conditions of ZnO on Graphene/Cu and Graphite; Morales, C., Black, A., Urbanos, F.J., Granados, D., Méndez, J., del Campo, A., Yubero, F., Soriano, L.; *Adv. Mater. Interfaces* 2019, 6, 1801689; [10.1002/admi.201801689](https://doi.org/10.1002/admi.201801689);

110. Polarization dependence of angle-resolved photoemission with submicron spatial resolution reveals emerging one-dimensionality of electrons in NbSe₃; Valbuena, M.A., Chudzinski, P., Pons, S., Conejeros, S., Alemany, P., Canadell, E., Berger, H., Frantzeskakis, E., Avila, J., Asensio, M.C., Giamarchi, T., Grioni, M.; *Phys. Rev. B* 99, 075118 (2019); [10.1103/PhysRevB.99.075118](https://doi.org/10.1103/PhysRevB.99.075118);

111. Resonant Photoelectron Confinement in the SF₆ Molecule; Plésiat, E., Canton, S.E., Bozek, J.D., Decleva, P., Martín, F.; *J. Phys. Chem. A* 2019, 123, 5, 1062–1068; [10.1021/acs.jpca.8b12237](https://doi.org/10.1021/acs.jpca.8b12237);



112. **Strain-induced bound states in transition-metal dichalcogenide bubbles;** Chirolli, L., Prada, E., Guinea, F., Roldán, R., San-Jose, P.; **2019** *2D Mater.* 6 025010; [10.1088/2053-1583/ab0113](https://doi.org/10.1088/2053-1583/ab0113);
113. **Performance of van der Waals DFT approaches for helium diffraction on metal surfaces;** Del Cueto, M., Maurer, R.J., Al Taleb, A., Farias, D., Martin, F., Diaz, C.; **2019** *J. Phys.: Condens. Matter* 31 135901; [10.1088/1361-648X/aafcf4](https://doi.org/10.1088/1361-648X/aafcf4);
114. **Magnetic-polymer composites for bonding and 3d printing of permanent magnets;** Palmero, E.M., Casaleiz, D., Jimenez, N.A., Rial, J., De Vicente, J., Nieto, A., Altimira, R., Bollero, A.; **2019**; *IEEE Transactions on Magnetics*; 55; 2; 8456592; [10.1109/TMAG.2018.2863560](https://doi.org/10.1109/TMAG.2018.2863560);
115. **Photothermally triggered soft robot with adaptive local deformations and versatile bending modes;** Niu, D., Jiang, W., Ye, G., Lei, B., Luo, F., Liu, H., Lu, B.; **2019** *Smart Mater. Struct.* 28 02LT01; [10.1088/1361-665X/aad8f3](https://doi.org/10.1088/1361-665X/aad8f3);
116. **Hund nodal line semimetals: The case of a twisted magnetic phase in the double-exchange model;** Geilhufe, R.M., Guinea, F., Juric V.; *Phys. Rev. B* 99, 020404(R) (**2019**); [10.1103/PhysRevB.99.020404](https://doi.org/10.1103/PhysRevB.99.020404);
117. **Aggregation effects on the magnetic properties of iron oxide colloids;** Gutiérrez, L., De La Cueva, L., Moros, M., Mazario, E., De Bernardo, S., De La Fuente, J.M., Morales, M.P., Salas, G.; **2019** *Nanotechnology* 30 112001; [10.1088/1361-6528/aafbf3](https://doi.org/10.1088/1361-6528/aafbf3);
118. **Concurrent Optical Gain Optimization and Electrical Tuning in Novel Oligomer:Polymer Blends with Yellow-Green Laser Emission;** Zhang, Q., Wei, Q., Guo, X., Hai, G., Sun, H., Li, J., Xia, R., Qian, Y., Casado, S., Castro-Smirnov, J.R., Cabanillas-Gonzalez, J.; *Adv. Sci.* **2019**, 6, 1801455; [10.1002/advs.201801455](https://doi.org/10.1002/advs.201801455); Open Access
119. **Signatures of surface Majorana modes in the magnetic response of topological superconductors;** Chirolli, L., Guinea, F.; *Phys. Rev. B* 99, 014506 (**2019**); [10.1103/PhysRevB.99.014506](https://doi.org/10.1103/PhysRevB.99.014506);
120. **Ultrastable Supramolecular Self-Encapsulated Wide-Bandgap Conjugated Polymers for Large-Area and Flexible Electroluminescent Devices;** Lin, J., Liu, B., Yu, M., Wang, X., Lin, Z., Zhang, X., Sun, C., Cabanillas-Gonzalez, J., Xie, L., Liu, F., Ou, C., Bai, L., Han, Y., Xu, M., Zhu, W., Smith, T.A., Stavrinou, P.N., Bradley, D.D.C., Huang, W.; *Adv. Mater.* **2019**, 31, 1804811; [10.1002/adma.201804811](https://doi.org/10.1002/adma.201804811); Open Access
121. **TiO₂ self-assembled, thin-walled nanotube arrays for photonic applications;** David, C.; *Materials* **2019**, 12(8), 1332; [10.3390/ma12081332](https://doi.org/10.3390/ma12081332); Open Access
122. **Facile and Controllable Fabrication of High-Performance Methylammonium Lead Triiodide Films Using Lead Acetate Precursor for Low-Threshold Amplified Spontaneous Emission and Distributed-Feedback Lasers;** Zhang, Q., Sun, H., Zhang, H., Jiang, M., Wu, X., Zhang, Z., Yang, T., Xia, R., Cabanillas-Gonzalez, J.; *Phys. Status Solidi RRL* **2019**, 13, 1900176; [10.1002/pssr.201900176](https://doi.org/10.1002/pssr.201900176);
123. **Subphthalocyanine-tetracyanobuta-1,3-diene-aniline conjugates: stereoisomerism and photophysical properties ;** Kim A. Winterfeld, Giulia Lavarda, Julia Guilleme, Dirk M. Guldi, Tomas Torres; *Chem. Sci.*, **2019**, 10, 10997; [10.1039/c9sc03970h](https://doi.org/10.1039/c9sc03970h);
124. **Multivalent fullerene/ π -extended TTF electroactive molecules-non-covalent interaction with graphene and charge transfer implications;** Muñoz, A., Rodríguez-Pérez, L., Casado, S., Illescas, B.M., Martín, N.; *J. Mater. Chem. C*, **2019**, 7, 8962; [10.1039/c9tc02277e](https://doi.org/10.1039/c9tc02277e);
125. **Assembly effect on the charge carrier mobility in quaterthiophene-based n/p-materials;** López-Andarias, A., Atienza, C., López-Andarias, J., Matsuda, W., Sakurai, T., Seki, S., Martín, N.; *J. Mater. Chem. C*, **2019**, 7, 6649; [10.1039/c9tc00165d](https://doi.org/10.1039/c9tc00165d);
126. **Charge transfer in graphene quantum dots coupled with tetrathiafulvalenes;** Scharl, T., Ferrer-Ruiz, A., Saura-Sanmartín, A., Rodríguez-Pérez, L., Ángeles Herranz, M., Martín, N., Guldi, D.M.; *Chem. Commun.*, **2019**, 55, 3223; [10.1039/c8cc09990a](https://doi.org/10.1039/c8cc09990a);
127. **Linear assembly of lead bromide-based nanoparticles inside lead(ii) polymers prepared by mixing the precursors of both the nanoparticle and the polymer;** Gonzalez-Carrero, S., Bareño, L., Debroye, E., Martin, C., Bondia, P., Flors, C., Galian, R.E., Hofkens, J., Pérez-Prieto, J.; *Chem. Commun.*, **2019**, 55, 2968; [10.1039/c8cc10287b](https://doi.org/10.1039/c8cc10287b);
128. **Copper dithiolen [Cu(SC₆H₂Cl₂S)₂]- units connected to alkaline/copper complexes: from ionic assemblies to discrete molecular entities and coordination polymers;** Amo-Ochoa, P., Castillo, O., Delgado, E., Gallut, A., Hernández, E., Perles, J., Zamora, F.; *CrystEngComm*, **2019**, 21, 957–963; [10.1039/c8ce01594e](https://doi.org/10.1039/c8ce01594e);

129. **Chemical sensing of water contaminants by a colloid of a fluorescent imine-linked covalent organic framework**; Albacete, P., López-Moreno, A., Mena-Hernando, S., Platero-Prats, A.E., Pérez, E.M., Zamora, F.; *Chem. Commun.*, **2019**, 55, 1382; [10.1039/c8cc08307j](https://doi.org/10.1039/c8cc08307j);
130. **Tailoring Magnetic Anisotropy at Will in 3D Interconnected Nanowire Networks**; Ruiz-Clavijo, A., Ruiz-Gomez, S., Caballero-Calero, O., Perez, L., Martin-Gonzalez, M.; *Phys. Status Solidi RRL* **2019**, 13, 1900263; [10.1002/pssr.201900263](https://doi.org/10.1002/pssr.201900263);
131. **Boosting the singlet oxygen photosensitization abilities of Zn(ii) phthalocyanines through functionalization with bulky fluorinated substituents**; Revuelta-Maza, M.A., Nonell, S., De La Torre, G., Torres, T.; *Org. Biomol. Chem.*, **2019**, 17, 7448; [10.1039/c9ob00872a](https://doi.org/10.1039/c9ob00872a);
132. **Resistive switching in an organic supramolecular semiconducting ferroelectric**; Casellas, N.M., Urbanaviciute, I., Cornelissen, T.D., Berrocal, J.A., Torres, T., Kemerink, M., García-Iglesias, M.; *Chem. Commun.*, **2019**, 55, 8828; [10.1039/c9cc02466b](https://doi.org/10.1039/c9cc02466b);
133. **Understanding the affinity of bis-exTTF macrocyclic receptors towards fullerene recognition**; Calbo, J., De Juan, A., Aragón, J., Villalva, J., Martín, N., Pérez, E.M., Ortí, E.; *Phys. Chem. Chem. Phys.*, **2019**, 21, 11670; [10.1039/c9cp01735f](https://doi.org/10.1039/c9cp01735f);
134. **Saddle-like, π -conjugated, cyclooctatetrathiophene-based, hole-transporting material for perovskite solar cells**; Urieta-Mora, J., García-Benito, I., Zimmermann, I., Aragón, J., Calbo, J., Grancini, G., Molina-Ontoria, A., Ortí, E., Martín, N., Nazeeruddin, M.K.; *J. Mater. Chem. C*, **2019**, 7, 6656; [10.1039/c9tc00437h](https://doi.org/10.1039/c9tc00437h);
135. **Minimizing geminate recombination losses in small-molecule-based organic solar cells**; Sandoval-Torrientes, R., Gavrik, A., Isakova, A., Abudulimu, A., Calbo, J., Aragón, J., Santos, J., Ortí, E., Martín, N., Dyakonov, V., Lüer, L.; *J. Mater. Chem. C*, **2019**, 7, 6641; [10.1039/c9tc00862d](https://doi.org/10.1039/c9tc00862d);
136. **Synthesis and structural characterization of transition metal dithiolene derivatives containing divalent metals as counter-cations**; Castillo, O., Delgado, E., Hernández, D., Hernández, E., Martín, A., Zamora, F.; *CrystEngComm*, **2019**, 21, 1423; [10.1039/c8ce01916a](https://doi.org/10.1039/c8ce01916a);
137. **The role of formic acid/formate equilibria in the oxidation of formic acid on Pt (111)**; Busó-Rogero, C., Ferre-Vilaplana, A., Herrero, E., Feliu, J.M.; *Electrochemistry Communications* **98** (2019) 10–14; [10.1016/j.elecom.2018.11.011](https://doi.org/10.1016/j.elecom.2018.11.011); Open Access
138. **Controlling Interfacial Charge Transfer and Fill Factors in CuO'-based Tandem Dye-Sensitized Solar Cells**; Oliver Langmar, Ettore Fazio Peter Schol, Dr. Gema de la Torre, Rubén D. Costa, Tomás Torres, Dirk M. Guldi; *Angew. Chem. Int. Ed.* **2019**, 58, 4056–4060; [10.1002/anie.201812397](https://doi.org/10.1002/anie.201812397);
139. **Prominent out-of-plane diffraction in helium scattering from a methyl-terminated Si(111) surface**; Del Cueto, M., Muzas, A.S., Frankcombe, T.J., Martín, F., Díaz, C.; *Phys. Chem. Chem. Phys.*, **2019**, 21, 15879; [10.1039/c9cp02141h](https://doi.org/10.1039/c9cp02141h);
140. **Ultrafast imaging of laser-controlled non-adiabatic dynamics in NO₂ from time-resolved photoelectron emission**; Richter, M., González-Vázquez, J., Mašín, Z., Brambila, D.S., Harvey, A.G., Morales, F., Martín, F.; *Phys. Chem. Chem. Phys.*, **2019**, 21, 10038; [10.1039/c9cp00649d](https://doi.org/10.1039/c9cp00649d);
141. **Impact of molecular conformation on triplet-fusion induced photon energy up-conversion in the absence of exothermic triplet energy transfer**; Goudarzi, H., Limbu, S., Cabanillas-González, J., Zenonos, V.M., Kim, J.-S., Keivanidis, P.E.; *J. Mater. Chem. C*, **2019**, 7, 3634; [10.1039/c8tc06283h](https://doi.org/10.1039/c8tc06283h);
142. **Aromaticity, Coulomb repulsion, π delocalization or strain: Who is who in endohedral metallofullerene stability?**; Wang, Y., Díaz-Tendero, S., Alcamí, M., Martín, F.; *Phys. Chem. Chem. Phys.*, **2019**, 21, 124; [10.1039/c8cp06707d](https://doi.org/10.1039/c8cp06707d);
143. **Physically Unclonable Functions Based on Single-Walled Carbon Nanotubes: A Scalable and Inexpensive Method toward Unique Identifiers**; Enrique Burzurí, Daniel Granados, and Emilio M. Pérez; *ACS Appl. Nano Mater.* **2019**, 2, 4, 1796–1801; [10.1021/acsanm.9b00322](https://doi.org/10.1021/acsanm.9b00322);
144. **The 3s: Versus 3p Rydberg state photodissociation dynamics of the ethyl radical**; Marggi Poullain, S., Chicharro, D.V., Zanchet, A., Rubio-Lago, L., García-Vela, A., Banãres, L.; *Phys. Chem. Chem. Phys.*, **2019**, 21, 23017; [10.1039/c9cp04273c](https://doi.org/10.1039/c9cp04273c);
145. **Excited-state non-radiative decay in stilbenoid compounds: An Ab initio quantum-chemistry study on size and substituent effects**; Izquierdo, M.A., Shi, J., Oh, S., Park, S.Y., Milián-Medina, B., Gierschner, J., Roca-Sanjuán, D.; *Phys. Chem. Chem. Phys.*, **2019**, 21, 22429; [10.1039/c9cp03308d](https://doi.org/10.1039/c9cp03308d);



146. Stable antiferromagnetic nanocrystals for room temperature applications: The case of iron nitride; Kowalik, I.A., Gonzalez Szwacki, N., Niño, M.A., Luque, F.J., Arvanitis, D.; *J. Mater. Chem. C*, **2019**, 7, 9474; [10.1039/c9tc02334h](#); Open Access

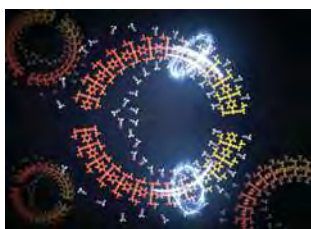
147. Reversible transformation between Cu(i)-thiophenolate coordination polymers displaying luminescence and electrical properties; Troyano, J., Castillo, Ó., Amo-Ochoa, P., Martínez, J.I., Zamora, F., Delgado, S.; *CrystEngComm*, **2019**, 21, 3232; [10.1039/c9ce00313d](#);

148. Control defeasance by anti-alignment in the excited state; Chang, B.Y., Shin, S., González-Vázquez, J., Martín, F., Malinovsky, V.S., Sola, I.R.; *Phys. Chem. Chem. Phys.*, **2019**, 21, 23620; [10.1039/c9cp04427b](#);

149. Engineered protein-based functional nanopatterned materials for bio-optical devices; Sanchez-Dealcázar, D., Romera, D., Castro-Smirnov, J., Sousaraei, A., Casado, S., Espasa, A., Morant-Miñana, M.C., Hernandez, J.J., Rodríguez, I., Costa, R.D., Cabanillas-Gonzalez, J., Martinez, R.V., Cortajarena, A.L.; *Nanoscale Adv.*, **2019**, 1, 3980; [10.1039/c9na00289h](#); Open Access

150. Liquid phase exfoliation of antimonene: Systematic optimization, characterization and electrocatalytic properties; Gibaja, C., Assebban, M., Torres, I., Fickert, M., Sanchis-Gual, R., Brotons, I., Paz, W.S., Palacios, J.J., Michel, E.G., Abellán, G., Zamora, F.; *J. Mater. Chem. A*, **2019**, 7, 22475; [10.1039/c9ta06072c](#);

151. A switchable iron-based coordination polymer toward reversible acetonitrile electro-optical readout; Resines-Urien, E., Burzurí, E., Fernandez-Bartolome, E., García García-Tuñón, M.Á., De La Presa, P., Poloni, R., Teat, S.J., Costa, J.S.; *Chem. Sci.*, **2019**, 10, 6612; [10.1039/c9sc02522g](#); Open Access



Showing research from Professor Enrique Urien at the Functional Nanoscale Materials and Device Group and Professor Jose Sanchez-Gual from the Functional Nanomaterials Group, IMDEA Nanoscience, Madrid, Spain.

A switchable iron-based coordination polymer toward reversible acetonitrile electro-optical readout.

A rational design concept of iron-pyridine molecular-based acetonitrile sensor is reported. This material presents a reversible magnetic/optical transition under electrochemical control of acetonitrile molecules involving a drastic modification in its optical and electronic transport properties. These materials can therefore be a versatile platform to fabricate sensor made compatible with a variety of real-time systems from optical magnetism to electron transport measurements.

As featured in:

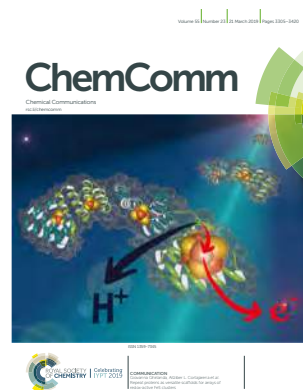


See Enrique Burzurí and Jose Sanchez-Gual et al., *Chem. Sci.*, 2019, 10, 6612.

152. Formation of highly ordered micro fillers in polymeric matrix by electro-field-assisted aligning; Zhang, Y., Zheng, X., Jiang, W., Han, J., Pu, J., Wang, L., Lei, B., Chen, B., Shi, Y., Yin, L., Liu, H., Luo, F., Liu, X., Chen, J.; *RSC Adv.*, **2019**, 9, 15238; [10.1039/c9ra00507b](#); Open Access

153. Repeat proteins as versatile scaffolds for arrays of redox-active FeS clusters; Mejias, S.H., Bahrami-Dizicheh, Z., Liutkus, M., Sommer, D.J., Astashkin, A., Kodis, G., Ghirlanda, G., Cortajarena, A.L.; *Chem. Commun.*, **2019**, 55, 3319; [10.1039/c8cc06827e](#); Open Access

154. Analysis of corneal stromal roughness after iFS 150 kHz and LenSx femtosecond LASIK flap creation in porcine eyes; Gros-Otero, J., Ketabi, S., Cañones-Zafra, R., Garcia-Gonzalez, M., Parafita-Fernandez, A., Villa-Collar, C., Casado, S., Teus, M.; *Graefes Arch Clin Exp Ophthalmol* 257, 2665–2670 (2019); [10.1007/s00417-019-04497-7](#);



155. Replicative DNA polymerases promote active displacement of SSB proteins during lagging strand synthesis; Cerrón, F., De Lorenzo, S., Lemishko, K.M., Ciesielski, G.L., Kaguni, L.S., Cao, F.J., Ibarra, B.; *Nucleic Acids Research*, **2019**, Vol. 47, No. 11 5723–5734; [10.1093/nar/gkz249](#); Open Access

156. Photoinduced effects on the magnetic properties of the (Fe_{0.2}Cr_{0.8})_{1.5} [Cr(CN)₆] Prussian blue analogue; Luque, F.J., Kowalik, I.A., Prieto-Ruiz, J.P., Niño, M.Á., Prima-García, H., Romero, F.M., Arvanitis, D., Mathonière, C., Coronado, E., Miranda, R., De Miguel, J.J.; *J. Mater. Chem. C*, **2019**, 7, 2305; [10.1039/c8tc05815f](#);

157. **Broad-band high-resolution rotational spectroscopy for laboratory astrophysics;** Cernicharo, J., Gallego, J.D., López-Pérez, J.A., Tercero, F., Tanarro, I., Beltrán, F., De Vicente, P., Lauwaet, K., Alemán, B., Moreno, E., Herrero, V.J., Doménech, J.L., Ramírez, S.I., Bermúdez, C., Peláez, R.J., Patino-Esteban, M., López-Fernández, I., García-Álvaro, S., García-Carreño, P., Cabezas, C., Malo, I., Amils, R., Sobrado, J., Díez-González, C., Hernández, J.M., Tercero, B., Santoro, G., Martínez, L., Castellanos, M., Jiménez, B.V., Pardo, J.R., Barbas, L., López-Fernández, J.A., Aja, B., Leuther, A., Martín-Gago, J.A.; *A&A* **2019**, A34 (2019); [10.1051/0004-6361/201935197](https://doi.org/10.1051/0004-6361/201935197); Open Access
158. **Confining Iron Oxide Nanocubes inside Submicrometric Cavities as a Key Strategy to Preserve Magnetic Heat Losses in an Intracellular Environment;** Zyuzin, M.V., Cassani, M., Barthel, M.J., Gavilan, H., Silvestri, N., Escudero, A., Scarpellini, A., Lucchesi, F., Teran, F.J., Parak, W.J., Pellegrino, T.; *ACS Appl. Mater. Interfaces* **2019**, 11, 45, 41957–41971; [10.1021/acsami.9b15501](https://doi.org/10.1021/acsami.9b15501);
159. **Multilevel Hierarchical Topographies by Combined Photolithography and Nanoimprinting Processes To Create Surfaces with Controlled Wetting;** María T. Alameda, Manuel R. Osorio, Jaime J. Hernández, and Isabel Rodríguez; *ACS Appl. Nano Mater.* **2019**, 2, 8, 4727–4733; [10.1021/acsnm.9b00338](https://doi.org/10.1021/acsnm.9b00338);
160. **2D/2D Graphitic Carbon Nitride/Antimonene Heterostructure: Structural Characterization and Application in Photocatalysis;** Barrio, Jesus; Gibaja, Carlos; Tzadikov, Jonathan; Shalom, Menny; Zamora, Felix; *Adv. Sustainable Syst.* **2019**, 3, 1800138; [10.1002/adsu.201800138](https://doi.org/10.1002/adsu.201800138)
161. **A closer look into laurdan as a probe to monitor cationic DODAB bilayers;** Masukawa, Marcos K.; Vequi-Suplicy, Cintia C.; Duarte, Evandro L.; Lamy, M. Teresa; *Journal of Photochemistry & Photobiology A: Chemistry* **2019**, 376 (2019) 238–246; [10.1016/j.jphotochem.2019.03.006](https://doi.org/10.1016/j.jphotochem.2019.03.006)
162. **Synthesis of Highly Efficient Multivalent Disaccharide/[60]Fullerene Nanoballs for Emergent Viruses;** Javier Ramos-Soriano, José J. Reina, Beatriz M. Illescas, Noelia de la Cruz, Laura Rodríguez-Pérez, Fátima La-sala, Javier Rojo, Rafael Delgado, and Nazario Martín; *J. Am. Chem. Soc.* **2019**, 141, 38, 15403–15412; [10.1021/jacs.9b08003](https://doi.org/10.1021/jacs.9b08003)
163. **Antibacterial mechanism and activity of cerium oxide nanoparticles;** Zhang, Mengzhen; Zhang, Chao; Zhai, Xinyun; Luo, Feng; Du, Ya-ping; Yan, Chunhua; *Sci. China Mater.* **2019**, 62, 1727–1739 (2019); [10.1007/s40843-019-9471-7](https://doi.org/10.1007/s40843-019-9471-7)
164. **Selective guest recognition by a metallo-organic phthalocyanine-based host;** Ettore Fazio, M. Jesús Vicente-Arana, M. Teresa Alonso, Tomás Torres and Gema de la Torre; *J. Porphyrins Phthalocyanines* **2019**; 23: 1570-1575; [10.1142/S1088424619501712](https://doi.org/10.1142/S1088424619501712)
165. **Anion–p Catalysis on Carbon Nanotubes;** Anna-Bea Bornhof, Mikiko Vazquez-Nakagawa, Laura Rodríguez-Pérez, María Angeles Herranz, Naomi Sakai, Nazario Martín, Stefan Matile, and Javier López-Andarias; *Angew. Chem. Int. Ed.* **2019**, 58, 16097 –16100; [10.1002/anie.201909540](https://doi.org/10.1002/anie.201909540)
166. **Chemisorption of Atomically Precise 42-Carbon Graphene Quantum Dots on Metal Oxide Films Greatly Accelerates Interfacial Electron Transfer;** Han, Peng; Hou, Ian Cheng-Yi; Lu, Hao; Wang, Xiao-Ye; Muellen, Klaus; Bonn, Mischa; Narita, Akimitsu; Canovas, Enrique; *J. Phys. Chem. Lett.* **2019**, 10, 7, 1431–1436; [10.1021/acs.jpclett.9b00399](https://doi.org/10.1021/acs.jpclett.9b00399)
167. **Perspectives for Ag₂S NIR-II nanoparticles in biomedicine: from imaging to multifunctionality;** Shen, Yingli; Lifante, Jose; Ximendes, Erving; Santos, Harrison D A; Ruiz, Diego; Juarez, Beatriz H; Zabala Gutierrez, Irene; Torres Vera, Vivian; Rubio Retama, Jorge; Martin Rodriguez, Emma; Ortgies, Dirk H; Jaque, Daniel; Benayas, Antonio; Del Rosal, Blanca; Nanoscale, **2019**, 11, 19251; [10.1039/c9nr05733a](https://doi.org/10.1039/c9nr05733a)
168. **Crosswise Phthalocyanines with Collinear Functionalization: New Paradigmatic Derivatives for Efficient Singlet Oxygen Photosensitization;** Revuelta-Maza, Miguel A.; Hally, Cormac; Nonell, Santi; de la Torre, Gema; Torres, Tomas; *ChemPlusChem* **2019**, 84, 673 –679; [10.1002/cplu.201800631](https://doi.org/10.1002/cplu.201800631)
169. **Diffraction of CH₄ from a Metal Surface;** Al Taleb, Amjad; Anemone, Gloria; Zhou, Linsen; Guo, Hua; Farias, Daniel; *J. Phys. Chem. Lett.* **2019**, 10, 7, 1574–1580; [10.1021/acs.jpclett.9b00158](https://doi.org/10.1021/acs.jpclett.9b00158)
170. **Dimensional reduction, quantum Hall effect and layer parity in graphite films;** Yin, Jun; Slizovskiy, Sergey; Cao, Yang; Hu, Sheng; Yang, Yaping; Lobanova, Inna; Piot, Benjamin A.; Son, Seok-Kyun; Ozdemir, Servet; Taniguchi, Takashi; Watanabe, Kenji; Novoselov, Kostya S.; Guinea, Francisco; Geim, A. K.; Fal'ko, Vladimir; Mishchenko, Artem; *Nat. Phys.* **2019**, 15, 437–442 (2019); [10.1038/s41567-019-0427-6](https://doi.org/10.1038/s41567-019-0427-6)
171. **Dynamic constriction and fission of endoplasmic reticulum membranes by reticulon;** Espadas, Javier; Pendin, Diana; Bocanegra, Rebeca; Escalada, Artur; Misticoni, Giulia; Trevisan, Tatiana; Velasco del Olmo, Ariana; Montagna, Aldo; Bova, Sergio; Ibarra, Borja; Kuzmin, Peter, I; Bas-



hkirov, Pavel, V; Shnyrova, Anna, V; Frolov, Vadim A.; Daga, Andrea; *Nat Commun* 10, 5327 (2019); [10.1038/s41467-019-13327-7](https://doi.org/10.1038/s41467-019-13327-7)

172. Electronic band structure and pinning of Fermi energy to Van Hove singularities in twisted bilayer graphene: A self-consistent approach; Cea, Tommaso; Walet, Niels R.; Guinea, Francisco; *Phys. Rev. B* 100, 205113 (2019); [10.1103/PhysRevB.100.205113](https://doi.org/10.1103/PhysRevB.100.205113)

173. Suppressing backscattering of helical edge modes with a spin bath; Andrey A. Bagrov, Francisco Guinea, and Mikhail I. Katsnelson; *Phys. Rev. B* 100, 195426 (2019); [10.1103/PhysRevB.100.195426](https://doi.org/10.1103/PhysRevB.100.195426)

174. High harmonic generation in crystals using maximally localized Wannier functions; Silva, R. E. F.; Martin, F.; Ivanov, M.; *Phys. Rev. B* 100, 195201 (2019); [10.1103/PhysRevB.100.195201](https://doi.org/10.1103/PhysRevB.100.195201)

175. Interplay between ROS and Autophagy in Cancer and Aging: From Molecular Mechanisms to Novel Therapeutic Approaches; Cordani, Marco; Donadelli, Massimo; Strippoli, Raffaele; Bazhin, Alexandr V.; Sanchez-Alvarez, Miguel; *Oxid Med Cell Longev* 2019: 8794612; [10.1155/2019/8794612](https://doi.org/10.1155/2019/8794612)

176. Iron-Based Core-Shell Nanowires for Combinatorial Drug Delivery and Photothermal and Magnetic Therapy; Martinez-Banderas, Aldo Isaac; Aires, Antonio; Quintanilla, Marta; Holguin-Lerma, Jorge A; Lozano-Pedraza, Claudia; Teran, Francisco J; Moreno, Julian A; Perez, Jose E; Ooi, Boon S; Ravasi, Timothy; Merzaban, Jasmeen S; Cortajarena, Aitziber L; Kosel, Jurgen; *ACS Appl. Mater. Interfaces* 2019, 11, 47, 43976–43988; [10.1021/acsami.9b17512](https://doi.org/10.1021/acsami.9b17512)

177. Leggett mode controlled by light pulses; Giorgianni, Flavio; Cea, Tommaso; Vicario, Carlo; Hauri, Christoph P.; Withanage, Wenura K.; Xi, Xiaoxing; Benfatto, Lara; *Nat. Phys.* 15, 341–346 (2019); [10.1038/s41567-018-0385-4](https://doi.org/10.1038/s41567-018-0385-4)

178. Light-harvesting porphyrazines to enable intramolecular singlet fission; Medina, Diana-Paola; Papadopoulos, Ilias; Lavarda, Giulia; Gotfredsen, Henrik; Rami, Parisa R; Tykewski, Rik R; Rodriguez-Morgade, M Salome; Guldi, Dirk M; Torres, Tomas; *Nanoscale*, 2019, 11, 22286; [10.1039/c9nr08161e](https://doi.org/10.1039/c9nr08161e)

179. Mechanical conditions for stable symmetric cell constriction; Beltran-Heredni, Elena; Monroy, Francisco; Cao-Garcia, Francisco J.; *Phys. Rev. E* 100, 052408 (2019); [10.1103/PhysRevE.100.052408](https://doi.org/10.1103/PhysRevE.100.052408)

180. Mechanically interlocked materials. Rotaxanes and catenanes beyond the small molecule; Mena-Hernando, Sofia; Perez, Emilio M; *Chem. Soc. Rev.*, 2019, 48, 5016; [10.1039/c8cs00888d](https://doi.org/10.1039/c8cs00888d)

181. Vortex dynamics controlled by local superconducting enhancement; V Rollano, A Gomez, A Muñoz-Noval, J del Valle, M Menghini, M C de Ory, J L Prieto, E Navarro, E M Gonzalez and J L Vicent1; *2019 New J. Phys.* 21 113059; [10.1088/1367-2630/ab5994](https://doi.org/10.1088/1367-2630/ab5994)

182. MicroRNA sensors based on gold nanoparticles; Coutinho, Catarina; Somoza, Alvaro; *Anal Bioanal Chem* 2019; 411(9):1807–1824; [10.1007/s00216-018-1450-7](https://doi.org/10.1007/s00216-018-1450-7)

183. Nanoparticles for nucleic-acid-based biosensing: opportunities, challenges, and prospects; Campuzano, Susana; Yanez-Sedeno, Paloma; Pingarron, Jose M.; *Anal Bioanal Chem* 411, 1791–1806 (2019); [10.1007/s00216-018-1273-6](https://doi.org/10.1007/s00216-018-1273-6)

184. On Modeling of Plasmon-Induced Enhancement of the Efficiency of Solar Cells Modified by Metallic Nano-Particles; Kluczyk, K.; David, C.; Jacak, J.; Jacak, W.; *Nanomaterials* 2019, 9, 3; [10.3390/nano9010003](https://doi.org/10.3390/nano9010003)

185. Engineering protein assemblies with allosteric control via monomer fold-switching; Campos, L.A., Sharma, R., Alvira, S. et al.; *Nat Commun* 10, 5703 (2019); [10.1038/s41467-019-13686-1](https://doi.org/10.1038/s41467-019-13686-1)

186. Oxygen Vacancies on Layered Niobic Acid that Weaken the Catalytic Conversion of Polysulfides in Lithium-Sulfur Batteries; Xu, Lingling; Zhao, Hongyang; Sun, Mingzi; Huang, Bolong; Wang, Jianwei; Xia, Jiale; Li, Na; Yin, Dandan; Luo, Meng; Luo, Feng; Du, Yaping; Yan, Chunhua; *Angew.Chem. Int.Ed.* 2019, 58,11491 –11496; [10.1002/anie.201905852](https://doi.org/10.1002/anie.201905852)

187. Correction: Perspectives for Ag2S NIR-II nanoparticles in biomedicine: from imaging to multifunctionality; Shen, Yingli; Lifante, Jose; Ximendes, Erving; Santos, Harrison D A; Ruiz, Diego; Juarez, Beatriz H; Gutierrez, Irene Zabala; Vera, Vivian Torres; Retama, Jorge Rubio; Rodriguez, Emma Martin; Ortgies, Dirk H; Jaque, Daniel; Benayas, Antonio; Rosal, Blanca Del; *Nanoscale*, 2019, 11, 21009; [10.1039/c9nr0229e](https://doi.org/10.1039/c9nr0229e)

188. Phthalocyanines and porphyrinoid analogues as hole- and electron-transporting materials for perovskite solar cells; Urbani, Maxence; de la Torre, Gema; Nazeeruddin, Mohammad Khaja; Torres, Tomas; *Chem. Soc. Rev.*, 2019, 48, 2738; [10.1039/c9cs00059c](https://doi.org/10.1039/c9cs00059c)

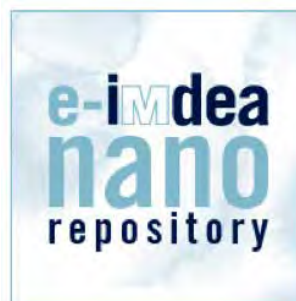
189. **Phthalocyanines for dye-sensitized solar cells**; Urbani, Maxence; Ragoussi, Maria-Eleni; Nazeeruddin, Mohammad Khaja; Torres, Tomas; *Coordination Chemistry Reviews* **381** (2019) 1–64; [10.1016/j.ccr.2018.10.007](#)
190. **Effect of quasiparticle excitations and exchange-correlation in Coulomb drag in graphene**; Fandan, R., Pedrós, J., Guinea, F. et al.; *Commun Phys* **2**, 158 (2019); [10.1038/s42005-019-0259-9](#)
191. **Polydiarylfuorene Molecular Weight Effects on beta-Conformation Formation for Amplified Spontaneous Emission for Optoelectronic Applications**; Zhu, Wensai; Wei, Chuanxin; An, Xiang; Weng, Jiena; Liu, Bin; Wang, Ning; Sun, Ning; Sun, Lili; Yu, Mengna; Lin, Jinyi; Bai, Lubing; Sun, Chen; Lu, Dan; Xie, Linghai; Huang, Wei; *ACS Appl. Polym. Mater.* **2019**, 1, 9, 2352–2359; [10.1021/acsapm.9b00451](#)
192. **Processing of covalent organic frameworks: an ingredient for a material to succeed**; Rodriguez-San-Miguel, David; Zamora, Felix; *Chem. Soc. Rev.*, **2019**, 48, 4375; [10.1039/c9cs00258h](#)
193. **Rare earth double perovskites: a fertile soil in the field of perovskite oxides**; Chen, Xiaoyun; Xu, Jun; Xu, Yueshan; Luo, Feng; Du, Yaping; *Inorg. Chem. Front.*, **2019**, 6, 2226; [10.1039/c9qi00512a](#)
194. **Selenoamides modulate dipole-dipole interactions in hydrogen bonded supramolecular polymers of 1,3,5-substituted benzenes**; Berrocal, Jose Augusto; Mabesoone, Mathijs F J; Garcia Iglesias, Miguel; Huizinga, Alex; Meijer, E W; Palmans, Anja R A; *Chem. Commun.*, **2019**, 55, 14906; [10.1039/c9cc08423a](#)
195. **Sestrins as a Therapeutic Bridge between ROS and Autophagy in Cancer**; Sanchez-Alvarez, Miguel; Strippoli, Raffaele; Donadelli, Massimo; Bazhin, Alexandr, V; Cordani, Marco; *Cancers (Basel)*. **2019**; 11(10): 1415; [10.3390/cancers11101415](#);;
196. **Sestrins at the Interface of ROS Control and Autophagy Regulation in Health and Disease**; Cordani, Marco; Sanchez-Alvarez, Miguel; Strippoli, Raffaele; Bazhin, Alexandr, V; Donadelli, Massimo; *Oxid Med Cell Longev* **2019**:1283075; [10.1155/2019/1283075](#);;
197. **Site-selective-induced isomerization of formamide**; Oberli, S; Gonzalez-Vazquez, J; Rodriguez-Perello, E; Sodupe, M; Martin, F; Picon, A; *Phys. Chem. Chem. Phys.*, **2019**, 21, 25626; [10.1039/c9cp04441h](#)
198. **Subppm Amine Detection via Absorption and Luminescence Turn-On Caused by Ligand Exchange in Metal Organic Frameworks**; Sousaraei, Ahmad; Queiros, Carla; Moscoso, Francisco G; Lopes-Costa, Tania; Pedrosa, Jose M; Silva, Ana M G; Cunha-Silva, Luis; Cabanillas-Gonzalez, Juan; *Anal. Chem.* **2019**, 91, 24, 15853–15859; [10.1021/acs.analchem.9b04291](#)
199. **Targeting autophagy using metallic nanoparticles: a promising strategy for cancer treatment**; Cordani, Marco; Somoza, Alvaro; *Cell. Mol. Life Sci.* **76**, 1215–1242 (2019); [10.1007/s00018-018-2973-y](#)
200. **Targeting Macrophages: Friends or Foes in Disease?**; Ardura, Juan A.; Rackov, Gorjana; Izquierdo, Elena; Alonso, Veronica; Gortazar, Arancha R.; Escribese, Maria M.; *Front. Pharmacol.* **2019**, 10, 1255; [10.3389/fphar.2019.01255](#)
201. **Enhanced Performance of Reagent-Less Carbon Nanodots Based Enzyme Electrochemical Biosensors**; Iria Bravo, Cristina Gutiérrez-Sánchez, Tania García-Mendiola, Mónica Revenga-Parra, Félix Pariente and Encarnación Lorenzo; *Sensors* **2019**, 19(24), 5576; [10.3390/s19245576](#)
202. **The Legacy of Sir Harold W. Kroto: Fullerenes and Beyond**; Martin, Nazario; *Chem.* **5**, 733–738, **2019**; [10.1016/j.chempr.2019.03.015](#)
203. **Effect of Charge-Assisted Hydrogen Bonds on Single-Molecule Electron Transport**; Valentina Sacchetti, J. Ramos-Soriano, Beatriz M. Illescas, M. Teresa González, Dongzhe Li, Lucía Palomino-Ruiz, Irene R. Márquez, Edmund Leary, Gabino Rubio-Bollinger, Fabian Pauly, Nicolás Agraït, and Nazario Martín J.; *Phys. Chem. C* **2019**, 123, 48, 29386–29393; [10.1021/acs.jpcc.9b06850](#)
204. **Twists and the Electronic Structure of Graphitic Materials**; Cea, Tommaso; Walet, Niels R; Guinea, Francisco; *Nano Lett.* **2019**, 19, 12, 8683–8689; [10.1021/acs.nanolett.9b03335](#)
205. **Plasmon oscillations in two-dimensional arrays of ultranarrow graphene nanoribbons**; A. Sindona, M. Pisarra, S. Bellucci, T. Tene, M. Guevara, and C. Vacacela Gomez; *Phys. Rev. B* **100**, 235422 (2019); [10.1103/PhysRevB.100.235422](#)
206. **Characterizing the CdSe nanodots in the vicinity of the monolayer covering range**; María J. Capitan, Jesus Alvarez, Sergio Puebla, Michael J. Spilsbury, Julio J. Conde, Beatriz H. Juarez, and Roberto Otero; *RSC Adv.*, **2019**, 9, 41531; [10.1039/c9ra09184j](#)



IMDEA Nanociencia Repository

Open Science commitment -all IMDEA publications and data will be freely available at the Institutional repository.

This aligns the Institute with the Open Access policies of Horizon Europe and the Spanish and Regional Government funding agency requirements.



Home

Advanced search

- » Author
- » Funding
- » Title
- » Communities & Collections

My account

- » Log in
- » New registry

Services

- » Autoarchive guide
- » Open access policies
- » Licenses
- » Help - FAQs

Welcome to IMDEA Nanociencia Repository

The institutional Repository of IMDEA Nanociencia is the digital archive that collects the scientific production of the institute, with the aim of preserving and disseminating research results in open access.

» Recent submissions

» Institutional documents

» Research programmes



2. Patents

Title	Publication date	Date of application	Inventor(S)	Applicant(S)	Application number	Publication number
Method of detection of marked structures (machine-translation by google translate, not legally binding)	2020-02-27	20180727	Hernandez Juarez Beatriz Arias Gonzalez de la Aleja José Ricardo Rodríguez Rodríguez Héctor Acebron Rodicio María Iborra Rodríguez Francisco José	Univ Madrid Autonoma [Es] Fund IMDEA Nanociencia [Es] Consejo Superior Investigacion [Es]	ES20180030775	ES2745070 (A1)
Systems and methods for obtaining unique identifiers and measuring displacements by sensing and analyzing spatial magnetic field variations	2019-11-05	20160520	Pedrosa Ruiz Francisco Javier Camarero de Diego Julio Bollero Real Alberto	Fund IMDEA Nanociencia	ES20160382224T	ES2729665 (T3)
Anticancer compositions containing mirna mimics and uses thereof	2020-03-26	20190919	Somoza Calatrava Álvaro [Es] Milán Rois Paula [Es] Latorre Lozano Alfonso [Es]	Fund IMDEA Nanociencia [Es]	W02019EP75199	W02020058418 (A1)
Polymeric composites with functional surfaces	2019-03-28	20170330	Hernandez Rueda Jaime [Es] Rodríguez Fernandez Isabel [Es] Navarro Baena Ivan [Es] Viela Bovio Felipe [Es]	Fund IMDEA Nanociencia [Es]	US201716097152	US2019091950 (A1)
Method for detection of an analyte	2019-05-16	20181108	Cabrera Carrasco David [Es] Aires Trapote Antonio [Es] Artés Ibañez Emilio José [Es] Camarero de Diego Julio [Es] López Cortajarena Aitziber [Es] Terán Garcinuño Francisco José [Es]	Fund IMDEA Nanociencia [Es]	W02018EP80662	W02019092131 (A1)
Ferrite type materials and process for the production thereof	2018-11-22	20180518	Real Alberto Bollero [Es] Deledda Stefano [No] Camarero de Diego Julio [Es] Guzik Matylda [No] Rodríguez Javier Rial [Es]	Inst Energiteknik [No] Fund IMDEA Nanociencia [Es]	W02018EP63222	W02018211121 (A1)
Covalently modified graphene	2016-08-11	20160202	Calleja Mitjá Fabián [Es] Leret García Sofía [Es] Navarro Ocaña Juan Jesús [Es] Stradi Daniele [DK] Black Morocoima Andrés [Es] Bernardo Gavito Ramón [Es] Garnica Alonso Manuela [Es] Granados Ruiz Daniel [Es] López Vázquez de Parga Amadeo [Es] Pérez Álvarez Emilio [Es] Miranda Soriano Rodolfo [Es]	Fundación IMDEA Nanociencia [Es] Univ Autónoma de Madrid [Es]	W02016ES70059	W02016124803 (A1)



Title	Publication date	Date of application	Inventor(S)	Applicant(S)	Application number	Publication number
Modified solid support for the synthesis of oligonucleotides	2016-03-17	20140429	Somoza Calatrava Alvaro [Es] Latorre Lozano Alfonso [Es]	Fundación IMDEA Nanociencia [Es] Fundacion IMDEA Nanociencia [Es]	US20141488276	US2016075680 (A1)
Detection and treatment of gnaq mutant uveal melanoma cells with gold nanoparticles	2015-08-06	20150123	Urda Susana Ortiz [Us] Somoza Calatrava Alvaro [Es] Latorre Lozano Alfonso [Es] Posch Christian [Us]	Univ California [Us] Fundacion IMDEA Nanociencia [Es]	WO2015US12779	WO2015116502 (A1)
Preparation of corrugated and porous graphene from cof for use as supercapacitors (machine-translation by google translate, not legally binding)	2015-06-22	20131122	Coronado Miralles Eugenio [Es] Ribera Hermano Antonio Luis [Es] Abellan Saez Gonzalo [Es] Zamora Abanades Félix [Es] Mas Ballesté Rubén [Es] Rodríguez San Miguel David [Es]	Uni De València [Es] Univ Madrid Autonoma Fundación IMDEA Nanociencia	ES20130001099	ES2538604 (A1)
Functionalised magnetic nanoparticle	2016-09-29	20150326	López Cortajarena Aitziber [Es] Somoza Calatrava Alvaro [Es] Couleaud Pierre [Es] Ocampo Garcia Sandra [Es] Aires Trapote Antonio [Es] Latorre Lozano Alfonso [Es]	Fundación IMDEA Nanociencia [Es]	WO2015EP56631	WO2016150521 (A1)
Functionalized metal nanoparticles and uses thereof for detecting nucleic acids	2016-12-07	20150202	Somoza Calatrava Álvaro [Es] Latorre Lozano Alfonso [Es] Ortiz Urda Susana [Us] Posch Christian [Us]	Fundación IMDEA Nanociencia [Es] Univ California [Us]	EP20150702742	EP3099814 (A1)
Method for the synthesis of covalent organic frameworks	2015-02-05	20140730	Zamora Abanades Félix Juan [Es] Mas-Ballesté Rubén [Es] Rodríguez San Miguel David [Es] Segura Castedo José Luis [Es] De La Peña Ruigómez Alejandro [Es]	Fundación IMDEA Nanociencia [Es] Univ Autónoma de Madrid [Es] Univ Madrid Complutense [Es]	WO2014ES70621	WO2015015035 (A1)
Graphene dried powder and method for its preparation	2015-02-05	20140729	Miranda Soriano Rodolfo [Es] Zamora Abanades Félix Juan [Es] Mas-Ballesté Rubén [Es] Azani Mohammad-Reza [Es] Carcelén Valero Verónica [Es] Castellano Doblaré Manuel [Es]	Fundación IMDEA Nanociencia [Es] Univ Autónoma de Madrid [Es] Abengoa Res SL [Es]	WO2014EP66316	WO2015014862 (A1)
Position-sensitive photodetector, method for obtaining same and method for measuring the response from the photodetector	2012-07-12	20101210	Cabanillas Gonzalez Juan [Es] Campoy Quiles Mariano [Es]	Fundacion IMDEA Nanociencia [Es] Consejo Superior Investigacion	ES20100031818	ES2384766 (A1)
Position-sensitive photodetector, method for obtaining same and method for measuring the response from the photodetector	2013-10-16	20111207	Cabanillas Gonzalez Juan [Es] Campoy Quiles Mariano [Es]	Fundacion IMDEA Nanociencia [Es] Consejo Superior Investigacion [Es]	EP20110847054	EP2650939 (A1)

3. Congresses

166
events

103 abroad and 63 in Spain

244
contributions

22 invited lectures
and **222 regular**
contributions,
125 oral and 97 as posters

03-08/03/2019

Annual American Physical Society Meeting, Boston, USA.

02-06/03/2019

14th International Symposium on Macrocyclic and Supramolecular Chemistry, Lecce, Italy.

07-08/03/2019

International symposium on ultrafast electronic and structural dynamics, Sendai, Japan.

31/03-04/04/2019

American Chemical Society National Meeting (ACS Spring Meeting), Orlando, Florida, USA.

01-05/04/2019

DPG Spring Meeting, Regensburg, Germany.

25/04/2019

4th GTU Photodynamic Day in the framework of the International Day of Light Gebze, Turkey.

26-30/05/2019

XXXVII Biennial Meeting of the Spanish Royal Society of Chemistry (RSEQ), San Sebastián, Spain.

02-07/06/2019

14th International Symposium on Functional π -Electron Systems (F π 14), Berlin, Germany.

12-13/06/2019

International Workshop on Topology, Nims, Tsukuba, Japan.

17-21/06/2019

10th International Symposium on Metallic Multilayers (MML 2019), Madrid, Spain.

23-26/06/2019

International Seoul Symposium on Exotic Porphyrinoids and Related Systems, Seoul, Korea.

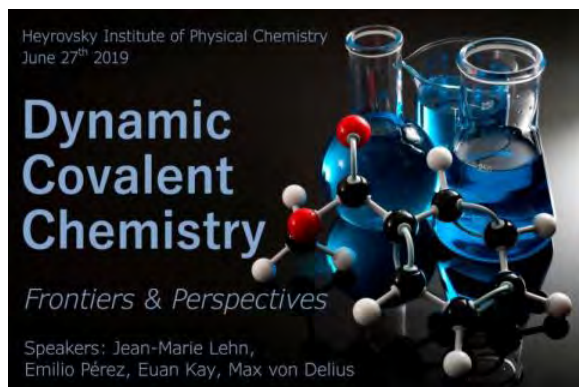
24-28/06/2019

15th International Conference on Organic Electronics (ICOE 2019), Hasselt, Belgium.



27/06/2019

Dynamic Covalent Chemistry, Prague, Czech Republic.



01-05/07/2019

40th International Conference on Vacuum Ultraviolet and X-ray Physics (VUVX 2019), San Francisco, California, USA.



01-06/07/2019

Coma-Ruga-2019 - International Workshop on Magnetism & Superconductivity at the Nanoscale, Barcelona, Spain.

11-17/07/2019

10th meeting of the International Society of Theoretical Chemical Physics (ISTCP 2019), Tromsø, Norway.



15-19/07/2019

XXXVII Biennial Meeting of the Spanish Royal Society of Physics (RSEF), Zaragoza, Spain.



17/07/2019

Gordon Conference in Photochemistry, Stonehill College, MA, USA.

17-19/07/2019

8th Iberian Meeting of Colloids and Interfaces (RICI8), Aveiro, Portugal.



20-24/07/2019

12th EBSA- 10th ICBP-IUPAP Biophysics Congress, Madrid, Spain.



30/07/2019

9th International Symposium on Bioorganometallic Chemistry, York, United Kingdom.

4. Funding

We include all research grants that were active during the whole part of 2019 funded by the European Commission, national and regional governments and other public and private agencies.

4.1. International programmes

European Projects



ERC CONSOLIDATOR GRANTS

ELECNANO



Electrically Tunable Functional Lanthanide Nanoarchitectures on Surfaces

Grant Agreement number: 766555

From 2018 to 2023

Principal Investigator: [Dr. David Écija](#)

ERC PROOF OF CONCEPT

PINT

Ultrastrong Composites through Polymers Interlocked with carbon NanoTubes

Grant Agreement number: 842606

From 2019 to 2020

Principal Investigator: [Dr. Emilio Pérez](#)

Collaborative Projects



NOCANTHER



Nanomedicine upscaling for early clinical phases of multimodal cancer therapy

H2020-NMP-2015-two-stage

Grant Agreement number: 685795

From 2016 to 2021

Coordinated by IMDEA Nanociencia

Principal Investigators: [Dr. Rodolfo Miranda](#) and [Dr. Álvaro Somoza](#)

<http://www.nocanther-project.eu/>



ByAXON



Towards an active bypass for neural reconnection

H2020-FETOPEN-2016-2017

Grant Agreement number: 737116

From 2017 to 2020

Coordinated by IMDEA Nanociencia

Principal Investigators: **Dr. Rodolfo Miranda**

and **Dr. Teresa González**

<http://www.byaxon-project.eu/>

A-LEAF



Towards An Artificial Leaf

H2020-FETPROACT-2016-2017

Grant Agreement number: 732840

From 2017 to 2020

Principal Investigators: **Dr. Rodolfo Miranda** and **Dr. David Écija**

<http://www.a-leaf.eu/>

EVO-NANO



Evolvable platform for programmable nanoparticle based cancer therapies

H2020-FETOPEN-2016-2017

Grant Agreement number: 800983

From 2018 to 2021

Principal Investigator: **Dr. M^a Isabel Rodríguez**

<http://evonano.eu/>

GRAPHENECORE2



Graphene-based disruptive technologies

H2020-FETFLAG-2017

Grant Agreement number: 785219

From 2018 to 2020

Principal Investigator: **Dr. Francisco Guinea**

UWIPOM2



Ultra-efficient wireless powered micro-robotic joint for health applications

H2020-FETOPEN-2018-2020

Grant Agreement number: 857654

From 2019 to 2022

Principal Investigator: **Dr. Alberto Bollero**

nanomiR

MicroRNAs-based nanosystems for the detection and treatment of muscular diseases

Funding: ERA-Net EuroNanoMedII (ENMII) 2016 EU-Framework Programme Horizon 2020 and Ministerio de Economía, Industria y Competitividad.

PCIN-2016-167

From 2016 to 2019

Principal Investigator: **Dr. Álvaro Somoza**

BIOMAG

Advanced magnetic nanoparticles for detection and quantification of biomarkers in biological fluids

Funding: M-ERA.NET Call 2018

From 2019 to 2022

Principal Investigator: **Dr. Francisco J. Terán**

Coordinated by IMDEA Nanociencia

Programación Conjunta Internacional (Programa España – Japón)

AMYLIGHT

Desarrollo de estrategias fototerapéuticas para la amiloidosis mediante visión nanoscópica del daño fotoinducido al material amiloide

Funding: Ministerio de Ciencia, Innovación y Universidades. Ref.: PCI2018-093064

From 2019 to 2021

Principal Investigator: [Dr. Cristina Flors](#)

European Cooperation in Science and Technology (COST Actions)

ATTOCHEM

Attosecond Chemistry (CA18222)

From 2019 to 2023

Chair: [Prof. Fernando MARTÍN](#)

<https://www.cost.eu/actions/CA18222/#tabsName:overview>

Other International Programmes

DEFROST

Development of hybrid graphene-superconductor detectors for quantum and space applications

Funding: Office of Naval Research (United States)

From 2019 to 2021

Principal Investigator: [Dr. Daniel Granados](#)

4.2. National Programmes. Ministerio de Ciencia, Innovación y Universidades

Programa Estatal de Generación del Conocimiento y fortalecimiento científico y tecnológico del sistema de I+D+i

SUBPROGRAMA ESTATAL DE FORTALECIMIENTO INSTITUCIONAL

Centros de Excelencia «Severo Ochoa»
y Unidades de Excelencia «Maria de Maeztu»

Severo Ochoa Centre of Excellence (Call 2017)



Ref.: SEV-2016-0686

From 2017 to 2021

Scientific Director: [Dr. Francisco Guinea](#)

IMDEA Nanociencia became an accredited Severo Ochoa Centre of Excellence by the Spanish Ministry of Economy, Industry and Competitiveness in 2017. This award is the highest national recognition for centres of excellence in Spain and is granted after a rigorous evaluation process carried out by an independent international committee of prestigious scientists.

Europa Redes y Gestores - Europa Centros Tecnológicos 2019

OPINA

Optimización en los Procesos de preparación y gestión de iniciativas europeas en IMDEA Nanociencia

Ref.: ECT2019-000615

From 2019-2020

Principal Investigator: [Dr. M.J.Villa](#) (Projects and Communication Offices)



SUBPROGRAMA ESTATAL DE I+D+I ORIENTADA A LOS RETOS DE LA SOCIEDAD



Call 2018

SMS-QUTE

Espintrónica molecular aplicada a tecnologías cuánticas

Ref.: RTI2018-096075-A-C22

From 2019 to 2022

Principal Investigator: [Dr. Enrique Burzuri](#)

AMAPOLA

Materiales avanzados para la optimización de láseres orgánicos y aplicaciones nanotecnológicas

Ref.: RTI2018-097508-B-I00

From 2019 to 2021

Principal Investigators: [Dr. Juan Cabanillas](#) and [Dr. Reinhold Wanne-macher](#)

FUN-SOC: FEST

Nuevas funcionalidades dirigidas por interacciones espín-orbita: texturas de espines quirales rápidas y eficientes

Ref.: RTI2018-097895-B-C42

From 2019 to 2021

Principal Investigator: [Dr. Paolo Perna](#)

INTRA_TEMP

Interpretación de la temperatura intracelular para el diagnóstico y tratamiento del cáncer

Ref.: RTI2018-101050-J-I00

From 2019 to 2021

Principal Investigator: [Dr. Sebastian Thompson Parga](#)

TOPTWEEZ

Medida de temperatura en medios fisiológicos mediante pinzas ópticas

Ref.: RTI2018-101939-B-I00

From 2019 to 2021

Principal Investigator: [Dr. Gorka Salas](#)

Call 2017

Incorporación estable de Doctores

Ref.: IEDI-2017-00902

From 2017 to 2019

Principal Investigator: [Dr. Johannes Grieschner](#)

NanoSmart

Nanoestructuras inteligentes contra el melanoma de úvea y el cáncer de páncreas

Ref.: SAF2017-87305-R

From 2018 to 2020

Principal Investigators: [Dr. Álvaro Somoza](#) and [Dr. Begoña Sot](#)

3D-MAGNETOH

Impresión 3D de imanes basados en mn para configurar un nuevo horizonte en energía y transporte

Ref.: MAT2017-89960-R

From 2018 to 2020

Principal Investigator: [Dr. Alberto Bollero](#)

NANOLICO

Nanomateriales funcionales para la verificación de predicciones in silico de nanotermometría e hipertermia magnética

Ref.: MAT2017-85617-R

From 2018 to 2020

Principal Investigator: [Dr. Francisco J. Terán](#)

DETECTA

Desarrollo de detectores para futuras misiones espaciales en el mm/sub-mm y fir basados en materiales superconductores o de baja dimensionalidad

Ref.: ESP2017-86582-C4-3-R

From 2018 to 2019

Principal Investigator: **Dr. Daniel Granados Ruiz**

BiSURE

Superficies nanoestructuradas biofuncionales como nueva generación de implantes en medicina regenerativa

Ref.: DPI2017-90058-R

From 2018 to 2020

Principal Investigators: **Dr. M. Isabel Rodríguez Fernández and Dr. Teresa González**

Call 2016

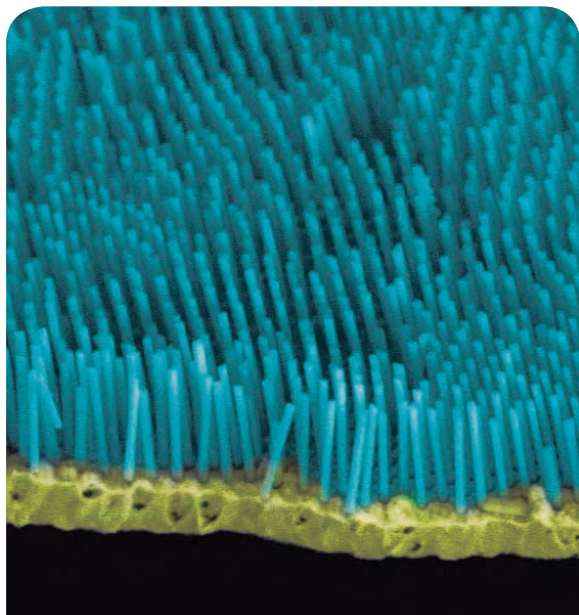
NEWMAG

Nueva generación de imanes basados en MNAL mediante impresión 3D para aplicaciones energéticas

Ref.: EUIN2017-88502

Duration: 2017-2019

Principal Investigator: **Dr. Alberto Bollero**



SUBPROGRAMA ESTATAL DE GENERACIÓN DE CONOCIMIENTO

Proyectos de I+D de generación de conocimiento

Call 2018

MICRUNC

Microscopia de super-resolución con fluoróforos no convencionales

Ref.: PGC2018-094802-B-I00

From 2019 to 2021

Principal Investigator: **Dr. Cristina Flors**

TOPSURF

Investigando los estados de superficie topológicos de materiales cuánticos

Ref.: PGC2018-097028-A-I00

From 2019 to 2021

Principal Investigator: **Dr. Manuela Garnica**

SpOrQuMat

Spin-orbit driven physics at surfaces and interfaces of quantum materials

Ref.: PGC2018-098613-B-C21 / PGC2018-098613-B-C22

From 2019 to 2021

Principal Investigators: **Dr. Rodolfo Miranda and Dr. Francisco Guinea**

SIN_FLU

Caracterización de la dinámica transcripcional del virus de la gripe, influenza a, a nivel de moléculas individuales

Ref.: PGC2018-099341-B-I00

From 2019 to 2021

Principal Investigator: **Dr. Borja Ibarra**

**MECAVIRINF****Caracterización nano-mecánica y detección en tiempo real de la infección de células eucariotas con calicivirus**

Ref.: PGC2018-099713-B-I00

From 2019 to 2021

Principal Investigator: [Dr. Johann Mertens](#)**Call 2017****BPMDUHDMRM****Bits de nanoestructuras magnéticas por nanolitografía de ADN para memorias magnéticas de alta densidad**

Ref.: MAT2017-89868-P

From 2018 to 2020

Principal Investigator: [Dr. Feng Luo](#)**OptoCT****Espectroscopia óptica de estado estacionario y resuelto en el tiempo de sistemas orgánicos de transferencia de carga innovadores**

Ref.: CTQ2017-87054-C2-1-P

From 2018 to 2021

Principal Investigators: [Dr. Johannes Gierschner](#) and [Dr. Larry Luer](#)**SwipH****Metallofamacos como conmutadores sensibles al pH para su uso en nanomedicina**

Ref.: CTQ2017-84932-P

From 2018 to 2020

Principal Investigator: [Dr. Ana M. Pizarro](#)**IMAN****Novel interfaces between molecules and nanomaterials**

Ref.: CTQ2017-86060-P

From 2018 to 2020

Principal Investigator: [Dr. Emilio M. Pérez](#)**Call 2016****ORGENERGY****Materiales orgánicos optoelectrónicos para la energía**

Ref.: CTQ2016-81911-REDT

From 2017 to 2019

Principal Investigator: [Dr. Nazario Martín](#)**GRAPHICS****Graphene hybrid switchable materials**

Ref.: CTQ2016-80635-P

From 2016 to 2019

Principal Investigator: [Dr. Jose Sánchez Costa](#)**Equipamiento científico****Spin-ARPES****Sistema de fotoemisión resuelta en ángulo con polarización en espín**

Ref.: EQC2019-006304-P

From 2019 to 2020

Principal Investigator: [Dr. Rodolfo Miranda](#)**EqNanoIncrease****Equipamiento para incrementar la productividad y la calidad de dispositivos electro-ópticos y/o superconductores del Centro de Nanofabricación**

Ref.: EQC2018-005134-P

From 2018 to 2019

Principal Investigator: [Dr. Daniel Granados](#)

Acciones de Dinamización “Europa Investigación” 2019

Designing rational schemes for solar fuel and methane oxidizing catalysts

Ayudas del ERC “Starting Grants” (StG)

Ref.: EIN2019-103399

From 2019 to 2020

Principal Investigator: **Dr. Dooshaye Moonshiram**

Preparación de la propuesta: ANACONDA

Acciones en Tecnologías Futuras y Emergentes (FET)

Ref.: EIN2019-103305

From 2019 to 2020

Principal Investigator: **Dr. Isabel Rodríguez Fernández**

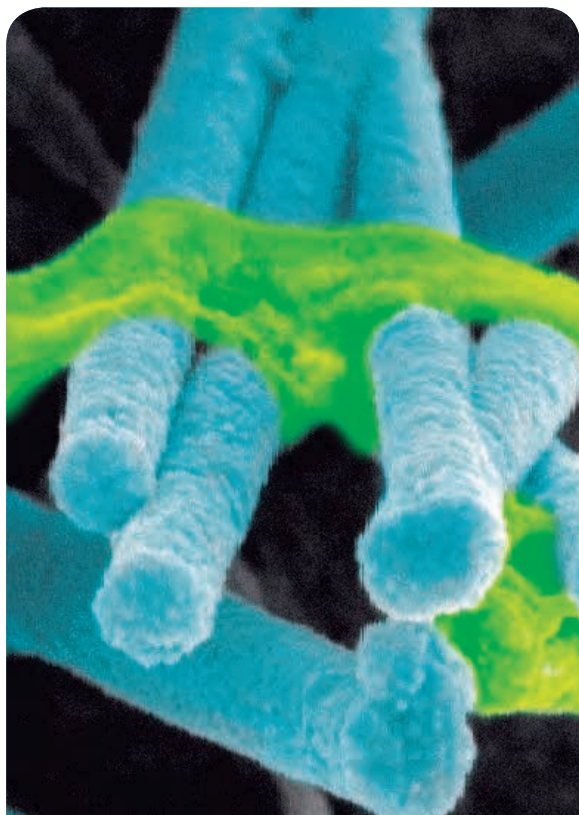
Nanociencia aplicada al desarrollo de imanes permanentes libres de tierras raras mediante tecnologías sostenible

Ayudas del ERC “Advanced Grants” (AdG)

Ref.: EIN2019-103506

From 2019 to 2020

Principal Investigator: **Dr. Alberto Bollero**



Convocatoria de Ayudas para el Fomento de la Cultura Científica



Nanociencia to-go



Ref.: FCT-18-14139

From 2019-2020

Principal Investigator: **Dr. M.J.Villa** (Projects and Communication Offices)

4.3. Regional programmes

Programas de Actividades de I+ D entre grupos de investigación de la Comunidad de Madrid

SINERGIAS 2018

FULMATEN



Fotónica ultrarrápida para el diseño de nuevos materiales y la captura eficiente de energía

Coordinator: IMDEA Nanociencia

From 2019 to 2021

Principal Investigator: **Dr. Fernando Martin**



QUIMTRONIC

Química disruptiva en la nanoescala par electrónica y flexibles

Coordinator: Universidad Complutense de Madrid

From 2019 to 2021

Principal Investigators: [Dr. David Écija](#) and [Dr. Nazario Martín](#)

CONVOCATORIA TECNOLOGÍAS 2018

NMAT2D



Nuevos materiales bidimensionales: caracterización, propiedades y aplicaciones

Coordinator: IMDEA Nanociencia

From 2019 to 2022

Principal Investigator: [Dr. Francisco Guinea](#)

NanomagCOST



Soluciones del nanomagnetismo a los retos sociales

From 2019 to 2022

Coordinator: Universidad Autónoma de Madrid

Principal Investigators: [Dr. Rodolfo Miranda](#), [Dr. Alberto Bollero](#) and [Dr. Paolo Perna](#)

TEC2SPACE

Desarrollo y explotación de nuevas tecnologías para instrumentación espacial en la Comunidad de Madrid

Coordinator: Centro de Astrobiología (CAB)

From 2019 to 2022

Principal Investigator: [Dr. Daniel Granados](#)

MADRID-PV2

Materiales, dispositivos y tecnologías para el desarrollo de la industria fotovoltaica

Coordinator: Instituto Energía Solar (Universidad Politécnica de Madrid)

From 2019 to 2022

Principal Investigator: [Dr. Isabel Rodríguez](#)

FotoArt

Nueva generación de materiales multifuncionales para fotosíntesis artificial

From 2019 to 2022

Coordinator: IMDEA Energía

Principal Investigators: [Dr. Emilio M. Pérez](#) and [Dr. Miguel A. Niño](#)

CONVOCATORIA BIOMEDICINA 2017

RENIM-CM

Red Madrileña de Nanomedicina en Imagen Molecular

Ref.: B2017/BMD-3867

From 2018 to 2021

Coordinator: Fundación para la Investigación Biomédica Hospital Gregorio Marañón

Principal Investigators: [Dr. Cristina Flors](#)

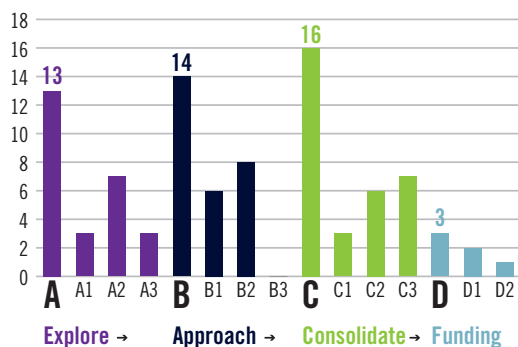
4.4. Industrial projects

The Strategic Industrial Partnership Office (SIPO) was launched in 2019 led by H. Guerrero. The office plays a key role in establishing new strategic alliances, partnerships and collaborations with the private sector. The office also fosters collaboration with strategically important institutional partners.

A system has been introduced to manage all the contacts and monitor the maturity of the relationships using a proprietary set of metrics **Partnership Readiness Level (PRL)**. Over 40 companies spread across several research areas: Aerospace, Security & Defence; Health & Food; Energy & Environment; Manufacturing (materials, sensors, actuators); Transport / Logistics; Information (Artificial Intelligence) are now part of the IMDEA Nanociencia eco-system, with 17% of these contacts coming from outside of Spain.

Partnerships Readiness Level (PRL) proprietary to IMDEA Nano

Industrial Opportunities (09/2019)



Company: Höganäs (Sweden)

Höganäs

ECNanoManga

Up-scaled production of a new generation of Exchange/Coupled Nanocrystalline Mn-based RE-free PMs.

From 2018 to 2021

Dr. Alberto Bollero

Company: Nanocore Aps (Denmark)

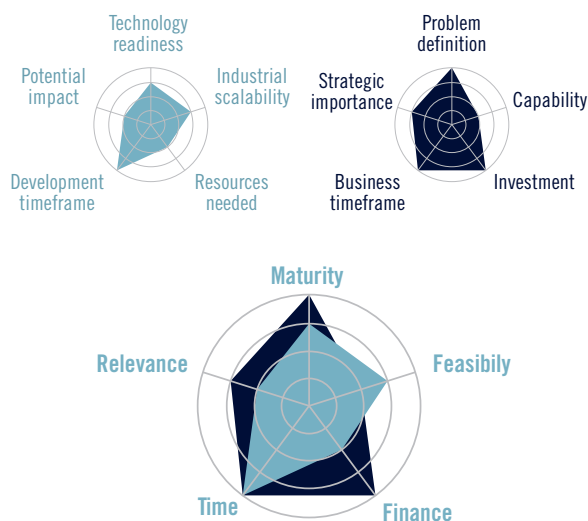
nanocore
STRENGTH FROM WITHIN

Polymint

From 2018 to 2019

Dr. Emilio Pérez

Nanotechnology Roadmapping





4.5. Fellowships

4.5.1. International



MARIE SKŁODOWSKA-CURIE ACTIONS (MSCA) | H2020

2DSPIN

2D magnetic materials for molecular SPINtronics

Grant Agreement number: 746579

Duration: 2018-2019

Fellow: [Dr. Enrique Burzuri](#)

4.5.2. National

PROGRAMA ESTATAL DE PROMOCIÓN DEL TALENTO Y SU EMPLEABILIDAD EN I+D+I

Ayudas para la contratación de doctores «Ramón y Cajal»

Call 2015 [Dr. Jose Sánchez Costa](#)

Ayudas para la contratación de doctores «Juan de la Cierva»

Call 2018 [Dr. Jose Ignacio Urgel](#) (Incorporación)

Call 2017 [Dr. Lucía Piñeiro](#) (Formación)

Ayudas para la contratación de personal técnico de apoyo a la I+D+i

Call 2018 [Patricia Pedraz](#), [Cintia de Vequi](#)

Call 2017 [Silvia Miranda](#)

Call 2016 [Isabel Ortiz](#)

Contratos predoctorales para la formación de doctores (FPI Programme)

Call 2018 [Alicia Naranjo](#), [Ana Arché](#), [Jesús Galán](#), [Alejandro Jimeno](#), [Joel Gabriel Fallaque](#), [Ingrid Ortega](#)

Call 2017 [Paula Milian](#), [Daniel Moreno](#), [Tomás Nicolas](#)

Call 2016 [Patricia Bondia](#)

Call 2015 [Sofia Mena](#)

Contratos predoctorales para la formación del profesorado universitario (FPU Programme)

Call 2018 [Nuria Lafuente](#)

Ayudas para la promoción de empleo joven e implantación de la Garantía Juvenil en I+D+i

2018 ([6 ayudantes de investigación](#))

4.5.3. Regional (Comunidad de Madrid)



Comunidad
de Madrid

PROGRAMA DE ATRACCIÓN DE TALENTO INVESTIGADOR

Ayudas para la contratación de doctores con experiencia (Modalidad 1)

Call 2019 [Dr. Edmund Leary](#)

Call 2018 [Dr. Ana Espinosa](#)

Call 2017 [Dr. Enrique Cánovas](#), [Dr. Enrique Burzuri](#)

Ayudas para la contratación de jóvenes doctores (Modalidad 2)

Call 2019 [Dr. Ramon Bernardo](#), [Dr. Jose Ignacio Urgel](#)

Call 2018 [Dr. Yago Ferreirós](#), [Dr. Alberto González](#)

Call 2017 [Dr. Manuela Garnica](#), [Dr. Christin David](#)

Ayudas para la Contratación de Doctorados Industriales

Call 2017 [Demian Pardo](#)

Programa Operativo de Empleo Juvenil y la Iniciativa de Empleo Juvenil (YEI) Contratación de Investigadores predoctorales y postdoctorales

Total 35:

Calls: 2016 (7 Predocs); 2017 (16 Predocs); 2018 (8 Predocs & 1 PostDoc); 2019 (3 Predocs & 1 PostDoc)

Realización de contratos de Ayudantes de investigación/ Técnicos de Laboratorio

Total 15:

Calls: 2016 (1 Tec.); 2017 (3 Ayu. & 2 Tec.); 2018 (3 Ayud.); 2019 (4 Ayu. & 2 Tec.)

4.5.4. Others Programmes



Becas postdoctorales en Centros de Investigación y Universidades Españolas (Junior Leader)

Call 2019 [Dr. Ignacio Colomer](#)

Call 2018 [Dr. Manuela Garnica](#)

Programa de Becas de Doctorado InPhINIT

Call 2018 [Raman Prajapati](#)



Ayudas Predoctorales en Oncología (APRO)

Call 2019 [Dr. Catarina Coutinho](#)

Ideas Semilla 2019

[Dr. Ana Espinosa de los Monteros](#)



5. Training

1. Seminars

JANUARY

Interpreting Catalysis by Simulations

Prof. Nuria López, *Institute of Chemical Research of Catalonia, ICIQ*

Thermodynamic, structural and magnetic properties of nanocrystalline vortex matter: when the surface crystallographic orientation matters

Dr. Yanina Fasano, *Centro Atómico Bariloche*

Electromigration as a nanofabrication tool

Dr. Alejandro V. Silhanek, *Q-MAT Center and Université de Liège*

FEBRUARY

Expanding the boundaries of cathodic corrosion: The effective preparation of metal, metal alloy and mixed oxides nanoparticles and their use as active electrocatalyst and photocatalyst

Dr. Paramaconi Rodriguez, *School of Chemistry, University of Birmingham*

G-quadruplexes in Cancer Research: from Targets to Nanotools?

Dr. Alessio Terenzi, *Donostia International Physics Center*

On-surface synthesis of single molecular magnets by contacting magnetic atoms to π -conjugated molecules using STM manipulation

Prof. Toyo Kazu Yamada, *Chiba University, Department of Materials Science, Chiba*

Protein engineering and single molecule fluorescence: combined to study new folding and binding mechanisms

Dr. Luis Alberto Campos Prieto, *Centro Nacional de Biotecnología – CSIC*

MARCH

Molecular insights into electrochemical surfaces with EC-TERS

Dr. Katrin F. Domke, *Max Planck Institute for Polymer Research*

Cascade of superconducting domes and magnetic order in charge neutral and $\frac{1}{4}$ filled magic angle bilayer graphene

Dr. Dmitri K. Efetov, *Low Dimensional Quantum Materials, ICFO, Barcelona*

Quantum computing with magnetic molecules

Dr. Fernando Luis Vitalla, *ICMA, CSIC, Zaragoza*

APRIL

Status of the new ARPES beamline at ALBA: LOREA

Prof. Massimo Tallarida (on behalf of the LOREA group) *ALBA, Synchrotron Light Source, Barcelona*

Photo-excitation dynamics of nitrogen-vacancy centers in diamond

Dr. Ronald Ulbricht, *Nanyang Technical University*

Visible light mediated enantioselective formation of quaternary centers

Dr. Estíbaliz Merino, *Departamento de Química Orgánica. Universidad Autónoma de Madrid.*

Electromagnetic Field Enhancement on Axially Heterostructured NWs

Dr. Jose Luis Pura, *GdS Optrolab, Dpt. Física de la Materia Condensada, Ed. LUCIA Universidad de Valladolid*



MAY

G2-S16 in innate and adaptive immune system, microbiomen and human vaginal tissue

Dra. M^a Ángeles Muñoz-Fernández, *Hospital General Universitario Gregorio Marañón, CIBER BBN, Spanish HIV HGM BioBank*

Spectroscopic studies of dispersion and orientation of carbon nanotubes and graphene in aqueous inks and related nanomaterials

Prof. Eric Anglaret, *Laboratoire Charles Coulomb, CNRS, Université de Montpellier*

Shedding light on the editorial processes at Nature Communications

Dr. Selina La Barbera, *Nature Research, Springer Nature, Berlin*

Cavity-enhanced scattering to create photonic qubits from quantum dots

Prof. Anthony Bennet, *Cardiff University*

Recent Developments on Rare Earth-Lean/Free Magnets

Prof. George C. Hadjipanayis, *University of Delaware (USA), Dept. of Physics and Astronomy*

Chemical tools in catalysis and systems chemistry

Dr. Ignacio Colomer, *Universidad Autónoma de Madrid*

Superconductores en rotación: la pistola humeante

Jorge E. Hirsch, *Universidad de California San Diego*

A dynamic picture of energy conversion in photovoltaic devices

Prof. Alejandro Jenkins, *Universidad de Costa Rica*

JUNE

Photoactivatable Oxygenation Catalysts of Amyloids

Prof. Youhei Sohma, *Graduate School of Pharmaceutical Sciences, The University of Tokyo*

JULY

Charge transport and Photoactivity in Metal-Organic Frameworks: Thin Films and Porous Crystals

Prof. Carlos Martí-Gastaldo, *Instituto de Ciencia Molecular, Universidad de Valencia*

2D transition metal dichalcogenides: Production, characterization and applications

Dr. Víctor Vega Mayoral, *School of Physics, Trinity College Dublin*

SEPTEMBER

Manipulating energy transfer processes in molecular materials systems

Prof. Soo Young Park, *Seoul National University*

Electronic structure study of luminescent monometallic and bimetallic cooper (I)

Dr. Leonel Llano, *Universidad de Santiago de Chile*

Predicting Relaxation times of Single Molecule Magnets from First Principles

Dr. Daniel Aravena, *Universidad de Santiago de Chile*

Probing and manipulating magnetic domains and domain walls in magnetic insulators by spin currents

Dr. Saül Vélez, *Department of Materials, ETH Zurich, Switzerland*

NOVEMBER

Band engineering in superstructured 2D materials

Prof. Toshikaze Kariyado, *MANA, NIMS, Tsukuba, Japan*

DECEMBER

Direct and Inverse Spin Hall Effect: Zerman Energy and Lorentz Force

Prof. Antonio Hernando Grande, *Profesor Física IMDEA Nanociencia – Instituto de Magnetismo Aplicado (IMA) de la Universidad Complutense de Madrid.*

2. Conferences and Courses

Participation in Master's Degrees

Universidad Autonoma de Madrid

- Master's degree in Genetics and Cell Biology
- Master's degree in Biomolecules and Cell Dynamics

Master's degree in Theoretical Chemistry and Computational Modelling

- Master's degree in Physics of Condensed Matter and Biological Systems
- Master's degree of Biotechnology

Universidad Carlos III de Madrid

- Master's Degree in Materials Science and Engineering

Universidad Complutense de Madrid

- Master's Degree in Biomedical Physics from the University

Universidad Miquel Hernández de Elche

- Master's degree in Molecular Nanoscience and Nanotechnology

Universidad de Cadiz

- Master's degree in Biotechnology

Universidad de Zaragoza

- Master's degree in nanomaterials

University of Trento, Trento, Italy

- Master's degree Applied Mathematics

External Courses and Seminars

JANUARY

Weizmann Institute of Science, Rejovot University, Israel.

Winter School on 2D Materials.

F. Guinea

14-25/01/2019

Kavli Institute for Theoretical Physics, Research institute in Isla Vista, California.

Correlations in Moiré Materials.

F. Guinea

24-25/01/2019

XV Scientific Conference of the Institute of Materials of Alicante, Alicante, Spain.

Tribute to Professor Enrique Louis.

F. Guinea

28/01/2020

Swiss Federal Laboratories for Materials Science and Technology (EMPA), Engelberg, Switzerland.

Electric and thermoelectric properties of conjugated oligomers at the single molecule level.

Edmund Leary

FEBRUARY

University of Valladolid, Valladolid, Spain.

Attoseconds lasers: the super slow camera of physics, chemistry and ... Biology?

F. Martin

Daza de Valdés Institute of Optics (CSIC), Madrid, Spain.

Super-resolution microscopy. Microscopy and Applications Course

C. Flors

Institute for Physical and Theoretical Chemistry, University of Tübingen, Tübingen, Germany.

Optical Spectroscopy of Conjugated Organic Materials: Chromophores in Solution. Lecture Series

J. Gierschner

FEBRUARY- MAY

03-08/02/2019

Graphene Study 2019, Obergurgl, Austria.

F. Guinea

07-08/02/2019

EC60 Nanoscience and Molecular Materials Symposium, Valencia, Spain.

Subphthalocyanines as molecular materials.

T. Torres

**18/02/2019****University of Salamanca, Salamanca, Spain.***Interfacing molecules and nanomaterials: from carbon nanotube rotaxanes to single-molecule experiments*

E.M. Perez

21-22/02/2019**Graphene Industry conference - Challenges & Opportunities, Madrid, Spain.***Atomic-scale functionalization of metal-supported graphene: Towards a graphene-based catalyst.*

F. Calleja

21-22/02/2019**Aragon Institute of Nanoscience, Zaragoza, Spain.***XMCD-PEEM: a tool to study magnetic nanomaterials.*

Lucas Pérez

MARCH

School of New Computational Methods for Attosecond Molecular Processes ZCAM-BiFi, Zaragoza, Spain.*Theoretical modeling of attosecond electron dynamics in molecules*

F. Martín

International School on Quantum Electronics: The Frontiers of Attosecond and Ultrafast X-ray Science. Ettore Majorana Foundation, Erice, Sicily, Italy.*Theory of molecular physics with attosecond pulses*

F. Martín

19/03/2019**The Center for Systems and Synthetic Biology (CCSB), The University of Texas at El Paso, El Paso, USA.***Subphthalocyanines: Singular aromatic non-planar molecules.*

T. Torres

25/03/2019**Institute of Materials Science of Barcelona (ICMAB-CSIC), Barcelona, Spain.***Exploring the metal-insulator transition in vanadium oxide thin films.*

M. Menghini

26/03/2019**Argonne National Laboratory, Illinois, USA.***Advanced Photon Source User Seminar 2019.*

D. Moonshiram

APRIL

Central Florida University, Orlando Florida, USA.*Attosecond electron dynamics in molecules.*

F. Martín

12th European School of Molecular Nanoscience in Elche, Elche, Spain.*Electron transport in low dimensional materials: from 2D materials to molecules*

E. Burzuri

04/04/2019**MAGBIOVIN - Vinca Institute - Belgrade, Belgrade, Serbia.***Thermal therapies mediated by iron oxide-based nanoparticles: quantitative comparison of heat generation, therapeutic efficiency and limitations.*

A. Espinosa

04/04/2019**Spanish network of materials sp2, Granada, Spain.***Quantitative determination of a model organic/insulator/metal interface structure.*

Manuela Garnica

11/04/2019**National Centre for Oncological Research (CNIO), Madrid, Spain.***Optical Tweezers to explore life under tension, one molecule at a time.*

B. Ibarra

MAY

University of Rostock, Rostock, Germany.*The image and control of electron dynamics in atoms and molecules*

F. Martín

14/05/2019**University of Castellón, Castellón, Spain.***Group of switchable nanomaterials: monitoring the effects of solvatochromes*

J. S. Costa

16/05/2019

Department of Physics, University of Calabria, Rende (CS), Italy.
Nanostructured graphene catalyzes the reaction between two organic molecules
M. Pisarra

20-23/05/2019

Max Planck Institute for Chemical Energy Conversion, Mulheim, Germany.
2nd Scientific Symposium of IMPRS-RECHARGE
D. Moonshiram

21/05/2019

ICFO, Barcelona, Spain.
Electronic Properties of Twisted Graphene Layers: Bands, Interactions and Superconductivity
F. Guinea

22/05/2019

Michigan State University, East Lansing, USA.
Superconducting vortices on the move: A powerful tool to study nanomagnetism
J. L. Vicent

29/05/2019

Georgetown University, Washington DC, USA.
Ratchet Effect Induced by Frustrated Spin Ice Nanomagnets
J. L. Vicent

31/05/2019

Biofisika Institute, Bilbao, Spain.
Hybrid nanoscopy of amyloids: from materials to biomedicine
C. Flors

03-04/06/2019

Moiré en Paris, Ecole Normale Supérieure, Paris, France.
Electronic properties of twisted graphene layers: bands, interactions and superconductivity
F. Guinea

05/06/2019

Biological Research Centre (CIB-CSIC), Madrid, Spain
Optical tweezers and their application in biology.
B. Ibarra

16/06/2019-07/07/2019

Aspen Center for Physics, EE.UU.
Moiré Materials. Strong Correlations in Synthetic Superlattices.
F. Guinea

17/06/2019

Graduate School of Science, Kyoto University, Kyoto, Japan.
Subphthalocyanines: Supramolecular Organization and Self-Assembling Properties
T. Torres

17-21/06/2019

Training School ITN LightDyNAmics, Bologna, Italy.
Iluminación del futuro.
J. Gierschner

18/06/2019

Shinshu University, Ueda, Japan.
Self-assembling Properties of Subphthalocyanines.
T. Torres

21/06/2019

University of Tokyo, Komaba Campus, Tokyo, Japan.
The role of phthalocyanines and subphthalocyanines in molecular photo
T. Torres

27/06/2019

J. Heyrovsky Institute of Physical Chemistry, Prague, Czech Republic.
Invited Seminar: Interfacing molecules and nanomaterials: from carbon nanotube rotaxanes to single-molecule experiments.
E.M. Perez

JULY

UAM summer course: towards the perfect synergy: the connection between academic and industrial research as a tool for innovation, Miraflores de la Sierra, Spain.
Nanomedicine as an instrument of multidisciplinary innovation.
Álvaro Somoza

Centre for Hybrid Nanostructures CHYN, Hmaburgh, Germany.
Playing old physics on new materials: From PN junctions to Light-Matter interactions.
D. Granados

**01-16/07/2019****Royal Hallaway, London, United Kingdom.***Condensed Matter Physics in the City*

F. Guinea

10/07/2019**MSRH Imperial College, London, England.***Study of epitaxial NiFe surfaces as catalyst for water splitting.*

M.A. Niño

15/07/2019**Advanced Microscopy Laboratory (AML), Zaragoza, Spain.***Molecular Junctions for Life Sciences.*

J. Trasobares

17/07/2019**Gordon Conference in Photochemistry, Stonehill College, MA, USA.***Nanoscopia Híbrida de Fibras Amiloides*

C. Flors

25/07/2019**Exciting nanostructures: Characterizing advanced confined systems, Bad Honnef, Germany.***Luminescence Nanothermometry with Semiconductor Nanoparticles*

Beatriz H. Juárez

Characterization of advanced confined systems

Roberto Otero

AUGUST

School on Multiscale Dynamics in Molecular Systems, Les Houches, France*Real-time observation of electron and nuclear dynamics in molecules: from the attosecond to the picosecond*

F. Martín

SEPTEMBER

Fall International School of Organic Electronics, Moscow, Russia.*Highly luminescent organic load transfer crystals Improved luminescence and extinction of organic solids*

J. Gierschner

Summer School 2019 “Nicolás Cabrera”. Leading the way to superconductivity at room temperature. Miraflores de la Sierra, Spain.
Electronic properties of twisted graphite layers: bands, interactions and superconductivity

F. Guinea

SEPTEMBER - DECEMBER

Carlos III University of Madrid, Madrid, Spain
Chemical Engineering Fundamentals. Lecture Series

G. Salas

09/09/2019**Ministry of Economic Affairs and Digital Transformation, Madrid, Spain.***Conference between SOMMA centres and representatives of the Autonomous Communities.*

R. Miranda

11-14/09/2019**Berkeley University, Berkeley, California.***Miquel Salmerón's Anniversary “Miquel is 75 birthday”.*

R. Miranda

18/09/2019**13th Spanish Supercomputing Network (RES) Users Conference, Zaragoza, Spain.***Attosecond pump-probe photoelectron spectroscopy of molecules.*

F. Martín

20/09/2019**Workshop in Supramolecular Chemistry, Universidad de Castilla la Mancha, Toledo, Spain.***Interfacing molecules and nanomaterials: from carbon nanotube rotaxanes to single-molecule experiments.*

E.M. Pérez

27/09/2019**Faculty of Biology (UAM), Madrid, Spain***Current perspectives in molecular biology, Master in Genetics and Cell Biology*

Ana Espinosa

OCTOBER

Institute for Physical and Theoretical Chemistry, University of Tübingen, Tübingen, Germany

Optical Spectroscopy of Conjugated Organic Materials: Solid State.

Lecture Series

J. Gierschner

01/10/2019

Alcalá de Henares University, Madrid, Spain.

Presentation of the TEC2SPACE consortium

D. Granados

07-11/10/2019

Ultrafast Physics from Molecules to Nanostructures. San Sebastián, Spain.

Attosecond pump-probe spectroscopy of molecular electron dynamics: a theoretical point of view.

F. Martín

12/10/2019

EC Symposium on "The Molecular Approach to Functional Materials, Lisbon, Portugal.

Phthalocyanine based molecular materials.

T. Torres.

28-29/10/2019

Bessy Synchrotron Workshop II, Berlín, Germany.

2D firo textures: from long-range order to chiral structures

R. Miranda

12/11/2019

University of Burgos, Burgos, Spain.

Smart Nanoparticles for the Treatment of Cancer.

Álvaro Somoza

14/11/2019

Autonomous University of Barcelona, Barcelona, Spain

Surface synthesis of ethylene polymers of bridged acene

D. Écija

15/11/2019

Institute of Molecular Science (ICMOL), Valencia, Spain.

Targeting Mitochondria by Highly Potent Iridium Metallodrugs.

A. M. Pizarro

19/11/2019

Institute Laue Langevin, Grenoble, France.

Switchable Nanomaterials Group; Monitoring Solvatochromic Effects

J. S. Costa

20-22/11/2019

Solid State Physics Group of the UdelaR Engineering School, Montevideo, Uruguay.

Controlling the molecular spin by means of chemical reactions on functionalized metal-supported graphene

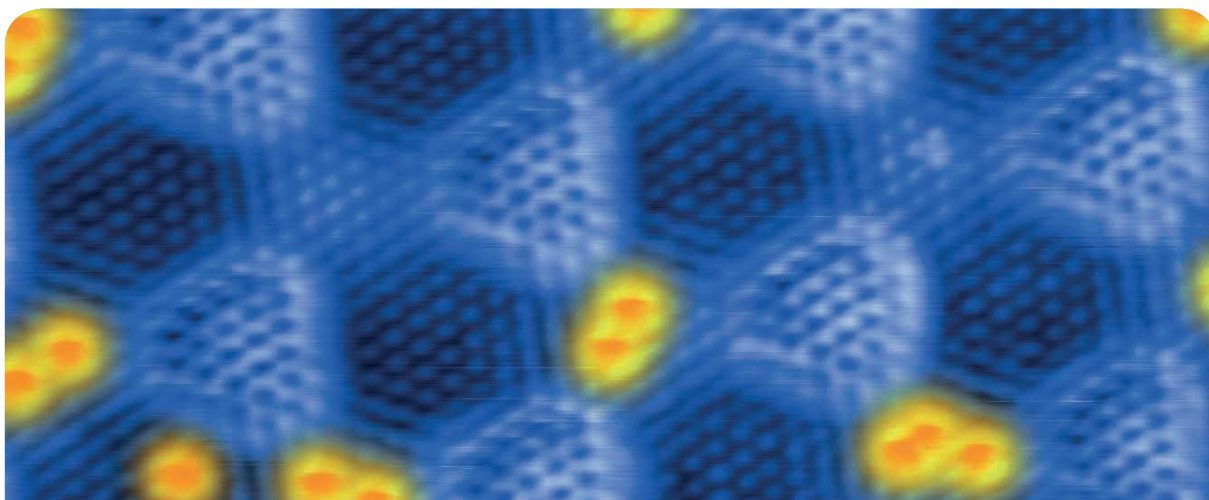
F. Calleja

26/11/2019

Waseda - IMDEA Joint Workshop on "Energy and Nanomaterials", Madrid, Spain.

Photophysics of Small-Molecule Based Functional Materials

J. Gierschner





27-31/11/2019

WE-Heraeus Seminar, Bad Honnef, Germany.*Tailoring π -conjugation on surfaces.*

D. Écija

04/12/2019

Institute of Materials Science of Aragon, Zaragoza, Spain.*Probing the interaction between magnetic nanoparticles and biological entities by AC magnetometry AC.*

F.J. Teran

10/12/2019

University of Pais Vasco, Leioa, Spain.*Probing the interaction between magnetic nanoparticles and biological entities by AC magnetometry.*

F.J. Teran

13/12/2019

University of Manchester, Manchester, United Kingdom.*From rotaxanes to porphyrinoids.*

G. Bottari

16/12/2019

University of Trento, Trento, Italy*Avances en los ensayos clínicos con silicio para la hipertermia magnética*

Daniel Ortega

17/12/2019

École Normale Supérieure, Paris, France.*Hybrid nanoscopy of amyloids: from materials to biomedicine*

C. Flors

17-20/12/2019

Department of Physics, University of Calabria, Rende (CS), Italy.*Organic Molecules on Graphene/Ru (0001): Molecule Dynamics and Reactivity*

M. Pisarra

3. Training programmes

As part of the Severo Ochoa programme a series of new training programmes have been launched over the past year.

IMDEA Nano Postdoctoral Programme in Nanoscience – a 2 year training plan developed to provide technical excellence in the multidisciplinary fields on offer at IMDEA Nanociencia.

IMDEA Nano Doctoral Programme in Nanomedicine – a 3 year programmes that allows our doctoral students in nanomedicine to gain a cutting-edge education in the developing area of nanomedicine.

IMDEA Nano Bachelor and Graduate Education in Nanotechnology – the aim of this particular programme is to engage undergraduate students from local Universities at an early stage and encourage them to gain experience in the IMDEA Nanociencia laboratories.

Transferable Skills Courses – the aim of this programme is to provide transversal training support in both research derived needs and non-scientific skills, these courses are open to all IMDEA Nanociencia staff.

Comunidad de Madrid Programme for training stays in companies (ESO + Empresa Programme). 1 week in April 2019



IES San Isidro, Madrid. 1 Student

IES Ramiro de Maeztu, Madrid. 3 Students

IES Ignacio Aldecoa, Madrid. 2 Students

Centro Paraíso Sagrados Corazones, Madrid. 2 Students

IES Gran Capitán, Madrid. 1 Student

4. PhD thesis

14/01/2019

Marcos del Cueto

Estudios de difracción de átomos y moléculas de superficies usando superficies de energía potencial basada en DFT

Supervisor: F. Martín

Universidad Autónoma de Madrid.

20/04/2019

Belén Cortés Llanos

Nanomateriales de óxido de hierro y su interacción con sistemas biológicos.

Supervisors: Lucas Pérez, Ángel Ayuso

Universidad Complutense de Madrid

24/05/2019

Héctor Rodríguez Rodríguez

Manipulación óptica de puntos cuánticos y nanoestructuras magnéticas simples

Supervisors: Beatriz H. Juárez, J. Ricardo Arias González

Universidad Autónoma de Madrid

20/06/2019

Carlos Gibaja Palacios

El antimonio de pocas capas desde la síntesis hasta la aplicación

Supervisor: Zamora, Félix

Universidad Autónoma de Madrid.

26/07/2019

Diana Paola Medina

Nuevos fotosensibilizadores y sistemas multi-cromóforos basados en porfirinas: aplicaciones en la fotovoltaica molecular

Supervisors: Tomás Torres, M. Salomé Rodríguez-Morgade

Universidad Autónoma de Madrid.

20/09/2019

Fernando Jiménez Urbanos

Nuevas rutas de nanofabricación para adaptar las propiedades electrónicas de los dispositivos de MoS₂: desde transistores de efecto de campo hasta homoestructuras laterales

Supervisor: Daniel Granados

Universidad Autónoma de Madrid.

21/10/2019

David Guzmán Ríos

Sistemas basados en subporfirazina y subnaftolacianina para la energía fotovoltaica molecular

Supervisor: Tomás Torres and M. Salomé Rodríguez-Morgade

Universidad Autónoma de Madrid.

25/10/2019

Javier Rial Rodríguez

Polvo de imán permanente MnAL(C) nanocristalino isotrópico;

Supervisor: Alberto Bollero

Universidad Autónoma de Madrid.

30/10/2019

Fernando Cerrón Campoo

Replicación del ADN mitocondrial humano a nivel de moléculas individuales: síntesis de la cadena retrasada

Supervisores: Borja Ibarra, Francisco Javier Cao-García

Universidad Complutense de Madrid.

15/11/2019

Carl Leon Mikael Petersson

A theoretical study of ultrafast phenomena in complex atom

Supervisor: F. Martín

Universidad Autónoma de Madrid.

22/11/2019

Diego Ruiz Gómez

Síntesis y caracterización de nanopartículas basadas en Ag₂S como nanotermómetros de luminiscencia

Supervisor: Beatriz H. Juárez

Universidad Autónoma de Madrid.

22/11/2019

Javier Conesa Egea

Materiales y nanomateriales con un comportamiento estimulante basado en la flexibilidad de la cadena de cobre-haluro;

Supervisores: Zamora, Félix; Amo Ochoa, Pilar

Universidad Autónoma de Madrid.



13/12/2019

Patricia Bondia Raga

Imaginando las fibras amiloides a nanoescala: desarrollo de métodos y aplicaciones para materiales híbridos y biomedicina

Supervisor: Cristina Flors

Universidad Autónoma de Madrid.

16/12/2019

Sandra Ruiz Gomez

Nanomateriales para el almacenamiento de datos magnéticos

Supervisor: Lucas Perez, Arantazu Mascaraque

Universidad Complutense de Madrid

16/12/2019

Laura Rincón García

Conductance, thermopower and thermal conductance measurements in single-molecule junctions and atomic contacts

Supervisor: Nicolás Agrait de la Puente

Universidad Autónoma de Madrid.

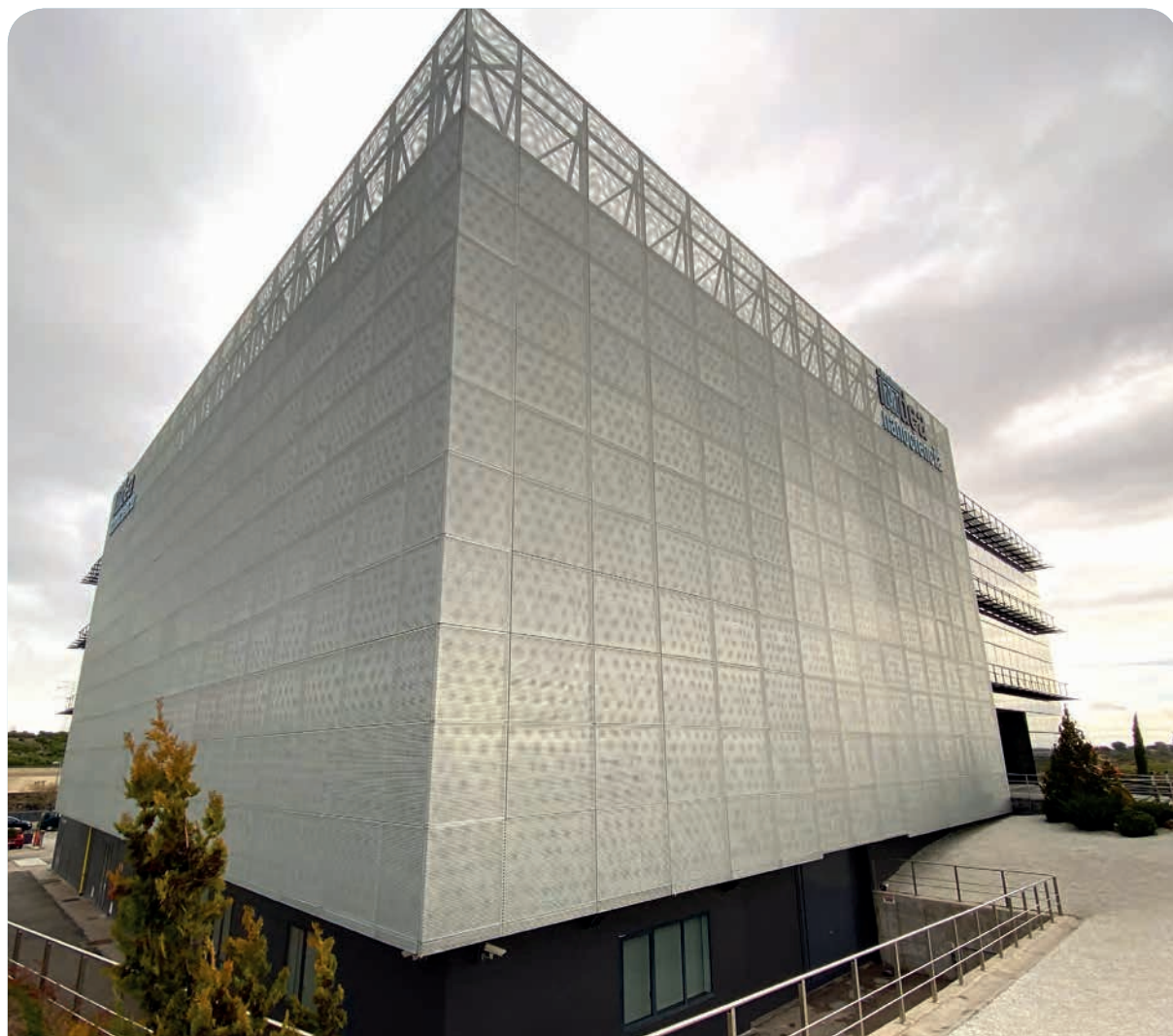
18/12/2019

Víctor Rollano García

Dinámica de vórtices superconductores en potenciales variables.

Supervisores: Elvira María González Herrera, Alicia Gómez Gutiérrez.

Universidad Complutense de Madrid



6. Internationalization

1. Scientific Conference (co)-organized

II Meeting of the Spanish Photovoltaic Excellence Network (24-25th January 2019)



9th edition of the Early Stage Researchers Workshop continued from strength to strength with over 250 participants:



The 10th International Symposium on Metallic Multilayers (MML 2019) brought together over 150 scientists working on magnetic and non-magnetic metallic multilayers and heterostructures in order to share expertise and experience. Hosted and organised by IMDEA Nano with speakers from 11 countries including Prof A. Fert (Nobel Prize for Physics 2007) (17-21st June 2019)



5th International Workshop "Yes those are the atoms -35 years of STM in Spain" (25 speakers, 24-25th October 2019)





USTS Congress - Ultrafast Science and Technology Spain 2019 (November 6th to 8th, 2019)



4th IMDEA Nanociencia Nobel Prize Winners Symposium (10th December, 2019)



2. Collaborations with top Research Institutions

To increase our external collaborations (both national and international) we have supported our researchers at all levels to carry out placements in research institutes and industry >90 mobility month have been accumulated (incoming/outgoing) -funded by the SO, ERASMUS, EMBO etc. Some notable collaborations that have started this year are highlighted below



Collaboration between D Granados and R J Young (Programme 5)



Equipment Development Agreement between F J Terán and T Pellegrino (Programme 3)

Max-Planck-Institut für Polymerforschung
Max Planck Institute for Polymer Research



Group of E Canovas has become an official Max Planck Partner Group, work will focus on a subclass of graphene-like 2D metal organic frameworks (Programme 1)



D Granados DEFROST Project (Programmes 1, 4, 5)



Strategic Alliance (Programmes 1, 4, 5)

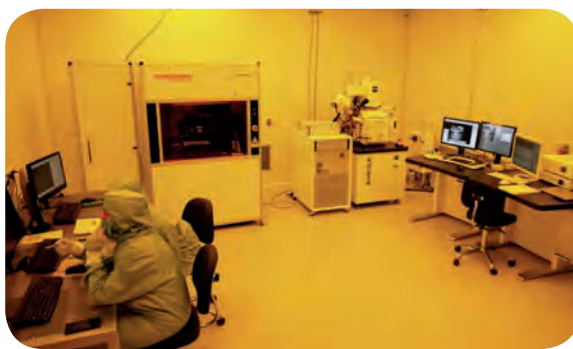
7. High-quality research infrastructure

1. Center for nanofabrication



Nº registro: 363

The Centre for Nanofabrication is a joint proposal between the IMDEA Nanociencia and Campus of Excellence UAM+CSIC to create a facility of excellence for the fabrication of nanostructures and devices based on a wide range of nanosciences. The manufacturing of such nanostructures and devices is crucial for fundamental research, but also for the development of prospective nanotechnologies with commercial applications. The Centre for Nanofabrication is hosted in a latest generation clean room, with more than 200m² of clean room surface and more than 500m² in total, including the technical gray area. The clean room is divided in two main areas. The smaller section is approximately 60m² and has a certified air quality of ISO-5 (Class-100). This section is devoted to lithography processes. It is equipped with electron beam Lithography (e-Beam), Focused Ion Beam Lithography (FIB), Gas Assisted Ion/Electron beam lithography (Multi-GIS), Mask-less Optical lithography and Nano-Imprint Lithography. This section is also equipped with a small wet chemistry room for all the processes related to nano and micro lithography. The largest section of the clean room is about 140m² and has a certified air quality of ISO-6 (Class-1000). This part is dedicated to sample and device processing. It is equipped with several thin film evaporators (Thermal, eBeam), an unique Atomic Layer Deposition (ALD), inductively Coupled Plasma Reactive Ion etching (ICP-RIE) for deep cryo etching, Reactive Ion Etching for Metals and Insulators (RIE), Rapid thermal Processor (RTP), Profilometer





(Dektak), Plasma Cleaner, Ozone Cleaner, Optical Microscopy, Wire Bonder, Diamond Scriber, Probe Satiation and Parameter analyzer. This section is also equipped with an encapsulation room and a large wet chemistry room.

The Centre for Nanofabrication provides the researches and users within the Cantoblanco campus of the UAM and in the framework of the Campus of Excellence project, with an efficient access to the necessary nanofabrication resources to be internationally competitive. Since IMDEA Nanociencia is an institute created and financed jointly by the regional Government of Madrid and the Government of Spain, the Centre for Nanofabrication is intentionally planned to be able to provide under demand services of nanofabrication to researchers of public institutions as well as to private companies.

2. New infrastructure

New infrastructure and equipment are been geared in the direction of accomplishing world leading research and discoveries in Nanoscience and Nanotechnology, creating and reinforcing the different research programmes by implementing unique facilities and making them available to the scientific community.

One of the priorities of the infrastructure development was to ensure equipment and laboratory space was available to develop our new **Research programme in Quantum Devices** (P5). This is highlighted by the following scientific infrastructures:

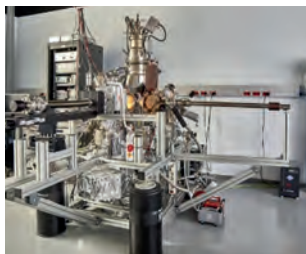
- A new spin-ARPES (spin & Angle Resolved Photoemission Spectroscopy) system, unique in Spain, will be installed in early 2020. It will permit the characterisation of the electronic structure of spin polarised bands in surfaces and interfaces.
- New UHV e-beam evaporator installed in the centre of nanofabrication as part of our framework collaboration with UAM. Partially funded by a National Infrastructure Grant.
- New closed-circuit helium cryostat with ultra-low vibrations for optoelectronic characterisation (AttoDry800) to be installed in December 2019.
- We have also continued to reinforce the other research programmes including the following cross-disciplinary laboratories: a unique non-contact AFM/STM laboratory in UHV and cryogenic temperatures is fully operational (2019) as part of D. Ecija's ERC Project (P2) (CoG -ELECNAO).



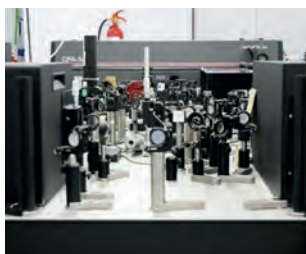
Cell Culture and Microbiology Unit expansion to now host two laboratories working under BioSafety Level 2. Enabling in-house projects and encouraging transversal transfer of knowledge between programmes (P2, P3, P6) potentiating external collaborations.

Laboratory for PhotoHyperthermia AECC seed funding is assisting in the set-up of this unique facility (P3, P4 A. Espinosa).

3. RedLab – Network of laboratories of the Regional Government of Madrid



278
Laboratory of Surfaces
Contact: F. Calleja



279
Laboratory of Advanced Optical Characterization
Contact: J. Cabanillas



280
Laboratory of Femtosecond Spectroscopy
Contact: L. Lürer



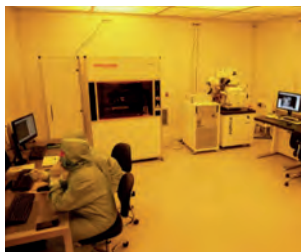
282
Laboratory of Nanomagnetism
Contact: P. Perna



293
Laboratory of Atomic Force Microscopy
Contact: C. Flors



349
Laboratory of Cell Cultures
Contact: A. Pizarro



363
Laboratory of Nanofabrication
Contact: D. Granados



398

**Laboratory of the
Instrumentation Service**

Contact: F. Terán



435

**Laboratory of Nanomaterials
Characterization**

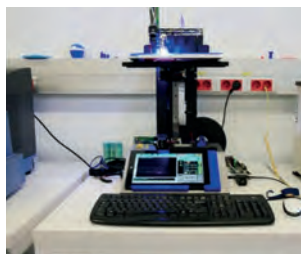
Contact: Y. Luengo



416

**Laboratory of Molecular
Motors Manipulation**

Contact: B. Ibarra



436

**Laboratory of Processing
and Characterization of
Multifunctional Materials**

Contact: E. Palmero



417

**Laboratory of
Oligonucleotides and
Modified Particles**

Contact: Á. Somoza



438

**Laboratory of Biomolecules
Preparation for
Nanotechnological
Applications**

Contact: B. Sot



432

**Laboratory of
Nanostructured Functional
Surfaces**

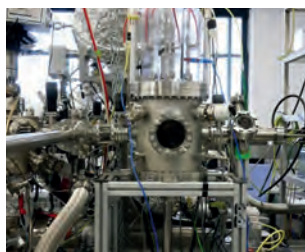
Contact: I. Rodríguez



441

**Laboratory of Photovoltaic
Energy**

Contact: A. Molina



433

**Laboratory of Catalytic
Surfaces Spectroscopy in
Controlled Atmosphere**

Contact: M. A. Niño



447

**Laboratory of
Electromagnetic Trials in
silico**

Contact: D. Ortega

8. Awards and honours

Prof. José López Carrascosa

Premio de Investigación Miguel Catalán 2019

Comunidad de Madrid

Teresa Naranjo

Accesit mejor tesis doctoral

Real Sociedad Española de Química

Nuria Lafuente Gómez

Best Flash Presentation

6th European Chemical Biology Symposium

Best flash presentation award

Bienal RSEQ

Javier Rial

Prize "Three Minute Thesis"

Madrid

Carmen Escalona

Best Poster Award

Spanish Conference on Biomedical Applications of Nanomaterials (SBAN 2019)

Diego Ruiz

Best Talk Award

Spanish Conference on Biomedical Applications of Nanomaterials (SBAN 2019)

Melek Villanueva

IEEE Magnetics Society Summer School

Project Award

University of Virginia Commonwealth

Beatriz Rodilla

Best Poster Presentation

9th ESRW (IMDEA Nanociencia)

Eduardo Garrido y Ana Valls

Twitter Scientific Session 9th ESRW

Alejandra Jacobo

Best Oral presentation 9th ESRW

Claudia Fernández González

Best Poster Jornadas de Jóvenes

Investigadores

Instituto de Cerámica y Vidrio (CSIC)

Victor Marzoa

Poster Prize

XXXVII Reunión Bienal de la Real Sociedad Española de Física

Junqing Shi

Premio Extraordinario de Doctorado

UAM

Ana Carrasco

Best poster

UK-Spain Organometallic Chemistry Symposium

Leticia de Melo Costa

First prize Poster Award

4th-ALBA users meeting & IX Congress of the Spanish Synchrotron User Association (AUSE), Barcelona, 8-11 October 2019





9. Communication and Outreach

The recently launched **IMDEA Nano Communication Office** continues to go from strength to strength with the definition of a Communication and Outreach Plan, our aim has been to increase the impact of the dissemination of our scientific results. Special focus has been placed on the following areas:

Press releases: In 2019 we released >30 press communications, with an average of 700 reads each, the communication office works hand in hand with the PIs of the Institute in order to maximise impact.

Impact Monitoring: Monitoring the impact of our communication activities provides valuable feedback to the Institute and our Funding Bodies. A highlight is our website with a significant increase in unique visitors,

these visits show real engagement with our content (> 2mins and 3.7 pages per session). Also worthy of note is our social media channels which have increased steadily since 2017, from 300 to 1860 (Twitter) and 271 to 550 (Facebook) in total we have had over 1.15M impressions of our publications on social media.

We have been present this year in **Madrid Science Week** and the **Madrid Science Fair** –the largest scientific outreach events in the region. During Science Week our labs were open to the public with an impressive 220 attendees from both schools and the general public. In 2019 the **Madrid Science Fair** returned, in collaboration with AULA, the national fair on academic studies. The IMDEA institutes participated jointly with a stand and the 15,000 attendees of the event could engage with scientific expe-



periments performed by the researchers from our centre.

Nanociencia to go



Bringing Nanoscience and Nanotechnology to an older generation of students (FECYT funded)

Nanociencia para todos



Outreach work has focused on bringing together all our initiatives under our already successful "Nanociencia para todos" umbrella:

Nanociencia para Todos is the outreach programme of IMDEA Nanociencia. We believe that one of our duties is to contribute to the creation of links between Science and Society in our region. For this purpose, through this programme, *Nanociencia para Todos*, we showcase the Nanoscience directly from our labs.

IMDEA Nano has hosted 17 educational centres, (primary, secondary schools, and universities). A new programme has also been launched aimed at educational centres for the older generation (FECYT award 2019 –*Nanociencia-to-go*). In total, 1300 people have visited our institute in organized tours.



As part of our goal to introduce nanoscience and nanotechnology to secondary school students IMDEA scientists have acted as nanotechnology ambassadors at the following events:

Ciencia a la carta

January, 2019

L. Pérez visits to Virgen de la Paz School in Guadalajara to talk about Nanoscience (26/01/2019).

International Day of Women and Girls in Science

February, 2019

Cristina Flors and Begoña Sot visit to Gredos San Diego School -Vallecas and A. Sánchez (D. Écija's group) visited Santo Domingo School (Vallecas).

Voluntarios por la Ciencia

Students from A. Somoza's group have joined with the outreach programme of the Spanish Association against Cancer (AECC). Acting as Nanotechnology Ambassadors they visit schools and hospitals to engage children with basic nanoscience concepts through experiment. They have visited a total of 7 schools and 1 hospital in 2019 alone (200 children, 4-16 years old).





Feria Madrid por la Ciencia y la Innovación



Pint of Science 2019



Lucas Pérez talks for *Pint of Science*

ByAxon: tecnología hacia un bypass neuronal (Toledo)

European Researchers Night

27th September 2019



IMDEA Nanociencia opened its doors for the European Researchers' Night on 27th September. Three thematic activities were organised by 20 researchers from the institute with more than 70 attendees from the general public. The objective this year was to raise awareness on the research carried out by projects funded by the European Commission.

The European Researchers Night is an initiative powered by the Marie Skłodowska-Curie actions under the European Union's Horizon 2020 research and innovation programme and takes place every year simultaneously in about 300 cities all over Europe and beyond. In Madrid it is managed by Fundación para el Conocimiento madri+d. Education and Research Regional Department of Regional Government of Madrid.

Semana de la Ciencia

4-17 November 2019

www.madrimasd.org

fundación para el conocimiento madrid

XIX semana de la ciencia y la innovación MADRID

4-17 NOV 19

150 Aniversario del Sistema Periódico de los Elementos
150 Aniversario de la Unión del Norte y el Sur
Objetivos de Desarrollo Sostenible

Por una ciencia inclusiva
#SemanaCienciaInnovacion

CELEBRA COLABORA ORGANIZA

Comunidad de Madrid

The **Week of Science and Innovation of Madrid** is an event of popularization of science and citizen participation organized by madri+d Foundation that offers the public the opportunity to learn about the work of scientists, their research, motivations and efforts. It was held from 4-17th November in different locations of the Community of Madrid.

IMDEA Nanociencia participates every year since 2014 in this initiative. More than 400 students and 8 schools and high-schools to our facilities.





4

projects offices

1. **Competitive Projects Office (CPO)** [146]
2. **Research Support Office (RSO)** [147]
3. **Outreach 2019** [148]
4. **Strategic Industrial Partnership Office (SIPO)** [149]



About

S0 Programme Strengthening Research Support

As well as support for our Research Programmes, an important part of the Severo Ochoa project was to reinforce and strengthen the support provided for our researchers. The strengthening of the Competitive Projects Office –provides help in identifying and submission of proposals to important international funding sources (EU, and others). The Dissemination and Communication Office has been formalised, allowing the expansion of our communication networks to aid the dissemination of the scientific results from the Institute. The opening of the Research Support Office allows us to centralise support for staff and students and has the short-term goal of achieving the Human Resource Research of Excellence Award. Finally, the creation of the Strategic International Partnerships Office provides our researchers with unique support in creating collaborative links to both Industry and World-renowned research institutes.



Competitive Projects Office (CPO)

CPO works to promote the participation of the researchers in funding programmes to develop ambitious, innovative and high-quality research.

FOCUS 1: VISIBILITY

- Monthly Internal Newsletter
- Factsheets & Tools
- Training (*Skills development support programme*)
- Research Projects Office Web page

FOCUS 2: TALENT ATTRACTION

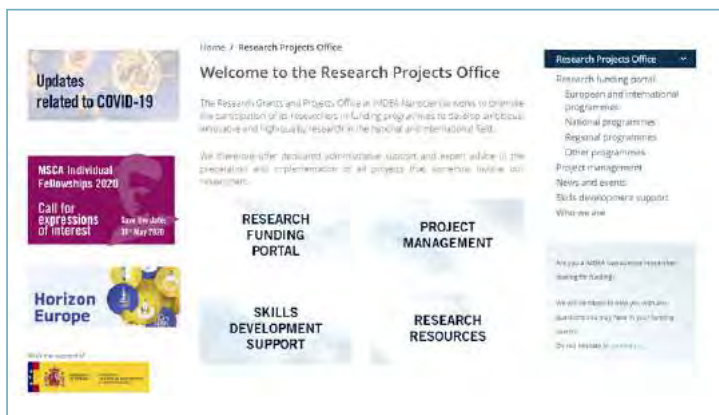
- The CPO engages in talent attraction campaigns to recruit outstanding researchers:
Expressions of interest ERC
- CPO-led initiatives (CO-FUND, ITN, large consortium)

FOCUS 3: ASSISTANCE

- Active Funding identification
- Proposal Revision Service
- Support service to find partners
- Projects Report Service
- Innovation-based proposal (FET-PROACTIVE, FET Launchpad, EIT KICs)

FOCUS 4: SUSTAINABILITY

- OPINA. ECT2019-000615
- Research Assistant. PEJ2018-005493-A
- IM-PULSA. ECT2020-000746. Submitted June 10th 2020





Research Support Office (RSO)

RSO centralizes and enhances human resources services to support research staff and their career development.

FOCUS 1



HR EXCELLENCE IN RESEARCH

- Setting a framework under C&C recommendations for HRS4R award
- Incorporating gender dimension on HR management and policies: Launching of *IMDEA Nano's first Gender Plan*
- **HRS4R procedure started on June 15th: documents and methodology under preparation**

FOCUS 2

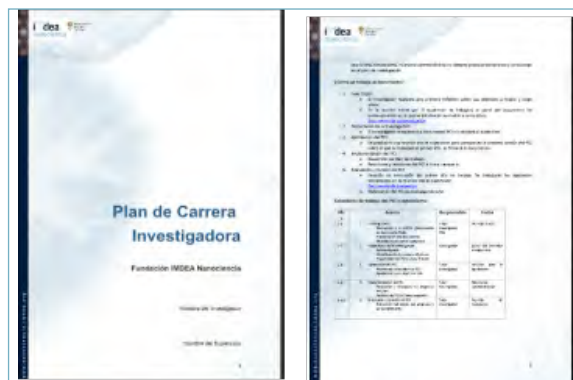
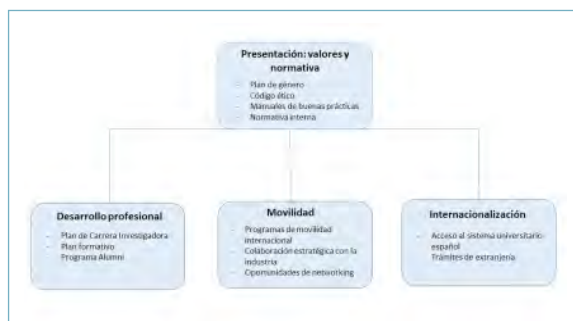
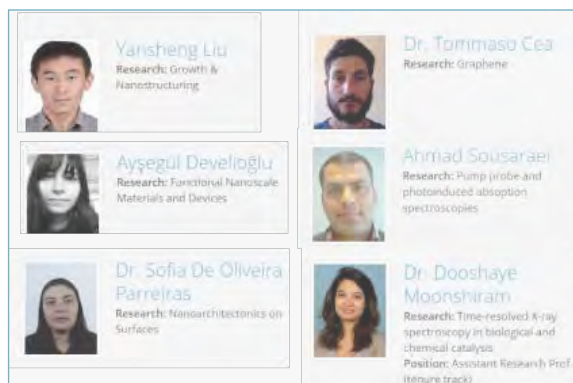
- Support international talent attraction through personal assistance
- **Launching RSO website**

FOCUS 3

- Development of the IMDEA Nano *Welcome Pack* to boost HR internal communication
- **Implementation of the Welcome protocol**

FOCUS 4

- IMDEA Nano Career Development Plan + Assessments and self reflection tools
- **2 new training programmes in collaboration with the CPO**



Outreach 2019

NANOCIENCIA TO GO



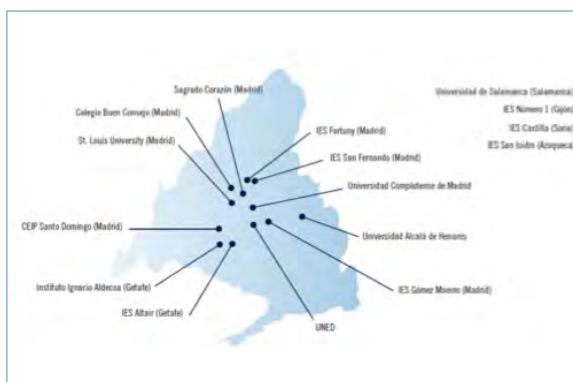
- Bringing Nanoscience and Nanotechnology to an older generation of students (FECYT funded)
- Live online tours with “take-away” experiments –supported by videos (science at home)

REACHING NEW AUDIENCES *UNIVERSIDAD REY JUAN CARLOS, UNIVERSIDAD DE LA EXPERIENCIA*

NANOCIENCIA PARA TODOS



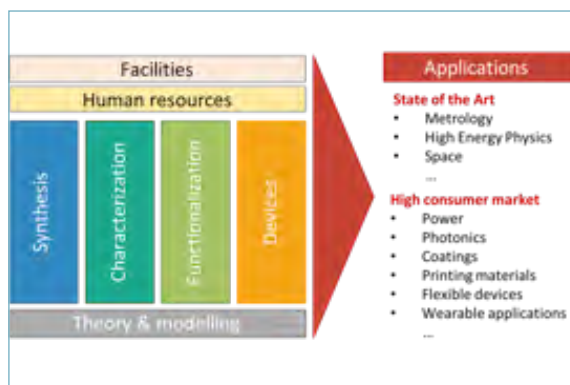
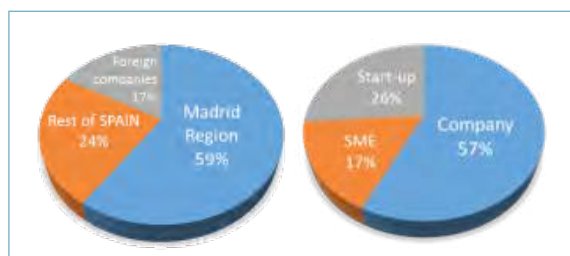
- 17 Educational Centres, and general public
>1300 people visited our Institute on guided tours
- Virtual Lab tours
part of Nanociencia para todos, allows continuity with our visits and keeps Institute commitment to “open-doors”





Strategic Industrial Partnership Office (SIPO)

- The office establishes new strategic alliances, partnerships and collaborations with the **PRIVATE SECTOR**. In 2019, relations with >40 spread across several research areas, such as: Aerospace, Security, Health, Energy, Environment, Transport...
- The SIPO fosters relations with 'complementary' **PUBLIC INSTITUTIONS**, those that are challenging solutions from fields like nanotechnology to be compliant with final applications. In 2019 several scouting activities started with Research Organizations from several Ministries (Defence; Industry, Commerce and Tourism; Science, Innovation and Universities).
- The office promotes to join **ASSOCIATIONS** focused on final applications to raise interest in partnering with IMDEA Nanociencia due to the potential technology transfer offered by the Institute. In 2019 the Institute has joined PAE (*Plataforma Tecnológica Aeroespacial Española*) and SECPHO (cluster promoting technological innovation based on photonics).
- The SIPO maintains the **INTELLECTUAL PROPERTY** portfolio of the Institute. It was increased with three new submissions to the European Patent Office in 2019.



5

annex

1. National and International Congresses [151]
2. Conferences [165]
3. Outreach [168]



1. National and international congresses: invited lectures and regular contributions

166 events

103 abroad and 63 in Spain

244 contributions

22 invited lectures

and **222 regular contributions,**

125 oral and 97 as posters

14-17/01/2019

2019 Conference - Fundan University, Shanghai, China.

Polariton anomalous hall effect

L. Chirolli

Oral contribution

14-18/01/2019

2019 Joint Magnetism and Magnetic Materials Conference (MMM) – Intermag, Washington, USA.

Phase-tuning control in MnAl gas atomized powder by nanostructuring through flash-milling process

J. Rial, P. Švec, E.M. Palmero, P. Švec Sr., and A. Bollero

Oral contribution

MnBi thin and ultra-thin films for high temperature permanent magnet applications

M. Villanueva, C. Navío, J. Rial, E. Céspedes, F.J. Mompeán, M. García-Hernández, J. Camarero y A. Bollero.

Oral contribution

Disentangling the anomalous Nernst and spin Seebeck effect in epitaxial NM/Graphene/Cobalt heterostructures.

A. Anadon, A. Gudin, J. M. Diez, R. Guerrero, J. Camarero, R. Miranda, and P. Paolo.

Oral contribution

21-22/02/2019

4th edition of the GraphIn International Conference (GraphIN 2019), Madrid, Spain.

Graphene/Cobalt interface for spin-orbitronics

Paolo Perna.

Oral contribution

02-06/03/2019

63rd Annual Meeting of the Biophysical Society (BPS2019), Baltimore, USA.

Mechanism of SSB displacement by replicative DNA polymerases during lagging strand synthesis

F. Cerron, G.L. Ciesielski, L.S. Kaguni, F.J. Cao, B. Ibarra.

Poster contribution

03-08/03/2019

Annual American Physical Society Meeting, Boston, USA.

Superconductivity in twisted graphene layers: electronic structure and interactions

F. Guinea. Invited lecture

Frustrated Spin Ice Nanomagnets Probed by Superconducting Vortex Dynamics

J. L. Vicent.

Oral contribution

07-08/03/2019

International symposium on ultrafast electronic and structural dynamics, Sendai, Japan.

Imaging and controlling attosecond electron dynamics in molecules: a theoretical outlook.

F. Martín. Invited lecture

02-06/03/2019

14th International Symposium on Macrocyclic and Supramolecular Chemistry, Lecce, Italy.

Subphthalocyanines: Singular aromatic non-planar molecules

T. Torres. Invited lecture

17-23/03/2019

Quantum nanophotonics. Banasque Pedro Pascual Science Center. Zaragoza, Spain.

Polariton anomalous hall effect

L. Chirolli

Oral contribution

20-22/03/2019

Joint workshop between MOLSPIN and NANOCOBYBRI – Superconductivity meets Molecular Spins, Lisbon, Portugal.

Controlling the molecular spin by means of chemical reactions on functionalized metal-supported GRAPHENE

F. Calleja

Oral contribution

22/03/2019

COST Action: Spintronics meets superconductivity Workshop, Lisbon, Portugal.

Assembly of carbon nanotubes in superconducting circuits: Adimensional bridge between spin qubits and resonators

E. Burzuri

Oral contribution

25-27/03/2019

Building and Probing Small, Brussels, Belgium.

Dynamics of individual molecular shuttles under mechanical force

T. Naranjo, K.M. Lemishko, S. de Lorenzo, A. Somoza, F. Ritort, EM Perez, B. Ibarra.

Oral contribution

31/03-04/04/2019

American Chemical Society National Meeting (ACS Spring Meeting), Orlando, Florida, USA.

Attosecond electron dynamics in molecules

F. Martín. Invited lecture

01-05/04/2019

DPG Spring Meeting, Regensburg, Germany.

Electronic properties of twisted graphene layers: bands, interactions and superconductivity

F. Guinea. Invited lecture

03-05/04/2019

6th European Chemical Biology Symposium (ECBS), Madrid, Spain.

PEI-modified Carbon Nanotubes for Gene Editing Mediated by CRISPR/Cas9

Ana Latorre, Teresa Naranjo, Milagros Castejano, Emilio Pérez, Álvaro Somoza.

Poster contribution

A nanoparticle-based ligand for CuAAC fluorogenic "click" reactions in water.

Ciro Rodríguez Díaz, Ana Latorre, Romina Lorca, Alfonso Latorre, Álvaro Somoza.

Poster contribution

Functionalization of Magnetic Nanoparticles with Gemcitabine via disulfide bonds: a new approach for the pancreatic cancer treatment
Nuria Lafuente-Gómez, Paula Milán Rois, Marco Cordani, Álvaro Somoza.

Oral contribution

Reprogramming Uveal Melanoma Cells:

A Combination Therapy Based On Gold Nanoparticles

Paula Milán Rois, Alfonso Latorre, Ciro Rodríguez Díaz, Álvaro del Moral and Álvaro Somoza.

Oral contribution

08-09/04/2019

Magnetism 2019, Leeds, United Kingdom.

Investigating the dynamic magnetic behaviour of nanoparticles in biological environments

Neil D. Telling, Manea E. Sharifabad, D. Cabrera, Rémy Soucaille, F. J. Terán and Robert J. Hicken

Oral contribution

25/04/2019

4th GTU Photodynamic Day in the framework of the International Day of Light 2019, Gebze, Turkey.

Phthalocyanines for Photodynamic Therapy

T. Torres. Invited lecture

06-10/05/2019

Quantitative Aspects of Membrane Fusion and Fission, Padova, Italy.

Comparative analysis of membrane constriction by dynamin isoforms

Bocanegra R, Velasco A, de Lorenzo S, Ormaetxea, J, Carrascosa JL, Shnyrova AV, Ibarra B, Frolov VA.

Poster contribution

06-07/05/2019

SBAN 2019 2nd Spanish Conference on Biomedical Applications of Nanomaterials, Madrid, Spain.

Correlating Intracellular Biodegradation and Photothermal Efficiency of Au, Ag, and Ag@Au Nanoparticles on Cells and Tumour Environment
A. Espinosa, A. Curcio, S. Cabana, G. Radtke, M. Bugnet, J. Kolosnjaj-Tabi, C. Péchoux, C. Álvarez-Lorenzo, G. A. Botton, A. Silva, A. Abou-Hassan and C. Wilhelm.

Oral contribution

10-12/05/2019

1st International Forum on new functional materials and devices, Hangzhou, China.

Micro/Nano Fabrication and Ultra-Precision Manufacturing for Magnetic Applications

Feng Luo

Oral contribution

15-16/05/2019

Workshop on Light-Induced Dynamics in Molecular Aggregates, Rückersbach, Germany.

Exciton Generation and Fate in Organic Solids

J. Gierschner

Oral contribution

15-17/05/2019

SupraBio, Barcelona, Spain.

Smart Nanoparticles for the Treatment of Cancer

Álvaro Somoza

Oral contribution

20-25/05/2019

Vortex 2019, Antwerpen, Belgium.

Vortex Dynamics on Superconducting and Non-Superconducting Arrays

V. Rollano, A. Gómez, J. Del Valle, M. Calero, M. Menghini (autor presentador), A. Muñoz Noval, M. R. Osorio, D. Granados, E. M. González, J. L. Vicent.

Oral contribution

22/05/2019

COST Connect event on European Cancer Research, Brussels, Belgium.

Multifunctional Nanoparticles for Magnetic Hyperthermia and Indirect Radiation Therapy
D. Ortega and S. Spassov

Oral contribution



24-26/05/2019

3th national oxide materials, devices and development, Chengdu, China.*Micro/Nano Fabrication and Ultra-Precision Manufacturing for Applications in Magnetic Random Access Memory (MRAM)*

Feng Luo

Oral contribution

26-30/05/2019

235th Electrochemistry Society Meeting, Dallas, USA.*Subphthalocyanine Fused Dimer and Subphthalocyanines Conjugates*

G. Zango, V. Mariñas, O. Fernandez-Vera, L. Gallago, G. Lavarda, D. P. Medina, M. V. Martínez-Díaz and T. Torres

Oral contribution

26-30/05/2019

XXXVII Biennial Meeting of the Spanish Royal Society of Chemistry (RSEQ), San Sebastián, Spain.*Phototherapeutic strategies for amyloid-related diseases: a nanoscale view*

C. Flors. Invited lecture

Subphthalocyanines and related compounds: Singular aromatic non-planar molecules

T. Torres. Invited lecture

Symposium "From chemistry to nanomedicine"

Organizers: A. Somoza and G. Salas.

On-surface synthesis of ethynylene bridged acene polymers

D. Écija

Oral contribution

Hybrid Fe₃O₄@MnO₂ nanoparticles for hyperthermia and MRI applications

David García-Soriano, Rebeca Amaro, Lucía Gutiérrez, Cristina Navío and Gorka Salas.

Oral contribution

Antibacterial activity of g-Fe₂O₃/Ag nanocomposites synthesized by an aqueous route
Y. Luengo, B. Sot and G. Salas.

Oral contribution

Is that nano? Aggregation of magnetic nanoparticles: consequences and opportunities

David García-Soriano, Yurena Luengo and Gorka Salas.

Poster contribution

A nanoparticle-based ligand for CuAAC "click" reactions in water

Ana L. Lozano, Romina L., Alfonso L. Lozano, Álvaro S. Calatrava and Ciro R. Diaz

Oral contribution

Synthesis and Functionalization of Magnetic Nanoparticles with cytotoxic drugs: design of efficient drug delivery systems

Álvaro Somoza, Yurena Luengo, Paula Milán Rois, Marco Cordani, Milagros Castellanos, Gorka Salas and Nuria Lafuente-Gómez

Oral contribution

Exploring non-covalent interactions in phthalocyanine chemistry

G. Bottari, L. M. Mateo de Doni, O. Trukhina, T. Torres.

Oral contribution

Optical Tweezers to Study Noncovalent Chemistry: Five Minutes in the Life of a Molecular Shuttle

E.M. Perez

Oral contribution

Targeting Mitochondria by Highly Potent Iridium Metallodrugs

A. M. Pizarro

Oral contribution

27-31/05/2019

Spring Meeting of the European Materials Research Society (E-MRS), Niza, France.*Photon detection based on Ferrocene-Graphene Junctions*

J. Trasobares, M. Calero, F. J. Urbanos, M. Acebrón, R. Miranda, D. Granados.

Oral contribution

Flexible nanostructured electrodes as neural tissue interfaces

Beatriz L. Rodilla, Claudia Fernández-González, Ana Arché, Ana Domínguez-Bajo, Ankor González-Mayorga, Elisa López-Dolado, Sandra Ruiz-Gomez, Julio Camarero, Rodolfo Miranda, María Concepción Serrano, Lucas Pérez, María Teresa González

Oral contribution

Nanostructured electrodes as bioactive interfaces for spinal cord injury

Ana Domínguez, Ankor González-Mayorga, Beatriz L. Rodilla, Ana Arché, Lucas Pérez, María Teresa González, Elisa López, and María Concepción Serrano.

Oral contribution

27-31/05/2019

ICFPM 2019 International Conference on Fine Particle Magnetism, Gijón, Spain.*3D magnetometry in nanomaterials using XMCD-PEEM microscopy*

S. Ruiz-Gómez, A. Quesada, M. Foerster, L. Aballe, A. Mascaraque, J. de la Figuera y L. Pérez.

Oral contribution

Photon detection based on ferrocene and graphite bonds

J. Trasobares, M. Calero, F. J. Urbanos, M. Acebrón, R. Miranda, D. Granados

Oral contribution

Interlaboratory assessment on the determination of the specific loss power from magnetic nanoparticles for magnetic hyperthermia

D. Ortega, J. Wells, U. Steinhoff, S. Dutz, E. Garaio, O. Sandre, E. Natividad, M. Cruz, P. Southern, S. Spirou, Q. A. Pankhurst y S. Spassov.

Oral contribution

In vivo thermal transient nanothermometry for early tumour detection and diagnosis

H. D. A. Santos, E. Ximendes, C. Jacinto, D. Ortega, I. Rubia-Rodríguez, M. C. Iglesias de la Cruz, I. Chaves-Coira, L. Monge, D. Jaque y N. Fernández.

Poster contribution

Bimodal magnetic-fluorescent nanostructures based on SPIONs and near-infrared emitting nanocrystals in phospholipidic micelles

D. Ruiz, A. Espinosa, C. Lozano, R. Amaro, H. D. A. Santos, D. Ortega, D. Jaque, G. Salas, F. J. Terán, B. H. Juárez.

Poster contribution

Assessment of the parameters behind photothermal conversion: from colloidal dispersion to cell internalization

C. Lozano-Pedraza, E. Plaza-Mayoral, B. Sot, D. Cabrera, G. Salas, A. Espinosa and F. J. Terán.

Poster contribution

28-29/05/2019

Euronanomed3, Bratislava, Slovakia.

Gold nanoparticles for the treatment and sensing of duchenne muscular dystrophy

Paula Milán Rois, Ciro Rodríguez Díaz, Catarina Coutinho, Francesco Millozzi, Valentina Saccone, Milagros Castellanos, Arghya Settc, Jean-Jacques Toulmé, Daniela Palacios and Álvaro Somoza.

Poster contribution

30/05/2019

SpLine meeting, Madrid, Spain.

Towards a local temperature probe in nanoparticles for hyperthermia therapies by means of X-ray absorption fine structure spectroscopy.

A. Espinosa, G. R. Castro, C. Castellano, C. Wilhelm, M. Á. García García-Tuñón, Á. Muñoz Noval.

Oral contribution

02-07/06/2019

14th International Symposium on Functional π -Electron Systems (F π 14), Berlín, Germany.

Subphthalocyanines and related compounds: Singular aromatic non-planar molecules

T. Torres. Invited lecture

06-07/06/2019

2nd Spanish Conference on Biomedical Applications of Nanomaterials (SBAN), Madrid, Spain.

Gold-based nanostructures for biolabeling and smart drug delivery systems

A. Somoza

Oral contribution

In Vivo Early Tumor Detection and Diagnosis by Infrared Luminescence Transient Nanothermometry

H. D. A. Santos, E. Ximendes, C. Jacinto, D. Ortega, I. Rubia-Rodríguez, M. C. Iglesias de la Cruz, I. Chaves-Coira, L. Monge, D. Jaque and N. Fernández.

Oral contribution

Fe304-Fe203 clustered nanoparticles to improve hyperthermia effect in different tumour cell lines

David García-Soriano, Paula Milán-Rois, Cristina Navío, Álvaro Somoza and Gorka Salas.

Poster contribution

Influence of coating, concentration and medium on the aggregation of magnetic nanoparticles synthesized by polyol method for hyperthermia

Victoria López, Gorka Salas.

Poster contribution

Antibacterial Activity Of γ -Fe203/Ag Nanocomposites Synthesized by an Aqueous Route

Y. Luengo, B. Sot and G. Salas.

Oral contribution

Nanoparticle-mediated delivery of engineered Cpf1 for the generation of improved genome editing tools

Escalona-Noguero, C., Luengo, Y., Lafuente-Gómez, N., Latorre, A., Salas G., Somoza A, Sot, B
Poster contribution

MicroRNA sensors based on gold nanoparticles functionalized with oligonucleotides

Catarina Coutinho, Milagros Castellanos, Álvaro Somoza

Poster contribution

Fe304-Fe203 clustered nanoparticles to improve hyperthermia effect in different tumour cell lines.

David García-Soriano, Paula Milán-Rois, Cristina Navío, Álvaro Somoza and Gorka Salas

Poster contribution

Multifunctional Gold Nanoparticles for nucleic acid delivery

Eduardo Garcia-Garrido, Álvaro Somoza.

Oral contribution

Iron-based coordination polymers lead ROS generation and enhance chemosensitivity to Gemcitabine in pancreatic adenocarcinoma cells

Marco Cordani, Esther Resines Urien, Arturo Gamonal, Jose Sanchez Costa, Álvaro Somoza.

Poster contribution

Albumin-Based Nanoparticles for Nucleic Acid Delivery

Rama Prajapati, Alvaro Somoza.

Oral contribution

12-13/06/2019

International Workshop on Topology, Nims, Tsukuba, Japan

New Physics in Moire Graphene Superlattices

F. Guinea. Invited lecture



13-14/06/2019

XII Meeting of Nucleic Acids and Nucleosides (RANN), Valencia, Spain.*A nanoparticle-based ligand for CuAAC "click" reactions in water*

Ciro Rodríguez Díaz, Ana Latorre, Romina Lorc, Alfonso Latorre, Álvaro Somoza.

Oral contribution

Non-coding RNAs carried by gold or magnetic nanoparticles for the treatment of rare diseases

Paula Milán Rois, Nuria Lafuente-Gómez, David García Soriano, Ciro Rodríguez Díaz, Milagros Castellanos, Arghya Sett, Yurena Luengo, Gorka Salas, Jean-Jacques Toulmé, Daniela Palacios and Álvaro Somoza.

Oral contribution

MicroRNA sensors based on gold nanoparticles functionalized with oligonucleotides

Catarina Coutinho, Milagros Castellanos and Álvaro Somoza.

Oral contribution

17/06/2019

European Technology Platform for Nanomedicine annual meeting Braga, Portugal.*Multifunctional nanoparticles for magnetic hyperthermia and indirect radioation therapy*

D. Ortega and S. Spassov

Oral contribution

17-19/06/2019

Nanomed Europe 2019 (NME19), Braga, Portugal.*MicroRNA sensors based on functionalized gold nanoparticles*

Catarina Coutinho, Milagros Castellanos, Álvaro Somoza.

Poster contribution

Functionalized Magnetic Nanoparticles: a versatile platform for cancer diagnosis and treatment

Nuria Lafuente-Gómez, Paula Milán Rois, Marco Cordani, Milagros Castellanos, Yurena Luengo,

Guillermo Garaulet, Francisca Mulero, Gorka Salas Álvaro Somoza

Oral contribution

17-20/06/2019

8th International conference on Scanning Probe Spectroscopy (SPS'19), Hamburgo, Germany.*Controllable Switching of the Superconductivity of a Tungsten STM Tip on Epitaxial Graphene*

C.G. Ayani, P. Casado, A. Norris, J.J. Navarro, J.G. Rodrigo, F. Calleja, A.L. Vázquez de Parga y R. Miranda.

Poster contribution

17-21/06/2019

10th International Symposium on Metallic Multilayers (MML 2019), Madrid, Spain.*Graphs based on the orbit of the spirits*

Paolo Perna. Invited lecture

Rotating orbit driven effects of Graphene-FM systems

P. Perna, R. Miranda, J. Camarero

Oral contribution

Superconducting vortex dynamics modified by multilayer magnetic fields: pinning effect vs Little-Parks

V. Rollano, M. C. De Ory, A. Muñoz-Noval, A. Gómez, M. Menghini, J. Del Valle, E. M. González, J. L. Vicent.

Poster contribution

Three-layer graphite-based synthetic antiferromagnetic structure with near-zero net magnetization

M. Valvidares, P. Gargiani, HB Vasili, Y Bleu, L. Melo Costa, P. Perna, J. Camarero, R. Cuadrado, M. Pruneda, F. Sanchez Barrera

Oral contribution

Magnetization processes in cylindrical nanowires with chemical notches.

Ruiz-Gómez, C. Fernández-González, A. Quesada, M Foerster, L. Aballe, S. Ferrer, A. Sorrentino,

J. de la Figuera, A. Mascaraque and L. Pérez.
Oral contribution*Growth of 2H and 1T'-MoTe2 island molecular ray epitaxy in graphene/Ir (111)*

Pablo Casado Aguilar, Amadeo L. Vázquez de Parga, Rodolfo Miranda, Manuela Garnica.

Poster contribution

High-coercivity MnBi ultra-thin films grown on MgO (001)

M.Villanueva, E.H. Sánchez, P.S. Normile, J.A. de Toro, J. Camarero, C. Navío y A. Bollero.

Poster contribution

A detailed study on the influence of substrate, orientation, and thickness of high-quality stoichiometric magnetite films

F.J. Pedrosa, J.L.F. Cuñado, P. Perna, M. Sanz, M. Oujja, E. Rebollar, J.F. Marco, J. De La Figuera, M. Monti, M. Castillejo, M. García-Hernández, F. Mompeán, J. Camarero y A. Bollero.

Poster contribution

Unravelling Dzyaloshinskii-Moriya interaction and chiral nature of Graphene/Cobalt Interface

Leticia de Melo Costa, A. Anadon, A. Gudin, J. M. Diez, R. Guerrero, J. Camarero, R. Miranda, and P. Paolo.

Poster contribution

Graphene-based synthetic antiferromagnets with close to zero net magnetization

Leticia de Melo Costa, P. Gargiani, J. Camarero, P. Perna, M. Valvidares.

Poster contribution

Disentangling the anomalous Nernst and spin Seebeck effect in epitaxial NM/Graphene/Cobalt heterostructures

A. Anadon, A. Gudin, J. M. Diez, R. Guerrero, J. Camarero, R. Miranda, and P. Paolo.

Oral contribution

Universality of Magnetoresistance in SpinOrbitronics Systems

Jose Manuel Diez, Fernando Ajejas, Davide

Maccariello, Francisco Pedrosa, Rubén Guerrero, Jose L. Fernández Cuñado, Julio Camarero, Rodolfo Miranda, Paolo Perna.

Poster contribution

Spin-orbit torque and Dzyaloshinskii-Moriya interaction effects in perpendicularly magnetized trilayers

A. Gudín, A. Anadón, R. Guerrero, J. M. Díez, P. Olleros, F. Ajejas, L. de Melo Costa, J. Camarero, R. Miranda, and P. Perna.

Poster contribution

Spin-orbit torque estimation in perpendicularly magnetized trilayers

R. Guerrero, A. Anadón, A. Gudín, J.M. Díez, P. Olleros, F. Ajejas, J. Camarero, R. Miranda, Paolo Perna.

Poster contribution

Micromagnetic modelling of thickness dependent spin orbit interfacial effects in asymmetric epitaxial stacks

P. Olleros, J.M. Díez, A. Gudín, L.de Melo Costa, A. Anadón, R. Guerrero, J. Camarero, O. Chubykalo-Fesenko, P. Perna.

Poster contribution

Towards an active bypass for neural reconnection

Arturo Vera García, Lucas Pérez, Julio Camarero, Rodolfo Miranda, M. Teresa González

Poster contribution

20-22/06/2019

6th International Iberian Biophysics Congress and X Iberoamerican Congress of Biophysics, Castellón, Spain.

A single-molecule manipulation assay to study the transcriptional dynamics of Influenza A virus

C.R. Pulido, R. Bocanegra, R. Coloma, J. Martín-Benito, B. Ibarra

Poster contribution

Determination of the mechanical properties of single-stranded heteropolymeric RNA

C R Pulido, R. Bocanegra, S de Lorenzo, R Colo-

ma, J. Martín-Benito, B. Ibarra.

Poster contribution

Coordinated activity of human mitochondrial DNA helicase (TWINKLE) with SSB proteins and human mitochondrial DNA polymerase

KM Lemishko, G L. Ciesielski, J. López-Carras-cosa, L.S. Kaguni, Borja Ibarra.

Poster contribution

23-26/06/2019

International Seoul Symposium on Exotic Porphyrinoids and Related Systems, Seoul, Korea.

Subphthalocyanines and related compounds: Singular aromatic non-planar molecules.

T. Torres. Invited lecture

24-26/06/2019

VII Spanish Congress on Powder Metallurgy, Madrid, Spain.

Synthesis of heterogeneous photocatalysts for water remediation.

L. González, G. Flores-Carrasco, M.E. Rabanal, G. Salas.

Oral contribution

24-27/06/2019

Magnetic Frontiers 2019: Magnetic Sensor, Lisbon, Portugal.

New approaches in protein detection: magnetic nanoparticles as a biosensing tool.

L. Cremades-Jimeno, A. Aires, E.J. Artés-Ibáñez, A.L. Cortajarena y F.J. Teran

Poster contribution

Sub-nT AMR sensors based on low noise La_{0.7}Sr_{0.3}MnO₃ thin films for neuronal activity measurement.

L. Enger, O. Rousseau, S. Flament, B. Guillet, M. Lam Chok Sing, S. Chaluvadi, V. Muñoz, R. Guerrero, M. T. González, J. Camarero, L. Méchin

Poster contribution

24-28/06/2019

International Conference on Magnetism & Spintronics (Sol-SkyMag 2019), San Sebastián, Spain.

Unravelling Dzyaloshinskii-Moriya interaction and chiral nature of grapheme/cobalt interface

J. M. Díez, A. Gudín, L. de Melo Costa, P. Olleros, F. Ajejas, A. Anadón, R. Guerrero, S. Pizzini, J. Vogel, M. Valvidares, P. Gargiani, M. Varela, J. Camarero, R. Miranda, and P. Perna

Poster contribution

Spin-orbit torque and Dzyaloshinskii-Moriya interaction effects in perpendicularly magnetized trilayers

A. Gudín, A. Anadón, R. Guerrero, J. M. Díez, P. Olleros, F. Ajejas, J. Camarero, R. Miranda, and P. Perna

Oral contribution

Spin-orbit torque estimation in perpendicularly magnetized trilayers

R. Guerrero, A. Anadón, A. Gudín, J.M. Díez, P. Olleros, F. Ajejas, J. Camarero, R. Miranda, Paolo Perna

Contribución oral

Micromagnetic modelling of thickness dependent spin orbit interfacial effects in asymmetric epitaxial stacks

P. Olleros, J.M. Díez, A. Gudín, L.de Melo Costa, A. Anadón, R. Guerrero, J. Camarero, O. Chubykalo-Fesenko, P. Perna.

Oral contribution

Disentangling the anomalous Nernst and spin Seebeck effect in epitaxial grapheme / cobalt heterostructures

A. Anadón, R. Guerrero, P. Jiménez-Cavero, A. Gudín, J. M. Díez, P. Olleros, L. de Melo Costa, F. Ajejas, I. Lucas, L. Morellón, P. A. Algarabel, M R. Ibarra, R. Miranda, J. Camarero, P. Perna

Oral contribution



A detailed study on the influence of substrate, orientation, and thickness of high-quality stoichiometric magnetite films

F.J. Pedrosa, JLF Cuñado, P Perna, M Sanz, M Oujja, E Rebollar, JF Marco, J de la Figuera, M Monti, M Castillejo, M García-Hernández, F Mompeán, J Camarero, A Bollero

Oral contribution

24-28/06/2019

15th International Conference on Organic Electronics (ICOE 2019), Hasselt, Belgium.

Phthalocyanines and subphthalocyanines for molecular photovoltaics

T. Torres. Invited lecture

26-27/06/2019

ESRW2019, 9th Early Stage Researchers Workshop in Nanoscience, Madrid, Spain.

Synthesis of metal nanoparticles (NiFe, CoFe) by reducing process of (Ni-, Co-) ferrites.

D. Casaleiz, M. Villanueva, E. M. Palmero, S. Estradé, P. Torruella, F. Peiró, Y. Luengo, J. Camarero, A. Espinosa, G. Salas and A. Bollero.

Poster contribution

Physicochemical properties of iron oxide nanoparticles (IONPs) in photothermal therapies: analyzing trends in photothermal conversion and cell uptake

Lozano-Pedraza, E. Plaza-Mayoral, B. Sot, D. Cabrera, G. Salas, A. Espinosa, S. Begin-Colin, G. Cotin, C. Blanco-Andujar and F. J. Teran.

Poster contribution

Modulating of sensitivity of novel detection methodology based on the variation of AC hysteresis loops of magnetic nanoparticles functionalized

E. Sanz-de Diego, A. Aires, D. Cabrera, N. Silvestri, T. Pellegrino, A.L. Cortajarena and FJTeran.

Poster contribution

Physicochemical properties of iron oxide nanoparticles (IONPs) in photothermal therapies: analyzing trends in photothermal conversion and cell uptake

C.Lozano-Pedraza, E. Plaza-Mayoral, B. Sot, D. Cabrera, G. Salas, A. Espinosa, S. Begin-Colin, G. Cotin, C. Blanco-Andujar and F.J. Teran.

Poster contribution

Bacterial cell wall mechanical damage studied by simultaneous nanoindentation and fluorescence microscopy

Adrián Del Valle, Joaquim Torra, Patricia Bondia, Caterina M. Tone, Virginia Vadillo y Cristina Flors.

Oral contribution

Imaging of light-induced damage in amyloid fibers at the nanoscale

Patricia Bondia, Caterina Tone, Joaquim Torra, Adrián del Valle, Begoña Sot, Youhei Sohma, Motomu Kanai, Cristina Flors.

Poster contribution

Set-up of an ultra-high vacuum system hosting a nc-AFM/STM

Cristina Martín Fuentes, Koen Lawaet, Rodolfo Miranda, David Écija.

Poster contribution

Design mechano-instructive biointerfaces for medical implants

María Teresa Alameda, Manuel R. Osorio, Jaime Hernández, Isabel Rodríguez

Poster contribution

Optical characterization of few layer MoS2 mechanical resonators

Victor Marzoa, Fernando J. Urbanos, Jorge Trasobares, Amjad Al Taleb, R. Bernardo Gavito, Rodolfo Miranda, and Daniel Granados

Poster contribution

Continuous Flow synthesis of Gold Nanoparticles

Demian Pardo, Francisco Tato, Alvaro Somoza.

Poster contribution

Triazol based-coordination polymers as synergistic therapy in pancreatic cancer

Marco Cordani, Esther Resines-Urien, Arturo Gamonal, Jose Sanchez-Costa, Álvaro Somoza.

Poster contribution

Towards rare earth-free bulk magnets: Fabrication of L10-phase in gas-atomized MnAlC powder by hot pressing

C. Muñoz-Rodríguez, L. Feng, E.M. Palmero, T. Mix, J. Rial, J. Camarero, B. Skårman, H. Vidarsson, P.-O. Larsson, T.G. Woodcock y A. Bollero.

Oral contribution

Effective control of the magnetic anisotropy direction in MnBi thin films during film growth

M. Villanueva, E. Hernández, P.S. Normile, J.A. de Toro, J. Camarero, C. Navío y A. Bollero.

Poster contribution

Synthesis of metal nanoparticles (NiFe, CoFe) by reducing process of (Ni-, Co-) ferrites

D. Casaleiz, M. Villanueva, E.M. Palmero, S. Estradé, P. Torruella, F. Peiró Y. Luengo, J. Camarero, A. Espinosa, G. Salas y A. Bollero.

Poster contribution

Synthesis of hybrid nanoparticles for magnetic hyperthermia and MR imaging.

David García-Soriano, Rebeca Amaro, Cristina Navío, Marco Filice, Lucía Gutiérrez y Gorka Salas.

Oral contribution

Influence of coating, concentration and medium on the aggregation of magnetic nanoparticles synthesized by polyol method for hyperthermia

Victoria López y Gorka Salas.

Poster contribution

Antibacterial Activity Of γ -Fe2O3/Ag Nanocomposites Synthesized by an Aqueous Route

Y. Luengo, B. Sot y G. Salas.

Poster contribution

Nanofabrication of bio-inspired antireflective surfaces and its up-scaling by Roll to Roll technology

Alejandra Jacobo-Martín.

Oral contribution

Superconducting Lumped Element Resonators for molecular spin quantum processors

M. C. de Ory, I. Gimeno, M. T. Magaz, E. Burzuri, F. Luis, D. Granados, A. Gomez

Poster contribution

Fabrication of flexible metallic nanostructured surfaces as neural electrodes

Beatriz L. Rodilla, Claudia Fernández-González, Ana Arché-Núñez, Ana Domínguez-Bajo, Ankor González-Mayorga, Elisa López-Dolado, Sandra Ruiz-Gomez, Julio Camarero, Rodolfo Miranda, María Concepción Serrano, Lucas Pérez, M Teresa González.

Poster contribution

Bioactive neural interfaces made of nanostructured electrodes for spinal cord injury

Ana Domínguez-Bajo, Ankor González-Mayorga, Beatriz L. Rodilla, Ana Arché-Núñez, Lucas Pérez, María Teresa González, Elisa López, and María Concepción Serrano

Oral contribution

Nanostructured electrodes for electrophysiological extra and in tracellular recordings on cells

Ana Arché-Núñez, Beatriz L. Rodilla, Lucas Pérez, María Concepción Serrano and M. Teresa González

Poster contribution

26-28/06/2019

IBERTRIVA 2019, Sevilla, Spain.

Visualizing On-surface Intramolecular and Intermolecular Chemistry of Porphyrins:

Planarization, Gold Self-metalation and Coupling
 Borja Cirera, Bruno de la Torre, Daniel Moreno, Martin Ondráček, Radek Zbořil, Rodolfo Miranda, Pavel Jelínek, and David Ěcija.

Oral contribution

Co-based oxides nanoislands on Au (111)

A. Sánchez-Grande, K. Lauwaet, J. Rodríguez-Fernández, E. Carrasco, B. Cirera, J. M Gallego, R. Miranda, J. V. Lauritsen, D. Ěcija.

Oral contribution

On-surface synthesis of ethynylene bridged anthracene polymers

A. Sánchez-Grande, B. de la Torre, J. Santos, B. Cirera, K. Lauwaet, T. Chutura, S. Edalatmanesh, P. Mutombo, J. Rosen, R. Zboril, R. Miranda, J. Björk, P. Jelínek, N. Martín, and D. Ěcija

Oral contribution

27/06/2019

Dynamic Covalent Chemistry, Prague, Czech Republic.

Diversions and junctions in the road of science: from carbon nanotube rotaxanes to covalent organic frameworks

E.M. Perez. Invited lecture

01-02/07/2019

United Kingdom Porous Materials Conference, Cardiff, United Kingdom.

Sub-ppm Amine Detection by Absorption and Luminescence Turn-On in Metal Organic Frameworks

A. Sousaraei

Poster contribution

01-05/07/2019

40th International Conference on Vacuum Ultraviolet and X-ray Physics (VUVX 2019), San Francisco, California, USA.

Attosecond electron dynamics in molecules.

F. Martín. Invited lecture

01-05/07/2019

IVC 2019, Malmö, Sweden.

Visualizing On-surface Intramolecular and Intermolecular Chemistry of Porphyrins: Planarization, Gold Self-metalation and Coupling

Borja Cirera, Bruno de la Torre, Daniel Moreno, Martin Ondráček, Radek Zbořil, Rodolfo Miranda, Pavel Jelínek, y David Ěcija.

Oral contribution

On-surface synthesis of ethynylene bridged anthracene polymers

A. Sánchez-Grande, B. de la Torre, J. Santos, B. Cirera, K. Lauwaet, T. Chutura, S. Edalatmanesh, P. Mutombo, J. Rosen, R. Zboril, R. Miranda, J. Björk, P. Jelínek, N. Martín, y D. Ěcija.

Oral contribution

01-06/07/2019

Coma-Ruga-2019 - International Workshop on Magnetism & Superconductivity at the Nanoscale, Barcelona, Spain.

Mapping the spin distribution in molecules adsorbed on graphene

R. Miranda. Invited lecture

06-07/07/2019

44th Federation European biochemical societies congress (FEBS), Krakow, Poland.

Cocktail of non-coding RNAs against uveal melanoma delivered by magnetic and gold nanoparticles

Paula Milán Rois, David García-Soriano, Nuria Lafuente, Ciro Rodriguez Diaz, Yurena Luengo, Alfonso Latorre, Gorka Salas, Álvaro Somoza.

Poster contribution

07-12/07/2019

Conference Optical Probes OP2019, Vilnius, Lithuania.

Features and Fates of Excitons in Luminescent Organic Solids

J. Gierschner

Oral contribution

08/07/2019

First Bi-annual Focused Meeting of the European network for advancing Electromagnetic hyperthermic medical technologies MyWAVE, Sibiu, Romania.

Current outlook and perspectives on nanoparticle-mediated magnetic hyperthermia.

D. Ortega

Oral contribution

**08-12/07/2019****International Conference on Magnetic Fluids 2019, París, France.***Investigating the dynamic magnetic behavior of nanoparticles into biological environments.*

N.D. Telling, Maneea E. Sharifabad, D. Cabrera, Rémy Soucaille, F. Terán y Robert J. Hicken.

Oral contribution

10/07/2019**Young Researchers Conference 2019 (ICyV), Madrid, Spain.***Synthesis of heterogeneous nanostructures as magnetically recoverable photocatalysts.*

L. González, M.E. Rabanal, G. Salas.

Oral contribution

11-17/07/2019**10th meeting of the International Society of Theoretical Chemical Physics (ISTCP 2019), Tromsø, Norway.***Attosecond pump-probe spectroscopy of molecular electron dynamics.*

F. Martín Invited lecture

15-19/07/2019**XXXVII Biennial Meeting of the Spanish Royal Society of Physics (RSEF), Zaragoza, Spain.***The transport of electrons and heat in molecular bonds*

N. Agrait. Invited lecture

By attaching the molecular spin qubits to the superconducting circuits through the carbon nanotubes

Enrique Burzurí, Alicia Gómez, Marina C. de Ory, Ignacio Gimeno, Daniel Granados, Arturo Méndiz, Fernando Luis

Oral contribution

Vortex Dynamics on Superconducting Periodic Arrays.

V. Rollano, A. Gómez, J. Del Valle, M. Calero, M. Menghini (autor presentador), A. Muñoz Noval, M. R. Osorio, D. Granados, E. M. González, J. L. Vicent.

Oral contribution

Development of Superconducting Lumped Element Resonators for molecular spin quantum processors.

M. C. de Ory, I. Gimeno, M. T. Magaz, F. Luis, E. Burzuri, D. Granados, A. Gomez

Oral contribution

Exploring new materials for Superconducting Kinetic Inductance Detectors. .

M.C. de Ory, M.T. Magaz, M. Acebrón, J. Salgue-ro, J.L. Costa-Krämer, D. Granados, J. Martín-Pintado, A. Gomez

Poster contribution

Controllable Switching of the Superconductivity of a Tungsten STM Tip on Epitaxial Graphene.

C.G. Ayani, P. Casado, A. Norris, J.J. Navarro, J.G. Rodrigo, F. Calleja, A.L. Vázquez de Parga y R. Miranda.

Poster contribution

Optical characterization of few layer MoS2 mechanical resonators.

V́ctor Marzoa, Fernando J. Urbanos, Cristina García-Pérez, Jorge Trasobares, Amjad Al Taleb, R. Bernardo-Gavito, Rodolfo Miranda, y Daniel Granados.

Poster contribution

New routes for the development of alternative permanent magnets: from composite synthesis to 3D printing

E.M. Palmero, D. Casaleiz, J. Rial, J. de Vicente y A. Bollero

Oral contribution

16-19/07/2019**42nd Congress of the Spanish Society of Biochemistry and Molecular Biology, Madrid, Spain.***Role of γ -Synuclein regions in amyloid fibrillation kinetics and fibres morphology.*

J. Gallardo; C. Escalona-Noguero; B. Sot.

Poster contribution

Membrane accommodation surfaces modulate the biological function of anti-HIV antibodies through semi-specific interactions.

Nieva, J.L.; Apellaniz, B.; Caaveiro, J.M.M.; Caravilla, P.; Garcia-Vesga, A.; Insausti, S.; Largo, E.; Requejo-Isidro, J.; Rujas, E.; Sanchez-Eugenia, R.; Torralba, J.

Oral contribution

17/07/2019**Gordon Conference in Photochemistry, Stonehill College, MA, USA.**

Hybrid Nanoscopy of Amyloid Fibers

Cristina Flors. Invited lecture

17-19/07/2019**8th Iberian Meeting of Colloids and Interfaces (RICI8), Aveiro, Portugal.***Multifunctional approaches based on magnetic and photothermal nanomaterials for cancer treatment.*

Ana Espinosa. Invited lecture

20-24/07/2019**12th EBSA- 10th ICBP-IUPAP Biophysics Congress, Madrid, Spain.***A molecular obstacle course: How does DNA polymerase deal with SSBs that are stably bound to the template?*

B. Ibarra. Invited lecture

Dynamics of individual molecular shuttles under mechanical force.

K M. Lemishko, T Naranjo, S de Lorenzo, A So-moza, F Ritort, E M. Pérez, B Ibarra

Contribución de Póster

Hierarchical biointerfaces as smart cellular mechanoselective surfaces.

María Teresa Alameda, Manuel R. Osorio, Jaime Hernández, Isabel Rodríguez

Poster contribution

Design mechanoinstructive biointerfaces for medical implants.

María Teresa Alameda, Manuel R. Osorio, Jaime Hernández, Isabel Rodríguez.

Poster contribution

Rational oligomerization control for a designed metamorphic protein with de novo toroidal hexameric rings.

Campos, L.A., Martín-Zamora, F.M. Pulido-Cid, M., Ibarra-Molero, B. & Muñoz, V.

Poster contribution

Anti-HIV Antibody-Lipid Interactions Enhance Affinity for the Native Env Glycoprotein as Revealed by Single Virion STED Microscopy.

Carravilla, P., J. Chojnacki, E. Rujas, S. Insausti, E. Largo, D. Waithe, B. Apellaniz, T. Sicard, L. Darre, I.R. Oar-Arteta, C. Domene, J.P. Julien, J. Requejo-Isidro, C. Eggeling, J.L. Nieva.

Poster contribution

Binding Affinity of Membrane -Inserted Epitope to HIV-1 Antibody and Its Dependency on Lipids Quantified by Fluorescence Correlation Spectroscopy.

Garcia, A., J. Torralba, B. Apellaniz, P. Carravilla, J. L. Nieva, and J. Requejo-Isidro.

Poster contribution

Imaging of light-induced damage in amyloid fibers at the nanoscale

Patricia Bondia, Caterina Tone, Joaquim Torra, Adrián del Valle, Begoña Sot, Youhei Sohma, Motomu Kanai y Cristina Flors.

Poster contribution

Bacterial cell wall mechanical damage studied by simultaneous nanoindentation and fluorescence microscopy.

Adrián Del Valle, Patricia Bondia, Caterina M. Tone, Virginia Vadillo y Cristina Flors.

Poster contribution

Exploring the potential of unconventional fluorophores in super-resolution imaging.

Joaquim Torra, Patricia Bondia, Begoña Sot y Cristina Flors.

Poster contribution

23-27/07/2019

41st International Engineering in Medicine and Biology Conference, Berlín, Germany.

Modelling the response of magnetic nanoparticles inside living cells.

J. Leliaert, A. Coene, D. Cabrera, E. J. Artés-Ibáñez, L. Dupré, N. D. Telling, F. J. Teran

Oral contribution

In silico testing of clinical magnetic hyperthermia: nanothermometry options and the role of tumour vasculature.

D.Ortega, I. Rubia-Rodriguez, B. H. Juarez, F.J. Teran, H. Verdaguer, T. Macarulla.

Oral contribution

25-27/07/2019

Protein-Lipid nanostructures: from domains to devices (EBSA ProLIN2019), Bilbao, Spain.

Comparative analysis of membrane constriction by dynamin isoforms.

Bocanegra R, Velasco A, de Lorenzo S, Ormaetxea, J, Carrascosa JL, Shnyrova AV, Ibarra B, Frolov VA.

Poster contribution

Binding Affinity of Membrane-Inserted Epitope to HIV-1 Antibody and Its Dependency on Lipids Quantified by Fluorescence Correlation Spectroscopy.

Vesga, A. G., J. Torralba, B. Apellaniz, P. Carravilla, J. L. Nieva, and J. Requejo-Isidro.

Oral contribution

27-31/07/2019

XVI Sitges Conference on Statistical Mechanics, Sitges, Spain.

Mechanics, thermodynamics and kinetics of ligand bonding to long polymers.

F. J. Cao.

Oral contribution

30/07/2019

9th International Symposium on Bioorganometallic Chemistry, York, United Kingdom.

Targeting Mitochondria by Highly Potent Iridium Metallodrugs.

A. M. Pizarro. Invited lecture

18-21/08/2019

10th National Conference on Inorganic Chemistry of the Chinese Chemical Society, Jinan, China.

Micro/Nano Fabrication and Ultra-Precision Manufacturing for Applications in Magnetic Hard Disk Storage, Magnetic Random Access Memory (MRAM).

Feng Luo

Oral contribution

25-30/08/2019

17th International Conference on Photobiology (Light and Life), Barcelona, Spain.

Nanoscale image of photodynamic damage to amyloid

Cristina Flors

Oral contribution

26-30/08/2019

The Joint European Magnetic Symposia (JEMS 2019), Uppsala, Sweden.

Effect of particle size on permanent magnet-polymer composites and resulting flexible filaments.

E.M. Palmero, D. Casaleiz, J. Rial, J. de Vicente y A. Bollero.

Oral contribution



Tuning the magnetic anisotropy of high-coercive MnBi thin films.

M. Villanueva, E. Hernández, P.S. Normile, J.A. de Toro, J. Camarero, C. Navío y A. Bollero.

Oral contribution

Fabrication of bulk MnAlC magnets by hot-pressing from γ -phase gas-atomized and milled powder.

C. Muñoz-Rodríguez, L. Feng, E.M. Palmero, T. Mix, J. Rial, J. Camarero, B. Skårman, H. Vidarsson, P.-O. Larsson, T.G. Woodcock y A. Bollero.

Oral contribution

Exchange bias coupling in Fe₃O₄/CoO magnetic nanoparticles with different morphologies.

C. Bidaud, D. García Soriano, G. Salas, y A. Bollero.

Oral contribution

High coercive ultra-thin films of L10-MnAl.

C. Navío, M. Villanueva, E. Céspedes, F. Mompeán, M. García-Hernández, J. Camarero y A. Bollero.

Poster contribution

Microstructure and magnetic properties in core/shell nanoparticles: (Co-, Ni-) ferrite/ (CoFe, NiFe)

D. Casaleiz, M. Villanueva, E.M. Palmero, S. Estradé, P. Torruella, F. Peiró Y. Luengo, J. Camarero, A. Espinosa, G. Salas y A. Bollero.

Poster contribution

Engineering the magnitude and the sign of the bias field in orthogonally coupled SmCo₅-CoFeB films.

A. Bollero, V. Neu, V. Baltz, D. Serantes, J.L.F. Cuñado, F.J. Pedrosa, E.M. Palmero, M. Seifert, L. Schultz, B. Dieny, R.P. del Real, M. Vázquez, O. Chubykalo-Fesenko y J. Camarero.

Poster contribution

27-30/08/2019

Photo- and electrocatalysis at the atomic scale (PECAS 2019), San Sebastian, Spain.

CoO and Co_{1-x}FexOy nanoislands on Au (111) studied at low temperature: Model catalysts for the water splitting reaction.

A. Sánchez-Grande, K. Lauwaet, J. Rodríguez-Fernández, E. Carrasco, B. Cirera, J. M Gallego, R. Miranda, J. V. Lauritsen, D. Écija

Poster contribution

CoO and Co_{1-x}FexOy nanoislands on Au (111) studied at low temperature: Model catalysts for the water splitting reaction.

A. Sánchez-Grande, K. Lauwaet, J. Rodríguez-Fernández, E. Carrasco, B. Cirera, J. M Gallego, R. Miranda, J. V. Lauritsen, D. Écija.

Oral contribution

02-13/09/2019

European School on Magnetism - Experimental techniques 2019, Brno, Czech Republic.

Sub-nT AMR sensors based on low noise La_{0.7}Sr_{0.3}MnO₃ thin films for neuronal activity measurement.

L. Enger, O. Rousseau, S. Flament, B. Guillet, M. Lam Chok Sing, S. Chaluvadi, V. Pierron, V. Muñoz, R. Guerrero, M. T. González, J. Camarero, L. Méchin

Poster contribution

03-06/09/2019

25th International Workshop on Single Molecule Spectroscopy and Super-Resolution Microscopy in the Life Sciences, Berlín, Germany.

Binding Affinity of Membrane-Inserted Epitope to HIV-1 Antibody and Its Dependency on Lipids Quantified by Fluorescence Correlation Spectroscopy

Vesga, A. G., J. Torralba, B. Apellaniz, P. Carravilla, J. L. Nieva, y J. Requejo-Isidro

Poster contribution

03-06/09/2019

Chem2Dmat, Dresden, Germany.

New tools for the chemical modification of 2D materials.

E.M. Perez.

Oral contribution

04-06/09/2019

18th National meeting of the Spanish Society of Neuroscience, Santiago de Compostela, Spain.

Metallic nanoelectrodes as biocompatible neural interfaces.

M.C. Serrano, A. Domínguez-Bajo, A. González-Mayorga, B. L. Rodilla, A. Arché, R. Miranda, J. Camarero, L. Pérez, M.T. González, y E. López

Poster contribution

08-13/09/2019

XXVI International Summer School "Nicolás Cabrera", Madrid, Spain.

Superconducting Resonators for molecular spin quantum processors.

M. C. de Ory, I. Gimeno, M. T. Magaz, E. Burzuri, F. Luis, D. Granados, A. Gomez

Poster contribution

Twists and the electronic structure of graphitic materials.

Tommaso Cea

Poster contribution

12-14/09/2019

1st European Association for Cancer Research (EACR) Conference on Nanotechnology in Cancer, Cambridge, United Kingdom.

Cocktail of non-coding RNAs delivered by Magnetic and Gold Nanoparticles for the treatment of Uveal Melanoma.

Paula Milán Rois, David García Soriano, Nuria Lafuente-Gómez, Ciro Rodríguez-Díaz, Yurena Luengo, Alfonso Latorre, Gorka Salas, Álvaro Somoza

Poster contribution

Nanomedicines for gene editing as therapy for p53 associated pancreatic cancer.

Marco Cordani, Eduardo Garcia-Garrido, Alba Fernandez-Calvo, Carmen Escalona-Noguero, Sonia Romero, Begoña Sot, Alvaro Somoza
Oral contribution

16/09/2019

GDCh Science Forum Chemistry, Aachen, Germany.

Amyloid hybrid nanoscopy: from materials to biomedicine

Cristina Flors
Oral contribution

16-19/09/2019

Autumn Meeting of the European Society for Materials Research (EMRS) 2019.

Metal-insulator transition materials and their applications in photonic devices.

M. Menghini, P. Himm, B. van Bilzen, L.-W. Jang, J. W. Seo, J. -P. Locquet, L. Sánchez, I. Olivares, J. Parra, P. Sanchis.
Oral contribution

17-19/09/2019

1st UK-SPAIN Organometallic Chemistry Symposium (USOCS2019), Alcalá de Henares, Spain.

Potent Half-Sandwich Iridium(III) Complexes as Mitochondria-Targeted Anticancer Drugs.

Ana C. Carrasco, José Javier Conesa, Vanessa Rodríguez-Fanjul, Yang Yang, José L. Carrasco-sa, Peter Cloetens, Eva Pereiro, Ana M. Pizarro.
Poster contribution

Organometallic tethered compounds with a coordinative bond capable of hijacking/releasing a proton.

Sonia Infante, Ana M. Pizarro.
Oral contribution

18/09/2019

Nanax 9, Nanoscience with Nanocrystals, Hamburg, Germany.

Luminescence Nanothermometry with Semiconductor Nanoparticles.

Beatriz H. Juarez
Oral contribution

22-25/09/2019

4th EuChemMS - Green and Sustainable Chemistry conference, Tarragona, Spain.

Tracking the electronic and structural configurations of earth-abundant photosensitizers and water splitting catalysts for artificial photosynthesis.

D. Moonshiram.
Oral contribution

27/09/2019

9th International Symposium on Photochromism, Paris, France.

Switchable and selective photodynamic damage of amyloid aggregates: a nanoscale view

P. Bondia, J. Torra, A. Del Valle, B. Sot, M. Kanaiz, Y. Sohma, C. Flors
Oral contribution

29/09/2019

SPICE-JGU, Mainz, Germany.

Rotating orbit driven effects of Graphene-FM systems

Paolo Perna
Oral contribution

30/09/2019-04/10/2019

TNT-209, San Sebastián, Spain.

Nanostructured graphene catalyzes the reaction between two organic molecules.

Michele Pisarra, J. J. Navarro, B. Nieto-Ortega, J. Villalva, C. G. Ayani, C. Díaz, F. Calleja, R. Miranda, F. Martín, E. M. Pérez, A. L. Vázquez de Parga.
Oral contribution

01-02/10/2019

GDR Oxyfun, Thematic day "Functional Oxide Thin Films and Applications", Caen, France.

AMR effect in patterned La₂/3Sr₁/3MnO₃ thin films on SrTiO₃ vicinal substrates at body temperature (310K).

L.G. Enger, O. Rousseau, S. Flament, B. Guillet, M. Lam Chok Sing, S. Chaluvadi, V. Pierron, V. Muñoz, R. Guerrero, M. T. Gonzalez, J. Camarero, L. Méchin.
Poster contribution

02/10/2019

104th Meeting of the Argentine Physics Association, Santa Fé, Argentina.

Graphene as a playground for molecules: from physisorption to catalysis

A.L. Vázquez de Parga
Oral contribution

03-04/10/2019

GDR Meeticc, "Magnetism" theme days, Caen, France.

Optimization of thin film La₂/3Sr₁/3MnO₃ magnetic field sensor.

L.G. Enger, S. Flament, O. Rousseau, B. Guillet, M. Lam Chok Sing, S. Chaluvadi, V. Pierron, S. Lebarry, V. Muñoz, R. Guerrero, M. T. Gonzalez, J. Camarero, L. Méchin.
Oral contribution

08/10/2019

International Workshop on Nanoscale Imaging and Manipulation in Life and Materials Sciences, Madrid, Spain.

Exploring the dynamics of biological and synthetic molecular motors one at a time.

B. Ibarra
Oral contribution

08-11/10/2019

IX Congress of the Spanish Synchrotron User Association (AUSE) and the 4th ALBA User's Meeting, Barcelona, Spain.

Overview, perspectives and challenges in nanomagnetism

P. Perna, A. Bollero, R. Miranda, J. Camarero
Oral contribution



A ThreeDimensional Dynamic Supramolecular “Sticky Fingers” Organic Framework

E. Fernández-Bartolomé, José Sánchez Costa

Oral contribution

Tracking the electronic and structural configurations of earth-abundant photosensitizers and water splitting catalysts for artificial photosynthesis.

D.Moonshiram.

Oral contribution

Graphene-based synthetic antiferromagnets with close to zero net magnetization.

Leticia de Melo Costa, P. Gargiani, J. Camarero, P. Perna, M. Valvidares.

Poster contribution

14-17/10/2019

Conference on ultrafast magnetism (UMC 2019), York, United Kingdom.

Ultrafast light-induced nucleation of skyrmion lattices in Co-based Magnetic trilayers.

P. Olleros, M. Strungaru, S. Ruta, P. Gavrilooa, R.W. Chantrell, O. Chubykalo-Fesenko, P. Perna.

Poster contribution

17/10/2019

EPFL Valais Wallis, Sion, Switzerland.

Phthalo- and Subphthalocyanines: Supramolecular Chemistry and Molecular Photovoltaics

T. Torres

Oral contribution

18-19/10/2019

XLI Congress of the Iberian Society of Biomechanics and Biomaterials, Madrid, Spain.

Design of bactericidal surfaces by using micro-nano hierarchical topographies.

María Teresa Alameda, Manuel R. Osorio, Jaime J. Hernández e Isabel Rodríguez.

Oral contribution

24-25/10/2019

35 Years of STM in Spain, Madrid, Spain.

35 years of STM at the UAM Surface Science Lab (LASUAM)

R. Miranda

Oral contribution

The light at the end of the tunnel: Electrons, Plasmons and Excitons studied by STM.

R. Otero

Oral contribution

Thin films on epitaxial graphene: From magnetic order to topological phases.

Manuela Garnica

Oral contribution

Graphene: From carbon contamination to a superconductivity toggle for STM tips

F. Calleja

Oral contribution

Surface synthesis of ethylene polymers of spotted acene.

D. Écija

Oral contribution

26/10/2019

World Young Scientist Summit (WYSS), Wenzhou, China.

Energy Science: Phthalocyanines for Molecular Photovoltaics

T. Torres

Oral contribution

3rd Convocation of the PhDay Complutense - Faculty of Physics, Madrid, Spain.

Nano-electrodes fabrication to perform electric neuronal activity measurements.

Beatriz L. Rodilla

28/10/2019 Poster contribution

04/11/2019 Oral contribution

04-08/11/2019

MMM 2019: 64th Annual Conference on Magnetism and Magnetic Materials, Las Vegas, USA.

Disentangling the anomalous Nernst and spin Seebeck effect in epitaxial NM/ Graphene/Cobalt heterostructures.

A. Anadon, A. Gudin, J. M. Diez, R. Guerrero, J. Camarero, R. Miranda, and P. Paolo.

Oral contribution

Spin-orbit torque and Dzyaloshinskii-Moriya interaction effects in perpendicularly magnetized trilayers.

A. Anadon, A. Gudin, J. M. Diez, L. de Melo Costa, R. Guerrero, J. Camarero, R. Miranda, and P. Paolo.

Oral contribution

Spin-orbit torque estimation in perpendicularly magnetized trilayers.

R. Guerrero, A. Anadon, A. Gudin, J.M. Diez, P. Olleros, F. Ajejas, J. Camarero, R. Miranda, Paolo Perna.

Oral contribution

Evaluation of Local and Global Induced Temperature Therapeutic Profile in Magnetic and Photo-thermal Nanoparticle-based Therapies.

A. Espinosa, G. R. Castro, J. Reguera, A. Curcio, C. Castellano, C. Wilhelm, M. Á. García, Á. Muñoz Noval.

Oral contribution

05/11/2019

PCCP Editorial Board Symposium, Madrid, Spain.

Organic Lasers: Materials Insights from Femtosecond Spectroscopy.

J Cabanillas

Oral contribution

Nanotechnology-based neural interfaces: sensors and actuators.

M. Teresa González

Oral contribution

05-07/11/2019

29th Annual Users Meeting of the Brazilian Synchrotron Light Laboratory (29. RAU/ LNLS), São Paulo, Brazil.

Unexpected optical blue shift in large colloidal quantum dots elucidated by XAS.

Martin Mizrahi, María A. Rodicio, Facundo C. Herrera, Félix G. Requejo, Beatriz H. Juárez

Poster contribution

06-08/11/2019

Spanish Portuguese Meeting for Advanced Optical Microscopy, Coimbra, Portugal.

Nano-scale temperature measurement using anisotropy-based nanothermometers.

S. Thompson

Oral contribution

06-08/11/2019

3rd edition of the Ultrafast Science and Technology meeting in Spain (USTS), IMDEA Nanociencia, Madrid, Spain.

Effects of core and active space on attosecond dynamics.

Juan J. Omiste and Lars B. Madsen.

Poster contribution

Electron angular distribution in double ionization of H₂.

Kilian Arteaga, Johannes Feist, Fernando Martín and Alicia Palacios.

Poster contribution

Ultrafast light-induced nucleation of skyrmion lattices in Co-based Magnetic trilayers.

P. Olleros, M. Strungaru, S. Ruta, P. Gavriloea, R.W. Chantrell, O. Chubykalo-Fesenko, P. Perna.

Poster contribution

Ultra-fast spectroscopy of organic materials for energy applications

L. Luer

Oral contribution

Tracking the electronic and structural configurations of earth-abundant

photosensitizers and water separation catalysts for artificial photosynthesis

D. Moonshiram

Oral contribution

On the problem of achieving a low-threshold yellow-green polymer in energy transfer mixtures

Juan Cabanillas-González, Qi Zhang, Chen Sun, Larry Luer, Jingguang Liu, Xiangru Guo, Qi Wei, Ruidong Xia, Yan Qian, Donal D C Bradley, and Wei Huang,

Poster contribution

The influence of γ -phase shaping on the transient absorption and light amplification properties of polyarylfuorine

Chen Sun, Jinyi Lin, Jaime J. Hernandez Rueda, Xingyuan Shi, Aleksandr Perevedentsev, and Juan Cabanillas-Gonzalez

Poster contribution

Ultrafast magnetic sky light induced nucleation in Pt/Co/Pt magnetic trays

Pablo Olleros, Mara Strungaru, Sergiu Ruta, Roy W. Chantrell, Oksana Chubykalo-Fesenko, and Paolo Perna

Poster contribution

Effects of core and active space on the dynamics of seconds.

Juan J. Omiste and Lars B. Madsen

Poster contribution

Characterization of conductivity, mobility and density of carriers in semiconductors using time resolution THz spectroscopy

Sergio Revuelta and Enrique Canovas

Poster contribution

Dynamics of photo excitation of solution-processable photovoltaic mixtures of all small molecules in bulk

Junqing Shi, Anna Isakova, Abasi Abudulimu, Marius van den Berg, Oh Kyu Kwon, Alfred J. Meixner, Soo Young Park, Dai Zhang, Johannes Gierschner, and Larry Luer

Poster contribution

11-13/11/2019

Workshop Superconducting Kinetic Inductances, Bad Honnef, Germany.

Development of Superconducting Resonators for molecular spin quantum processors.

M. C. de Ory, I. Gimeno, M. T. Magaz, E. Burzuri, D. Granados, F. Luis, A. Gomez

Poster contribution

12-14/11/2019

2D-Chem Valencia-Erlangen Symposium 2019 on the Chemistry and Physics of 2D Materials, Valencia, Spain.

Porphyrinoid-based 2D-Systems for Molecular Photovoltaics.

T. Torres

Oral contribution

Sub-ppm Amine Detection by Absorption and Luminescence Turn-On in Metal Organic Frameworks.

A. Sousaraei

Poster contribution

14-15/11/2019

Metals in Medicine Workshop, Paris, France.

Hybrid systems for metal-based bio-orthogonal catalysis on carbon nanotubes.

Federica Battistin, Ana M. Pizarro

Poster contribution

Half-sandwich iridium(III) anticancer complexes to target the cell mitochondria.

Ana C. Carrasco, José Javier Conesa, Vanessa Rodríguez-Fanjul, Yang Yang, José L. Carrasco-sa, Peter Cloetens, Eva Pereiro, Ana M. Pizarro.

Poster contribution

Organometallic tethered compounds with a coordinative bond prone to proton-mediated activation.

Sonia Infante-Tadeo, Abraha Habtemariam, Adriana Arnáiz, Diane L. Barber and Ana M. Pizarro.

Poster contribution



Rhodium and Iridium half sandwich complexes that report activity status inside cells.

Arturo Villechenous Rojo, Ana C. Carrasco, Adrián Luguera and Ana M. Pizarro.
Poster contribution

21-22/11/2019

Advancing Chemistry in Spain, Palma de Mallorca, Spain.

Tailoring pi-conjugation on surfaces.

D. Écija

Oral contribution

10-12/12/2019

SFNano – C’Nano joint meeting 2019, Dijon, France.

Composite magnetic nanoparticles of Fe₃O₄/CoO with different shapes exhibiting exchange bias.

C. Bidaud, E. Sánchez, D. García Soriano, J.A. de Toro, M. Varela, G. Salas, A. Bollero.

Oral contribution

12-13/12/2019

Symposium on Progress in Organic Optoelectronics and Energy Conversion, Málaga, Spain.

Photophysics of Curved Nanographenes.

S. Ramírez, R. Wannemacher.

Oral contribution

Sub-ppm Amine Detection by Absorption and Luminescence Turn-On in Mixed Matrix Membranes with Metal Organic Frameworks.

A. Sousaraei

Oral contribution

Tunable emission of azaindole derivative varying the crystalline morphology.

J. Alvarez Conde

Oral contribution

2. Conferences

60 conferences

26 in Spain

14-17/01/2019

Weizmann Institute of Science, Rejovot University, Israel

Winter School on 2D Materials.

F. Guinea

14-25/01/2019

Kavli Institute for Theoretical Physics, Research institute in Isla Vista, California.

Correlations in Moiré Materials.

F. Guinea

24-25/01/2019

XV Scientific Conference of the Institute of Materials of Alicante, Alicante, Spain.

Tribute to Professor Enrique Louis.

F. Guinea

28/01/2020

Swiss Federal Laboratories for Materials Science and Technology (EMPA), Engelberg, Switzerland.

Electric and thermoelectric properties of conjugated oligomers at the single molecule level.

Edmund Leary

Febrero 2019

University of Valladolid, Valladolid, Spain.

Attosecond lasers: the super slow camera of physics, chemistry and ... Biology?

F. Martin

03-08/02/2019

Graphene Study 2019, Obergurgl, Austria.

F. Guinea

07-08/02/2019

EC60 Nanoscience and Molecular Materials Symposium, Valencia, Spain.

Subphthalocyanines as molecular materials.

T. Torres

18/02/2019

University of Salamanca, Salamanca, Spain.

Interfacing molecules and nanomaterials: from carbon nanotube rotaxanes to single-molecule experiments

E.M. Perez

21-22/02/2019

Graphene Industry conference - Challenges & Opportunities, Madrid. Spain.

Atomic-scale functionalization of metal-supported graphene: Towards a graphene-based catalyst.

F. Calleja

21-22/02/2019

Aragon Institute of Nanoscience, Zaragoza, Spain.

XMCD-PEEM: a tool to study magnetic nanomaterials.

Lucas Pérez

19/03/2019

The Center for Systems and Synthetic Biology (CCSB), The University of Texas at El Paso, El Paso, USA.

Subphthalocyanines: Singular aromatic non-planar molecules.

T. Torres

25/03/2019

Institute of Materials Science of Barcelona (ICMAB-CSIC), Barcelona, Spain.

Exploring the metal-insulator transition in vanadium oxide thin films.

M. Menghini

26/03/2019

Argonne National Laboratory, Illinois, USA.
Advanced Photon Source User Seminar 2019.
 D. Moonshiram

Abril de 2019

Central Florida University, Orlando Florida, USA.
Attosecond electron dynamics in molecules.
 F. Martin

04/04/2019

MAGBIOVIN - Vinca Institute - Blegrade, Belgrade, Serbia.
Thermal therapies mediated by iron oxide-based nanoparticles: quantitative comparison of heat generation, therapeutic efficiency and limitations.
 A. Espinosa

04/04/2019

Spanish network of materials sp2, Granada, Spain.
Quantitative determination of a model organic/insulator/metal interface structure.
 Manuela Garnica

11/04/2019

National Centre for Oncological Research (CNIO), Madrid, Spain.
Optical Tweezers to explore life under tension, one molecule at a time.
 B. Ibarra

14/05/2019

University of Castellón, Castellón, Spain.
Group of switchable nanomaterials: monitoring the effects of solvatochromes
 J. S. Costa

Mayo de 2019

University of Rostock, Rostock, Germany.
The image and control of electron dynamics in atoms and molecules
 F. Martin

16/05/2019

Department of Physics, University of Calabria, Rende (CS), Italy.
Nanostructured graphene catalyzes the reaction between two organic molecules
 M. Pisarra

20-23/05/2019

Max Planck Institute for Chemical Energy Conversion, Mulheim, Germany.
2nd Scientific Symposium of IMPRS-RECHARGE
 D. Moonshiram

21/05/2019

ICFO, Barcelona, Spain.
Electronic Properties of Twisted Graphene Layers: Bands, Interactions and Superconductivity
 F. Guinea

22/05/2019

Michigan State University, East Lasing, USA.
Superconducting vortices on the move: A powerful tool to study nanomagnetism
 J. L. Vicent

29/05/2019

Georgetown University, Washington DC, USA.
Ratchet Effect Induced by Frustrated Spin Ice Nanomagnets
 J. L. Vicent

31/05/2019

Biofisika Institute, Bilbao, Spain.
Hybrid nanoscopy of amyloids: from materials to biomedicine
 C. Flors

03-04/06/2019

Moiré en Paris, Ecole Normale Supérieure, Paris, France.
Electronic properties of twisted graphene layers: bands, interactions and superconductivity
 F. Guinea

05/06/2019

Biological Research Centre (CIB-CSIC), Madrid, Spain
Optical tweezers and their application in biology.
 B. Ibarra

16/06/2019-07/07/2019

Aspen Center for Physics, EE.UU.
Moiré Materials. Strong Correlations in Synthetic Superlattices.
 F. Guinea

17/06/2019

Graduate School of Science, Kyoto University, Kyoto, Japan.
Subphthalocyanines: Supramolecular Organization and Self-Assembling Properties
 T. Torres

17-21/06/2019

Training School ITN LightDyNAMics, Bologna, Italy.
Illumination of the future
 J. Gierschner

18/06/2019

Shinshu University, Ueda, Japan.
Self-assembling Properties of Subphthalocyanines.
 T. Torres

21/06/2019

University of Tokyo, Komaba Campus, Tokio, Japan.
The role of phthalocyanines and subphthalocyanines in molecular photovolt
 T. Torres

27/06/2019

J. Heyrovsky Institute of Physical Chemistry, Prague, Czech Republic.
Invited Seminar: Interfacing molecules and nanomaterials: from carbon nanotube rotaxanes to single-molecule experiments.
 E.M. Perez

**01/07/2019****Centre for Hybrid Nanostructures CHYN, Hmaburgh, Germany.***Playing old physics on new materials: From PN junctions to Light-Matter interactions.*

D. Granados

01-16/07/2019**Royal Hallaway, London, United Kingdom.***Condensed Matter Physics in the City*

F. Guinea

10/07/2019**MSRH Imperial College, London, England.***Study of epitaxial NiFe surfaces as catalyst for water splitting.*

M.A. Niño

15/07/2019**Advanced Microscopy Laboratory (AML), Zaragoza, Spain.***Molecular Junctions for Life Sciences.*

J. Trasobares

17/07/2019**Gordon Conference in Photochemistry, Stonehill College, MA, USA.***Hybrid Nanoscopy of Amyloid Fibers*

C. Flors

25/07/2019**Exciting nanostructures: Characterizing advanced confined systems, Bad Honnef, Germany.***Luminescence Nanothermometry with Semiconductor Nanoparticles*

Beatriz H. Juarez

09/09/2019**Ministry of Economic Affairs and Digital Transformation, Madrid, Spain.***Conference between SOMMA centres and representatives of the Autonomous Communities.*

R. Miranda

11-14/09/2019**Berkeley University, Berkeley, California.***Miquel Salmerón's Anniversary "Miquel is 75 birthday".*

R. Miranda

18/09/2019**13th Spanish Supercomputing Network (RES) Users Conference, Zaragoza, Spain.***Attosecond pump-probe photoelectron spectroscopy of molecules.*

F. Martín

20/09/2019**Workshop in Supramolecular Chemistry, Universidad de Castilla la Mancha, Toledo, Spain.***Interfacing molecules and nanomaterials: from carbon nanotube rotaxanes to single-molecule experiments.*

E.M. Pérez

27/09/2019**Faculty of Biology (UAM), Madrid, Spain***Current perspectives in molecular biology, Master in Genetics and Cell Biology*

Ana Espinosa

01/10/2019**Alcalá de Henares University, Madrid, Spain.***Presentation of the TEC2SPACE consortium*

D. Granados

07-11/10/2019**Ultrafast Physics from Molecules to Nanostructures., San Sebastián, Spain.***Attosecond pump-probe spectroscopy of molecular electron dynamics: a theoretical point of view.*

F. Martín

12/10/2019**EC Symposium on "The Molecular Approach to Functional Materials, Lisbon, Portugal.***Phthalocyanine based molecular materials.*

T. Torres.

28-29/10/2019**Bessy Synchrotron Workshop II, Berlín, Germany.***2D firo textures: from long-range order to chiral structures*

R. Miranda

12/11/2019**University of Burgos, Burgos, Spain.***Smart Nanoparticles for the Treatment of Cancer.*

Álvaro Somoza

14/11/2019**Autonomous University of Barcelona, Barcelona, Spain***Surface synthesis of ethylene polymers of bridged acene*

D. Écija

15/11/2019**Institute of Molecular Science (ICMOL), Valencia, Spain.***Targeting Mitochondria by Highly Potent Iridium Metallodrugs.*

A. M. Pizarro

19/11/2019**Institute Laue Langevin, Grenoble, France.***Switchable Nanomaterials Group; Monitoring Solvatochromic Effects*

J. S. Costa

20-22/11/2019**Solid State Physics Group of the UdelaR Engineering School, Montevideo, Uruguay.***Controlling the molecular spin by means of chemical reactions on functionalized metal-supported graphene*

F. Calleja

26/11/2019

Waseda - IMDEA Joint Workshop on "Energy and Nanomaterials", Madrid, Spain.

Photophysics of Small-Molecule Based Functional Materials

J. Gierschner

27-31/11/2019

WE-Heraeus Seminar, Bad Honnef, Germany.

Tailoring pi-conjugation on surfaces.

D. Écija

04/12/2019

Institute of Materials Science of Aragon, Zaragoza, Spain.

Probing the interaction between magnetic nanoparticles and biological entities by AC magnetometry AC.

F.J. Teran

10/12/2019

University of Pais Vasco, Leioa, Spain.

Probing the interaction between magnetic nanoparticles and biological entities by AC magnetometry.

F.J. Teran

13/12/2019

University of Manchester, Manchester, United Kingdom.

From rotaxanes to porphyrinoids.

G. Bottari

16/12/2019

University of Trento, Trento, Italy

Advances in clinical trials with silicon for magnetic hyperthermia

Daniel Ortega

17/12/2019

École Normale Supérieure, Paris, France.

Hybrid nanoscopy of amyloids: from materials to biomedicine

C. Flors

17-20/12/2019

Department of Physics, University of Calabria, Rende (CS), Italy.

Organic Molecules on Graphene/Ru (0001): Molecule Dynamics and Reactivity

M. Pisarra

3. Outreach

1. Presencia en los medios y las redes sociales

Jornada de puertas abiertas

"Nanociencia para todos" es el programa de divulgación científica de IMDEA Nanociencia. Actualmente, el programa se articula en distintas actividades, que están abiertas para todos los públicos. En el año 2019, IMDEA Nanociencia recibió a más de 600 estudiantes, profesores y ciudadanos en las jornadas de puertas abiertas; de un total de 19 centros educativos.

12 y 14/11/2019 Semana de la Ciencia

27/09/2019 La Noche Europea de los Investigadores

12/02/2019 Día de la Mujer y la Niña en la Ciencia

Actividades de divulgación

26/01/2019

Lucas Perez

Ciencia a la Carta. Visita al CEIP Virgen de la Paz (Alovera, Guadalajara).

30/01/2019

Rodolfo Miranda

Acto en memoria de los académicos agraviados durante la dictadura Real

Academia de Ciencias exactas, físicas y naturales (Madrid)

10/02/2019

Manuela Garnica

Academia Arte y Ciencia por el Día Internacional de la Mujer y la Niña en la Ciencia.

11/02/2019

Ana Sánchez

Visita al colegio Santo Domingo (Vallecas).

Charla a niños de 6º primaria con motivo del Día Internacional de la Mujer y la Niña en la Ciencia.

13/02/2019

Alberto Bollero

Visita al CPB Ángel León in Colmenar Viejo - Día Mujer y Niña en la Ciencia 11F.

14/02/2019

Juan Rojo

XII Ciclo Ciencia para Todos de la Real Academia de Ciencias Exactas, Físicas y Naturales: "El Universo, la Complejidad y la Vida".

20/02/2019

Grupo de Álvaro Somoza

"Voluntarios por la Ciencia" con el programa "Ciencia para todos" de la Asociación Española Contra el Cáncer (la AECC).

Colegio Zola (Madrid). Alumnos 4 años.

28/02/2019

Eduardo García (Álvaro Somoza)

"Voluntarios por la Ciencia" con el programa "Ciencia para todos" de la Asociación Española Contra el Cáncer (la AECC).

Hospital 12 de octubre.

**06/03/2019**

Carmen Escalona (Alvaro Somoza)

“Voluntarios por la Ciencia” con el programa “Ciencia para todos” de la Asociación Española Contra el Cáncer (la AECC).tesis

Colegio Zola (Madrid).

07/03/2019

Manuela Garnica

Charla “Mujeres y Ciencia” para los trabajadores de la empresa Gemalto.

08/03/2019

Carmen Escalona (Alvaro Somoza)

“Voluntarios por la Ciencia” con el programa “Ciencia para todos” de la Asociación Española Contra el Cáncer (la AECC).

Centro Nuevo de Pedagogía (Madrid). Alumnos de primaria.

22/03/2019

Grupo de Álvaro Somoza

“Voluntarios por la Ciencia” con el programa “Ciencia para todos” de la Asociación Española Contra el Cáncer (la AECC).

27/03/2019

Carmen Escalona (Alvaro Somoza)

“Voluntarios por la Ciencia” con el programa “Ciencia para todos” de la Asociación Española Contra el Cáncer (la AECC).

Colegio Madres Concepcionistas (Madrid) 4 primaria.

05/04/2019

Lucas Pérez

“La semana de la ciencia indignada” de la Facultad de Ciencias Físicas de la Universidad Complutense de Madrid (UCM).

23/04/2019

Carmen Escalona (Alvaro Somoza)

“Voluntarios por la Ciencia” con el programa “Ciencia para todos” de la Asociación Española Contra el Cáncer (la AECC).

Liceo Sorolla (Madrid). Alumnos 4ESO.

13/05/2019

Grupo de Álvaro Somoza

“Voluntarios por la Ciencia” con el programa “Ciencia para todos” de la Asociación Española Contra el Cáncer (la AECC).

British Council (Pozuelo).

22/05/2019

Lucas Pérez

PINTA DE CIENCIA

Proyecto ByAxon: tecnología hacia un bypass neuronal.

24/05/2019

Lucas Pérez

Charla-Taller “¿Por qué los imanes son tímidos?” en el Centro Social Casco Histórico.

12/06/2019

Alejandra Jacobo (Isabel Rodríguez)

Thesis Talk en Universidad Carlos III.

13/06/2019

Rodolfo Miranda

El Mañana Empieza Hoy (IFEMA).**18/06/2019**

Rodolfo Miranda

Conferencia en la Residencia de Estudiantes de CSIC.

27/06/2019

Elena Alonso Redondo, Beatriz Rodilla, Ana Arché, Elena Alonso, Teresa González, Rodolfo Mi-

randa, Lucas Pérez, María Concepción Serrano, Ana Domínguez Bajo, Ankor González-Mayorga, Elisa López-Dolado.

Fotciencia16

Foto - “El abrazo de la Neurona”.

15/07/2019

Mariela Menghini

Taller de superconductividad en la calle durante la Reunión Bienal de la Real Sociedad Española de Física RSEF en Zaragoza.

17/07/2019

Álvaro Somoza

Curso de Verano UAM: Hacia la sinergia perfecta: la conexión entre investigación académica e industrial como herramienta de innovación.

24/09/2019

Álvaro Somoza

Día Mundial de la Investigación Contra el Cáncer WCRD - Recepción de su Majestad la Reina de España.

Ana Espinosa

Día Mundial de la Investigación Contra el Cáncer WCRD – Recogida de beca en un acto de la AECC.

01/10/2019

Lucas Pérez

Charla de Boticaria García en la Biblioteca de CIM. Musica en directo.

04/11/2019

Elena Alonso Redondo, María Concepción Serrano, Ana Domínguez Bajo, Ankor González-Mayorga, Elisa López-Dolado, Beatriz Rodilla, Ana Arché, Elena Alonso, Teresa González y Lucas Pérez

Fotciencia16

Foto - “Hilando neuronas”.

05/11/2019

Lucas Pérez

Cocinando Materiales - Ibercaja Social.

19/11/2019

Rodolfo Miranda

Nano Bio & Med Barcelona - Parque Científico de Barcelona.

23/11/2019

Lucas Pérez

ByAxon, la búsqueda de un bypass para lesiones medulares - Ibercaja Social - Mes de la Ciencia.

En los medios

01/01/2019

Fernando Martín

El nacimiento de la attoquímica

<https://www.investigacionyciencia.es/revistas/investigacion-y-ciencia/aprender-mientras-dormimos-757/el-nacimiento-de-la-attoquimica-17051>

07/01/2019

Francisco Guinea

Francisco Guinea, uno de los 8 científicos madrileños más citados del mundo

<https://www.lavanguardia.com/vida/20190107/453992190861/ocho-investigadores-de-madrid-entre-los-mas-citados-del-mundo-en-2018.html>

09/01/2019

Aitziber Cortajarena

Un antídoto contra la sangría e cerebros españoles

<https://www.elmundo.es/papel/historias/2019/01/09/5c34f703fdddf3b3f8b46bc.html>

28/01/2019

Juan Cabanillas

Una nueva estrategia supramolecular para construir el cable eléctrico más pequeño

<http://www.madrimasd.org/notiweb/noticias/una-nueva-estrategia-supramolecular-construir-cable-electrico-mas-pequeno>
<https://www.azonano.com/news.aspx?newsID=36542>
<https://www.nanowerk.com/nanotechnology-news2/newsid=51987.php>

25/02/2019

Visita de MasMadrid con Íñigo Errejón a IMDEA Nanociencia (Europa Press)

<https://okdiario.com/espana/errejon-promete-oficina-regional-id-copiada-que-propuso-ayuso-10-dias-antes-3767789>
https://www.cope.es/actualidad/espana/noticias/errejon-propone-crear-una-agencia-regional-podemos-seguir-siendo-una-colonia-cientifica-20190225_361083
https://www.eldiario.es/politica/Errejon-Agencia-Regional-ID-cientifica_0_871763672.html
<https://www.lavanguardia.com/vida/20190225/46685920264/errejon-propone-crear-una-agencia-regional-de-id-no-podemos-seguir-siendo-una-colonia-cientifica.html>

06/03/2019

Jose Sanchez Costa

Primera estructura 3d dinámica puramente orgánica cohesionada por interacciones "sticky fingers"

<https://www.sincrotronalba.es/es/actualidad/noticias/primera-estructura-3d-dinamica-puramente-organica-cohesionada-por-interacciones-sticky-fingers>

08/03/2019

Teresa Rodríguez

Los científicos de ByAxon reflexionan sobre el equilibrio de género en el mundo

académico en el Día Internacional de la Mujer

<http://www.fetfx.eu/story/international-womens-day-female-scientists-share-thoughts-gender-balance-modern-research/>

18/03/2019

David Ecija

Un protocolo químico innovador: síntesis en superficie de polímeros de aceno

<https://www.nanowerk.com/nanotechnology-news2/newsid=52383.php>
<http://www.madrimasd.org/blogs/energiasalternativas/2019/06/25/133868>

19/03/2019

Nazario Martín

Entrevista en EL PAÍS

https://elpais.com/elpais/2019/03/14/ciencia/1552561950_752292.html

20/03/2019

Tomás Torres

Estudio Ciencia – Entrevista

<https://www.ktep.org/post/science-studio-professor-tomas-torres>

28/03/2019

Isabel Rodríguez Q&A proyecto EVONANO

<http://evonano.eu/2019/03/28/evo-nano-qa-isabel-rodriguez-fernandez-on-microfluidics-for-cancer-therapy/>

01/04/2019

'Madrid por la Ciencia y la Innovación' concluye con gran éxito de asistencia

<https://www.madrimasd.org/notiweb/noticias/madrid-por-ciencia-innovacion-concluye-gran-exito-asistencia>

Experiencias de la Feria Madrid por la Ciencia y la Innovación 2019

http://www.madrimasd.org/uploads/experiencias_feria_ciencia_27_mayo.pdf



17/04/2019

A. Molina, N. Martín

Cómo mejorar las células solares de perovskita

<http://icmab.es/energy-alignment-and-recombination-in-perovskite-solar-cells-weighted-influence-on-the-open-circuit-voltage>
<http://www.dicat.csic.es/rdcsic/index.php/tecnologia-de-materiales-2/115-proyectos/505-como-mejorar-los-materiales-de-las-celdas-solares-basadas-en-perovskitas>
<https://www.agenciasinc.es/Noticias/Como-mejorar-las-celulas-solares-de-perovskita>
https://www.lasexta.com/tecnologia-tecnoplora/sinc/como-mejorar-celulas-solares-perovskita_201904235cbec56e0cf221ee230816d8.html

25/04/2019

Aitziber Cortajarena

Nanomateriales funcionales empleando proteínas

<https://noticiasdelaciencia.com/art/32441/nanomateriales-funcionales-empleando-proteinas>

30/04/2019

Roberto Otero

Niveles de energía discretos sin confinamiento - un nuevo truco cuántico

<https://physics.aps.org/synopsis-for/10.1103/PhysRevLett.122.176801>
<https://physicsworld.com/a/quantum-nanoconfinement-effects-observed-without-confinement/>
<https://www.agenciasinc.es/Noticias/Nuevo-truco-cuantico-sin-confinamiento-de-electrones>
<http://www.ciemat.es/portal.do?TR=C&IDR=194>
http://www.uam.es/ss/Satellite?c=UAM_NotCientific_FA&cid=1446781464039&language=es&pagename=UniversidadAutonomaMadr/id/UAM_NotCientific_FA/UAM_notCientific&p

[id=1242652870949&title=Discretizaci%3Fn+de+niveles+de+energ%3Fa+sin+confinamiento+%3F+un+nuevo+truco+cu%3Fntico](https://phys.org/news/2019-05-discrete-energy-confinement-quantum.html)
<https://phys.org/news/2019-05-discrete-energy-confinement-quantum.html>
<https://www.icmm.csic.es/es/noticias.php>
https://www.lasexta.com/tecnologia-tecnoplora/sinc/nuevo-truco-cuantico-confinamiento-electrones_201905065cd0378e0cf20364a398e091.html
<https://www.madrimasd.org/en/notiweb/noticias/discrete-energy-levels-without-confinement-new-quantum-trick>
<https://www.madrimasd.org/notiweb/noticias/nuevo-truco-cuantico-sin-confinamiento-electrones>
<https://www.pro-physik.de/nachrichten/elektronen-sind-frei-und-doch-diskret>
<https://www.technology.org/2019/05/06/discrete-energy-levels-without-confinement-a-new-quantum-trick/>

01/05/2019

Ana Sánchez Grande

Periódico escolar El Lápiz del CEIP Santo Domingo. Cobertura de la visita de Ana durante las actividades del 11F

<https://www.educa2.madrid.org/web/educamadrid/principal/files/8e93f1ce-104e-4c11-b73e-2b1b4c5b3992/Peri%C3%B3dico%20EI%20Lapiz%202019.pdf>

09/05/2019

Aitziber López Cortajarena

Aitziber López Cortajarena, premiada por Ikerbasque

<https://www.innovaspain.com/aitziber-lopez-cortajarena-el-sistema-cientifico-como-el-resto-de-la-sociedad-tiene-sesgos-de-genero/>

13/05/2019

Lucas Perez

3 bares, 6 charlas y divertidos científicos para el PoS'19

<https://www.latribunadetoledo.es/noticia/ZE-FC6786C-F87F-6C4E-5CA72EC8B5100DA8/3-bares-6-charlas-y-divertidos-cientificos-para-el-PoS19>

Menú Especial Pint of Science 2019

<https://ciencialacarta.com/2019/05/13/menu-especial-pint-of-science-2019/>

17/05/2019

Los siete magníficos de la i+d+i madrileña

<http://www.doopaper.com/pubs/madriario/madridsocial/>

20/05/2019

Enrique Burzurí

Luchando contra la falsificación con nanotubos de carbono

<http://www.madrimasd.org/notiweb/noticias/combatiedo-las-falsificaciones-nanotubos-carbono>
<http://www.newelectronics.co.uk/electronics-news/fighting-counterfeit-with-carbon-nanotubes/215437/>
<https://phys.org/news/2019-05-counterfeit-carbon-nanotubes.html>
<https://www.azonano.com/news.aspx?newsID=36747>
https://www.lasexta.com/tecnologia-tecnoplora/sinc/nanotubos-carbono-autenticar-informacion-combatir-falsificaciones_201905215ce3aaf80cf2c919afa8f3ca.html
<https://www.nanowerk.com/nanotechnology-news2/newsid=52829.php>
https://www.cope.es/programas/tiempo-de-juego/audios/miguel-pita-noticia-cientifica-semana-02-06-2019-20190602_764430

06/06/2019

Ana Pizarro

Los metales que tienen la clave para curar el cáncer

https://cordis.europa.eu/project/rcn/186849/brief/en?WT.mc_id=exp

https://www.cde.ual.es/los-metales-que-albergan-la-clave-para-curar-el-cancer/?fbclid=IwAR0bZH3pmSKCi5_S6S1rGYj2RG_JFUFTeT9PSsrI9-YCJVGrwk_Fal3Ky7E#.XPoW1Knij-s.facebook

07/06/2019

Alvaro Somoza

Campaña AECC #1minutoContraelCancer

https://www.youtube.com/watch?v=xkbxFdn_o0Q

12/06/2019

Alejandra Jacobo

Charla de Tesis en Universidad Carlos III

<https://media.uc3m.es/video/5d2ed1db8f420835a08b4568>

https://www.uc3m.es/ss/Satellite/UC-3MInstitucional/es/Detalle/Comunicacion_C/1371273604700/1371216052733/La_UC3M_celebra_el_Thesis_Talk_2019

IMDEA: la herramienta de la Comunidad de Madrid que investiga, divulga y da resultados

<https://www.innovaspain.com/imdea-madrid-agua-alimentacion-energia-materiales-nanociencia-networks-software/>

17/06/2019

Simposio internacional sobre multicapas metálicas MML2019

<https://www.agenciasinc.es/Agenda/Congreso-Internacional-de-Multicapas-Metalicas-MML2019-en-Madrid>

<https://www.madrimasd.org/notiweb/noticias/futuro-las-nuevas-tecnologias-debate>

26/06/2019

Emilio M. Pérez y David Écija

Nueva generación de materiales para la obtención de combustibles a través de fotosíntesis artificial aprovechando la energía solar

<https://www.madrimasd.org/notiweb/noticias/>

nueva-generacion-materiales-obtencion-combustibles-traves-fotosintesis-artificial-aprovechando-energia-solar

27/06/2019

Encarnación Lorenzo

Logran la detección rápida de mutaciones genéticas con nanopuntos de carbono

http://www.uam.es/ss/Satellite?c=UAM_NotCientific_FA&cid=1446784616018&language=es&pagename=UniversidadAutonomaMadrid/UAM_NotCientific_FA/UAM_notCientific&pid=1242652870949&title=Logran+la+deteccion+rapida+de+mutaciones+geneticas+con+nanopuntos+de+carbono

28/06/2019

Nazario Martín

El Prof. Nazario Martín recibe el Premio Ciamician-Gonzales Lectureship 2019

https://rseq.org/el-prof-nazario-martin-recibe-el-premio-ciamician-gonzales-lectureship-2019/?fbclid=IwAR2BrTqGpX6_OwCyCk64Rm6p0u2IG3gKXNZEABns7p_V9xLo2nnYT6DbBs

08/07/2019

Daniel granados

Confección directa posterior a la fabricación de transistores MoS2-FET

<https://phys.org/news/2019-07-after-fabrication-tailoring-molybdenum-disulphide-transistors.html>

<https://www.nanowerk.com/nanotechnology-news2/newsid=53119.php>

<https://niboe.info/blog/fabricacion-transistores-nanomateriales/>

<https://www.azonano.com/news.aspx?newsID=36862>

<http://www.madrimasd.org/notiweb/noticias/confeccion-post-fabricacion-medida-transistores-mos2-fet>

<https://noticiasdelaciencia.com/art/33507/confeccion-post-fabricacion-a-medida-de-transistores-mos2-fet>

<https://noticiasdelaciencia.com/art/33507/confeccion-post-fabricacion-a-medida-de-transistores-mos2-fet>

https://www.xianjichina.com/special/detail_411482.html

<https://noticiasdelaciencia.com/art/34304/confeccion-postfabricacion-y-a-medida-de-transistores-mos2-fet>

Rodolfo Miranda

El ‘tsunami’ de la nanociencia está por llegar y va a cambiar el mundo

https://elpais.com/ccaa/2019/06/04/madrid/1559599997_020372.html

Nuevos Materiales Bidimensionales:

Desde su comportamiento y propiedades cuánticas hasta sus aplicaciones industriales

<https://www.madrimasd.org/notiweb/noticias/nuevos-materiales-bidimensionales-desde-su-comportamiento-propiedades-cuanticas-hasta-sus-aplicaciones-industriales>

15/07/2019

Jose Sanchez Costa

Detector optoelectrónico reversible para la detección ambiental de contaminantes

<https://noticiasdelaciencia.com/art/33588/sensor-electrooptico-para-la-deteccion-ambiental-de-agentes-contaminantes>
<https://phys.org/news/2019-07-reversible-electro-optical-detector-environmental-pollutants.html>

<https://www.albasynchrotron.es/en/media/news/reversible-electro-optical-detector-for-environmental-sensing-of-pollutants>

<https://www.azonano.com/news.aspx?newsID=36885>

<https://www.nanowerk.com/nanotechnology-news2/newsid=53182.php>

<http://scixel.es/it-comes-in-colors-everywhere>

<https://www.madrimasd.org/notiweb/noticias/un-sensor-electro-optico-deteccion-ambiental-contaminantes>

<https://www.technology.org/2019/07/15/reversible-electro-optical-detector-for-environmental-sensing-of-pollutants/>



New two-dimensional materials: from their behavior and quantum properties to their industrial applications

<https://www.nanowerk.com/nanotechnology-news2/newsid=53181.php>

18/07/2019

Fernando Martín

Fotónica ultrarrápida para el diseño de nuevos materiales y la captura eficiente de energía

<https://www.madrimasd.org/notiweb/noticias/fotonica-ultrarrapida-diseno-nuevos-materiales-captura-eficiente-energia>

19/07/2019

Rama Prajapati/Alvaro Somoza

Video promocional sobre la investigación de Rama con motivo de la entrega de los premios de Becas La Caixa<https://twitter.com/BecariosLaCaixa/status/1152187084079292416>

26/07/2019

IMDEA Nanociencia: lo pequeño es diferente
<https://www.madridiario.es/470468/madrid-social-fundaciones-rsc-imdea-nanociencia>

30/08/2019

Álvaro Somoza

Breve aparición en el programa Zapeando de La Sexta #vacacioneszapeando
<https://twitter.com/NanoBioTube/status/1167475093192216577>

02/09/2019

Los Institutos IMDEA mostrarán toda la ciencia que hay detrás de la investigación de un delito durante la próxima Noche de los Investigadores de Madrid

<https://www.madrimasd.org/notiweb/noticias/los-institutos-imdea-mostraran-toda-ciencia-que-hay-detras-investigacion-un-delito-durante-proxima-noche-los-investigadores-madrid>

03/09/2019

Alberto Bollero

Fabricando componentes de metal/polímero impresos en 3D y controlados térmicamente

<https://www.nanowerk.com/news2/gadget/newsid=53513.php>

<https://www.scienceandtechnologyresearch-news.com/an-industrial-collaboration-for-thermally-controlled-3d-printed-metal-polymer-components/>

<https://www.livescience.tech/2019/09/04/an-industrial-collaboration-for-thermally-controlled-3d-printed-metal-polymer-components/>

06/09/2019

Alvaro Somoza

Nanoterapia: la entrega controlada de quimioterapéuticos para combatir las células madre del cáncer

http://www.nanotech-now.com/news.cgi?story_id=55809

<https://noticiasdelaciencia.com/art/34223/nanoterapia-la-liberacion-controlada-de-quimioterapeuticos-para-combatir-celulas-madre-cancerosas>

<https://www.technology.org/2019/09/08/nanotherapy-the-controlled-delivery-of-chemotherapeutics-to-fight-cancer-stem-cells/>
<https://phys.org/news/2019-09-nanotherapy-delivery-chemotherapeutics-cancer-stem.html>

<https://www.agenciasinc.es/Noticias/Nanoterapia-para-combatir-celulas-madre-cancerosas>

<https://www.madrimasd.org/notiweb/noticias/nanoterapia-liberacion-controlada-quimioterapeuticos-combatir-celulas-madre-cancerosas>

07/09/2019

Nazario Martín

Martín: «La Nanociencia está por explorar»

<https://www.latribunadeciudadreal.es/Noticia/Z50062C5C-9D0B-D5D7->

57AA22613E132168/201909/Martin-La-Nanociencia-esta-por-explorar

19/09/2019

Recta final del proyecto de investigación ByAxon

<https://www.youtube.com/watch?v=YnaIII1nbLM>

24/09/2019

El Hospital de Parapléjicos acoge una reunión del proyecto europeo para crear un bypass para la lesión medular

<https://www.lavozdeltajo.com/noticia/41429/provincia/el-hospital-de-paraplejicos-acoge-una-reunion-del-proyecto-europeo-para-crear-un-bypass-para-la-lesion-medular.html>

El Hospital Nacional de Parapléjicos acoge la reunión del consorcio europeo destinado a diseñar un bypass activo para la reconexión neural

<https://elespectadorcastillalamancha.es/el-hospital-nacional-de-paraplejicos-acoge-la-reunion-del-consorcio-europeo-destinado-a-disenar-un-bypass-activo-para-la-reconexion-neural/>

<https://www.miciudadreal.es/2019/09/24/el-hospital-nacional-de-paraplejicos-acoge-la-reunion-del-consorcio-europeo-destinado-a-disenar-un-bypass-activo-para-la-reconexion-neural/>

25/09/2019

Objetivo: la reconexión neuronal

<https://diariosanitario.com/byaxon-reconexion-neuronal/>

26/09/2019

La Noche de los Investigadores vuelve este viernes con más de 60 actividades

<https://ecodiario.eleconomista.es/ciencia/noticias/10105304/09/19/La-Noche-de-los-Investigadores-vuelve-este-viernes-con-mas-de-60-actividades.html>

Ana Espinosa

Video: Investigadores AECC 2019

https://www.youtube.com/watch?v=8aqwdXeL2TI&feature=youtu.be&fbclid=IwAR3FqbPILPevm94BD0IBRgACbvxf_PHFuwFqM5l-MumQJB197t90TjsfKdUc

08/10/2019

Alvaro Somoza

Imdea-CSI T3 Noche Investigadores 2019

<https://www.youtube.com/watch?v=owgYfEVFSOo>

21/10/2019

Koen Lauwaet

Prevalencia de moléculas carbonosas no aromáticas en las regiones internas de las envolturas circunestelares

<https://astronomycommunity.nature.com/users/303444-jose-a-martin-gago/posts/55021-behind-the-paper-prevalence-of-non-aromatic-carbonaceous-molecules-in-the-inner-regions-of-circumstellar-envelopes>

23/10/2019

Juan Cabanillas, Isabel Rodríguez

Láseres flexibles, transparentes y económicos

<https://noticiasdelaciencia.com/art/34872/laseres-flexibles-transparentes-y-rentables>
<https://phys.org/news/2019-10-flexible-transparent-cost-effective-lasers.html>
<https://sciglow.com/flexible-transparent-and-cost-effective-lasers/>
<https://www.nanowerk.com/nanotechnology-news2/newsid=53887.php>
<https://www.photoniconline.com/doc/flexible-transparent-and-cost-effective-lasers-0001>
<https://www.madrimasd.org/notiweb/noticias/laseres-flexibles-transparentes-rentables>

28/10/2019

Marco Cordani

Nanotecnología en el cáncer 2019: La opinión de un participante - La revista

online de la Comunidad de Investigación del Cáncer

<http://magazine.eacr.org/nanotechnology-in-cancer-2019-a-participants-view/4/>

02/11/2019

La Vanguardia - Vuelve la Semana de la Ciencia con 1200 actividades en 48 municipios

<https://www.lavanguardia.com/vida/20191102/471324442532/vuelve-la-semana-de-la-ciencia-con-1200-actividades-en-48-municipios.html>

04/11/2019

Álvaro Somoza

Video promocional Semana de la Ciencia 2019

<https://twitter.com/edsicilia/status/1191299050919858182>

Marco Cordani

RTVE - Informativo territorial Madrid - Promoción Semana de la Ciencia y la Innovación 2019

<http://www.rtve.es/alacarta/videos/informativo-de-madrid/informativo-madrid-04-11-19/5433550/>

05/11/2019

Rodolfo Miranda

Materiales 'a la carta' gracias a la nanotecnología

<https://www.elmundo.es/extras/30-aniversario-el-mundo/2019/11/05/5dc1792b21efa0ec278b45ee.html>

06/11/2019

Arranca el proyecto europeo UWIPOM2, coordinado por la Universidad de Alcalá
<http://portalcomunicacion.uah.es/diario-digital/reportaje/arranca-el-proyecto-europeo-uwipom2-coordinado-por-la-universidad-de-alcala.html>

Los Institutos IMDEA nos invitan a hacer un recorrido por sus áreas de investigación

<https://www.madrimasd.org/notiweb/noticias/los-institutos-imdea-nos-invitan-hacer-un-recorrido-por-sus-areas-investigacion>

13/11/2019

Lucas Pérez

La Ciencia vuelve al Centro Ibercaja de Guadalajara

<https://nuevaalcarria.com/articulos/la-ciencia-vuelve-al-centro-ibercaja-de-guadalajara>

20/11/2019

Francisco J. Terán

El proyecto BIOMAG desarrollará una metodología de detección de biomarcadores en fluidos biológicos para dolencias cardíacas

<http://portalcomunicacion.uah.es/sala-prensa/notas-prensa/el-proyecto-biomag-desarrollara-una-metodologia-de-deteccion-de-biomarcadores-en-fluidos-biologicos-para-dolencias-cardiacas.html>

27/11/2019

UIJ diseña un reactor para convertir el CO2 atmosférico en productos de interés industrial y reducir cambio climático

<https://www.20minutos.es/noticia/4069655/0/uij-disena-un-reactor-para-convertir-el-co2-atmosferico-en-productos-de-interes-industrial-y-reducir-cambio-climatico/>

23/12/2019

Francisco Guinea

Siete investigadores de centros vascos, entre los científicos más influyentes a nivel mundial

<https://www.interempresas.net/Farmacia/Articulos/261905-Siete-investigadores-de-centros-vascos-entre-cientificos-mas-influyentes-a-nivel-mundial.html>



28/12/2019

El 40 aniversario de la asociación Aspaym, portada de la nueva edición de la revista Infomédula

<https://eldiigital.es/art/315146/el-40-aniversario-de-la-asociacion-aspaym-portada-de-la-nueva-edicion-de-la-revista-infomedula>

29/12/2019

Melek Villanueva

Una almeriense en el mundo de la nanociencia y los imanes permanentes

<https://www.lavozdealmeria.com/noticia/12/almeria/184319/una-almeriense-en-el-mundo-de-la-nanociencia-y-los-iman-permanentes>

Redes sociales

TWITTER

La cuenta oficial de IMDEA Nanociencia es la principal red social para la difusión de la ciencia. Hemos duplicado nuestros seguidores en 2019 (de 1200 a 1900), y hemos tenido más de 400k impresiones.

https://twitter.com/IMDEA_Nano

FACEBOOK

La página de IMDEA Nanociencia en Facebook mantiene a sus seguidores actualizados con las últimas noticias de nuestro instituto. En 2019 tuvimos más de 500 seguidores.

<https://www.facebook.com/IMDEANanociencia/>

YOUTUBE

IMDEA Nanociencia explica proyectos, líneas de investigación y publicaciones en breves vídeos. Los YouTubers de nuestro instituto se destacan en nuestras listas de reproducción.

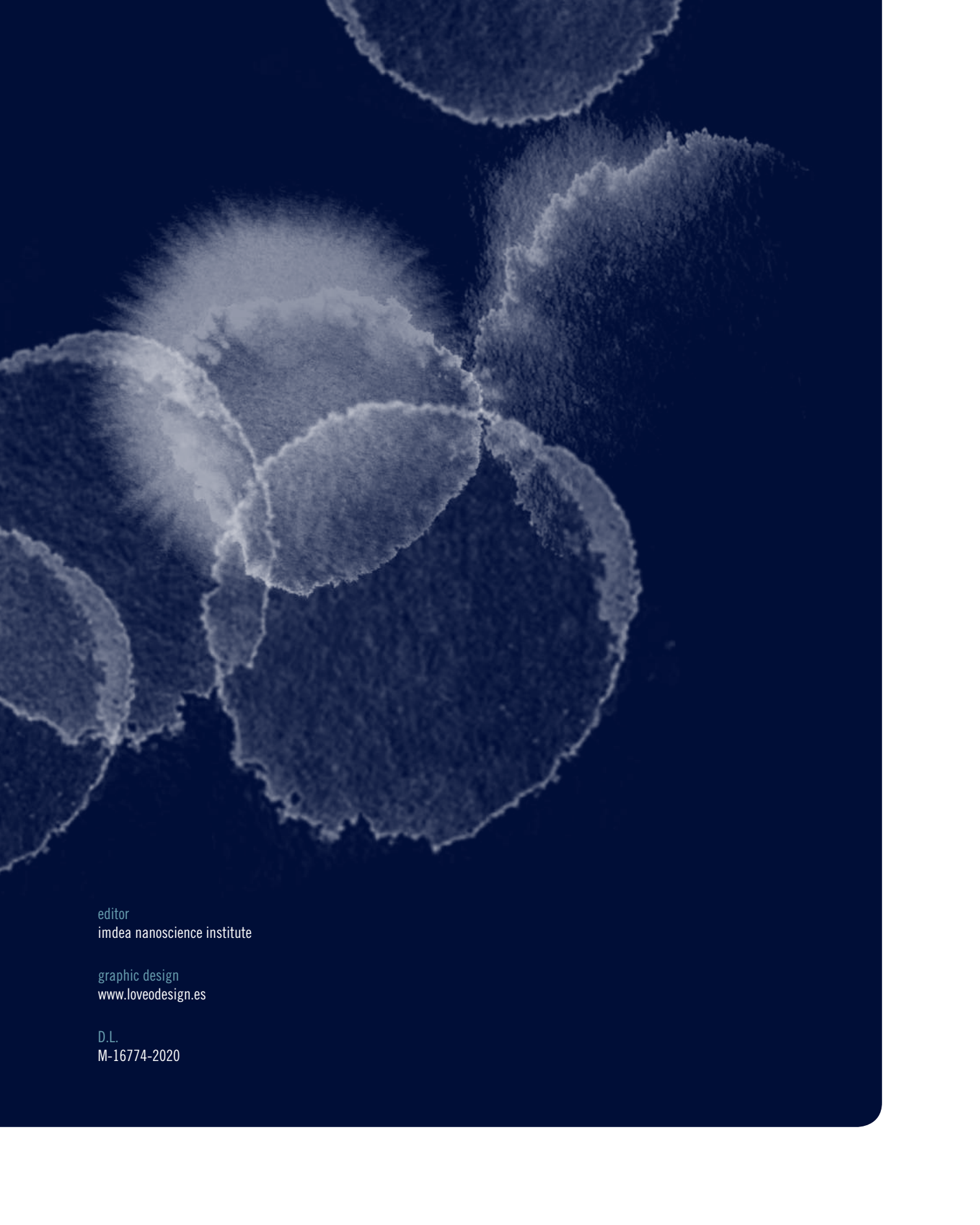
https://www.youtube.com/channel/UCyL-J_nvT6Um1-xvRPpg3oA

LINKED-IN

Encuentra ofertas de trabajo, mantente en contacto con los compañeros de trabajo.

IMDEA Nanociencia tiene 320 seguidores en Linked-In.

<https://www.linkedin.com/company/imdea-nanociencia/>



editor
imdea nanoscience institute

graphic design
www.loveodesign.es

D.L.
M-16774-2020

nanoscience and nanotechnology: small is different



www.nanoscience.imdea.org

dos mil
19
annual
report

Contact

contacto.nanociencia@imdea.org

tel. +34 91 299 88 10

fax +34 91 299 87 25

C/ Faraday, 9

Ciudad Universitaria de Cantoblanco

28049 · Madrid (Spain)

UNIÓN EUROPEA
Fondo Social Europeo
El FSE invierte en tu futuro

