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1. OUR CENTER
LETTER FROM THE DIRECTOR

Welcome to the annual report of the Condensed Matter Physics Center (IFIMAC). Established in 2012, IFIMAC’s mission is pursuing cutting-edge research and scientific excellence in this broad field, at the crossroads of Physics, Chemistry, Materials Science and Biology, fostering a truly multidisciplinary approach. 2021 has been a year of change. The research and hiring plans associated with our second award, at the end of 2019, as a “Maria de Maeztu” (MdM) research unit of excellence, were severely affected by the COVID-19 pandemic. In 2021, these plans have been fully implemented, we have managed to recover in-person interactions with a hybrid format for many of our seminars and outreach activities, and held the election of a new Director in October. It has been also a year of celebration, with different awards for several young and senior IFIMAC researchers, including the Blas Cabrera National Award 2021 to our founding director, Prof. Francisco Jose Garcia Vidal.

Under the leadership of Prof. Garcia Vidal and his team, IFIMAC has become a Spanish center of reference in Condensed Matter Physics, with an internationally recognized research program that spans from Quantum Materials and Technologies, Nano and Quantum optics, and Nanotechnology, to Soft and Active Matter and Biophysics. IFIMAC membership is awarded to individual researchers, based on the scientific excellence achieved at the different levels of the academic career. IFIMAC had 80 members in 2021, including 65 permanent research and teaching staff from our host institution, the Universidad Autónoma de Madrid (UAM), and 15 young researchers associated with different programs of international talent attraction. These young researchers are supported by national (8 Ramon y Cajal contracts), regional (2 Atracción de Talento Comunidad de Madrid modalidad 1 fellows) and private (3 Junior Leader La Caixa grants) programs, as well as by our own MdM funds (2 young international research leaders). We are particularly proud of this action, that offers brilliant international young researchers a four-year contract, lab space and funding to develop their own research groups. The three young researchers attracted with the previous 2014-2018 MdM grant have secured Ramón y Cajal contracts, and two of them have been awarded ERC starting grants. Apart from its members, IFIMAC hosted in 2021 the research activity and training of 26 post-doctoral researchers (almost 60% of them, non-spaniards), and 177 PhD students. They contribute significantly to the achievement of the IFIMAC’s mission.

Our research production has increased again in 2021, with the publication of 197 articles (85.8% (67.0%) in Q1, 71.6% (32.0%) in D1 according to Scopus (WoS)) and the application for three patents. This activity is mainly supported by 93 active projects (12% EU) developed by IFIMAC researchers, representing a total budget of 6.9 million € in 2021 (18.4% EU). Together with this external funding, the seven collaborative projects, supported by past and current MdM funds, have played a key role in fostering synergies among IFIMAC researchers. The two currently active collaborative projects, “Disorder as a novel platform for topological superconductivity” and “Dynamically driving spinning colloidal particles in 2D lattices”, expand the boundaries of two areas of intense activity, topological properties and active matter, in which IFIMAC has a unique position and great potential.

These research activities are complemented by the IFIMAC’s involvement in training and outreach. We directly promote the Master in Physics of Condensed Matter and the Biological Systems (https://www.masternanobio.es) and the PhD Program in Physics of Condensed Matter, Nanoscience and Biophysics (http://doctorate-nanobio-uam.es), and are involved in another three master and three doctoral programs at UAM. Our outreach activities cover from lectures for high school and university students to promote STEM studies and scientific careers in the areas covered by IFIMAC, to the development of a very successful series of videos, in collaboration with the youtube channel QuantumFracture , approaching our latest research to society. Under the orientation of our gender committee, these activities are strongly focused on reducing the underrepresentation of women in STEM fields, particularly acute in the case of Condensed Matter Physics.

I invite you to explore this annual report. Through its pages, you will discover IFIMAC’s reality. Looking into the future, IFIMAC has a great potential to go beyond its already remarkable achievements. In order to sustain the international excellence of our research and to attract more young talent, we have to grow as institution. This requires work along different directions, to strengthen the administrative and technical support to both our experimental and theoretical activities, to meet the urgent needs of office and lab space, and to complement our current research infrastructure with shared experimental and computational facilities. Securing funding for these efforts is not an easy task, particularly in these dire economic times, and when a war at the doorsteps of the European Union carries risks for a world that has not yet recovered from the pandemic shock. Nevertheless, I am confident in the competitiveness of IFIMAC, of its individual researchers and of the institution as a whole, in our ability to secure funding and to transfer the basic knowledge that we have accumulated through collaborations with industry. These goals are intrinsically linked with the need to improve the gender balance, to promote and sustain open science, and to increase our outreach and transfer to society.

As the new Director, I am really honored to face, together with the Steering Committee and all of the IFIMAC researchers, the challenging and exciting times ahead.

Ruben Perez

IFIMAC Director
1. OUR CENTER

OVERVIEW

The IFIMAC – Condensed Matter Physics Center is a María de Maeztu Excellence Research Unit. The Center got the first María de Maeztu Excellence accreditation (MDM-20140377) on the 2014 call and it was renewed in 2018 (CEX2018-000805-M).

The Condensed Matter Physics Center is a Research Center within UAM, located in the campus of the Universidad Autónoma de Madrid pursuing cutting-edge research and scientific excellence. It comprises researchers from several university departments aiming to advance the limits of knowledge in both theoretical and experimental Condensed Matter Physics. Sixty five researchers constitute its permanent staff with fifteen young researchers (RyC, talent grant, Junior leader, IFIMAC positions) and up to one hundred and forty postdoctoral researchers and Ph.D students.

Research performed in the institute has gained world reputation in the following areas:

- Advanced Materials
- First Principles Simulations and Modeling
- Nanophysics
- Nano and Quantum Optics
- Soft Condensed Matter and Biophysics

RESEARCH LINES

Research developed in the IFIMAC since it was set up in 2012 is organized in the following areas. Here we describe relevant general aspects of each line in the past years:

Advanced materials

Advanced materials are responsible in a large part for the continuous transformation of our daily life technology. New graphene based materials with improved strength and fatigue resistance open possibilities for transport industry, organic molecular devices allow optical applications for communications, superconductors improve energy efficiency and storage, and interfaces provide radically new operational principles for information treatment and storage.

IFIMAC makes fundamental studies of the properties of materials with the aim to set the pace for future transformational changes in technology. For this, we carry an extensive research program in the synthesis, characterization and modeling of new materials. We develop state of the art instrumentation and techniques which we offer to other research groups through spin-offs or scientific collaborations.

Among them are computational techniques or atomic manipulation as well as surface characterization techniques. Further experimental possibilities are given by support, characterization and nanofabrication facilities provided by the UAM. For example, engineers of the UAM operate the largest liquid helium production and recovery facility of our country (with over 50 000 liters/year), and provide a development center dedicated to the construction of new instrumentation. IFIMAC allows researchers to measure and characterize materials from atomic scale to large sizes, from low to high frequencies, at temperatures down to 7 mK and magnetic fields up to 13 T. Quantum calculations of interfaces and dynamical properties of surfaces are used to interpret experiments and make new predictions. In the IFIMAC, practically every new idea in materials science can be realized using state of the art tools.

Regarding the material properties under study at IFIMAC, several groups are very active in the research on magnetism, superconductivity, spintronics and vortex physics. Other areas of expertise in our center are two-dimensional materials like graphene, in which we analyze in depth its mechanical properties and the role of defects and impurities. Within this area, we also investigate the exciting properties of topological insulators.
A very important topic is also the study of interfaces of organic semiconductors and the atomic, electronic and dynamical properties of semiconductors.

Some of our activities in the field of Advanced Materials are the study of quantum phase transitions, like superconductor-insulator or magnetic-non magnetic, and reversible phase transitions.

**First Principles Simulations and Modeling**

Computer modeling has grown over the years into a scientific discipline on its own. Models are utilized to assess real-world phenomena maybe too complex to be analyzed in the laboratory or under hypotheses at a fraction of the cost of undertaking the actual activities. Models in industry, government, and educational institutions shorten design cycles, reduce costs, and enhance knowledge.

In Physics, the modeling of materials through what is known as “first-principles” has become a major research field. By “first-principles” one understands the use of the fundamental quantum mechanical laws of nature and nothing else. The properties of the materials should emerge from the numerical solution of these laws. The models here are actually a faithful representation of reality, but in a controlled environment.

Researchers at IFIMAC have a long-standing and well-deserved international reputation on theoretical modeling and, in particular, on the development of efficient first-principles techniques for the simulation of the electronic and structural properties of complex materials. All the other research lines at IFIMAC benefit one way or another from this expertise. This knowledge not only benefits fundamental research, but can also be transferred directly into the society through spin-offs.

This is a list of codes and computational techniques being developed and implemented:

- SIESTA code for large-scale DFT simulations.
- ANT code for DFT-based electronic quantum transport calculations.
- FIREBALL code for DFT local-orbital molecular-dynamics.
- Hybrid Quantum Mechanics/Molecular Mechanics (QM/MM) method for the simulation of biomolecules.
- Non-adiabatic molecular dynamics.
- MOLCAS code for wave function theory electronic structure calculations.

**Research topics:**

- Molecular electronics.
- Bi-dimensional crystals.
- Interfaces of organic semiconductors.
- Chemical reactions in biomolecules.
- Atomic, electronic, and dynamical properties of semiconductor surfaces.
- Nanowires and nanocontacts.
- Excited states off-element ions in solids.
1. OUR CENTER

Nanophysics

When the characteristics dimensions of a system or a device are shrunk to the nanoscale, their properties change dramatically. The reason for that is that at this scale quantum mechanical effects set in, which leads to novel physical phenomena that, in turn, are often the basis of unforeseen technological applications. One of the main goals of researchers at IFIMAC is the study of the electronic, mechanical, thermal, and optical properties of structures and devices with nanometric dimensions, for which classical laws do not longer apply. For this purpose, we make use of a wide range of nanofabrication techniques, experimental probes, and theoretical tools.

Some of our main activities in the field of Nanophysics are related to the theoretical and experimental study of novel low-dimensional systems such as graphene and graphene-based nanostructures. Making use of experimental techniques such as Angle Resolved Photoemission Spectroscopy (ARPES) or Low Energy Electron Diffraction (LEED), IFIMAC researchers also investigate topics like 2D structural phase transitions, surface charge density waves, or the electronic structure of laterally nanostructured systems. Furthermore, we study the growth and properties of nanometer-scale objects on solid surfaces with applications in spintronics, optoelectronics, magnetic recording, nanoscale catalysis, nanomechanical biosensing, medical nanoimaging, etc.

Other important areas of expertise in our center are the fields of Nanoelectronics and Quantum Transport. In particular, in recent years researchers at IFIMAC have played a leading role in the understanding of the electronic transport in a great variety of nanoscale systems such as metallic atomic-size contacts, single-molecule junctions, superconducting hybrid structures, or strongly correlated low-dimensional systems.

A very important topic in our center is also the use and modeling of Scanning Probe Microscopes (SPMs). Thus for instance, from an experimental point of view, Atomic Force Microscopy (AFM) is being currently used for instrumentation, physical virology, and for the study of mechanical and electrical properties of low-dimensional materials. Another key subject is the use of cryogenic Scanning Tunnelling Microscopy (STM) for the surface characterization of semiconductor and superconductor nanostructures. From a theoretical point of view, IFIMAC researchers are among the worldwide leaders in the area of ab initio modeling of nanowires and SPMs.

Nano and Quantum Optics

Nano Optics is the research domain devoted to the study of electromagnetic field propagation, confinement and interaction with matter at a sub-wavelength scale. Recent advances in fabrication and characterization techniques permit nowadays the study of optical phenomena at the nanoscale. Quantum optics is a related field of research, merging the areas of quantum field theory and optics, dealing with phenomena involving light and its interaction with matter at the quantum level. The field has evolved considerably from its early studies of coherence properties of radiation and parametric processes of light to recent topics of investigation such as quantum information, manipulation of single atoms, Bose-Einstein condensation, etc. The progress of quantum optics implies, from the scientific point of view, a deeper understanding of the foundations of quantum mechanics. From the applications side, it is expected to have a strong social and economic impact thanks to the build up of a revolutionary technology based on quantum phenomena.

Some of our main activities in this line of research are related to the emerging field is Plasmonics, which is the study of optical phenomena associated with the electromagnetic response of metals. The interface between a metal and a dielectric presents surface plasmons (surface electron density oscillations), which originate electromagnetic fields confined near the metal-dielectric interface, leading to exotic optical properties, like negative refraction. Researchers at IFIMAC have played a key role in the study of the phenomenon of extraordinary optical transmission through subwavelength apertures. Also within Plasmonics, we have made important contributions in the field of plasmon-assisted transport in atomic-scale junctions and the propagation of electromagnetic waves in magneto-plasmonic nanostructures.
Another very active subject in IFIMAC is the analysis of non-conservative optical forces on small particles. From the study of basic fundamental aspects to different applications to the manipulation of nanoparticles by optical tweezers and also pushing and pulling nanoparticles by radiation pressure or light-induced modification of the Brownian motion of particles in suspension. Light-matter interaction in two-dimensional systems, such as graphene and graphene-based heterostructures, graphene relatives, transition metal dichalcogenides and their combination in vertical stacks are also investigated at IFIMAC.

On the other hand, theorists at IFIMAC have produced seminal contributions to the understanding of light emission and absorption spectra in low-dimensional semiconductor structures. We have worked in the quantum optics produced by interacting bosonic complexes describing cavity polaritons and contributed with pioneering works on the superfluidity and coherence properties of polariton gases both under resonant and non-resonant pumping. IFIMAC also has a strong activity in the field of ultracold atomic gases.

Experimental groups at IFIMAC have a long experience on optical spectroscopy of semiconductor low-dimensional systems. Currently we are working on quantum optics based on semiconductor quantum dots. Using photon correlation techniques, we have studied the properties of single photon emitters based on quantum dots of semiconductor systems both isolated and coupled to optical microcavities. By using time-resolved spectroscopy, we have presented the first experimental evidence on spin relaxation in doped quantum wells. We have also discovered exciton interactions strongly dependent on spin. In the last years IFIMAC researchers have focused on the study of quantum microcavities based on semiconductor nanostructures and on the preparation of Bose-Einstein condensates in solid-state systems.
Soft Matter and Biophysics

Soft condensed matter includes liquids, colloids, polymers, liquid crystals, gels, membranes, foams, etc. Each of these dense phases appears as the result of a finely tuned balance between the thermal fluctuations and the molecular attractions. The qualitatively different aspects and properties of soft condensed matter are very difficult to predict because it self organizes into mesoscopic physical structures that are much larger than the molecular scale, but yet are much smaller than the macroscopic scale of the material. Understanding the link between these scales, and the emergence of qualitatively new properties from the interactions of the molecular elements sets a fundamental problem in condensed matter physics.

The amazing complexity of biological systems is built on that variety of soft condensed matter mesoscale structures, and it sets the most outstanding challenge in our goal to understand the spontaneous self-assembly of matter. The connection between soft condensed matter physics and the study of biological systems opens a broad and fructiferous route to the interdisciplinary field of biophysics, in which researchers with very different backgrounds, from molecular biology to theoretical physics and mathematics, are contributing to a fully new perspective of that active field of research.

Soft condensed matter and biophysics are very active areas of activity at IFIMAC. The theory and simulations of liquids and their interfaces has already a long tradition among some of the members of the institute, with the younger researchers bringing new ideas and perspectives to cover more complex systems. Special simulation methods have been developed for the study to these systems out of equilibrium. Experimental and theoretical work on glasses has also been carried out for a long time, and it has recently being extended to the study of fossil amber samples and other ultra-stabilized glasses.

Among the multiple routes to biophysical systems, the experience of IFIMAC members in theoretical soft matter physics is being successfully used in different approaches to biological systems. First-principle simulations for the electronic structure of bio-molecules are being used to describe their chemical reactions. In a complementary top-down approach, the experience in the statistical physics of soft condensed matter system is been used to study bi-layer membranes and protein filaments, in close connection with experimental works. Younger members of the institute have incorporated new lines of biophysical research at IFIMAC, from genetic to neuronal networks, that open a fresh perspective based on the application of non-linear dynamics, the theory of stochastic processes and information theory.
Physical Virology

The basic architecture of a virus consists of the capsid, a shell made up of repeating protein subunits, packing within the viral genome. Far or being static structures, viruses are highly dynamic nucleoprotein complexes that transport and deliver their genome from host to host in a fully automatic process. Viral particles are endowed with specific physicochemical properties which confer to their structures certain meta-stability whose modulation permits fulfilling each task of the viral cycle at the right time.

These natural designed capabilities have impelled using viral capsids as protein containers of artificial cargoes (drugs, polymers, enzymes, minerals) with applications in biomedical and materials sciences. Both natural and artificial protein cages have to protect their cargo against a variety of physicochemical aggressive environments, including molecular impacts of highly crowded media, thermal and chemical stresses, and osmotic shocks.

Viral cages stability under these ambiances depend not only on the ultimate structure of the external capsid, which rely on the interactions between protein subunits, but also on the nature of the cargo. Thus, it is important to find methodologies that directly supply univocal information about protein cages stability not only under different environments, but also its evolution upon structural changes.
1. OUR CENTER

ORGANIZATION/MANAGEMENT

Steering Committee

Rubén Pérez Pérez
IFIMAC Director
Full Permanent Professor at Department of Theoretical Condensed Matter Physics, Universidad Autónoma de Madrid.

Luisa E. Bausá López
IFIMAC Deputy Director
Full Permanent Professor at Materials Physics Department, Universidad Autónoma de Madrid.

Antonio I. Fernández-Domínguez
Member
Associate Professor at Department of Theoretical Condensed Matter Physics, Universidad Autónoma de Madrid.

Cristina Gómez-Navarro González
Member
Professor at Department of Condensed Matter Physics, Universidad Autónoma de Madrid.

Felix Zamora Abanades
Member
Full Permanent Professor at Department of Inorganic Chemistry, Universidad Autónoma de Madrid.

Hermann Suderow
Infrastructure development
Full Permanent Professor at Department of Condensed Matter Physics, Universidad Autónoma de Madrid.
1. OUR CENTER

Scientific Advisory Board

**Prof. Paul C. Canfield**
Researcher at Ames Laboratory (USA).

**Prof. Daan Frenkel**
Professor at University of Cambridge (United Kingdom).

**Prof. Emilio Artacho**
Research Professor at Ikerbasque at CIC Nanogune (Spain).

**PhD. Fernando B. Cáceres**
Chief Executive Officer at Endesa Gas T&D (Spain).

**Prof. Juan Ignacio Cirac**
Scientific Director at Max-Planck Institut für Quantenoptik (Germany).

**Prof. Jan van Ruitenbeek**
Professor at Leiden University (Holland).

Organization Chart
GENDER EQUALITY COMMITTEE

On April 2021 we created the **Gender Equality Committee at IFIMAC**. The main task of this Committee is to generate a good practices and specific activities targeted at promoting and strengthening the role of women in Science, also particularly inside IFIMAC, as well as raising awareness of the IFIMAC members on gender equality issues in science.

The activities designed to reach these broad goals are organised in different areas: diagnosis and monitoring, participation, visibility and awareness, and support for students. Each of these areas and their specific actions are promoted and carried on by different female and male members of IFIMAC. During these months the activity of this committee has been focus on:

- **Performing an initial diagnostic report** regarding gender equality at IFIMAC. This report will analyze the IFIMAC indicators and statistics improving the gender disaggregated data collection. We are evaluating indicators such as the number of hired personnel and Principal Investigators on competitive projects fellowship or grant awardees.

- **Establishing the first edition of a mentoring program for female students.** one of the first initiatives of this committee will be to set up a mentoring program for undergraduate female physics students. This program aims at-offering a close and friendly contact with research activities. In addition, it will:
  - promote the scientific career of women students of the graduate and master’s degree,
  - provide female role models,
  - empower mentors,
  - build a strong network between women in the academic field of physics

The first edition of this program is currently being setting-up to start in September 2022.

- **Promoting outreach activities on the International Day of Women and Girls in Science** (11 February) The activities are aimed at primary and secondary school students, with the aim of making visible the scientific activity of the women who work at IFIMAC and notice pioneering women in the history of science

**Promoting participation:** The Gender Equality Committee aim to achieve within two years a minimum of 40% of female members in the following committees: Steering Committee, Scientific Advisory Board, Project evaluation committee, Grant commission, Recruitment commission, Thesis Defense Committees, Invited seminars
2. IFIMAC AT A GLANCE AND KEY INDICATORS
2. IFIMAC AT A GLANCE (2021)

**ARTICLES**

![IFIMAC Activity Report 2021](image)

- **SCOPUS**
  - Articles Q1: 169
  - %Q1: 85.79%
  - D1: 141
  - %D1: 71.57%

- **WOS**
  - Articles Q1: 132
  - %Q1: 67.01%
  - D1: 63
  - %D1: 31.98%

**PROJECTS**

- 12 International projects
- 59 National projects
- 18 Regional projects

**RESEARCHERS**

- 19 full Professor
- 20 Professor
- 20 Associate Professor
- 15 Young researcher (RyC, Talent Grant, Junior Leader)
- 4 Emeritus Professor

**PHD STUDENTS**

- 117

**POST DOC RESEARCHERS**

- 26

**DOCTORAL THERSES DEFENDED IN 2021**

- 14

**INDICATORS**

**Publications**

- **SCOPUS**
  - Q1 (169)
  - %Q1: 85.79%
  - D1 (141)
  - %D1: 71.57%

- **WOS**
  - Q1 (132)
  - %Q1: 67.01%
  - D1 (63)
  - %D1: 31.98%

**AVERAGE IF: 9.23**
2. IFIMAC AT A GLANCE (2021)

### 93 PROJECTS YEAR 2021 - ACTIVE PROJECTS

**Projects**
- Type:
  - Public: 89
  - Private: 4

**Financial Agency**
- EU: 11
- National: 59
- Regional: 18
- UAM: 0
- Others: 5

### Funding

**TOTAL FUNDING**
- 6.9 Million €
  - Private: 4,68% (325 K €)
  - Regional: 8,84% (613 K €)
  - International: 18,39% (1.3 million €)
  - National: 68,09% (4.7 Million €)
2. IFIMAC AT A GLANCE (2021)

Human resources

**Gender**
- Male: 93
- Female: 24

**Nationality**
- SP: 99
- Non-SP: 17

Doctoral thesis defended

- 14 theses defended in 2021

Invited lectures

- 41 invited lectures in 2021
3. RESEARCH
3. RESEARCH

MAIN RESEARCH ACTIVITIES

IFIMAC COLLABORATIVE PROJECTS

As a part of our strategic program (2019-2023) within the Maria de Maeztu Excellence Accreditation, IFIMAC have launched the third call for collaborative projects within different groups (between 3 and 5) working at IFIMAC. The projects funded with a budget of 160,000 euros each were:

**Disorder as a novel platform for topological superconductivity**
Isabel Guillamón / Hermann Suderow
Miguel Ángel Ramos
Roberto Otero
Juan José Palacios

**Dynamically driving spinning colloidal particles in 2D lattices**
Juan. L. Aragonés
Laura. R. Arriaga
Salvatore Assenza
José. V. Alvarez

Previously, our Center funded other five proposals in two different calls for this kind of projects involving several research groups to strengthen the internal collaborations to boost scientific excellence

**FIRST CALL:**

**Virus as molecular containers: transport, delivery and nanoreactors**
Pedro J de Pablo Gómez
José Ortega Mateo
Rafael Delgado Buscalioni

**Visualizing, understanding and controlling Andreev bound states down to atomic scale**
Hermann Suderow Rodríguez
Alfredo Levy Yeyati
Álvaro Martin Rodero
Miguel Angel Ramos Ruiz
Jose Gabriel Rodrigo Rodriguez
Isabel Guillamón Gómez

**SECOND CALL:**

**Single-photon generation in 2D crystals for quantum information**
Juan José Palacios Burgos
Elsa Prada
Gabino Rubio Bollinger
José Manuel Calleja Pardo
Snezana Lazic
Carlos Tejedor de Paz
Luis Viña Liste

Ultrahigh pressure chemistry at the nanoscale
Julio Gómez Herrero
3. RESEARCH

Enrique García Michel
José María Gómez Rodríguez
Daniel Fariás Tejerina
Félix Zamora Abanades
Fernando Martín García

Charge and heat transport in atomic, molecular and protein-based junctions
Nicolás Agrait de la Puente
Juan Carlos Cuevas y
Rubén Pérez Pérez

YOUNG RESEARCHERS

One of the most important and decisive action within the Maria de Maeztu Grant has been the hiring of three brilliant international young researchers. Thanks to the financial support of this grant, IFIMAC has been able to offer three new four-years contracts plus an additional money to develop their research group to these three researchers:

Saúl Vélez:
Saúl Vélez pursued his master’s (2008) and PhD studies (2012) at the University of Barcelona under the supervision of Prof. Tejada, receiving in both the Extraordinary award for his results on quantum magnetism. In April 2013, Saúl joined the nanodevices group at CIC nanoGUNE to work with Prof. Hueso with the purpose to transition towards spintronics and nanodevices, areas in which he is now a reference. From September 2017 to May 2021, Saúl also hold a senior postdoctoral position in the groups of Prof. Gambardella and Prof. Fiebig at ETH Zürich.

With interest in spintronics, magnetotransport, and optoelectronics phenomena, his recent research focused on exploring magnetoresistive effects and magnetic dynamic phenomena in metal/oxide heterostructure devices. Among his discoveries, he has demonstrated that interfacial interactions and spin currents can be used for probing and manipulating the magnetic moments of electrically insulating materials, opening a new research field with profound fundamental and technological impacts. His contributions to polaritons and optoelectronics in low dimensional materials and heterostructures are also multiple.

Saúl joined IFIMAC in June 2021 as Junior Group Leader and found the Spintronics and Nanodevices group. In his lab, he aims at exploring non-conventional materials and new device concepts for spintronic applications.

Akashdeep Kamra:

Akash obtained his master degree in Electrical Engineering from the Indian Institute of Technology Kanpur and a PhD in Physics from the Delft University of Technology, Netherlands. Then he worked as an Alexander von Humboldt postdoc fellow at the University of Konstanz, Germany before joining Norwegian University of Science and Technology as an independent researcher. His primary interest lies in the theory of spin-dependent phenomena in magnetic insulators, (super)conductors and their hybrids. Akash especially enjoys working on research problems that exploit knowledge from different sub-fields of Physics. While being a “theorist”, he has performed several experiments first hand in the past and continues to collaborate closely with experimentalists. When not enjoying Physics, Akash likes to go hiking and exploring new places.

Pablo Ares:

Pablo Ares research interests have a marked multidisciplinary character within the framework of nanoscience and nanotechnology. They are focused on the use and development of scanning probe microscopies, mainly atomic force microscopy (AFM), for the study of low-dimensional systems, with particular attention to 2D materials.

He received his B.S. and Master degree in Physics at the Universidad Complutense de Madrid (Spain) in 2003. He then joined the company Nanotecn Electrónica S.L. (devoted to the design, development and commercialization of scanning probe microscopes) as an Application Scientist. In 2014, he moved to the Universidad Autónoma de Madrid (Spain), where in 2017 he obtained his Ph.D. in Condensed Matter Physics and Nanotechnology under the supervision of Prof. Julio Gómez-Herrero and Dr. Adriana Gil. His thesis presented a double scientific-technical aspect, with advances on the AFM technique itself, as well as with more fundamental science studies, such as the isolation and study of antimonene, pioneering the worldwide experimental research on this novel 2D material.
3. RESEARCH

After this, he joined the Graphene Group at the Condensed Matter Physics department of the University of Manchester (UK) as a Research Associate working with Prof. Konstantin S. Novoselov and Dr. Laura Fumagalli. Once there he gained a Marie Skłodowska-Curie Individual Fellowship in 2018. His research during this time focused on basic properties of 2D materials and their combination in van der Waals heterostructures, and their use for the study of electrical properties of molecules under extreme confinement.

In a previous call in the frame of the first Maria de Maeztu unit of excellence accreditation, IFIMAC attracted other three top young researchers:

1) **EDUARDO LEE**: His research program is focused on the investigation of hybrid superconductor-semiconductor quantum dot devices. It is divided in two main directions: (i) the exploration of arrays of proximity-coupled QDs as a potential system for building a 1D topological superconductor with edge MZMs, and (ii) the development of hybrid devices towards applications in nanoelectronics. It is important to notice that Dr. Eduardo Lee was awarded with an ERC Starting Grant in year 2016.

2) **FERRY PRINS**: The aim of his research project is to establish an experimental research group focused on understanding and controlling light-matter interactions at the nanoscale. To achieve this, his group will study carefully chosen combinations of photonic, plasmonic, and excitonic effects that are characteristic of nanostructured materials and interfaces. Specifically, they will use innovative processing strategies to eliminate losses in exciton transport in quantum dot solids through photonic control, open up routes towards excitonic circuitry using the unique properties of 2D semiconductors, and develop plasmonic nanopores for nanoscale spectroscopy. Dr. Ferry Prins was awarded with a Talent Attraction grant from the Community of Madrid in year 2016, and with a Ramón y Cajal grant in 2019.

3) **JOHANNES FEIST**: The theoretical research that he conducts within IFIMAC is related to the field of strong coupling of organic molecules with confined light modes. This field relies on the recent progress in nanophotonics and nanoplasmics that has allowed unprecedented control over electromagnetic fields on the nanoscale, creating confined modes of light that can couple to excitations in a material. One of the major goals of this research is how confined light modes can be used to significantly alter material and chemical properties of organic materials. It is important to notice that Dr. Johannes Feist was awarded with an ERC Starting Grant in year 2016, and was awarded with a Ramón y Cajal Grant in 2018.

SEMINARS

After the summer of 2020, and in the middle of the COVID pandemic, we realized that we needed to re-launch our program of research seminars, which had functioned continuously, and with great success, since the birth of the institute. We also saw clearly that the seminar format had to be accommodated to the social situation. Thus, together with our colleagues at the Instituto de Ciencia de Materiales de Madrid (ICMM-CSIC), we initiated an online seminar series on Condensed Matter Physics: https://sites.google.com/view/ifimac-icmm-joint-seminars/. The online format has meant a double opportunity for us. On one hand, it has allowed us to count with renowned international (and also national) speakers on a weekly basis. On the other hand, it has enabled us to reach an international audience that is well beyond the area of the UAM campus and Madrid. Since December 2020, 50 talks have taken place within this initiative, and currently, more than 650 people have joined the email list used to circulate the seminar announcements. When the speakers grant permission, the talks are uploaded into youtube at https://www.youtube.com/c/IFIMACICMMJointSeminarSeries. At the moment, we are facing the challenge to recover the onsite character of the seminars without giving up the advantages that the online format have brought.

**Leni Bascones**  
*Instituto de Ciencia de Materiales de Madrid, ICMM-CSIC*  
**Electronic correlations in moiré heterostructures: the ABC tri-layer graphene/hBN**  
December 16th (**Thursday**), 2021  
12:00 CET  
Hybrid, on-line-on-site

**David Zueco**  
*Instituto de Nanociencia y Materiales de Aragón, Universidad de Zaragoza, Spain*  
**Matter in non-perturbative cavity QED**  
December 9th (**Thursday**), 2021  
16:00 CET  
Hybrid, on-line-on-site  
Recorded talk in youtube:  
https://youtu.be/ns3lcRnCTTM
3. RESEARCH

Alexey Yulin  
*Department of Nanophotonics and Metamaterials ITMO University, Saint-Petersburg (Russia)*  
Bound states in the continuum, hybrid modes and pattern formation in one dimensional nonlinear resonators  
December 2 (Thursday), 2021 12:00 CET  
Hybrid format, celebrated at the Facultad de Ciencias of the Universidad Autónoma de Madrid  
Recorded talk in youtube:  
https://youtu.be/wI6jKHPyg_4

Jacobo Santamaría  
*Universidad Complutense de Madrid*  
Extremely long range Josephson effect across a half-metallic ferromagnet  
November 25 (Thursday), 2021 12:00 CET  
Hybrid format, celebrated at Instituto de Ciencia de Materiales de Madrid, Sor Juana Inés de la Cruz 3, 28049 Madrid.  
Recorded talk in youtube:  
https://youtu.be/JX8sIdqPngZc

Simone De Liberato  
*School of Physics and Astronomy, University of Southampton*  
Cavity-induced single-photon wavefunction engineering  
November 18 (Thursday), 2021 12:00 CET  
Recorded talk in youtube:  
https://youtu.be/hYnG8jTgWp4

Hugo Terças  
*Instituto de Plasmas e Fusão Nuclear, Instituto Superior Técnico, Universidade de Lisboa*  
Plasmonic Instabilities in two-dimensional Dirac Materials  
November 11 (Thursday), 2021, 12:00 CET  
Recorded talk in YouTube:  
https://www.youtube.com/watch?v=ROYFHZs5yfI

Rui E. F. Silva  
*Instituto de Ciencia de Materiales de Madrid (ICMM) - CSIC, Spain*  
High Harmonic Spectroscopy of Strongly Correlated and Topological Materials  
November 04 (Thursday), 2021, 12:00 CET  
On-line  
Recorded talk in YouTube:  
https://youtu.be/_J0pEW9gTMc

Timur Shegai  
*Department of Physics, Chalmers University of Technology, Gothenburg, Sweden*  
Strong light-matter coupling: from transition metal dichalcogenides to Casimir self-assembly  
October 28 (Thursday), 2021, 12:00 CEST  
On-line  
Recorded talk in youtube:  
https://youtu.be/ojCDAtmpB0Q

Andreas Hüttel  
*Institute for Experimental and Applied Physics, University of Regensburg, Germany*  
Quantum devices and quantum materials: Single nanotube mechanics and quantum electronics  
October 21 (Thursday), 2021, 12:00 CEST  
On-line  
Recorded talk in youtube:  
https://youtu.be/UEjnDHgAFeg
3. RESEARCH

**Jose Lado**  
*Department of Applied Physics, Aalto University, Espoo, Finland*  
*Correlated twisted spinorbitronics and heavy-fermions in van der Waals heterostructures*  
October 14 (Thursday), 2021; 12:00 CEST  
On-line  
Recorded talk in youtube: https://youtu.be/gviF-p3sTV8?t=2

**Hugo Dil**  
* Institute of Physics, Ecole Polytechnique Fédéral de Lausanne*  
*Exploring spin physics with topological materials*  
September 30, 2021; 12:00 CEST  
On-site venue (also online)  
Sala de Conferencias, Módulo 0, Facultad de Ciencias, Universidad Autónoma de Madrid

**Mathias Kläui**  
*Institute of Physics, Johannes Gutenberg-University Mainz, Graduate School of Excellence Materials Science in Mainz, Germany; Centre for Quantum Spintronics, NTNU, Norway*  
*IEEE Magnetics Society Distinguished Lecturer*  
*Antiferromagnetic Insulatronics: Spintronics without magnetic fields*  
September 27 (Monday), 2021; 12:00 CEST  
On-site venue (also online)  
Salón de Actos, Instituto de Ciencia de Materiales de Madrid, ICMM-CSIC.  
Recorded talk in youtube: https://youtu.be/v7VMvhN5Jpo

**Juan MR Parrondo**  
*Dep. Estructura de la Materia, Física Térmica y Electrónica, Universidad Complutense de Madrid, Spain*  
*Scattering and thermalization: wave-particle duality hits quantum thermodynamics*  
June 24, 2021  
Recorded talk in YouTube: https://youtu.be/IFA-3YbTBqY

**María José Martínez-Pérez**  
*INMA-CSIC, Universidad de Zaragoza, Spain*  
*NanoSQUID magnetometry of multishaped individual nanoparticles*  
June 17, 2021  
Recorded talk in YouTube: https://youtu.be/Yjlqu7SZWfo

**Stephen Hughes**  
*Department of Physics, Queen’s University, Kingston, Ontario, Canada*  
*Quasinormal modes, Purcell factors and corrected Fermi’s golden rule for spontaneous emission in absorptive and amplifying media*  
June 10, 2021

**Jesper Nygard**  
*Niels Bohr Institute, University of Copenhagen*  
*Hybrid nanowires, dots and bound states - elements for quantum devices*  
June 3, 2021
3. RESEARCH

**Victor Pardo**  
*Universidade de Santiago de Compostela, Spain*  
Electronic structure of the superconducting layered nickelates  
May 27, 2021  
Recorded talk in YouTube:  
https://youtu.be/epdGieWfjgI

**Maia G. Vergniory**  
*Max Planck for the Chemical Physics of Solids, Germany Donostia International Physics Center, Spain*  
Beyond Topological Quantum Chemistry  
May 20, 2021  
Recorded talk in YouTube:  
https://youtu.be/O2HM17naGi0

**Jelena Klinovaja**  
*University of Basel, Switzerland*  
Majorana bound states in topological insulators without a vortex  
May 13, 2021

**Xiao Mi**  
*Google Research Santa Barbara, USA*  
Catching the quantum butterfly: Thermalization and information scrambling on a 53-qubit quantum processor  
May 6, 2021  
Recorded talk in YouTube:  
https://youtu.be/B8psYr36OFM

**Markus Müller**  
*RWTH Aachen University and Forschungszentrum Jülich, Germany*  
Topological Quantum Error Correction: From Theoretical Concepts to Experiments  
April 29, 2021  
Recorded talk in YouTube:  
https://youtu.be/ftr7Oemjxow

**Enrique Burzurí**  
*IMDEA Nanoscience*  
Molecule-based magnetic heterostructures for spintronics and quantum computing  
April 22, 2021  
Recorded in YouTube:  
https://www.youtube.com/watch?v=vZsnyTg1iU

**Attila Geresdi**  
*Chalmers University*  
Andreev bound states: detection and the road towards quantum technologies  
April 15, 2021  
Recorded talk in YouTube:  
https://youtu.be/-4KdV-xpxVs

**Manuela Garnica**  
*IMDEA Nanoscience*  
Epitaxial growth of 2D materials: Insights from scanning tunneling microscopy  
April 8, 2021
3. RESEARCH

Fernando González Zalba  
Quantum Motion Technologies  
Scaling silicon-based quantum computers using CMOS technology  
March 25, 2021  
Recorded talk in YouTube:  
https://youtu.be/lIE9nmz70nY

Rafael Sánchez  
Universidad Autónoma de Madrid, Spain  
Quantum thermoelectrics: using interference, entanglement and non-equilibriumness  
March 11, 2021  
Recorded talk in YouTube:  
https://youtu.be/sAkRfyGlISs

Peter Schall  
Institute of Physics, University of Amsterdam, Netherlands  
Colloidal design: building "molecules" and materials at the micro- and nanometer scale  
March 4, 2021  
Recorded talk in YouTube:  
https://youtu.be/27qPWbHoJegE

Félix Zamora  
Universidad Autónoma de Madrid  
Evolution in uses of Antimony: from ancient Egyptian queen make-up to new 2D-materials  
February 25, 2021  
Recorded talk in YouTube:  
https://youtu.be/_u1NaSNFCo

Miguel M. Ugeda  
DIPC, CSIC-UPV-EHU, Ikerbasque, San Sebastián, Spain  
Unconventional superconductivity in two-dimensional Van der Waals materials  
February 18, 2021  
Recorded talk in YouTube:  
https://youtu.be/WhoQfHfXaps

Elsa Prada  
Instituto de Ciencia de Materiales de Madrid (ICMM-CSIC)  
From Andreev to Majorana bound states in hybrid superconductor-semiconductor nanowires  
February 11, 2021  
Recorded talk in YouTube:  
https://youtu.be/QXf4B1WPwWw

Lucas Lamata  
Universidad de Sevilla  
Quantum simulations of condensed matter systems with quantum technologies  
February 4, 2021  
Recorded talk in YouTube:  
https://www.youtube.com/Z3eHSy5ePkM

Alberto Fernandez-Nieves  
Universitat de Barcelona  
Toroids, Active Nematics and Topological Defects  
January 28, 2021  
Recorded talk in YouTube:  
https://youtu.be/Tk6br6BbAk0
3. RESEARCH

Anna Böhmer
*Ruhr-University Bochum*

**Iron-based superconductors Materials, magnetism and tuning methods**
January 21, 2021
*Recorded talk in YouTube*
https://youtu.be/nXCRtnUESkk

Andrés Castellanos
*Instituto de Ciencia de Materiales de Madrid (ICMM-CSIC)*

**Straintronics with 2D materials**
January 14, 2021
*Recorded talk in YouTube:*
https://youtu.be/9N33DEQpuNs

**PhD POSITIONS AT THE IFIMAC WITHIN THE PREDOCTORAL FELLOWSHIPS PROGRAM OF THE SPANISH AEI**

We welcome 3 new PhD students, one in each Strategic research line

- Daniel Gallego Fuente *(Experimental condensed matter physics line)*
- Francisco Jesús Matute Fernández-Cañadas *(Theoretical condensed matter physics line)*
- Mario Gómez Gutierrez *(Nanoscience and quantum technologies line)*

**RESEARCH PROJECTS**

**International R&D projects:**

1. **ANDREEV QUBITS FOR SCALABLE QUANTUM COMPUTATION- ANDQC**
   - Reference: CA 828948
   - Funding institution: COMISION EUROPEA
   - Period: 01/04/2019-31/03/2023
   - PI: LEVY-YEYATI Mizrahi, Alfredo

2. **ATTOSECOND CHEMISTRY- ATTOCHEM**
   - Reference: CA18222
   - Funding institution: COMISION EUROPEA
   - Period: 25/10/2019-24/10/2023
   - PI: MARTIN Garcia, Fernando

3. **IMPROVING THE SUSTAINABILITY OF THE EUROPEAN MAGNETIC FIELD LABORATORY**
   - Reference: CA 877106
   - Funding institution: COMISION EUROPEA
   - Period: 01/11/2020-31/10/2024
   - PI: SUDEROW RODRIGUEZ, Hermann Jesus

4. **MISTI GLOBAL SEED FUND PROGRAM**
   - Reference: Funding institution: Massachusetts Institute of Technology
   - Period: 01/09/2021-31/08/2022
   - PI: PRINS, Ferry

5. **MODIFICATION OF MOLECULAR STRUCTURE UNDER STRONG COUPLING TO CONFINED LIGHT MODES – MMUSCLES**
   - Reference: CA 714870
   - Funding institution: COMISION EUROPEA
   - Period: 01/04/2017-31/03/2022
   - PI: FEIST, Johannes Maximilian

6. **MULTI-FUNCTIONAL ICEPHOBIC, ROBUST, LIGHTWEIGHT AND TRANSPARENT COATINGS FOR WINDOWS AND LENSES (IGC AS)**
   - Reference: 300023
   - Funding institution: Ice Guard Coating AS
   - Period: 01/09/2019-31/08/2021
   - PI: FARIAS TEJERINA, Daniel

7. **MULTI-FUNCTIONAL ICEPHOBIC, ROBUST, LIGHTWEIGHT AND TRANSPARENT COATINGS FOR WINDOWS AND LENSES (NORCE)**
   - Reference: 300023
   - Funding institution: NORCE Norwegian Research Centre AS
   - Period: 01/09/2019-31/08/2021
   - PI: FARIAS TEJERINA, Daniel
3. RESEARCH

8. NANOSCALE COHERENT HYBRID DEVICES FOR SUPERCONDUCTING QUANTUM TECHNOLOGIES
Reference: CA 16218
Funding institution: COST ASSOCIATION
Period: 18/10/2017-17/10/2021
PI: SUDEROW RODRIGUEZ, HERMANN JESUS

9. PROTEIN NANOCAGES AS SINGLE MOLECULAR REACTORS TO UNDERSTAND BIOCATALYSIS IN CROWDED ENVIROMENTS
Reference: RGP0012/2018
Funding institution: THE INTERNATIONAL HUMAN FRONTIER SCIENCE PROGRAM ORGANIZATION
Period: 01/06/2018-31/08/2021
PI: DE PABLO GOMEZ, PEDRO JOSE

10. QUANTUM INTERFERENCE ENHANCED THERMOELECTRICITY -QUIET
Reference: GA 767187
Funding institution: COMISION EUROPEA
Period: 01/04/2018-31/03/2027
PI: AGRAIT DE LA PUENTE, MARIO NICOLAS

11. THE ULTIMATE TIME SCALE IN ORGANIC MOLECULAR OPTO-ELECTRONICS, THE ATTOSECOND
Reference: GA 951224
Funding institution: COMISION EUROPEA
Period: 01/04/2018-31/03/2027
PI: MARTIN GARCIA, FERNANDO

12. USING EXTREME MAGNETIC FIELD MICROSCOPY TO VISUALIZE CORRELATED ELECTRON MATERIALS – PNICTEYES
Reference: GA 679080
Funding institution: COMISION EUROPEA
Period: 01/03/2018-31/02/2022
PI: GUILLAMON GOMEZ, ISABEL

National R&D Projects:

1. ACOPLAMIENTO CUANTICO DE LUZ Y MATERIA EN SISTEMAS DE DOS DIMENSIONES
Reference: MAT2017-83722-R
Funding institution: MINISTERIO DE ECONOMIA Y COMPETITIVIDAD
Period: 01/01/2018-31/12/2020
PI: VIÑA LISTE, LUIS MARIA ANTONIO

2. CARACTERIZACION ESCALA ATOMICA DE NUEVOS MATERIALES 2D FUNCIONALIZADOS CON MOLECULAS ORGANICAS Y BIOMOLECULAS MEDIANTE MICROSCOPIAS DE PROXIMIDAD
Reference: MAT2017-83273-R
Funding institution: MINISTERIO DE ECONOMIA Y COMPETITIVIDAD
Period: 01/01/2018-31/12/2020
PI: PÉREZ PEREZ, RUBEN

3. CENTRO DE INVESTIGACION DE FISICA DE LA MATERIA CONDENSADA (IFIMAC)
Reference: CEX2018-000805-M
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 16/12/2019-15/12/2023
PI: GARCIA VIDAL, FCO. JOSE

4. CONTROL A LA NANOESCALA DE NUEVAS PROPIEDADES INCORPORADAS AL GRAFENO: SUPERCONDUCTIVIDAD, MAGNETISMO Y GAP ELECTRONICO
Reference: PID2020-115171GB-I00
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/09/2021-31/08/2024
PI: BRIHUEGA ALVAREZ, IVAN

5. CORRELACIONES CUASICONTICAS E INTERFERENCIA DE FOTONES INTERACTUANTES EN ESTRUCTURAS MATERIA-LUZ BIDIMENSIONALES
Reference: PID2020-113415RB-C22
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/09/2021-31/08/2024
PI: MARCHETTI, FRANCESCA MARIA

6. CUANDO LAS INTERACCIONES ADHESIVAS CONTROLAN EL MOVIMIENTO CELULAR
Reference: RTI2018-101953-A-100
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/01/2019-31/12/2021
PI: ARAGONES GOMEZ, JUAN LUIS

7. CUANTIFICACION DEL PAPEL DE LA VÍA DE SEÑALIZACIÓN TGBETA EN LA REGULACIÓN DE LA NEUROGÉNESIS DE VERTEBRADOS
Reference: RTI2018-096953-B-100
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/01/2019-31/12/2021
PI: MIGUEZ GOMEZ, DAVID

8. DEFECTOS Y HETEROUNIONES BIDIMENSIONALES DE DICALCOGENUROS CON METALES DE TRANSICIÓN
Reference: PGC2018-093291-B-I00
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/01/2019-31/12/2021
PI: LOPEZ VAZQUEZ DE PARGA, AMADEO

9. DESARROLLO DE UN MICROSCOPIO DE EFECTO TUNEL EN CONDICIONES DE UHV, TEMPERATURA REALMENTE VARIABLE CON POSICIONAMIENTO MICROMETRICO Y VOLTAJE DE PUERTA PARA MATERIALES 2D
Reference: MAT2016-80907-P
Funding institution: MINISTERIO DE ECONOMIA Y COMPETITIVIDAD
Period: 30/12/2016-29/12/2020
PI: BRIHUEGA ALVAREZ, IVAN

10. DIFRACTOMETRO DE RAYOS X DE MONOCRISTAL CON FUENTE DUAL
Reference: EQC2021-007518-P
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/06/2021-31/12/2023
PI: ZAMORA ABANADES, FELIX JUAN
3. RESEARCH

11. DINÁMICA Y RUIDO EN NUEVOS MATERIALES Y
   DISPOSITIVOS PARA PROCESAMIENTO ULTRA
   RÁPIDO Y NO DISIPATIVO DE SEÑALES
   Reference: RTI2018-095303-B-CS5
   Funding institution: AGENCIA ESTATAL DE
   INVESTIGACION
   Period: 01/01/2019-31/12/2021
   PI: ALIEV KAZANSKI, FARKHAD

12. DINAMICA, SUPERCONDUCTIVIDAD Y TOPOLOGIA
   EN NANOESTRUCTURAS HIBRIDAS
   Reference: FIS2017-84860-R
   Funding institution: MINISTERIO DE ECONOMIA Y
   COMPETITIVIDAD
   Period: 01/01/2018-31/12/2020
   PI: LEVY-YEYATI MIZRAHI, ALFREDO

13. DISEÑO DE MATERIALES 2D PARA APLICACIONES DE
   ENERGÍA: MEMBRANAS Y BATERÍAS
   Reference: PID2019-106268GB-C32
   Funding institution: AGENCIA ESTATAL DE
   INVESTIGACION
   Period: 01/01/2020-31/12/2022
   PI: ZAMORA ABANADES, FELIX JUAN

14. DISEÑO DE MATERIALES 2D PARA APLICACIONES EN
   ENERGÍA: NANOELCTROMECANICA
   Reference: PID2019-106268GB-C31
   Funding institution: AGENCIA ESTATAL DE
   INVESTIGACION
   Period: 01/01/2020-31/12/2022
   PI: GOMEZ-NAVARRO GONZALEZ, CRISTINA

15. ESCALADO INDUSTRIAL DE TINTAS BASADAS EN
   MATERIALES BIDIMENSIONALES: CARACTERIZACIÓN
   Y RECUBRIMIENTOS
   Reference: PDC2021-120782-C22
   Funding institution: AGENCIA ESTATAL DE
   INVESTIGACION
   Period: 01/12/2021-30/11/2023
   PI: GOMEZ HERRERO, JULIO

16. ESCALADO INDUSTRIAL DE TINTAS BASADAS
   EN MATERIALES BIDIMENSIONALES: PREPARACIÓN Y
   RECUBRIMIENTOS
   Reference: PDC2021-120782-C21
   Funding institution: AGENCIA ESTATAL DE
   INVESTIGACION
   Period: 01/12/2021-30/11/2023
   PI: ZAMORA ABANADES, FELIX JUAN

17. ESTRUCTURAL LOCAL DE MATERIALES NANO-
    POROSOS EN ACCION
   Reference: EUR2020-112294
   Funding institution: AGENCIA ESTATAL DE
   INVESTIGACION
   Period: 01/12/2020-31/12/2022
   PI: PLATERO PRATS, ANA EVA

18. ESTUDIO DE LA INTERACION BIOFISICA ENTRE
    NANOCONTENEDORES PROTEICOS Y SU CONTENIDO
    MOLECULAR: MECANICA ESTRUCTURAL, LIBERACION
    DE LA CARGA Y CATALISIS CONFINADA
   Reference: FIS2017-89549-R
   Funding institution: MINISTERIO DE ECONOMIA Y
   COMPETITIVIDAD
   Period: 01/01/2018-31/12/2021
   PI: DE PABLO GOMEZ, PEDRO JOSE

19. EXPLORANDO LA INTERACCIÓN ENTRE
    PARTÍCULAS VÍRICAS Y MATERIALES:
    FUNDAMENTOS Y APLICACIONES PROFILÁCTICAS
    (INFRAESTRUCTURA)
   Reference: VIRMAT
   Funding institution: CONSEJERIA CIENCIA,
   UNIVERSIDADES E INNOVACION
   Period: 01/02/2020-31/12/2022
   PI: DE PABLO GOMEZ, PEDRO JOSE

20. EXPLORANDO LA INTERACCIÓN ENTRE
   PARTÍCULAS VÍRICAS Y MATERIALES:
   FUNDAMENTOS Y APLICACIONES PROFILÁCTICAS
   Reference: VIRMAT
   Funding institution: CONSEJERIA CIENCIA,
   UNIVERSIDADES E INNOVACION
   Period: 01/02/2020-31/12/2022
   PI: DE PABLO GOMEZ, PEDRO JOSE

21. EXTENDIENDO LOS LÍMITES DE LA FÍSICA DE
    ATTOSEGUNDOS: VISUALIZACIÓN Y CONTROL DE
    PROCESOS DE TRANSFERENCIA ELECTRÓNICA EN
    SISTEMAS DE INTERÉS QUÍMICO Y BIOLÓGICO
   Reference: PID2019-105688RB-100
   Funding institution: AGENCIA ESTATAL DE
   INVESTIGACION
   Period: 01/06/2020-31/05/2023
   PI: MARTIN GARCIA, FERNANDO

22. FABRICACIÓN ADITIVA EN METAL PARA LA
    INSTRUMENTACIÓN CIENTÍFICA AVANZADA
   Reference: EQC2021-007318-P
   Funding institution: AGENCIA ESTATAL DE
   INVESTIGACION
   Period: 01/06/2021-31/12/2023
   PI: GOMEZ HERRERO, JULIO

23. FISICA DE MOTT PARA NUEVAS APLICACIONES EN
    COMPUTACION NEUROMORFICA
   Reference: FIS2017-82415-R
   Funding institution: MINISTERIO DE ECONOMIA Y
   COMPETITIVIDAD
   Period: 01/01/2018-31/12/2020
   PI: GARCIA MICHEL, ENRIQUE

24. FLUJO DE CARGA Y ENERGÍA EN PROCESOS
    QUÍMICOS COMPLEJOS
   Reference: PID2019-110091GB-I00
   Funding institution: AGENCIA ESTATAL DE
   INVESTIGACION
   Period: 01/06/2020-31/05/2023
   PI: DIAZ-TENDERO VICTORIA, SERGIO

25. FOTOGENERACIÓN DE H2 MEDIANTE
    SEMICONDUCTORES EMERGENTES Y AJUSTABLES
    Y SU COMPRENSIÓN A PRESIONES ULTRAALTAS
    MEDIANTE HIDRUROS METÁLICOS
   Reference: RTI2018-099794-B-100
   Funding institution: AGENCIA ESTATAL DE
   INVESTIGACION
   Period: 01/01/2019-31/12/2021
   PI: AREN FERNANDEZ, JOSE RAMON
26. FUNDAMENTOS MICROSCÓPICOS DEL MICROSCOPIO DE FUERZAS ATÓMICAS Y MICROBALANZAS DE CUARZO PARA SENSAR BIOMOLÉCULAS
Reference: PID2020-117080RB-CSI
Funding institution: AGENCIA ESTATAL DE INVESTIGACIÓN
Period: 01/09/2021-31/08/2024
PI: DELGADO BUSCALIONI, RAFAEL

27. GRAFENO Y MATERIALES BIDIMENSIONALES PARA APLICACIONES EN ENERGÍA LIMPIA
Reference: PID2019-109525RB-I00
Funding institution: AGENCIA ESTATAL DE INVESTIGACIÓN
Period: 01/06/2020-31/05/2023
PI: FARIAS TEJERINA, DANIEL

28. IDENTIFICACIÓN QUÍMICA Y CONTROL DE LAS PROPIEDADES ELECTRÓNICAS Y MECÁNICAS DE SISTEMAS MOLECULARES MEDIANTE MICROSCOPÍAS DE PROXIMIDAD Y APRENDIZAJE AUTOMÁTICO
Reference: PID2020-115864RB-I00
Funding institution: AGENCIA ESTATAL DE INVESTIGACIÓN
Period: 01/09/2021-31/08/2024
PI: PEREZ PEREZ, RUBEN

29. LIGHT MANAGEMENT IN PLASMONIC NANOPORES
Reference: EUR2019-103826
Funding institution: AGENCIA ESTATAL DE INVESTIGACIÓN
Period: 01/10/2019-30/09/2020
PI: PRINS, FERRY

30. MICROSCOPÍAS DE BARRIDO A BAJAS TEMPERATURAS EN CAMPOS MAGNÉTICOS VECTORIALES
Reference: PDC2021-121086-I00
Funding institution: AGENCIA ESTATAL DE INVESTIGACIÓN
Period: 01/12/2021-30/11/2023
PI: SUDEROW RODRIGUEZ, HERMANN JESUS

31. MICROSCOPIO ELECTRÓNICO DE BARRIDO DE EMISIÓN DE CAMPO DE ULTRA ALTA RESOLUCIÓN PARA APLICACIONES EN NANOLOGÍA, IMAGEN, ANÁLISIS QUÍMICO Y NANO-INGENIERÍA
Reference: EQC2021-007091-P
Funding institution: AGENCIA ESTATAL DE INVESTIGACIÓN
Period: 01/06/2021-31/12/2023
PI: AGRAIT DE LA PUENTE, MARIO NICOLAS

32. MODELIZACION DE MATERIALES COMPLEJOS: BIOMOLECULAS Y SISTEMAS DIMENSIONALES
Reference: MAT2017-88258-R
Funding institution: MINISTERIO DE ECONOMIA Y COMPETITIVIDAD
Period: 01/01/2018-31/12/2021
PI: ORTEGA MATEO, JOSE

33. MULTI-FUNCTIONAL ICEPHOBIC, ROBUST, LIGHTWEIGHT AND TRANSPARENT COATINGS FOR WINDOWS AND LENSES
Reference: PCI2019-103586
Funding institution: AGENCIA ESTATAL DE INVESTIGACIÓN
Period: 01/09/2019-31/08/2021
PI: FARIAS TEJERINA, DANIEL

34. NANODISPOSITIVOS FOTÓNICOS DE ESTADO SOLIDO OBTENIDOS POR COMBINACIÓN DE EMISORES DE TIERRAS RARAS, NANOSTRUCTURAS PLASMÓNICAS Y MATERIALES 2D
Reference: PID2019-108257GB-I00
Funding institution: AGENCIA ESTATAL DE INVESTIGACIÓN
Period: 01/06/2020-31/05/2023
PI: BAUSA LOPEZ, LUISA EUGENIA

35. NUEVAS MICROSCOPÍAS DE DISPOSITIVOS PARA VISUALIZAR MATERIALES CUENTICOS CONTROLADOS
Reference: FIS2017-84330-R
Funding institution: MINISTERIO DE ECONOMIA Y COMPETITIVIDAD
Period: 01/01/2018-31/12/2020
PI: SUDEROW RODRIGUEZ, HERMANN JESUS

36. NUEVOS FENÓMENOS Y APLICACIONES DE MATERIALES TOPOLÓGICOS FUERTEMENTE CORRELACIONADOS EN EQUILIBRIO Y FUERA DE EQUILIBRIO
Reference: RTI2018-098452-B-I00
Funding institution: AGENCIA ESTATAL DE INVESTIGACIÓN
Period: 01/01/2019-31/12/2022
PI: MERINO TRONCOSO, JAIME

37. NUEVOS SUPERCONDUCTORES PARA TECNOLOGÍAS CUÁNTICAS: VISUALIZANDO Y MANIPULANDO CORRELACIONES TRIPLETE
Reference: PID2020-114071RB-I00
Funding institution: AGENCIA ESTATAL DE INVESTIGACIÓN
Period: 01/09/2021-31/08/2024
PI: SUDEROW RODRIGUEZ, HERMANN JESUS

38. ÓPTICA DE LUZ MAGNETO-ELÉCTRICA EN MEDIOS NANOESTRUCTURADOS DIELECTRICOS
Reference: PGC2018-097236-A-I00
Funding institution: AGENCIA ESTATAL DE INVESTIGACIÓN
Period: 01/01/2019-31/12/2022
PI: MARQUES PONCE, MANUEL IGNACIO

39. PHOTONIC TAILORING OF NANOMATERIALS: EXTRAORDINARY LIGHT HARVESTING IN EXCITONIC SYSTEMS
Reference: PGC2018-095777-B-C22
Funding institution: AGENCIA ESTATAL DE INVESTIGACIÓN
Period: 01/01/2019-31/12/2022
PI: MARQUES PONCE, MANUEL IGNACIO
3. RESEARCH

40. PLANTA DE LICUEFACCIÓN DE HELIO PARA LA CIENCIA Y TECNOLOGÍA CERCA DEL CERO ABSOLUTO
Reference: EQC2021-007277-P
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/06/2021-31/12/2023
Pi: SUDEROY RODRIGUEZ, HERMANN JESUS

41. PREPARACIÓN Y CARACTERIZACIÓN DE NANO-LÁMINAS DE ANTIMONIO Y GERMANIO
Reference: PCI2018-093081
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 02/10/2018-01/10/2021
Pi: ZAMORA ABANADES, FELIX JUAN

42. PRODUCCIÓN Y MANIPULACIÓN CONTROLABLE DE ESTADOS CUÁNTICOS DE LUZ EN SEMICONDUCTORES BIDIMENSIONALES
Reference: PID2020-113415RB-C21
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/09/2021-31/08/2024
Pi: LAZIC, SNEZANA

43. PROPIEDADES CUÁNTICAS DE LA LUZ EMITIDA POR UNA UNIÓN TÚNEL
Reference: PCC2018-096047-B-I00
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/01/2019-31/12/2021
Pi: OTERO MARTIN, ROBERTO

44. PROPIEDADES DINÁMICAS Y DE EQUILIBRIO DE MATERIA BLANDA
Reference: FIS207-86007-C3-1-P
Funding institution: MINISTERIO DE ECONOMIA Y COMPETITIVIDAD
Period: 01/01/2019-31/12/2020
Pi: VELASCO CARAVACA, ENRIQUE

45. PROPIEDADES OPTOELECTRÓNICAS Y TERMOELÉCTRICAS DE MATERIALES BIDIMENSIONALES
Reference: MAT2017-88693-R
Funding institution: MINISTERIO DE ECONOMIA Y COMPETITIVIDAD
Period: 01/01/2018-31/12/2020
Pi: RUBIO BOLLINGER, GABINO

46. QUIRALIDAD Y HECICIDAD EN LA NANOESCALA DESDE PRIMEROS PRINCIPIOS
Reference: PID2019-109539GB-C43
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/06/2020-31/12/2023
Pi: PALACIOS BURGOS, JUAN JOSE

47. REDES METAL-ORGÁNICAS DE DISEÑO ATÓMICO: ARQUITECTURAS POROSAS PARA LA ELIMINACIÓN DE CONTAMINANTES EMERGENTES
Reference: RTI2018-096138-A-100
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/01/2019-31/12/2021
Pi: PLATERO PRATS, ANA EVA

48. SIESTA Y SU INTEROPERABILIDAD PARA LOS NUEVOS RETOS EN SIMULACIONES ATOMÍSTICAS (SIESTA-UAM)
Reference: PGC2018-096955-B-C42
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/06/2018-31/12/2023
Pi: SOLER TORROJA, JOSE MARIA

49. SIMULACIÓN DE OPTOELECTRÓNICA MOLECULAR RESUELTAA EN EL TIEMPO CON EL CÓDIGO XCHEM
Reference: PDC2021-120703-I00
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/12/2021-31/12/2023
Pi: MARTIN GARCIA, FERNANDO

50. SUPERCOMPUTACIÓN, ALMACENAMIENTO Y BIG DATA
Reference: EQC2021-007589-P
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/06/2021-31/12/2023
Pi: GARCIA VIDAL, FCO. JOSE

51. SUPERCONDUCTIVIDAD EN LA NANOESCALA: DISPOSITIVOS CUÁNTICOS DE 0 A 2D
Reference: PID2020-117671GB-I00
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/09/2021-31/08/2024
Pi: LEVY-YEYATI MIZRAHI, ALFREDO

52. TECNOLOGÍAS CUÁNTICAS A TEMPERATURA AMBIENTE
Reference: PCI2018-093145
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/03/2018-28/02/2021
Pi: GARCIA VIDAL, FCO. JOSE

53. TECNOLOGÍAS POLARITONICAS CUÁNTICAS
Reference: RTI2018-099737-B-I00
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/01/2019-31/12/2021
Pi: FEIST, JOHANNES MAXIMILIAN

54. TENSIONES MECÁNICAS EN COMPONENTES LAMINARES DE IONES LITIO: LA MURALLA A FRANQUEAR PARA EL USO DE BATERÍAS DE LI EN APLICACIONES INTENSIVAS
Reference: PCC2019-103594
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/03/2019-28/02/2022
Pi: POLOP JORDA, CELIA

55. TERMOMETRÍA DE LUMINISCENCIA CON NANOPARTÍCULAS COMO HERRAMIENTA PARA EL DIAGNÓSTICO PRECOZ DE UNA ENFERMEDAD DISTRÓFICA DE LA RETINA
Reference: PID2020-118678RB-100
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/09/2021-31/08/2024
Pi: HERNANDEZ JUAREZ, BEATRIZ
3. RESEARCH

56. TRANSFERENCIA DE ENERGÍA Y ELECTRONES EN MATERIALES SOLIDOS LUMINISCENTES ACTIVADOS POR LANTANIDOS MULTIVALENTES
Reference: MAT2017-83553-P
Funding institution: MINISTERIO DE ECONOMIA Y COMPETITIVIDAD
Period: 01/01/2018-31/12/2021
PI: BARRANDIARAN PIEDRA, ZOILA

57. TRANSFERENCIA DE ENERGÍA Y ELECTRONES EN MATERIALES SOLIDOS LUMINISCENTES ACTIVADOS POR LANTANIDOS MULTIVALENTES
Reference: MAT2017-83553-P
Funding institution: MINISTERIO DE ECONOMIA Y COMPETITIVIDAD
Period: 01/01/2018-31/12/2021
PI: BARRANDIARAN PIEDRA, ZOILA

57. TRANSPORTE DE CALOR Y TERMOELECTRICIDAD EN CONTACTOS MOLECULARES
Reference: PID2020-114880GB-I00
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/06/2020-31/05/2023
PI: SANCHEZ RODRIGO, RAFAEL

58. TRANSPORTE DE CALOR Y TERMOELECTRICIDAD EN CONTACTOS MOLECULARES
Reference: PID2020-114880GB-I00
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/06/2020-31/05/2023
PI: SANCHEZ RODRIGO, RAFAEL

59. VIRTUAL-QCM: SOFTWARE CIENTÍFICO PARA REPRODUCIR EXPERIMENTOS EN MICROBALANZAS DE CUARZO A PARTIR DE PRIMEROS PRINCIPIOS
Reference: PDC2021-121441-C21
Funding institution: AGENCIA ESTATAL DE INVESTIGACION
Period: 01/12/2021-30/11/2023
PI: DELGADO BUSCALIONI, RAFAEL

Regional R&D Projects:

1. AYUDA PARA LA REALIZACION DE DOCTORADO INDUSTRIAL EN LA COMUNIDAD DE MADRID.
Doctorando Cristina Arqueros Albay. Convocatoria 2020
Reference: IND2020/IND-17321
Funding institution: COMUNIDAD DE MADRID
Period: 05/02/2021-04/02/2024
PI: ZAMORA ABANADES, FELIX JUAN

2. AYUDA PARA LA REALIZACION DE DOCTORADO INDUSTRIAL EN LA COMUNIDAD DE MADRID.
Doctorando Jaime Carracedo Cosme
Reference: IND2017/IND-7793
Funding institution: COMUNIDAD DE MADRID
Period: 01/04/2018-31/03/2021
PI: PEREZ PEREZ, RUBEN

3. AYUDA PARA LA REALIZACION DE DOCTORADO INDUSTRIAL EN LA COMUNIDAD DE MADRID.
Doctorando Jesús López Molina. Convocatoria 2019
Reference: IND2019/AMB-17242
Funding institution: COMUNIDAD DE MADRID
Period: 03/02/2020-02/02/2023
PI: ZAMORA ABANADES, FELIX JUAN

4. CENTRO DE INNOVACIÓN DIGITAL EN BIOCIENCIAS, BIOTECNOLOGÍA Y SALUD (DIH-BIO)
Reference: OI2020-UAM-7.0
Funding institution: COMUNIDAD DE MADRID
Period: 29/11/2021-31/12/2022
PI: GOMEZ HERRERO, JULIO

5. EXCELENCIA PROFESORADO UNIVERSITARIO CATEDRÁTICO DE UNIVERSIDAD - FÍSICA DE LA MATERIA CONDENSADA
Reference: Funding institution: COMUNIDAD DE MADRID
Period: 01/01/2020-31/12/2022
PI: AGRAIT DE LA PUENTE, MARIO NICOLAS

6. EXCELENCIA PROFESORADO UNIVERSITARIO CATEDRÁTICO/A DE UNIVERSIDAD - FÍSICA DE LA MATERIA CONDENSADA
Reference: Funding institution: COMUNIDAD DE MADRID
Period: 01/01/2020-31/12/2023
PI: ALIEV KAZANSKI, FARKHAD

7. EXCELENCIA PROFESORADO UNIVERSITARIO CATEDRÁTICO/A DE UNIVERSIDAD - QUÍMICA INORGÁNICA
Reference: Funding institution: COMUNIDAD DE MADRID
Period: 01/01/2020-31/12/2023
PI: ZAMORA ABANADES, FELIX JUAN

8. EXCELENCIA PROFESORADO UNIVERSITARIO PROFESOR CONTRATADO DOCTOR - FÍSICA DE LA MATERIA CONDENSADA
Reference: Funding institution: COMUNIDAD DE MADRID
Period: 01/01/2020-31/12/2022
PI: AGRAIT DE LA PUENTE, MARIO NICOLAS

9. EXCELENCIA PROFESORADO UNIVERSITARIO PROFESOR CONTRATADO DOCTOR - FÍSICA TEÓRICA DE LA MATERIA CONDENSADA
Reference: Funding institution: COMUNIDAD DE MADRID
Period: 01/01/2020-31/12/2022
PI: LEVY-YEYATI MIZRAHI, ALFREDO

10. EXCELENCIA PROFESORADO UNIVERSITARIO PROFESOR TITULAR DE UNIVERSIDAD - FÍSICA DE LA MATERIA CONDENSADA
Reference: Funding institution: COMUNIDAD DE MADRID
Period: 01/01/2020-31/12/2022
PI: AGRAIT DE LA PUENTE, MARIO NICOLAS

11. EXCELENCIA PROFESORADO UNIVERSITARIO PROFESOR/A CONTRATADO/A DOCTOR/A - FÍSICA DE LA MATERIA CONDENSADA
Funding institution: COMUNIDAD DE MADRID
Period: 01/01/2021-31/12/2023
PI: JAAFAR RUIZ-CASTELLANOS, MIRIAM
3. RESEARCH

12. EXCELENCIA PROFESORADO UNIVERSITARIO PROFESOR/A TITULAR DE UNIVERSIDAD - FÍSICA DE LA MATERIA CONDENSADA
  Reference: 
  Funding institution: COMUNIDAD DE MADRID
  Period: 01/01/2021-31/12/2023
  PI: OTERO MARTIN, ROBERTO

13. MICROSCOPÍA MAGNÉTICA MULTIPARAMÉTRICA CON ALTA SENSIBILIDAD
  Reference: SI1/PJI/2019-00055
  Funding institution: COMUNIDAD DE MADRID
  Period: 01/01/2020-31/12/2021
  PI: JAFAFAR RUIZ-CALLEJANOS, MIRIAM

14. NANOFOOTÓNICA PARA COMPUTACIÓN CUÁNTICA
  Funding institution: COMUNIDAD DE MADRID
  Period: 01/07/2021-30/06/2024
  PI: GARCIA VIDAL, FCO. JOSE

15. NUEVOS MATERIALES BIDIMENSIONALES: CARACTERIZACIÓN, PROPIEDADES Y APLICACIONES - G2-UAM
  Reference: S2018/NMT-4321
  Funding institution: COMUNIDAD DE MADRID
  Period: 01/01/2019-31/12/2022
  PI: BRIHUEGA ALVAREZ, IVAN

16. SOLUCIONES DEL NANOMAGNETISMO A LOS RETOS SOCIALES - 287
  Reference: S2018/NMT-4321
  Funding institution: COMUNIDAD DE MADRID
  Period: 01/01/2019-31/12/2022
  PI: RAMOS RUIZ, MIGUEL ANGEL

17. SOLUCIONES DEL NANOMAGNETISMO A LOS RETOS SOCIALES - LASUAM
  Reference: S2018/NMT-4321
  Funding institution: COMUNIDAD DE MADRID
  Period: 01/01/2019-31/12/2022
  PI: MIRANDA SORIANO, RODOLFO

18. SOLUCIONES DEL NANOMAGNETISMO A LOS RETOS SOCIALES - LBT-UAM
  Reference: S2018/NMT-4321
  Funding institution: COMUNIDAD DE MADRID
  Period: 01/01/2019-31/12/2022
  PI: SUDEROW RODRIGUEZ, HERMANN JESUS

Private Funding:

1. CONVENIO BANCO SANTANDER-UAM-IFIMAC
   Reference: SANTANDER UNIVERSIDADES
   Funding institution: BANCO DE SANTANDER CENTRAL HISPANO SA
   Period: 18/06/2016-17/06/2020
   PI: GARCIA VIDAL, FCO. JOSE

2. NANO-OPTICA CUANTICA DE TRANSFORMACION
   Reference: FBBVA BECA LEONARDO
   Funding institution: FUNDACION BBVA
   Period: 30/09/2019-30/03/2021
   PI: FERNANDEZ DOMINGUEZ, ANTONIO ISAAC

3. NANOTEK / NANOTECH-BASED PCR-FREE SARS-COV-2 QUANTITATIVE DETECTION KIT
   Reference: NANOTEK
   Funding institution: BANCO DE SANTANDER CENTRAL HISPANO SA
   Period: 01/09/2020-31/08/2021
   PI: MIRANDA SORIANO, RODOLFO

4. NUEVOS TEJIDOS PROFILÁCTICOS EFICIENTES CONTRA SARS-COV-2 BASADOS TEXTILES NO-TEJIDOS MODIFICADOS CON GRAFENO Y DERIVADOS
   Reference: TEXGRAF
   Funding institution: BANCO DE SANTANDER CENTRAL HISPANO SA
   Period: 01/07/2020-01/07/2021
   PI: ZAMORA ABANADES, FELIX JUAN
3. RESEARCH

SCIENTIFIC RESULTS

Publications

1. Abujetas DR; Marqués MI; Sánchez-Gil JA, Modulated flipping torque, spin-induced radiation pressure, and chiral sorting exerted by guided light, 2021, *Optics Express*, 29 (11) 16969-16979

2. Aguilar-Galindo F; Borisov AG; Díaz-Tendero S, Unveiling the anisotropic behavior of ultrafast electron transfer at the metal/organic interface, 2021, *Applied Surface Science*, 554 (149311) -

3. Aguilar-Galindo F; Zapata-Herrera M; Díaz-Tendero S; Aizpurua J; Borisov AG, Effect of a Dielectric Spacer on Electronic and Electromagnetic Interactions at Play in Molecular Exciton Decay at Surfaces and in Plasmonic Gaps, 2021, *Acs Photonics*, 8 (12) 3495-3505


5. Aguilar-Galindo, Fernando; Rodriguez, Ricardo I.; Mollari, Leonardo; Alarcon, Jose; Díaz-Tendero, Sergio, Visible-Light Radical-Radical Coupling vs. Radical Addition: Disentangling a Mechanistic Knot, 2021, *Catalysts*, 11 (8), 922

6. Aguierre, Nestor F; Díaz-Tendero, Sergio; Hervieux, Paul-Antoine; Alcami, Manuel; Chabot, Marin; Beroff, Karine; Martin, Fernando; Charge and energy sharing in the fragmentation of astrophysically relevant carbon clusters, 2021, *Theoretical Chemistry Accounts*, 140 (3), 22


8. Ahmed S; Sánchez Muñoz C; Nori F; Kockum AF, Quantum State Tomography with Conditional Generative Adversarial Networks, 2021, *Physical Review Letters*, 127 (14) 140502-

9. Al Taleb A; Miranda R; Farias D, Time-of-flight measurements of the low-energy scattering of CH4 from Ir(111), 2021, *Physical Chemistry Chemical Physics*, 23 (13) 7830-7836


11. Almendro-Vedia V; Natale P; Valdivieso González D; Lillo MP; Aragones JL; Lopez-Montero I, How rotating ATP synthases can modulate membrane structure, 2021, *Archives Of Biochemistry And Biophysics*, 708, 108939


13. Anadón A; Gutín A; Guerrero R; Arny I; Guedeja-Marron A; Jiménez-Cavero P; Díez Toledano JM; Ajejas F; Varelú M; Petit-Watelot S; Lucas I; Morellíón L; Algarabel PA; Ibarra MR; Miranda R; Camarero J; Rojas-Sánchez JC; Perna P, Engineering the spin conversion in graphene monolayer epitaxial structures, 2021, *Apl Materials*, 9 (6) 061113

14. Anadón A; Guadix R; Jover-Gaitier JA; Gutín A; Díez Toledano JM; Olleros-Rodriguez P; Miranda R; Camarero J; Perna P, Spin-orbit torque from the introduction of Cu interlayers in Pt/Cu/Co/Pt nanolayered structures for spintronic devices, 2021, *Acs Applied Nano Materials*, 4 (1) 487-492

15. Anemone G; Casado Aguilar P; Garnica M; Calleja F; Al Taleb A; Kuo CN; Lue CS; Politano A; Vázquez de Parga AL; Benedek G; Farias D; Miranda R, Electron-phonon coupling in superconducting IT-PdTe2, 2021, *Npj 2d Materials And Applications*, 5 (1) 25

16. Ares, Pablo; Pakdel, Sahar; Palacio, Irene; Paz, Wendel S.; Rassekh, Maedeh; Rodriguez-San Miguel, David; Aballe, Lucia; Foerster, Michael; Ruiz del Arbol, Nerea; Angel Martin-Gago, Jose; Zamora, Felix; Gomez-Herrero, Julio; Jose Palacios, Juan; Diaz-Tendero, Sergio; Borisov, Andrey G.; Aizpurua, Javier; Parga AL; Benedek G; Farías D; Miranda R; Camarero J; Perna P, Spin-orbit torque from the introduction of Cu interlayers in Pt/Cu/Co/Pt nanolayered structures for spintronic devices, 2021, *Apl Materials Today*, 24, 101132

17. Ares, Pablo; Santos, Hernan; Lazic, Snezana; Gibaja, Carlos; Torres, Inigo; Pinilla, Sergio; Gomez-Herrero, Julio; van der Meulen, Herko P.; Garcia-Gonzalez, Pablo; Zamora, Felix; Díez Toledano, J.; Rojas-Sánchez JC; Perna P, Enhanced Light-Matter Interaction in B-10 Monoisotopic Boron Nitride Infrared Nanonanosatars, 2021, *Advanced Optical Materials*, 104 (7) 075406


19. Ashraf SM; Malekfar R; Bahrampour AR; Feist J, Long-distance heat transfer between molecular systems through a hybrid plasmonic-photonic nanoresonator, 2021, *Journal Of Optics*, 23 (1), 015003

20. Autore, Marta; Dolado, Irene; Li, Peining; Esteban, Ruben; Alfarro-Mozaz, Francisco Javier; Atxabal, Ainhoa; Liu, Song; Edgar, James H.; Velez, Saul; Casanova, Felix; Hueso, Luis E.; Aizpurua, Javier; Hillenbrand, Rainer; Enhanced Light-Matter Interaction in B-10 Monoisotopic Boron Nitride Infrared Nanonanosatars, 2021, *Advanced Optical Materials*, 9 (5), 2001958
3. RESEARCH

21. Ayani,Cosme G.; Pisarra, Michele; Urgel, Jose I.;Navarro, Juan Jesus; Diaz, Cristina; Hayashi, Hiroonobu;Yamada, Hiroko; Calleja, Fabian; Miranda, Rodolfo;Fasel, Roman; Martinez, Fernando; Vazquez de Parga,Amaeeo L.; Efficient photogeneration of nonacene onnanostuctured graphene, 2021, Nanoscale Horizons, 6 (9) 744-750

22. Barreiro-Lage, Dario; Bolognese, Paola; Chiarinelli, Jacopo; Richter, Robert; Zettergren, Henning; Stockett, Mark H.; Carlini, Laura; Diaz-Tendero, Sergio; Avaldi, Lorenzo, “Smart Decomposition” of CyclicalAlanine-Alanine Dipeptide by VUV Radiation: A Seed for the Synthesis of Biologically Relevant Species, 2021, Journal Of Physical Chemistry Letters; 12 (30) 7379-7386

23. Barrio J; Barzilai S; Kargule N; Ame-Ochoa P; Zamora F; Shalom M, Synergistic doping and surface decoration of carbon nitride macrostructures by single crystal design, 2021, ACS Applied EnergyMaterials; 4 (2) 1868-1875

24. Barrio, Jesus; Barzilai, Shmuel; Kargule, Neeta; Ame-Ochoa, Pilar; Zamora, Felix; Shalom, Menry, Fluorescent Carbon Nitride Macrostructures Derived from Triazine-Based Cocrysals, 2021, AdvancedOptical Materials; 9 (19)200663

25. Barzaga, Ransel; Leston-Sanchez, Lucia; Aguilar- Calindo, Fernando; Estevez-Hernandez, Osvaldo; Diaz-Tendero, Sergio; Synergy Effects in Heavy Metal Ion Chelation with Aryl- and Areny-Substituted Thiourea Derivatives, 2021, Inorganic Chemistry; 60 (16)11984-12000

26. Bello RY; Martin F; Palacios A, Attosecond laser control of photoelectron angular distributions in XUV-induced ionization of H2, 2021, Faraday Discussions; 228 (0) 378-393

27. Benaglia, Ricardo; Munoz, Jose; Chacon, Enrique; Tarazona, Pedro; Garcia, Ricardo; Tip Charge Dependence of Three-Dimensional AFM Mapping of Concentrated Ionic Solutions, 2021, Physical Review Letters; 127 (19) 196101

28. Benedek G; Bernasconi M; Campi D; Silkin IV; Chernov IP; Silkin VM; Chulkov EV; Echenique PM; Toennies JP; Anemone G; Al Taleb A; Miranda R; Farias D, Evidence for a spin acoustic surface plasmon from inelastic atom scattering, 2021, Scientific Reports; 11 (1) 1506


30. Bujalance, Clara; Esteso, Victoria; Callo, Laura; Lavarda, Giulia; Torres, Tomas; Feist, Johannes; Jose Garcia-Vidal, Francisco; Bottari, Giovanni; Miguez, Hernan, Ultrashort Exciton-Photon Coupling in Broadband Solar Absorbers, 2021, Journal Of Physical Chemistry Letters; 12 (43), 10706-10712

31. Calaresu, Ivo; Hernandez, Jaime; Rauti, Rossana; Rodilla, Beatriz L.; Arche-Nunez, Ana; Perez, Lucas; Camarero, Julio; Miranda, Rodolfo; Gonzalez, M. Teresa; Rodriguez, Isabel; Scaini, Denis; Ballerini, Laura; Polystyrene Nanopillars with Inbuilt Carbon Nanotubes Enable Syncaptic Modulation and Stimulation in Interfaced Neuronal Networks, 2021, Advanced Materials Interfaces; 8 (9), 2002121

32. Carracedo-Cosme, Jaime; Romero-Muniz, Carlos; Perez, Ruben, A Deep Learning Approach for Molecular Classification Based on AFM Images, 2021, Nanomaterials; 11 (7), 1658

33. Cayao J; Burset P, Confinement-induced zero-bias peaks in conventional superconductor hybrids, 2021, Physical Review b; 104 (13), 134507 -

34. Cerrillo, Javier; Hays, M.; Fatemi, V; Levy Yeyati, Alfredo, Spin coherent manipulation in Josephson weak links, 2021, Physical Review Research; 3 (2),L022012


37. Cistaro, Giovanni; Plaja, Luis; Martin, Fernando; Picon, Antonio, Attosecond x-ray transient absorption spectroscopy in graphene, 2021, Physical Review Research; 3 (1), 013144
3. RESEARCH

43. Cortés-del Río E; Lado JL; Chekerz V; Mallet P; Veuillen JY; Cuevas JC; Gómez-Rodríguez JM; Fernández-Rossier J; Brihuega I, Observation of Yu–Shiba–Rusinov States in Superconducting Graphene, 2021, Advanced Materials; 33 (200813) e200813-.

44. Cuartero-González, Alvaro; Manjavacas, Alejandro; Fernandez-Dominguez, Antonio, I.; Distortion of the local density of states in a plasmonic cavity by a quantum emitter, 2021, New Journal of Physics; 23 (7), 073011.

45. Dar D; Lacombe L; Feist J; Maitra NT, Exact time-dependent density-functional theory for nonperturbative dynamics of the helium atom, 2021, Physical Review a; 104 (3), 032821.

46. de Leo, E; Prins, F; Norris, DJ, Inverse design and realization of an optimized photonic multilayer for thermophotovoltaics, 2021, Osa Continuum; 4 (12) 3254-3261.

47. de Oliveira, Thales V. A. G.; Neerenberg, Tobias; Alvarez-Perez, Gonzalo; Wehmeier, Lukas; Taboada-Guitierrez, Javier; Obst, Maximilian; Hempel, Franz; Lee, Eduardo J. H.; Klopf, J. Michael; Errea, Ion; Nikitin, Roberta; Martin-Perez, Lucia; Costa, Jose Sanchez; Develioglu, Aysegul; Resines-Urien, Esther; Poloni, Erdmann; Richter, Robert; Avaldi, Lorenzo; Diaz-Tendero, Sergio; Alcamí, Manuel; Labuda, Marta; A general approach to study molecular fragmentation and energy redistribution after an ionizing event, 2021, Physical Chemistry Chemical Physics; 23 (3), 1059-1067.

48. Delgado J; Lara-Astiaso M; González-Vázquez J; Decleve P; Palacios A; Martin F, Molecular fragmentation as a way to reveal early electron dynamics induced by attosecond pulses, 2021, Faraday Discussions; 228 (0) 349-377.

49. Denis A Kisol; Egor A Gurvitz; Alexander A Pavlov; Dmitri N Redka; Manuel I Marques; Pavel Ginzburg; Alexander S Shalin, Multipole Engineering of Attractive-Repulsive and Bending Optical Forces, 2021, Faraday Discussions; 21, 200082.

50. Develioglu, Aysegul; Resines-Urrien, Esther; Poloni, Roberta; Martin-Perez, Lucia; Costa, Jose Sanchez; Burzuri, Enrique; Tunable Proton Conductivity and Color in a Nonporous Coordination Polymer via Lattice Accommodation to Small Molecules, 2021, Advanced Science; 8 (22) e2102619.

51. Diaz, Israel; Sanchez, Rafael; The qutrit as a heat diode and circulator, 2021, New Journal of Physics; 23 (12), 125006.


53. Divilov, Simon; Wan, Wen; Dreher, Paul; Bolen, Emre; Sanchez-Portal, Daniel; Ugeda, Miguel M.; Yndurain, Félix, Magnetic correlations in single-layer NbSe2, 2021, Journal Of Physics-Condensed Matter; 33 (29), 295804-.

54. Dominguez-Bajo A; Rosa JM; González-Mayorga A; Rodilla BL; Arché-Nuñez A; Benayas E; Ocon P; Pérez L; Camarero J; Miranda R; González MT; Aguilar J; López-Dolado E; Serrano MC, Nanostructured gold electrodes promote neural maturation and network connectivity, 2021, Biomaterials; 279, 121186.


56. Dutreix C; González-Herrero H; Brihuega I; Katsnelson MI; Chapelier C; Renard VT, Measuring graphene’s Berry phase at B = 0 T Mesurer la phase de Berry du graphe en l’absence de champ magnétique, 2021, Comptes Rendus Physique; 22 (54) 1-11.
3. RESEARCH

67. Fernández-Lomana M; Wu B; Martín-Vega F; Sánchez-Barquilla R; Álvarez-Montoya R; Castilla JM; Navarrete J; Marijuan JR; Herrera E; Suderow H; Guillamón I. Millikelvin scanning tunneling microscopy at 20/22 T with a graphite enabled stick-slip approach and an energy resolution below 8 μeV: Application to conductance quantization at 20 T in single atom point contacts of Al and Au and to the charge density wave of 2H-NbSe2, 2021, Review Of Scientific Instruments, 92 (9) 093701-

68. FERNANDEZ-MARTINEZ J; CARRETERO-PALACIOS S; SANCHEZ-GARCIA L; BRAVO-ABAD J; MOLINA P; VAN HOOF N; RAMIREZ MO; GOMEZ RIVAS J; BAUSA LE. Spatial coherence from Nd3+ quantum emitters mediated by a plasmonic chain, 2021, Optics Express, 29 (6) 26244-26254

69. Fleury, Genevieve; Gorini, Cosimo; Sanchez, Rafael; Scanning probe-induced thermoelectrics in a quantum point contact, 2021, Applied Physics Letters, 119 (4), 043101

70. Fregoni J; Garcia-Vidal FJ; Feist J, Theoretical Challenges in Polaritonic Chemistry, 2021, ACS Photonics, 9 (4) 1096-1107

71. Fumea, Adolfo O.; Pardo, Victor; Cortijo, A.; Increasing the number of topological nodal lines in semimetals via uniaxial pressure, 2021, Scientific Reports, 11 (1) 10574

72. Garcia-Arroyo, P; Navalpotro P; Mancheño MJ; Salagre E; Cabrera-Trujillo J J; Michel EC; Segura JL; Carretero-Gonzalez J; Acidic triggering of reversible electrochemical activity in a pyrenetetraone-based 2D polymer, 2021, Polymer, 212, 123273

73. Garcia-Elicio I; Bravo-Abad J; Gonzalez-Tudela A, Light-matter interactions near photonic Weyl points, 2021, Physical Review a, 103 (3), 033511


75. Garcia-Vidal, Francisco J.; Ciutí, Cristian; Ebbesen, Thomas W.; Manipulating matter by strong coupling to vacuum fields, 2021, Science, 373 (6551) 178


77. Gibaja, Carlos; Rodriguez-San-Miguel, David; Paz, Wendel S.; Torres, Inigo; Elena; Segovia, Pilar; Michel, Enrique G.; Assebben, Mhamed; Ares, Pablo; Hernandez-Maldonado, David; Ramasse, Quentin; Abellán, Gonzalo; Gomez-Herrero, Julio; Varela, Maria; Jose Palacios, Juan; Zamora, Felix; Exfoliation of Alpha-Germanium: A Covalent Diamond-Like Structure, 2021, Advanced Materials, 33 (10) e2006826-

78. Gisbert VC; Amo CA; Jaafar M; Asenjo A; Garcia R, Quantitative mapping of magnetic properties at the nanoscale with bimodal AFM, 2021, Nanoscale; 13 (3) 2026-2033

79. Gómez-Tornero A; Bausá LE; Ramírez MO, Giant second harmonic generation enhancement by ag nanoparticles compactly distributed on hexagonal arrangements, 2021, Nanomaterials, 11 (9), 2394

80. Gómez-Tornero, Alejandro; Palacios, Pablo; Molina, Pablo; Carretero-Palacios, Sol; Bausa, Luisa E.; Ramírez, Mariola O.; Enhancing Nonlinear Interactions by the Superposition of Plasmonic Lattices on chiral Nonlinear Photonic Crystals, 2021, ACS Photonics, 8 (8) 2529-2537

81. González-Muñoz D; Martin-Somer A; Strobl K; Cabrera S; De Pablo PJ; Díaz-Tendero S; Blanco M; Alemany J, Enhancing Visible-Light Photocatalysis via Endohedral Functionalization of Single-Walled Carbon Nanotubes with Organic Dyes, 2021, ACS Applied Materials & Interfaces, 13 (21) 24877-24886

82. González-Ruano C; Caso D; Johnsen LG; Tiusan C; Hehn M; Banerjee N; Linder J; Aliev FG, Superconductivity assisted change of the perpendicular magnetic anisotropy in V/MgO/Fe junctions, 2021, Scientific Reports, 11 (1) 19041-

83. Guerrero, Pablo; Mikellides, Ioannis G.; Polk, James E.; Carmina Monreal, Rosa; Meiron, Daniel I.; Critical implications of ion-surface energy accommodation and neutralization mechanism in hollow cathode physics, 2021, Journal Of Applied Physics, 130 (4) 043506-

84. Guillamón I, Models and mountains, 2021, Nature Physics, 17 (10) 1077-1078

85. Gurlek B; Sandoghdar V; Martin-Cano D, Engineering Long-Lived Vibrational States for an Organic Molecule, 2021, Physical Review Letters, 127 (12), 123603-

86. Hannukainen JD; Cortijo A; Bardarson JH; Ferreira Y, Electric manipulation of domain walls in magnetic Weyl semimetals via the axial anomaly, 2021, SciPost Physics, 10 (5), 102

87. Hartmann, Dion M. F.; Wouters, Jurriaan J.; Schuricht, Dirk; Duine, Rembert A.; Kamra, Akashdeep; Intersublattice entanglement entropy as an extensive property in antiferromagnets, 2021, Physical Review b, 104 (6), 064436


89. Herrera E; Barrena V; Guillamón I; Calvis 3A; Herrera WJ; Castilla J; Aoki D; Flouquet J; Suderow H, 1D charge density wave in the hidden order state of URu2Si2, 2021, Communications Physics, 4 (1), 98
3. RESEARCH

90. Holst B; Alexandrowicz G; Aivor N; Benedek G; Bracco G; Ernst WE; Farias D; Jardine AP; Lefmann K; Manson JR; Marquardt R; Artés SM; Sibener SJ; Wells JW; Tamtogl A; Allison W, Material properties particularly suited to be measured with helium scattering: selected examples from 2D materials, van der Waals heterostructures, glassy materials, catalytic substrates, topological insulators and superconducting radio frequency materials, 2021, Physical Chemistry Chemical Physics, 23 (13) 7653-7672

91. Hong JY; Chen CY; Ling DC; Martínez I; González-Ruano C; Aliev FG, Low-frequency 1/f noise characteristics of ultra-thin AlOx-based resistive switching memory devices with magnetotriode responses, 2021, Electronics, 10 (20), 2525

92. Hope, MK; Amundsen, M; Suri, D; Moodera, JS; Kamra, A, Interfacial control of vortex-limited critical current in type-II superconductor films, 2021, Physical Review b, 104 (18), 184512 -

93. Horgan D; Ciliberto G; Conte P; Curigliano G; Seijo L; Montuenga LM; Garassino M; Penault-Ilorca F; Galli F; Ray-coquard I; Querleu D; Riegemann P; Kerr K; Van Poppel H; Bjartell A; Codacci-pisanelli G; Koeva-balabanova J; Paradiso A; Maravic Z; Fotaki V; Malats N; Bernstein C; Buglioni S; Kent A; Munzone E; Belina I; Van Meerbeeck J; Duffy M; Jagielska B; Capoluongo N; Bernini C; Buglioni S; Kent A; Munzone E; Belina I; Van Meerbeeck J; Duffy M; Jagielska B; Capoluongo E, Bringing onco-innovation to Europe’s healthcare systems: The potential of biomarker testing, real world evidence, tumour agnostic therapies to empower personalised medicine, 2021, Cancers, 13 (3) 1-12

94. Huang, Haonan; Senkpiel, Jacob; Paduraru, Ciprian; Drost, Robert; Villas, Alberto; Klees, Raffael L.; Heyati, Alfredo Levy; Cuevas, Juan Carlos; Kubala, Bjorn; Ankerhold, Joachim; Kern, Klaus; Ast, Christian R.; Spin-dependent tunneling between individual superconducting bound states, 2021, Physical Review Research, 3 (3), L032008

95. Huidobro PA; Fernández-Domínguez AI, Transformation optics for plasmonics: From metasurfaces to excitonic strong coupling, 2021, Comptes Rendus Physique, 21 (4) 389-408


97. Jiménez-Sánchez MD; Romero-Muñiz C; Pou P; Pérez R; Gómez-Rodríguez JM, Graphene on Rh(111): A template for growing ordered arrays of metal nanoparticles with different periodicities, 2021, Carbon, 173, 1073-1081


99. Joos JI; Van Der Heggen D; Amidani L; Seijo L; Barandiarán Z, Elucidation of the electro transfer mechanism in Eu2+ and Sm3+ codoped CaF2: A step towards better understanding of trapping and detrapping in luminescent materials, 2021, Physical Review b, 104 (20)

100. Joos, Jonas J.; Neefjes, Ivo; Seijo, Luis; Barandiaran, Zoila; Charge transfer from Eu2+ to trivalent lanthanide co-dopants: Systematic behavior across the series, 2021, Journal Of Chemical Physics, 154 (6) 064704

101. Kirkpatrick, James; McMorrow, Brendan; Turban, David H. P.; Gaunt, Alexander L.; Spencer, James S.; Matthews, Alexander G. D. G.; Obika, Annette; Thiry, Louis; Fortunato, Meire; Pfau, David; Castellanos, Lara Roman; Petersen, Stig; Nelson, Alexander W. R.; Kohli, Pushmeet; Mori-Sanchez, Paula; Hassabis, Demis; Cohen, Aron J., Pushing the frontiers of density functionals by solving the fractional electron problem, 2021, Science, 374 (6573) 1385

102. Klees RL; Cuevas JC; Belzig W; Rastelli G, Ground-state quantum geometry in superconductor-quantum dot chains, 2021, Physical Review b, 103 (13), 014516

103. Kotilahti, Janne; Burset, Pablo; Moskalets, Michael; Flindt, Christian; Multi-Particle Interference in an Electronic Mach-Zehnder Interferometer, 2021, Entropy, 23 (6), 736

104. Kotsakidis, Jimmy C.; Curie, Marc; Grubisic-Cabo, Antonija; Tadich, Anton; Myers-Ward, Rachael L.; DeJarld, Matthew; Daniels, Kevin M.; Liu, Chang; Edmonds, Mark T.; Vazquez de Parga, Amadeo L.; Fuhrer, Michael S.; Gaskill, D. Kurt, Increasing the Rate of Magnesium Intercalation Underneath Epitaxial Graphene on 6H-SiC(0001), 2021, Advanced Materials Interfaces, 8 (23), 2101598

105. Leary E; Kastlunger G; Limburg B; Rincón-García L; Hurtado-Gallego J; González MT; Bollinger GR; Agrait N; Higgins SJ; Anderson HL; Stadler R; Nichols RJ, Long-lived charged states of single porphyrin-tape junctions under ambient conditions, 2021, Nanoscale Horizons, 6 (1) 49-58

106. Liu, Lin; Tobing, Landobasa Y. M.; Wu, Tingting; Qiang, Bo; Garcia-Vidal, Francisco J.; Zhang, Dao Hua; Wang, Q; Jie; Luo, Yu, Plasmon-induced thermal tuning of few-exciton strong coupling in 2D atomic crystals, 2021, Optica, 8 (11) 1416-1423

107. Llorens JB; Herrera E; Barrena E; Valenti R; Meier WR; Bud’ko S; Canfield PC; Guillamón I; Suterow H, Anisotropic superconductivity in the spin-vortex antiferromagnetic superconductor CaK(Fe0.95Ni0.05)4As4, 2021, Nano Materials Science, 4 (1), 18-26
3. RESEARCH


110. Lu D; Pedroni M; Labrador-Páez L; Marqués M I; Jaque D; Haro-González P, Nanojet Trapping of a Single Sub-10 nm Upconverting Nanoparticle in the Full Liquid Water Temperature Range, 2021, Small, 17 (2006764) e2006764–

111. Magdaleno A J; Seitz M; Frising M; Herranz De La Cruz A; Fernández-Domínguez Al; Prins F, Efficient interlayer exciton transport in two-dimensional metal-halide perovskites, 2021, Materials Horizons, 8 (2) 639-644.

112. Maksudov F; Kononova O; Llauró A; Ortega-Esteban A; Douglas T; Condonen CN; Martin CS; Max KA; Wuite GJ L; Roos WH; de Pablo PJ; Barsegov V, Fluctuating nonlinear spring theory: Strength, deformability, and toughness of biological nanoparticles from theoretical reconstruction of force-deformation spectra: Fluctuating Nonlinear Spring Theory Strength, deformability, and toughness of virus particles, 2021, Acta Biomaterialia, 122, 263-277

113. Manzanares-Negro Y; López-Polín C; Fujisawa K; Zhang T; Zhang F; Kahn E; Perea-López N; Terrones M; Gómez-Herrero J; Gómez-Navarro C, Conﬁned Crack Propagation in MoS2 Monolayers by Creating Atomic Vacancies, 2021, ACS Nano, 15 (1) 1210-1216

114. Marqués M I; Edelstein S; Serena PA, A proposal to measure Belinfante’s curl of the spin optical force based on the Kerker conditions, 2021, European Physical Journal Plus, 136 (2), 185

115. Martínez-Gualda, Ana M.; Domingo-Legarda, Pablo; Rigotti, Thomas; Diaz-Tendero, Sergio; Fraile, Alberto; Aleman, Jose; Asymmetric [2+2] photocycloaddition via charge transfer complex for the synthesis of tricyclic chiral ethers, 2021, Chemical Communications, 57 (24) 3046-3049

116. Martínez-Ratón Y; Velasco E, Failure of standard density functional theory to describe the phase behavior of a fluid of hard right isosceles triangles, 2021, Physical Review e, 104 (5), 054132

117. Martin-Fuentes, Cristina; Urgel, Jose; I; Edalatmanesh, M; Gómez-Herrero J; Gómez-Navarro C, Theoretical analysis of the dynamics of trap filling in quantum dots, 2021, Chemical Communications, 57 (61) 7545–7548

118. Martinez-Gonzalez, Natalia; Ibanez-Freire, Pablo; Ortega-Esteban, Alvaro; Laguna-Castro, Mara; San Martin, Carmen; Valbuena, Alejandro; Delgado-Buscailoni, Rafael; de Pablo, Pedro J.; Long-Range Cooperative Disassembly and Aging During Adenovirus Uncoating, 2021, Physical Review x, 11 (2), 021025

119. Martín-IlIan, Jesus A.; Rodríguez-San-Miguel, David; Castillo, Oscar; Beobide, Garikitz; Perez-Carvajal, Javier; Imaz, Inhar; Maspoch, Daniel; Zamora, Felix, Macroscopic Ultralight Aerogel Monoliths of Imine-based Covalent Organic Frameworks, 2021, Angewandte Chemie (International Ed. Print), 60 (25) 13969-13977

120. Martín-Jiménez A; Lauwaet K; Jover O; Granados D; Arnau A; Silkin VM; Miranda R; Otero R, Electronic Temperature and Two-Electron Processes in Overbias Plasmonic Emission from Tunnel Junctions, 2021, Nano Letters, 21 (16) 7086-7092

121. Martín-Pérez L; Burzuri E, Optimized liquid-phase exfoliation of magnetic van der Waals heterostructures: Towards the single layer and deterministic fabrication of devices, 2021, Molecules; 26 (23)

122. Martín-Vega F; Barrena V; Sánchez-Barquilla R; Fernández-Lomana M; Benito Llorens J; Wu B; Fente A; Perconte Duplain D; Horcas I; López R; Blanco J; Higuera JA; Mafnas-Valero S; Jo NH; Schmidt J; Canfield PC; Rubio-Bollinger G; Rodrigo JC; Herrera E; Guillamón I; Suderow H, Simpliﬁed feedback control system for scanning tunneling microscopy, 2021, Review Of Scientiﬁc Instruments; 92 (10) 103705


124. Merino J; López MF; Powell BJ, Unconventional superconductivity near a flat band in organic and organometallic materials, 2021, Physical Review b, 103 (9), 094577


126. Moncada-Villa E; Cuevas JC, Near-field radiative heat transfer between one-dimensional magnetophotonic crystals, 2021, Physical Review b, 103 (7), 075432


129. Mony, Jurgen; Clermont, Claudia; Petersen, Anne Ugelholdt; Moth-Poulsen, Kasper; Feist, Johannes; Borjesson, Karl, Photoisomerization Efﬁciency of a Solar Thermal Fuel in the Strong Coupling Regime, 2021, Advanced Functional Materials; 31 (2), 200737)
3. RESEARCH

130. Moreno, Daniel; Cirera, Borja; Parreiras, Sofia O.; Urgel, Jose; I.; Gimenez-Agullo, Nelson; Lauwaet, Koen; Gallego, Jose M.; Galan-Mascaros, Jose R.; Martinez, Jose I.; Ballester, Pablo; Miranda, Rodolfo; Ecija, David; Dysprosium-directed metallosupramolecular network on graphene/Ir(111), 2021, Chemical Communications, 57 (11) 1380-1383

131. Moreno-Da Silva, S; Martinez, JI; Develioglu, A; Nieto-Ortega, B; de Juan-Fernandez, L; Ruiz-Gonzalez, L; Picon, A; Oberli, S; Alonso, P; Moonshiram, D; Perez, EM; Burzuri, E; Magnetic, Mechanically Interlocked Porphyrin-Carbon Nanotubes for Quantum Computation and Spintronics, 2021, Journal Of The American Chemical Society, 143 (50) 21286-21293

132. Muller, M; Liensberger, L; Flacke, L; Huebl, H.; Kamra, A; Belzig, W; Gross, R; Weiler, M; Althammer, M.; Temperature-Dependent Spin Transport and Current-Induced Torques in Superconductor-Ferromagnet Heterostructures, 2021, Physical Review Letters, 126 (8) 087201


134. Murillo-Sanchez, Marta L.; Reitsma, Ceert; Poullain, Sonia Marggi; Fernandez-Milan, Pedro; Gonzalez-Vazquez, Jesus; de Nalda, Rebeca; Martin, Fernando; Vrakking, Marc J. J.; Kornilov, Oleg; Bañares, Luis; Femtosecond XUV- IR induced photodynamics in the methyl iodide cation, 2021, New Journal Of Physics, 23 (7), 073023

135. Naher, Masnun; Milan, David C.; Al-Owaedi, Oday A.; Planje, Inco J.; Bock, Soren; Hurtado-Gallego, Juan; Bastante, Pablo; Abd Dawood, Zahra Murtada; Rincon-Garcia, Laura; Rubio-Bollinger, Cabino, Higgins, Simon J.; Agrait, Nicolas; Lambert, Colin J.; Nichols, Richard J.; Low, Paul J.; Molecular Structure-(Thermo)electric Property Relationships in Single-Molecule Junctions and Comparisons with Single- and Multiple-Parameter Models, 2021, Journal Of The American Chemical Society, 143 (10) 3817-3829

136. Núñez A; Garcia AM; Moreno DA; Guantes R, Seasonal changes dominate long-term variability of the urban air microbiome across space and time, 2021, Environmental International, 150 (106423) 106423

137. Ota F; Abe S; Hatada K; Ueda K; Díaz-Tendero S; Martín F., Imaging intramolecular hydrogen migration with time-And momentum-resolved photoelectron diffraction, 2021, Physical Chemistry Chemical Physics, 23 (36) 20174-20182

138. Palomino-Ruiz, Lucia; Rodríguez-Gonzalez, Sandra; Fallaque, Joel G.; Marquez, Irene R.; Agrait, Nicolas; Diaz, Cristina; Leary, Edmund; Cuerva, Juan M.; Campaña, Araceli C.; Martín, Fernando; Millan, Alba; Gonzalez, M. Teresa; Single-Molecule Conductance of 1,4-Azaborine Derivatives as Models of BN-doped PAHs, 2021, Angewandte Chemie (International Ed. Print), 60 (12) 6609-6616

139. Parreiras, Sofia O.; Moreno, Daniel; Cirera, Borja; Valbuena, Miguel A.; Urgel, Jose I.; Paradinas, Markos; Panighel, Mirco; Ajejas, Fernando; Nino, Miguel A.; Gallego, Jose M.; Valdivares, Manuel; Gargiani, Pierluigi; Kuch, Wolfgang; Martinez, Jose I.; Mugarza, Aitor; Camarero, Julio; Miranda, Rodolfo; Perna, Paolo; Tuning the Magnetic Anisotropy of Lanthanides on a Metal Substrate by Metal-Organic Coordination, 2021, Small, 17 (35) e2102753

140. Paz WS; Menezes MG; Batista NN; Sanchez-Santolino G; Velicky M; Varela M; Capaz RB; Palacios JJ, Franchekite as an Exfoliable Naturally Occurring Topological Insulator, 2021, Nano Letters, 21 (18) 7781-7788

141. Perez-Dones D; Ledesma-Terron M; Miguez DG, Quantitative approaches to study retinal neurogenesis, 2021, Biomedicines, 9 (9), 1222

142. Pisarra M; Díaz C; Martín F, Theoretical study of structural and electronic properties of 2H-phase transition metal dichalcogenides, 2021, Physical Review b, 103 (19), 195416

143. Pscherer, A; Meierhofer, M; Wang, DQ; Kelkar, H; Martin-Cano, D; Utkal, T; Gotzinger, S; Sandohgdarv, V; Single-Molecule Vacuum Rabi Splitting: Four-Wave Mixing and Optical Switching at the Single-Photon Level, 2021, Physical Review Letters, 127 (13) 133603

144. Ramirez Gonzalez, Juan Pedro; Cinacchi, Giorgio; Phase behavior of hard circular arcs, 2021, Physical Review e, 104 (5) 054604

145. Ramos, M. A.; Gomez-Camacho, J.; Focus point on small and medium particle accelerator facilities in Europe, 2021, European Physical Journal Plus, 136 (12), 1219

146. Rassekh, Maedeh; Santos, Hernan; Latge, Andrea; Chico, Leonor; Shayesteh, Saber Farjami; Palacios, Juan Jose; Charge-spin interconversion in graphene-based systems from density functional theory, 2021, Physical Review b, 104 (23), 235429

147. Robredo I; Rao P; De Juan F; Bergara A; Mañes NI; Cortijo A; Vergniory MG; Bradlyn B, Cubic Hall viscosity in three-dimensional topological semimetals, 2021, Physical Review Research, 3 (3), L032068

148. Samuel; Baldovi, Jose J.; Fente, Anton; Herrera, Edwin; Mompean, Federico; Garcia-Hernandez, Mar; Rubio, Angel; Coronado, Eugenio; Guillamon, Isabel; Yeyati, Alfredo Levy; Suderow, Hermann, Coherent coupling between vortex bound states and magnetic impurities in 2D layered superconductors, 2021, Nature Communications, 12 (1) 4668

149. Samuel; Baldovi, Jose J.; Fente, Anton; Herrera, Edwin; Mompean, Federico; Garcia-Hernandez, Mar; Rubio, Angel; Coronado, Eugenio; Guillamon, Isabel; Yeyati, Alfredo Levy; Suderow, Hermann, Coherent coupling between vortex bound states and magnetic impurities in 2D layered superconductors, 2021, Nature Communications, 12 (1) 4668
3. RESEARCH

150. Rocci, Mirko; Suri, Dhavala; Kamra, Akashdeep; Vilela, Gilvania; Takamura, Yota; Nemes, Norbert M.; Martínez, Jose L.; Hernandez, Mar Garcia; Moodera, Jagadeesh S.; Large Enhancement of Critical Current in Superconducting Devices by Gate Voltage, 2021, *Nano Letters*, 21 (1) 216-221


152. Romero-Muñiz C; Ortega M; Vilhena JG; Diez-Pérez I; Pérez R; Cuevas JC; Zotti LA, Can Electron Transport through a Blue-Copper Azurin Be Coherent? An Ab Initio Study, 2021, *Journal Of Physical Chemistry c*, 125 (3) 1693-1702


154. Rousseau P; González-Vázquez J; PiekarSKI DG; Kopyra J; Domaracka A; Alcami M; Adoui L; Huber BA; Díaz-Tendero S; Martin F, Timing of charge migration in betaine by impact of fast atomic ions, 2021, *Science Advances*, 7 (40) eabg9080

155. Rozas E, Yulin A; BeieRlein J; Klembt S; Höfling S; Egorov O; Peschel U; Shelykh IA; Gundin M; Robles-López I; Martin MD; Viña L, Effects of the Linear Polarization of Polaron Condensates in Their Propagation in Codirectional Couplers, 2021, *Acs Photonics*, 8 (8) 2489-2497

156. Salagre E; Quilez S; de Benito P; Jaafar M; van der Meulen HP; Vasco E; Cid R; Fuller EJ; Tallin AA; Segovia P; Michel EG; Popol C, A multi-technique approach to understanding delithiation damage in LiCoO2, 2021, *Journal Of Physical Chemistry c*, 125 (3) 1693-1702

157. Salvati Manni L; Duss M; Assenza S; Boyd BJ; Landau EM; Fong WK, Enzymatic hydrolysis of monoacylglycerols and their cyclopropanated derivatives: Molecular structure and nanostructure determine the rate of digestion, 2021, *Journal Of Colloid And Interface Science*, 588, 767-775


161. Sánchez-Grande A; Urgel JI; Veis L; Edalatmanesh S; Santos J; Lazuwaet K; Mutombo P; Gallego JM; Brabec J; Beran P; Nachtigallová D; Miranda R; Martin N; Jelinek P; Écija D, Selective isomer emission via funneling of exciton polaritons, 2021, *Science Advances*, 7 (44) eabj0997


163. Schmid, Maximilian; Wassy, Daniel; Herrmann, Mathias; Teresa Gonzalez, M.; Agraeit, Nicolas; Zotti, Linda A.; Esser, Birgit; Leary, Edmund, Single-molecule conductance of dibenzopentalenes: antiaromaticity and quantum interference, 2021, *Chemical Communications*, 57 (6) 745-748


165. Seitz M; Meléndez M; Alcázar-Canó N; Congreve DN; Delgado-Buscalioni P; Prins F, Mapping the Trap-State Landscape in 2D Metal-Halide Perovskites Using Transient Photoluminescence Microscopy, 2021, *Advanced Optical Materials*, 9, 2001875

166. Skogvoll, IC; Lidal, J; Danon, J; Kamra, A, Tunable Anisotropic Quantum Rabi Model via a Magnon-Spin-Qubit Ensemble, 2021, *Physical Review Applied*, 16 (6), 064008

167. Sopena A; Bachau H; Catoire F; Martin F; Palacios A, Selecting two-photon sequential ionization pathways in H2through harmonic filtering, 2021, *Physical Chemistry Chemical Physics*, 23 (39) 22395-22403

168. Sopena, Arturo; Palacios, Alicia; Catoire, Fabrice; Bachau, Henri; Martin, Fernando, Angle-dependent interferences in electron emission accompanying stimulated Compton scattering from molecules, 2021, *Communications Physics*, 4 (1), 253

3. RESEARCH


175. Tinao, Berta; Magrinya, Paula; Aragones, Juan L.; Arriaga, Laura R., Double-emulsion templated lipid vesicles as minimal cell mimics for assembling tissue-like vesicular materials, 2021, Mrs Communications, 11 (1) 18-30.

176. Torres, Inigo; Alcaraz, Marta; Sanchis-Gual, Roger; Carrasco, Jose A.; Fickert, Michael; Asssebahn, Mhamed; Gibaja, Carlos; Dolle, Christian; Aldave, Diego A.; Gomez-Navarro, Cristina; Salagre, Elena; Garcia Michiel, Enrique; Varela, Maria; Gomez-Herrero, Julio; Abellan, Gonzalo; Zamora, Felix; Continuous-Flow Synthesis of High-Quality Few-Layer Antimonene Hexagons, 2021, Advanced Functional Materials, 31, 2101616.

177. Torres-Sanchez, Jose; Feist, Johannes, Molecular photodissociation enabled by ultrafast plasmon decay, 2021, Journal Of Chemical Physics, 154 (1), 014303.

178. Troncoso, Roberto E.; Lund, Mike A.; Brataas, Arne; Kamra, Akashdeep, Cross-sublattice spin pumping and magnon level attraction in van der Waals antiferromagnets, 2021, Physical Review b, 103 (14), 1444422.

179. Troyano J; Zamora F; Delgado S, Copper(ii)-iodide cluster structures as functional and processable platform materials, 2021, Chemical Society Reviews, 50 (7) 4606-4628.

180. Vasco, Enrique; Ramirez-Peral, Maria J.; Jacas-Rodriguez, Alfredo; Polop, Celia; Kinetics of intrinsic stress in nanocrystalline films, 2021, Scripta Materialia, 202, 114015.

181. Vasco, Enrique; Ramirez-Peral, Maria J.; Michel, Enrique G.; Polop, Celia; Understanding the intrinsic compression in polycrystalline films through a mean-field atomistic model, 2021, Journal Of Physics D-Applied Physics, 54 (6), 065302.

182. Vegas, Veronica G.; Latorre, Ana; Luisa Marcos, Maria; Gomez-Garcia, Carlos J.; Castillo, Oscar; Zamora, Felix; Gomez, Jacobo; Martinez-Costas, Jose; Vazquez Lopez, Miguel; Somoza, Alvaro; Amo-Ochoa, Pilar, Rational Design of Copper(ii)-Uracil Nanoprocessed Coordination Polymers to Improve Their Cytotoxic Activity in Biological Media, 2021,ACS Applied Materials & Interfaces, 13 (31), 36948-36957.


185. Villanueva M; Sanchez EH; Ollerors-Rodriguez P; Pedraz P; Pernna P; Normie PS; De Toro JA; Camarero J; Navio C; Bollero A, Effective control of the magnetic anisotropy in ferromagnetic MnBi micro-islands, 2021, Journal Of Alloys And Compounds, 852, 156731.

186. Villas A; Klee RL; Morra RS; Huang H; Ast CR; Castelli G; Belzig W; Cuevas JC, Tunneling processes between Yu-Shiba-Rusinov bound states, 2021, Physical Review b, 103 (15), 155407.


188. Woods CR; Ares P; Nevison-Andrews H; Holwill MJ; Fabregas R; Guinea F; Geim AK; Novoselov KS; Walet NR; Fumagalli L, Charge-polarized interfacial superlattices in marginally twisted hexagonal boron nitride, 2021, Nature Communications, 12 (1) 347.

189. Ximendes, Erving; Marc, Riccardo; Shen, Yingli; Ruiz, Diego; Gomez-Cerezo, Diego; Rodriguez-Sevilla, Paloma; Lifante, Jose; Viveros-Mendez, Perla X.; Camez, Francisco; Garcia-Soriano, David; Salas, Corka; Zalbideoa, Carmen; Espinosa, Ana; Benayas, Antonio; Garcia-Carrillo, Nuria; Cusso, Lorena; Desco, Manuel; Teran, Francisco J.; Juarez, Beatriz H.; Jaque, Daniel; Infrared-Emitting Multimodal Nanostructures for Controlled In Vivo Magnetic Hyperthermia, 2021, Advanced Materials, 33, 2100077.

190. Xu, WJ; Leary, E; Sangtarash, S; Jirasek, M; Gonzalez, MT; Christensen, KE; Vicente, LA; Agrait, N; Higgins, S3; Nicholls, RJ; Lambert, CJ; Anderson, HL, Controlled In Vivo Magnetic Hyperthermia, 2021, Physical Review Applied, 16 (2), 024047.


192. Zahl, Percy; Yakutovich, Aliaksandr; Vencia, Emiliano; Carracedo-Cosme, Jaime; Romero-Muniz, Carlos; Pou, Pablo; Sadowski, Jerzy T.; Hybertsen, Mark S.; Perez, Ruben, Hydrogen bonded trimers acid networks on Cu(111) reveal how basic chemical properties are imprinted in HR-AFM images, 2021, Nanoscale, 13 (44) 18473-18482.

193. Zambudio, Aitor; Gnecco, Enrico; Colchero, Jaime; Perez, Ruben; Gomez-Herrero, Julio; Gomez-Navarro, Cristina, Fine defect engineering of graphene friction, 2021, Carbon, 182, 735-741.
3. RESEARCH


195. Zettergren H; Domaracka A; Schlathölter T; Bolognesi P; Díaz-Tendero S; Labuda M; Tosić S; Maclot S; Johnsson P; Steber A; Tikhonov D; Castrovilli MC; Avaldi L; Bari S; Milosavljević AR; Palacios A; Faraji S; Piekarski DG; Rousseau P; Ascenzi D; Romanzin C; Erdmann E; Alcamí M; Kopyra J; Limão-Vieira P; Kotićek J; Fedor J; Albertini S; Catchell M; Cederquist H; Schmidt HT; Gruber E; Andersen LH; Heber O; Toker Y; Hansen K; Noble JA; Jouvet C; Kjær C; Nielsen SB, Roadmap on dynamics of molecules and clusters in the gas phase, 2021, *European Physical Journal d*, 75 (5), 152


3. RESEARCH

National and International congresses: invited lectures

1. “Magnon-Polarons in different flavors: (anti)ferromagnetic to topological”. A. Kamra, Spring Meeting of the German Physical Society (DPG), virtual event, 27 September - 1 October 2021 https://skm21.dpg-tagungen.de/


6. Quantum Nanophotonics Torun Poland. Diego Martin Cano

7. NANOQUICO Kickoff meeting Diego Martín Cano


11. “Proximity effects in epitaxial ferromagnet-superconductor hybrids: towards superconducting spintronics with spin-orbit interaction”. César González-Ruano, Diego Caso, Lina G. Johnsen, Coriolan Tiusan, Michel Hehn, Niladri Banerjee, Jacob Linder, Farkhad G. Aliev, Nanoengineered Superconductors – NES21 Young investigator’s online workshop, online conference, University of Vienna, 10-12 May 2021


13. “Nanoscale control of new properties added to graphene: Superconductivity, Magnetism and Electronic Gap” I. Brihuega EWEG2D 21, Online Lectures, 21st September 2021


16. “Plasmon-assisted coherent optical sources at the nanoscale” L.E. Bausá International Workshop Nanomaterials for Photoenergy Conversion - Light Generation and Sensing, online conference, NIMS, Tsukuba, Japón 24 November 2021


3. RESEARCH


22. “Ultrafast molecular polaritonics in lossy plasmonic & hybrid cavities”, Johannes Feist CEN (Conferencia Española de Nanofotónica), online conference, Vigo, Spain, 21 September 2021


31. “Dynamic acousto-optoelectric manipulation of quantum light states in GaN/InGaN nanowire quantum dots” S. Lazić, XXI Semana del IICO: Fronteras de la Óptica (XXII IICO WEEK), San Luis Potosí (Mexico), September 2021


33. “Scanning tunneling spectroscopy of bound states in superconductors”, Hermann Suderow, 27th May to 4th June, https://www.iltk.ac.in/vortex2021/


37. “Engineering single and N-photon emission from frequency resolved correlations” E. del Valle, 2021 Workshop on Entanglement Assisted Communication Networks (EACN), online, Munich (Alemania), 10-12 March

38. “Engineering single and N-photon emission from frequency resolved correlations” E. del Valle, Non-Hermitian Physics conference organised by ICTS-TIFR, Bangalore (online). Bangalore (India), 22-26 March


3. RESEARCH

Organization of congresses

1. Symposium on Crystalline Materials for electrical, optical and medical applications at the International Conference on Advanced Ceramics and Composites, ICACC 2021. (USA, 8-12 de febrero de 2021, participación online). Co-organized by Luisa Bausá

2. Symposium on Crystalline Materials for Electrical, Optical and Medical Applications at the 14th Pacific Rim Conference on Ceramic and Glass Technology (PACRIM 14) (Vancouver, December 2021, online) Co-organized by Luisa Bausá

3. PATAS 2021 “Processes in Atmospheric and Astrochemical Environments” Conference associated to the MD-GAS COST Action (CA 18212) Virtual meeting, January 18th - 21st 2021. Sergio Díaz Tendero Co-chair

4. School on New Computational Methods for Attosecond Molecular Processes. The objective of this school is disseminating simulation methodologies and codes developed in the research group, and other collaborating groups, providing users with basic training necessary for their use, Zaragoza (ES), 26-29 March 2021. https://www.cecarn.org/workshop-details/1058 Co-organized by Fernando Martín y Alicia Palacios


11. IFIMAC+ICMM Joint Seminar Series IFIMAC+ICMM Joint Seminar Series focuses on cutting-edge research on condensed matter physics, bringing speakers from all over the world to our Cantoblanco Campus. Laura R. Arriaga, Iván Brihuega, Antonio Fernández-Domínguez, Isabel Guillamón.

12. INC, Young Researchers Meeting 2021 The Young Researchers Meeting is dedicated to those PhD students and young doctors whose research work has been or is being performed at the Institute Nicolás Cabrera. Iván Brihuega.
3. RESEARCH

Sponsorships

1. Virtual conference SPPM2021 “Spintronics, Photonics, Phononics, Magneto-Optics” (10 de junio 2021), organizada por Fundacion Phantoms/IFIMAC/NTC/Universitat Rovira I Virgila/ICFO
http://confstreaming.archivephantomsnet.net/SPPM2021/index.php

https://gefes-rsef.org/convocatoria-premio-tesis-gefes-9a-edicion/

PATENT applications

1. DISPOSITIVO CON UNIÓN TÚNEL MAGNÉTICA HÍBRIDA
F.G. Aliev, C. Gonzalez-Ruano
Application number: N. P202130765
Date of application: 05.08.2021
Universidad Autónoma de Madrid (N/REF.-P21329ES00)

2. MÉTODO DE DETERMINACIÓN DE LA CONDUCTANCIA TÉRMICA
Nicolás Agrait
Application number: P202130798
Date of application: 19-08-2021
Universidad Autónoma de Madrid

3. SISTEMA PARA ANALIZAR CUANTITATIVAMENTE IMÁGENES DE MUESTRAS BIOLÓGICAS
Mario Ledesma Terron; Diego Perez Dones; David Míguez Gómez
Application number: P202130485
Date of application: 24/05/2021
Universidad Autónoma de Madrid

Awards

Francisco José García Vidal, Blas Cabrera National Prize 2021

Francisco José García Vidal, Full Professor at the Theoretical Condensed Matter Physics Department of the Universidad Autónoma de Madrid, and IFIMAC member, has been awarded the Blas Cabrera national prize in Physical, materials and earth Sciences, in its 2021 edition.

F. J. García-Vidal started this activity during his postdoctoral stay at Imperial College of London and continued when he returned to Universidad Autónoma de Madrid at the end of 1996. During its scientific career has published 274 peer-reviewed articles. His citation record stands at more than 26,000 and the H-index is 77(WoS). The average citation per article is more than 96, and has been included in Clarivate compilation of most influential authors. Since 2004, Prof. Garcia Vidal has supervised 14 PhD theses.

This prize recognize the exceptionality and impact of his research career and the relevance of his contributions in the field of Nanophotonics, Plasmonics and Metamaterial. The jury highlighted the international recognition of his career, his leadership qualities and his training work.

The Blas Cabrera National Award is one of the 2021 National Research Awards, granted by the Ministry of Science and Innovation. These awards are the most important recognition in Spain in the field of scientific research. Their objective is to recognize the merit of Spanish researchers who are developing outstanding professional work of international relevance in their respective research areas and scientific fields, and exceptionally contributing to the advancement of science.
3. RESEARCH

Rodolfo Miranda Soriano Miguel Catalán Awards 2021

Prof. Rodolfo Miranda Soriano has a PhD in Physical Sciences, is a professor in the Department of Condensed Matter Physics at the Autonomous University of Madrid, director of the IMDEA Nanoscience Foundation and IFIMAC’s member. His research has contributed decisively to the development of Nanotechnology in Spain, creating a school in our country in the field of Surface Physics by introducing for his study Scanning Tunnel Microscopy – STM, Magnetism in low dimensional systems or Surface Physics-Chemistry in Ultra High Vacuum.

Prof. Rodolfo Miranda Soriano has received Miguel Catalán 2021 Award of the Comunidad de Madrid – CAM for his scientific contributions.

Miriam Jaafar, IFIMAC member, awarded the CEMAG First Prize for Emerging Research in Magnetism

Miriam Jaafar, associate professor at the Department of Condensed Matter Physics and IFIMAC researcher have been awarded the First Prize for Emerging Research in Magnetism granted by the Spanish club of magnetism (CEMAG).

The jury has decided to grant her this recognition for her outstanding career in scientific research and technological development, as well as for its wide impact and its future projection.

Ana E. Platero Awarded the “Young Researcher-group Leader” Prize of RSEQ

Ana E. Platero received one of the prizes of RSEQ 2021, in the category Young researcher “Group leader”. She obtained her MSc in Crystallography in 2009 and her PhD in Chemistry in 2011 from UAM. She developed her PhD work at Instituto de Ciencia de Materiales de Madrid (ICMM-CSIC), under supervision of Prof. Gutiérrez-Pubela and Dr. Snejko. She spent three months at Institute Lavoisier de Versailles (CNRS) with Dr. Horcajada in France and one month in Università degli Studi di Milano with Prof. Proserpio in Italy.

In 2012 she joined the Stockholm University (Sweden) as postdoctoral researcher within the Berzelii Center EXSELENT on Porous Materials.

In 2014, she joined the Argonne National Laboratory (USA) as Beatriz de Piñós fellow. In November 2017, she was awarded with an InterTalentum MSCA-grant to join the UAM. In 2018, she was awarded with a TALENT-CM Modality-1 grant (310,000 EUR) to start her independent career. Since March 2019, she is a member of the Condensed Matter Physics Center (IFIMAC). Ana is recipient of a prestigious Ramón y Cajal Fellowship since November 2020.

Francisco José García-Vidal Included In Clarivate 2021 Compilation Of Most Influential Authors

Each year, Clarivate™ identifies the world’s most influential researchers - the select few who have been most frequently cited by their peers over the last decade. In 2021, fewer than 6,700, or about 0.1%, of the world’s researchers, in 21 research fields and across multiple fields, have earned this exclusive distinction.

In the list of Physics, in which Prof. García-Vidal has been selected for his exceptional research influence, demonstrated by the production of multiple highly-cited papers that rank in the top 1% by citations for field and year in the Web of Science™. [See the list]
4. TRAINING AND OUTREACH ACTIVITIES
4. TRAINING AND OUTREACH ACTIVITIES

MASTER AND DOCTORATE PROGRAMMES

IFIMAC members are actively involved in the Master Programmes:
- Máster Universitario en Física de la Materia Condensada y de los Sistemas Biológicos
- Máster Universitario en Química Teórica y Modelización Computacional
- Máster Universitario en Materiales Avanzados, Nanotecnología y Fotónica
- Máster Universitario en Química Aplicada

And in the Doctorate programmes:
- Física de la Materia Condensada, Nanociencia y Biofísica
- Programa de Doctorado en Materiales Avanzados y Nanotecnología
- Química Teórica y Modelización Computacional
- Química Aplicada

IFIMAC’S MASTER FELLOWSHIPS

IFIMAC has offered 12 grants for the best students starting the Masters of Condensed Matter Physics within UAM.

2020/2021 course: Six Master grants awarded to the following students:
1.- de Pedro Embid, Ismael (Master en Materiales Avanzados, Nanotecnología y Fotónica)
   Tutor TFM: Snezana Lazic
2.- Díaz Sánchez, Jesús (Master en Física de la Materia Condensada y los Sistemas Biológicos (NANOFISICA))
   Tutor TFM: Celia Polop, Enrique García Michel
3.- Fernández Martínez, Javier (Master en Materiales Avanzados, Nanotecnología y Fotónica)
   Tutor TFM: Luisa Bausá
4.- Matute Fernández-Cañadas, Francisco Jesús (Master en Física de la Materia Condensada y los Sistemas Biológicos (NANOFISICA))
   Tutor TFM: Alfredo Levy
5.- Murillo Vidal, María (Master en Materiales Avanzados, Nanotecnología y Fotónica)
   Tutor TFM: Félix Zamora
6.- Vega Martín, Jorge (Master en Física de la Materia Condensada y los Sistemas Biológicos (NANOFISICA))
   Tutor TFM: Enrique Velasco

2021/2022 course: five Master grants awarded:
1.- Martínez Martínez, Pablo (Máster en Física de la Materia Condensada y de los Sistemas Biológicos BIOFÍSICA)
   Director TFM: David Miguez
2.- Ocio Moliner, Mikel (Máster en Física de la Materia Condensada y de los Sistemas Biológicos BIOFÍSICA)
   Director TFM: David Miguez
3.- Gonzalez Lastre, Manuel Eduardo (Master en Física de la Materia Condensada y los Sistemas Biológicos (BIOFISICA))
   Director TFM: Raúl Guantes
4.- Sagasta Beltran de Guevara, Ander (Master en Química Teórica y Modelización Computacional)
   Director TFM: Fernando Martín
5.- Osuna Bris, Eva (Master en Física de la Materia Condensada y los Sistemas Biológicos (NANOFISICA))
   Director TFM: Cristina Gómez-Navarro González.
4. TRAINING AND OUTREACH ACTIVITIES

RESEARCH AWARDS FOR PHYSICS STUDENTS

The Condensed Matter Physics Center provides two of the six awards called by The Nicolas Cabrera Institute. The candidates awarded by IFIMAC in the 2021 edition are:
- Arranz Jiménez, Marcos
- de la Peña Ruiz, Sebastián


OUTREACH

- Dissemination talk, “Ecuaciones de Maxwell: Nanofotónica y óptica cuántica”, Jornadas de divulgación de investigación del FTMC. **Diego Martín Cano.**
- Invited talk “¿Qué hace un físico en un laboratorio un viernes por la tarde?” at the Pint of Science Festival, On-line, 17th May 2021. **Iván Brihuega.**
- Organization of interviews to young researchers, https://nanocohybri.eu/category/meet-some-of-us/” **H. Suderow.**
- Managing the RealScientists Nano (@RealSci_Nano) account for a week in July (Jul 12 - Jul 18), which included also a podcast series: http://thesciencetalk.com/2021/07/22/ferry-prins/ **F. Prins.**
- Dissemination talk “Dispositivos de estado sólido para computación cuántica” (https://gefes-rsef.org/universo-gefes-dispositivos-de-estado-solido-para-computacion-cuantica-eduardo-lee-21-de-abril-de-2021/) in a seminar series organized by CEFES https://gefes-rsef.org/universogefes/ that is directed to undergraduate students in Physics. The idea is to attract them to Condensed Matter. **Eduardo Lee.**
- Course “AI for Scientists Bootcamp 2021”, of introduction to the application of artificial intelligence techniques in scientific research. Fundación Universidad Autónoma de Madrid. 14-24 June, 2021. **Jorge Bravo.**
- International Day of Women and Girls in Science: The Condensed Matter Physics Center joined the celebration of the International Day of Women and Girls in Science through a series of talks in different schools and secondary schools, given by IFIMAC members.
- Celia Gonzalez participated in the initiative #100tífiques – https://100tífiques.cat/, organized by a consortium of research institutes. She gave talk at Col·legi Sagrada Familia Sant Andreu de Barcelona on February 11th.
- Celia Gonzalez “Acercaendo la ciencia al instituto”, IES Cruz Santa de Tenerife, February 9th, and “La ciencia también es cosa nuestra”, IES Eulogio Florentino Sanz, Arevalo (Avila), February 16th.
- Marta Fernández-Lomana “Física de bajas temperaturas [Superconductores]” Colegio Mirasol (Fuencarral) for the student of 2nd grade of bachillerato category in sciences, February 23rd.
- Cristina Gómez-Navarro “Mama quiero ser científica… ¿y ahora qué?”, BBVA “Move for equality” working group, February 10th.
- Miriam Jaafar Ruiz-Catellanos “Conociendo a una científica del nanomundo” for the students from 1st and 2nd grade of Bachillerato category, Colegio Esclavas del Sagrado Corazón de Jesús (Madrid), March, 3rd.
- Outreach videos in collaboration with Quantumfracture:
Since 2017, we have kept a fruitful collaboration with the YouTube channel QuantumFracture and QuantumFractureEN (https://www.youtube.com/user/QuantumFracture), devoted to scientific outreach in Spanish and English. Since then, we have generated 6 videos that have received 3 million views. The first video, “La física de lo complejo”, provided a general perspective on the field of Condensed Matter Physics, as well as the research performed at IFIMAC. A team of 7 IFIMAC researchers were involved in its realization. The following videos dealt with different topics of intense research activity worldwide, in which IFIMAC researchers play an important role. They were coordinated by 1-2 IFIMAC researchers each, who offered their particular vision on the topic in question. The titles of the videos were:

- “El cristal que se alimenta de entropía”
- “Cómo el microscopio más potente del mundo acabó en España”
- “El quinto estado de la materia: superfluidos y superconductores”
- “El material cuántico que se enfria al sol”
- “Ya, en serio, ¿qué es la luz?”

These videos can be also found (both in Spanish and in English) in our webpage and YouTube channel: https://www.ifimac.uam.es/outreach/, https://www.youtube.com/c/ifimac. Finally, very recently, we have been awarded a FECYT grant entitled “La física de la materia condensada sale al encuentro”, within the “Convocatoria de Ayudas para el foment de la cultura científica, tecnológica y de la innovación”. This funding will be employed to support the generation of new outreach audiovisual materials in the near future.
5. HUMAN RESOURCES
5. HUMAN RESOURCES

NEW RESEARCHERS AFFILIATED DURING 2021

YOUNG SCIENTISTS CALL:

Saúl Vélez:
Saúl Vélez pursued his master's (2008) and PhD studies (2012) at the University of Barcelona under the supervision of Prof. Tejada, receiving in both the Extraordinary award for his results on quantum magnetism. In April 2013, Saúl joined the nanodevices group at CIC nanoGUNE to work with Prof. Hueso with the purpose to transition towards spintronics and nanodevices, areas in which he is now a reference. From September 2017 to May 2021, Saúl also hold a senior postdoctoral position in the groups of Prof. Gambardella and Prof. Fiebig at ETH Zürich.

With interest in spintronics, magnetotransport, and optoelectronics phenomena, his recent research focused on exploring magnetoresistive effects and magnetic dynamic phenomena in metal/oxide heterostructure devices. Among his discoveries, he has demonstrated that interfacial interactions and spin currents can be used for probing and manipulating the magnetic moments of electrically insulating materials, opening a new research field with profound fundamental and technological impacts. His contributions to polaritronics and optoelectronics in low dimensional materials and heterostructures are also multiple.

Saúl joined IFIMAC in June 2021 as Junior Group Leader and found the Spintronics and Nanodevices group. In his lab, he aims at exploring non-conventional materials and new device concepts for spintronic applications.

Akashdeep Kamra:

Akash obtained his master degree in Electrical Engineering from the Indian Institute of Technology Kanpur and a PhD in Physics from the Delft University of Technology, Netherlands. Then he worked as an Alexander von Humboldt postdoc fellow at the University of Konstanz, Germany before joining Norwegian University of Science and Technology as an independent researcher. His primary interest lies in the theory of spin-dependent phenomena in magnetic insulators, (super)conductors and their hybrids. Akash especially enjoys working on research problems that exploit knowledge from different sub-fields of Physics. While being a “theorist”, he has performed several experiments first hand in the past and continues to collaborate closely with experimentalists. When not enjoying Physics, Akash likes to go hiking and exploring new places.

Pablo Ares:

Pablo Ares research interests have a marked multidisciplinary character within the framework of nanoscience and nanotechnology. They are focused on the use and development of scanning probe microscopies, mainly atomic force microscopy (AFM), for the study of low-dimensional systems, with particular attention to 2D materials.

He received his B.S. and Master degree in Physics at the Universidad Complutense de Madrid (Spain) in 2003. He then joined the company Nanotec Electrónica S.L. (devoted to the design, development and commercialization of scanning probe microscopes) as an Application Scientist. In 2014, he moved to the Universidad Autónoma de Madrid (Spain), where in 2017 he obtained his Ph.D. in Condensed Matter Physics and Nanotechnology under the supervision of Prof. Julio Gómez-Herrero and Dr. Adriana Gil. His thesis presented a double scientific-technical aspect, with advances on the AFM technique itself, as well as with more fundamental science studies, such as the isolation and study of antimonene, pioneering the worldwide experimental research on this novel 2D material.

After this, he joined the Graphene Group at the Condensed Matter Physics department of the University of Manchester (UK) as a Research Associate working with Prof. Konstantin S. Novoselov and Dr. Laura Fumagalli. Once there he gained a Marie Skłodowska-Curie Individual Fellowship in 2018. His research during this time focused on basic properties of 2D materials and their combination in van der Waals heterostructures, and their use for the study of electrical properties of molecules under extreme confinement.
New members proposed by IFIMAC Researchers:

**Pablo Burset (Talent grant)**

Pablo Burset is a research fellow at the Autonomous University of Madrid within the “Atracción de Talento” Program of the Community of Madrid. Pablo is a theoretical physicist working on the fields of electronic transport in mesoscopic systems, superconductivity, and their applications for developing quantum technologies. He specializes in novel materials such as quantum dots, graphene, and topological insulators, and their interplay with superconductivity and magnetism in hybrid junctions. In 2012, Pablo obtained his PhD in Condensed Matter Physics at the Autonomous University of Madrid, under the supervision of Prof. Levy Yeyati. His thesis analyzed the superconducting proximity effect in carbon-based materials like graphene and carbon nanotubes. He next became a postdoctoral researcher at Würzburg University in the group of Prof. Trauzettel. In 2015, the Japan Society for the Promotion of Science awarded him with a postdoctoral fellowship in Nagoya University, to work in the group of Prof. Tanaka. In 2017, he became a Marie Skłodowska-Curie fellow at Aalto University in the group of Prof. Flindt. During his postdoctoral career, Pablo has developed novel theoretical methods to detect unconventional superconductivity in topological materials and to explore the symmetries of proximity-induced Cooper pairs. His research focuses on designing applications of superconducting hybrid junctions as sources of quantum entanglement or as platforms for engineering exotic effects like spin-polarised supercurrents or topological superconductivity.

**Enrique Burzurí (RyC)**

Enrique Burzurí obtained his BSc (2006) and MSc (2007) in Physics from the Universidad de Zaragoza in Spain. He obtained his PhD diploma in 2011 at the Instituto de Ciencia de Materiales de Aragón (ICMA, CSIC) working on quantum phenomena in magnetic molecular crystals. Thereafter he moved to Delft University of Technology (The Netherlands) to join the van der Zant Lab as a VENI fellow. There, he worked in the field of single-molecule electronics and spintronics, and he unveiled the subtle interaction between charge and the complex magnetic properties of molecules. In January 2017 he joined IMDEA Nanoscience in Madrid as postdoc first and soon after as Assistant Research Prof. During this period, he was awarded with a Marie Skłodowska-Curie fellowship and an Atracción del Talento Investigador fellowship to work on low-dimensional magnetic heterostructures and their potential applications on spintronics and quantum information. In 2021, Enrique joined the Ifimac as Ramón y Cajal fellow.

**IFIMAC MEMBERS**

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<td>AGRAÏT DE LA PUENTE, Nicolás</td>
<td>Full Professor</td>
<td>FMC</td>
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<td>ALIEV KAZANSKI, Farkhad</td>
<td>Full Professor</td>
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<td>ÁLVAREZ ALONSO, Jesús</td>
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<td>ÁLVAREZ CARRERA, José Vicente</td>
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<td>FPSM, NP</td>
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<td>ARAGONÉS GÓMEZ, Juan Luis</td>
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<td>Ares García, Pablo</td>
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## 5. HUMAN RESOURCES

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### Acronyms

**Departments**
- FMC: Física de la Materia Condensada
- FTMC: Física Teórica de la Materia Condensada
- FM: Física de Materiales
- QI: Química Inorgánica
- Q: Química

**Research Lines**
- NP: Nanophysics
- AM: Advanced Materials
- SCMB: Soft Condensed Matter and Biophysics
- FPSM: First-principles Simulations and Modeling
- NQO: Nano and Quantum Optics
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