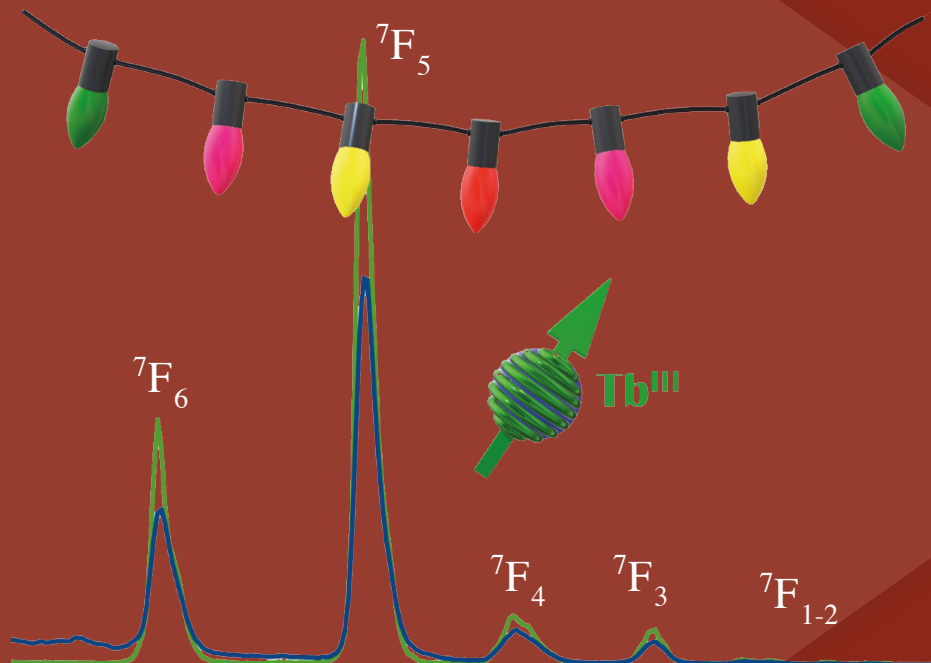


2022 Activity Report





Editorial Board and Scientific Management: IN²UB

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Cover image

Description: A new family of multidimensional lanthanide-derived systems using dppeO₂ as a ligand yields in systems displaying luminescence and field-induced slow relaxation of the magnetization, a new path to achieve multifunctionality. A work developed with the support of IN²UB (Project ART_2021_3). Kindly provided by Dr. Arnald Grabulosa and Dr. Júlia Mayans.



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2022 Activity Report



Institut de Nanociència
i Nanotecnologia



UNIVERSITAT DE
BARCELONA

Foreword

Dr. Guillem Aromí Bedmar
IN²UB Director



Dear colleagues and friends,

It is a pleasure to present the Activity Report of IN²UB, reflecting on the contribution of our organization to enhance the scientific and educational excellence of the University of Barcelona, as well as its commitment to our society, during the year 2022.

The year revised has been especial because it has witnessed the renewal of the Steering Committee following an election incorporating the regulations recently approved by the UB Council. I use this opportunity to thank the members that have ended their term after several years of dedication, and welcome the new members, who with their talent and renewed

motivation are already contributing to shape the IN²UB of the future. I also thank the new Committee for confirming their trust in my person to lead the Institute for a second term. I hope that this new period will serve to increase the positive impact of the organization in both directions; towards improving the status of its members and towards the exterior.

The year 2022 has witnessed again a net improvement of the IN²UB regarding the most relevant indicators of inputs and outputs. Being one of the largest Institutes of UB, IN²UB is among these that has experienced the biggest improvements in relative terms and the most growing in absolute terms with regard to production and attraction of funds. This is despite

the fact that the organization has not enjoyed yet the label of excellence by the AEI and its associated grant, Maria de Maeztu, which continues to be a major goal.

With independence that the above long sought recognition has not yet arrived, the activities and data listed in this report are a satisfying demonstration of the dedication and passion of the IN²UB community for top science, for commitment to teaching and training and for a very active engagement with outreach to the general public.

I hope you enjoy scanning through this display of healthy dedication to serve UB and the society who sustains us.

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1. About in²ub

1.1. PRESENTATION

The Institute of Nanoscience and Nanotechnology of the University of Barcelona (IN²UB) was created in 2006. Its main goal is to coordinate and enhance multidisciplinary research among research groups from the Faculties of Chemistry, Physics, Pharmacy and Food Sciences, Biology, Earth Sciences and Medicine and Health Sciences that work on the different phenomena occurring at the nanoscale. This collaborative spirit aims at integrating both, internally and internationally, interdisciplinary activities which integrate equally, basic and applied research.

The IN²UB wants to contribute to the progress of science, while spurring, at the same time, industrial excellence. In this sense, several spin-off companies are now led by IN²UB researchers. Finally, all members of the IN²UB are strongly involved in teaching endeavours, the most important programs being the Master of Nanoscience and Nanotechnology and the Doctoral Program of Nanoscience. Research and Education serve us to convey our strong commitment with society.

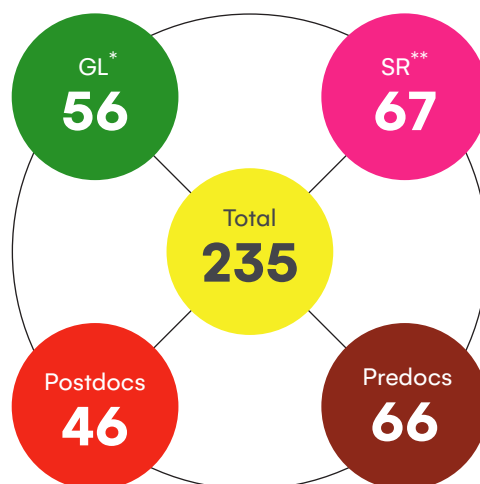
IN²UB gathers around 200 researchers (including permanent, postdoctoral researchers and Predoctoral Researchers). They are organized in research groups distributed among seven major research areas:

1. Modeling, Simulation and Nanoscopic Methods ([NanoMet](#))
2. Nanobioscience, Nanobiomechanics and BioNanotechnology ([NanoBio](#))
3. Nanopharmaceutics and Nanomedicine ([NanoPharmaMed](#))
4. Nanomagnetism and Spintronics ([NanoMagnetics](#))
5. Nanoelectronics, Nano-optics and Nanophotonics ([NanoPhotoElectro](#))
6. Nanostructured materials ([NanosMat](#))
7. Nanoenergy: Production and Storage ([NanoEnergy](#))

1.2. ORGANIZATION

The Institute is led by the Steering Committee, the Secretary and the Director. Each of the seven research areas has a coordinator. In addition, the Institute receive the advises from internal and external scientific boards.

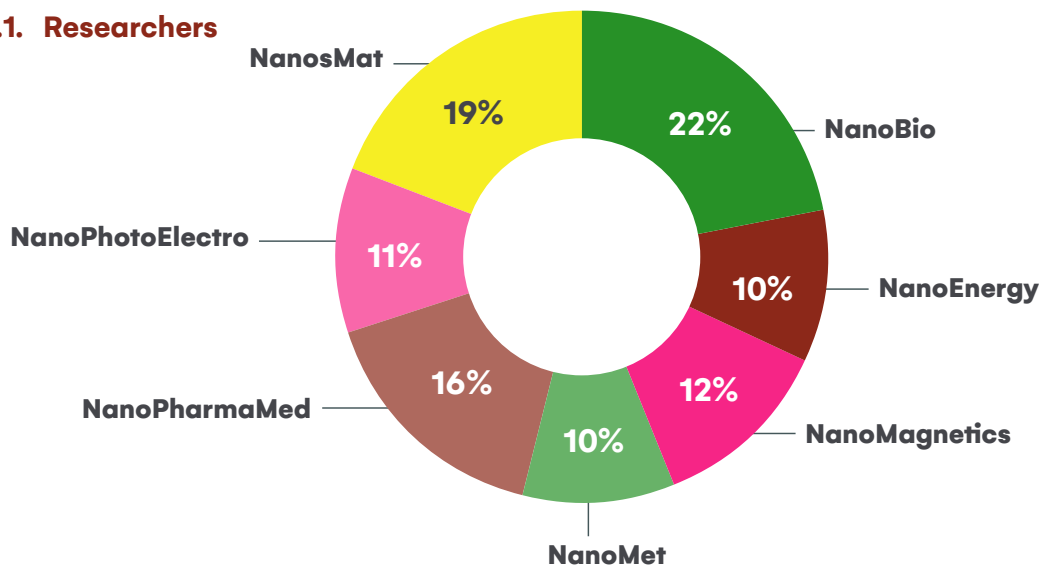
The Institute currently has **235 researchers**.



*GL: Group Leader, leading an independent research group at the unit

**SR: Senior researcher, Investigator leading one or several projects in a research group, but not being GL

1.2.1. Researchers



Steering Committee

Director: **Dr. Guillem Aromí Bedmar**

Deputy Director: **Dr. Albert Romano Rodríguez**

Permanent Collective:

- Dr. Xavier Batlle Gelabert
- Dr. Enric Bertran Serra
- Dr. Martí Duocastella Solà
- Dr. Sònia Estradé Albiol
- Dr. Arantxa Fraile Rodríguez
- Dr. Giancarlo Franzese
- Dr. Maria José García Celma
- Dr. Sergi Hernández Márquez
- Dr. Narcís Homs Martí
- Dr. Francesca Peiró Martínez
- Dr. Eva Carolina Sañudo Zotes

Postdoctoral Collective:

- Dr. Pedro Güixens Gallardo

Research Areas Coordinators

1. NanoMet: Dr. Francesca Peiró Martínez
2. NanoBio: Dra. Núria Gavara Casas
3. NanoPharmaMed: Dr. M José García Celma
4. NanoMagnetics: Dr. Xavier Batlle Gelabert
5. NanoPhotoElectro: Dr. Martí Duocastella Solà
6. NanosMat: Dr. Enric Bertran Serra
7. NanoEnergy: Dr. Narcís Homs Martí

Internal Scientific Board

- Dr. M. Pilar Vinardell Martínez Hidalgo (President)
- Dr. Ramon Farré Ventura
- Dr. Amílcar Labarta Rodríguez
- Dr. Francesc Sagués Mestre

International Scientific Advisory Board

- Dr. Ivan Schuller | UC San Diego (President)
- Dr. Kenneth Dawson | UC Dublin
- Dr. Katja Schenke-Layland | Eberhard Karls University Tübingen
- Dr. Maria Jesús Vicent | Centro de Investigación Príncipe Felipe

Outreach Commission

Dr. Jordi Díaz Marcos; Dr. Xavier Batlle Gelabert; Dr. Giancarlo Franzese; Dr. M. Aranzazu Fraile Rodríguez; Dr. Blas Garrido Fernández; Dr. Oscar Iglesias Clotas; Dra. Francesca Peiró Martínez; Dr. Laura Rodríguez Raurell; Dr. M. Antònia Busquets Viñas; Dr. Giancarlo Franzese; Dr. Elena Sánchez López; Dr. Sonia Trigueros; Mariona Escoda Torroella, Elena Lopez Aymerich
Contact: in2ub-divulga@ub.edu

Executive Equal Opportunities Committee:

Dr. María Aranzazú Fraile (Coordinator), Dr. Marta Estrader, Dr. Carolina Sañudo, Dr. Ferran Macià, Dr. Sònia Estradé, Dr. Antònia Busquets.
Contact: in2ub.igualtat@ub.edu

Research Management and Promotion

Dr. Ifigènia Saborit Villarroya

1.3. RESEARCH OUTPUTS, FUNDING SOURCES AND TRANSFER INDICATORS

1.3.1. Scientific Production

IN²UB is a multidisciplinary research unit, mainly harvesting research in the field of **Physics, Chemistry, Material Science, Pharmacology and Biology**. Specifically, the following major subject areas represent IN²UB scientific production: **Chemistry, Physics and Astronomy and Material Science, Biochemistry, Genetics and Molecular Biology, Engineering, Medicine and Chemical Engineering and Pharmacology, Toxicology and Pharmaceutics**. The rest of IN²UB publications, are integrated in other related subject areas such as **Medicine, Computer Science, Energy Environmental Science or Earth and Planetary Sciences**. The analysis of these areas during 2022 period, represented 232 papers published in indexed journals in Scopus, with 76,29 % of this production at first quartile.



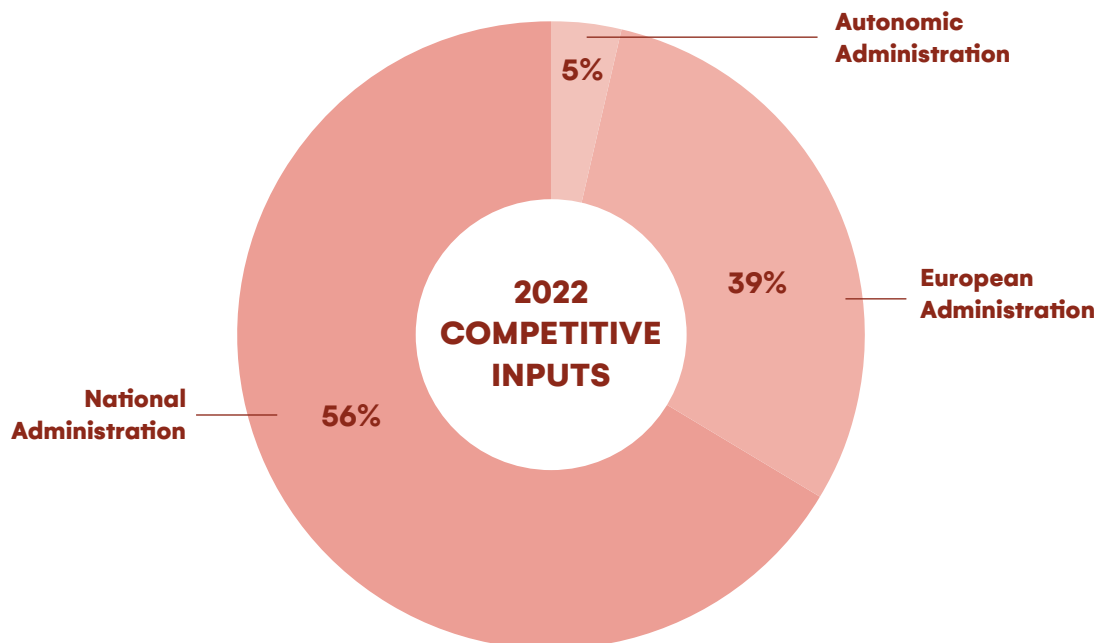
Data from Indexed Scopus Sources (February 2023)

1.3.2. High Index Publications

- **Active boundary layers in confined active nematics.** *Hardoÿin J., Doré C., Laurent J., Lopez-Leon T., Ignés-Mullol J., Sagués F. Nature Communications, 13, 1, 6675, 2022*
- **On the uptake of cationic liposomes by cells: From changes in elasticity to internalization.** *A. Botet-Carreras, M. Bosch Marimon, R. Millan-Solsona, E. Aubets, C. J. Ciudad, V. Noé, M.T. Montero, Ò. Domènech and J.H. Borrell. Colloids and Surfaces B: Biointerfaces, 221, page 112968, 2022*
- **Stiffness-dependent active wetting enables optimal collective cell durotaxis.** *M. Esteve Pallarès, I. Pi-Jaumà, I. Corina Fortunato, V. Gazu, M. Gómez-González, P. Roca-Cusachs, J.M. de la Fuente, R. Alert, R. Sunyer, J. Casademunt & X. Trepat. Nature Physics, 2022*
- **2D PEA2SnI4Inkjet-Printed Halide Perovskite LEDs on Rigid and Flexible Substrates.** *Vescio G., Sanchez-Diaz J., Frieiro J.L., Sánchez R.S., Hernández S., Cirera A., Mora-Seró I., Garrido B. ACS Energy Letters, 7, 10, 3653–3655, 2022*
- **Molten globule-like transition state of protein barnase measured with calorimetric force spectroscopy.** *Rico-Pasto M., Zaltron A., Davis S.J., Frutos S., Ritort F. Proceedings of the National Academy of Sciences of the United States of America, 119 (11) e2112382119, 2022*
- **Electrodeposition of nanostructured Bi₂MoO₆@Bi₂MoO₆-x homojunction films for the enhanced visible-light-driven photocatalytic degradation of antibiotics.** *Gómez E., Cestaro R., Philippe L., Serrà A. Applied Catalysis B: Environmental, 317, 121703, 2022*
- **Engineered MoxC/TiO₂ interfaces for efficient noble metal-free photocatalytic hydrogen production.** *Wang Y., Mino L., Pellegrino F., Homs N., Ramírez de la Piscina P. Applied Catalysis B: Environmental, 31, 121783, 2022*
- **Unravelling of a [High Spin—Low Spin] ↔ [Low Spin—High Spin] Equilibrium in Spin-Crossover Iron(II) Dinuclear Helicates Using Paramagnetic NMR Spectroscopy.** *Aleshin D.Y., Diego R., Barrios L.A., Nelyubina Y.V., Aromí G., Novikov V.V. Angewandte Chemie - International Edition, 2022*
- **Polysilicon Microchips Functionalized with Bipyridinium-Based Cyclophanes for a Highly Efficient Cytotoxicity in Cancerous Cells.** *Limón D., Hornick J.E., Cai K., Beldjoudi Y., Duch M., Plaza J.A., Pérez-García L., Stoddart J.F. ACS Nano., 2022*

1.3.3. Funding Sources

During 2022 the researchers from IN²UB have been awarded with 6M€ to be distributed in the forthcoming years. The graphic and pie below, show the amount allocated from competitive calls from public organizations achieved by our researchers, provided by GREC UB.



1.3.4. Highlighted Projects

Form all these projects here we highlight the most relevant ones:

- **H2020. P1. ERC CONSOLIDATOR GRANT (ERC-2020-COG), Ultrasonic Endoscopes for DEEP Light Focusing** (acronym, DEEP). IP: *Martí Duocastella*. Budget: 1.8M€ (2021-2025)
- *Oriol Arteaga Barriel* amb el projecte "**Mueller matrix microscope**" amb referència PDC2022-133625-I00 finançat pel MCIN/AEI /10.13039/501100011033 i per la Unió Europea Next GenerationEU/ PRTR
- *Oscar Castaño Linares* amb el projecte "**Plataforma de pruebas universal de un vaso sanguíneo cerebral para aplicaciones médicas**" amb referència PDC2022-133918-C22 finançat pel MCIN/AEI /10.13039/501100011033 i per la Unió Europea Next GenerationEU/ PRTR
- *Estela Martín Badosa* amb el projecte "**Microscopía de superresolución paralela por 'agotamiento'**" amb referència PDC2022-133351-I00 finançat pel MCIN/AEI /10.13039/501100011033 i per la Unió Europea Next GenerationEU/ PRTR
- *Guillem Aromí Bedmar* amb el projecte "**Química de Coordinación para la Extracción y Separación de Tierras Raras**" amb referència PDC2022-133184-I00 finançat pel MCIN/AEI /10.13039/501100011033 i per la Unió Europea Next GenerationEU/ PRTR
- **4-Deep Brain Reconstruction (4-DBR)**. EIC Pathfinder Open 2021 (HORIZON-EIC-2021-PATHFINDEROPEN-01). IP at UB: *M. Elena Xuriguera Martín*.
- *Guillem Domènech-Gil*, a former PhD student of UB and who is currently a postdoctoral fellow at Linköping Universitet (Sweden), has been awarded with a Marie Curie Postdoctoral fellowship 20220call, entitled "**Volcan Activity monitoring by light cycled dynamic operation of metal oxide gas sensors**" (VolcanAI), under the supervision of Albert Romano-Rodríguez.

1.3.5. Transfer Indicators

A relevant indicator is the number of spin-off companies emerged from IN²UB. The Institute has 7 spin-offs currently active, one of which has been created this year.

- **Nimble Diagnostics**, a newly created (2022) UB, IGTP and UPC spin-off, founded to monitor stent using microwave technology, being Dr. Javier Tejada Palacios a co-founder of this newly created spin-off. [\[read more\]](#)
- **Impetux Optics, S.L.**, created in 2012 lead by *Dr. Mario Montes Usategui*. Impetux Optics focuses its activity on Design, Manufacturing and Marketing of optical force measurement systems for Optical Tweezers. The company makes available a patented technology that overcomes existing limitations, providing clear advantages when measuring optical forces. The systems developed, allow force measurements in experiments where trap stiffness calibration is difficult or impossible.
- **Advanced Nanotechnologies, S.L.**, created in 2012 by *Dr. Enric Bertran Serra*, *Dr. Esther Pascual Miralles* and *Dr. José Luis Andújar Bella*. Advanced Nanotechnologies S.L. is devoted to materials and surface applications addressed to general consumers and to the business market. It supports R&D projects by developing specific processes and equipment for each application. The company offers innovative solutions based on nanotechnology adapted to specific developments of the costumers, related to the manufacturing of nanostructured materials. It offers also consultancy services.
- **Smalle Technologies, S.L.** (by *Dr. Christophe Serre* and *Dr. Alejandro Pérez Rodríguez*), created in 2012. Smalle Technologies is a company that develops new methods for maximizing the benefits from renewable and sustainable energy sources in order to address energy supply shortages of off-grid devices. Smalle Technologies develops generators that transform the energy contained in the waves into electricity to supply power to off-shore devices.
- **EndoASIC, S.L.** (2013) (*Dr. Angel Dieguez Barrientos*, *Dr. Oscar Alonso Casanovas* and *Dr. Ana Vilà Arbonés*, members of the entrepreneurial group). This company develops, using micro and nanotechnologies, autonomous minimally invasive systems for the substitution of gastrointestinal endoscopic systems.
- **Enlighting Technologies**, created in 2016 by *Dr. Blas Garrido Fernández* and *Dr. Sergi Hernández Márquez*. It aims at achieving a more comfortable and adaptable light to each need and situation. They have developed the FLEXILIGHT-UB technology, which is able to reproduce any spectrum of light accurately and imitate any kind of light.
- **ColorSensing, S.L.**, created in 2018 by *Dr. Juan Daniel Prades García*, devoted to smart packaging for food processing efficiency, quality, and safety.

During this period, IN²UB has applied for 11 patents.

1.3.6. Scientific Highlighted News

- Start of the future Quantum Internet research program in Catalonia with Next Generation funds, with the participation of *Dr. Guillem Aromí* [\[read more\]](#)
- IN²UB researchers, have been awarded with Prova de Concepte (PdC) de la convocatòria Fons per a l'Impuls de la Innovació (F2I) 2021. *Dr. Anna Vilà* (Faculty of Physics) leading the development of a chip size digital microscope and *Dr. Elena Sánchez* (Faculty Pharmacy and Food Sciences) leader of a project based on the implementation of a gel with nanoparticles that improves the infection of endodontics. [\[read more\]](#)
- ColorSensing, spin-off of the UB created by *Dr. Daniel Prades* (Researcher at the IN²UB and the Faculty of Physics), wins the “Sustainability Awards 2022” and the Senén Vilaró Prize to the top innovative company [\[Sustainability Awards 2022\]](#) / [\[Senén Vilaró Prize\]](#)
- UB reaches agreement with Italian company to develop super-resolution microscope. This technology has been developed by the Biophotonics from the IN²UB and the Faculty of Physics [\[read more\]](#)
- *Dr. Marta Estrader Bofarull*, Ramon y Cajal Researcher, has been awarded with a Beca Leonardo to develop the project “**Activación ‘low cost’ de la transición de espín mediante nanofuentes de calor**” on Chemistry. [\[read more\]](#)

- Thirteen IN²UB researchers among the 2% of the world's most influential scientists according to the Stanford ranking. [[read more](#)]
- 29 Female IN²UB researchers in the ranking of leading female scientists of Spain [[read more](#)]
- Expert *Giancarlo Franzese* (Faculty of Physics) takes part in an International Network Initiative on Safe and Sustainable Nanotechnologies [[read more](#)]
- Researchers *Anna Vilà* and *Ángel Diéguez* (Faculty of Physics), are leading a project to develop a high-resolution digital microscope as small as a chip. [[read more](#)]
- *Dr. Stefanos Chaitoglou*, post-doctoral researcher at ENPHOMACAT group has been awarded a MSCA individual fellowship from the European Research Executive Agency, to implement his project CARBODOH2.
- Expert *Oriol Arteaga*, from ENPHOCAMAT group, takes part in the international Chiral Materials Team awarded by the UK Royal Society of Chemistry [[read more](#)]
- *Dr. Albert Cirera* (Faculty of Physics and IN²UB) in collaboration with the initiative FabCat for the promotion of Catalonia as one of the locations of one of the semiconductor factories to be built in the European Union [[read more](#)].
- ICREA Academia 2022 - The ICREA Academia programme awards Prof. *Francesca Peiró* and Prof. *Martí Duocastella*, researchers at the Faculty of Physics and IN²UB. [[read more](#)]

2. Research at in²ub

2.1. RESEARCH LINES

2.1.1. Modeling, Simulation and Nanoscopic Methods (Nanomet)

Coordination: Dr. Francesca Peiró Martínez

This research area develops instrumentation and methodology (employing experimental and theoretical tools) to characterize nanostructures and nanosystems of any nature.

- A. NanobiInteractions: Interactions between biological and nanoscopic systems
- B. Confinement-related phenomena: reactivity, magnetism, optoelectronics and quantum photonics
- C. Transport and conduction
- D. Surface effects
- E. Electronic structure and excitations
- F. Bose-Einstein condensates and quantum confined gases
- G. Advanced Electronic Microscopy (EFM, TEM, STM, EELS, EDS)
- H. Instrumentation and Methodology Development in Electron Microscopy

2.1.2. Nanobioscience, Nanobiomechanics and BioNanotechnology (NanoBio)

Coordination: Dr. Núria Gavara Casas

This research area studies the organizational patterns observable in the molecular structures that control and rule the biological systems both at the cellular and at the molecular scales. Its most relevant application is that of developing techniques and devices aimed at prevention and diagnose in nanomedicine.

- A. Functionalisation of surfaces
- B. Cellular and molecular biomechanics
- C. Biomimetic structures and systems
- D. Nanofluidics and nanorobotics. Nanomotors
- E. Diagnosis in nanomedicine: marking and molecular observation
- F. Nanobiosensors; DNA and Protein Chips; lab on chip

2.1.3. Nanopharmaceutics and Nanomedicine (NanoPharmaMed)

Coordination: Dr. M. José García Celma

This area aims at developing nanostructured systems for controlled drug release and to the improvement of drug therapeutic efficiency when administered on targets to treat diseases.

- A. Nanostructured systems for controlled drug release. Nanocapsules
- B. Nanostructured systems interaction with biological structures
- C. Bioavailability, toxicity and therapeutic efficiency of nanostructured systems
- D. Non-viral vectors. Gene therapy. Pharmacogenomics and nutrigenomics
- E. Molecular internalization, molecular marking and detoxification

2.1.4. Nanomagnetism and Spintronics (NanoMagnetics)

Coordination: Dr. Xavier Batlle Gelabert

The area aims at developing new systems for storage and processing of information at the nanoscopic scale for information processing. It is also devoted to the study of new phenomena appearing at the nanometric size for the implementation of innovative devices of application in healthcare, sustainable energy, environment, healthy food and security.

It is also involved with the preparation and study of multifunctional molecular nanomagnets for spintronics and quantum computing.

- A. Magnetic nanoparticles and single molecule magnets
- B. Dynamic processes in nanomagnetism and interaction with microwaves
- C. Magnetic electronics
- D. Spin-based molecular quantum bits and quantum gates for quantum computing

2.1.5. Nanoelectronics, Nano-optics and Nanophotonics (NanoPhotoElectro)

Coordination: Dr. Martí Duocastella Solà

Study and exploitation at the nanoscale of the interaction of electric, magnetic and optical properties for the design of functional nanosystems.

- A. NEMS (Nanoelectromechanical Systems)
- B. Nanodevices, nanosensors and electronic nanosystems, optoelectronics and photonics. Photonic crystals

2.1.6. Nanostructured materials (NanosMat)

Coordination: Dr. Enric Bertran Serra

This research area aims at developing new nanostructured materials or improving the properties of existing materials. This line also includes knowledge-frontier research in characterization techniques and manipulation tools at the nanoscale (as electron and probe microscopies, surface analysis, or spectroscopic and magnetic characterization).

- A. Synthesis, nanomanufacturing and nanomanipulation
- B. Thin layers, nanostructured multilayers and coatings
- C. Nanoparticles, gels, nanofibers, nanorods, nanothreads and nanotubes
- D. Nanostructured metallic oxides
- E. Mesoporous materials and nanopatterns

2.1.7. Nanoenergy: Production and Storage (NanoEnergy)

Coordination: Dr. Narcís Homs Martí

The aim of this research line is the application of nanomaterials to energy production and storage to overcome efficiency and lifetime limits.

- A. Catalytic nanostructures for energy production. Fuel cells
- B. Nanomaterials for solar cells and photocatalytic processes
- C. Nanostructured systems for energy storage

2.2. GROUPS AT RESEARCH LINES

In the following section, you will find all research groups distributed along the 7 research lines according to the research developed. However, due to the transversality of the research performed, some groups can be found in more than one main line.

2.2.1. Bioelectrical Characterization at Nanoscale (NanoBio)

Department Electronics and Biomedical Engineering, Faculty Physics

Team

Gabriel Gomila Lluch (Full Professor)

Annalisa Caló (Tenure-Track Lecturer)

Selected Papers

- **Thermal scanning probe lithography.** *Albisetti E., Calò A., Zanut A., Zheng X., de Peppo G.M., Riedo E.* Nature Reviews Methods Primers, 2, 1, 2022
- **Supramolecular systems chemistry through advanced analytical techniques.** *Jain A., Calò A., Barceló D., Kumar M.* Analytical and Bioanalytical Chemistry, 414, 18, 5105, 2022

2.2.2. Biomolecule and small-systems physics (NanoBio)

Department Condensed Matter Physics, Faculty Physics

Team

Fèlix Ritort Farran (Full Professor)

Maria Mañosas Castejon (Postdoctoral Researcher Ramon y Cajal)

Selected Papers

- **Molten globule-like transition state of protein barnase measured with calorimetric force spectroscopy.** *Rico-Pasto M., Zaltron A., Davis S.J., Frutos S., Ritort F.* Proceedings of the National Academy of Sciences of the United States of America, 119, 11, e2112382119, 2022
- **Temperature-dependent elastic properties of DNA.** *Rico-Pasto M., Ritort F.* Biophysical Reports, 2, 3, 100067, 2022
- **Measurement of the specific and non-specific binding energies of Mg²⁺ to RNA.** *Martinez-Monge A., Pastor I., Bustamante C., Manosas M., Ritort F.* Biophysical Journal, 121, 16, 3010, 2022
- **Folding Free Energy Determination of an RNA Three-Way Junction Using Fluctuation Theorems.** *Aspas-Caceres J., Rico-Pasto M., Pastor I., Ritort F.* Entropy, 24, 7, 895, 2022

Selected Projects

- **Experimental measurement of entropy and information in single molecules and cells (PID2019-111148GB-I00)**
IP: *Fèlix Ritort/Maria Mañosas* Ministerio de Ciencia e Innovación. (2020-2023)
- **ICREA ACADEMIA 2008, 2013, 2018.**
IP: *Fèlix Ritort.* Generalitat de Catalunya (2009-2023).

2.2.3. Biophysics and Bioengineering Unit (NanoBio)

Department Biomedicine, Faculty Medicine

Team

Ramon Farré Ventura (Full Professor)

Pere Roca Cusachs (Associate Professor)

Núria Gavara Casas (Tenure–Track Lecturer — Serra Hunter)

Isaac Almendros López (Associate Professor)

Raimon Sunyer Borrell (Tenure–Track Lecturer)

Jorge Otero Díaz (Tenure–Track Lecturer)

Daniel Navajas Navarro (Emeritus Professor)

Miguel Rodríguez Lazaro (Technician)

Selected Papers

- **Development of a physiomimetic model of acute respiratory distress syndrome by using ECM hydrogels and organ-on-a-chip devices.** *Marhuenda E., Villarino A., Narciso M., Elowsson L., Almendros I., Westergren–Thorsson G., Farré R., Gavara N., Otero J.* *Frontiers in Pharmacology*, 13, 945134, 2022.
- **Lung Extracellular Matrix Hydrogels Enhance Preservation of Type II Phenotype in Primary Alveolar Epithelial Cells.** *Marhuenda E., Villarino A., Narciso M.L., Camprubí–Rimblas M., Farré R., Gavara N., Artigas A., Almendros I., Otero J.* *International Journal of Molecular Sciences*, 23, 9, 4888, 2022
- **Novel Decellularization Method for Tissue Slices.** *Narciso M., Ulldemolins A., Júnior C., Otero J., Navajas D., Farré R., Gavara N., Almendros I.* *Frontiers in Bioengineering and Biotechnology*, 10, 832178, 2022
- **Involvement of Mechanical Cues in the Migration of Cajal–Retzius Cells in the Marginal Zone During Neocortical Development.** *López–Mengual A., Segura–Feliu M., Sunyer R., Sanz–Fraile H., Otero J., Mesquida–Veny F., Gil V., Hervera A., Ferrer I., Soriano J., Trepal X., Farré R., Navajas D., del Río J.A.* *Frontiers in Cell and Developmental Biology*, 10, 886110, 2022

Selected Projects

- **Condicionamiento biofísico de células madre/estromales mesenquimales para la terapia del síndrome de distrés respiratorio agudo (PID2020–113910RB–I00).**
IP: *Farré, Ramon*. Ministerio de Ciencia e Innovación (2021–2024)

2.2.4. BiOPT: Optical Trapping Lab – Grup de Biofotònica (NanoBio)

Department Applied Physics, Faculty Physics

Team

Estela Martín Badosa (Associate Professor)

Mario Montes Usategui (Associate Professor)

Antonio Marzoa (Predoctoral Researcher)

Selected Projects

- **Microscopio Digital Super–Rápido y Super–Flexible (PID2019–109225RB–I00)** IP: *Estela Martín*.
Ministerio de Ciencia e Innovación (2020–2023)

2.2.5. Cancer therapy group (NanoBio)

Department Biochemistry and Physiology, Faculty Pharmacy and Food Sciences

Team

Carlos Ciudad Gómez (Full Professor)

Verònica Noé Mata (Full Professor)

Judith Cullell Moltó (Predoctoral Researcher)

Simonas Valiuska (Predoctoral Researcher)

Selected Projects

- **Terapia genica mediada por PPRHS: vehiculizacion, silenciamiento, reparacion y aproximaciones *in vivo*.** RTI2018-093901-B-I00.
IP: *Verónica Noé Mata/Carlos Ciudad Gomez*. Ministerio de Ciencia e Innovación (2019–2021)
- **Diagnòstic i tractament de Sars-Cov-2 per formació de tríplex (MARATO TV3 202110-30).**
IP: *Noé, Verónica* (2021–2023)

Selected Papers

- **Targeting KRAS Regulation with PolyPurine Reverse Hoogsteen Oligonucleotides.** *Pсарas A.M., Valiuska S., Noé V., Ciudad C.J., Brooks T.A.* International Journal of Molecular Sciences, 23, 4, 2097, 2022.

2.2.6. Catalysis and Advanced Inorganic Materials (MATCAT) (NanoEnergy)

Department Inorganic and Organic Chemistry, Faculty Chemistry

Team

Narcis Homs Martí (Full Professor)

Adrià Sánchez Ruiz (Predoctoral Researcher)

Pilar Ramírez de la Piscina (Full Professor)

Yan Wang (Predoctoral Researcher)

María Lourdes Mestres Vila (Full Professor)

Arturo Pajares Rojas (Collaborator)

Xavier Vendrell Villafruela (Tenure-Track Lecturer)

Selected Papers

- **Engineered MoxC/TiO₂ interfaces for efficient noble metal-free photocatalytic hydrogen production.** *Wang Y., Mino L., Pellegrino F., Homs N., Ramírez de la Piscina P.* Applied Catalysis B: Environmental, 318, 121783, 2022
- **Supported Nanostructured MoxC Materials for the Catalytic Reduction of CO₂ through the Reverse Water Gas Shift Reaction.** *Pajares A., Liu X., Busacker J.R., Ramírez de la Piscina P., Homs N.* Nanomaterials, 12, 18, 3165, 2022.
- **Evolution of the optimal catalytic systems for the oxidative dehydrogenation of ethane: The role of adsorption in the catalytic performance.** *de Arriba A., Solsona B., Dejoz A.M., Concepción P., Homs N., de la Piscina P.R., López Nieto J.M.* Journal of Catalysis. Journal of Catalysis. 408, 388, 400, 2022

Selected Projects

- **L-Hydrogen. EMC/1124/2018** IP: *EVARM Innovación SL, Acció Nuclis, Generalitat de Catalunya.* (2019–2021)

2.2.7. Cellular Responses to Xenobiotics (NanoPharmaMed)

Department Biochemistry and Physiology, Faculty Pharmacy and Food Sciences

Team

Maria Pilar Vinardell Martínez-Hidalgo (Full Professor) Wawan Kurniawan (Predoctoral Researcher)
Montserrat Mitjans Arnal (Associate Professor) Michele Ferrari (External Collaborator-CNR-ICMATE)
M del Carmen Moran Bádenas (Associate Professor) Italy)

Selected Papers

- **Overcoming MDR by Associating Doxorubicin and pH-Sensitive PLGA Nanoparticles Containing a Novel Organoselenium Compound—An In Vitro Study.** Macedo L.B., Nogueira-Librelotto D.R., Mathes D., de Vargas J.M., da Rosa R.M., Rodrigues O.E.D., Vinardell M.P., Mitjans M., Rolim C.M.B. *Pharmaceutics*, 14, 1, 80, 2022
- **Exploring wild Aspleniaceae ferns as safety sources of polyphenols: The case of *Asplenium trichomanes* L. and *Ceterach officinarum* Willd.** Farràs A., Mitjans M., Maggi F., Caprioli G., Vinardell M.P., López V. *Frontiers in Nutrition*. 9, 994215, 2022
- **Methodological shortcomings in the reports of the imiquimod psoriatic model.** Vinardell M.P. *Experimental Dermatology*. 31, 3, 299, 2022

2.2.8. Conformational Diseases Group (NanoPharmaMed)

Department Pharmacy and Pharmaceutical Technology and Physical-Chemical, Faculty Pharmacy and Food Sciences

Team

Raimon Sabaté Lagunas (Associate Professor) Alba Espargaró Colomé (Tenure-Track Lecturer)
M. Antonia Busquets Viñas (Associate Professor)

Selected Papers

- **Coumarin derivatives against amyloid-beta 40 — 42 peptide and tau protein.** Kowalczyk J., Skalicka-Wozniak K., Budzynska B., El Sayed N., Espargaró A., Sabate R. *Current Issues in Pharmacy and Medical Sciences*. 35, 2, 67, 2022
- **Design, Synthesis, and In Vitro, In Silico and In Cellulo Evaluation of New Pyrimidine and Pyridine Amide and Carbamate Derivatives as Multi-Functional Cholinesterase Inhibitors.** Bortolami M., Pandolfi F., Tudino V., Messori A., Madia V.N., De Vita D., Di Santo R., Costi R., Romeo I., Alcaro S., Colone M., Stringaro A., Espargaró A., Sabatè R., Scipione L. *Pharmaceutics*, 15, 6, 673, 2022
- **Characterisation of the enzymes involved in the diol synthase metabolic pathway in *Pseudomonas aeruginosa*.** Shoja-Chaghervand S., Castells M., Rabanal F., Cajal Y., Manresa A., Estupiñán M., Busquets M. *Process Biochemistry*, 120, 301, 312, 2022

Selected Projects

- **Compuestos anti-amiloides fácilmente disponibles para prevenir la internalización celular de los coronavirus (PID2021-127863OB-I00).** IP1: Raimon Sabaté Lagunas/IP2: Alba Espargaró Colomé. Convocatoria 2021 de ayudas a «Proyectos de Generación de Conocimiento». Modalidad Proyectos de «Investigación Orientada». Ministerio de Ciencia e Innovación (MICINN). From 2022 to 2025

2.2.9. Design and Improvement of Processes and Materials (NanoEnergy)

(Department Materials Science and Physical Chemistry, Faculty Chemistry)

Team

Mercè Segarra Rubí (Full Professor)

Elena Xuriguera Martín (Associate Professor)

Joan Formosa Mitjans (Associate Professor)

José Antonio Pandilla Sánchez (Tenure-Track Lecturer)

Rebeca Salgado Pizarro (Predoctoral Researcher)

Selected Papers

- **Coumarin derivatives against amyloid-beta 40 – 42 peptide and tau protein.** *Kowalczyk J., Skalicka-Wozniak K., Budzynska B., El Sayed N., Espargaró A., Sabate R.* Current Issues in Pharmacy and Medical Sciences. 35, 2, 67, 2022
- **Optimization of the ceramic ink used in Direct Ink Writing through rheological properties characterization of zirconia-based ceramic materials.** *Yarahmadi M., Barcelona P., Fargas G., Xuriguera E., Roa J.J.* Ceramics International, 48, 4, 4775, 2022

Selected Projects

- **4-Deep Brain Reconstruction (4-DBR) (101047099).** IP-UB: *Elena Xuriguera Martín*. EIC Pathfinder Open 2021 (HORIZON-EIC-2021-PATHFINDEROPEN-01). From 2022 to 2023

2.2.10. Drug Design and Response-evaluation within Pharmaceutical Nanostructured and self-ordered Systems Group (NanoPharmaMed)

Department Pharmacy and Pharmaceutical Technology and Physical-Chemical, Faculty Pharmacy and Food Sciences

Team

Elvira Escribano Ferrer (Full Professor)

Francesc Xavier García Sala (Adjunct Lecturer)

2.2.11. Engineering of colloidal systems (NanosMat)

Department Chemical Engineering and Analytical Chemistry, Faculty Chemistry

Team

José María Gutiérrez González (Associate Professor)

Alicia Maestro Garriga (Associate Professor)

2.2.12. Genomics, Proteomics and Plant Metabolomics (NanoBio)

Department Biology, Healthcare and the Environment and Department Biochemistry and Physiology, Faculty Pharmacy and Food Sciences

Team

Jaume Bastida Armengol (Full Professor)

Montserrat Arró Plans (Associate Professor)

Francesc Viladomat Meya (Full Professor)

Laura Torras Claveria (Associate Professor)

Selected Papers

- **Alkaloid Composition and Biological Activities of the Amaryllidaceae Species *Ismene amancaes* (Ker Gawl.) Herb.** Soto-Vásquez M.R., Rodríguez-Muñoz C.A., Tallini L.R., Bastida J. *Plants*, 11, 15, 1906, 2022
- **Anti-*Trypanosoma cruzi* activity of alkaloids isolated from *Habranthus brachyandrus* (Amaryllidaceae) from Argentina.** Martínez-Peinado N., Ortiz J.E., Cortes-Serra N., Pinazo M.J., Gascon J., Tapia A., Roitman G., Bastida J., Feresin G.E., Alonso-Padilla J. *Phytomedicine*, 101, 154126, 2022
- **In vitro and in silico analysis of galanthine from *Zephyranthes carinata* as an inhibitor of acetylcholinesterase.** Sierra K., de Andrade J.P., R. Tallini L., Osorio E.H., Yañez O., Osorio M.I., Oleas N.H., García-Beltrán O., de S. Borges W., Bastida J., Osorio E., Cortes N. *Biomedicine and Pharmacotherapy*, 150, 113016, 2022

2.2.13. Group of Magnetism and Functional Molecules (NanoMagnetics, NanosMat)

Department Inorganic and Organic Chemistry, Faculty Chemistry

Team

Guillem Aromí Bedmar (Full Professor)

Verónica Velasco Amigó (Adjunct Lecturer)

Eva Carolina Sañudo (Associate Professor)

Rosa Diego Creixenti (Predoctoral Researcher)

David Aguilà Avilés (Tenure-Track Lecturer)

Guillem Gabarró Riera (Predoctoral Researcher)

Leoni A. Barrios Moreno (Postdoctoral Researcher)

Diamantuula Maniaki (Predoctoral Researcher)

Selected Papers

- **Three individually addressable spin qubits in a single molecule.** Borilović I., Roubeau O., Le Guennic B., van Slageren J., Lenz S., Teat S.J., Aromí G. *Chemical Communications*, 58, 54, 7530, 2022
- **The template effect of a SiF₆²⁻ guest drives the formation of a heteroleptic Fe(II) coordination helicate.** Capó N., Barrios L.A., Cardona J., Ribas-Ariño J., Teat S.J., Roubeau O., Aromí G. *Chemical Communications*, 58, 78, 10969, 2022
- **A ferric guest inside a spin crossover ferrous helicate.** Barrios L.A., Diego R., Darawsheh M., Martínez J.I., Roubeau O., Aromí G. *Chemical Communications*, 58, 35, 5375, 2022
- **Unparalleled selectivity and electronic structure of heterometallic [LnLn'Ln] molecules as 3-qubit quantum gates.** Maniaki D., Garay-Ruiz D., Barrios L.A., Martins D.O.T.A., Aguilà D., Tuna F., Reta D., Roubeau O., Bo C., Aromí G. *Chemical Science*, 2022

Selected Projects

- **Diseño de espines moleculares para las tecnologías cuánticas (TED2021-129214B-I00)**. IP1: Guillem Aromí Bedmar/IP2: David Aguilà Avilés. Convocatoria 2021 de ayudas a Proyectos estratégicos orientados a la transición ecológica y a la transición digital. Ministerio de Ciencia e Innovación (MICINN). (2022-2024)

2.2.14. Group of Magnetic Nanomaterials (NanoMet, NanoMagnetics, NanoPharmaMed, NanoPhotoElectro)

Department Condensed Matter Physics, Faculty Physics

Team

Amílcar Labarta Rodríguez (Full Professor)

Adriana Isabel Figueroa Garcia (Tenure-Track Lecturer)

Xavier Batlle Gelabert (Full Professor)

Carlos Moya Alvarez (Postdoctoral Researcher María Zambrano)

Òscar Iglesias Clotas (Associate Professor)

Javier Rodríguez Álvarez (Predoctoral Researcher)

Montserrat García del Muro Solans (Associate Professor)

María Aranzazu Fraile Rodríguez (Associate Professor)

Mariona Escoda i Torroella (Predoctoral Researcher)

Eric Langenberg Perez (Tenure-Track Lecturer)

Ana Conde Rubio (External Collaborator)

Selected Papers

- **Tunable circular dichroism through absorption in coupled optical modes of twisted triskelia nanostructures.** Rodríguez-Álvarez J., García-Martín A., Fraile Rodríguez A., Batlle X., Labarta A. Scientific Reports, 12, 1, 26, 2022
- **Magnetic nanoparticles: From the nanostructure to the physical properties.** Batlle X., Moya C., Escoda-Torroella M., Iglesias Ò., Fraile Rodríguez A., Labarta A. Journal of Magnetism and Magnetic Materials, 543, 168594, 2022
- **Dependence of Exchange Bias on Interparticle Interactions in Co/CoO Core/Shell Nanostructures.** Goswami S., Gupta P., Nayak S., Bedanta S., Iglesias Ò., Chakraborty M., De D. Nanomaterials, 12, 18, 3159, 2022

Selected Projects

- **Diseño de bits fonónicos con control eléctrico en láminas y superestructuras epitaxiales basadas en óxidos ferroeléctricos.** PID2021-128281NA-I00. IP: Eric Langenberg Perez. Convocatoria 2021 de ayudas a «Proyectos de Generación de Conocimiento». Modalidad Proyectos de «Investigación No Orientada». Ministerio de Ciencia, Innovación y Universidades. (2022-2025)
- **De redes de nanoestructuras planares y 3D a nanopartículas híbridas con propiedades ópticas y magnéticas mejoradas.** PID2021-127397NB-I00. IP1: Arantxa Fraile Rodríguez/IP2: Xavier Batlle Gelabert. Convocatoria 2021 de ayudas a «Proyectos de Generación de Conocimiento». Modalidad Proyectos de «Investigación No Orientada». Ministerio de Ciencia, Innovación y Universidades. From 2022 to 2025.

2.2.15. Homogeneous Catalysis (NanosMat)

Department Inorganic and Organic Chemistry, Faculty Chemistry

Team

Arnald Grabulosa Rodriguez (Associate Professor)

Dana Josa Hidalgo (Predoctoral Researcher)

Daniel Sainz Garcia (Associate Professor)

Alba Martínez Bascuñana (Predoctoral Researcher)

Anton Vidal Ferran (ICREA Researcher)

Javier Eusamio Rodríguez (Predoctoral Researcher)

José Luis Núñez Rico (Postdoctoral Researcher)

Albert Gutiérrez Currius (Technician)

Selected Papers

- **Valorisation of mixtures of linear alkenes using cobalt-mediated isomerisation and hydroformylation chemistries.** Martínez-Carrión A., Romero-Navarro A., Núñez-Rico J.L., Gutiérrez A., Grabulosa A., Vidal-Ferran A. *Catalysis Science and Technology*, 2022

Selected Projects

- **Procesos mejorados para la valorización de productos químicos mediante hidroformilaciones reguladas y selectivas.** IP: Anton Vidal Ferran PDC2021-120826-I00. MCIN/AEI/10.13039/501100011033 and "NextGenerationEU"/PRTR".
- **Transformaciones catalíticas eficientes sobre productos orgánicos hacia productos de valor añadido para los sectores de ciencias de la vida y química fina (PID2020-115658GB-I00).** IP1: Anton Vidal Ferran. Generación de Conocimiento. Ministerio de Ciencia e Innovación. From 2021 to 2025

2.2.16. Instrumentation Systems and Communications (SIC) (NanoPhotoElectro, NanoEnergy)

Department Electronics and Biomedical Engineering, Faculty Physics

Team

Angel Dieguez Barrientos (Full Professor)

Mauricio Moreno Sereno (Associate Professor)

Anna Vilà Arbonés (Associate Professor)

Christophe Serre (Associate Professor)

Selected Papers

- **Malaria quantitative POC testing using magnetic particles, a paper microfluidic device and a hand-held fluorescence Reader.** Arias-Alpizar K., Sánchez-Cano A., Prat-Trunas J., de la Serna Serna E., Alonso O., Sulleiro E., Sánchez-Montalvá A., Diéguez A., Baldrich E. *Biosensors and Bioelectronics*, 215, 114513, 2022

Selected Projects

- **Microscopi multi-hologràfic digital en la mida d'un xip. F2I-PdC_2021-006.** IP1: Anna Vilà/IP2: Angel Dieguez. Convocatòria Prova de concepte 2021. Fons per a l'Impuls de la Innovació - Fundació Bosch i Gimpera. 2022-2023

2.2.17. Laboratory of Electron Nanoscopies (LENS)– Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic devices (MIND) (NanoMet)

(Department Electronics and Biomedical Engineering, Faculty Physics)

Team

Francisca Peiró Martínez (Full Professor)
Sònia Estradé Albiol (Associate Professor)
Lluís Yedra Cardona (Postdoctoral Researcher–Juan de la Cierva)
Daniel del Pozo Bueno (Predoctoral Researcher)
Catalina Coll Benejam (Predoctoral Researcher)
Javier Blanco Portals (Predoctoral Researcher)
Pranjal Nandi (Predoctoral Researcher)
Beatriz Vargas Carosi (Predoctoral Researcher)
Gemma Martín Malpartida (Collaborator)
Josep Manel Rebled Corselles (Collaborator)
Luís López Conesa (Collaborator)

Selected Papers

- **Precessed electron diffraction study of defects and strain in GaN nanowires fabricated by top-down etching.** *Martín G., López-Conesa L., Pozo D.D., Portillo Q., Doundoulakis G., Georgakilas A., Estradé S., Peiró F.* Applied Physics Letters, 121, 8, 82104, 2022
- **Understanding the Anisotropy in the Electrical Conductivity of CuPtB-type Ordered GaInP Thin Films by Combining In Situ TEM Biasing and First Principles Calculations.** *Martín G., Coll C., López-Conesa L., Rebled J.M., Barrigón E., García I., Rey-Stolle I., Algora C., Cornet A., Estradé S., Peiró F.* ACS Applied Electronic Materials, 4, 7, 3478, 2022
- **Strategies for EELS Data Analysis. Introducing UMAP and HDBSCAN for Dimensionality Reduction and Clustering.** *Blanco-Portals J., Peiró F., Estradé S.* Microscopy and Microanalysis, 28, 1, 109, 2022
- **Unveiling the Complex Magnetization Reversal Process in 3D Nickel Nanowire Networks.** *Ruiz-Clavijo A., Caballero-Calero O., Navas D., Ordoñez-Cencerrado A.A., Blanco-Portals J., Peiró F., Sanz R., Martín-González M.* Advanced Electronic Materials, 8, 10, 2200342, 2022

Selected Projects

- **“Herramientas Avanzadas para EELS Cuantitativo”.** *Francisca Peiró Martínez.* PDC2021-121366-I00. MCIN/AEI/10.13039/501100011033 and “NextGenerationEU”/PRTR”
- **Herramientas Avanzadas para EELS Cuantitativo (PDC2021-121366-I00).** IP1: *Francisca Peiró Martínez* IP2: *Sònia Estradé Albiol.* Convocatoria 2021 de ayudas a proyectos de I+D+i para la realización de pruebas de concepto. Ministerio de Ciencia e Innovación. From 2021 to 2023

2.2.18. Laboratory of Nanostructured and Nanocomposite Materials (LM2N) (NanoMagnetics/NanosMat)

Department Inorganic and Organic Chemistry, Faculty Chemistry

Team

Albert Figuerola Silvestre (Associate Professor)

Marta Estrader Bofarull (Ramón y Cajal Researcher)

Mengxi Lin (Predoctoral Researcher)

Selected Papers

- **Spontaneous Hetero-attachment of Single-Component Colloidal Precursors for the Synthesis of Asymmetric Au—Ag₂X (X = S, Se) Heterodimers.** *M. Lin, G. Montana, J. Blanco, L. Yedra, H. van Gog, M. A. van Huis, M. López-Haro, J. J. Calvino, S. Estradé, F. Peiró, and A. Figuerola.* Chemistry of Materials, 2022

Selected Projects

- **Activación 'low cost' de la transición de espín mediante nanofuentes de calor".** Becas Leonardo a Investigadores y Creadores Culturales 2022. IP: *Marta Estrader*
- **Hacia nuevos nanomateriales para tecnologías emergentes.** PID2019-106165GB-C22. Ministerio de Ciencia e Innovación. IP1: *Albert Figuerola*/IP2: *Marta Estrader.* 2020-2023

2.2.19. LASER- Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic devices (NanoPhotoElectro)

Department Applied Physics, Faculty Physics

Team

Pere Serra Coromina (Full Professor)

Juan Marcos Fernández Pradas (Associate Professor)

Martí Duocastella Solà (Tenure-Track Lecturer-Serra Hünter — ERC Consolidator Grant (www.ub.edu/dlight))

Ernest Martí Jerez (Predoctoral Researcher)

Narcís Vilar Solé (Industrial Predoctoral Researcher)

Selected Papers

- **Preparation of anisotropic multiscale micro-hydrogels via two-photon continuous flow lithography.** *Manghnani P.N., Di Francesco V., Panella La Capria C., Schlich M., Miali M.E., Moore T.L., Zunino A., Duocastella M., Decuzzi P.* Journal of Colloid and Interface Science, 608, 622, 633, 2022
- **Optical system for the measurement of the surface topography of additively manufactured parts.** *Vilar N., Artigas R., Bermudez C., Thompson A., Newton L., Leach R., Duocastella M., Carles G.* Measurement Science and Technology, 33, 10, 104001, 2022

Selected Projects

- **Technology for real-time visualizing and modelling of fundamental process in living organoids towards new insights into organ-specific health, disease, and recovery (OrganVision).** FET OPEN,

964800. IP: *Martí Duocastella* (2021–2025)

- **Ultrasonic Endoscopes for DEEP Light Focusing (DEEP)**. ERC Consolidator Grant (ERC–2020–COG), 101002460. IP: *Martí Duocastella* (2021–2025)
- **Superar los límites de la fabricación láser con materiales reconfigurables. PID2020–112669GB–I00. Ministerio de Ciencia, Innovación y Universidades.** IP1: *Juan Marcos Fernandez Pradas*/IP2: *Martí Duocastella Solà*. 2021–2024

2.2.20. Magnetic Interactions and Molecular Magnetism (NanoMagnetics)

(Department Inorganic and Organic Chemistry, Faculty Chemistry)

Team

Ramón Vicente Castillo (Full Professor)

Albert Escuer Fité (Full Professor)

Mohamed Salah El Fallah (Full Professor)

Júlia Mayans Ayats (Tenure–Track Lecturer)

Annia Tubau Ribot (Predoctoral Researcher)

Evangelos Pilichos (Predoctoral Researcher)

Ernesto Costa Villén (Predoctoral Researcher)

Selected Papers

- **Spontaneous Hetero–attachment of Single–Component Colloidal Precursors for the Synthesis of Asymmetric Au–Ag₂X (X = S, Se) Heterodimers.** *M. Lin, G. Montana, J. Blanco, L. Yedra, H. van Gog, M. A. van Huis, Mi. López–Haro, J. J. Calvino, S. Estradé, F. Peiró, and A. Figuerola.* *Chemistry of Materials*, 2022
- **Slow magnetic relaxation for cobalt(ii) complexes in axial bipyramidal environment: an S = 1/2 spin case.** *Pilichos E., Font–Bardía M., Cano J., Escuer A., Mayans J.* *Dalton Transactions*, 51, 23, 8986, 2022
- **Quasi–isotropic SMMs: Slow relaxation of the magnetization in polynuclear CuII/MnII complexes.** *Pilichos E., Bhunia P., Font–Bardía M., Ghosh A., Mayans J., Escuer A.* *Dalton Transactions*, 51, 5, 1779, 2022
- *Moutzouris N., Moushi E.E., Tziotzi T.G., Tarlas G.D., Tasiopoulos A.J., Escuer A., Papaefstathiou G.S.* *European Journal of Inorganic Chemistry*, 2022, 12, e202200024, 2022.
- **Insights into the Spin Dynamics of Mononuclear Cerium(III) Single–Molecule Magnets.** *Mautner F.A., Bierbaumer F., Fischer R.C., Tubau À., Speed S., Ruiz E., Massoud S.S., Vicente R., Gómez–Coca S.* *Inorganic Chemistry*, 61, 29, 11124, 2022

Selected Projects

- **Clústeres quirales de cationes d/f: nuevos materiales multipropiedad magnéticos y/o luminiscentes y/o ferroelectricos. Aplicaciones de clusters de Manganeso como antioxidantes.** PGC2018–094031–B–I00. IP: *Albert Escuer Fite*. Ministerio de Ciencia e Innovación. 2019–2022

2.2.21. Magnetic Soft Matter Group (NanoBio)

Department Condensed Matter Physics, Faculty Physics

Team

Pietro Tierno (Full Professor – ERC Consolidator Grant)

Antonio Ortiz-Ambriz (Associate Professor)

Eric Cereceda López (Predoctoral Researcher)

Selected Papers

- **Friction Induces Anisotropic Propulsion in Sliding Magnetic Microtriangles.** Junot G., Leyva S.G., Pauer C., Calero C., Pagonabarraga I., Liedl T., Tavaicoli J., Tierno P. *Nano Letters*, 22, 18, 7408, 2022
- **Hydrodynamic synchronization and clustering in ratcheting colloidal matter.** Leyva, S.G., Stoop, R.L., Pagonabarraga, I., Tierno, P. *Science Advances*, 8, 23, eabo4546, 2022
- **Dynamics and interactions of magnetically driven colloidal microrotors.** Hernández, R.J.H., Fischer, T.M., Tierno, P. *Applied Physics Letters*, 120(8), 081601, 2022

Selected Projects

- **Engineering Frustration in artificial Colloidal iceS: degeneracy, exotic lattices and 3D states (ENFORCE).** ERC Consolidator Grant. IP: *Pietro Tierno*. (2020–2024)

2.2.22. Magnetism (NanoMagnetics)

Department Condensed Matter Physics, Faculty Physics

Team

Antoni García Santiago (Associate Professor)

Joan Manel Hernández Ferràs (Associate Professor)

Ferran Macià Bros (Associate Professor)

Marius Vasile Costache (Associate Professor)

Blai Casals Montserrat (Tenure-Track Lecturer)

Marc Rovírola Metcalfe (Predoctoral Researcher)

Javier Tejada Palacios (Emeritus Professor)

Selected Papers

- **Efficient spin pumping into metallic SrVO₃ epitaxial films.** Macià F., Mirjolet M., Fontcuberta J. *Journal of Magnetism and Magnetic Materials*, 546, 168871, 2022.

Selected Projects

- **Control acústico de excitaciones magnéticas en dispositivos nanométricos.** PID2020–113024GB–I00. IP1: *Joan Manel Hernández Ferràs*/IP2: *Ferran Macià Bros*. Ministerio de Ciencia, Innovación y Universidades. 2021–2024
- **Phonon–Magnon Pumping in Oxide Nano–structures – Creating condensates for Boson based computin.** Prokject owner — Norwegian University of Technology and Science. Partners: UB, Stockholm University, JAIST. Funding agency: Research Council of Norway (RCN). 2021–2025

2.2.23. Materials for Energy, Photonics and Catalysis (NanosMat)

Department Applied Physics, Faculty Physics

Team

Enric Bertran Serra (Full Professor)

Adolf Canillas Biosca (Full Professor)

Esther Pascual Miralles (Full Professor)

José Luis Andújar Bella (Associate Professor)

Franc Güell Vilà (Associate Professor)

Roger Amade Rovira (Associate Professor)

Oriol Arteaga Barriel (Postdoctoral Researcher Ramon y Cajal)

Jordi Gomis Bresco (Tenure-Track Lecturer)

Regina Galceran Vercher (Tenure-Track Lecturer)

Stefanos Chaitoglou (Postdoctoral Researcher Beatriu de Pinós)

Islam Alshaikh (Predoctoral Researcher)

Jordi Díaz Marcos (Adjunct Lecture)

Selected Papers

- **Friction Induces Anisotropic Propulsion in Sliding Magnetic Microtriangles.** *Junot G., Leyva S.G., Pauer C., Calero C., Pagonabarraga I., Liedl T., Tavecchi J., Tierno P.* Nano Letters, 22, 18, 7408, 2022
- **Insights into the inherent properties of vertical graphene flakes towards hydrogen evolution reaction.** *Chaitoglou S., Amade R., Bertran E.* Applied Surface Science, 592, 153327, 2022.
- **Spectrally modulated polarimetry with wavelength domain analysis.** *Bendada H., Bakhouché B., González-Siu L.O., Bruce N.C., Arteaga O.* Applied Optics, 61, 19, 5608, 2022.
- **Characterization of amorphous carbon films from 5 nm to 200 nm on single-side polished α -plane sapphire substrates by spectroscopic ellipsometry.** *Li Z., Cui C., Zhou X., Bian S., Arteaga O., Xu X.* Frontiers in Physics, 10, 968101, 2022.
- **Model for the depolarizing retarder in Mueller matrix polarimetry.** *Ossikovski R., Arteaga O., García-Caurel E., Hingerl K.* Journal of the Optical Society of America A: Optics and Image Science, and Vision, 39, 5, 873, 2022

Selected Projects

- **Nuevos materiales para la evolución electrocatalítica de hidrógeno.** TED2021-132070B-C21. IP1: *Roger Amade Rovira*/IP2: *Stefanos Chaitoglou*. Convocatoria 2021 de ayudas a Proyectos estratégicos orientados a la transición ecológica y a la transición digital. Ministerio de Ciencia e Innovación (MICINN). 2022-2024
- **Caracterización óptica de células solares altamente texturizadas para optimizar su eficiencia.** TED2021-129639B-I00. IP: *Oriol Arteaga Barriel*. Convocatoria 2021 de ayudas a Proyectos estratégicos orientados a la transición ecológica y a la transición digital. Ministerio de Ciencia e Innovación (MICINN). 2022-2024
- **Síntesis y funcionalización de nanoparedes de grafeno para detección de hidrógeno.** TED2021-131442B-C33. IP1: *Enric Bertran Serra*/IP2: *Frank Güell Vilà*. Convocatoria 2021 de ayudas a Proyectos estratégicos orientados a la transición ecológica y a la transición digital. Ministerio de Ciencia e Innovación (MICINN). 2022-2024
- **Dr. Enric Bertran and Dr. Roger Amadé (ENPHOCAMAT): “Fabricación avanzada de supercondensadores híbridos”.** PDC2021-121868-C22. MCIN/AEI/10.13039/5011 00011033 amd “NextGenerationEU”/PRTR”.

2.2.24. Materials: Phase transitions (NanoMet)

Department Condensed Matter Physics, Faculty Physics

Team

Antoni Planes Vila (Full Professor)

Lluís Mañosa Carrera (Full Professor)

Maria Teresa Castán Vidal (Full Professor)

Enric Stern Taulats (Postdoctoral Researcher Juan de la Cierva)

Marcel Porta Tena (Adjunct Lecturer)

Michela Romanini (External Collaborator)

Selected Papers

- **Giant elastic response and ultra-stable elastocaloric effect in tweed textured Fe–Pd single crystals.** *Xiao F., Bucsek A., Jin X., Porta M., Planes A.* Acta Materialia, 223,117486, 2022
- **Flexocaloric effect in superelastic materials.** *Pérez–Junyent C., Porta M., Valdés E., Mañosa L., Planes A., Saxena A., Vives E.* APL Materials, 10(12),121103, 2022
- **Magnetic and structural entropy contributions to the multicaloric effects in Ni–Mn–Ga–Cu.** *Gràcia–Condal A., Planes A., Mañosa L., Wei Z., Guo J., Soto–Parra D., Liu J.* Physical Review Materials, 6(8),084403, 2022.

Selected Projects

- **Battery Thermal Management System Based on High Power Density Digital Microfluidic Magnetocaloric Cooling (Cool BatMan).** PCI2022–132957. IP: *Lluís Mañosa Carrera*. Proyectos de Colaboración Internacional 2022. Ministerio de Ciencia e Innovación (MICINN). (2022–2025)

2.2.25. Mechanisms of Reactions in Inorganic Chemistry (NanosMat)

Department Inorganic and Organic Chemistry, Faculty Chemistry

Team

Manuel Martínez López (Full Professor)

Montserrat Sofia Ferrer García (Associate Professor)

Selected Papers

- **Amino acids with fluorescent tetrazine ethers as bioorthogonal handles for peptide modification.** *Ros E., Bellido M., Matarin J.A., Gallen A., Martínez M., Rodríguez L., Verdaguer X., Ribas de Pouplana L., Riera A.* RSC Advances, 12(23), 2022
- **Homo- and heterometallic chiral dynamic architectures from allyl–palladium(ii) building blocs.** *Ferrer M., Gallen A., Martínez M., Rocamora M., Puttreddy R., Rissanen K.* Dalton Transactions, 51(15), 2022

Selected Projects

- **Estudios cinético–mecanísticos de la reactividad de compuestos de coordinación en disolución: la importancia de las variables inocentes en los parámetros de activación.** PID2019–107006GB–C21. IP: *Manuel Martínez López*. Ministerio de Ciencia, Innovación y Universidades. (2020–2023)

2.2.26. Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (NanoPhotoElectro)

Department Electronics and Biomedical Engineering, Faculty Physics

Team

Albert Cornet Calveras (Full Professor)

Blas Garrido Fernández (Full Professor)

Albert Cirera Hernández (Full Professor)

Juan Daniel Prades Garcia (Full Professor)

Albert Romano Rodríguez (Full Professor)

Paolo Pellegrino (Associate Professor)

Daniel Navarro Urríos (Associate Professor)

Sergio Hernández Márquez (Associate Professor)

Cristian Fàbrega Gallego (Tenure-Track Lecturer)

Olga Casals Guillén (Adjunct Lecture)

Giovanni Vescio (Adjunct Lecture)

Sachin Tatyasaheb Navale (Postdoctoral Researcher)

Marie Skłodowska-Curie)

Juan Luis Frieiro Castro (Predoctoral Researcher)

Elena López Aymerich (Predoctoral Researcher)

Joshua Diago Forero (Predoctoral Researcher)

Francisco de P. Hernandez Ramirez (Adjunct Lecture)

Selected Papers

- **Automatic electrocardiogram detection and classification using bidirectional long short-term memory network improved by Bayesian optimization.** *Li H., Lin Z., An Z., Zuo S., Zhu W., Zhang Z., Mu Y., Cao L., Prades Garcia J.D.* Biomedical Signal Processing and Control 73, 103424, 2022
- **2D PEA2SnI4Inkjet-Printed Halide Perovskite LEDs on Rigid and Flexible Substrates.** *Vescio G., Sanchez-Diaz J., Frieiro J.L., Sánchez R.S., Hernández S., Cirera A., Mora-Seró I., Garrido B.* ACS Energy Letters, 7, 10, 3653, 2022
- **High Quality Inkjet Printed-Emissive Nanocrystalline Perovskite CsPbBr₃ Layers for Color Conversion Layer and LEDs Applications.** *Vescio G., Frieiro J.L., Gualdrón-Reyes A.F., Hernández S., Mora-Seró I., Garrido B., Cirera A.* Advanced Materials Technologies, 7, 7, 2101525, 2022
- **Visible-Light-Driven Room Temperature NO₂ Gas Sensor Based on Localized Surface Plasmon Resonance: The Case of Gold Nanoparticle Decorated Zinc Oxide Nanorods (ZnO NRs).** *Qomaruddin, Casals O., Wasisto H.S., Waag A., Prades J.D., Fàbrega C.* Chemosensors, 10, 1, 28, 2022.

Selected Projects

- **Towards ALL-optical sEnsinG and signal pRocessing using cavity and moleculaR Optomechanics.** TED2021-132040B-C21. IP1: *Daniel Navarro Urríos*/IP2: *Albert Romano Rodríguez*. Convocatoria 2021 de ayudas a Proyectos estratégicos orientados a la transición ecológica y a la transición digital. Ministerio de Ciencia e Innovación (MICINN) (2022-2024)
- **Colorimetric Indoor Air Quality Sensors (ColorIndS). INNOTEc.** ACE034/21/000057. IP: *Cristian Fàbrega Gallego*. Convocatòria per a l'any 2021 de la línia de subvencions per a la realització de projectes de recerca industrial i desenvolupament experimental entre empreses catalanes i desenvolupadors de tecnologia acreditats TECNIO (projectes INNOTEc) (2022-2024)
- **Computación en Memoria en soporte flexible: una tecnología disruptiva para el empoderamiento ciudadano.** TED2021-129643B-I00. IP1: *Albert Cirera Hernández*/IP2: *Sergi Hernández Márquez*. Convocatoria 2021 de ayudas a Proyectos estratégicos orientados a la transición ecológica y a la transición digital. Ministerio de Ciencia e Innovación (MICINN) (2022-2024)
- **Continuous two-dimensional Stretch monitoring of fresh tissue Biopsies (StretchBio).** H2020 FET-OPEN. IP: *Albert Romano Rodríguez* (2021-2025)

2.2.27. Microbial Enzymes for Industrial Applications Group (NanoBio)

Department Genetics, Microbiology and Statistics, Faculty Biology

Team

Susana Valenzuela Mayorga (Adjunct Lecturer)

Lourdes Verónica Cabañas (Predoctoral Researcher)

Research

The group of Microbial Enzymes for Industrial and Environmental Applications works on the biotransformation of natural polymers, including the development of enzymes that catalyze their modification, hydrolysis, and/or synthesis. In addition, they are exploring the potential of bacterial nanocellulose and other nanocellulosic materials, as sources of new biomaterials, suitable for high added value applications.

Selected Papers

- **Lytic polysaccharide monooxygenases and cellulases on the production of bacterial cellulose nanocrystals.** *Buruaga-Ramiro C., Fernández-Gándara N., Cabañas-Romero L.V., Valenzuela S.V., Pastor F.I.J., Díaz P., Martínez J.* European Polymer Journal, 163, 110939, 2022

2.2.28. Mineral Resources Research Group (NanoBio)

(Department Mineralogy, Petrology and Applied Geology, Faculty Earth Sciences)

Team

Josep Roqué Rosell (Associate Professor)

Joan Carles Melgarejo Draper (Associate Professor)

Joaquín Antonio Proenza Fernandez (Associate Professor) M. Abigail Jiménez Franco (Postdoctoral Researcher)

Selected Papers

- **Multiproxy characterization of sedimentary facies in a submarine sulphide mine tailings dumping site and their environmental significance: The study case of Portmán Bay (SE Spain).** *Baza-Varas A., Canals M., Frigola J., Cerdà-Domènech M., Rodés N., Tarrés M., Sanchez-Vidal A., Amblàs D., Rayo X., Soldevila E., Rivera J., Lastras G., Roqué J.* Science of the Total Environment, 810, 151183, 2022
- **Accurate and Efficient SIMS Oxygen Isotope Analysis of Composition-Variable Minerals: Online Matrix Effect Calibration for Dolomite.** *Xu J.-Y., Li Q.-L., Tang G.-Q., Lu K., Liu Y., Feng L.-J., Melgarejo J.C.* Analytical Chemistry, 94, 22, 7944, 2022
- **Colours of Gemmy Phosphates from the Gavà Neolithic Mines (Catalonia, Spain): Origin and Archaeological Significance.** *Díaz-Acha Y., Campeny M., Casas L., Di Febo R., Ibañez-Insa J., Jawhari T., Bosch J., Borrell F., Jorge-Villar S.E., Greneche J.-M., Tauler E., Melgarejo J.C.* Minerals, 12, 3, 368, 2022

Selected Projects

- **Recursos minerales en la litosfera de arcos volcánicos intra-oceánicos: una perspectiva a partir de sistemas minerales (MISYAP)** Ministerio de Ciencia e Innovación PID2019-105625RB-C21. IP: *Joaquín Antonio Proenza Fernandez*. Ministerio de Ciencia, Innovación y Universidades. (2020-2024)

2.2.29. Nanobioengineering and Biomaterials Unit (NanoBio)

Department Electronics and Biomedical Engineering, Faculty Physics

Team

Josep Samitier Martí (Full Professor)

Oscar Castaño Linares (Associate Professor)

Romén Rodríguez Trujillo (Tenure-Track Lecturer)

Mònica Mir Llorente (Adjunct Lecturer)

Adrià Noguera Monteagudo (Predoctoral Researcher)

Selected Papers

- **Microfluidic 3D platform to evaluate endothelial progenitor cell recruitment by bioactive materials.** *López-Canosa A., Pérez-Amodio S., Engel E., Castaño O.* Acta Biomaterialia, 2022
- **Development of a Custom-Made 3D Printing Protocol with Commercial Resins for Manufacturing Microfluidic Devices.** *Subirada F., Paoli R., Sierra-Agudelo J., Lagunas A., Rodríguez-Trujillo R., Samitier J.* Polymers, 14, 14, 2955, 2022
- **Trackability of distal access catheters: An in vitro quantitative evaluation of navigation strategies.** *Li J., Tomasello A., Requena M., Canals P., Tiberi R., Galve I., Engel E., Kallmes D.F., Castaño O., Ribo M.* Journal of NeuroInterventional Surgery, 2022

Selected Projects

- **Plataforma microfluídica integrada como modelo de miocardio electrofisiológicamente relevante.** **PID2021-124575OB-I00.** IP: *Oscar Castaño Linares.* Convocatoria 2021 de ayudas a «Proyectos de Generación de Conocimiento». Modalidad Proyectos de «Investigación Orientada». Ministerio de Ciencia e Innovación (MICINN). (2022-2025)

2.2.30. NanoBioPharma (NanoPharmaMed)

Department Pharmacy and Pharmaceutical Technology and Physical–Chemical, Faculty Pharmacy and Food Sciences

Team

Ana Calpena Campmany (Associate Professor)

Mireia Oliva Herrera (Associate Professor)

Lyda Halbaut Bellowa (Associate Professor)

Mireia Mallandrich Miret (Postdoctoral Researcher)

Helen Lissette Alvarado Bonilla (Adjunct Lecturer)

Joaquim Suñer Carbó (Adjunct Lecturer)

Antonio De Padua Boix Montanes (Adjunct Lecturer)

Paulo Cesar Sarango Granda (Predoctoral Researcher)

Roya Mohammadi (Predoctoral Researcher)

Salima El Moussaoui El Masnaoui (Industrial Predoctoral Researcher)

Marcelle Silva de Abreu (External Collaborator)

Guadalupe Del Carmen Abrego Escobar (External Collaborator)

Beatriz Clares Mavericks (External Collaborator)

Lupe Carolina Espinoza Tituana (External Collaborator)

Selected Papers

- **Effect of Penetration Enhancers and Safety on the Transdermal Delivery of Apremilast in Skin.** Sarango–Granda P., Espinoza L.C., Díaz–Garrido N., Alvarado H., Rodríguez–Lagunas M.J., Balmó L., Calpena A. *Pharmaceutics*, 14, 5, 1011, 2022
- **Assessment of Efficacy and Safety Using PPAR– γ Agonist–Loaded Nanocarriers for Inflammatory Eye Diseases.** Miralles E., Kamma–Lorger C.S., Domènech Ò., Sosa L., Casals I., Calpena A.C., Silva–Abreu M. *International Journal of Molecular Sciences*, 23, 19, 11184, 2022
- **Swine as the Animal Model for Testing New Formulations of Anti–Inflammatory Drugs: Carprofen Pharmacokinetics and Bioavailability of the Intramuscular Route.** Gómez–Segura L., Boix–Montañes A., Mallandrich M., Parra–Coca A., Soriano–Ruiz J.L., Calpena A.C., Gimeno Á., Bellido D., Colom H. *Pharmaceutics*, 14, 5, 1045, 2022
- **Enhanced transdermal delivery of pranoprofen using a thermo–reversible hydrogel loaded with lipid nanocarriers for the treatment of local inflammation.** Rincón M., Silva–Abreu M., Espinoza L.C., Sosa L., Calpena A.C., Rodríguez–Lagunas M.J., Colom H. *Pharmaceutics*, 15, 1, 22, 2022

2.2.31. Nanoenergy and Electronic Materials (M2E) Group (NanoEnergy)

Department Electronics and Biomedical Engineering, Faculty Physics

Team

Joan Ramon Morante Lleonart (Full Professor)

Selected Papers

- **Engineering the Interfacial Microenvironment via Surface Hydroxylation to Realize the Global Optimization of Electrochemical CO₂Reduction.** Han X., Zhang T., Biset-Peiró M., Zhang X., Li J., Tang W., Tang P., Morante J.R., Arbiol J. ACS Applied Materials and Interfaces, 14, 28, 32157, 2022
- **Phase Engineering of Defective Copper Selenide toward Robust Lithium–Sulfur Batteries.** Yang D., Li M., Zheng X., Han X., Zhang C., Jacas Biendicho J., Llorca J., Wang J., Hao H., Li J., Henkelman G., Arbiol J., Morante J.R., Mitlin D., Chou S., Cabot A. ACS Nano, 16, 7, 11102, 2022

2.2.32. Nanomalaria Group (NanoBio)

Department Biochemistry and Molecular Biology. Faculty Biology

Team

Santiago Imperial Ródenas (Associate Professor)

Xavier Fernández Busquets (External collaborator- IBEC-CRESIB)

Carlota Roca Martínez (Predoctoral Researcher)

Selected Papers

- **Engineering the Interfacial Microenvironment via Surface Hydroxylation to Realize the Global Optimization of Electrochemical CO₂Reduction.** Han X., Zhang T., Biset-Peiró M., Zhang X., Li J., Tang W., Tang P., Morante J.R., Arbiol J. ACS Applied Materials and Interfaces, 14, 28, 32157, 2022
- **Characterization of Domiphen Bromide as a New Fast-Acting Antiplasmodial Agent Inhibiting the Apicoplastidic Methyl Erythritol Phosphate Pathway.** Biosca A., Ramírez M., Gomez-Gomez A., Lafuente A., Iglesias V., Pozo O.J., Imperial S., Fernández-Busquets X. Pharmaceutics, 14, 7, 1320, 2022

Selected Projects

- **Coated liposome nanocomplexes as drug delivery systems for treatment of leishmaniasis.** (201811–30). Fundació La Marató de TV3 call for Research Projects on Infectious Diseases. 2019–2022

2.2.33. Nanoscience and Bio-Inorganic Chemistry (nanoBIC) (NanoPharmaMed)

Department Inorganic and Organic Chemistry, Faculty Chemistry

Team

Patrick Gamez Enamorado (ICREA Researcher)

Amparo Caubet Marín (Associate Professor)

Ana Belén Caballero Hernández (Associate Professor)

Selected Projects

- **Fotosensibilizadores multifuncionales de rutenio(II) para fotoquimioterapia** (PID2020-115537RB-I00). IP1: *Patrick Gamez Enamorado*/IP2: *Ana Belén Caballero Hernández*. Ministerio de Ciencia e Innovación. (2021-2025)

Selected Papers

- **Three to Tango: Inhibitory Effect of Quercetin and Apigenin on Acetylcholinesterase, Amyloid- β Aggregation and Acetylcholinesterase-Amyloid Interaction.** *I. Álvarez-Berbel, A. Espargaró, A. Viayna, A.B. Caballero, M.A. Busquets, P. Gámez, F.J. Luque and R. Sabaté.* *Pharmaceutics* 2022, 14(11), 2342
- **Anti-Amyloid Drug Screening Methods Using Bacterial Inclusion Bodies.** *Caballero, A.B., Gamez, P., Sabate, R., Espargaró, A.* *Methods in Molecular Biology*, 2538, 2022

Selected Projects

- **Fotosensibilizadores multifuncionales de rutenio(II) para fotoquimioterapia** (PID2020-115537RB-I00). IP1: *Patrick Gamez Enamorado*/IP2: *Ana Belén Caballero Hernández*. Ministerio de Ciencia e Innovación. (2021-2025)

2.2.34. Nanostructure of Biomembranes Group (NanoBio)

Department Pharmacy and Pharmaceutical Technology and Physical-Chemical, Faculty Pharmacy and Food Sciences

Team

Maria Teresa Montero Barrientos (Associate Professor)

Òscar Domènech Cabrera (Associate Professor)

Martha Leticia Vázquez González (Adjunct Lecturer)

Adrià Botet Carreras (Predoctoral Researcher)

Selected Papers

- **Studying Lipid Membrane Interactions of a Super-Cationic Peptide in Model Membranes and Living Bacteria.** *Pérez-Guillén I., Domènech Ò., Botet-Carreras A., Merlos A., Sierra J.M., Albericio F., de la Torre B.G., Montero M.T., Viñas M., Borrell J.H.* *Pharmaceutics*, 14, 10, 2191, 2022
- **On the uptake of cationic liposomes by cells: From changes in elasticity to internalization.** *A. Botet-Carreras, M. Bosch Marimon, R. Millan-Solsona, E. Aubets, C. J. Ciudad, V. Noé, M.T. Montero, Ò. Domènech and J.H. Borrell.* *Colloids and Surfaces B: Biointerfaces*, 221, 2022

2.2.35. Nanostructured systems for controlled drug delivery (NanoPharmaMed)

Department Pharmacy and Pharmaceutical Technology and Physical-Chemical, Faculty Pharmacy and Food Sciences

Team

María Luisa García López (Full Professor)

Espina García Marta (Associate Professor)

Elena Sánchez López (Tenure-Track Lecturer)

Fidencia Gamisans Linares (Adjunct Lecturer)

Gerard Esteruelas Navarro (Predoctoral Researcher)

Lorena Bonilla Vidal (Predoctoral Researcher)

Ana Laura Lopez Machado (Predoctoral Researcher)

Amanda Cano Fernández (External Collaborator)

Selected Papers

- **Development of Peptide Targeted PLGA-PEGylated Nanoparticles Loading Licochalcone-A for Ocular Inflammation.** Galindo R., Sánchez-López E., Gómara M.J., Espina M., Ettcheto M., Cano A., Haro I., Camins A., García M.L. *Pharmaceutics*, 14, 2, 285, 2022
- **Biodegradable nanoparticles for the treatment of epilepsy: From current advances to future challenges.** Bonilla L., Esteruelas G., Ettcheto M., Espina M., García M.L., Camins A., Souto E.B., Cano A., Sánchez-López E. *Epilepsia Open*, 7, S1, S121, S132, 2022
- **Therapeutic Approaches for Age-Related Macular Degeneration.** Galindo-Camacho R.M., Blanco-Llamero C., da Ana R., Fuertes M.A., Señoráns F.J., Silva A.M., García M.L., Souto E.B. *International Journal of Molecular Sciences*, 23, 19, 11769, 2022
- **Novel Strategies against Cancer: Dexibuprofen-Loaded Nanostructured Lipid Carriers.** Thiruchenthooran V., Świtalska M., Bonilla L., Espina M., García M.L., Wietrzyk J., Sánchez-López E., Głiszczyńska A. *International Journal of Molecular Sciences*, 23, 19, 11310, 2022

Selected Projects

- **Nanopartícules per a la desinfecció en endodòncia.** F2I-PdC_2021-002. IP1: M. Luisa García López/IP2: Elena Sánchez López. Convocatòria Prova de concepte 2021. Fons per a l'Impuls de la Innovació - Fundació Bosch i Gimpera. (2022-2023)
- **Comportamiento fisicoquímico y biofarmacéutico de nuevas nanoestructuras no lipídicas para la liberación de fármacos.** PID2021-122187NB-C32. IP1: M. José García Celma/IP2: M. Luisa García López. Convocatoria 2021 de ayudas a «Proyectos de Generación de Conocimiento». Modalidad Proyectos de «Investigación No Orientada» Ministerio de Ciencia, Innovación y Universidades. (2022-2025)

2.2.36. Nanosystems Statistical Physics (NanoMet)

Department Condensed Matter Physics, Faculty Physics

Team

Miguel Rubí Capaceti (Full Professor)

Andrés Arango Restrepo (Predoctoral Researcher)

Selected Papers

- **Radiative heat transfer between two carbon nanotubes.** *Nefedov I.S., Davidovich M.V., Glukhova O.E., Slepchenkov M.M., Rubí J.M.* Scientific Reports, 12, 1, 17930, 2022
- **Nonequilibrium thermodynamics of Janus particle self-assembly.** *Torrenegra-Rico J.D., Arango-Restrepo A., Rubí J.M.* Journal of Chemical Physics, 157, 10, 104103, 2022
- **Enhancing particle transport in deformable micro-channels.** *Torrenegra-Rico J.D., Arango-Restrepo A., Rubí J.M.* Journal of Chemical Physics, 156, 5, 54118, 2022

Selected Projects

- **Materia activa, confinada y autoensamblada fuera de equilibrio.** PID2021-126570NB-I00. IP: Convocatoria 2021 de ayudas a «Proyectos de Generación de Conocimiento». Modalidad Proyectos de «Investigación No Orientada». Miguel Rubí Capaceti. Ministerio de Ciencia, Innovación y Universidades. (2022-2025)

2.2.37. Organic Materials Unit (NanosMat)

Department Inorganic and Organic Chemistry, Faculty Chemistry

Team

María Dolores Velasco Castrillo (Full Professor)

Jaume García Amorós (Associate Professor)

Pedro Güixens Gallardo (Postdoctoral Researcher Margarita Salas)

Roger Bujaldón Carbó (Predoctoral Researcher)

Clara Fabregat Pallejà (Predoctoral Researcher)

Selected Papers

- **Powder X-ray diffraction as a powerful tool to exploit in organic electronics: shedding light on the first N,N',N''-trialkyldiindolocarbazole.** *Vilche A., Bujaldon R., Alcobe X., Velasco D., Puigjaner C.* Acta Crystallographica Section B: Structural Science, Crystal Engineering and Materials, 78, 253, 260, 2022
- **Low-molar-mass and oligomeric derivatives of carbazole and triphenylamine containing thiazolo[5,4-d]thiazole moieties.** *Dabuliene A., Dainyte A., Andruleviciene V., Lygaitis R., Punniyakoti S.M., Tomkeviciene A., Velasco D., Obushak M., Grazulevicius J.V.* Polymer Bulletin, 2022

2.2.38. Peptides and Proteins: Physicochemical Studies (NanoBio)

Department Pharmacy and Pharmaceutical Technology and Physical–Chemical, Faculty Pharmacy and Food Sciences

Team

Yolanda Cajal Visa (Associate Professor)

Josefina Prat Aixelà (Associate Professor)

Montserrat Pujol Cubells (Associate Professor)

Montserrat Muñoz Juncosa (Associate Professor)

Selected Papers

- **Characterisation of the enzymes involved in the diol synthase metabolic pathway in *Pseudomonas aeruginosa*.** *Shoja–Chaghervand S., Castells M., Rabanal F., Cajal Y., Manresa A., Estupiñán M., Busquets M.* *Process Biochemistry*, 120, 301, 312, 2022

2.2.39. Pharmaceutical Nanotechnology (NanoPharmaMed)

Department Pharmacy and Pharmaceutical Technology and Physical–Chemical, Faculty Pharmacy and Food Sciences

Team

María José García Celma (Full Professor)

M. Immaculada Dinarès Milà (Associate Professor)

M. Àngels Salvadó Lladós (Associate Professor)

Marta Monge Azemar (Adjunct Lecturer)

Esteban Figueroa Becerra (Predoctoral Researcher)

Selected Papers

- **Rosmarinic Acid–Loaded Polymeric Nanoparticles Prepared by Low–Energy Nano–Emulsion Templating: Formulation, Biophysical Characterization, and In Vitro Studies.** *García–Melero J., López–Mitjavila J.–J., García–Celma M.J., Rodríguez–Abreu C., Grijalvo S.* *Materials*, 15, 13, 4572, 2022

Selected Projects

- **Comportamiento fisicoquímico y biofarmacéutico de nuevas nanoestructuras no lipídicas para la liberación de fármacos.** PID2021–122187NB–C32. IP1: *M. José García Celma*/IP2: *M. Luisa García Lopez*. Convocatoria 2021 de ayudas a «Proyectos de Generación de Conocimiento». Modalidad Proyectos de «Investigación No Orientada». Ministerio de Ciencia, Innovación y Universidades. (2022–2025)

2.2.40. Physics in Nanobiophysics (NanoBio)

Department Condensed Matter Physics, Faculty Physics

Team

Aurora Hernandez Machado (Full Professor)

Josep Ferré Torres (Industrial Predoctoral Researcher)

Carla Riera Llobet (Predoctoral Researcher)

Selected Papers

- **Normalization of Blood Viscosity According to the Hematocrit and the Shear Rate.** *Trejo-Soto C., Hernández-Machado A.* *Micromachines*, 13, 3, 357, 2022
- **Microfluidics Approach to the Mechanical Properties of Red Blood Cell Membrane and Their Effect on Blood Rheology.** *Trejo-Soto C., Lázaro G.R., Pagonabarraga I., Hernández-Machado A.* *Membranes*, 12, 2, 217, 2022
- **Dynamical shapes of droplets of cyclodextrin-surfactant solutions.** *Romero-Arias J.R., Luviano A.S., Costas M., Hernandez-Machado A., Barrio R.A.* *Scientific Reports*, 12, 1, 5252, 2022
- **Membrane rigidity regulates E. coli proliferation rates.** *Salinas-Almaguer S., Mell M., Almendro-Vedía V.G., Calero M., Robledo-Sánchez K.C.M., Ruiz-Suarez C., Alarcón T., Barrio R.A., Hernández-Machado A., Monroy F.* *Scientific Reports*, 12, 1, 933, 2022

Selected Projects

- **Microfluidica y Biomembranas: Experimentos y teoría.** PID2019-106063GB-I00. Ministerio de Ciencia e Innovación. IP: *Aurora Hernandez Machado*. 2020-2023

2.2.41. Self-organized complexity and self-assembling materials (NanoBio, NanosMat)

Department Materials Science and Physical Chemistry, Faculty Chemistry

Team

Francesc Sagués Mestre (Full Professor)

Jordi Ignés Mullol (Associate Professor)

Joan-Anton Farrera Piñol (Associate Professor)

Mohammad Tahghighi (Predoctoral Researcher)

Berta Martínez Prat (Predoctoral Researcher)

Ignasi Vélez Cerón (Predoctoral Researcher)

Ruoshi Wang (Predoctoral Researcher)

Selected Papers

- **Active boundary layers in confined active nematics.** *Jerôme HardoÛin, Claire Doré, Justine Laurent, Teresa Lopez-Leon, Jordi Ignés-Mullol & Francesc Sagués.* *Nature Communications* volume 13, 6675, 2022

Selected Projects

- **Materia blanda fuera de equilibrio: materiales activos y sistemas vivos.** PID2019-108842GB-C22. IP1: *Jordi Ignés Mullol*/IP2: *Francesc Sagués Mestre*. Ministerio de Ciencia, Innovación y Universidades (2020-2023)

2.2.42. Solar and Photovoltaic Energy Group (NanoEnergy)

Department Applied Physics, Faculty Physics

Team

Joan Bertomeu Balagueró (Full Professor)

Ana Luz Muñoz Rosas (Visiting Postdoctoral Researcher)

José Miguel Asensi López (Associate Professor)

Thomas Tom (Predoctoral Researcher)

Julià López Vidrier (Tenure-Track Lecturer)

Selected Papers

- **Deoxyribonucleic Acid-Based Electron Selective Contact for Crystalline Silicon Solar Cells.** Tom T., Ros E., Rovira D., López-Vidrier J., Asensi J.M., Ortega P., Puigdollers J., Voz C., Bertomeu J. *Advanced Materials Technologies*, 2022
- **Expanding the Perspective of Polymeric Selective Contacts in Photovoltaic Devices Using Branched Polyethylenimine.** Ros E., Tom T., Rovira D., Lopez J., Masmitjà G., Pusay B., Almache E., Martín I., Jimenez M., Saucedo E., Tormos E., Asensi J.M., Ortega P., Bertomeu J., Puigdollers J., Voz C. *ACS Applied Energy Materials*, 5, 9, 10702, 2022

Selected Projects

- **Contactos selectivos y capas activas para dispositivos de energía. PID2019-109215RB-C43.**
IP: Joan Bertomeu Balagueró. Ministerio de Ciencia e Innovación (2020-2023)

2.2.43. Solar Energy Materials and Systems (SEMS) Group (NanoEnergy)

Department Electronics and Biomedical Engineering, Faculty Physics

Team

Alejandro Pérez Rodríguez (Full Professor)

Lorenzo Calvo Barrio (Adjunct Lecturer)

Victor Izquierdo Roca (External Collaborator)

Marcel Placidi (External Collaborator)

Selected Papers

- **Characterization of the Stability of Indium Tin Oxide and Functional Layers for Semitransparent Back-Contact Applications on Cu(in,Ga)Se₂ Solar Cells.** Fonoll-Rubio R., Placidi M., Hoelscher T., Thomere A., Li-Kao Z.J., Guc M., Izquierdo-Roca V., Scheer R., Pérez-Rodríguez A. *Solar RRL*, 6, 7, 2101071, 2022
- **Ultrathin Wide-Bandgap α -Si:H-Based Solar Cells for Transparent Photovoltaic Applications.** Lopez-García A.J., Blazquez O., Voz C., Puigdollers J., Izquierdo-Roca V., Pérez-Rodríguez A. *Solar RRL*, 6, 1, 2100909, 2022
- **Combinatorial Analysis Methodologies for Accelerated Research: The Case of Chalcogenide Thin-Film Photovoltaic Technologies.** Fonoll-Rubio R., Becerril-Romero I., Vidal-Fuentes P., Grau-Luque E., Atlan F., Perez-Rodríguez A., Izquierdo-Roca V., Guc M. *Solar RRL*, 6, 9, 2200235, 2022
- **To grind or not to grind? The influence of mechanical and thermal treatments on the Cu/Zn disorder in Cu₂ZnSn(S_xSe_{1-x})₄ monograins.** Gurieva G., Rotaru V., Ernits K., Siminel N., Manjón-Sanz A., Kirkham M., Perez-Rodríguez A., Guc M., Meissner D., Schorr S. *Solar Energy Materials and Solar Cells*, 248, 112009, 2022

2.2.44. Statistical Physics of Bio–Nano Systems and Complex Matter (NanoMet)

Department Condensed Matter Physics, Faculty Physics

Team

Giancarlo Franzese (Associate Professor)

Carlos Calero Borrallo (Tenure–Track Lecture)

Oriol Vilanova Gabarrón (Predoctoral Researcher)

Luis Enrique Coronas Serna (Predoctoral Researcher)

Selected Papers

- **Using Car–Parrinello simulations and microscopic order descriptors to reveal two locally favored structures with distinct molecular dipole moments and dynamics in ambient liquid water.** *Skarmoutsos I., Franzese G., Guardia E.* Journal of Molecular Liquids, 364, 119936, 2022
- **Modeling and Simulation of Lipid Membranes.** *Martí J., Calero C.* Membranes, 12, 6, 549, 2022

Selected Projects

- **Protein unfolding and aggregation near a hydrophobic interface.** *March D., Bianco V., Franzese G. March D., Bianco V., Franzese G.* Polymers. 2021, 13, 1, 153
- **Física estadística para materia blanda Bio–Nano. PID2021–124297NB–C31.** IP1: *Giancarlo Franzese* IP2: *Carlos Calero Borrallo*. Convocatoria 2021 de ayudas a «Proyectos de Generación de Conocimiento». Modalidad Proyectos de «Investigación No Orientada». Ministerio de Ciencia, Innovación y Universidades. (2022–2025)

2.2.45. Supra and Nanostructured Systems Group (NanosMat)

Department Inorganic and Organic Chemistry, Faculty Chemistry

Team

Laura Rodríguez Raurell (Full Professor)

Ariadna Lázaro Palacios (Predoctoral Researcher)

Inmaculada Angurell Purroy (Associate Professor)

Guillermo Romo Islas (Predoctoral Researcher)

Araceli De Aquino Samper (Predoctoral Researcher)

Selected Papers

- **How to achieve near unity fluorescence quantum yields on gold(I) benzothiadiazole–based derivatives.** *Pinto A., Echeverri M., Gómez–Lor B., Rodríguez L.* Dyes and Pigments, 202, 110308, 2022
- **Aggregation of gold(i) complexes: phosphorescence vs. singlet oxygen production.** *Pinto A., Ward J.S., Rissanen K., Smith M., Rodríguez L.* Dalton Transactions, 51, 22, 2022
- **Highly emissive supramolecular gold(i)–BTD materials.** *Pinto A., Echeverri M., Gómez–Lor B., Rodríguez L.* Dalton Transactions, 51, 21, 2022
- **Development of gold(i) phosphorescent tweezers for sensing Applications.** *de Aquino A., Caparrós F.J., Aullón G., Truong K.–N., Rissanen K., Lima J.C., Rodríguez L.* Dalton Transactions, 51, 42, 2022

Selected Projects

- **Herramientas supramoleculares para aumentar la emisión de fosforescencia (PID2019–104121GB–I00).** PI: *Laura Rodríguez Raurell*. Ministerio de Ciencia e Innovación (2020–2023)

2.2.46. Supramolecular Systems in Nanobiomedicine (NanoPharmaMed)

Department Pharmacology, Toxicology and Therapeutic Chemistry, Faculty Pharmacy and Food Sciences

Team

M. Lluïsa Pérez García (Full Professor)

David Limon Magaña (Adjunct Lecture)

Thais Fedatto Abelha (Tenure-Track Lecturer)

Bagherpour Saman (Predoctoral Researcher)

Selected Papers

- **Using Car–Parrinello simulations and microscopic order descriptors to reveal two locally favored structures with distinct molecular dipole moments and dynamics in ambient liquid water.** Skarmoutsos I., Franzese G., Guardia E. *Journal of Molecular Liquids*, 364, 119936, 2022
- **Supramolecular Hydrogels Consisting of Nanofibers Increase the Bioavailability of Curcuminoids in Inflammatory Skin Diseases.** Limón D., Gil-Lianes P., Rodríguez-Cid L., Alvarado H.L., Díaz-Garrido N., Mallandrich M., Baldomà L., Calpena A.C., Domingo C., Aliaga-Alcalde N., González-Campo A., Pérez-García L. *ACS Applied Nano Materials*, 2022
- **Gemini Surfactant Mediated Catansomes for Enhanced Singlet Oxygen Generation of Rose Bengal and Their Phototoxicity against Cancer Cells.** Sharma B., Samperi M., Jain A., Chaudhary G.R., Kaur G., Pérez-García L. *ACS Biomaterials Science and Engineering*, 2022
- **Polysilicon Microchips Functionalized with Bipyridinium–Based Cyclophanes for a Highly Efficient Cytotoxicity in Cancerous Cells.** Limón D., Hornick J.E., Cai K., Beldjoudi Y., Duch M., Plaza J.A., Pérez-García L., Stoddart J.F. *ACS Nano*, 2022
- **Intracellular Mechanical Drugs Induce Cell–Cycle Altering and Cell Death.** Arjona M.I., Duch M., Hernández-Pinto A., Vázquez P., Aguil J.P., Gómez-Martínez R., Redondo-Horcajo M., Amirthalingam E., Pérez-García L., Suárez T., Plaza J.A. *Advanced Materials*, 2022

Selected Projects

- **Bio-funcionalización de chips en suspensión innovadores para estudios químicos, bioelectrónicos y mecánicos en células vivas.** PID2020-115663GB-C32. IP1: *M. Luisa Perez Garcia*/IP2: *Elvira Gomez Valentín*. Ministerio de Ciencia, Innovación y Universidades. 2021-2024.
- **Collaborating at Wireless communication with cells towards bioelectronic treatments of the future.** EP/R004072/1. EPSRC Healthcare Technologies Challenge Awards. Engineering and Physical Sciences Research Council (EPSRC). 2018-2022

2.2.47. Surface Engineering. Thin-layer Lab (NanosMat)

Department Applied Physics, Faculty Physics

Team

Arturo Lousa Rodríguez (Associate Professor)

Joan Esteve Pujol (Emeritus Lecturer)

2.2.48. Sustainable Electrochemical Processes (NanoEnergy)

Department of Materials Science and Physical Chemistry, Faculty of Chemistry

Teams

Maria Sarret Pons (Associate Professor)

Teresa Andreu Arbella (Tenure-track Lecturer)

Mohamed Amazian El Moussaoui (Industrial Predoctoral Researcher)

Marti Molera Janer (Technician)

Selected Papers

- **Using Car–Parrinello simulations and microscopic order descriptors to reveal two locally favored structures with distinct molecular dipole moments and dynamics in ambient liquid water.** *Skarmoutsos I., Franzese G., Guardia E.* Journal of Molecular Liquids, 364, 119936, 2022
- **Fischer–Tropsch synthesis: Towards a highly-selective catalyst by lanthanide promotion under relevant CO₂ syngas mixtures.** *Guilera J., Díaz-López J.A., Berenguer A., Biset–Peiró M., Andreu T.* Applied Catalysis A: General, 629, 118423, 2022
- **Effect of Thermal Treatment on Nickel–Cobalt Electrocatalysts for Glycerol Oxidation.** *Andreu T., Mallafré M., Molera M., Sarret M., Oriol R., Sirés I.* ChemElectroChem, 9, 9, 2022
- **Ignition of CO₂ methanation using DBD–plasma catalysis in an adiabatic reactor.** *Biset–Peiró M., Guilera J., Andreu T.* Chemical Engineering Journal, 433, 133638, 2022
- **Design of a Multi–Tubular Catalytic Reactor Assisted by CFD Based on Free–Convection Heat–Management for Decentralised Synthetic Methane Production.** *Alarcón A., Busqué R., Andreu T., Guilera J.* Catalysts, 12, 9, 1053, 2022

Selected Projects

- **Interfaces conductoras para reducir el coste de los electrolizadores PEM.** TED2021-130461B-I00. IP: *Teresa Andreu Arbella.* Convocatoria 2021 de ayudas a Proyectos estratégicos orientados a la transición ecológica y a la transición digital. Ministerio de Ciencia e Innovación (MICINN). (2022–2025)

2.2.49. Theoretical Physics of Nanoscopic Systems (NanoMet)

Department Quantum Physics, Faculty Physics

Team

Martí Pi Pericay (Full Professor)

Manuel Barranco Gómez (Full Professor)

Selected Papers

- **Using Car–Parrinello simulations and microscopic order descriptors to reveal two locally favored structures with distinct molecular dipole moments and dynamics in ambient liquid water.** *Skarmoutsos I., Franzese G., Guardia E.* Journal of Molecular Liquids, 364, 119936, 2022
- **Merging of superfluid helium nanodroplets with vortices.** *Escartín J.M., Ancilotto F., Barranco M., Pi M.* Physical Review B, 105, 2, 24511, 2022
- **Clustering, collision, and relaxation dynamics in pure and doped helium nanoclusters: Density–vs particle–based approaches.** *García-Alfonso E., Barranco M., Bonhommeau D.A., Halberstadt N., Pi M., Calvo F.* Journal of Chemical Physics, 157, 1, 14106, 2022

2.2.50. Thin Layer Structures for Spintronics (NanoMagnetics)

Team

Manuel Varela Fernández (Full Professor)

César Ferrater Martorell (Associate Professor)

M Carmen Polo Trasancos (Associate Professor)

2.2.51. Thin-film and Nanostructure electrodeposition group (NanosMat)

Department Materials Science and Physical Chemistry, Faculty Chemistry

Team

Elvira Gómez Valentín (Full Professor)

Albert Serrà Ramos (Tenure-Track Lecturer)

Judit Lloreda Rodes (Predoctoral Researcher)

Laura Hidrobo Rodríguez ((Predoctoral Researcher)

Fatemeh Mohandes (Postdoctoral Researcher M. Zambrano)

Arnau Fons Cervera (External Collaborator)

Selected Papers

- **Electrodeposition of CoNi alloys in a biocompatible DES and its suitability for activating the formation of sulfate radicals.** Gómez E., Fons A., Cestaro R., Serrà A. *Electrochimica Acta*, 435, 141428, 2022
- **Electrodeposition of nanostructured Bi₂MoO₆@Bi₂MoO₆-x homojunction films for the enhanced visible-light-driven photocatalytic degradation of antibiotics.** Gómez E., Cestaro R., Philippe L., Serrà A. *Applied Catalysis B: Environmental*, 317, 121703, 2022
- **Recent progress in the electrochemical deposition of ZnO nanowires: synthesis approaches and applications.** Manzano C.V., Philippe L., Serrà A. *Critical Reviews in Solid State and Materials Sciences*, 47, 5, 772, 2022
- **Visible-light driven sonophotocatalytic removal of tetracycline using Ca-doped ZnO nanoparticles.** Bembibre A., Benamara M., Hjiri M., Gómez E., Alamri H.R., Dhahri R., Serrà A. *Chemical Engineering Journal*, 427, 132006, 2022

Selected Projects

- **Micro/Nano-reactores foto-termo-catalíticos escalables para la síntesis de compuestos químicos verdes con luz solar a través de biomasa lignocelulósica.** TED2021-129898B-C22. IP1: : Elvira Gomez Valentín/IP2: Albert Serrà Ramos. Convocatoria 2021 de ayudas a Proyectos estratégicos orientados a la transición ecológica y a la transición digital. Ministerio de Ciencia e Innovación (MICINN). (2022-2024)
- **Bio-funcionalización de chips en suspensión innovadores para estudios químicos, bioelectrónicos y mecánicos en células vivas.** PID2020-115663GB-C32. IP1: M. Luisa Perez Garcia/IP2: Elvira Gomez Valentín. Ministerio de Ciencia, Innovación y Universidades. 2021-2024

3. Researchers grouped by areas

3.1. NANOMET

- **Arango Restrepo, Andres**
Predoctoral Researcher
Nanosystems Statistical Physics
- **Barranco Gomez, Manuel**
Full Professor,
Theoretical physics of Nanoscopic Systems
- **Blanco Portals, Javier**
Predoctoral Researcher
LENS-Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
- **Calero Borrillo, Carlos**
Tenure-Track Lecture
Statistical Physics of Bio-Nano Systems and Complex Matter (BioNanoComplex)
- **Castan Vidal, Maria Teresa**
Full Professor
Materials: Phase transitions
- **Coll Benejam, Catalina**
Predoctoral Researcher
LENS-Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
- **Coronas Serna, Luis Enrique**
Predoctoral Researcher
Statistical Physics of Bio-Nano Systems and Complex Matter (BioNanoComplex)
- **del Pozo Bueno, Daniel**
Predoctoral Researcher
LENS-Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
- **Estrade Albiol, Sònia**
Associate Professor
LENS-Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
- **Franzese, Giancarlo**
Associate Professor
Statistical Physics of Bio-Nano Systems and Complex Matter (BioNanoComplex)
- **Iglesias Clotas, Òscar**
Associate Professor
Group of Magnetic Nanomaterials
- **Lopez Conesa, Luis**
Collaborator
LENS-Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
- **Mañosa Carrera, Lluís**
Full Professor
Materials: Phase transitions
- **Marchetti, Gianni,**
Technician
Statistical Physics of Bio-Nano Systems and Complex Matter (BioNanoComplex)
- **Martin Malpartida, Gemma**
Collaborator
LENS-Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
- **Nandi, Pranjal**
Predoctoral Researcher
LENS-Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)

▪ **Peiro Martinez, Francisca**

Full Professor

LENS-Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)

▪ **Pi Pericay, Marti**

Full Professor

Theoretical physics of Nanoscopic Systems

▪ **Planes Vila, Antoni**

Full Professor

Materials: Phase transitions

▪ **Porta Tena, Marcel**

Adjunct Lecture

Materials: Phase transitions

▪ **Rebled Corsellas, Jose Manuel**

Collaborator

LENS-Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)

▪ **Romanini, Michela**

External Collaborator

Materials: Phase transitions

▪ **Rubi Capaceti, Jose Miguel**

Full Professor

Nanosystems Statistical Physics

▪ **Stern Taulats, Enric**

Postdoctoral Researcher Juan de la Cierva

Materials: Phase transitions

▪ **Vescio, Giovanni,**

Adjunct Lecture

Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)

▪ **Vilanova Gabarron, Oriol**

Predoctoral Researcher

Statistical Physics of Bio-Nano Systems and Complex Matter (BioNanoComplex)

▪ **Yedra Cardona, Lluís**

Postdoctoral Researcher Juan de la Cierva

LENS-Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)

3.2. NANOBIO

▪ **Almendros Lopez, Isaac**

Associate Professor

Biophysics and Bioengineering Unit

▪ **Arro Plans, Montserrat**

Associate Professor

Genomics, Proteomics and Plant Metabolomics

▪ **Bastida Armengol, Jaume**

Full Professor

Genomics, Proteomics and Plant Metabolomics

▪ **Botet Carreras, Adrià**

Predoctoral Researcher

Nanostructure of Biomembranes Group

▪ **Cajal Visa, Yolanda Carlota**

Associate Professor

Peptides and Proteins: Physicochemical Studies

▪ **Calo, Annalisa**

Tenure-Track Lecture

Bioelectrical Characterization at Nanoscale

▪ **Castaño Linares, Oscar**

Associate Professor

Nanobioengineering and Biomaterials Unit

▪ **Cereceda Lopez, Eric**

Predoctoral Researcher

Magnetic Soft Matter Group

▪ **Ciudad Gomez, Carlos Julian**

Full Professor

Cancer therapy group

▪ **Domenech Cabrera, Òscar**

Associate Professor

Nanostructure of Biomembranes Group

▪ **Farre Ventura, Ramon**

Full Professor

Biophysics and Bioengineering Unit

- **Fernandez Busquets, Xavier**
External Collaborator
Nanomalaria Group
- **Lazaro Miguel, Rodriguez**
Personal Administració i Serveis
Biophysics and Bioengineering Unit
- **Ferré Torres, Josep**
Industrial Predoctoral Researcher
Physics in Nanobiophysics
- **Gavara Casas, Nuria**
Tenure-Track Lecture
Biophysics and Bioengineering Unit
- **Gomila Lluch, Gabriel**
Full Professor
Bioelectrical Characterization at Nanoscale
- **González Martha Leticia, Vázquez**
Adjunct Lecture
Nanostructure of Biomembranes Group
- **Hernandez Machado, Aurora**
Full Professor
Physics in Nanobiophysics
- **Imperial Rodenas, Santiago**
Associate Professor
Nanomalaria Group
- **Jimenez Franco, M. Abigail**
Postdoctoral Researcher
Mineral Resources Research Group
- **Mañosas Castejon, Maria**
Researcher Ramon y Cajal
Biomolecule and small-system physics: Small Biosystems Lab
- **Martínez Prat, Berta**
Predoctoral Researcher
Self-organized complexity and self-assembling materials (SOC&SAM)
- **Marzoa Dominguez, Antonio**
Predoctoral Researcher
BiOPT: Optical Trapping Lab – Grup de Biofotònica
- **Pajares Rojas, Arturo**
Collaborator
Catalysis and Advanced Inorganic Materials (MATCAT)
- **Melgarejo Draper, Joan Carles**
Associate Professor
Mineral Resources Research Group
- **Mir Llorente, Mònica**
Adjunct Lecture
Nanobioengineering and Biomaterials Unit
- **Montero Barrientos, Maria Teresa**
Associate Professor
Nanostructure of Biomembranes Group
- **Montes Usategui, Mario**
Associate Professor
BiOPT: Optical Trapping Lab – Grup de Biofotònica
- **Muñoz Juncosa, Maria Montserrat**
Associate Professor
Peptides and Proteins: Physicochemical Studies
- **Navajas Navarro, Daniel**
Emeritus Professor
Biophysics and Bioengineering Unit
- **Noe Mata, Veronica**
Full Professor
Cancer therapy group
- **Noguera Monteagudo, Adrià**
Predoctoral Researcher
Nanobioengineering and Biomaterials Unit
- **Ortiz Ambriz, Antonio**
Adjunct Lecture
Magnetic Soft Matter Group
- **Otero Diaz, Jorge**
Tenure-Track Lecture
Biophysics and Bioengineering Unit

- **Prat Aixela, Josefina**
Associate Professor
Peptides and Proteins: Physicochemical Studies
- **Proenza Fernandez, Joaquin Antonio**
Associate Professor
Mineral Resources Research Group
- **Pujol Cubells, Montserrat**
Associate Professor
Peptides and Proteins: Physicochemical Studies
- **Riera Llobet, Carla**
Predoctoral Researcher
Physics in Nanobiophysics
- **Ritort Farran, Felix**
Full Professor
Biomolecule and small-system physics: Small Biosystems Lab
- **Roca Martinez, Carlota**
Predoctoral Researcher
Nanomalaria Group
- **Roca-cusachs Soulere, Pere**
Associate Professor
Biophysics and Bioengineering Unit
- **Rodriguez Lazaro, Miguel**
Technician
Biophysics and Bioengineering Unit
- **Rodriguez Trujillo, Romen**
Associate Professor
Nanobioengineering and Biomaterials Unit
- **Roque Rosell, Josep**
Associate Professor
Mineral Resources Research Group
- **Sagues Mestre, Francesc**
Full Professor
Self-organized complexity and self-assembling materials (SOC&SAM)
- **Samitier Marti, Josep**
Full Professor
Nanobioengineering and Biomaterials Unit
- **Sunyer Borrell, Raimon**
Tenure-Track Lecture
Biophysics and Bioengineering Unit
- **Tierno, Pietro**
Full Professor
Magnetic Soft Matter Group
- **Torras Claveria, Laura**
Associate Professor
Genomics, Proteomics and Plant Metabolomics
- **Valenzuela Mayorga, Susana Valeria**
Adjunct Lecture
Microbial Enzymes for Industrial Applications Group
- **Vázquez González, Martha Leticia**
Adjunct Lecture
Nanostructure of Biomembranes Group
- **Vélez Cerón, Ignasi**
Predoctoral Researcher
Self-organized complexity and self-assembling materials (SOC&SAM)
- **Veronica Cabañas, Lourdes**
Predoctoral Researcher
Microbial Enzymes for Industrial Applications Group
- **Viladomat Meya, Francisco**
Full Professor
Genomics, Proteomics and Plant Metabolomics

3.3. NANOPHARMAMED

- **Abrego Escobar, Guadalupe Del Carmen**
External Collaborator
NanoBioPharma

- **Alvarado Bonilla, Helen Lissette**
Adjunct Lecture
NanoBioPharma
- **Bagherpour, Saman**
Predoctoral Researcher
Supramolecular Systems in Nanobiomedicine
- **Boix Montanes, Antonio De Padua**
Adjunct Lecture
NanoBioMed
- **Bonilla Vidal, Lorena**
Predoctoral Researcher
Nanostructured systems for controlled drug delivery
- **Busquets Viñas, Maria Antònia**
Associate Professor
Conformational Diseases Group
- **Caballero Hernandez, Ana Belen**
Associate Professor
Nanoscience and Bio-Inorganic Chemistry (nanoBIC)
- **Calpena Campmany, Ana Cristina**
Associate Professor
NanoBioPharma
- **Cano Fernandez, Amanda**
External Collaborator
Nanostructured systems for controlled drug delivery
- **Caubet Marin, Amparo**
Associate Professor
Nanoscience and Bio-Inorganic Chemistry (nanoBIC)
- **Clares Naveros, Beatriz**
External Collaborator
NanoBioPharma
- **Cullell Moltó, Judith**
Predoctoral Researcher
Cancer therapy group
- **Dinarès Milà, M. Immaculada**
Associate Professor
Pharmaceutical Nanotechnology
- **El Moussaoui El Masnaoui, Salima**
Predoctoral Researcher
NanoBioPharma
- **Escribano Ferrer, Elvira**
Associate Professor
Drug Design and Response-evaluation within Pharmaceutical Nanostructured and self-ordered Systems Group
- **Espargaro Colome, Alba**
Tenure-Track Lecture
Conformational Diseases Group
- **Espina Garcia, Marta**
Associate Professor
Nanostructured systems for controlled drug delivery
- **Espinoza Tituana, Lupe Carolina**
External Collaborator
NanoBioPharma
- **Esteruelas Navarro, Gerard**
Predoctoral Researcher
Nanostructured systems for controlled drug delivery
- **Fedatto Abelha, Thais**
Tenure-Track Lecture
Supramolecular Systems in Nanobiomedicine
- **Ferrari, Michele**
External Collaborator
Cellular responses to xenobiotics
- **Figueroa Becerra, Esteban**
Predoctoral Researcher
Pharmaceutical Nanotechnology
- **Gamez Enamorado, Patricio**
ICREA Researcher
Nanoscience and Bio-Inorganic Chemistry (nanoBIC)

- **Garcia Sala, Francesc Xavier**
Adjunct Lecture
*Drug Design and Response–evaluation within
Pharmaceutical Nanostructured and self–ordered
Systems Group*
- **Garcia Lopez, Maria Luisa**
Full Professor
Nanostructured systems for controlled drug delivery
- **Garcia Celma, Maria Jose**
Full Professor
Pharmaceutical Nanotechnology
- **Halbaut Bellowa, Lyda**
Associate Professor
NanoBioPharma
- **Kurniawan, Wawan**
Predoctoral Researcher
Cellular responses to xenobiotics
- **Limon Magaña, David**
Adjunct Lecture
Supramolecular Systems in Nanobiomedicine
- **Lopez Machado, Ana Laura**
Predoctoral Researcher
Nanostructured systems for controlled drug delivery
- **Mallandrich Miret, Mireia**
Postdoctoral Researcher
NanoBioPharma
- **Mey Abadi, Roya Mohammadi**
Predoctoral Researcher
NanoBioPharma
- **Mitjans Arnal, Montserrat**
Associate Professor
Cellular responses to xenobiotics
- **Monge Azemar, Marta**
Adjunct Lecture
Pharmaceutical Nanotechnology
- **Moran Badenas, Maria Del Carmen**
Associate Professor
Cellular responses to xenobiotics
- **Oliva Herrera, Mireia**
Associate Professor
NanoBioPharma
- **Perez Garcia, M. Luisa**
Full Professor
Supramolecular Systems in Nanobiomedicine
- **Sabate Lagunas, Raimon**
Associate Professor
Conformational Diseases Group
- **Sanchez Lopez, Elena**
Tenure–Track Lecture
Nanostructured systems for controlled drug delivery
- **Sarango Granda, Paulo Cesar**
Predoctoral Researcher
NanoBioPharma
- **Silva De Abreu, Marcella**
External Collaborator
NanoBioPharma
- **Suñer Carbó, Joaquim**
Adjunct Lecture
NanoBioPharma
- **Torroella Mariona, Escoda**
Predoctoral Researcher
Group of Magnetic Nanomaterials
- **Valiuska, Simonas**
Predoctoral Researcher
Cancer therapy group
- **Gamisans Linares, Fidencia**
Adjunct Lecture
Nanostructured systems for controlled drug delivery
- **Vinardell Martinez Hidalgo, Maria Pilar**
Full Professor
Cellular responses to xenobiotics

3.4. NANOMAGNETICS

- **Aguilà Aviles, David**
Postdoctoral Researcher
Group Magnetism and Functional Molecules (GMMF)
- **Aromi Bedmar, Guillem**
Full Professor
Group Magnetism and Functional Molecules (GMMF)
- **Barrios Moreno, Leoni A.**
Postdoctoral Researcher
Group Magnetism and Functional Molecules (GMMF)
- **Batlle Gelabert, Xavier**
Full Professor
Group of Magnetic Nanomaterials
- **Casals Montserrat, Blai**
Tenure-Track Lecture
Magnetism
- **Conde Rubio, Ana**
External Collaborator
Group of Magnetic Nanomaterials
- **Costa Villén, Ernesto**
Predocctoral Researcher
Magnetic Interactions and Molecular Magnetism
- **Costache, Marius Vasile**
Associate Professor
Magnetism
- **Diego Creixenti, Rosa**
Predocctoral Researcher
Group Magnetism and Functional Molecules (GMMF)
- **El Fallah El Boufrah, Mohamed Salah**
Full Professor
Magnetic Interactions and Molecular Magnetism
- **Escuer Fite, Alberto**
Full Professor
Magnetic Interactions and Molecular Magnetism
- **Estrader Bofarull, Marta**
Researcher Ramon y Cajal
Laboratory of Nanostructured and Nanocomposite Materials
- **Ferrater Martorell, Cesar**
Associate Professor
Thin Layer Structures for Spintronics
- **Figuerola Garcia, Adriana Isabel**
Postdoctoral Researcher
Group of Magnetic Nanomaterials
- **Gabarró Riera, Guillem**
Predocctoral Researcher
Group Magnetism and Functional Molecules (GMMF)
- **Garcia Santiago, Antoni**
Associate Professor
Magnetism
- **Hernandez Ferras, Joan Manel**
Associate Professor
Magnetism
- **Labarta Rodriguez, Amilcar Ramon**
Full Professor
Group of Magnetic Nanomaterials
- **Langenberg Perez, Eric**
Tenure-Track Lecture
Group of Magnetic Nanomaterials
- **Macia Bros, Ferran**
Associate Professor
Magnetism
- **Maniaki, Diamantuula**
Predocctoral Researcher
Group Magnetism and Functional Molecules (GMMF)

- **Mayans Ayats, Júlia**
Tenure–Track Lecture
Magnetic Interactions and Molecular Magnetism
- **Moya Alvarez, Carlos**
Postdoctoral Researcher María Zambrano
Group of Magnetic Nanomaterials
- **Pilichos, Evangelos**
Predocctoral Researcher
Magnetic Interactions and Molecular Magnetism
- **Polo Trasancos, Maria Del Carmen**
Associate Professor
Thin Layer Structures for Spintronics
- **Rovirola Metcalfe, Marc**
Predocctoral Researcher
Magnetism
- **Sañudo Zotes, Eva Carolina**
Associate Professor
Group of Magnetism and Functional Molecules
- **Tejada Palacios, Javier**
Emeritus Professor
Magnetism
- **Tubau Ribot, Annia**
Predocctoral Researcher
Magnetic Interactions and Molecular Magnetism
- **Varela Fernandez, Manuel**
Full Professor
Thin Layer Structures for Spintronics
- **Velasco Amigo, Veronica**
Adjunct Lecture
Group Magnetism and Functional Molecules (GMMF)
- **Vicente Castillo, Ramon**
Full Professor
Magnetic Interactions and Molecular Magnetism
- **Diaz Marcos, Jordi**
Adjunct Lecture

Materials for Energy Photonics and Catalysis (ENPHOCAMAT)

3.5. NANOPHOTOELECTRO

- **Casals Guillen, Olga**
Adjunct Lecture
Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
- **Cirera Hernandez, Albert**
Full Professor
Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
- **Cornet Calveras, Albert**
Professor Full
Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
- **Diago Forero, Joshua**
Predocctoral Researcher
Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
- **Dieguez Barrientos, Angel**
Full Professor
Instrumentation Systems and Communications (SIC)
- **Duocastella Solà, Marti**
Full Professor
LASER–Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
- **Fabrega Gallego, Cristian**
Tenure–Track Lecturer
Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
- **Fernandez Pradas, Juan Marcos**
Associate Professor
LASER–Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
- **Fraile Rodriguez, Maria Aranzazu**

- Associate Professor**
Group of Magnetic Nanomaterials
- **Frieiro Castro, Juan Luis**
Predoctoral Researcher
Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
 - **Garcia Del Muro Solans, Montserrat**
Associate Professor
Group of Magnetic Nanomaterials
 - **Garrido Fernandez, Blas**
Full Professor
Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
 - **Hernandez Ramirez, Francisco De P.**
Adjunct Lecture
Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
 - **Hernández Márquez, Sergi**
Associate Professor
Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
 - **Lopez Aymerich, Elena**
Predoctoral Researcher
Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
 - **Martí Jerez, Ernest**
Predoctoral Researcher
LASER-Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
 - **Moreno Sereno, Mauricio**
Associate Professor
Instrumentation Systems and Communications (SIC)
 - **Navale, Sachin Tatyasaheb**
Postdoctoral Researcher Marie Skłodowska-Curie
Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices
 - **Navarro Urrios, Daniel**
Associate Professor
Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
 - **Pellegrino, Paolo**
Associate Professor
Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
 - **Prades Garcia, Juan Daniel**
Full Professor
Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
 - **Rodríguez Álvarez, Javier**
Predoctoral Researcher
Group of Magnetic Nanomaterials
 - **Romano Rodríguez, Albert**
Full Professor
Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
 - **Serra Coromina, Pedro**
Full Professor
LASER-Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
 - **Vila Arbones, Ana Maria**
Associate Professor
Instrumentation Systems and Communications (SIC)
 - **Vilar Solé, Narcís**
Industrial Predoctoral Researcher
LASER-Micro and Nanotechnology and nanoscopies for Electronic and Electrophotonic Devices (MIND)
- ### 3.6. NANOSMAT
- **Alshaikh, Islam**
Predoctoral Researcher
Materials for Energy, Photonics and Catalysis (ENPHOCAMAT)

- **Amade Rovira, Roger**
Tenure–Track Lecturer
Materials for Energy, Photonics and Catalysis (ENPHOCAMAT)
- **Andujar Bella, José Luis**
Associate Professor
Materials for Energy, Photonics and Catalysis (ENPHOCAMAT)
- **Angurell Purroy, Inmaculada**
Associate Professor
Supra and Nanostructured Systems Group
- **Arteaga Barriel, Oriol**
Researcher Ramon y Cajal
Materials for Energy, Photonics and Catalysis (ENPHOCAMAT)
- **Bertran Serra, Enric**
Full Professor
Materials for Energy, Photonics and Catalysis (ENPHOCAMAT)
- **Bujaldón Carbó, Roger**
Predocctoral Researcher
Organic Materials Unit
- **Canillas Biosca, Adolfo**
Full Professor
Materials for Energy Photonics and Catalysis (ENPHOCAMAT)
- **Chaitoglou, Stefanos**
Postdoctoral Researcher Beatriu de Pinós
Materials for Energy Photonics and Catalysis (ENPHOCAMAT)
- **de Aquino Samper, Araceli**
Predocctoral Researcher
Supra and Nanostructured Systems Group
- **Esteve Pujol, Joan**
Emeritus Professor
Surface Engineering. Thin–layer Lab
- **Eusamio Rodríguez, Javier**
Predocctoral Researcher
Homogeneous Catalysis
- **Fabregat Pallejà, Clara**
Predocctoral Researcher
Organic Materials Unit
- **Farrera Piñol, Joan Antoni**
Associate Professor
Self–organized complexity and self–assembling materials (SOC&SAM)
- **Ferrer Garcia, Montserrat Sofia**
Associate Professor
Mechanisms of Reactions in Inorganic Chemistry
- **Figuerola Silvestre, Albert**
Associate Professor
Laboratory of Nanostructured and Nanocomposite Materials
- **Galceran Vercher, Regina**
Tenure–Track Lecturer
Materials for Energy Photonics and Catalysis (ENPHOCAMAT)
- **Garcia Amoros, Jaume**
Associate Professor
Organic Materials Unit
- **Gómez Valentín, Elvira**
Full Professor
Thin–film and Nanostructure electrodeposition group
- **Gomis Bresco, Jordi**
Tenure–Track Lecturer
Materials for Energy, Photonics and Catalysis (ENPHOCAMAT)
- **Grabulosa Rodriguez, Arnald**
Associate Professor
Homogeneous Catalysis
- **Güell Vilà, Frank**
Associate Professor
Materials for Energy, Photonics and Catalysis (ENPHOCAMAT)

- **Guixens Gallardo, Pedro**
Postdoctoral Researcher Margarita Salas
Organic Materials Unit
- **Gutierrez Gonzalez, Jose Maria**
Associate Professor
Engineering of colloidal systems
- **Ignes Mullol, Jordi**
Associate Professor
Self-organized complexity and self-assembling materials (SOC&SAM)
- **Josa Hidalgo, Dana**
Predoctoral Researcher
Homogeneous Catalysis
- **Judit Lloreda, Rodes**
Predoctoral Researcher
Thin-film and Nanostructure electrodeposition group
- **Laura Huidorbo, Rodríguez**
Predoctoral Researcher
Thin-film and Nanostructure electrodeposition group
- **Lázaro Palacios, Ariadna**
Predoctoral Researcher
Supra and Nanostructured Systems Group
- **Lin, Mengxi**
Predoctoral Researcher
Laboratory of Nanostructured and Nanocomposite Materials
- **Lousa Rodriguez, Arturo**
Associate Professor
Surface Engineering. Thin-layer Lab
- **Maestro Garriga, Alicia**
Associate Professor
Engineering of colloidal systems
- **Martinez Lopez, Manuel**
Full Professor
Mechanisms of Reactions in Inorganic Chemistry
- **Martínez Bacuñana, Alba**
Predoctoral Researcher
Homogeneous Catalysis
- **Mohandes, Fatemeh**
Postdoctoral Researcher María Zambrano
Thin-film and Nanostructure electrodeposition group
- **Núñez Rico, José Luis**
Postdoctoral Researcher
Homogeneous Catalysis
- **Pascual Miralles, Esther**
Full Professor
Materials for Energy, Photonics and Catalysis (ENPHOCAMAT)
- **Rodríguez Raurell, Laura**
Full Professor
Supra and Nanostructured Systems Group
- **Romo Islas, Guillermo**
Predoctoral Researcher
Supra and Nanostructured Systems Group
- **Sainz Garcia, Daniel**
Associate Professor
Homogeneous Catalysis
- **Serra Ramos, Albert**
Tenure-Track Lecture
Thin-film and Nanostructure electrodeposition group
- **Fons Cervera, Arnau**
Collaborador student
Thin-film and Nanostructure electrodeposition group
- **Tahghighi Haji Alizadeh, Mohammad**
Predoctoral Researcher
Self-organized complexity and self-assembling materials (SOC&SAM)
- **Velasco Castrillo, Maria Dolors**
Full Professor
Organic Materials Unit

▪ **Vidal Ferran, Anton**
ICREA Researcher
Homogeneous Catalysis

▪ **Wang, Ruoshi**
Predoctoral Researcher
Self-organized complexity and self-assembling materials (SOC&SAM)

3.7. NANOENERGY

▪ **Andreu Arbella, Teresa**
Tenure-Track Lecturer
Sustainable Electrochemical Processes

▪ **Asensi Lopez, Jose Miguel**
Associate Professor
Solar and Photovoltaic Energy Group

▪ **Bertomeu Balagueró, Joan**
Full Professor
Solar and Photovoltaic Energy Group

▪ **Calvo Barrio, Lorenzo**
Adjunct Lecture
Solar Energy Materials and Systems (SEMS) Group

▪ **El Moussaoui, Mohamed Amazian**
Industrial Predoctoral Researcher
Sustainable Electrochemical Processes

▪ **Formosa Mitjans, Joan**
Associate Professor
Design and improvement of Processes and Materials (DIOPMA)

▪ **Homs Martí, Narciso**
Full Professor
Catalysis and Advanced Inorganic Materials (MATCAT)

▪ **Izquierdo Roca, Victor**
External Collaborator
Solar Energy Materials and Systems (SEMS) Group

▪ **Mestres Vila, Maria Lourdes**
Full Professor

Catalysis and Advanced Inorganic Materials (MATCAT)

▪ **Molera Janer, Martí**
Technician
Sustainable Electrochemical Processes

▪ **Morante Lleonart, Joan Ramon**
Full Professor
NanoEnergy and Electronic Materials (M2E) Group

▪ **Muñoz Rosas, Ana Luz**
Visiting Postdoctoral Researcher
Solar and Photovoltaic Energy Group

▪ **Padilla Sanchez, Jose Antonio**
Tenure-Track Lecturer
Design and Improvement of Processes and Materials

▪ **Perez Rodriguez, Alejandro**
Full Professor
Solar Energy Materials and Systems (SEMS) Group

▪ **Placidi, Marcel**
External Collaborator
Solar Energy Materials and Systems (SEMS) Group

▪ **Ramirez De La Piscina Millan, Maria Del Pilar**
Full Professor
Catalysis and Advanced Inorganic Materials (MATCAT)

▪ **Salgado Pizarro, Rebeca**
Predoctoral Researcher
Design and Improvement of Processes and Materials (DIOPMA)

▪ **Sánchez Ruiz, Adrià**
Predoctoral Researcher
Catalysis and Advanced Inorganic Materials (MATCAT)

▪ **Sarret Pons, Maria**
Associate Professor
Sustainable Electrochemical Processes

- **Segarra Rubi, Merce**
Full Professor
Design and improvement of Processes and Materials (DIOPMA)

- **Gutierrez Currius, Albert**
Technician
Homogeneous Catalysis

- **Serre, Christophe Georges Camille**
Associate Professor
Instrumentation Systems and Communications (SIC)

- **Tom, Thomas**
Predoctoral Researcher
Solar and Photovoltaic Energy Group

- **Vendrell Villafruela, Xavier**
Tenure-Track Lecturer
Catalysis and Advanced Inorganic Materials (MATCAT)

- **Vidrier López, Julià**
Tenure-Track Lecturer
Solar and Photovoltaic Energy Group

- **Wang, Yan**
Predoctoral Researcher
Catalysis and Advanced Inorganic Materials (MATCAT)

- **Xuriguera Martin, M. Elena**
Associate Professor
Design and improvement of Processes and Materials (DIOPMA)

4. Internal calls

4.1. GRANTS FOR MULTIDISCIPLINARY RESEARCH (AJUTS A LA RECERCA TRANSVERSAL-ART)

Internal call of collaborative research projects (*Ajuts a la Recerca Transversal*— ART). The aim of these calls is to promote transversal an innovative research among the research areas of the Institute between PhD researchers at the beginning of their career developing a project as Principal Investigator (IP) for the first time. On 2022, 3 ART grants have been awarded to the following proposals:

- **Early Thermal Runway Detection in Lithium-ion Batteries by Metal-organic Framework based Chemoresistive Gas Sensors.** A collaboration between NanosMat and NanoPhotoElectro Research Areas.
- **Hierarchically nanostructured transition metal carbides and MXenes on carbon felt for CO₂ reduction and green H₂ production.** A collaboration between NanosMat and NanoEnergy Research Areas.
- **ELectronic and PHOtoelectronic properties of multifunctional Semiconducting nanostructures (ELPHOS).** A collaboration between NanoMagnetics, NanoBio and NanoPhotoElectro Research Areas

4.2. MASTER FELLOWSHIPS

In order to stimulate scientific careers in master's students, in the frame of *Beques de Col·laboració UB (UB Collaborating Fellowships)*, the Institute offers Master Fellowships to collaborate with IN²UB research groups and supports the students in the process of carrying out research and working on their master theses. During 2022, 5 students have been awarded.

4.3. IN²UB CALLS FOR CONGRESSES

The institute give support to researchers organizing congresses or scientific events as well as contribute to inviting scientist in the fields of the IN²UB. On 2022, IN²UB has sponsored:

- [Biennial meeting of the Spanish-French network GDRI—HC3A: “Hetero-elements and Coordination Chemistry: from Concepts to Applications”](#). 20–21/01/2022, Barcelona. Organizers: *Patrick Gamez* and *Laura Rodríguez*
- [2nd Bioforphys conference, Biological Evolution and Nonequilibrium Physics: Close Encounters](#), July 2022 (Barcelona). Conference Chair and Chair of EPS Division of Physics for Life Sciences: *Felix Ritort*
- [XL Reunió del GEQO-RSEQ XL GEQO Meeting — Organometallic Chemistry Group](#), September 2022 (Barcelona). Scientific Committee: *Laura Rodríguez*
- [EMLG2021: Joint European/Japanese Molecular Liquids Group Annual Meeting: Molecular liquid at interfaces](#), Barcelona, September 2022. Organizer: *Giancarlo Franzese*
- [4th ELECMI International Workshop](#), October 2022 (Barcelona), chaired Prof. *Francesca Peiró*

4.4. FUNDING SCIENTIFIC ASSOCIATIONS

The IN²UB gives support to specific scientific associations of general interest for the Institute:

Since July 2009, the IN²UB is part of the scientific cluster SECPHo (Southern European Cluster of Photonics and Optics). The IN²UB collaborates with the costs and activities of the cluster through an annual fee and, when needed, funds attendance to specialized conferences by the cluster members belonging to the IN²UB. For further details about the SECPHO Cluster, please check www.secpHo.org

5. Events

5.1. ANNUAL MEETING

This year, we have been able to meet once again, by virtual means at our annual meeting. An event to share the knowhow and research between IN²UB members. The meeting has counted with 10 oral presentations from IN²UB researchers, a plenary session from an external expert scientist and up to 51 posters from our members ([read more](#)).

5.2. INTERNATIONAL RESEARCH SEMINAR (IRS)

In frame of the cycle of International Research Seminars (IRS), once a month an international researcher is invited to impart a high-level research seminar, covering one of the subject areas from the Institute, thi seminars are in collaboration and with the support of PhD Program in Nanoscience:

- **Molecular engineering of redox-active nanomagnets: how to promote large magnetic interactions and spin delocalization.** By Dr. *Pierre Dechambenoit*, University of Bordeaux, CNRS, Centre de Recherche Paul Pascal, France. 20/01/22 at 12 h (webinar)
- **Thermal scanning probe lithography: from fundamentals to Applications.** By Dr. *Edoardo Albisetti*, Department of Physics of Politecnico di Milano, Italy. 28/04/22 at 12h (webinar)
- **Magnetic Nanoreactors for Environmental Applications** By Dr. *María del Puerto Morales Herrero*, Instituto de Ciencia de Materiales de Madrid, ICMM/CSIC. 31/05/22 at 12h (webinar)
- **Halide Perovskite Materials for Optoelectronic and Photochemical Applications.** By Prof. *Iván Mora Seró*, Institute of Advanced Materials (INAM), Universitat Jaume I, 12071 Castelló, Spain. 30/06/22 at 12h (webinar)

5.3. SPECIAL MINI-SYMPOSIUM IN²UB

A new dawn for magnetism: from Spin Qubits to the spin-orbit based magnetic memory and terahertz generation on July 15th, 2022 at Aula Magna Enric Casassas (Faculties of Chemistry and Physics), Profs. *Guillem Aromí* and *Xavier Batlle*, co-organizers.

10h–11h Molecular Spin Qubits for Quantum Computer and Highly Density Memory Device Based on Molecular Magnets. Prof. *Masahiro Yamashita*, Department of Chemistry, Graduate School of Science, Tohoku University. Chaired by Prof. *Guillem Aromí* — IN²UB Director.

11h–11.30h Coffee break

11.30–12.30h Spin-orbit technologies: from magnetic memory to terahertz generation. Prof. *Hyunsoo Yang*, Department of Electrical and Computer Engineering, National University of Singapore. Chaired by Prof. *Xavier Batlle* — IN²UB Steering Committee

5.4. FIRA D'EMPRESSES

This year, for the first time, the Institute has participated on the Virtual Employment Fair – May 4th, 2022 Sciences and Engineering, where we had the opportunity to present the IN2UB and the research areas to students interested in nanoscience and nanotechnology.

5.5. WORKSHOPS

- **Working Safely at the Nanoscale**, with the support of PhD Program in Nanoscience 17/06/2021 at 10h
– Telematic session
10h–10:05h – Rebuda i Presentació, modera *Laura Rodríguez*, investigadora IN²UB i delegada rector en seguretat a Química, 2020
10:05h–10:30h – Estado del arte sobre Nanoseguridad: Aspectos Regulatorios, José A. Pérez, Health & Safety Area, Institut Català de Nanociència i Nanotecnologia (ICN2)
10:30h–10:55h – Riscos laborals al treballar a la Nanoescala, Miriam Belloc, Institut Català de Seguretat i Salut Laboral (ICSSL)
10:55h–11:20h – Nanomaterials i Nanotecnologia, cas pràctic, Xavier Borrisé, IMB–CNM–CSIC & ICN2
11:20h–11:45h – Laboratoris segurs i nanopartícules, Marc Pujol i Ekaitz Olaguenaga, Burdinola Safer Labs
10:45h–12h – Discussió final, modera *Laura Rodríguez*

5.6. II JORNADA INSTITUTS DE LA UB: "CANVI CLIMÀTIC I RISCOS NATURALS: TRANSFORMACIÓ I RESILIÈNCIA"

The aim of the Meeting, on 4th October 2022, was to tackle the topic of space from a cross-sectional perspective using the research carried out at the different research institutes of the UB.

With Dr. *Teresa Andre* (IN2UB, Faculty of Chemistry). **CO2 UPCYCLING: Solucions sostenibles des de la química per prescindir dels combustibles fòssils.**

6. Outreach

IN²UB is committed to transfer knowledge to society. In the year 2019, a **Permanent Commission of Outreach** was created and put to work in order to reinforce this facet of the Institute. The outreach activities have, since then stepped up in amount relevance and diffusion.

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6.1. OUTREACH EVENTS

- In frame of 11F International Day of Women and Girls in Science, researchers from the Institute participated at the **Coffee with women scientist**. An online event to share with to the audience own experiences and talk to talk about the passion for research and the associated professional stages, while exemplifying the role of the female scientist: [International day of women and girls in science coffee with women scientist](#)
- Presentation of the **Libro blanco de las Nanotecnologías II**. Estado del arte de la I+D+I. on 15th February 2022 at Aula Magna Enric Casassas of the Faculty of Chemistry.
The new volume is a continuation of the *Libro Blanco sobre Nanotecnologías (White Paper on Nanotechnologies)*, also with the coordination of Dr. *Jordi Díaz-Marcos*, IN²UB Outreach Coordinator. The book represents the State of the Art of Nanotechnology in diverse field such as: Health, Energy, TIC, Food, Cosmetics, Products on the Market, Water and the Environment and Characterization
- Developed the [Application Saved by the Paradox](#), based on the Maxwell's demon paradox. A game to approach to the general public, including children, the Maxwell's demon paradox. The development of this apps was supervised by professors *Carles Calero* (IN²UB), *Muntsa Guilleumas* (ICCUB) and *Bruno Julia Díaz* (ICCUB).
- Researchers from the Institute participates on [Nanoinvetum](#). A project aiming at incorporating nanoscience at Primary Schools.
- [Festival 10almenos9 \(10-9 Festival\)](#). The Festival aims to bring the nanometric scale, its effects and how this knowledge is going to change our lives through countless applications and products, to all audiences.

7. PhD thesis defended

Most IN²UB researchers are involved in the doctorate training. This is the list of doctoral theses defended in 2022, supervised by IN²UB researchers:

MONOCAPES AUTOASSEMBLADES ELECTROACTIVES: INTERACCIONS PI-DONADOR/PI-ACCEPTOR PER A INDUIR TRANSPORT EN SUPERFÍCIE

Author: Sandra Giraldo Clemente

Directors: Ma Luisa Pérez García; Arántzazu

Gonzalez-Campo

ADVANCED COMPUTATIONAL TOOLS FOR EELS DATA REDUCTION AND CLUSTERING, QUANTITATIVE ANALYSIS AND 3D RECONSTRUCTIONS

Author: Javier Blanco Portals

Director: Francesca Peiró; Sònia Estradé

GIANT CALORIC AND MULTICALORIC EFFECTS IN MAGNETIC ALLOYS

Author: Adrià Gràcia Condal

Director: Lluís Mañosa Carrera

MAKING THE MOST OF IMAGING AND SPECTROSCOPY IN TEM: COMPUTER SIMULATIONS FOR MATERIALS SCIENCE PROBLEMS

Author: Catalina Coll

Director: Francesca Peiró; Sònia Estradé

ATOMIC FORCE MICROSCOPY TO ELUCIDATE LIPID MEMBRANES ENHANCED BY ENGINEERED LIPOSOMES

Author: Adrià Botet Carreras

Director: Jordi Borrell Hernández; Òscar Domènech Cabrera

OBTENCIÓN DE APTÁMEROS ESPECÍFICOS PARA ENZIMAS DE LA VÍA DEL METILERITRITOL FOSFATO DE MICROORGANISMOS

Author: Roca Martínez, Carlota

Director: Santiago Imperial Ródenas; Xavier

Fernández Busquets

TUNING THE PERFORMANACE OF MAGNETIC, SEMICONDUCTOR, AND MULTIFUNCTIONAL HYBRID NANOSTRUCTURES

Author: Mariona Escoda i Torroella

Director: Xavier Batlle; Amílcar Labarta

DESIGN AND CHARACTERIZATION OF TOPICAL KETOROLAC TROMETHAMINE FORMULATIONS

Author: Salima El Moussaoui El Masnaoui

Director: Ana C Calpena Campmany; Mireia

Mallandrich Miret

DESIGN, SYNTHESIS AND STUDY OF COORDINATION COMPLEXES WITH SPIN CROSSOVER OR SINGLE-MOLECULE MAGNET PROPERTIES

Author: Rosa Diego

Director: G. Aromí

AUTOMATED COLOR CORRECTION FOR COLORIMETRY APPLICATIONS USING BARCODES

Author: Ismael Benito-Altamirano

Director: Juan Daniel Prades

DEVELOPMENT OF A NANO-ILLUMINATION MICROSCOPE

Author: Franch, Nil

Director: Angel Dieguez Barrientos

FABRICATING ULTRASENSITIVE METAL NANOSTRUCTURES WITH LANGMUIR-BLODGETT TECHNIQUE TO IMPROVE PLASMONIC RESPONSE OF SERS

Author: Mohammad Tahghighi Haji Alizadeh

Director: Jordi Ignés Mullo

NEW ORGANIC SEMICONDUCTORS BASED ON THE CARBAZOLE CORE: SYNTHESIS AND APPLICATION IN OPTOELECTRONIC DEVICES

Author: Roger Bujaldon

Director: D. Velasco

SYNTHESIS AND CHARACTERIZATION OF CARBON NANOTUBES AND HYBRID CARBON NANOSTRUCTURES GROWN ON FLEXIBLE ELECTRODES FOR SUPERCAPACITOR APPLICATIONS

Author: Islam Alshaikh

Director: E. Bertran

DBD PLASMA REACTOR FOR CO₂ METHANATION

Author: Martí Biset Peiró

Director: Teresa Andreu Arbella

TI-CONTAINING HYBRID ORGANOSILICAS, MO(X)C/G-C(3)N(4) NANOCOMPOSITES AND ENGINEERED MO(X)C/TIO(2) NANOMATERIALS AS NOBLE-METAL-FREE PHOTOCATALYSTS FOR H₂ PRODUCTION

Author: Yang Wang

Director: N. Homs

RESPONSIVE NANOMATERIALS FOR CANCER THERANOSTICS

Author: Jordan Potts

Director: M Luisa Pérez García; Frankie Rawson; David Amabilino

NEW π -FUNCTIONAL MOLECULES FOR ENERGY AT THE INTERFACE BETWEEN BIOLOGY AND MATERIALS

Author: Ferdinando Malagrecà

Director: M Luisa Pérez García; David Amabilino; Frankie Rawson

DEVELOPMENT OF TUNABLE BIOINKS TO FABRICATE 3D-PRINTED IN VITRO MODELS: A SPECIAL FOCUS ON SKELETAL MUSCLE MODELS WITH POTENTIAL APPLICATIONS IN METABOLIC ALTERATION STUDIES

Author: García Lizarribar, Andrea

Director: Josep Samitier Martí

NOVEL ANTIMICROBIAL PEPTIDES FOR THERAPEUTIC APPLICATIONS: DESIGN, SYNTHESIS, CHARACTERIZATION, AND EVALUATION OF THEIR BIOLOGICAL AND BIOPHYSICAL ACTIVITY

Author: Roser Segovia

Director: Francesc Rabanal; Yolanda Cajal

DESIGN, SYNTHESIS, AND EVALUATION OF THE BIOLOGICAL AND BIOPHYSICAL ACTIVITY OF COLISTIN ANALOGUES

Author: Judith Solé

Director: Francesc Rabanal; Yolanda Cajal

CELL-ADHESIVE NANOPATTERNS FOR MUSCULOSKELETAL TISSUE ENGINEERING

Author: Ignasi Casanellas Mercado

Director: Josep Samitier Martí; Anna Lagunas Targarona

PLASMON-ENHANCED CATALYTIC REACTIONS FOR RENEWABLE FUELS

Author: Viktoria Golovanova

Director: J.R. Morante; T. Andreu

CHARACTERIZATION OF THROMBECTOMY CATHETERS TO OPTIMIZE STRATEGIES FOR ENDOVASCULAR TREATMENT OF ACUTE ISCHEMIC STROKE

Author: Jiahui Li

Director: Oscar Castaño Linares; Marc Ribo Jacobi

For further information on the achievement of the institute and its researchers,
please have a look at our website www.ub.edu/in2ub



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