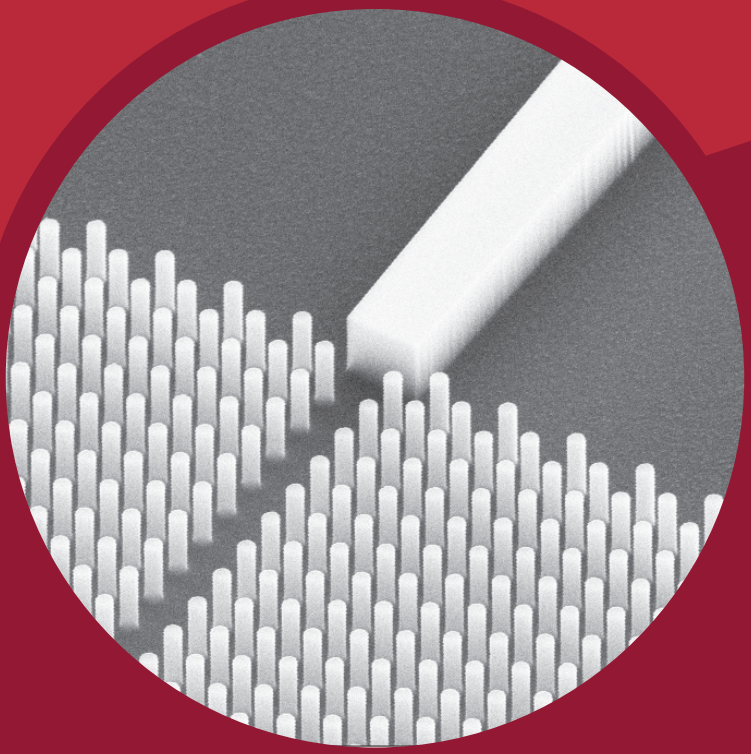
Institut de Nanociència
i Nanotecnologia
UNIVERSITAT DE BARCELONA

ACTIVITY REPORT



2021

UNIVERSITAT DE BARCELONA

Editorial Board and Scientific Management: IN²UB
Graphic Design and Layout: www.idoate.com

Cover and back cover Image
Authors: Elena Lopez-Aymerich, Albert Romano-Rodriguez
Description: SEM image of nanofabricated silicon pillars performing as a photonic crystal with one missing line creating a waveguide. The purpose of this nanostructure is to operate as a mechanical sensor of lateral tensions to *in vivo* monitor the growth and regeneration of tissues.

The online version is available at http://hdl.handle.net/2445/185451

Institut de Nanociència
i Nanotecnologia

ACTIVITY REPORT 2021

UNIVERSITAT DE BARCELONA

FOREWORD

Dr. Guillem Aromí Bedmar

IN²UB Director

Dear colleagues and friends,

I have the pleasure to introduce the Activity Report of IN²UB for the year 2021. The members of the IN²UB community have good reasons to be proud of their contribution in giving shape to this report. Following the difficulties associated to the aftermath of COVID19, the data that emerge from this report demonstrate that the scientific activity at the Institute has resumed with impetus after that episode. In fact, following an analysis by the University Office of Research Management, our Institute in absolute terms is the one that has experienced the largest improvement in scientific inputs and outputs of the whole University of Barcelona. Thus, while keeping the high numbers and quality in research papers, there has been an important increase on the amount and importance of attracted projects (European and National, as well as private contracts). Significant contributions to this have been for example the coordination of a FET-OPEN H2020 Grant or achieving an ERC Consolidator Grant.

This activity report is an evidence that the standards of the Institute are comparable to these of organizations that have had recognized their high-level of excellence by the National Research Agency (AEI). In fact, our score in last report received from the Agency on the last call of applications to obtain such recognition is the highest ever received by the Institute since we are aiming to reach this status, a goal that seems closer than ever.

On the year reported, the IN²UB has been able to grant three collaborative projects (ART) and five Master fellowships. The fruits from the research and training efforts from our scientists have also translated into thirteen new PhD graduates from the Institute in 2021. In this year, the IN2UB was able to celebrate again its annual Workshop. The uncertainties and restrictions of the pandemics forced us to do it through telematic means, but the action was nevertheless a success.

Finally yet importantly, the commitment of the Institute with its role on the outreach of the scientific activity has been maintained at a strong level. The budged dedicated to it this year is the largest even devoted to it and some of the visible recognitions of this activity is the concession of the Outreach Award by the University of Barcelona to the coordinator the permanent commission for outreach of the IN²UB.

I therefore thank to all members and collaborators of the IN²UB for their constant efforts, allowing myself the pleasant task of presenting this very encouraging summary of the activity and achievements of the year by the Organization.

ACTIVITY REPORT 2021

TABLE OF CONTENTS

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.

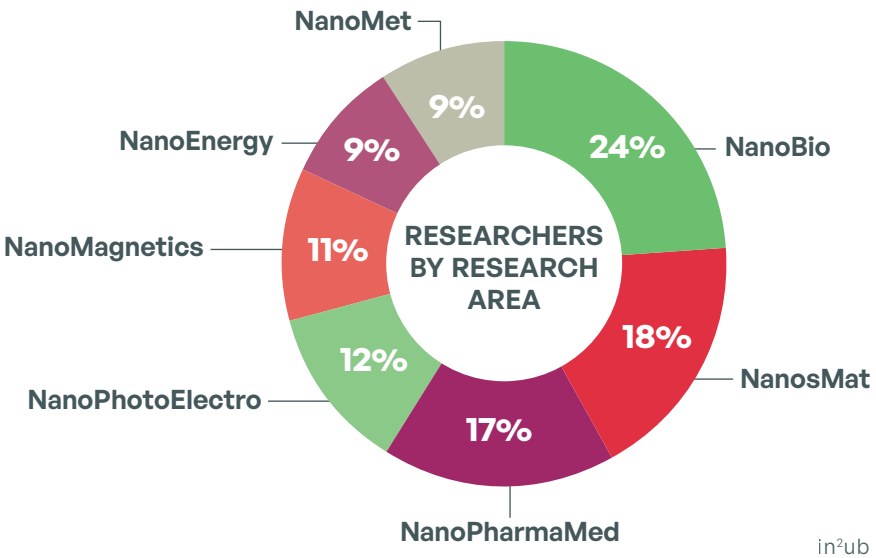
RESEARCH AREAS

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 **52 research groups** with **224 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*



STEERING COMMITTEE

Director: **Dr. Guillem Aromí Bedmar**

Secretary: **Dr. Albert Romano Rodríguez**

- Dr. Xavier Batlle Gelabert
- Dr. Enric Bertran Serra
- Dr. Sònia Estradé Albiol
- Dr. Giancarlo Franzese
- Dr. M. José García Celma
- Dr. Blas Garrido Fernandez
- Dr. Frank Güell Vilà
- Dr. Narcís Homs Martí
- Dr. Sergi Hernández Márquez
- Dr. Jordi Ignés Mullol
- Dr. Montserrat Mitjans Arnal
- Dr. Francesca Peiró Martínez

RESEARCH AREAS COORDINATORS

1. NanoMet: Dr. Francesca Peiró Martínez
2. NanoBio: Dr. Montserrat Mitjans Arnal
3. NanoPharmaMed: Dr. M José García Celma
4. NanoMagnetics: Dr. Xavier Batlle Gelabert
5. NanoPhotoElectro: Dr. Blas Garrido Fernández
6. NanosMat: Dr. Enric Bertran Serra
7. NanoEnergy: Dr. Narcís Homs Martí

INTERNAL SCIENTIFIC BOARD

- Dr. Maria Pilar Vinardell Martinez 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

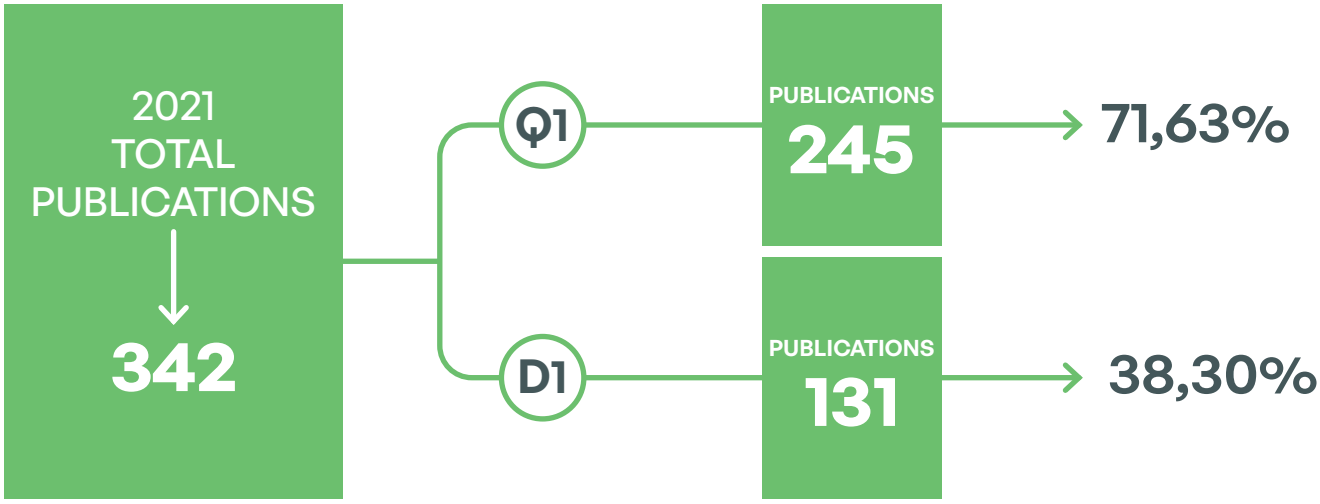
RESEARCH MANAGEMENT & PROMOTION

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 2021 period, represented 342 papers published in indexed journals in Scopus, with 71,63 % of this production at first quartile.



Data from Indexed Scopus Sources (February 2022)

1.3.2. High Index Publications

- **Nanochaperone-Based Strategies to Control Protein Aggregation Linked to Conformational Diseases**
  Caballero A.B., Gamez P. Angewandte Chemie - International Edition, 60, 1 (2021)

- **Unravelling of a [High Spin—Low Spin] ↔ [Low Spin—High Spin] Equilibrium in Spin-Crossover Iron(II) Dinuclear Helicates Using Paramagnetic NMR Spectroscopy**
  D.Y. Aleshin, R. Diego, L.A. Barrios,Y.V. Nelyubina, G. Aromí, V.V. Novikov.
  Angewandte Chemie - International Edition, 60, 1 – 6 (2021)

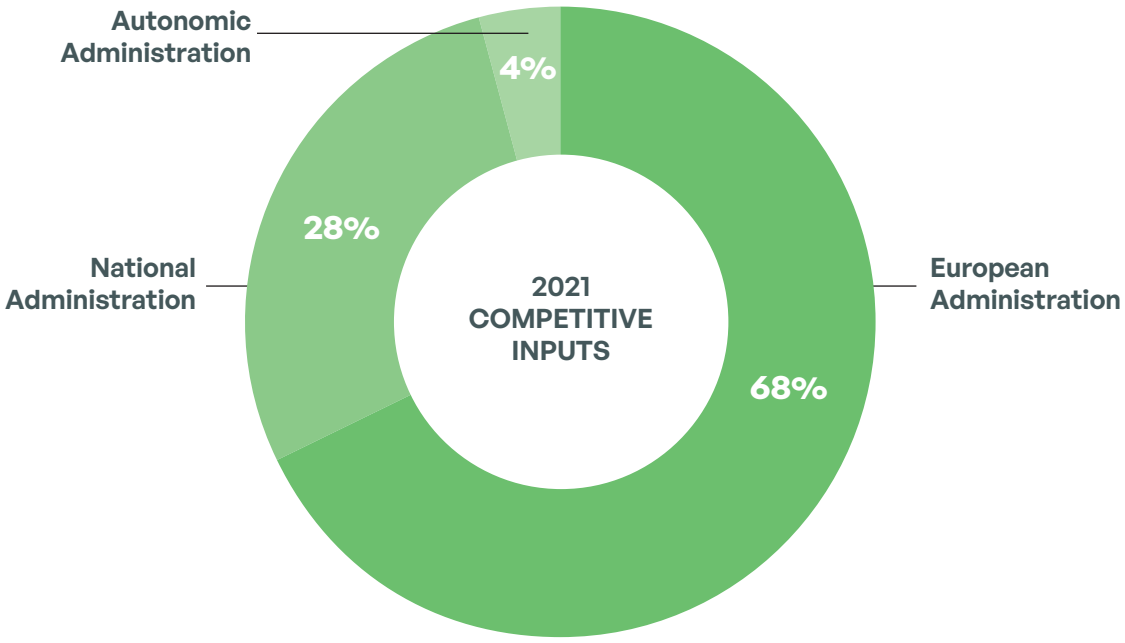
- **Light-controlled micron-scale molecular motion**
  Samperi M., Bdiri B., Sleet C.D., Markus R., Mallia A.R., Pérez-García L., Amabilino D.B.
  Nature Chemistry, 13, 12 (2021)

- **The force loading rate drives cell mechanosensing through both reinforcement and cytoskeletal softening**
  Andreu I., Falcones B., Hurst S., Chahare N., Quiroga X., Le Roux A.-L., Kechagia Z., Beedle A.E.M., Elosegui-Artola A., Trepat X., Farré R., Betz T., Almendros I., Roca-Cusachs P.
  Nature Communications, 12, 1 (2021)

- **Mechanical compartmentalization of the intestinal organoid enables crypt folding and collective cell migration**
  Ceada G., Greco F., Matejčić M., Gómez-González M., Castro N., Menendez A., Kale S., Krndija D., Clark A.G., Gannavarapu V.R., Álvarez-Varela A., Roca-Cusachs P., Batlle E., Vignjevic D.M., Arroyo M., Trepat X.
  Nature Cell Biology, 23, 3 (2021)

1.3.3. Funding Sources

During 2021 the researchers from IN²UB have been awarded with 5.9M€ 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)

- **H2020 FET-OPEN, Continuous two-dimensional Stretch monitoring of fresh tissue Biopsies** (acronym, StretchBio). Coordinator of the project: *Albert Romano*. Budget: 3.8M€ (1.4M€ for UB) (2021-2025)

- **H2020 FET-OPEN, Technology for real-time visualizing and modelling of fundamental process in living organoids towards new insights into organ-specific health, disease, and recovery** (acronym, OrganVision). UB-IP: *Martí Duocastella*. Budget: 3.7M€ (533K€ for UB) (2021-2025)

- **ERC Proof of Concept, A user-friendly approach to widespread gas monitoring** (acronym, Stick-n-Sense). IP: *J. Daniel Prades*. Budget: 150.000 EUR (2021-2022)

- **Diagnòstic i tractament de Sars-Cov-2 per formació de tríplex** (MARATO TV3 202110-30). IP: *Verónica Noé* (2021-2023)

1.3.5. Transfer Indicators

A relevant indicator is the number of spin-off companies emerged from IN²UB. The Institute has 6 spin-offs currently active, which are described below:

- **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 Luís 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 12 patents.

1.3.6. Scientific Highlighted News

- Horizon 2020 FET Open program of research and innovation actions awards two projects to develop avantgarde technologies with researchers from the IN²UB. **StretchBio**, a project to develop nanotechnology for the customized treatment of solid tumors, led by Dr. *Albert Romano* (Department of Electronic and Biomedical Engineering) and **OrganVision**: real-time organoid imaging, led by the University of Tromsø (Norway), in which Dr. *Martí Duocastella* (Department of Applied Physics) is the main UB researcher. (more information)

- An international team led by researchers from the IN²UB builds the smallest and cheapest high-resolution

microscope to date. As part of the FET-Open project ChipScope, coordinated by Dr. *Ángel Diéguez* (Department of Electronic and Biomedical Engineering), researchers have created a new type of super-resolution optical chip-sized microscope. As a continuation of this project, Dr. Daniel Prades (Department of Electronic and Biomedical Engineering) is coordinating the new FET-Proactive project, SMILE, to develop technology-based micro-lightening tools created in ChipScope. (more information).

- Eleven IN²UB researchers among the 2% of most influential scientists in the science disciplines, regarding to its production and impact, according to the database published by the editorial Elsevier.

The University of Barcelona is the Spanish university institution with most researchers within the 2% of most influential scientists in the science disciplines, regarding to its production and impact, according to the database published by the editorial Elsevier. The database gathers the leading scientists in different disciplines and is made out of the information provided by the Scopus database. Specifically, in this 2% of global leading scientists are 11 researchers with affiliation to the Institute (IN²UB), listed according to the top ranked Science-Metrix category (subfield) for author: Applied Physics (*Duocastella, Martí; Mañosa, Lluís and Planes, Antoni*); Chemical Physics (*Tierno, Pietro*); Fluids & Plasmas (*Ritort, Fèlix*); Inorganic & Nuclear Chemistry (*Aromí, Guillem* and *Gamez, Patrick*); Optics (*Arteaga, Oriol*); Pharmacology & Pharmacy (*García, Maria Luisa*); Respiratory System (*Farré, Ramon*); Toxicology (*Vinardell, M. Pilar*). Source: Notícies UB

- Development of the application Saved by the Paradox, based on the Maxwell's demon paradox. This App has been developed by undergraduate student *Gabriel Linares* as a continuation of his work within the framework of the subject "Business Internships" of the degree in Physics, under the supervision of Dr. *Carles Calero* (IN²UB) in collaboration with ICCUB (more information).

- Advanced Nanotechnologies, an UB spin-off, created by IN²UB researchers *Enric Bertran*, *Esther Pascual* and *José Luís Andújar* (Dep. Applied Physics, Fac. Physics), recognized among the best national nanotechnology startups (more information).

- Dr. *Giancarlo Franzese* (IN²UB-Faculty of Physics), Specialty Chief Editor at Frontiers in Nanotechnology of a new specialty section - Computational Nanotechnology (more information).

- The TFM developed by David March has received the 3rd Dresselhaus Award 2020 of the Sociedad Catalana de Nanciencia y Nanotecnologia for his work about "Computational study of protein folding and aggregation near a hydrophobic interface" under the supervision of Dr. *Giancarlo Franzese*.

- Synchrotron light to unravel the history of 15th Century Chinese porcelain. The first author of the study is the lecturer *Josep Roqué-Rosell*, from the Faculty of Earth Sciences and the IN²UB, and counts on the participation of members of the University of Toulouse (France), the Museum of Natural Sciences of Barcelona and ALBA Synchrotron (more information).

- RheoDx, an inexpensive medical device that monitors blood cells conditions to improve the quality of life of hematology patients and the efficiency in their clinical management, being Dr. A*urora Hernandez Machado* (Department Condensed Matter Physics, Faculty Physics), the Inventor and IP of the company, has been awarded with a CERVERA project from CDTI (more information)

- Prof. *Lluís Mañosa* (Department of Condensed Matter Physics, Faculty of Physics) has been elected Fellow of the Institute of Physics (**IOC**), for distinguished physicists in recognition of their accomplishments.

- Dr. *Maria del Carmen Morán Badenas* (Faculty of Pharmacy and Food Sciences) Guest Editor of Special Issue- Smart Materials for Biomedical Applications at Molecules (mdpi)

- Dr. *Estela Martín Badosa* (Department of Applied Physics) awarded with Valorisation Fund (Fval) from the 2020 Fund for the Promotion of Innovation (F21) call, to develop a more efficient laser projection system to get high-quality images. (more information).

2. RESEARCH AT IN²UB

2.1. Research Lines

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. NanobioInteractions: 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. NANOBIOSCIENCE, NANOBIOMECHANICS AND BIONANOTECHNOLOGY (NanoBio)

Coordination: Dr. Montserrat Mitjans Arnal

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.

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.

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.

5. NANOELECTRONICS, NANO-OPTICS AND NANOPHOTONICS (NanoPhotoElectro)

Coordination: Dr. Blas Garrido Fernández

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.

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.

7. NANOENERGY: PRODUCTION AND STORAGE (NanoEnergy)

Coordination: Dr. Narcis 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 transversally 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

- **Nanoscale wetting of single viruses.** *Calò A., Eleta-Lopez A., Ondarçuhu T., Verdaguer A., Bittner A.M.* Molecules. 2021, 26(17), 5184

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 PROJECTS

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

SELECTED PAPERS

- **Force dependence of proteins' transition state position and the bell–evans model.** *Rico-Pasto M., Zaltron A., Ritort F.* Nanomaterials. 2021, 11, 11
- **Dissipation Reduction and Information-to-Measurement Conversion in DNA Pulling Experiments with Feedback Protocols.** *Rico-Pasto M., Schmitt R.K., Ribezzi-Crivellari M., Parrondo J.M.R., Linke H., Johansson J., Ritort F.* Physical Review X. 2021, 11, 3, 031052
- **Cooperativity-Dependent Folding of Single-Stranded DNA.** *Viader-Godoy X., Pulido C.R., Ibarra B., Manosas M., Ritort F.* Physical Review X. 2021, 11, 3, 031037
- **Sugar-pucker force-induced transition in single-stranded DNA.** *Viader-Godoy X., Manosas M., Ritort F.* International Journal of Molecular Sciences. 2021, 22, 9, 4745

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 (Postdoctoral Researcher Ramon y Cajal)
Jorge Otero Díaz (Tenure-Track Lecturer)
Daniel Navajas Navarro (Emeritus)
Miguel Rodriguez Lazaro (Technician)

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)

SELECTED PAPERS

- **The force loading rate drives cell mechanosensing through both reinforcement and cytoskeletal softening.** *Andreu I., Falcones B., Hurst S., Chahare N., Quiroga X., Le Roux A.-L., Kechagia Z., Beedle A.E.M., Elosegui-Artola A., Trepat X., Farré R., Betz T., Almendros I., Roca-Cusachs P.* Nature Communications. 2021, 12, 1
- **Mechanical compartmentalization of the intestinal organoid enables crypt folding and collective cell migration.** *Ceada G., Greco F., Matejčić M., Gómez-González M., Castro N., Menendez A., Kale S., Krndija D., Clark A.G., Gannavarapu V.R., Álvarez-Varela A., Roca-Cusachs P., Batlle E., Vignjevic D.M., Arroyo M., Trepat X.* Nature Cell Biology. 2021, 23, 3

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 (Assciate Professor)
Raul Bola Sampol (Predoctoral Researcher)
Dorian Treptow (Predoctoral Researcher)
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)
- **PASCAL: Microscopi de matriu programable amb filtrat virtual. 2019PROD00129.** IP: *Mario Montes*. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). (2020-2022)

SELECTED PAPERS

- **Artifact-free holographic light shaping through moving acousto-optic holograms.** *Treptow D., Bola R., Martín-Badosa E., Montes-Usategui M.* Scientific Reports. 2021, 11, 1, 21261

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)

Eva Aubets Gil (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

- **Polypurine reverse-hoogsteen hairpins as a tool for exon skipping at the genomic level in mammalian cells.** *Noé V., Ciudad C.J.* International Journal of Molecular Sciences. 2021, 22, 7, 3784
- **Polypurine reverse hoogsteen hairpins work as rna species for gene silencing. Aubets E., Chillon M., Ciudad C.J., Noé V.** International Journal of Molecular Sciences. 2021, 22, 18, 10025
- **Synthesis and validation of DOPY: A new gemini dioleylbispyridinium based amphiphile for nucleic acid transfection.** *Aubets E., Griera R., Felix A.J., Rigol G., Sikorski C., Limón D., Mastrorosa C., Busquets M.A., Pérez-García L., Noé V., Ciudad C.J.* European Journal of Pharmaceutics and Biopharmaceutics. 2021,165
- **Nucleic acids therapeutics using PolyPurine Reverse Hoogsteen hairpins.** *Noé V., Aubets E., Félix A.J., Ciudad C.J.* Biochemical Pharmacology. 2021, 189, 11431

2.2.6. Catalysis and Advanced Inorganic Materials (NanoEnergy)

Department Inorganic and Organic Chemistry, Faculty Chemistry

TEAM

Narcis Homs Martí (Full Professor)
Pilar Ramírez de la Piscina (Full Professor)
Paulina Raquel Martinez Alanis (Adjunct Lecturer-Postdoc)
Arturo Pajares Rojas (Predoctoral Researcher)
Yan Wang (Predoctoral Researcher)
Joan Roca Busacker (Master Student)

SELECTED PROJECTS

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

SELECTED PAPERS

- **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. 2021
- **Ti-containing hybrid mesoporous organosilicas as photocatalysts for H2 production from ethanol.** *Wang Y., Homs N., Ramírez de la Piscina P.* Journal of Materials Research and Technology. 2021, 14

2.2.7. Cellular Responses to Xenobiotics (NanoPharmaMed)

Deparment Biochemistry and Physiology, Faculty Pharmacy and Food Sciences

TEAM

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

SELECTED PAPERS

- **Multifunctional PLGA nanoparticles combining transferrin-targetability and pH-stimuli sensitivity enhanced doxorubicin intracellular delivery and in vitro antineoplastic activity in MDR tumor cells.** *Scheeren L.E., Nogueira-Librelotto D.R., Mathes D., Pillat M.M., Macedo L.B., Mitjans M., Vinardell M.P., Rolim C.M.B.* Toxicology in Vitro. 2021, 75, 105192
- **Methodological shortcomings in the reports of the imiquimod psoriatic model.** *Vinardell M.P.* Experimental Dermatology (2021)
- **UVB photoprotective capacity of hydrogels containing dihydromyricetin nanocapsules to UV-induced DNA damage.** *Dalcin A.J.F., Roggia I., Felin S., Vizzotto B.S., Mitjans M., Vinardell M.P., Schuch A.P., Ourique A.F., Gomes P.* Colloids and Surfaces B: Biointerfaces. 2021, 197, 111431
- **Green cationic arginine surfactants: Influence of the polar head cationic character on the self-aggregation and biological properties.** *Pérez L., Pons R., Oliveira de Sousa F.F., Morán M.D.C., Ramos da Silva A., Pinazo A.* Journal of Molecular Liquids. 2021, 339, 116819

2.2.8. Colloids (NanoPharmaMed)

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

TEAM

Joan Estelrich Latràs (Full Professor)
M. Antonia Busquets Viñas *(Associate Professor)*

SELECTED PAPERS

- **Dual Effect of Prussian Blue Nanoparticles on Aβ40 Aggregation: β-Sheet Fibril Reduction and Copper Dyshomeostasis Regulation.** *Kowalczyk J., Grapsi E., Espargaró A., Caballero A.B., Juárez-Jiménez J., Busquets M.A., Gamez P., Sabate R., Estelrich J.* Biomacromolecules. 2021, 22, 2
- **Synthesis and validation of DOPY: A new gemini dioleylbispyridinium based amphiphile for nucleic acid transfection.** *Aubets E., Griera R., Felix A.J., Rigol G., Sikorski C., Limón D., Mastrorosa C., Busquets M.A., Pérez-García L., Noé V., Ciudad C.J.* European Journal of Pharmaceutics and Biopharmaceutics, 2021, 165
- **Prussian blue: A nanozyme with versatile catalytic properties.** *Estelrich J., Busquets M.A.* International Journal of Molecular Sciences. 2021, 22, 11, 5993

2.2.9. 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)

SELECTED PAPERS

- **Dual Effect of Prussian Blue Nanoparticles on Aβ40 Aggregation: β-Sheet Fibril Reduction and Copper Dyshomeostasis Regulation.** *Kowalczyk J., Grapsi E., Espargaró A., Caballero A.B., Juárez-Jiménez J., Busquets M.A., Gamez P., Sabate R., Estelrich J.* Biomacromolecules. 2021, 22, 2
- **Azobioisosteres of Curcumin with Pronounced Activity against Amyloid Aggregation, Intracellular Oxidative Stress, and Neuroinflammation.** *Hofmann J., Ginex T., Espargaró A., Scheiner M., Gunesch S., Aragó M., Stigloher C., Sabaté R., Luque F.J., Decker M.* Chemistry - A European Journal. 2021, 27, 19
- **Air Curtains Equipped With Hydroalcoholic Aerosol Sprayers for Massive COVID-19 Disinfection.** *Raventós J., Sabate R.* Frontiers in Public Health. 2021, 8, 582782

2.2.10. 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)
Rebeca Salgado Pizarro (Predoctoral Researcher)
Jordi Díaz Marcos (Adjunct Lecture)
José Antonio Pandilla Sánchez (Adjunct Lecture)

SELECTED PROJECTS

- **Metodologia para el análisis de tecnologías de almacenamiento de energía térmica hacia una economía circular.** RTI2018-093849-B-C32. Ministerio de Ciencia e Innovación. PI2: *Mercè Segarra (2019-2021)*

SELECTED PAPERS

- **Concentrating Solar Power Technologies: A Bibliometric Study of Past, Present and Future Trends in Concentrating Solar Power Research.** *Calderón A., Barreneche C., Prieto C., Segarra M., Fernández A.I.* Frontiers in Mechanical Engineering. 2021, 7, 682592
- **Thermal cycling test of solid particles to be used in concentrating solar power plants.** *Calderón A., Barreneche C., Fernández A.I., Segarra M.* Solar Energy Materials and Solar Cells. 2021, 222, 110936
- **Characterization of 3d printed yttria-stabilized zirconia parts for use in prostheses.** *Buj-Corral I., Vidal D., Tejo-Otero A., Padilla J.A., Xuriguera E., Fenollosa-Artés F.* Nanomaterials. 2021, 11, 11, 2942
- **Analysis of the compression behaviour of reinforced photocurable materials used in additive manufacturing processes based on a mask image projection system.** *Bonada J., Barcelona P., Casafont M., Pons J.M., Padilla J.A., Xuriguera E.* Materials. 2021, 14, 16, 4605

2.2.11. 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)

SELECTED PAPERS

- **Influence of the ripening stage and extraction conditions on the phenolic fingerprint of 'corbella' extra-virgin olive oil.** *López-Yerena A., Ninot A., Jiménez-Ruiz N., Lozano-Castellón J., Pérez M., Escribano-Ferrer E., Romero-Aroca A., Lamuela-Raventós R.M., Vallverdú-Queralt A.* Antioxidants. 2021, 10, 6, 877
- **Metabolomics technologies for the identification and quantification of dietary phenolic compound metabolites: An overview.** *López-Yerena A., Domínguez-López I., Vallverdú-Queralt A., Pérez M., Jáuregui O., Escribano-Ferrer E., Lamuela-Raventós R.M.* Antioxidants. 2021, 10, 6, 846
- **Blood-brain barrier dysfunction in hemorrhagic transformation: A therapeutic opportunity for nanoparticles and melatonin.** *Figueroa E.G., González-Candia A., Caballero-Román A., Fornaguera C., Escribano-Ferrer E., García-Celma M.J., Herrera E.A.* Journal of Neurophysiology. 2021, 216, 6
- **Tissue distribution of oleocanthal and its metabolites after oral ingestion in rats.** *López-Yerena A., Vallverdú-Queralt A., Jáuregui O., Garcia-Sala X., Lamuela-Raventós R.M., Escribano-Ferrer E.* Antioxidants. 2021, 10, 5, 688

2.2.12. Engineering of colloidal systems (NanosMat)

Department Chemical Engineering and Analytical Chemistry, Faculty Chemistry

TEAM

José Maria Gutiérrez González (Associate Professor)
Alicia Maestro Garriga (Associate Professor)

2.2.13. 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)
Francesc Viladomat Meya (Full Professor)
Montserrat Arró Plans (Associate Professor)
Laura Torras Claveria (Associate Professor)

SELECTED PAPERS

- **Alkaloids Analysis of Habranthus cardenasianus (Amaryllidaceae), Anti-Cholinesterase Activity and Biomass Production by Propagation Strategies.** *Zaragoza-Puchol D., Ortiz J.E., Orden A.A., Sanchez M., Palermo J., Tapia A., Bastida J., Feresin G.E.* Molecules. 2021, 26, 1
- **QToF exact mass and ESI fragmentation of bioactive Amaryllidaceae alkaloids.** *Torras-Claveria L., Berkov S., Viladomat F., Bastida J.* South African Journal of Botany. 2021, 136

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

Department Condensed Matter Physics, Faculty Physics

TEAM

Amílcar Labarta Rodríguez (Full Professor)
Xavier Batlle Gelabert (Full Professor)
Òscar Iglesias Clotas (Associate Professor)
Montserrat García del Muro Solans (Associate Professor)
Arantxa Fraile Rodríguez (Associate Professor)
Eric Langenberg Perez (Tenure-Track Lecturer)
Mariona Escoda Torroella (Predoctoral Researcher)
Javier Rodríguez Álvarez (Predoctoral Researcher)
Ana Conde Rubio (External Collaborator)
Carlos Moya Alvarez (External Collaborator)

SELECTED PROJECTS

- **Propiedades plasmónicas y magnéticas mejoradas en redes de nanoestructuras y nanopartículas multifuncionales.** PGC2018-097789-B-I00. PI: *Xavier Batlle* and *A. Fraile-Rodríguez.* Ministerio de Ciencia e Innovación (2019-2021)

SELECTED PAPERS

- **An inverted honeycomb plasmonic lattice as an efficient refractive index sensor.** *Rodríguez-álvarez J., Gnoatto L., Martínez-Castells M., Guerrero A., Borrisé X., Rodríguez A.F., Batlle X., Labarta A.* Nanomaterials. 2021, 11, 5, 1217
- **Deconvolution of Phonon Scattering by Ferroelectric Domain Walls and Point Defects in a PbTiO3Thin Film Deposited in a Composition-Spread Geometry.** *Bugallo D., Langenberg E., Ferreiro-Vila E., Smith E.H., Stefani C., Batlle X., Catalan G., Domingo N., Schlom D.G., Rivadulla F.* ACS Applied Materials and Interfaces. 2021, 13, 38
- **Driving magnetic domains at the nanoscale by interfacial strain-induced proximity.** *Valmianski I., Rodríguez A.F., Rodríguez-Álvarez J., García Del Muro M., Wolowiec C., Kronast F., Ramírez J.G., Schuller I.K., Labarta A., Batlle X.* Nanoscale. 2021, 13, 9
- **Crucial Role of the Co Cations on the Destabilization of the Ferrimagnetic Alignment in Co-Ferrite Nanoparticles with Tunable Structural Defects.** *Moya C., Fraile Rodríguez A., Escoda-Torroella M., García Del Muro M., Avula S.R.V., Piamonteze C., Batlle X., Labarta A.* Journal of Physical Chemistry C. 2021, 125, 1

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

Department Inorganic and Organic Chemistry, Faculty Chemistry

TEAM

Guillem Aromí Bedmar (Full Professor)
Eva Carolina Sañudo (Associate Professor)
David Aguilà Avilés (Tenure-Track Lecturer)
Leoni A. Barrios Moreno (Postdoctoral Researcher)
Verónica Velasco Amigó (Adjunct Lecturer)
Rosa Diego Creixenti (Predoctoral Researcher)
Guillem Gabarró Riera (Predoctoral Researcher)
Manto Maniaki (Predoctoral Researcher)

SELECTED PROJECTS

- **FAult Tolerant MOLecular Spin processor (FATMOLS).** UB IP: Aromí, Guillem. H2020 FET-OPEN. (2020-2023)
- **Diseño y Nanoestructuración de Moléculas Multifuncionales para el Avance de la Espintrónica.** PGC2018-098630-B-I00. Ministerio de Ciencia e Innovación. PI1: *Guillem Aromí* /PI2: E. *Carolina Sañudo* (2019-2022)
- **Convocatòria del Programa ICREA Acadèmia - Fundació Institució Catalana de Recerca i Estudis Avançats (ICREA).** IP: *Aromí Bedmar, Guillem* (2019-2023)

SELECTED PAPERS

- **Designed polynuclear lanthanide complexes for quantum information processing.** *Aguilà D., Roubeau O., Aromí G.* Dalton Transactions. 2021, 50, 35
- **Accessing Lanthanide-to-Lanthanide Energy Transfer in a Family of Site-Resolved [LnIIILnIII'] Heterodimetallic Complexes.** *Abad Galán L., Aguilà D., Guyot Y., Velasco V., Roubeau O., Teat S.J., Massi M., Aromí G.* Chemistry - A European Journal. 2021, 27, 25
- **Unravelling of a [High Spin—Low Spin] ↔ [Low Spin—High Spin] Equilibrium in Spin-Crossover Iron(II) Dinuclear Helicates Using Paramagnetic NMR Spectroscopy.** *D.Y. Aleshin, R. Diego, L.A. Barrios,Y.V. Nelyubina, G. Aromí, V.V. Novikov* Angewandte Chemie - International Edition. 2021, 60, 1 – 6
- **Piano-Stool Ruthenium(II) Complexes with Delayed Cytotoxic Activity: Origin of the Lag Time.** *Rafols L., Josa D., Aguilà D., Barrios L.A., Roubeau O., Cirera J., Soto-Cerrato V., Pérez-Tomás R., Martínez M., Grabulosa A., Gamez P.* Inorganic Chemistry. 2021, 60, 11

2.2.16. Homogeneous Catalysis (NanosMat)

Department Inorganic and Organic Chemistry, Faculty Chemistry

TEAM

Arnald Grabulosa Rodriguez (Associate Professor)
Anton Vidal Ferran (ICREA Researcher)
José Luis Núñez Rico (Postdoctoral Researcher)
Dana Josa Hidalgo (Predoctoral Researcher)
Alba Martínez Bascuñana (Predoctoral Researcher)
Javier Eusamio Rodríguez (Predoctoral Researcher)

SELECTED PROJECTS

- **Conceptually New Catalytic Systems for the Methoxycarbonylation and N-Carbamoylation of Anilines, Covestro AG,** IP: *Vidal Ferran*, Anton. 2016-2021.

SELECTED PAPERS

- **Piano-Stool Ruthenium(II) Complexes with Delayed Cytotoxic Activity: Origin of the Lag Time.** *Rafols L., Josa D., Aguilà D., Barrios L.A., Roubeau O., Cirera J., Soto-Cerrato V., Pérez-Tomás R., Martínez M., Grabulosa A., Gamez P.* Inorganic Chemistry. 2021, 60, 11
- **Differentiation of Epoxide Enantiomers in the Confined Spaces of an Homochiral Cu(II) Metal-Organic Framework by Kinetic Resolution.** *Cabezas-Giménez J., Lillo V., Luis Núñez-Rico J., Nieves Corella-Ochoa M., Jover J., Galán-Mascarós J.R., Vidal-Ferran A.* Chemistry - A European Journal. 2021

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

Department Electronics and Biomedical Engineering, Faculty Physics

TEAM

Angel Dieguez Barrientos (Full Professor)
Anna Vilà Arbonés (Associate Professor)
Mauricio Moreno Sereno (Associate Professor)
Christophe Serre (Associate Professor)

SELECTED PROJECTS

- **Scalable Structured Micro Illumination Light Engines (SMILE) H2020 FET-Open.**
  PI: *Ángel Diéguez / J. Daniel Prades* (2020-2022)
- **Disseny d'acceleradors basats en la tecnologia RISC-V per a la propera generació de computadors (DRAC).**
  IP: *Angel Dieguez*. Departament d'Empresa i Coneixement. Generalitat de Catalunya. RIS3CAT. (2019-2022)

SELECTED PAPERS

- **Pursuing the diffraction limit with nano-led scanning transmission optical microscopy.** *Moreno S., Canals J., Moro V., Franch N., Vilà A., Romano-Rodriguez A., Prades J.D., Bezshlyakh D.D., Waag A., Kluczyk-Korch K., der Maur M.A., Di Carlo A., Krieger S., Geleff S., Diéguez A.* Sensors. 2021, 21, 10, 3305
- **A compact raster lensless microscope based on a microdisplay.** *Vilà A., Moreno S., Canals J., Diéguez A.* Sensors, 21, 17, 5941 (2021)
- **Individually switchable ingan/gan nano-led arrays as highly resolved illumination engines.** *Kluczyk-Korch K., Moreno S., Canals J., Diéguez A., Gülink J., Hartmann J., Waag A., Di Carlo A., der Maur M.A.* Electronics. 2021, 10, 15, 1829

2.2.18. 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)
Gemma Martin Malpartida (Collaborator)
Josep Manel Rebled Corselles (Collaborator)
Luís López Conesa (Collaborator)

SELECTED PROJECTS

- **In4CIS: New in-line optical methodologies for advanced assessment of high efficiency CIGS industrial processes.** SOLAR-ERA.NET Cofund Program (H2020 Cost program) Coordinator: *Marcel Placidi*, IP: *Sònia Estradé* Código: SOLAR-ERA.NET Cofund 2nd Call –Project Number 48
  Partners: IREC (Institut de Recerca en Energia de Catalunya), Universitat de Barcelona, Lenz Instruments SL, ZSW (Center for Solar Energy and Hydrogen Research Baden-Württemberg, Germany), Manz AG (Germany). 2019-2022
- **Totem: hacia nuevos metodos en microscopia electronica de barrido y transmision (tome).** PID2019-106165GB-C21. MICIIN - Ministerio de Ciencia e Innovación IPs: *Francisca Peiró Martínez / Sònia Estradé*. 2020-2023

SELECTED PAPERS

- **Direct Evidence of a Graded Magnetic Interface in Bimagnetic Core/Shell Nanoparticles Using Electron Magnetic Circular Dichroism (EMCD).** *Del-Pozo-Bueno D., Varela M., Estrader M., López-Ortega A., Roca A.G., Nogués J., Peiró F., Estradé S.* Nano Letters. 2021, 21, 16.
- **Tailoring the Transport Properties of Mesoporous Doped Cerium Oxide for Energy Applications.** *Baiutti F., Blanco-Portals J., Anelli S., Torruella P., López-Haro M., Calvino J., Estradé S., Torrell M., Peiró F., Tarancón A.* Journal of Physical Chemistry C. 2021, 125, 30.
- **Mapping the magnetic coupling of self-assembled Fe3 O4 nanocubes by electron holography.** *López-Conesa L., Martínez-Boubeta C., Serantes D., Estradé S., Peiró F.* Materials. 2021, 14, 4, 774
- **Direct Measurement of Oxygen Mass Transport at the Nanoscale.** *Baiutti F., Chiabrera F., Diercks D., Cavallaro A., Yedra L., López-Conesa L., Estradé S., Peiró F., Morata A., Aguadero A., Tarancón A.* Advanced Materials. 2021

2.2.19. 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 PROJECTS

- **Hacia nuevos nanomateriales para tecnologías emergentes.** PID2019-106165GB-C22. Ministerio de Ciencia e Innovación. IP1: *Albert Figuerola*/IP2: *Marta Estrader*. 2020-2023

SELECTED PAPERS

- **Direct Evidence of a Graded Magnetic Interface in Bimagnetic Core/Shell Nanoparticles Using Electron Magnetic Circular Dichroism (EMCD).** *Del-Pozo-Bueno D., Varela M., Estrader M., López-Ortega A., Roca A.G., Nogués J., Peiró F., Estradé S.* Nano Letters. 2021, 21, 16
- **A setup to measure the temperature-dependent heating power of magnetically heated nanoparticles up to high temperature.** *Mille N., Faure S., Estrader M., Yi D., Marbaix J., De Masi D., Soulantica K., Millán A., Chaudret B., Carrey J.* Review of Scientific Instruments. 2021, 92, 5, 054905
- **Synthesis, characterization, and performance of nanocomposites containing reduced graphene oxide, polyaniline, and cobalt ferrite.** *Kooti M., Sedeh A.N., Gheisari K., Figuerola A.* Physica B: Condensed Matter. 2021, 612, 412974
- **Probing the meta-stability of oxide core/shell nanoparticle systems at atomic resolution.** *Roldan M.A., Mayence A., López-Ortega A., Ishikawa R., Salafranca J., Estrader M., Salazar-Alvarez G., Dolors Baró M., Nogués J., Pennycook S.J., Varela M.* Chemical Engineering Journal. 2021, 405, 126820

2.2.20. 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 Húnter – ERC Consolidator Grant (www.ub.edu/dlight))

Ernest Martí Jerez (Predoctoral Researcher)

Narcís Vilar Solé (Industrial Predoctoral Researcher)

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)

SELECTED PAPERS

- **Multiplane Encoded Light-Sheet Microscopy for Enhanced 3D Imaging.**
  Zunino A., Garzella F., Trianni A., Saggau P., Bianchini P., Diaspro A., Duocastella M. ACS Photonics. 2021, 8, 11
- **The Combined Use of Gold Nanoparticles and Infrared Radiation Enables Cytosolic Protein Delivery.**
  Garcia J., Fernández-Pradas J.M., Lladó A., Serra P., Zalvidea D., Kogan M.J., Giralt E., Sánchez-Navarro M.
  Chemistry - A European Journal. 2021, 27, 14

2.2.21. 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)
*Montserrat Corbella Cordomí (*Associate Professor)
Júlia Mayans Ayats (Tenure-Track Lecturer)
Annia Tubau Ribot (Predoctoral Researcher)

SELECTED PROJECTS

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

SELECTED PAPERS

- **Exploring the Role of Intramolecular Interactions in the Suppression of Quantum Tunneling of the Magnetization in a 3d-4f Single-Molecule Magnet.** *Akhtar M.N., Aldamen M.A., Mcmillen C.D., Escuer A., Mayans J.* Inorganic Chemistry. 2021, 60, 13
- **Single-Ion Anisotropy and Intramolecular Interactions in CeIIIand NdIIIDimers.** *Mayans J., Tesi L., Briganti M., Boulon M.-E., Font-Bardia M., Escuer A., Sorace L.* Inorganic Chemistry. 2021, 60, 12
- **Structural and magnetic studies of mononuclear lanthanide complexes derived from N-rich chiral Schiff bases.** *Pilichos E., Font-Bardia M., Escuer A., Mayans J.* Dalton Transactions. 2021, 50, 5
- **Correlating the axial Zero Field Splitting with the slow magnetic relaxation in GdIIISIMs.** *Mayans J., Escuer A.* Chemical Communications. 2021, 57, 6

2.2.22. 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 PROJECTS

- **ENgineering FrustratiOn in aRtificial Colloidal icEs: degeneracy, exotic lattices and 3D states (ENFORCE).** ERC Consolidator Grant. IP: *Pietro Tierno*. (2020-2024)

SELECTED PAPERS

- **Thermally active nanoparticle clusters enslaved by engineered domain wall traps.** *Tierno P., Johansen T.H., Straube A.V.* Nature Communications. 2021, 12, 5813
- **Degeneracy and hysteresis in a bidisperse colloidal ice.** *Rodríguez-Gallo C., Ortiz-Ambriz A., Tierno P.* Physical Review Research. 2021, 3, 4, 43023
- **Collective hydrodynamic transport of magnetic microrollers.** *Junot G., Cebers A., Tierno P.* Soft Matter. 2021, 17, 38
- **Topological Boundary Constraints in Artificial Colloidal Ice.** *Rodríguez-Gallo C., Ortiz-Ambriz A., Tierno P.* Physical Review Letters. 2021, 126, 18, 188001

2.2.23. Magnetism (NanoMagnetics)

Department Condensed Matter Physics, Faculty Physics

TEAM

Javier Tejada Palacios (Emeritus Professor)
Antoni García Santiago (Associate Professor)
Joan Manel Hernández Ferràs (Associate Professor)
Ferran Macià Bros (Associate Professor)

SELECTED PROJECTS

- **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
- **Matheroes: The Box.** Finacial Support: Project co-funded by ICMAB-CSIC and FECYT - Fundación Española para la Ciencia y la Tecnología. IP: *Anna May Masnou*. 2020-2021

2.2.24. 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)
Oriol Arteaga Barriel (Postdoctoral Researcher Ramon y Cajal)
Roger Amade Rovira (Tenure-Track Lecturer)
Jordi Gomis Bresco (Tenure-Track Lecturer)
Islam Alshaikh (Predoctoral Researcher)

SELECTED PROJECTS

- **Electrodos híbridos para almacenamiento de energía avanzado: hacia un futuro sostenible (PID2020-116612RB-C32).** IP: *Enric Bertran*. Ministerio de Ciencia e Innovación (2021-2024)
- **TCCV2, Textile Competence Center Vorarlberg 2, FFG 882502.** IP: *Enric Bertran.*, programa. COMET projects finançat per la Austrian Funding Agency, 2021-2024

SELECTED PAPERS

- **Three-dimensional Si / vertically oriented graphene nanowalls composite for supercapacitor applications.** *Hussain S., Amade R., Boyd A., Musheghyan-Avetisyan A., Alshaikh I., Martí-Gonzalez, J., Pascual E., Meenan B.J., Bertran-Serra E.* Ceramics International. 2021, 47, 15
- **Enhanced capacitance of manganese oxide driven by hierarchically structured carbon nanotube-carbon nanowall composite.** *Amade R., Alshaikh I., Musheghyan-Avetisyan A., Bertran-Serra E.* Surface and Coatings Technology. 2021, 428, 127885
- **Optimal elliptical retarder in rotating compensator imaging polarimetry.** *Gottlieb D., Arteaga O.* Optics Letters. 2021, 46, 13
- **Mueller matrix ellipsometer based on discrete-angle rotating Fresnel rhomb compensators.** *Bian S., Cui C., Arteaga O.* Applied Optics. 2021, 60, 16

2.2.25. Materials: Phase transitions (NanoMet)

Department Condensed Matter Physics, Faculty Physics

TEAM

Antoni Planes Vila (Full Professor)
Lluís Mañosa Carrera (Full Professor)
Teresa Castán Vidal (Full Professor)
Michela Romanini (Postdoctoral Researcher Juan de la Cierva)
Marcel Porta Tena (Adjunct Lecturer)

SELECTED PROJECTS

- **Materiales calóricos y multicalóricos avanzados para una refrigeración limpia y eficiente (PID2020-113549RB-I00).** IP: *Lluís Mañosa.* Ministerio de Ciencia e Innovación (2021-2025)

SELECTED PAPERS

- **Elastocaloric effect with a broad temperature window and low energy loss in a nanograin Ti-44Ni-5Cu-1Al (at·%) shape memory alloy.** *Chen H., Xiao F., Li Z., Jin X., Mañosa L., Planes A.* Physical Review Materials. 2021, 5, 1, 015201
- **Flexocaloric effect near a ferroelastic transition.** *Porta M., Castán T., Saxena A., Planes A.* Physical Review B,. 2021, 104, 9, 094108
- **Giant and Reversible Barocaloric Effect in Trinuclear Spin-Crossover Complex Fe3(bntrz)6(tcnset)6.** *Romanini M., Wang Y., Gürpinar K., Ornelas G., Lloveras P., Zhang Y., Zheng W., Barrio M., Aznar A., Gràcia-Condal A., Emre B., Atakol O., Popescu C., Zhang H., Long Y., Balicas L., Lluís Tamarit J., Planes A., Shatruk M., Mañosa L.* Advanced Materials. 2021, 33, 10, 2008076
- **Thermo-magnetic characterization of phase transitions in a Ni-Mn-In metamagnetic shape memory alloy.** *Romero F.J., Martín-Olalla J.-M., Blázquez J.S., Gallardo M.C., Soto-Parra D., Vives E., Planes A.* Journal of Alloys and Compounds. 2021, 887, 161395

2.2.26. Mechanisms of Reactions in Inorganic Chemistry (NanosMat)

Department Inorganic and Organic Chemistry, Faculty Chemistry

Website: Mechanisms of Reactions in Inorganic Chemistry

TEAM

Manuel Martínez López (Full Professor)

Montserrat Sofia Ferrer García (Associate Professor)

SELECTED PROJECTS

- **Estudios Cinetico-Mecanisticos De La Reactividad De Compuestos De Coordinacion En Disolucion: La Importancia De Las Variables Inocentes En Los Parametros De Activacion. PID2019-107006GB-C21.**
  IP: *Manuel Martínez (UB)*

SELECTED PAPERS

- **Molecular Approach to Alkali-Metal Encapsulation by a Prussian Blue Analogue FeII/CoIIICube in Aqueous Solution: A Kineticomechanistic Exchange Study.** *Gonzálvez M.A., Bernhardt P.V., Font-Bardia M., Gallen A., Jover J., Ferrer M., Martínez M.* Inorganic Chemistry. 2021, 60, 23, 18407–18422
- **Base-assisted synthesis of 4-pyridinate gold(i) metallaligands: a study of their use in self-assembly reactions.** *Ferrer M., Gutiérrez A., Martínez M., Da Silva C., Netto A.V.G., Rodríguez L., Romo-Islas G., Pan F., Rissanen K.* Dalton Transactions. 2021, 50, 23

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

Department Electronics and Biomedical Engineering, Faculty Physics

Website: MIND

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 Urrios (Associate Professor)
Sergio Hernández Márquez (Associate Professor)
Cristian Fàbrega Gallego (Tenure-Track Lecturer)
Francisco de P. Hernandez Ramirez (Adjunct Lecturer)
Olga Casals Guillén (Postdoctoral Researcher)
Juan Luis Frieiro Castro (Predoctoral Researcher)
Elena López Aymerich (Predoctoral Researcher)

SELECTED PROJECTS

- **DRop-on demand flexible Optoelectronics & Photovoltaics by means of Lead-Free halide perovskITes (DROP-IT). (H2020-FETOPEN-2018-2019-2020-01).** IP: *Garrido Fernández, Blas.* (2019-2022)
- **Continuous two-dimensional Stretch monitoring of fresh tissue Biopsies (StretchBio). H2020 FET-OPEN.** IP: *Albert Romano* (2021-2025)
- **A user-friendly approach to widespread gas monitoring (Stick-n-Sense). (ERC-2020-PoC).** IP: *Prades García, Juan Daniel.* (2021-2022)

INTERNATIONAL COLLABORATIONS:

Research Center: Technical University of Denmark (DTU).
Group leader: *Winnie E. Svendsen*
City: Lyngby (Denmark)

Research Center: Albrechts-Ludwig Universität Freiburg
Group leader: *Jürgen Wöllenstein*
City: Freiburg im Breisgau (Germany)

Research Center: Goethe University of Frankfurt
Group leader: *Sven Barth*
City: Frankfurt (Germany)

Research Center: TU Braunschweig
Group leader: *Andreas Waag*
City: Braunschweig (Germany)

SELECTED PAPERS

- **Fabrication, characterization and performance of low power gas sensors based on (Gax in1-x)2 o3 nanowires.** *López-Aymerich E., Domènech-gil G., Moreno M., Pellegrino P., Romano-rodriguez A.* Sensors. 2021, 21, 10, 3342
- **Printed sensor labels for colorimetric detection of ammonia, formaldehyde and hydrogen sulfide from the ambient air.** *Engel L., Benito-Altamirano I., Tarantik K.R., Pannek C., Dold M., Prades J.D., Wöllenstein J. Sensors and Actuators, B:* Chemical. 2021, 330, 129281
- **Plasmon expedited response time and enhanced response in gold nanoparticles-decorated zinc oxide nanowire-based nitrogen dioxide gas sensor at room temperature. Kim D.W.,** *Park K.H., Lee S.-H., Fàbrega C., Prades J.D., Jang J.-W.* Journal of Colloid and Interface Science, 2021. 582
- **Hybrid liquid crystalline zinc phthalocyanine@Cu2O nanowires for NO2 sensor application.** *Sisman O., Kilinc N., Akkus U.O., Sama J., Romano-Rodriguez A., Atilla D., Gürek A.G., Ahsen V., Berber S., Ozturk Z.Z.* Sensors and Actuators, B: Chemical. 2021, 345, 130431
- **Dielectric function of vanadium oxide thin films by thermal annealing.** *Canillas A., Guell F., Arteaga O., Martinez-Alanis P.R., Vergnat M., Rinnert H., Garrido B.* Applied Optics. 2021, 60, 15

2.2.28. Microbian Enzymes for Industrial Applications Group (NanoBio)

Department Genetics, Microbiology and Statistics, Faculty Biology

Website: Microbian Enzymes for Industrial Applications Group

TEAM

Francisco I. Javier Pastor Blasco (Full Professor)

Pilar Díaz Lucea (Full Professor)

Josefina Martínez Martínez (Associate Professor)

Susana Valenzuela Mayorga (Adjunct Lecturer)

Carolina Buruaga (Predoctoral Researcher)

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 PROJECTS

- **Diseño de herramientas biotecnológicas para el desarrollo de componentes de microdispositivos biodegradables.** CTQ2017-84966-C2-2-R. Ministerio de Economia y Competitividad.
  IP: *Pastor Blasco, Francisco I. Javier*. 2018-2021

SINGULAR SCIENTIFIC EQUIPMENT

- Nanofibrillated cellulose preparation: Panda Plus 2000, for high-pressure homogenization
- Protein purification: ÄKTA protein purification system, for chromatographic separation of proteins
- Screening for activity: ASYS UVM340 Microplate reader / Agilent, Varian Cary Eclipse Fluorescence Spectrophotometer, for microplate

INTERNATIONAL COLLABORATIONS

- Peter Biely's Lab: Institute of Chemistry, Slovak Academy of Sciences, Bratislava, Slovakia.
- Sonia Rodriguez Giordano's Lab: Bioscience Department, Universidad de la República. Montevideo, Uruguay.
- Diana Ciolacu: "Petru Poni" Institute of Macromolecular Chemistry, Department of Physical Chemistry of Polymers. Iasi, Romania.
- Mirjam Kabel: Department of Agrotechnology and Food Sciences, Wageningen University & Research. Wageningen, Netherlands
- Nawel Boucherba: Head of Team Microbial enzymes, president of the scientific council of the FNSL. University A/Mira of Bejaia

SELECTED PAPERS

- **Microbiological and sensory characterization of kombucha SCOBY for culinary applications.** *Torán-Pereg P., del Noval B., Valenzuela S., Martinez J., Prado D., Perisé R., Arboleya J.C.* International Journal of Gastronomy and Food Science. 2021, 23, 100314
- **Oxidized Product Profiles of AA9 Lytic Polysaccharide Monooxygenases Depend on the Type of Cellulose.** *Sun P., Valenzuela S.V., Chunkrua P., Javier Pastor F.I., Laurent C.V.F.P., Ludwig R., Van Berkel W.J.H., Kabel M.A.* ACS Sustainable Chemistry and Engineering. 2021, 9, 42

2.2.29. Mineral Resources Research Group (NanoBio)

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

TEAM

Josep Roqué Rosell (Associate Professor)
Joaquín Antonio Proenza (Associate Professor)
Joan Carles Melgarejo Draper (Associate Professor)
Maria Abigaíl Jiménez Franco (Postdoctoral Researcher)

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

SELECTED PAPERS

- **Mechanisms for Pd–Au enrichment in porphyry-epithermal ores of the Elatsite deposit, Bulgaria.** *González-Jiménez J.M., Piña R., Kerestedjian T.N., Gervilla F., Borrajo I., Pablo J.F.-D., Proenza J.A., Tornos F., Roqué J., Nieto F.* Journal of Geochemical Exploration. 2021, 220, 106664
- **Synchrotron XAS study of Mn and Fe in Chinese blue-and-white Ming porcelains from the second half of the 15th century.** *Roqué-Rosell J., Pinto A., Marini C., Prieto Burgos J., Groenen J., Campeny M., Sciau P.* Ceramics International. 2021, 47, 2.

2.2.30. 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)

SELECTED PROJECTS

Plataformas microfisiológicas in vitro para la mimetización de las barreras del sitema nervioso central: aplicaiones en cerebro y médula espinal (RTI2018-097038-B-C22). IP: Castaño, Oscar. Ministerio de Ciencia e Innovación (2019-2021)

SELECTED PAPERS

- **A microphysiological system combining electrospun fibers and electrical stimulation for the maturation of highly anisotropic cardiac tissue.** *López-Canosa A., Perez-Amodio S., Yanac-Huertas E., Ordoño J., Rodriguez-Trujillo R., Samitier J., Castaño O., Engel E.* Biofabrication, 2021, 13, 3
- **Stochastic modulation evidences a transitory EGF-Ras-ERK MAPK activity induced by PRMT5.** *Jurado M., Castaño Ó., Zorzano A.* Computers in Biology and Medicine. 2021, 133
- **Chemotactic TEG3 Cells' Guiding Platforms Based on PLA Fibers Functionalized With the SDF-1α/CXCL12 Chemokine for Neural Regeneration Therapy.** *Castaño O., López-Mengual A., Reginensi D., Matamoros-Angles A., Engel E., del Rio J.A.* Frontiers in Bioengineering and Biotechnology. 2021, 9

2.2.31. NanoBioPharma (NanoPharmaMed)

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

TEAM

Ana Calpena Campmany (Associate Professor)
Mireia Oliva (Associate Professor)
Lyda Halbaut Bellowa (Associate Professor)
Helen Lissette Alvarado Bonilla (Adjunct Lecturer)
Joaquim Suñer Carbó (Adjunt Lecturer)
Mireia Mallandrich Miret (Postdoctoral Researcher)
Paulo Cesar Sarango Granda (Predoctoral Researcher)
Marcelle Silva de Abreu (External Collaborator)
Guadalupe Del Carmen Abrego Escobar (External Collaborator)
Beatriz Clares Maveros (External Collaborator)
Lupe Carolina Espinoza Tituana (External Collaborator)

SELECTED PAPERS

- **In vivo pharmacokinetic evaluation of carprofen delivery from intra-articular nanoparticles in rabbits: A population modelling approach.** *Parra-Coca A., Boix-Montañés A., Calpena-Campmany A.C., Colom H.* Research in Veterinary Science. 2021, 137
- **Hpv lesions and other issues in the oral cavity treatment and removal without pain.** *El Moussaoui S., Mallandrich M., Garrós N., Calpena A.C., Lagunas M.J.R., Fernández-Campos F.* International Journal of Molecular Sciences. 2021, 22, 20, 11158
- **Screening anti-inflammatory effects of flavanones solutions.** *Bustos-Salgado P., Andrade-Carrera B., Domínguez-Villegas V., Díaz-Garrido N., Rodríguez-Lagunas M.J., Badía J., Baldomà L., Mallandrich M., Calpena-Campmany A., Garduño-Ramírez M.L.* International Journal of Molecular Sciences. 2021, 22, 16, 8878
- **Nano-engineering of ketorolac tromethamine platforms for ocular treatment of inflammatory disorders.** *Mallandrich M., Calpena A.C., Clares B., Parra A., Garcia M.L., Soriano J.L., Fernandez-Campos F.* Nanomedicine. 2021, 16, 5

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

Department Electronics and Biomedical Engineering, Faculty Physics

TEAM

Joan Ramon Morante Lleonart (Full Professor)

SELECTED PAPERS

- **Effects of solar irradiation on thermally driven CO2 methanation using Ni/CeO2–based catalyst.** *Golovanova V., Spadaro M.C., Arbiol J., Golovanov V., Rantala T.T., Andreu T., Morante J.R.* Applied Catalysis B: Environmental. 2021, 291, 120038
- **Tubular CoFeP@CN as a Mott–Schottky Catalyst with Multiple Adsorption Sites for Robust Lithium–Sulfur Batteries.** *Zhang C., Du R., Biendicho J.J., Yi M., Xiao K., Yang D., Zhang T., Wang X., Arbiol J., Llorca J., Zhou Y., Morante J.R., Cabot A.* Advanced Energy Materials. 2021, 11, 24, 2100432
- **Facing Seawater Splitting Challenges by Regeneration with Ni–Mo–Fe Bifunctional Electrocatalyst for Hydrogen and Oxygen Evolution. Ros C.,** *Murcia-López S., Garcia X., Rosado M., Arbiol J., Llorca J., Morante J.R.* ChemSusChem. 2021, 14, 1**4**
- **Contact resistance stability and cation mixing in a Vulcan-based LiNi1/3Co1/3Mn1/3O2slurry for semi-solid flow bateries.** *Jacas Biendicho J., Hemesh A., Izquierdo V., Flox C., Morante J.R.* Dalton Transactions. 2021, 50, 19

2.2.33. 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 PROJECTS

- **Discovery of new antiparasitic agents. UNIUN - Unión Iberoamericana de Universidades.** PI1: *Santiago Imperial*/PI2: *Xavier Fernandez-Busquets.* 2019-2021
- **Investigation of protein aggregation as a new antimalarial target.** (RTI2018-094579-B-I00). Ministerio de Ciencia e Innovación. 2019-2021.
- **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

2.2.34. 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 (Associate Professor)

SELECTED PROJECTS:

Fotosensibilizadores multifuncionales de rutenio(II) para fotoquimioterapia (PID2020-115537RB-I00). IP: Gámez. Patricio. Ministerio de Ciencia e Innovación. (2021-2025)

SELECTED PAPERS

- **Nanochaperone-Based Strategies to Control Protein Aggregation Linked to Conformational Diseases.** *Caballero A.B., Gamez P.* Angewandte Chemie - International Edition. 2021, 60, 1
- **Dual Effect of Prussian Blue Nanoparticles on Aβ40 Aggregation: β-Sheet Fibril Reduction and Copper Dyshomeostasis Regulation.** *Kowalczyk J., Grapsi E., Espargaró A., Caballero A.B., Juárez-Jiménez J., Busquets M.A., Gamez P., Sabate R., Estelrich J.* Biomacromolecules, 2021, 22, 2
- **DNA-interacting properties of two analogous square-planar cis-chlorido complexes: copper versus palladium.** *Palmeira-Mello M.V., Caballero A.B., Lopez-Espinar A., Guedes G.P., Caubet A., de Souza A.M.T., Lanznaster M., Gamez P.* Journal of Biological Inorganic Chemistry. 2021, 26, 6
- **Piano-Stool Ruthenium(II) Complexes with Delayed Cytotoxic Activity: Origin of the Lag Time.** *Rafols L., Josa D., Aguilà D., Barrios L.A., Roubeau O., Cirera J., Soto-Cerrato V., Pérez-Tomás R., Martínez M., Grabulosa A., Gamez P.* Inorganic Chemistry. 2021, 60, 11

2.2.35. Nanostructure of Biomembranes Group (NanoBio)

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

TEAM

Jordi Borrell Hernández (Full Professor)
Maria Teresa Montero Barrientos (Associate Professor)
Òscar Domènech Cabrera (Associate Professor)
Martha Leticia Vázquez González (Adjunct Lecturer)
Adrià Botet Carreras (Predoctoral Researcher)

SELECTED PAPERS

- **Engineering and development of model lipid membranes mimicking the HeLa cell membrane.** *Botet-Carreras A., Montero M.T., Sot J., Domènech Ò., Borrell J.H.* Colloids and Surfaces A: Physicochemical and Engineering Aspects. 2021, 630, 127663.

2.2.36. Nanostructured systems for controlled drug delivery (NanoPharmaMed)

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

TEAM

M. Luisa García López (Full Professor)
Espina García Marta (Associate Professor)
Elena Sanchez Lopez (Tenure-Track Lecturer)
Fidencia Gamisans Linares (Adjunct Lecturer)
Gerard Esteruelas (Predoctoral Researcher)
Eleni Aeridou (Master Student)
Rubén Pareja (Master Student)
Amanda Cano Fernández (External Collaborator - Fundació ACE)

SELECTED PAPERS

- **Thymol-loaded PLGA nanoparticles: an efficient approach for acne treatment.** *Folle C., Marqués A.M., Díaz-Garrido N., Espina M., Sánchez-López E., Badia J., Baldoma L., Calpena A.C., García M.L.* Journal of Nanobiotechnology. 2021, 19, 1, 359
- **Nanomedicine-based technologies and novel biomarkers for the diagnosis and treatment of Alzheimer's disease: from current to future challenges.** *Cano A., Turowski P., Ettcheto M., Duskey J.T., Tosi G., Sánchez-López E., García M.L., Camins A., Souto E.B., Ruiz A., Marquié M., Boada M.* Journal of Nanobiotechnology. 2021, 19, 1, 122.
- **Calcium hydroxide-loaded PLGA biodegradable nanoparticles as an intracanal medicament.** *Elmsmari F., González Sánchez J.A., Duran-Sindreu F., Belkadi R., Espina M., García M.L., Sánchez-López E.* International Endodontic Journal. 2021, 54, 11
- **Psoriasis: From pathogenesis to pharmacological and nano-technological-based therapeutics.** *Petit R.G., Cano A., Ortiz A., Espina M., Prat J., Muñoz M., Severino P., Souto E.B., García M.L., Pujol M., Sánchez-López E.* International Journal of Molecular Sciences, 2021, 22, 9, 4983

2.2.37. Nanosystems Statistical Physics (NanoMet)

Department Condensed Matter Physics, Faculty Physics

Website: Nanosystems Statistical Physics

TEAM

Miguel Rubí Capaceti (Full Professor)

Andrés Arango Restrepo (Predoctoral Researcher)

SELECTED PROJECTS

- **Statistícal physics of small-scale systems: structure, functionallty and cooperativity. PGC2018-098373-B-I00.** IP: *Rubi Capaceti, Jose Miguel*. Ministerio de Ciencia e Innovación (2019-2021)

SELECTED PAPERS

- **Antiresonant driven systems for particle manipulation.** *Carusela M.F., Malgaretti P., Rubi J.M.* Physical Review E. 2021, 103, 6, 062102
- **A criterion for the formation of nonequilibrium self-assembled structures.** *Arango-Restrepo A., Barragán D., Rubi J.M.* Journal of Physical Chemistry B. 2021, 125, 7
- **A Thermodynamic Framework for Stretching Processes in Fiber Materials.** *Arango-Restrepo A., Rubi J.M., Pradhan S.* Frontiers in Physics. 2021, 9, 642754
- **Casimir forces between two carbon nanotubes.** *Nefedov I.S., Davidovich M.V., Glukhova O.E., Slepchenkov M.M., Rubi J.M.* Physical Review B. 2021, 104, 8, 085409

2.2.38. Organic Materials Unit (NanosMat)

Department Inorganic and Organic Chemistry, Faculty Chemisty

TEAM

Maria Dolors Velasco Castrillo (Full Professor)
Jaume García Amorós (Associate Professor)
Roger Bujaldón Carbó (Predoctoral Researcher)
Clara Fabregat Pallejà (Predoctoral Researcher)

SELECTED PROJECTS

- **Materials funcionales con actividad programable frente a campos externos. PGC2018-095477-B-I00.** IP: M. *Dolores Velasco Castrillo*. Ministerio de Ciencia e Innovación. 2019-2021

SINGULAR SCIENTIFIC EQUIPMENT

- Polarised Optical Microscopy
- Photoisomerization set-up
- Heating centrifuge

INTERNATIONAL COLLABORATIONS

- *Dr. O. Poizat* (Laboratoire de Spectrochimie Infrarouge et Raman CNRS, Université de Lille1 Sciences et Technologies, Université Lille Nord de France, Villeneuve d'Ascq Cedex, France).
- *Dra. M. M. M. Raposo* (Centro de Química, Universidade do Minho, Braga,Portugal).
- *Dr. J. V. Grazulevicius* (Department of Polymer Chemistry and Technology, Kaunas University of Technology, Lithuania)
- *Dr. V. Jankauskas* (Department of Solid State Electronics, Vilnius University, Vilnius, Lithuania)

SELECTED PAPERS

- **Structural features guiding the design of liquid-crystalline elastomeric fluorescent force sensors.** *J. Garcia-Amorós, D. Velasco.* Applied Systems Innovation, 2020, 3, 22 (invited review).
- **Shedding light on the negative differential resistance effect observed in organic thin-film transistors.** *E. Ros, M. Reig, C. Voz, G. Bagdziunas, P. Ortega, D. Velasco, J. Puigdollers.* ACS Applied Electronic Materials, 2020, 2, 1574-1582.

2.2.39. 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

- **Unveiling the Membrane and Cell Wall Action of Antimicrobial Cyclic Lipopeptides: Modulation of the Spectrum of Activity.** *R.Segovia, J. Solé, AM. Marqués, Y. Cajal and F. Rabanal.* Pharmaceutics 2021, 13(12)

2.2.40. Pharmaceutical Nanotechnology (NanoPharmaMed)

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

TEAM

M. José García Celma (Full Professor)
Immaculada Dinarès Milà (Professor)
M. Àngels Salvadó Lladós (Professor)
Marta Monge Azemar (Adjunct Lecturer)
Esteban Figueroa Becerra (Predoctoral Researcher)

SELECTED PAPERS

- **A nanocellulose-based platform towards targeted chemo-photodynamic/photothermal cancer therapy. Do T.T.A.,** *Grijalvo S., Imae T., Garcia-Celma M.J., Rodríguez-Abreu C.* Carbohydrate Polymers. 2021, 270, 118366
- **Ethylcellulose nanoparticles prepared from nano-emulsion templates as new folate binding haemocompatible platforms.** *Leitner S., Solans C., García-Celma M.J., Morral-Ruíz G., Melgar-Lesmes P., Calderó G.* Materials Science and Engineering C. 2021, 120, 111682

2.2.41. Physics in Nanobiophysics (NanoBio)

Department Condensed Matter Physics, Faculty Physics

TEAM

Aurora Hernandez Machado (Full Professor)
Josep Ferré (Industrial Predoctoral Researcher)
Carla Riera Llobet (Predoctoral Researcher)

SELECTED PAPERS

- **Pitting of malaria parasites in microfluidic devices mimicking spleen interendothelial slits.** *Elizalde-Torrent A., Trejo-Soto C., Méndez-Mora L., Nicolau M., Ezama O., Gualdrón-López M., Fernández-Becerra C., Alarcón T., Hernández-Machado A., del Portillo H.A.* Scientific Reports. 2021, 11, 1, 22099.
- **On Gaussian curvature and membrane fission.** *Rueda-Contreras M.D., Gallen A.F., Romero-Arias J.R., Hernandez-Machado A., Barrio R.A.* Scientific Reports. 2021, 11, 1, 9562.
- **Red blood cells in low Reynolds number flow: A vorticity-based characterization of shapes in two dimensions.** *Gallen A.F., Castro M., Hernandez-Machado A.* Soft Matter. 2021, 17, 42.

SELECTED PROJECTS

- **Microfluidica y Biomembranas: Experimentos y teoría. PID2019-106063GB-I00. Ministerio de Ciencia e Innovación.** IP: *Aurora Hernandez Machado*. 2020-2023
- **Biomechanics of biofluids and biomembranes at the microscale: Experiments and theory. Ministerio de Economia y Competitividad (MINECO), Programa Estatal de Fomento de la Investigacion Cientifica y Tecnica de Excelencia. FIS2016-78883-C2-1-P, 2017-20.** IP: *A. Hernandez-Machado*. 2017-2020
- **Towards novel nano-scale technologies based on phoretic flow effects (NANOPHLOW) HORIZON 2020 FET-Open research and innovation actions (H2020-FETOPEN-1-2016-2017). European Union.** Participant: *Aurora Hernandez-Machado* 2014-2020

2.2.42. 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)

SELECTED PROJECTS

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

SELECTED PAPERS

- **Scaling Regimes of Active Turbulence with External Dissipation.** *B. Martínez-Prat, R. Alert, F. Meng, J. Ignés-Mullol, J.F. Joanny, J. Casademunt, R. Golestanian, and F. Sagués.* Phys. Rev. X. 2021, 11, 031065

2.2.43. Solar and Photovoltaic Energy Group (NanoEnergy)

Department Applied Physics, Faculty Physics

TEAM

Joan Bertomeu Balagueró (Full Professor)
José Miguel Asensi López (Associate Professor)
Julià López Vidrier (Tenure-Track Lecturer)
Thomas Tom (Predoctoral Researcher)

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)

SELECTED PAPERS

- **Deposition and characterisation of sputtered molybdenum oxide thin films with hydrogen atmosphere.** *Lopez-Pinto N., Tom T., Bertomeu J., Asensi J.M., Ros E., Ortega P., Voz C.* Applied Surface Science. 2021, Volume 563, 150285

2.2.44. 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-Senior researcher at IREC)

Marcel Placidi (External Collaborator-Senior researcher at IREC)

SELECTED PROJECTS

- **INFINITE-CELL: International cooperation for the development of cost efficient kesterite/c-Si thin film next generation tandem solar cells** (H2020-MSCA-RISE.2017-777968). H2020. 2017-2021

SELECTED PAPERS

- **Insights into interface and bulk defects in a high efficiency kesterite-based device.** *Fonoll-Rubio R., Andrade-Arvizu J., Blanco-Portals J., Becerril-Romero I., Guc M., Saucedo E., Peiró F., Calvo-Barrio L., Ritzer M., Schnohr C.S., Placidi M., Estradé S., Izquierdo-Roca V., Pérez-Rodríguez A.* Energy and Environmental Science. 2021, 14, 1
- **Insights on the Thermal Stability of the Sb2Se3 Quasi-1D Photovoltaic Technology.** *Vidal-Fuentes P., Guc M., Becerril-Romero I., Sylla D., Alcobé X., Sánchez Y., Pérez-Rodríguez A., Saucedo E., Izquierdo-Roca V.* Solar RRL. 2021, 5, 10, 2100517
- **Rear interface engineering of kesterite Cu2ZnSnSe4 solar cells by adding CuGaSe2 thin layers.** *Giraldo S., Fonoll-Rubio R., Jehl Li-Kao Z., Sánchez Y., Calvo-Barrio L., Izquierdo-Roca V., Pérez-Rodríguez A., Saucedo E.* Progress in Photovoltaics: Research and Applications. 2021, 29.3
- **Defect depth-profiling in kesterite absorber by means of chemical etching and surface analysis.** *Tiwari K.J., Fonoll Rubio R., Giraldo S., Calvo-Barrio L., Izquierdo-Roca V., Placidi M., Sanchez Y., Pérez-Rodríguez A., Saucedo E., Jehl Li-Kao Z.* Applied Surface Science. 2021, 540, 148342
- **Effective module level encapsulation of CIGS solar cells with Al2O3 thin film grown by atomic layer deposition.** *Zhang S.-T., Guc M., Salomon O., Wuerz R., Izquierdo-Roca V., Pérez-Rodríguez A., Kessler F., Hempel W., Hildebrandt T., Schneider N.* Solar Energy Materials and Solar Cells. 2021, 222, 110914

2.2.45. 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

- **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
- **Redefining the concept of hydration water near soft interfaces.** *Martelli F., Calero C., Franzese G.* Biointerphases. 2021, 16, 2, 020801
- **Structure and dynamics of nanoconfined water and aqueous solutions.** *Corti H.R., Appignanesi G.A., Barbosa M.C., Bordin J.R., Calero C., Camisasca G., Elola M.D., Franzese G., Gallo P., Hassanali A., Huang K., Laria D., Menéndez C.A., de Oca J.M.M., Longinotti M.P., Rodriguez J., Rovere M., Scherlis D., Szleifer I.* European Physical Journal E. 2021, 44, 11, 136
- **Selected Projects**
- **Física estadística para simulaciones a gran escala de sistemas bioinspirados hacia la erradicación de tumores (PGC2018-099277-B-C22)** PI: *Giancarlo Franzese*. Ministerio de Ciencia e Innovación (2019-2021)
- **Protein-Nanoparticle Corona Formation investigated by UV Resonant Raman spectroscopy (CALIPSOplus H2020-730872-proposal n. 20195350)** PI: *Giancarlo Franzese*. Elettra-Sincrotrone Trieste within the European Union's Horizon 2020 program (2019-2021)
- **Statistical Physics for Biological Systems at the Nanoscale (EIN2020-112431)** PI: *Giancarlo Franzese*. Ministerio de Ciencia e Innovación (2020-2021)

2.2.46. Supra and Nanostructured Systems Group (NanosMat)

Department Inorganic and Organic Chemistry, Faculty Chemistry

TEAM

Laura Rodríguez Raurell (Full Professor)
Inmaculada Angurell Purroy (Associate Professor)
Andrea Pinto Martínez (Predoctoral Researcher)
Araceli De Aquino Samper (Predoctoral Researcher)
Ariadna Lázaro Palacios (Predoctoral Researcher)
Guillermo Romo Islas (Predoctoral Researcher)

SELECTED PROJECTS

- **Herramientas supramoleculares para aumentar la emisión de fosforescencia (PID2019-104121GB-I00).** PI: *Laura Rodriguez Raurell*. Ministerio de Ciencia e Innovación (2020-2023)
- **Reference: 2017082311. Alba Synchrotron. Title: Identification of supramolecular gold(I) aggregates involved in biological and molecular recognition purposes.** PI: *Laura Rodríguez Raurell*
- **Reference: UC-CLL002537. Title: Effect of aggregation on the photophysical parameters of gold(I) supramolecular aggregates.** PI: *Laura Rodríguez Raurell*. Founding Agency: Unión Europea- CLL-Laserlab Europe

SELECTED PAPERS

- **Effect of Gold(I) on the Room-Temperature Phosphorescence of Ethynylphenanthrene.**
  de Aquino A., Caparrós F.J., Aullón G., Ward J.S., Rissanen K., Jung Y., Choi H., Lima J.C., Rodríguez L.
  Chemistry - A European Journal. 2021, 27, 5
- **Aggregation versus Biological Activity in Gold(I) Complexes. An Unexplored Concept.**
  Pinto A., Roma-Rodrigues C., Ward J.S., Puttreddy R., Rissanen K., Baptista P.V., Fernandes A.R., Lima J.C., Rodríguez L. Inorganic Chemistry. 2021 , 60, 24, 18753–18763
- **Gold(i)-doped films: new routes for efficient room temperature phosphorescent materials.**
  de Aquino A., Caparrós F.J., Truong K.-N., Rissanen K., Ferrer M., Jung Y., Choi H., Lima J.C., Rodríguez L.
  Dalton Transactions. 2021, 50, 11
- **Comprehensive Investigation of the Photophysical Properties of Alkynylcoumarin Gold(I) Complexes.**
  Pinto A., Cunha C., Aullón G., Lima J.C., Rodríguez L., Seixas de Melo J.S.
  Journal of Physical Chemistry B. 2021, 125, 42
- **Base-assisted synthesis of 4-pyridinate gold(i) metallaligands: a study of their use in self-assembly reactions.**
  Ferrer M., Gutiérrez A., Martínez M., Da Silva C., Netto A.V.G., Rodríguez L., Romo-Islas G., Pan F., Rissanen K.
  Dalton Transactions. 2021, 50, 23

2.2.47. Supramolecular Systems in Nanobiomedicine (NanoPharmaMed)

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

TEAM

M. Lluïsa Pérez Garcia (Full Professor)
David Limon Magaña (Adjunct Lecture)
Bagherpour Saman (Predoctoral Researcher)

SELECTED PROJECTS

- **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**
- **Bio-funcionalización de chips en suspensión innovadores para estudios químicos, bioelectrónicos y mecánicos en células vivas. PID2020-115663GB-C32.** IPs: *Perez Garcia, M. Luisa* and *Gomez Valentín, Elvira*. Ministerio de Ciencia, Innovación y Universidades. 2021-2024.

SELECTED PAPERS

- **Light-controlled micron-scale molecular motion.** *Samperi M., Bdiri B., Sleet C.D., Markus R., Mallia A.R., Pérez-García L., Amabilino D.B.* Nature Chemistry. 2021, 13, 12
- **Synthesis and validation of DOPY: A new gemini dioleylbispyridinium based amphiphile for nucleic acid transfection.** *Aubets E., Griera R., Felix A.J., Rigol G., Sikorski C., Limón D., Mastrorosa C., Busquets M.A., Pérez-García L., Noé V., Ciudad C.J.* European Journal of Pharmaceutics and Biopharmaceutics. 2021, 165
- **An imidazolium-based supramolecular gelator enhancing interlayer adhesion in 3D printed dual network hydrogels.** *Zhou Z., Samperi M., Santu L., Dizon G., Aboarkaba S., Limón D., Tuck C., Pérez-García L., Irvine D.J., Amabilino D.B., Wildman R.* Materials & Design. Volume 206, August 2021, 109792.

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

Department Applied Physics, Faculty Physics

TEAM

Arturo Lousa Rodríguez (Associate Professor)
Joan Esteve Pujol (Emeritus Lecturer)

SELECTED PAPERS

- **Bactericidal silver-doped DLC coatings obtained by pulsed filtered cathodic arc co-deposition.** *Orrit-Prat J., Bonet R., Rupérez E., Punset M., Ortiz-Hernández M., Guillem-Marti J., Lousa A., Cano D., Díaz C., García Fuentes G., Caro J.* Surface and Coatings Technology. 2021, 411, 15, 126977

2.2.49. 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 (Research Technician)

SELECTED PROJECTS

- **Proceso solar fotoelectroctroquimico para la co-valorizacion del co2 y subproductos de origen biologico (CCU+OX) . 2020 – 2023.** Ref.PID2019-108136RB-C33 . Ministerio de Ciencia, Innovación y Universidades. IP: *Teresa Andreu*
- **Comportament electroquímic d'un bany d'AU de 18 Kts. 2021-2024.** Doctorat industrial ref. 2021DI20, AGAUR.

SELECTED PAPERS

- **Water-assisted crystallization of nanoporous tin oxide formed by anodic oxidation on cold sprayed tin coating.** *Zarei, M., Nourouzi, S., Jamaati, R., Cano, I.G., Dosta, S., Sarret, M.* Journal of Alloys and Compounds, 876, art. no. 160207.
- **Formation of highly uniform tin oxide nanochannels by electrochemical anodization on cold sprayed tin Coatings.** *Zarei, M., Nourouzi, S., Jamaati, R., Cano, I.G., Dosta, S., Sarret, M.* Surface and Coatings Technology, 410, art. no. 126978,
- **Structural influence of the anode materials towards efficient zn deposition/dissolution in aqueous zn-iodide flow bateries.** *Chakraborty, M., Murcia-López, S., Morante, J.R., Andreu, T.* Journal of the Electrochemical Society, 168 (4), art. no. 040532

2.2.50. Theoretical Physics of Nanoscopic Systems (NanoMet)

Department Quantum Physics, Faculty Physics

TEAM

Martí Pi Pericay (Full Professor)

Manuel Barranco Gómez (Full Professor)

SELECTED PAPERS

- **Ultrafast Resonant Interatomic Coulombic Decay Induced by Quantum Fluid Dynamics.** *Laforge A.C., Michiels R., Ovcharenko Y., Ngai A., Escartín J.M., Berrah N., Callegari C., Clark A., Coreno M., Cucini R., Di Fraia M., Drabbels M., Fasshauer E., Finetti P., Giannessi L., Grazioli C., Iablonskyi D., Langbehn B., Nishiyama T., Oliver V., Piseri P., Plekan O., Prince K.C., Rupp D., Stranges S., Ueda K., Sisourat N., Eloranta J., Pi M., Barranco M., Stienkemeier F., Möller T., Mudrich M.* Physical Review X. 2021, 11, 2, 021011.
- **Coexistence of vortex arrays and surface capillary waves in spinning prolate superfluid He 4 nanodroplets.** *Pi M., Escartín J.M., Ancilotto F., Barranco M.* **Physical Review B. 2021, 104, 9, 094509**
- **Unravelling the full relaxation dynamics of superexcited helium nanodroplets.** *Asmussen J.D., Michiels R., Dulitz K., Ngai A., Bangert U., Barranco M., Binz M., Bruder L., Danailov M., Di Fraia M., Eloranta J., Feifel R., Giannessi L., Pi M., Plekan O., Prince K.C., Squibb R.J., Uhl D., Wituschek A., Zangrando M., Callegari C., Stienkemeier F., Mudrich M.* Physical Chemistry Chemical Physics. 2021, 23, 28
- **Dynamics of Photoexcited Cs Atoms Attached to Helium Nanodroplets.** *Rendler N., Scognamiglio A., Barranco M., Pi M., Halberstadt N., Dulitz K., Stienkemeier F.* Journal of Physical Chemistry A. 2021, 125, 41
- **Dynamics of equilibration and collisions in ultradilute quantum droplets.** *V. Cikojević, L. Vranješ Markić, M. Pi, M. Barranco, F. Ancilotto, and J. Boronat.* Phys. Rev. Research. 2021, 3, 043139

2.2.51. Thin Layer Stuctures for Spintronics (NanoMagnetics)

TEAM

Manuel Varela Fernández (Full Professor)

César Ferrater Martorell (Associate Professor)

M Carmen Polo Trasancos (Associate Professor)

2.2.52. 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)

Elisa Vallés Giménez (Collaborator)

SELECTED PROJECTS

- **Fusión de técnicas espectroelectroquímicas avanzadas. BU297P18.** IP: **Aránzazu Heras.** JCLE - Junta de Castilla y León. 2019-2021.
- **Bio-funcionalización de chips en suspensión innovadores para estudios químicos, bioelectrónicos y mecánicos en células vivas. PID2020-115663GB-C32.** IPs: *Perez Garcia, M. Luisa* and *Gomez Valentín, Elvira.* Ministerio de Ciencia, Innovación y Universidades. 2021-2024.

SELECTED PAPERS

- **Facile cost-effective fabrication of Cu@Cu2O@CuO–microalgae photocatalyst with enhanced visible light degradation of tetracycline.** *Serrà, A., Gómez, E., Michler, J., Philippe, L.* Chemical Engineering Journal. 2021, Volume 413, 127477.
- **Self-assembled oil palm biomass-derived modified graphene oxide anode: An efficient medium for energy transportation and bioremediating Cd (II) via microbial fuel cells.** *Yaqoob A.A., Serrà A., Ibrahim M.N.M., Yaakop A.S.* Arabian Journal of Chemistry. 2021, 14, 5, 103121
- **Biomimicry designs for photoelectrochemical systems: Strategies to improve light delivery efficiency.** *Brillas E., Serrà A., Garcia-Segura S.* Current Opinion in Electrochemistry. 2021, 26, 100660
- **Removal of cyanobacteria and cyanotoxins in waters.** *Serrà A., Philippe L., Gómez E.* Toxins. 2021, 13, 9, 636
- **Electrochemical assessment of high active area of cobalt deposited in deep eutectic solvent.** *Serrà A., Sebastián-Pascual P., Landa-Castro M., Gómez E.* Journal of Electroanalytical Chemistry. 2021, 896, 115177

3. RESEARCHERS GROUPED BY AREAS

3.1. NanoMet

- **Arango Restrepo, Andres**
  Predoctoral Researcher
  Nanosystems Statistical Physics
- **Barranco Gomez, Manuel**
  Professor Full
  Theoretical physics of Nanoscopic Systems
- **Blanco Portals, Javier**
  Predoctoral Researcher
  LENS-Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)
- **Calero Borrallo, Carlos**
  Tenure-Track Lecturer
  Statistical Physics of Bio-Nano Systems and Complex Matter (BioNanoComplex)
- **Castan Vidal, Maria Teresa**
  Professor Full
  Materials: Phase transitions
- **Coll Benejam, Catalina**
  Predoctoral Researcher
  LENS-Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)
- **Coronas Serna, Luis Enrique**
  Investigador predoctoral en formació BRD
  Statistical Physics of Bio-Nano Systems and Complex Matter (BioNanoComplex)
- **Del Pozo Bueno, Daniel**
  Predoctoral Researcher
  LENS-Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)
- **Estrade Albiol, Sonia**
  Associate Professor
  LENS-Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)
- **Franzese , Giancarlo**
  Associate Professor
  Statistical Physics of Bio-Nano Systems and Complex Matter (BioNanoComplex)
- **Iglesias Clotas, Oscar**
  Associate Professor
  Group of Magnetic Nanomaterials
- **Lopez Conesa, Luis**
  Collaborator
  LENS-Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)
- **Mañosa Carrera,**
  Lluis Professor Full
  Materials: Phase transitions
- **Martin Malpartida, Gemma**
  Collaborator
  LENS-Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)
- **Nandi , Pranjal**
  Predoctoral Researcher
  LENS-Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)
- **Peiro Martinez, Francisca**
  Professor Full
  LENS-Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)
- **Pi Pericay, Marti**
  Professor Full
  Theoretical physics of Nanoscopic Systems
- **Planes Vila, Antoni**
  Professor Full
  Materials: Phase transitions
- **Porta Tena, Marcel**
  Adjunct Lecture
  Materials: Phase transitions
- **Rebled Corsellas, Jose Manuel**
  Collaborator
  LENS-Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)
- **Rubi Capaceti, Jose Miguel**
  Professor Full
  Nanosystems Statistical Physics
- **Vilanova Gabarron, Oriol**
  Predoctoral Researcher
  Statistical Physics of Bio-Nano Systems and Complex Matter (BioNanoComplex)
- **Yedra Cardona, Lluis**
  Researcher Juan de la Cierva
  LENS-Micro-nanotechnologies and nanoscopies for electronics and photonic 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, Jaime**
  Professor Full
  Genomics, Proteomics and Plant Metabolomics
- **Bola Sampol, Raul**
  Predoctoral Researcher
  BiOPT: Optical Trapping Lab - Grup de Biofotònica
- **Botet Carreras, Adrià**
  Predoctoral Researcher
  Nanostructure of Biomembranes Group
- **Buruaga Ramiro, Carolina**
  Predoctoral Researcher
  Microbian Enzymes for Industrial Applications Group
- **Cajal Visa, Yolanda Carlota**
  Associate Professor
  Peptides and Proteins: Physicochemical Studies
- **Calo, Annalisa**
  Tenure-Track Lecturer
  Bioelectrical Characterization at Nanoscale
- **Castaño Linares, Oscar**
  Associate Professor
  Bioelectronics Unit and Nanobioeneering Lab
- **Cereceda Lopez, Eric**
  Predoctoral Researcher
  Magnetic Soft Matter Group
- **Ciudad Gomez, Carlos Julian**
  Professor Full
  Cancer therapy group
- **Domenech Cabrera, Oscar**
  Associate Professor
  Nanostructure of Biomembranes Group
- **Farre Ventura, Ramon**
  Professor Full
  Biophysics and Bioengineering Unit
- **Fernandez Busquets, Xavier**
  External Collaborator
  Nanomalaria Group
- **Ferre Torres, Josep**
  Predoctoral Researcher
  Physics in Nanobiophysics
- **Gavara Casas, Nuria**
  Postdoctoral Researcher
  Biophysics and Bioengineering Unit
- **Gomila Lluch, Gabriel**
  Full Professor
  Bioelectrical Characterization at Nanoscale
- **Hernandez Machado, Aurora**
  Professor Full
  Physics in Nanobiophysics
- **Imperial Rodenas, Santiago**
  Associate Professor
  Nanomalaria Group
- **Jimenez Franco, Maria Abigail**
  Postdoctoral Researcher
  Mineral Resources Research Group
- **Mañosas Castejon, Maria**
  Researcher Ramon i Cajal
  Biomolecule and small-system physics: Small Biosystems Lab
- **Marsa Samper, Ferran**
  External Collaborator
  BiOPT: Optical Trapping Lab - Grup de Biofotònica
- **Martin Badosa, Estela**
  Associate Professor
  BiOPT: Optical Trapping Lab - Grup de Biofotònica
- **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
- **Melgarejo Draper, Joan Carles**
  Associate Professor
  Mineral Resources Research Group
- **Mir Llorente, Monica**
  Adjunct Lecture
  Bioelectronics Unit and Nanobioeneering Lab
- **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**
  Postdoctoral Researcher
  Biophysics and Bioengineering Unit
- **Prat Aixela, Josefa**
  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
- **Ritort Farran, Felix**
  Professor Full
  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 Trujillo, Romen**
  Tenure-Track Lecturer
  Bioelectronics Unit and Nanobioeneering Lab
- **Rodriguez Lazaro, Miguel**
  Technician
  Biophysics and Bioengineering Unit
- **Roque Rosell, Josep**
  Associate Professor
  Mineral Resources Research Group
- **Sagues Mestre, Francesc**
  Professor Full
  Self-organized complexity and self-assembling materials (SOC&SAM)
- **Samitier Marti, Josep**
  Professor Full
  Bioelectronics Unit and Nanobioeneering Lab
- **Sunyer Borrell, Raimon**
  Postdoctoral Researcher
  Biophysics and Bioengineering Unit
- **Tierno, Pietro**
  Full Professor
  Magnetic Soft Matter Group
- **Torras Claveria, Laura**
  Associate Professor
  Genomics, Proteomics and Plant Metabolomics
- **Treptow, Dorian**
  Predoctoral Researcher
  BiOPT: Optical Trapping Lab - Grup de Biofotònica
- **Valenzuela Mayorga, Susana Valeria**
  Adjunct Lecture
  Microbian Enzymes for Industrial Applications Group
- **Valiuska, Simonas**
  Predoctoral Researcher
  Cancer therapy 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
  Microbian Enzymes for Industrial Applications Group
- **Viladomat Meya, Francisco**
  Professor Full
  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**
  Postdoctoral Researcher
  NanoBioPharma
- **Bonilla Vidal, Lorena**
  Predoctoral Researcher
  Nanostructured systems for controlled drug delivery
- **Busquets Viñas, Maria Antònia**
  Associate Professor
  Colloids
- **Caballero Hernandez, Ana Belen**
  Tenure-Track Lecturer
  Bio-Inorganic Chemistry research group (QBI)
- **Calpena Campmany, Ana Cristina**
  Associate Professor
  NanoBioPharma
- **Cano Fernandez, Amanda**
  External Collaborator
  Nanostructured systems for controlled drug delivery
- **Caubet Marin, Amparo**
  Associate Professor
  Bio-Inorganic Chemistry research group (QBI)
- **Clares Naveros, Beatriz**
  External Collaborator
  NanoBioPharma
- **Dinarès Milà, M Immaculada**
  Associate Professor
  Pharmaceutical Nanotechnology
- **El Moussaoui El Masnaoui, Salima**
  Predoctoral Researcher
  NanoBioPharma
- **Escoda i Torroella, Mariona**
  Predoctoral Researcher
  Group of Magnetic Nanomaterials
- **Escribano Ferrer, Elvira**
  Associate Professor
  Drug Design and Response-evaluation within Pharmaceutical Nanostructured and self-ordered Systems Group
- **Espargaro Colome, Alba**
  Tenure-Track Lecturer
  Conformational Diseases Group
- **Espina Garcia, Marta**
  Associate Professor
  Nanostructured systems for controlled drug delivery
- **Espinoza Tituana, Lupe Carolina**
  External Collaborator
  NanoBioPharma
- **Estelrich Latras, Joan**
  Professor Full
  Colloids
- **Esteruelas Navarro, Gerard**
  Predoctoral Researcher
  Nanostructured systems for controlled drug delivery
- **Ferrai, Michele**
  External Collaborator
  Cellular responses to xenobiotics
- **Figueroa Becerra, Esteban**
  Predoctoral Researcher
  Pharmaceutical Nanotechnology
- **Gámez Enamorado, Patricio**
  ICREA Researcher
  Bio-Inorganic Chemistry research group (QBI)
- **Gamisans Linares, Fidencia**
  Adjunct Lecture
  Nanostructured systems for controlled drug delivery
- **Garcia Sala, Francesc Xavier**
  Adjunct Lecture
  Drug Design and Response-evaluation within Pharmaceutical Nanostructured and self-ordered Systems Group
- **Garcia Lopez, Maria Luisa**
  Professor Full
  Nanostructured systems for controlled drug delivery
- **Garcia Celma, Maria Jose**
  Professor Full
  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**
  Professor Full
  Supramolecular Systems in Nanobiomedicine
- **Sabate Lagunas, Raimon**
  Associate Professor
  Conformational Diseases Group
- **Salvado Llados, M Angeles**
  Associate Professor
  Pharmaceutical Nanotechnology
- **Sanchez Lopez, Elena**
  Tenure-Track Lecturer
  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
- **Vinardell Martinez Hidalgo, Maria Pilar**
  Professor Full
  Cellular responses to xenobiotics

3.4. NanoMagnetics

- **Aguilà Aviles, David**
  Tenure-Track Lecturer
  Magnetism and Functional Molecules Group (GMMF)
- **Aromi Bedmar, Guillem**
  Full Professor
  Magnetism and Functional Molecules Group (GMMF)
- **Barrios Moreno, Leoni Alejandra**
  Postdoctoral Researcher
  Magnetism and Functional Molecules Group (GMMF)
- **Batlle Gelabert, Javier**
  Professor Full
  Group of Magnetic Nanomaterials
- **Conde Rubio, Ana**
  External Collaborator
  Group of Magnetic Nanomaterials
- **Corbella Cordomi, Montserrat**
  Associate Professor
  Magnetic Interactions and Molecular Magnetism
- **Diego Creixenti, Rosa**
  Predoctoral Researcher
  Magnetism and Functional Molecules Group (GMMF)
- **El Fallah El Boufrahi, Mohamed Salah**
  Professor Full
  Magnetic Interactions and Molecular Magnetism
- **Escuer Fite, Alberto**
  Professor Full
  Magnetic Interactions and Molecular Magnetism
- **Ferrater Martorell, Cesar**
  Associate Professor
  Thin Layer Structures for Spintronics
- **Fraile Rodriguez, Maria Aranzazu**
  Associate Professor
  Group of Magnetic Nanomaterials
- **Gabarró Riera, Guillem**
  Predoctoral Researcher
  Magnetism and Functional Molecules Group (GMMF)
- **Garcia Santiago, Antoni**
  Associate Professor
  Magnetism
- **Hernandez Ferras, Joan Manel**
  Associate Professor
  Magnetism
- **Labarta Rodriguez, Amilcar Ramon**
  Professor Full
  Group of Magnetic Nanomaterials
- **Langenberg Perez, Eric**
  Tenure-Track Lecturer
  Group of Magnetic Nanomaterials
- **Macia Bros, Ferran**
  Researcher Ramon i Cajal
  Magnetism
- **Maniaki, Diamantuula**
  Predoctoral Researcher
  Magnetism and Functional Molecules Group (GMMF)
- **Mayans Ayats, Julia**
  Tenure-Track Lecturer
  Magnetic Interactions and Molecular Magnetism
- **Moya Alvarez, Carlos**
  External Collaborator
  Group of Magnetic Nanomaterials
- **Polo Trasancos, Maria Del Carmen**
  Associate Professor
  Thin Layer Structures for Spintronics
- **Rodríguez Álvarez, Javier**
  Predoctoral Researcher
  Group of Magnetic Nanomaterials
- **Sañudo Zotes, Eva Carolina**
  Associate Professor
  Magnetism and Functional Molecules Group (GMMF)
- **Tejada Palacios, Javier**
  Emeritus Professor
  Magnetism
- **Tubau Ribot, Annia**
  Predoctoral Researcher
  Magnetic Interactions and Molecular Magnetism
- **Varela Fernandez, Manuel**
  Professor Full
  Thin Layer Structures for Spintronics
- **Velasco Amigo, Veronica**
  Adjunct Lecture
  Magnetism and Functional Molecules Group (GMMF)
- **Vicente Castillo, Ramon**
  Professor Full
  Magnetic Interactions and Molecular Magnetism

3.5. NanoPhotoElectro

- **Casals Guillen, Olga**
  Adjunct Lecture
  Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Cirera Hernandez, Albert**
  Full Professor
  Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Cornet Calveras, Albert**
  Professor Full
  Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Diago Forero, Joshua**
  Predoctoral Researcher
  Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Dieguez Barrientos, Angel**
  Full Professor
  Instrumentation Systems and Communications (SIC)

- **Duocastella Sola, Marti**
  Tenure-Track Lecturer
  LASER-Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Fabrega Gallego, Cristian**
  Tenure-Track Lecturer
  Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Fernandez Pradas, Juan Marcos**
  Associate Professor
  LASER-Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Frieiro Castro, Juan Luis**
  Predoctoral Researcher
  Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Garcia Del Muro Solans, Montserrat**
  Associate Professor
  Group of Magnetic Nanomaterials

- **Garrido Fernandez, Blas**
  Professor Full
  Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Hernandez Ramirez, Francisco De P**
  Adjunct Lecture
  Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Hernández Márquez, Sergi**
  Associate Professor
  Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Lopez Aymerich, Elena**
  Predoctoral Researcher
  Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Martí Jerez, Ernest**
  Predoctoral Researcher
  LASER-Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Moreno Sereno, Mauricio**
  Associate Professor
  Instrumentation Systems and Communications (SIC)

- **Navarro Urrios, Daniel**
  Associate Professor
  Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Pellegrino, Paolo**
  Associate Professor
  Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Prades Garcia, Juan Daniel**
  Full Professor
  Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Romano Rodriguez, Albert**
  Professor Full
  Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Serra Coromina, Pedro**
  Full Professor
  LASER-Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Vescio, Giovanni**
  Postdoctoral Researcher
  Micro-nanotechnologies and nanoscopies for electronics and photonic devices (MIND)

- **Vila Arbones, Ana Maria**
  Associate Professor
  Instrumentation Systems and Communications (SIC)

- **Vilar Solé, Narcís**
  Predoctoral Researcher
  LASER- Micro and Nanotechnology and Nanoscopies for Electronic and Electrophotonic Devices

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, Jose 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 i Cajal
  Materials for Energy, Photonics and Catalysis (ENPHOCAMAT)
- **Bertran Serra, Enric**
  Professor Full
  Materials for Energy, Photonics and Catalysis (ENPHOCAMAT)
- **Bujaldón Carbó, Roger**
  Predoctoral Researcher
  Organic Materials Unit
- **Canillas Biosca, Adolfo**
  Professor Full
  Materials for Energy, Photonics and Catalysis (ENPHOCAMAT)
- **Chaitoglou, Stefanos**
  Postdoctoral Researcher
  Materials for Energy, Photonics and Catalysis (ENPHOCAMAT)
- **de Aquino Samper, Araceli**
  Predoctoral Researcher
  Supra and Nanostructured Systems Group
- **Esteve Pujol, Joan**
  Emeritus Professor
  Surface Engineering. Thin-layer Lab
- **Estrader Bofarull, Marta**
  Researcher Ramon i Cajal
  Laboratory of Nanostructured and Nanocomposite Materials
- **Eusamio Rodríguez, Javier**
  Predoctoral Researcher
  Homogeneous Catalysis
- **Fabregat Pallejà, Clara**
  Predoctoral 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
- **Garcia Amoros, Jaime**
  Associate Professor
  Organic Materials Unit
- **Gomez Valentin, Elvira**
  Professor Full
  Thin-film and Nanostructure electrodeposition group
- **Gomis i 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)
- **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
- **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**
  Professor Full
  Mechanisms of Reactions in Inorganic Chemistry
- **Martínez Bacuñana, Alba**
  Predoctoral Researcher
  Homogeneous Catalysis
- **Núñez Rico, José Luis**
  Postdoctoral Researcher
  Homogeneous Catalysis
- **Pascual Miralles, Esther**
  Professor Full
  Materials for Energy, Photonics and Catalysis (ENPHOCAMAT)
- **Pinto i Martínez, ANDREA**
  Predoctoral Researcher
  Supra and Nanostructured Systems Group
- **Rodriguez Raurell, Laura**
  Professor Full
  Supra and Nanostructured Systems Group
- **Romo Islas, Guillermo**
  Predoctoral Researcher
  Supramolecular Systems in Nanobiomedicine
- **Serra Ramos, Albert**
  Tenure-Track Lecturer
  Thin-film and Nanostructure electrodeposition group
- **Tahghighi Haji Alizadeh, Mohammad**
  Predoctoral Researcher
  Self-organized complexity and self-assembling materials (SOC&SAM)
- **Valles Gimenez, Elisa**
  External Collaborator
  Thin-film and Nanostructure electrodeposition group
- **Velasco Castrillo, Maria Dolores**
  Professor Full
  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

- **Amazian El Moussaoui, Mohamed**
  Industrial Predoctoral Researcher
  Sustainable Electrochemical Processes
- **Andreu Arbella, Teresa**
  Tenure-track Lecturer
  Sustainable Electrochemical Processes
- **Asensi Lopez, Jose Miguel**
  Associate Professor
  Solar and Photovoltaic Energy Group
- **Bertomeu Balagueró, Joan**
  Professor Full
  Solar and Photovoltaic Energy Group
- **Calvo Barrio, Lorenzo**
  Adjunct Lecture
  Solar Energy Materials and Systems (SEMS) Group
- **Formosa Mitjans, Joan**
  Associate Professor
  Design and improvement of Processes and Materials (DIOPMA)
- **Homs Marti, Narciso**
  Professor Full
  Catalysis and Advanced Inorganic Materials (MATCAT)
- **Izquierdo Roca, Victor**
  External Collaborator
  Solar Energy Materials and Systems (SEMS)
- **Lopez Vidrier, Julià**
  Tenure-Track Lecturer
  Solar and Photovoltaic Energy Group
- **Martinez Alanis, Paulina Raquel**
  Adjunct Lecture
  Catalysis and Advanced Inorganic Materials (MATCAT)
- **Molera Janer, Martí**
  Research Technician
  Sustainable Electrochemical Processes
- **Morante Lleonart, Joan Ramon**
  Professor Full
  Nanoenergy and Electronic Materials (M2E) Group
- **Padilla Sanchez, Jose Antonio**
  Adjunct Lecture
  Design and Improvement of Processes and Materials
- **Pajares Rojas, Arturo**
  Predoctoral Researcher
  Catalysis and Advanced Inorganic Materials (MATCAT)
- **Perez Rodriguez, Alejandro**
  Professor Full
  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**
  Professor Full
  Catalysis and Advanced Inorganic Materials (MATCAT)
- **Salgado Pizarro, Rebeca**
  Predoctoral Researcher
  Design and improvement of Processes and Materials (DIOPMA)
- **Sarret Pons, Maria**
  Associate Professor
  Sustainable Electrochemical Processes
- **Segarra Rubi, Merce**
  Professor Full
  Design and improvement of Processes and Materials (DIOPMA)
- **Serre, Christophe Georges Camille**
  Associate Professor
  Instrumentation Systems and Communications (SIC)
- **Tom, Thomas**
  Predoctoral Researcher
  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 2021, 3 ART grants have been awarded to the following proposals:

- **P-Stereogenic Phosphine Oxides as Selective Sensors for Lanthanide Cations.**
  IP: *Arnald Grabulosa Rodríguez*. Involving: NanosMat Research Area (Faculty of Chemistry) and NanoMagnetics Research Area (Faculty of Chemistry).

- **Engineering Solid-State Device to Reversibly Switching ON/OFF the Magnetization with an Electric Field.**
  IP: *Eric Langenberg Perez*. Involging NanoMagnetics Research Area (Faculty of Physics) and NanoEnergy Research Area (Faculty of Chemistry).

- **ZOOMBIC - Zinc oxide-based optical modulator exploiting bound states in continuum.**
  IP1: *Jordi Gomis-Bresco* and PI2: *Julià Lopez Vidrier*. Involving: NanosMat Research Area (Faculty of Physics) and NanoEnergy Research Area (Faculty of Physics) and NanoPhotoElectro Research Area (Faculty of Physics).

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 Fellowhips*), 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 2021, 5 students have been awarded.

4.3. IN²UB calls for Congresses and Invited Professors

The institute give support to researchers organizing congressos or scientific events as well as contribute to invinting scientist in the fields of the IN²UB. On 2021, IN²UB has sponsored:

- XXXVI Trobades Científiques de la Mediterrània Microscòpies i Espectroscòpies: Accedint a la Nanoescala.
  27-29 October 2021. Abstract submission (deadline: 08/09/2021)
- Meeting: Biennial meeting of the Spanish-French network GDRI—HC3A**:**
  "Hetero-elements and Coordination Chemistry: from Concepts to Applications". 20-21/01/2022
- EMLG2021: Joint European/Japanese Molecular Liquids Group Annual Meeting: Molecular liquid at interfaces (on 2022)

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

4.5. Scientific and Technological Equipment Renewal Call

In frame of the scientific and technological equipment renewal call by the UB, the IN²UB has participated and been able to cofound two equipments of special interest for researchers at the Institute. An ion plasma cleaning system for TEM to be installed at Unitat de Microscòpia Electrònica Aplicada a Materials from CCiTUB and a CRYOSTREAM 800 LOW TEMPERATURE DEVICE, RR, 50 & 60 HZ which will be directly used for many research groups at the Faculties of Chemistry and Physics.

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 (more information).

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:

- **Nanometre scale paths for minimalist moving molecules.**
  By Prof. Dr. *David Amabilino*, University of Nottingham (UK). 26/02/21 at 12h – Webinar
- **Molecular Approaches to Energy Conversion.**
  By Prof. *Emilio Palomares*, Institute of Chemical Research of Catalonia (ICIQ)-BIST. 25/03/2021 at 12h - Webinar
- **From crafting to visualization: low-dimensional TMD nanostructures under the electron microscope lamppost.**
  By Dr. *Sonia Conesa-Boj*, Department of Quantum Nanoscience, Kavli Institute of Nanoscience, Delft University of Technology, The Netherlands. 14/04/2021 at 12h – Webinar
- **Dissecting how cells internalize and process nano-sized drug carriers for nanomedicine applications.**
  By Dr. *Anna Salvati*, Department of Nanomedicine & Drug Targeting Groningen Research Institute of Pharmacy University of Groningen Antonius Deusinglaan, The Netherlands. 27/05/2021 at 12h - Webinar
- **TiO2 based nanocomposites as photoelectrodes for degradation of organic pollutants.**
  By Dr. *Aleksandra Pieczyńska*, Department of Environmental Technology, Faculty of Chemistry, University of Gdansk, Poland. 15/07/2021 at 12h - Webinar
- **Nanoscale reticular materials: from metal-organic frameworks to metal-organic polyhedra.**
  By Dr. *Daniel Maspoch*, ICN2, CSIC, BIST, ICREA. 26/11/2021 at 12h – Webinar

5.3. Fira d'empreses

This year, for the first time, the Institute has participated on the Virtual Employment Fair - April 28th, 2021 Sciences and Engineering, where we had the opportunity to present the IN2UB and the research areas to students interested in nanoscience and nanotechnology.

5.4. 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 Reguladores, 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

- **Magnetic Insight - IN²UB Meeting.**
  In order to promote research collaborations with Magnetic Insight (MI) for Magnetic Particle Imaging, the institute organized, on March 2021, a workshop for researchers from the Instiute interested in this collaboration.

5.5. I Jornada Instituts de la UB: "L'exploració (i explotació) de l'espai"

The aim of the Meeting, on 22nd June 2021, 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. *Sònia Estradé* (IN²UB, Facultat de Física). **Caracterització a la nanoescala per a l'exploració del cosmos: EELS de meteorits**

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 reinforce this facet of the Institute. The outreach activities have, since then stepped up in amount relevance and diffusion.

Follow us at @In2Ub | In-IN2UB / IN2UB-Youtube

6.1. Outreach Events

- Càpsules **Les científiques de l'IN²UB**, in frame of 11F International Day of Women and Girls in Science and 8 March International Women's Day.
- Scientific conferences at Centre Cívic Pere Quart: **Les entrevistes de l'IN²UB**
  - **Solucions per a la medicina i la covid des del món Nano.**
    By Dr. *Giancarlo Franzese* (IN²UB researcher at the Faculty of Physics)
  - **Neurodegeneració des del món nano: Solucions per a la Neurodegeneració des del món Nano**.
    By Dr. *Elena Sánchez* (IN²UB researcher at the Faculty of Pharmacy)
- **La ciència del segle XXI: la revolució nanotecnològica** (Centre Cultural la Casa Elizalde) from 21st April to 9th June, 2021
- The artistic-scientific show **Ballant amb Nanopartícules** Dance, poetry, and music to represent the nanometric world: this is the aim of the show promoted by the Institute of Nanoscience and Nanotechnology of the University of Barcelona premiered on Sunday 13 June, at 18:00, at the Gasometer space in Barceloneta Park. The performance took place as part of the 14th Barcelona Science Festival, as part of the City and Science Biennial 2021. More performances of the show:
  - In frame of European Research Night - Cosmo Caixa: 24/09/21
  - Festival Ciència a Escena a l'Hospitalet: 13/10/21
  - In frame of "Setmana de la Ciència" - Centre cívic Pere Quart: 12/11/21
  - In frame of "Setmana de la Ciència" - Residència d'Investigadors: 13/11/21
- **Presentació del llibre blanc de les nanotecnologies.** 17/12/2021 - 12h via Zoom
  Benvinguda a càrrec del Director IN²UB, *Guillem Aromí*
  Taula rodona moderada per *Jordi Díaz-Marcos* (Coordinador Divulgació IN²UB, CCiTUB, coordinar Llibre Blanc) amb *Ifigènia Saborit* (IN²UB)
  Ponents: *Joan Mendoza* (visió ètica), *Sònia Estrade* (perspectiva de gènere a les nanotecnologies) i *Mª Antònia Busquets* (toxicologia).
  Cloenda a càrrec del Director CCiTUB, *Juan Fran Sangüesa*
- Researchers from the Institute participates on **Nanoinvetum**. A project aiming at incorporating nanoscience at Primary Schools.
- **Festival 10alamenos9 (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.

6.2. Outstanding News from Outreach

- Dr. **Jordi Díaz**, Outreach Coordinator of the Institute, has been awarded with the dissemination prize from the University of Barcelona, 2021**.**
- **Nanoscience and Nanotechnology Report** by Acció with the collaboration of IN²UB outreach commission.

7. PhD THESIS DEFENDED

Most IN²UB researchers are involved in the doctorate training. This is the list of doctoral theses defended in 2021, 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

INFLUENCE OF MORPHOLOGY ON THE INTERACTION OF NANO- AND MICROPARTICLES WITH THE EPITHELIUM: RATIONAL NANOMEDICINES DESIGN THROUGH UNDERSTANDING DESIGN PARAMETERS

Author: Gordon Bruce

Directors: Mª Luisa Pérez García/ Snow Stolnik /Richard Hayes

MULTI-SCALE TRANSMISSION OF FORCES TO AND WITHIN THE NUCLEUS

Author: Michael Christopher Keeling

Director: Nuria Gavara Casas

BIOPHYSICAL PROPERTIES OF SINGLE-STRANDED DNA STUDIED WITH SINGLE-MOLECULE FORCE SPECTROSCOPY

Author: Xavier Viader Godoy

Directors: Felix Ritort/ Maria Mañosas

BIOPHARMACEUTICAL STUDY OF THERAPEUTIC EFFICACY OF NANOSTRUCTURED FORMULATIONS MADE FROM PRODUCTS OF NATURAL ORIGIN

Author: Paola Bustos Salgado

Directors: Ana Cristina Calpena Campmany/ Mª Luisa Del Carmen Garduño Ramírez

CATALYST AND REACTOR DESIGN FOR CARBON DIOXIDE METHANATION

Author: Andreina Alarcón Avellán

Directors: Andreu Arbella, Teresa/ Guilera Sala, Jordi

DEVELOPMENT & IMPLEMENTATION OF AN ELECTRON DIFFRACTION APPROACH FOR CRYSTAL STRUCTURE ANALYSIS

Author: Sergi Plana Ruiz

Directors: Sònia Estradé/ Joaquim Portillo/ Ute Kolb

NANOSCALE TOMOGRAPHY BASED IN ELECTROSTATIC FORCE MICROSCOPY

Author: Harishankar Balakishan

Director: Gabriel Gomila Lluch/ Lázaro René Izquierdo Fábregas

NANOSCALE DIELECTRIC MAPPING OF BIOMEMBRANES WITH IN-LIQUID SCANNING DIELECTRIC MICROSCOPY

Author: Martina di Muzio

Director: Gabriel Gomila Lluch

GAn DEVICES FOR LOW-POWER CHEMICAL SENSING

Author: Nicolai Markiewicz

Directors: Olga Casals/ Juan Daniel Prades/ Andreas Waag

HEALTH-PROMOTING PHENOLIC COMPOUND IN EXTRA VIRGIN OLIVE OIL: AN INTEGRATED STUDY OF THEIR CONCENTRATION AND BIOAVAILABILITY

Author: Anallely López Yerena

Directors: Elvira Escribano Ferrer/ Anna Vallverdú Queralt

GENE SILENCING OF WEE1, CHK1 AND THYMIDYLATE SYNTHASE USING PPRHS. NON-VIRAL AND VIRAL DELIVERY OF PPRHS

Author: Eva Aubets Gil

Directors: Veronica Noé/ Carlos J Ciudad

NANOSTRUCTURED SYSTEMS OF THYMOL FOR DERMATOLOGICAL AND TOPICAL TREATMENTS

Author: Camila Folle

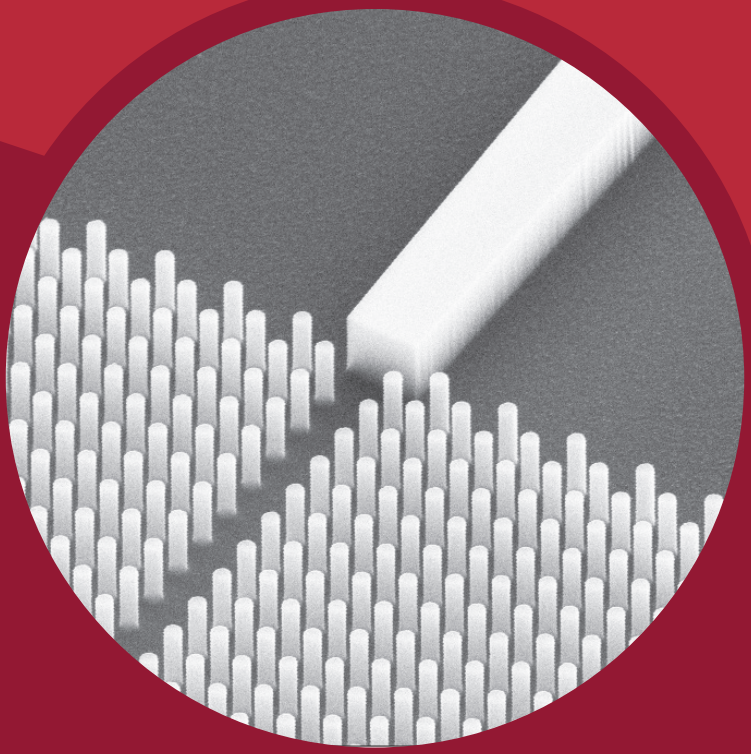
Directors: Ana Cristina Calpena Campmany/ Marisa García López

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

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

Institut de Nanociència i Nanotecnologia

UNIVERSITAT DE BARCELONA



INSTITUT DE NANOCIÈNCIA I NANOTECNOLOGIA
Universitat de Barcelona IN²UB

Faculty of Chemistry
Diagonal 645, 08028 Barcelona (Spain)
Telephone: + 34 93 402 12 66

in2ub@ub.edu | www.ub.edu/in2ub

IN² Institut de Nanociència i Nanotecnologia
UNIVERSITAT DE BARCELONA