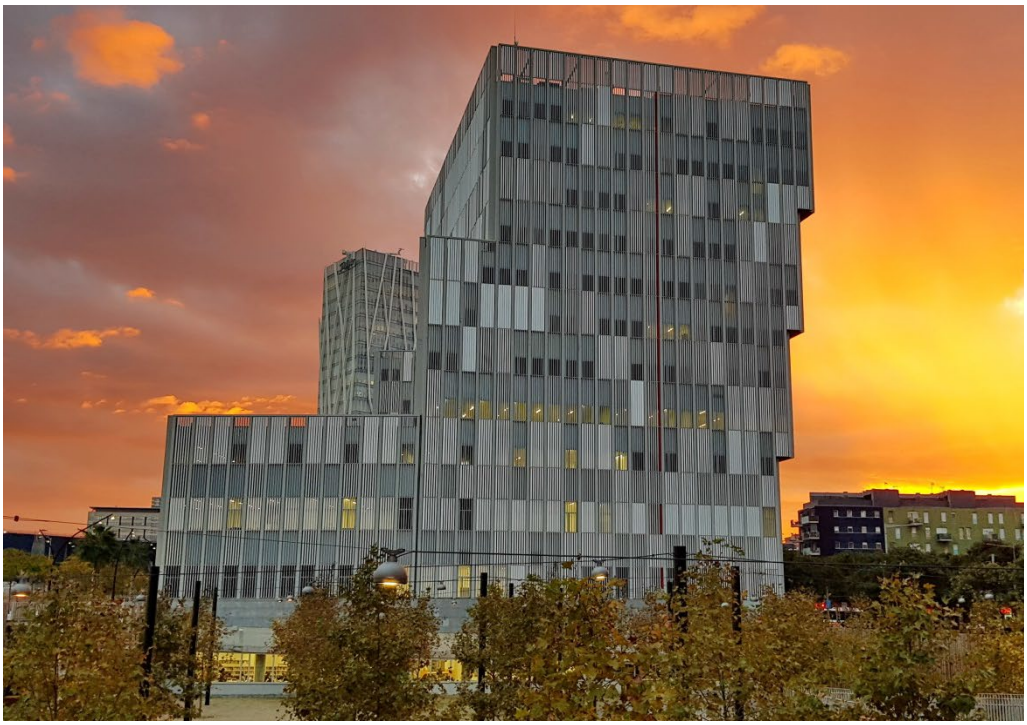


# CAMPUS DIAGONAL -BESÒS

## Research Newsletter

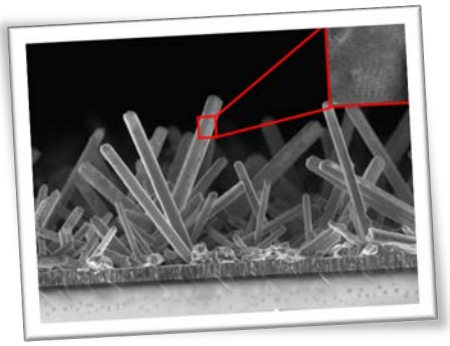
**Summer 2025**

FOREWORD

# Campus Diagonal-Besòs

## Beyond the Lecture Hall: Research as a Path to Innovation

University students, especially those in engineering, are highly focused on grasping the core concepts that will support their future careers. Understanding the theory and methods specific to each course is their top priority, as it forms the foundation for solving real-world problems. However, beyond lectures, it's essential to offer students opportunities to apply their knowledge in other meaningful ways.

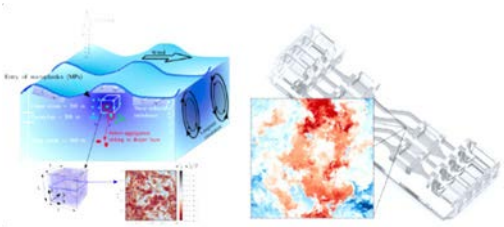


At the UPC **Campus Diagonal-Besòs** (CDB), students can take their learning further by engaging in research. With over 40 active research groups on campus, they have the chance to collaborate with experts and explore cutting-edge topics across a wide range of scientific fields.

To this end, the CDB has launched an annual call for **research initiation grants** (Page 8), in collaboration with all research groups. The selected applicants can carry out their *Final Degree Projects* within a research group or undertake their first steps into the world of research during the summer break. This exposure will not only enrich their academic experience but will also foster critical thinking and innovation skills—key tools for success in both industry and academia.

***Welcome to the Campus Diagonal-Besòs, where future's science and technology is being forged.***

IN THIS ISSUE



### Research Bites

A selection of high-impact articles, among those published by CDB researchers during the **first semester of 2023**, in areas such as *astrophysics, chemical and mechanical engineering, architecture, and chemistry*, is displayed on Pages 2-3. An overview of one of the CDB research groups, **BBT**, is presented on Page 4. These snapshots show the rich and diverse research landscape that characterize the Campus.


### News & Events

Funding opportunities, new research facilities and grants, past and future events, and research awards given to CDB researchers, can be found on Pages 9-10.

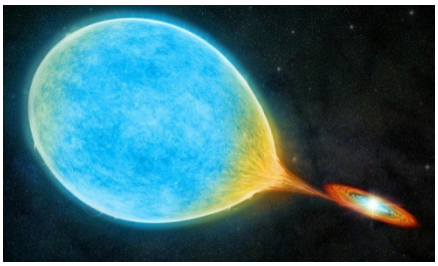
# Research Highlights

## SIMILARITIES BETWEEN ACCRETING NEUTRON STARS & BLACK HOLES

F.M. Vincentelli, J. Neilsen, A.J. Tetarenko, **Y. Cavecchi**, N. Castro Segura, & 18 coauthors, "A shared accretion instability for black holes and neutron stars", ***Nature*** *615*, 45 (2023) [*Q1, 1/213 in Mutidisciplinary Science; IF=50.5*]

An international team, that included a researcher of the **Astronomy & Astrophysics Group (GAA)**, has conducted a vast observational campaign of a neutron star attracting matter in a highly unstable way, demonstrating that the instability mechanism is a fundamental property of the matter flow, independent of the nature of the central object.

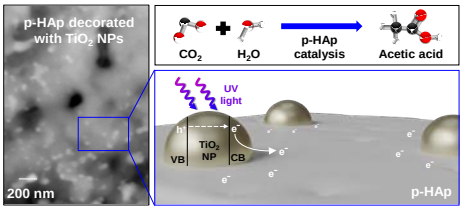
When black holes or neutron stars form a binary system with a normal star, they pull matter in a process called accretion. This matter forms a disc around them and eventually part of it falls on them and part is expelled. This process is not well understood: in particular, the instabilities of the flow are yet to be clarified. Before this discovery, only a handful of black holes was known to display a very chaotic instability at high accretion rate, thought to be related to the nature of the central object. Showing that both types of objects share the same instability opens the way to gathering much more information to finally identify its origin.



## USAGE OF P-HAP AS DUAL CATALYST SUPPORT

**M. Arnau**, P. Turon, **C. Alemán** & **J. Sans**, "Hydroxyapatite-based catalyst for $CO_2$ fixation with controlled selectivity towards $C_2$ products. Phenomenal support on active catalysts?", ***Journal of Materials Chemistry A*** 11, 1324 (2023) [*Q1, 52/1073 in Chemistry; IF=10.7*]

The application of the thermal stimulated polarization treatment to hydroxyapatite (highly abundant and biobased ceramic, HAp) has been reported to catalytically activate this material, enabling it to convert carbon dioxide ($CO_2$) into value-added products. Nonetheless, the scientific community has mostly been regarding pristine HAp as a mechanical support for conventional catalysts. Seeking a paradigm change, researchers from the **IMEM-BRT group (Innovation in Materials and Molecular Engineering – Biomaterials for Regenerative Therapies)** studied the synergistic effects of a p-HAp catalyst decorated with titanium dioxide ($TiO_2$) nanoparticles (NPs). The obtained composite, behaving as a p-n junction, has been tested for $CO_2$ conversion under UV irradiation and displays boosted catalytic activity and high product selectivity. Overall, this work establishes the usage of p-HAp as a green and cheap dual catalyst-support.

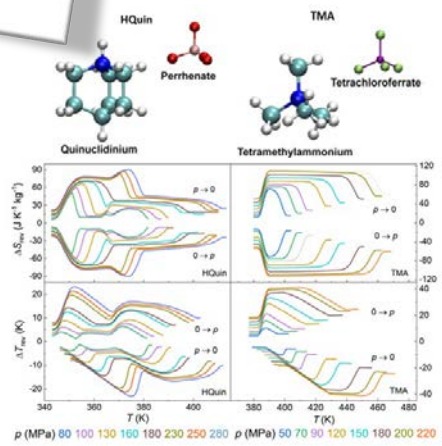



## FERROELECTRIC PLASTIC CRYSTALS FOR ECO-FRIENDLY REFRIGERATION

**A. Salvatori**, D. Aguilà, G. Aromí, L. Mañosa, A. Planes, **P. Lloveras, L.C. Pardo**, M. Appel, **M. Barrio, J.Ll. Tamarit** & **M. Romanini**, "Large barocaloric effects in two novel 2ferroelectric molecular plastic crystals", ***Journal of Materials Chemistry A*** 11, 12140 (2023) [*Q1, 52/1073 in Chemistry; IF=10.7*]

The study, conducted by researchers of the **PTP-GlaDyM group (Phase transitions, polymorphism, glasses and dynamics of the metastability)**, investigates two ferroelectric plastic crystals, quinuclidinium perrhenate (HQuin) and tetramethylammonium tetrachloroferrate (TMA), as phase-change materials for solid-state cooling.

Both compounds exhibit pressure-driven phase transitions between



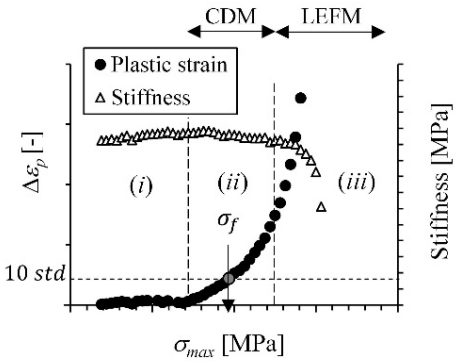

ferroelectric and plastic-crystal phases, yielding strong barocaloric effects. In TMA, reversible entropy changes of 81 J $K^{-1}$ $kg^{-1}$ and adiabatic temperature shifts of 21 K are obtained under moderate pressures of 100 MPa. While entropy values are lower than in non-ferroelectric plastic-crystal formers, temperature changes in both compounds are comparable to leading barocaloric materials. Their ferroelectric nature makes them sensitive to electric fields, opening the door to multicaloric effects that combine pressure and electric field responses for sustainable, eco-friendly refrigeration and efficient waste heat recovery.

## A NOVEL FATIGUE TESTING METHOD FOR METALLIC MATERIALS

**S. Pararedа**, D. Casellas, M. Mares & **A. Mateo**, "A damage-based uniaxial fatigue life prediction method for metallic materials", ***Materials & Design*** 231, 112056 (2023) [*Q1, 35/716 in Mechanical Engineering; IF=7.6*]

A new fatigue testing method, called the *stiffness method*, offers fast, reliable prediction of the fatigue life of metallic

materials. Unlike traditional, time-consuming approaches, this technique uses inelastic strain measurements via digital image correlation (DIC) to track fatigue damage from early microcrack formation to final failure. Tested on ten metals (Al, steel, stainless steel, Ti), the method accurately determines both the fatigue limit and the damage threshold using as few as three specimens per material. It eliminates the need for specialized equipment like infrared cameras or acoustic sensors, making it accessible and cost-effective. The results obtained in this study, conducted by researchers of **CIEFMA** (**Center for Research in Structural Integrity, Reliability and Micromechanics of Materials**), closely match conventional fatigue tests, demonstrating that this approach is robust and broadly applicable, especially for high-cycle fatigue (HCF) analysis in industrial settings.




## USE OF FACE MASK WASTE AS BUILDING INSULATION MATERIAL

M. Neri, E. Cuerva, E. Levi, P. Pujadas, E. Müller & **A. Guardo**, "Thermal, acoustic, and fire performance characterization of textile face mask waste for use as low-cost building insulation material", ***Developments in the Built Environment*** 14, 100164 (2023) [*Q1, 2/207 in Architecture; IF=8.2*]

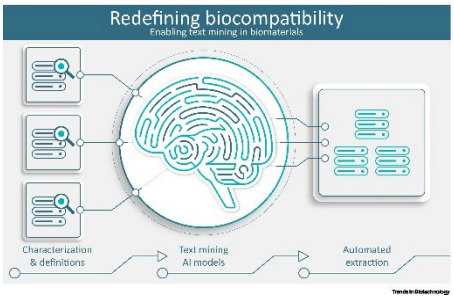
This study validates the engineering potential of repurposing Polyamide-66 (PA-66) textile waste from disposable face masks as a high-performance building insulation material. Led by researchers from **CDIF** (**Center for Industrial Diagnostics**), this work experimentally validated the engineering potential of repurposing shredded PA-66 fibers from discarded cloth face masks as a high-performance building insulation material. Technical assessment revealed that the recycled fiber achieves a thermal conductivity below 0.04 W/(m·K), a performance metric directly comparable to commercially-available thermal insulation materials. In terms of acoustics, the material demonstrates strong sound absorption at medium and high frequencies, with noise reduction coefficients reaching levels on par with common acoustic insulators. While the fire behavior mimics synthetic foams like EPS (characterized by dripping), the material remains viable when installed within well-confined systems.

Moving beyond material characterization to practical application, the research team designed and tested lightweight, self-portable cladding panels specifically conceived for low-income households. These panels were filled with the recycled mask fiber, with some configurations incorporating reused egg cartons to enhance structural integrity and performance. Tests confirmed that the panels could be mounted indoors without major construction works and that the addition of egg cartons improved thermal resistance by approximately 10% while contributing to better acoustic comfort. This successful prototyping proves that circular engineering can provide a feasible, socially oriented solution for retrofitting vulnerable homes.

## NEW TRENDS ON BIOMATERIAL BIOCOMPATIBILITY

**M. Mateu-Sanz**, C.V. Fuenteslópez, J. Uribe-Gomez, H.J. Haugen, A. Pandit, **M.P. Ginebra**, O. Hakimi, M. Krallinger & A. Samara, "Redefining biomaterial biocompatibility: challenges for artificial intelligence and text mining", ***Trends in Biotechnology*** 42, 402 (2023) [*Q1, 36/740 in Chemical Engineering; IF=14.3*]

Rapid growth of biomaterials research has produced data that are increasingly difficult to organize and interpret. Text mining and natural language processing enable structured knowledge to be extracted from vast, unstructured literature, but they depend on robust ontologies and high-quality datasets to support predictive modeling. Among biomaterial properties, biocompatibility is paramount, yet its definitions remain vague and inconsistent, failing to reflect complex host-material interactions.




In this study, researchers from the **Biomaterials, Biomechanics and Tissue Engineering** group (**BBT**) review existing concepts, identifies critical gaps, and proposes a unified, operational definition designed for automated data extraction and machine-readable analysis and clinical relevance assessment.

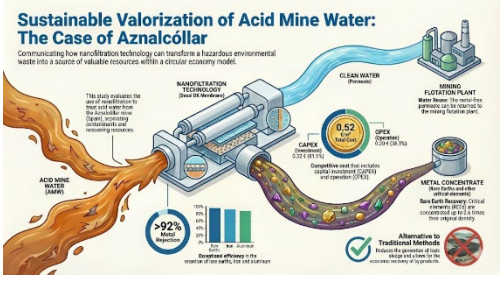
## ADVANCES IN VALORIZATION OF METAL-INFLUENCED MINE WATERS

**J. Lopez, O. Gibert** & **J.L. Cortina**, "The role of nanofiltration modelling tools in the design of sustainable valorisation of metal-influenced acidic mine waters: The Aznalcóllar open-pit case", ***Chemical Engineering Journal*** 451, 138947 (2023) [*Q1, 99/3747 in Engineering; IF=13.2*]

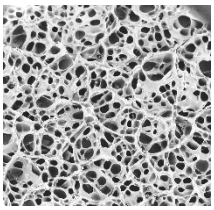
Acid Mine Waters (AMWs) in the Iberian Pyrite Belt, characterized by low pH and high contents of metals and rare earth elements, pose environmental risks but also offer opportunities for metal recovery.

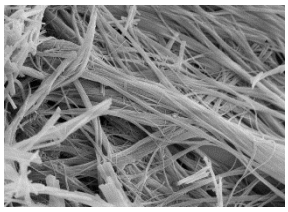
This study, conducted by researchers of the **Resource Recovery and Environmental Management** group (**R2EM**), investigates the potential of nanofiltration to recover valuable metals from Aznalcóllar mine AMW. The Solution-Electro-Diffusion model was applied to describe metal permeation and support full-scale plant design. Results showed that the nanofiltration membrane effectively rejected metals (Al, Mg, Zn) and rare earth elements, producing a stream with concentrations up to 2.5 times higher than in the original acid mine waters, and a permeate suitable for reuse. Metal rejection was governed by Donnan and dielectric exclusion.

An economic assessment showed a competitive cost (0.52 €/m³), making nanofiltration a viable option for sustainable mining waste management and the recovery of critical materials.



RESEARCH GROUPS





## BBT in a nutshell

**BBT** is a Generalitat de Catalunya's Consolidated Research Group at UPC. The group is part of UPC's Barcelona Research Center in Multiscale Science and Engineering (CCEM) and of the Institute for Research and Innovation in Health Technologies (IRIS). It is also part of the Centro de Investigación Biomédica en Red de Bioingeniería, Biomateriales y Nanomedicina (CIBER-BBN).

BBT's main scientific goal is the development of bio-instructive materials able to modulate the biological response of the host tissue, leading in some cases to the regeneration and neoformation of the degraded tissues and, in others, to a perfect integration of the biomaterial and to the recovery of the lost functionality. The approach to this objective is inherently interdisciplinary, requiring both knowledge in physico-chemical and mechanical characterization of the materials and in techniques of surface characterization of the materials and the study of the effect of these properties in the biological response.

BBT focuses not only on basic research, but also on transferring the knowledge generated to companies in the biomedical sector.

### *BBT*'s RECENT RESEARCH HIGHLIGHT

**V. Chausse, E. Casanova-Batlle, C. Canal, M.-P. Ginebra, J. Ciurana, M. Pegueroles**, *Solvent-cast direct-writing and electrospinning as a dual fabrication strategy for drug-eluting polymeric bioresorbable stents*, **Additive Manufacturing** 71, 103568 (2023)

### *BBT*'s RESEARCH FAST FACTS

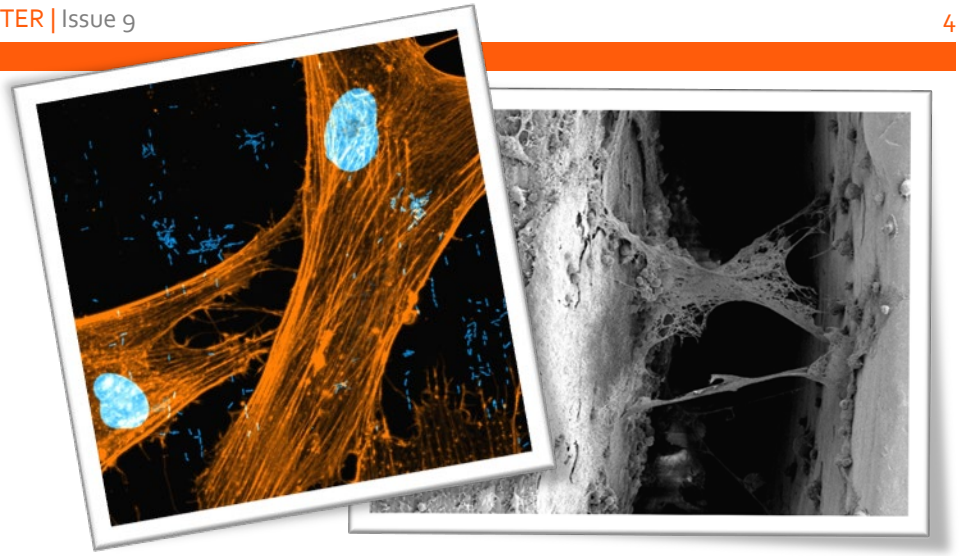
Source: https://futur.upc.edu/BBT
https://biomaterials.upc.edu/en

### RESEARCH OUTPUTS (5 Last Years)

- 156 Research Papers in indexed journals
- 177 Invited, Oral and Poster presentation to International Conferences
- 7 Research Books and Chapters
- 15 PhD Theses
- 6 Patents
- 1 Spin off company: *Mimetis Biomaterials*

### FUNDING & AWARDS (5 Last Years)

- 56 international & national competitive projects and grants
- 24 Awards (including 2 ICREA Academia distinctions)



# RESEARCH GROUPS @ CDB

# Biomaterials, Biomechanics & Tissue Engineering Research Group (BBT)

BBT works in a wide range of materials, such as calcium phosphates, biocompatible metals, biodegradable polymers and hydrogels. We do not organize our research in independent lines, but in interconnected strategies for different final applications, applying the principle of multidisciplinarity also to the way we organize ourselves internally.
The strategies we follow to endow materials with biological activity are diverse, including the development of surface nanostructures and/or nano-patterns, the functionalization with active biomolecules and peptides, the generation of reactive species by atmospheric plasma, the incorporation of magnetic and electrical stimuli, or the control of material architecture and porosity by 3D printing.

The challenges addressed by BBT include:

- Tissue regeneration: bone, skin, ocular and cardiovascular applications.
- Fighting infection: development of antibiotic-free strategies to bypass antibiotic resistance.
- Cancer treatment and combined therapies.

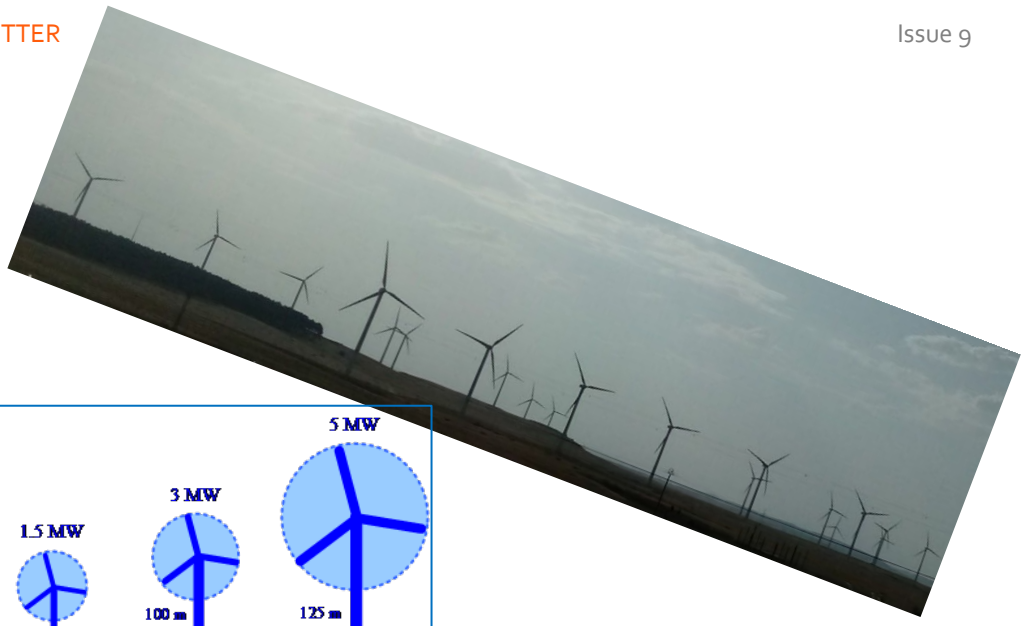
### FOR MORE INFORMATION

**Prof. Maria-Pau Ginebra,**
maria.pau.ginebra@upc.edu

WHAT/WHICH/HOW

# WHAT is the Future of Wind Turbines?

**By Prof. Alejandro Rolán (CS2AC-UPC, Dept. Automatic Control, EEBE-CDB)**






Over the past few decades, new materials, advanced designs and higher-fidelity modeling capabilities have made it possible for **wind turbines** (WTs) to operate more efficiently. For example, modern WT blades are 90% lighter than those from the 1980s. So, what are the **challenges** facing WTs from now on?

Firstly, **economic optimization**, i.e., building larger WTs at lower costs. It can be achieved by blade design optimization, by using multipole permanent magnet synchronous generators (thus avoiding the gearbox in the nacelle), or by opting for sensorless methodologies for speed estimation, among others.

Secondly, reliability improvement. Certainly, the wind resource is intermittent over time, so storage systems with higher energy densities should be implemented. Furthermore, in order to avoid massive blackouts that could affect entire countries (as the Iberian Peninsula blackout on April 28, 2025), more research should be done regarding WT behavior under faulty grids.

Finally, environmental impact should not be overlooked. Truly, WTs must be able to operate in a wide variety of atmospheric conditions and locations, but it should be achieved by reducing visual impact and noise, as well as ensuring the protection of ecosystems (e.g. safeguarding marine life in the case of offshore WTs).

FURTHER READING ON WIND TURBINES

**A. Rolán**, E. Romero-Ramírez, S. Bogarra, & J. Saura, "Speed estimation in PMSG-based wind turbines from DC voltage measurement," ***IEEE Trans. Instrumentation and Measurement*** 73, 9005613 (2024).

# SCIENCE & CINEMA

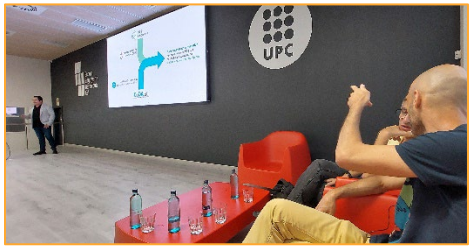
The 8th edition of the **Science & Cinema** series took place in February 2023 at the CDB. This series explores the scientific and technological concepts—along with the occasional misstep—featured in recent films and television shows.

In this edition, **Prof. Javier Giménez** (R2EM) entertained the audience with a lively and thought-provoking talk titled **"Should We Fear the Revenge of the Mummy?"** The speaker began with a riveting account of the discovery of Tutankhamun's tomb, then explored various ideas and myths from ancient Egyptian culture. His talk covered topics such as their views on death and resurrection, the study (and sometimes surprising uses) of mummified remains, and the use of DNA analysis to uncover the true identities of certain mummies—possibly even the one you've had lying around at home!

# RESEARCH DAY

The **4th edition** of **Research Day**, the annual event that brings together researchers and academics (and secretly compete for who made the fanciest presentation), was held on June 30, 2023, at the Diagonal-Besòs Campus.

These annual meetings gatherings seek to motivate both emerging and more *experienced* scientists, exchange knowledge, and above all, ignite fresh partnerships (along with the occasional lively argument!). It's a celebration of discovery, connection, and maybe even the chance to find a future collaborator—or finally meet someone who actually loves your most recent paper...



Launched in 2019, **Research Day** has continued to thrive each year. The debut event explored "Multiscale Energy Systems: From Microcosmos to Macro-cosmos", attracting more than 110 attendees. Following the pandemic pause, the 2021 edition embraced a daring theme: "Women, Men, and Machines: The Future of Mankind". The third gathering looked ahead to a more sustainable world, centering on "Circular Economy, Environment, and Sustainability". Most recently, the focus shifted to "Simulation and Reality". With each edition, the event grows richer in ideas, connections, and a shared passion for pushing research boundaries.

# RESEARCH BEER

During the first semester of 2023, **Research Beer** returned to the CDB with three new sessions. This initiative, launched in April 2022 and jointly organized by **UPC's Libraries Unit and EEBE's Research Sub-directorate**, brings cutting-edge, cross-disciplinary research to life — all in a casual setting with a refreshing drink.

Each session features two researchers from different groups who share an informal yet engaging look at their main areas of study. Their aim is to spark interest and inspire students to explore research opportunities, whether through internships or by taking on a BSc or MSc thesis.

Students are invited to sip a beer or soft drink as they absorb fresh scientific insights. The sessions wrap up with an open Q&A, encouraging relaxed and meaningful dialogue between speakers and attendees.


This semester's three editions of Research Beer showcased a remarkable lineup of guest speakers, each bringing their knowledge and passion to an engaged and curious audience:

- **Prof. Vega Pérez** (GiES) and **Prof. Maria Lluïsa Maspoch** (e-PLASCOM)
- **Prof. Maria-Pau Ginebra** (BBT) and **Prof. Yolanda Vidal** (CoDAlab)
- **Prof. Lexa Nescolarde** (IEB) and **Prof. Jordi José** (GAA)

Each session offered a mix of science, innovation, a touch of laid-back conversation — and, naturally, a cold beer!





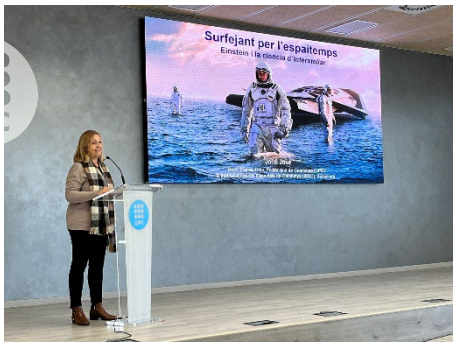

CONFERENCE

# EINSTEIN at the Diagonal-Besòs Campus

Yes, you read that right. **Albert Einstein**—scientific genius and icon of relativity—recently "appeared" at the Diagonal-Besòs Campus. Not through a wormhole, sadly, but through a series of events celebrating his historic visit to Barcelona.

Back in 1923, a group of Catalan scientists, eager to revive a thriving local scientific community, decided to shoot for the stars and invited none other than Albert Einstein to visit Barcelona. The German-born physicist, already a celebrity, arrived in the Catalan capital on February 22 and stayed until March 1. His presence stirred quite a buzz among the scientific and cultural circles of the time, during an era when people genuinely believed that research could change the world (spoiler: they were right!). Einstein's visit gave a welcome boost to local scientific enthusiasm…

To commemorate this milestone, the CDB organized a series of events, including a lecture on Einstein's scientific contributions entitled "Surfing Space-Time: Einstein and the Science of Interstellar," delivered by **Prof. Jordi José** (Einstein himself and his first wife, Mileva Marić, attended the lecture, despite the minor historical hiccup that in 1923 he actually visited with his second wife, Elsa).


The talk explored some of the most mind-bending aspects and predictions of general relativity, arguably Einstein's greatest gift to science (aside from his iconic hairs).

Questions on the table included: What exactly are black holes? Can we zip across the galaxy using wormholes? And just how many dimensions does this universe of ours have?

# RESEARCH INITIATION GRANTS

In January 2023, the EEBE's Research Subdirectorate, together with CDB's research groups, introduced the **first edition of the Research Initiation Grants**. Through this program, selected students can either complete their Final Degree Projects (Bachelor's or Master's Theses) within a research team or take their initial steps into research during the summer months. This initiative aims to bridge the gap between academic learning and real-world application by immersing students in active, hands-on research environments where they can contribute to ongoing scientific projects.

12 students were funded in this first edition of the *Research Initiation Grants*.

# AWARDS, GRANTS, & EVENTS

## PhD Theses Defended

**Alejandro Cifuentes** (Advisor: Jordi Llorca, ENCORE/Ricardo Torres, GReCEF), "Simulación y desarrollo de reactores catalíticos de membrana para la tecnología del hidrógeno" (Jan/2023)

**Mingshen Li** (Advisor: Jose Matas/Jose Maria Guerrero, EPIC), "Power Calculation Algorithm under Nonlinear Loads and Hopf Oscillator-based Synchronization Controller for Grid-forming Inverters in a Microgrid" (Jan/2023)

**Claudia Garcia-Mintegui** (Advisor: Jose Luis Cortina, R2EM/Marta Pegueroles, BBT), "Bioresorbable Zn-based alloys for bio-medical applications" (Jan/2023)

**Navid Salehi** (Advisor: Guillermo Velasco/Herminio Martinez, EPIC), "Energy Management in Collaborative Power Electronics-Based Microgrid Integrated With Renewable Energies" (Feb/2023)

**Esteban Cabrera** (Advisor: José Ramón González-Drigo, GiES/Guido Luzi), "Metodología para estimación del daño sísmico en edificios en base a modelos numéricos avanzados y a monitorizaciones RAR" (Feb/2023)

**M. Carmen Monterde** (Advisor: Marc Torrell/Emilio Piqué, CIEFMA/José Antonio Calero), "Nuevos interconectores pulvimetalúrgicos para sistemas de óxido sólido de alta temperatura: desarrollo, optimización y prototipado" (Feb/2023)

**Angel Molina** (Advisor: Anna Merino/José J. Rodellar, CoDAlab), "Clasificación automática de malaria e inclusiones eritrocitarias anómalas en sangre periférica utilizando modelos de machine learning" (Mar/2023)

**Bàrbara Adrover** (Advisor: Ramon Jerez/José Antonio Travieso, TECNOFAB), "Study of the characterization of the mechanical properties of materials with elastomeric behavior for biomedical applications" (Mar/2023)

**Saeed Sabounchi** (Advisor: Ferhun Cem Caner, IONHE), "Cylindrical Microplane Model for Fiber Reinforced Polymer Composites" (Apr/2023)

**Seyedeh Panahi** (Advisor: Pere Bruna/Eloi Pineda, PTP-GlaDyM), "Study of relaxation phenomena and local structure evolution in metallic glasses by means of mossbauer and mechanical spectroscopy" (May/2023)

**Yufen Chen** (Advisor: Jordi Llorca/Lluís Soler, ENCORE), "Mechanochemical preparation of $TiO_2$-based photocatalysts for hydrogen production" (May/2023)

**Bryan Puruncajas** (Advisor: Yolanda Vidal, CoDAlab/Christian Tutivén), "Detection and diagnosis of faults and damage in wind turbines" (May/2023)

**Mona Yarahmadi** (Advisor: Gemma Fargas, CIEFMA/Joan Josep Roa), "3D Printing of Zirconia-based Ceramic Materials" (May/2023)

**Victor Chausse** (Advisor: Marta Pegueroles, BBT), "3D-printed Polymeric Bioresorbable Stents for Cardiovascular Applications" (May/2023)

**Marcel F. Carpio** (Advisor: José María Cabrera/Jessica Calvo, PROCOMAME), "Development of quenching and partitioning steels (Q&P)" (Jun/2023)

**Jorge Ivan Jiménez** (Advisor: Cristóbal Padilla/Antoni Grau, VIS), "Characterization of a novel HgCdTe focal plane array for ground and space astronomy through innovative infrared setups" (Jun/2023)

**Junhui Zhang** (Advisor: Luis Llanes/Gemma Fargas, CIEFMA), "Integration of sensors on 3D-printed Zirconia Ceramics to be Used in structural applications" (Jun/2023)

**Marcos N. da Silva** (Advisor: Jessica Calvo/José María Cabrera, PROCOMAME/ Hamilton Ferreira), "Effect of deformation on the mechanical behavior of an advanced steel of high resistance with high manganese content" (Jun/2023)

## New Research Grants

*Design, manufacture, and characterization of auxetic stents capable of growing with the patient*, MISTI Global Seed Funds, MIT (USA), P061901/FC209255 (2023-2025), UPC's PI: M. Pegueroles (BBT)

*Hidrogeles biomiméticos para liberar estrés oxidativo de plasmas fríos estimulan la regeneración de tejidos*, Instituto de Salud Carlos III (ISCIII), IHRC22/00003 (2023-2025), PI: C. Canal (BBT)

*Cold atmospheric Plasma technology for Cancer treatment*, Barcelona Deep Tech Node – Ajuntament de Barcelona (2023), PI: C. Canal (BBT)

*Nanomembranas multifuncionales como biosensores inteligentes conformables para una monitorización clínica no invasiva*, Jané Mateu Foundation (2023-2024), PI: J.M. García-Torres (BBT)

*Nanoengineered magnetoelectric 3D hydrogels with built-in soft electronics for bioengineering applications*, MICINN, CNS2022-136109 (2023-2026), PI: J.M. García-Torres (BBT)

*Bringing Experiment and Simulation Together in Crystal Structure Prediction, European Union*, COST Action 22107 (2023-2027), UPC's PI: M. Romanini (PTP-GlaDyM)

*Real-Time Hand Gesture Recognition Using Combination Biomechanical Sensors, Surface Electromyography and Machine Learning*, AGAUR, 2022 DI 028 (2023-2026), PI: H. Martínez (EPIC)

*Utilització d'un nou catalitzador per capturar molècules de l'aire i transformar-les en productes. Bones Carbon Capture (BCC)*, Generalitat de Catalunya, ACE088/23/000128 (2023-2026), UPC's PI: C. Alemán (IMEM-BRT)

*Demonstration of battery metals recovery from primary and secondary resources through a sustainable processing methodology*, European Union, HORIZON-101091682-METALLICO (2023-2026), PI: José Luís Cortina (R2EM)

## Awards

**Milica Živanić** (BBT) was awarded with the *Best Oral Presentation* at 8th International Workshop on Plasma for Cancer Treatment – IWPCT 2023, Raleigh, NC (USA).

**Patricia López** (BBT) received a special mention in the interuniversity final of the 2023 #HiloTesis contest.

**Milica Živanić** and **Silvia Gómez** (BBT) won 1st and 3rd place in the "Presenta tu tesis en 4 minutos" contest organized by the UPC Doctorate School and sponsored by the Fundació Catalana per la Recerca i la Innovació (FCRI), Barcelona (2023).

**Ali Abdul Ameer Abbas** (Advisor: Herminio Martínez, EPIC) was awarded the *Premi Enginyers BCN 2023* for the Best Bachelor's Thesis by the Col·legi d'Enginyers Graduats i Enginyers Tècnics Industrials de Barcelona.

**Alexandra Roa** (Advisors: José Luis Cortina/Julio López, R2EM) and **Pol Llorach** (Advisor: César Valderrama, R2EM) received the first and second prize for *Best Master's Thesis* at the UPC Circular Economy Awards, promoted by the Hub Recircula UPC-AMB.

**Prof. Carlos Alemán** (IMEM-BRT) received the ICREA Academia 2022 distinction.

# CAMPUS DIAGONAL-BESOS
## Research Newsletter

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