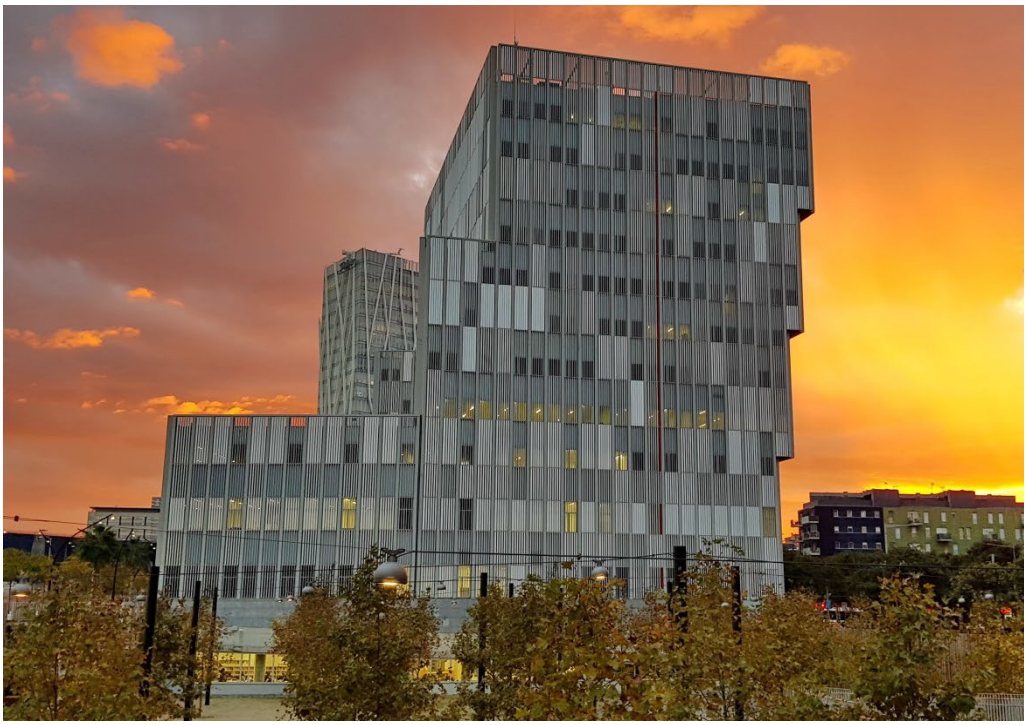


CAMPUS DIAGONAL -BESÒS

Research Newsletter

Summer 2023

FOREWORD

Campus Diagonal-Besòs

Is hydrogen the key to get rid of fossil fuels?

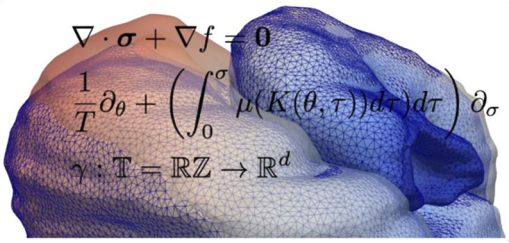
Hydrogen is an element of records. It is the simplest, the lightest, and the most abundant chemical species in the Universe. A relic of the Big Bang, it constitutes about 75% by mass of the normal, baryonic matter present in the Universe (and more than 90% by number of atoms). It forms giant molecular clouds, stars, and gas giant planets.

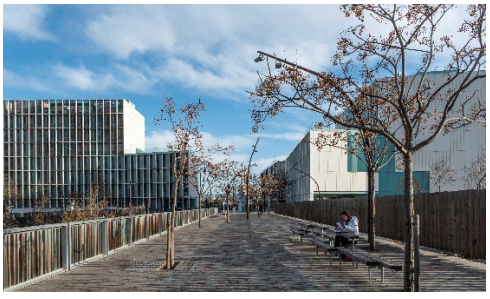
Visit of Catalan Minister for Research & Universities Joaquim Nadal to UPC's hydrogen lab

While a century ago, hydrogen fusion was identified as the energy source that powers ordinary stars, its use as an energy carrier has revitalized its interest in the 21st Century. In search for environmentally-respectful energy sources, some carbon-neutral, hydrogen-based technologies have been envisaged as feasible alternatives on a future economy-wide scale. To this end, a pioneering **hydrogen laboratory and production plant** is under construction at the Campus Diagonal-Besòs (CDB), a *living lab* to test and develop hydrogen-based technologies. In a nearby future, this facility will be able to produce, compress, transport, store, and use hydrogen (see Page 6, for more information).

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

IN THIS ISSUE



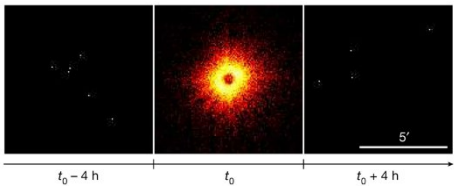


Research Highlights

THE INITIAL FIREBALL OF A NOVA EXPLOSION

O. König, J. Wilms, R. Arcodia, T. Dauser, K. Dennerl, V. Doroshenko, F. Haberl, S. Hämmerich, C. Kirsch, I. Kreykenbohm, M. Lorenz, A. Malyali, A. Merloni, A. Rau, T. Rauch, **G. Sala**, A. Schwope, V. Suleimanov, P. Weber & K. Werner, "X-ray detection of a nova in the fireball phase", ***Nature*** *605*, 248 (2022) [*Q1, 1/144 in Multidisciplinary; IF=69.8*]

White dwarfs are residual cores of stars like our Sun, doomed to cool down and turn off. However, when accompanied by a burning star that may share some fuel, the white dwarf may explode as a nova. The explosion produces a short-lived new star, easily detected in the optical. Novae have been known for centuries, deeply studied in all wavelengths. But the initial fireball, predicted more than 30 years ago, was almost impossible to detect, since the observational instrument must be pointed directly at the explosion days before the discovery of the nova. The instrument in this case was the eROSITA X-ray telescope.



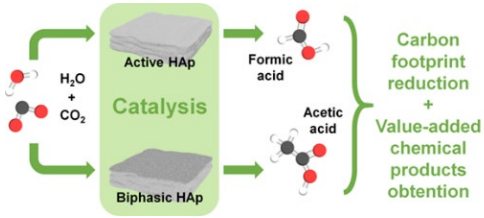
In this work, a group of scientists, which included a researcher from the **Astronomy & Astrophysics Group (GAA),** reported the observation of a strong X-ray flash on July 7, 2020, for less than 8 hours, in a region previously dark in X-rays. At the same position, 4 days later, Nova YZ Ret reached its maximum in the optical, becoming visible to the naked eye and the second brightest nova of the decade.

NOVEL APPROACHES TO REDUCE THE CARBON FOOTPRINT

J. Sans, M. Arnau, V. Sanz, P. Turon & **C. Alemán,** "Hydroxyapatite-Based Biphasic Catalysts with Plasticity Properties and Its Potential in Carbon Dioxide Fixation", ***Chemical Engineering Journal*** 433, 133512 (2022) [*Q1, 7/364 in Industrial and Manufacturing Engineering; IF=16.7*]

The use of carbon dioxide (CO_2) as a raw material for synthesizing valuable chemical products is extremely attractive for both environmental and economic aspects.

However, CO_2 recycling faces several challenges mainly related to the activation of the CO_2 molecule and the poor selectivity towards the production of a specific product, which requires the use of different custom engineered catalysts.



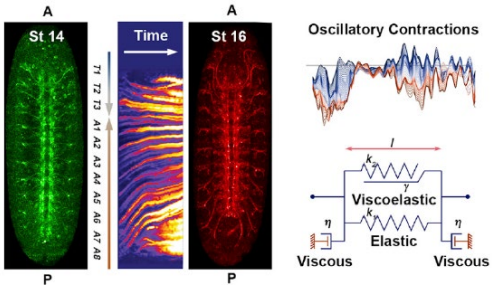
Aiming at avoiding the use of different metallic electro- and photo-catalysts (high economic costs and potential toxicity), this work, conducted by researchers of the **IMEM-BRT** group (**Innovation in Materials and Molecular Engineering - Biomaterials for Regenerative Therapies**), presents a green catalyst based on hydroxyapatite (main inorganic part of hard tissues, HAp) capable of fixing CO_2 under mild conditions and with controlled selectivity. This work shows how introducing reversible controlled lattice distortions at the surface of HAp allows to control, at will, the resultant chemical products obtained, a novel approach known as catalytic plasticity.

CHARACTERIZATION OF THE VENTRAL NERVE CORD OF THE DROSOPHILA FLY

K. Karkali, P. Tiwari, A. Singh, S. Tlili, I. Jorba, D. Navajas, **J.J. Muñoz,** T.E. Saunders & E. Martín-Blanco, "Condensation of the Drosophila Nerve Cord is Oscillatory and depends on Coordinated Mechanical Interactions", ***Developmental Cell*** 57, 867 (2022) [*Q1, 53/2120 in Biochemistry, Genetics and Molecular Biology; IF=13.4*]

The ventral nerve cord (VNC) of Drosophila fly undergoes a drastic condensation process during its embryo development. VNC is the main organ of the central neural system, and determines the final spatial configuration of the fly optical lobes, that is, its main brain structure.

In this work, an international team, which included a researcher of the group on **Numerical Methods for Applied Sciences and Engineering** (**LaCàN**), showed that this condensation process is not steady, but rather oscillatory with distinguished phases in time, and with differentiated segmented structures in space, forming a geometry that resembles an accordion. Mechanical characterization and a viscoelastic mechanical model show that these oscillations may be due to a delay between the viscous adaptation and the elastic response. In addition, and contrary to common intuition, it is demonstrated that the reduction of frictional contributions stabilizes the oscillatory condensation.

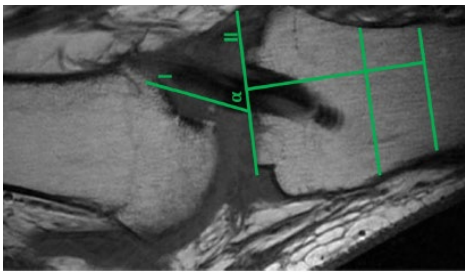


IMPROVING THE STABILITY OF RECONSTRUCTED KNEES

S. Perelli, R. Morales-Ávalos, M. Formagnana, G. Rojas-Castillo, **G. Serrancolí** & J.C. Monllau, "Lateral extraarticular tenodesis improves stability in non-anatomic ACL reconstructed knees: in vivo kinematic analysis", ***Knee Surgery, Sports Traumatology, Arthroscopy*** 30, 1958 (2022) [*Q1, 15/512 in Surgery; IF=4.11*]

This work is aimed at determining if adding a specific surgical technique, called lateral extraarticular tenodesis (LET), to patients who experienced knee instability after a previous anterior cruciate ligament reconstruction surgery, could reduce laxity and improve clinical outcomes. Nineteen patients were evaluated over a two-year period, and kinematic analyses were performed to measure rotational and

anteroposterior instability. The results showed a significant reduction in rotational instability both with and without anesthesia. Anteroposterior instability improved only under anesthesia. Functional tests and clinical outcome scores also showed improvement.



The study concludes that the LET technique can enhance knee stability and function in patients with residual instability after anterior cruciate ligament reconstruction, providing sustained improvement over a two-year follow-up period. A researcher from **InSup** (**Surface Interaction in Bioengineering and Materials Science Research Group**) has participated in this study.

TESTING THE THREAT POSED BY ARTIFICIAL FUELS AT THE WILDLAND-URBAN INTERFACE

P. Vacca, E. Planas, C. Mata, J. Muñoz & **E. Pastor**, "Experimental analysis of real-scale burning tests of artificial fuel packs at the Wildland-Urban Interface", **Safety science** 146, 1 (2022) [*Q1, 5/102 in Safety Research; IF=6.4*]

When a wildfire reaches the Wildland-Urban Interface (WUI), it can spread through a property and the community due to the ignition of residential fuels. Among these are artificial fuels, such as outdoor furniture and stored materials, which are located in a home's surrounding environment.

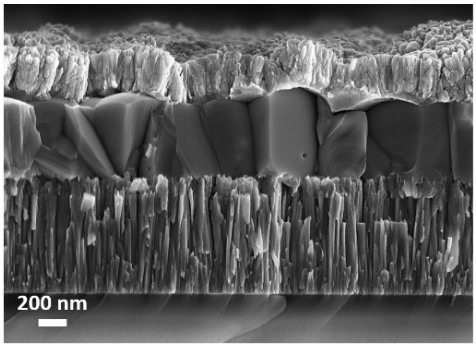
As little information on the real-scale burning behavior of these type of fuels is available, real-scale tests of four different fuel packs have been performed by **CERTEC (Centre for Technological Risk Studies)** researchers, to gather quantitative data on items that are commonly present in WUI properties. The fuel packs consisted of typical combustible materials present in porches, gardens, backyards, or stored in secondary structures. The data obtained can be used as input for Performance-Based Design methodologies for the quantification of hazards and vulnerabilities of WUI scenarios, to expand the current knowledge on the defensible space in these environments.

ON THE ADVANTAGES OF THIN-FILM CHALCOGENIDE SOLAR CELLS

S. Resalati, T. Okoroafor, A. Maalouf, **E. Saucedo** & **M. Placidi**, "Life cycle assessment of different chalcogenide thin-film solar cells", ***Applied Energy*** 313, 118888 (2022) [*Q1, 5/382 in Management, Monitoring, Policy and Law; IF=11.4*]

Thin-film photovoltaic (PV) cells offer several benefits over conventional first generation crystalline silicon PV technologies, including lighter weight, flexibility, and lower power generation costs.

This study, performed by researchers of the **Group of Micro and Nano Technologies for Solar Energy (MNT-Solar)**, presents a cradle to gate life cycle assessment for emerging chalcogenide PV cells, and compares their results with commercially available technologies to examine their effectiveness in reducing the environmental impacts associated with PV technologies.



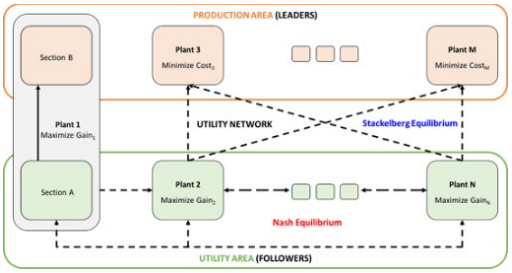
The results identify environmental hotspots associated with different materials and components, demonstrating that at comparable conversion efficiencies the emerging technologies offered the lowest environmental impacts in all impact categories.

In summary, the study demonstrates considerable environmental benefits associated with non-toxic chalcogenide PV cells suggesting that the current environmental concerns can be addressed effectively using alternative materials and manufacturing techniques if current efficiencies are improved.

MANAGEMENT OF UTILITY NETWORKS

A.-L. Galvan-Cara, M. Graells & A. Espuña, "Application of industrial symbiosis principles to the management of utility networks", ***Applied Energy*** 305, 117734 (2022) [*Q1, 5/382 in Management, Monitoring, Policy and Law; IF=11.4*]

While chemical process industries naturally share locations, so that they can also share services such as transportation routes, docks, ducts, etc., they hardly coordinate sharing of intermediate products and services (industrial symbiosis). Thus, this work, conducted by researchers of the **Center for Process and Environmental Engineering (CEPIMA)**, addresses the coordination of different independent plants operating in a given industrial site to propose more efficient utility networks (steam, water, and electricity).

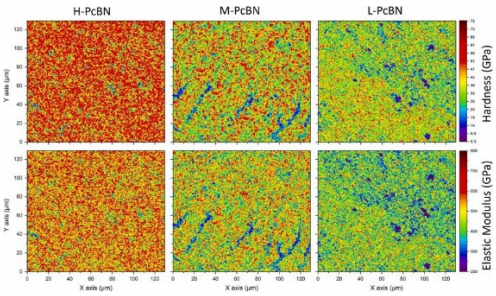


Given a set of plants, the objective is to determine industrial symbiosis alternatives that would increase energy efficiency and reduce environmental impact, while being economically appealing for all the private stakeholders involved. To this end, an optimization model has been developed for analyzing symbiosis alternatives in situations with cooperative and non-cooperative relationships between such stakeholders. Scenarios inspired by Game Theory have been considered and the problem has been modeled using a Mixed Integer Linear Programming formulation.

Results obtained for a study case from the literature show that cooperative scenarios allow determining solutions that produce total energy savings and cost reductions, but if the specific interests of individual companies are not taken into account, these solutions would fail to get implemented.

Conversely, the non-cooperative model showed the economic barriers that discourage companies to participate in industrial symbiosis solutions, which is useful for designing incentives and policies promoting industrial symbiosis.

RESEARCH GROUPS



CIEFMA in a nutshell

CIEFMA is a Generalitat de Catalunya's Consolidated Research Group (SGR) of the UPC since 2003, currently within a wider "Microstructural Design and Advanced Manufacturing of Materials" framework, together with PROCOMAME group. It is also part of the *TECNIO center IMEM-CIEFMA*, the *Barcelona Research Center in Multiscale Science and Engineering*, and the *Specific Center for Hydrogen Research*. It is also recognized as one of the twelve Centers of Excellence on Hard Materials Research of the *European Powder Metallurgy Association*. The group is constituted by 30 members (7 academic staff, 3 technical personnel and 20 PhD fellows) and its facilities are located at the EEBE-CDB.
CIEFMA's main core competences are defined as:
(1) its capability for successful assessment and understanding of mechanical integrity and reliability of ceramics, metals and corresponding composites at different length scales.
(2) its potential for implementing advanced processing technologies – such as additive manufacturing and surface modification - towards optimizing microstructural design and mechanical, energy- or biomedical- related functionality.
(3) its track-record expertise in failure analysis of industrial products.

CIEFMA's RECENT RESEARCH HIGHLIGHT

H. Besharatloo, M. de Nicolás-Morillas, M. Chen, **A. Mateo**, B. Ferrari, E. Gordo, **E. Jiménez-Piqué**, J.M. Wheeler, & **L. Llanes**, *Micropillar compression of Ti(C,N)-FeNi cermets: Microstructural, processing, and scale effects*, **Journal of the European Ceramic Society** 43, 2826 (2023)

CIEFMA's RESEARCH FAST FACTS

Source: https://futur.upc.edu/CIEFMA

RESEARCH OUTPUTS

- 638 Research Papers in indexed journals
- 770 contributions to Conference Proceedings
- 34 Research and Text Books
- 54 PhD Theses
- 8 Patents

FUNDING & AWARDS

- 130 R&D&I international & national competitive projects
- 23 R&D&I industrial projects
- 32 academic and research awards

RESEARCH GROUPS @ CDB

Structural Integrity, Micro-mechanics and Reliability of Materials (CIEFMA)

At present time, the main CIEFMA research lines are the following:

- 3D printing of ceramic-based composites for energy (SOFC, SOEC, catalysis) and biomedical applications: processing, post-processing treatments and performance assessment
- Toughness, damage tolerance and fatigue strength of hard materials
- Micromechanics of surface modified metastable stainless steels
- Surface modification of zirconia dental implants for cell instructive and antibacterial surfaces
- Additive manufacturing of cemented carbides: testing length-scale considerations
- Focused ion beam tomography and small-scale mechanical properties of multiphase materials
- Experimental evaluation and modelling of micromechanical behavior and failure mechanisms of ceramic-metal composites: hard metals, cermets and coated PcBN
- Biocompatible shape memory alloys produced by ink writing
- Simulation and rapid testing methodologies for assessing mechanical behavior of structural materials

FOR MORE INFORMATION

Prof. Luis Llanes,
luis.miguel.llanes@upc.edu

WHAT/WHICH/HOW

HOW to Deal with Wildfire Threat?

By Prof. Eulàlia Planas (CERTEC, Dept. Chemical Engineering, EEBE-CDB)

Fires affecting the wildland-urban interface (WUI) communities have increased rapidly over the past few decades, both in frequency and severity. The number of structures lost each year has increased significantly worldwide. When urban settlements are exposed to extreme wildfire conditions, many homes can ignite simultaneously, completely overwhelming firefighters' ability to cope with the situation, thus reducing the fire protection effectiveness. This has led to a growing need for self-protection and therefore to the creation of fire-adapted communities, which can safely coexist with wildfires. But how can we better protect our houses? To answer this question we should analyze why houses burn in the first place.

It is clear that if your house is made of wood (a common situation in the USA) it will easily ignite if firebrands or the fire front reach the house. However, in Europe houses are mainly built with non-burnable materials, so why do they still burn?

Looking at past WUI fires, we can see that the main reason is the presence of combustible elements around the house (e.g., ornamental vegetation, fences, sheds, garden furniture and other materials), which are responsible for the onset of combustion near the house, and often lead to the fire entering through holes in the structure or by breaking windows.

Once the fire enters into a house, the probability of complete destruction is high because settlements are often evacuated and firefighters are mainly devoted to ensure people safety and wildfire control and extinction.

At the EEBE, **CERTEC** group (Center for Technological Risk Studies) is actively working on providing tools for homeowners and policy makers to increase awareness and preparedness, and to reduce vulnerability in case of wildfires.

For instance, this year CERTEC researchers have developed *a Vulnerability Assessment Tool* (VAT) that will allow homeowners to analyze and reduce the vulnerability of their property in case of a wildfire.

FURTHER READING ON WILDFIRE THREATS

Vacca, P., Caballera, D., **Pastor, E.**, & **Planas, E.**, "WUI fire risk mitigation in Europe: A performance-based design approach at home-owner level", ***Journal of Safety Science and Resilience*** 1, 97 (2020)

SCIENCE & CINEMA

The **Science & Cinema** series, *hibernated* during the long pandemic, resumed in February 2022 with the 6th Edition. The series is aimed at analyzing and reviewing scientific and technological aspects used in recent movies and TV series.

In this edition, **Prof. Raúl Benítez** (ANCORA) delighted the audience with a highly stimulating conference entitled **"Can a Human Fall in Love with an Algorithm? Artificial Intelligences in the Movies and TV Series"**.

NEW RESEARCH FACILITIES

The UPC Hydrogen Laboratory and a green hydrogen production plant are nearing completion at the Campus Diagonal-Besòs. These cutting-edge facilities will advance research and innovation in hydrogen technologies, a key energy carrier in the transition to decarbonization of the energy sector, support the industrial sector, and enable cutting-edge academic activities

Located on the third floor of building C, at the Campus Diagonal-Besòs, the new UPC **Hydrogen Laboratory (H2-lab)** spans 340 m^2, and the first phase of construction works is set to be completed by summer 2023. This hydrogen living lab will provide technical support, benchmarking, and durability testing to the industry, develop new hydrogen-based technologies, and showcase hydrogen technology to both industrial and academic sectors.

The laboratory will have its own microgrid to optimize the consumption and production of hydrogen and electricity. The hydrogen and electricity used in the UPC Hydrogen Laboratory will be produced locally, sustainably, and modularly, from a green hydrogen production plant installed on the rooftop of building C. The first phase of the production plant is designed to generate more than 12 kW of electrical peak power with photovoltaic solar panels, with a hydrogen production of 3 Nm^3/h and 5 kW of electrical power for the laboratory's microgrid through PEM fuel cells. The final phase of construction will increase production to 24 Nm^3/h of hydrogen with a storage capacity of 36 kg at 350 bar pressure.

The testing laboratory infrastructure consists of:
* 4 test stations for smaller size equipment, of the order of watts

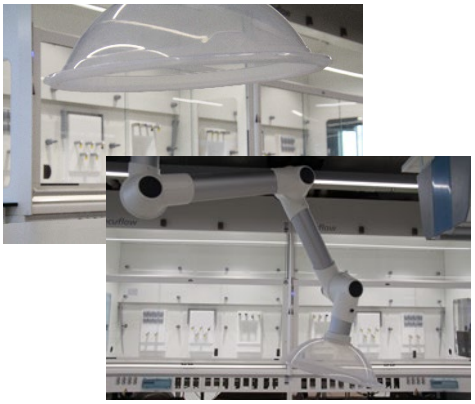
* 4 test stations for medium size equipment, up to 1 kW

* 4 test stations for medium/large size equipment up to 10 kW each

* 1 environmental chamber of 3x3 m^2 to test automotive systems, with a maximum power of 100 kW

The hydrogen required to carry out the experiments in the laboratory will be produced in the production plant located on the rooftop. The research lines conducted in the laboratory will comprise the whole hydrogen value chain, including production, compression and transport, storage, and final application of hydrogen.

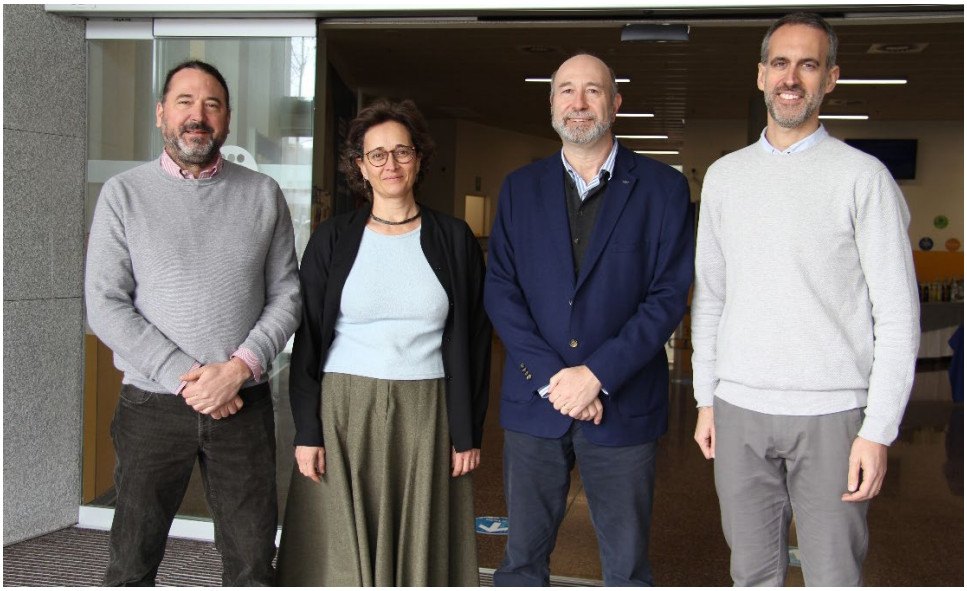
The unique infrastructure of the UPC Hydrogen Laboratory received more than one million euros of funds from the European Regional Development Funds (FEDER). In recent years, the UPC has obtained around 6 million euros in funding for projects related to hydrogen technologies.



The Specific Center for Hydrogen Research of the UPC (CER-H2) brings together the University's research activities in this area, with more than 40 researchers from nine research groups.

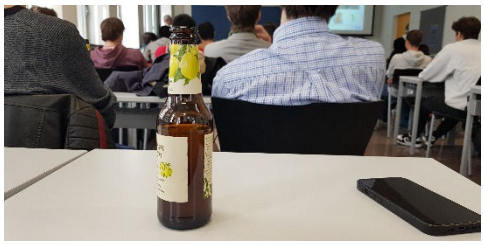
It is a reference center that offers a wide range of technical specialists and research capacities, enabling exploration of novel and state-of-the-art innovations in this field: from the production of green hydrogen or blue hydrogen through combining the absorption of carbon emissions, to storage, distribution, and final uses in industry or transport.

The decarbonization of industry and transport is one of the key challenges of hydrogen technologies in the coming years. Some of CER-H2's innovative projects to advance this goal focus on developing new metal hydride hydrogen storage systems, transforming it into synthetic liquid fuels as a zero-emission fuel for aircraft, creating bimetallic catalysts for efficient production of green and blue hydrogen, designing hydrogen fuel cells for hybrid electric vehicles, or creating intelligent hydrogen combustion systems to decarbonize the glass, cement, steel, and ceramics industries. The use of green hydrogen as a feedstock chemical for the manufacture of ammonia is also being studied, either to be used as fertilizer or as a fuel for maritime transport.



RESEARCH BEER






A new research initiative, co-organized by **UPC's Libraries Unit and EEBE's Research Sub-directorate,** aimed at popularizing the multidisciplinary research activity conducted at CDB, was launched in April 2022.

In each session, two speakers, from two different research groups explain, provide an informal overview of the main research interests of their groups, suggesting cutting-edge scientific topics for students willing to do a research internship (or planning already a research-based, Final Degree/Master Project) in one of CDB's research groups.

The students, who can enjoy a beer or a soft drink during the presentations, are invited to formulate questions to the speakers at the end of the session, in a highly relaxed atmosphere. **Prof. Josep Lluís Tamarit (GCM) and Prof. Antonio Travieso (TECNOFAB)** were the speakers of the first *Research Beer*.

STAR WARS @ CDB


On May 2022, the Campus Diagonal-Besòs hosted a **Star Wars day,** a special event aimed at discussing the scientific accuracy of this popular saga.

Three CDB researchers, **Prof. Luis Carlos Pardo (CDB), Prof. Emilio Jiménez (CIEFMA),** and **Prof. Jordi José (GAA),** discussed the odds to survive freezing in carbonite, the feasibility of light sabers, the existence of circumbinary planets, or the mysteries of dark energy, under the threatening presence of Darth Vader... The event received extensive media coverage.


AWARDS, GRANTS, & EVENTS

PhD Theses Defended

Vitor Bonamigo (Advisor: Alvaro Meneguzzi/ Elaine Armelin, IMEM-BRT), "Zirconium oxide conversion coating and biobased organic coatings for aluminum protection" (Jan/2022)

German A. Pérez (Advisor: Jordi Puiggalí/ Luis J. del Valle, PSEP), "Application of ultrasound in twin-screw extrusion and microinjection molding: improvements of properties of processed materials and nanocomposites" (Feb/2022)

Mar Bonany (Advisor: Montserrat Español/ Maria Pau Ginebra, BBT), "Nanotechnology-based Approaches for Bone Tissue Engineering" (Mar/2022)

Ana Baldrich (Advisor: Josep Coll/Francisco J. Llovera), "Tecnologia BIM 5D. Noves tècniques per a un nou model arquitectònic" (Mar/2022)

Jéssica Fernández (Advisor: José M. Manero/ Francisco J. Peña, BBT), "Modelo sistemático del proceso proyectual para una ingeniería que diseña mediante materiales avanzados" (Mar/2022)

Jordi Sans (Advisor: Carlos Aleman/Pau Turón, IMEM-BRT), "Design of catalysts based on hydroxyapatite for carbon and nitrogen fixation" (Apr/2022)

Jaroslaw Serafin (Advisor: Luis Carlos Pardo/ Jordi Llorca, GCM, NEMEN), "Titanium dioxide and nanoshaped ceria for solar hydrogen production" (Apr/2022)

Hamidreza Enshaei (Advisor: Nuria Saperas/ Carlos Alemán, IMEM-BRT, eb-POLICOM), "Biomedical Applications of Hybrid Polymer-Based materials" (Apr/2022)

Seyed R. Aghazadeh (Advisor: Herminio Martinez, EPIC), "Timed array antenna system: application to wideband and ultra-wideband beamforming receivers" (May/2022)

Flavio Palmieri (Román Gomis/Pablo Laguna, B2SLab), "Serum Potassium Concentration Monitoring by ECG Time Warping Analysis on the T wave" (May/2022)

Mohamed O. Salem (Advisor: Jose Placidi/ Zacharie Jehl, MNT-Solar), "Wide bandgap chalcogenide thin films onto transparent substrates" (Jun/2022)

Gerard Rubí-Sans (Advisor: Elisabet Engel/ Miguel Angel Mateos, IMEM-BRT), "Development of an in vitro three-dimensional colorectal cancer model using cell-derived extracellular matrices" (Jun/2022)

Miguel Mateu-Sanz (Advisor: Juan Tornin/ Cristina Canal, BBT), "Cold Plasma-Derived Oxidative Stress for Osteosarcoma Therapy" (Jun/2022)

Carlos A. Alfaro (Advisor: Ramon Guzman/ Jose L. Garcia de Vicuña, SEPIC), "Una nueva perspectiva del modelado y control de microrredes eléctricas y convertidores de potencia" (Jun/2022)

Rosó Baltà (Advisor: Marta Peña/Noelia Olmedo, SOC-STEM), "L'experiència acadèmica i el benestar de l'estudiantat en situació de risc en estudis STEM" (Jun/2022)

Yolanda Castillo-Escario (Advisor: Raimon Jané, BIOSPIN), "Biomedical signal interpretation and smartphone sensors for the assessment of trunk function and sleep disorders in patients with spinal cord injury" (Jun/2022)

New Research Grants

EEBE 3DDAY - 3D Printing Fair. Motivating High-School Students from University, MICINN, FCT-20-15915 (2021-2022), PI: J.A. Travieso (TECNOFAB)

BIOMATDB: Advanced Database for Biomaterials with Data Analysis and Visualisation Tools extended by a Marketplace with Digital Advisors, EU, HORIZON-CL4-2021-RESILIENCE-01-25 (2022-2024), PI: M.P. Ginebra (BBT)

RESPO X: Revolution of E-Skills with Participatory Online eXpert system, EU, 2021-1-SI01-KA2020-HED-000027626 (2022-2023), PI: C. Canal (BBT)

Telerehabilitation for people doubly vulnerable, CCD-UPC, 2022-C002 (2022-2023), PI: G. Serrancolí (InSup)

CaPONE: 3D printing calcium phosphates for osteoinduction in bone regenerative applications, MICINN, PCI2021-122079-2B (2022-2024), PI: M.P. Ginebra (BBT)

Cronos and Atenea (development assessment of a mobile application for post-stroke subjects), Indra/Universia Foundation (2022-2023), PI: G. Serrancolí (InSup)

Research and International Networking on Emerging Inorganic Chalcogenides for Photovoltaics (RENEW-PV), COST, CA21148 (2022-2026), UPC's PI: Edgardo Saucedo (MNT-Solar)

Evaluation of non-invasive indices for respiratory monitoring, focusing on the applicability at home, IMEC, OPP-18881 (2022-2023), UPC's PI: Raimon Jané (BIOSPIN)

Awards

Prof. Lluís Jofre (GReCEF) was awarded with an ERC Starting Grant (2022-2027)

Prof. Maria Lluïsa Maspoch (e-PLASCOM) was awarded with the 2022 Medal of the Grupo Español de Fractura, Sociedad Española de Integridad Estructural

Nerea García de Albéniz (Advisor: Joan Josep Roa, CIEFMA/Carles Mas, BBT) was awarded with the *Best Master Thesis Presentation* by SOCIEMAT, Madrid, 2022

David Piñera (Advisor: José M. Manero/Judit Buxadera, BBT) and **Miguel Mateu** (Advisor: C. Canal, BBT) qualified first and second in the *#HiloTesis* competition at UPC Doctorate School, 2022

María de Nicolás Morrillas (Advisor: Elena Gordo/Luis M. Llanes, CIEFMA) got the *SECV-Younexa Thesis Award* for the best thesis defended in a Spanish university

New Postdoctoral Fellows

Eva González Flo (GEMMA, Margarita Salas fellow)

Carlos Escorihuela (PTP-GlaDyM, Margarita Salas fellow)

International Events, Meetings & Conferences at CDB

EEIGM International Conference on Advanced Materials Research (June/2022; e-PLASCOM, CIEFMA, BBT, PROCOMAME)

Bridging the gap between fire ecology and fire behaviour, Summer School (June/2022; CERTEC)

CAMPUS DIAGONAL-BESOS
Research Newsletter

Edited by:
Sots-Direcció de Recerca, EEBE
sd.recerca.eebe@upc.edu

Universitat Politècnica de Catalunya (UPC)
Av. Eduard Maristany, 16
08019 Barcelona

UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH
Campus Diagonal-Besòs