EXCELENCIA MARÍA DE MAEZTU

institute IMDEA energy

www.energy.imdea.org

annual report

2022

research for a sustainable energy development

David Serrano
Director of IMDEA Energy
Móstoles, October 2023

annual report
2022
www.energy.imdea.org

I have the pleasure to introduce the 2022 Annual Report of the IMDEA Energy Institute. Fortunately, this year has seen the end of the main effects of the COVID19 pandemic, which has allowed us to recover practically normal working conditions and activities, as reflected in many of the indicators of the centre.

In terms of staff, there has been an important increase in the number of workers reaching a value of 148 personnel by the end of 2022. In addition, 54 students have collaborated with the IMDEA Energy Institute and we have hosted 28 visiting researchers. The last figure denotes the high interest that our research lines and infrastructures are raising in other institutions.

The participation in scientific events has been also increased, even overpassing the typical pre-pandemic values, with a total of 164 communications. In the case, of scientific publications we have been able to maintain the high-quality standards of the journals publishing our contributions, although with a slight decrease in the number of articles in comparison with 2020 and 2021. As in most institutions, this has been probably related to an over-productivity of publications during the pandemic when the experimental activities were strongly limited to protect the health of the workers.

During 2022, the total number of active projects and contracts with industry has reached a record value of 108. In particular, I would like to highlight the great success achieved in EU calls, which has led to the development of 30 international research projects. This represents a remarkable merit due to both the high competitiveness existing in the EU programs and the possibility of reinforcing our collaborations with foreign institutions. This fact, together with the new opportunities of getting additional resources from resilience/recovery programs, explain the strong increase produced in terms of executed external funding (6.68 M€).

In summary, I am glad and proud to state that the IMDEA Energy Institute has been able to overcome with success the difficult conditions derived from the COVID19 pandemic and it is facing now the future with optimism thanks to extraordinary commitment of all the staff: researchers, technicians and administration/management personnel.

words from the director...

annual report 2022

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contents

contents

about us

The IMDEA Energy Institute is a research centre created by the Regional Government of Comunidad de Madrid in the year 2006 that operates as a non-profit foundation. The Scientific Programme of the IMDEA Energy Institute aims at contributing to the future establishment of a sustainable and decarbonised energy system, economically competitive and securing energy supply.

The IMDEA Energy Institute is committed with having a significant impact on R&D energy challenges by bringing together high quality researchers, providing them with excellent infrastructures and resources, and promoting their close collaboration with the industrial sector.

strategic framework

The strategic framework guiding the R&D priorities of IMDEA Energy is based on goals and priorities established by energy plans and research programmes at regional, national and international levels; such as the UN's Sustainable Development Goals, the Grean Deal for Europe, the Clean Energy Transition Partnership, new European Strategic Energy Technology (SET) Plan with the selected targets for 2030 and 2050; the European Research Programme Horizon Europe; the National Integrated Plan on Energy and Climate; the Spanish Strategy on Science, Technology and Innovation; technology roadmaps of recognized international institutions and associations and implementation agreements of the International Energy Agency.

The building and laboratories of IMDEA Energy Institute are located at the Technological Park of Mostoles, Madrid, over a land of 10,000 m^2.

Research topics

- Production of sustainable fuels
- Concentrated solar power
- Energy storage
- Smart management of electricity demand
- Energy systems with enhanced efficiency
- Valorization of CO_2 emissions
- Techno-economic evaluation of energy systems

The excellent R&D capabilities and the first class research facilities make IMDEA Energy the ideal partner for companies, research centres and universities

The building has been awarded with the prestigious LEED Gold Certificate and the A Energy Efficiency Certificate.

IMDEA Energy
Unit of Excellence "María de Maeztu"

The commitment to excellence in attracting human resources, the selection of cutting-edge lines of research, the provision of top-level scientific equipment and, especially, the high quality and impact of IMDEA Energy's scientific contributions was recognized in 2020 with the award of accreditation as "María de Maeztu Unit of Excellence" (MdM), granted by the Ministry of Science and Innovation.

Unit of Excellence "María de Maeztu"

The funding raised has made it possible to strengthen the strategic research program at IMDEA Energy, designed for the period 2020-2023, in the field of:

- sustainable transport through electromobility,
- the production of hydrogen and solar fuels,
- the production of fourth-generation fuels from wastes,

and contributed to the consolidation of scientific capacities, leadership and talent attraction. All the indicators of the institute in terms of attracting new projects, show a significant increase in the participation of these topics.

The governance model of MdM Excellence Unit and the supervision activities have been fully operational in 2022 through the coordination of an Executive Committee and specific Committees like:

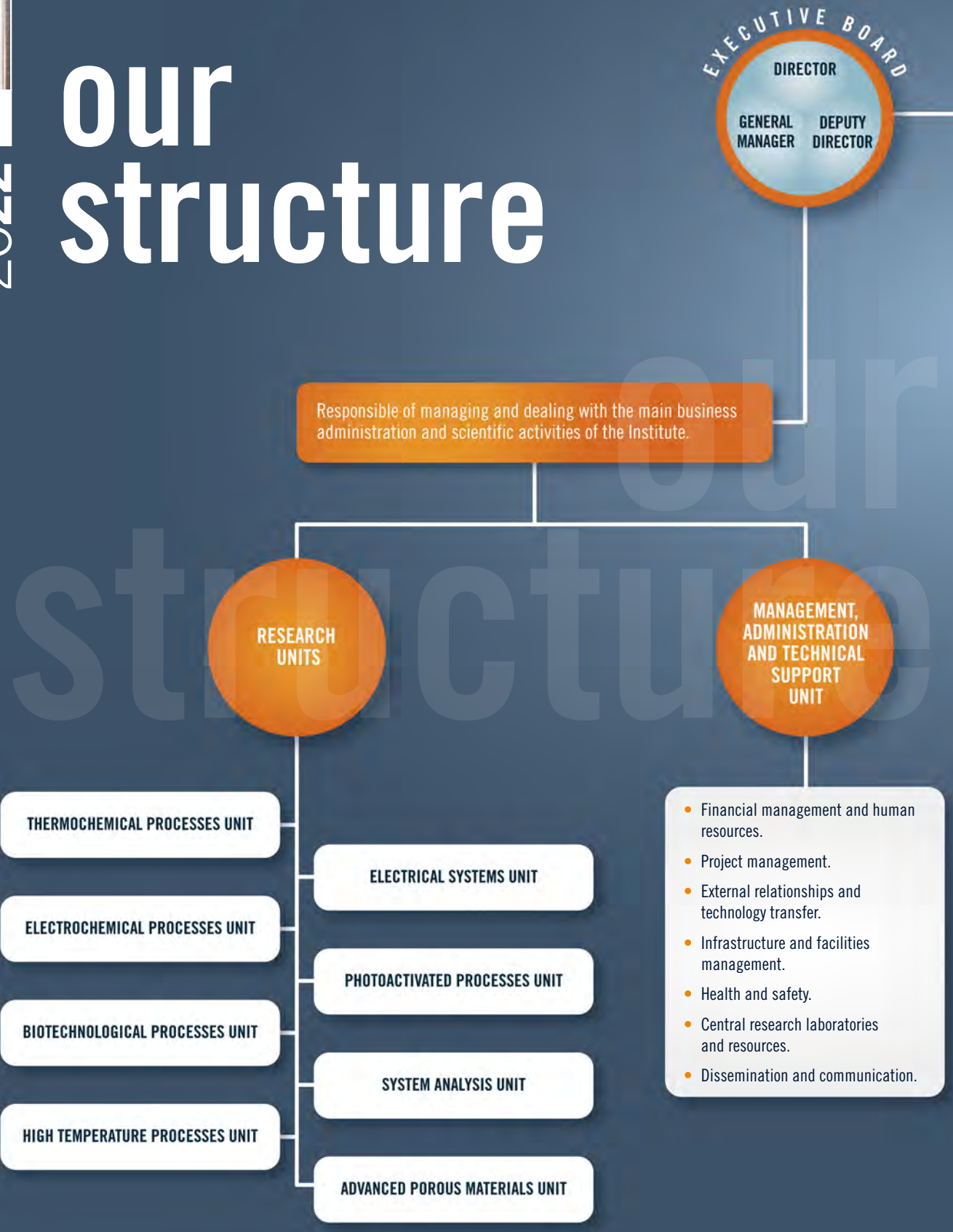
- Training and Mobility
- Exploitation and Dissemination
- Internationalization
- Human Resources

As a result of this supervision, the Institute has become more systematic in monitoring training activities, mobility, technology transfer, internationalization of activities, application of the HRS4R seal and gender equality policies.

It should be noted that through the funding of the MdM Excellence Unit, IMDEA Energy hosted distinguished researchers throughout 2022, with the aim of promoting new international collaborations. On the other hand, the two internal calls launched within the framework of the mobility program gave rise to seven stays of predoctoral and postdoctoral researchers to recognized international institutions.

The performance of the MdM Excellence Unit has been very positively assessed by the Scientific Council of IMDEA Energy and also received the highest rating during the mid-term review meeting held in November 2022 by the Scientific Monitoring Committee of international experts selected by the Spanish Research Agency.

our structure



BOARD OF TRUSTEES

The highest decision-making body responsible of the government, representation and administration, aiming to ensure the achievement of the established goals.

PRESIDENT

Prof. Dr. Martin Kaltschmitt
Institute for Environmental Engineering and Energy Economics
Hamburg University of Technology, Germany

VICE-PRESIDENT

Mr. Enrique Ossorio
Regional Minister of Science, Universities and Innovation
Comunidad de Madrid, Spain

REGIONAL ADMINISTRATION REPRESENTATIVES

Mr. Fidel Rodriguez
Vice Regional Minister of Universities, Science and Research
Comunidad de Madrid, Spain

Mr. Ana Cremades
General Director of Research and Technological Innovation
Comunidad de Madrid, Spain

Mrs. Ricardo Díaz
General Director of Universities and Artistic Education
Comunidad de Madrid, Spain

Mrs. Bárbara Fernández-Revuelta
Deputy General Director for Research
Comunidad de Madrid, Spain

Mr. Mariano González
Vice Regional Minister of Environment and Agriculture
Comunidad de Madrid, Spain

Mr. José de la Sota
Scientific Coordinator
Fundación para el Conocimiento madri+d
Comunidad de Madrid, Spain

INSTITUTIONAL TRUSTEES

Prof. Dr. José Antonio Calles
Rey Juan Carlos University, Spain

Dr. Yolanda Benito
Centre for Energy, Environmental and Technological Researchs, CIEMAT, Spain

Prof. Dr. José Ramón Ares
Autónoma University of Madrid, Spain

Prof. Dr. Carlos del Cañizo
Polytechnic University of Madrid, Spain

IMDEAS TRUSTEES

Prof. Dr. Arturo Romero
Complutense University of Madrid, Spain
(appointed by IMDEA Water)

Prof. Dr. Paula Sánchez
Castilla – La Mancha University, Spain
(appointed by IMDEA Materials)

SCIENTIFIC TRUSTEES

Prof. Dr. Antonio Monzón
University of Zaragoza, Spain

Dr. Francisco Girio
National Laboratory of Energy and Geology Portugal

Prof. Dr. Manuel Berenguel
University of Almería, Spain

Dr. Rufino Navarro
Institute of Catalysis and Petrochemistry, CSIC Spain

EXPERT TRUSTEES

Dr. José Jacinto Monge
Rey Juan Carlos University, Spain

Mr. Juan Manuel García
AENOR, Spain

COMPANIES TRUSTEES

Ms. Adriana Orejas
Repsol, S.A Spain

Ms. Pilar González
Iberdrola S.A., Spain

Mr. Vicente Alvarado
Empresarios Agrupados Internacional S.A. Spain

SECRETARY

Mr. Alejandro Blázquez
Advisoring Tercer Sector, Spain

SCIENTIFIC COUNCIL

Advisory body responsible of the elaboration of the scientific programme and of the establishment of the goals to be achieved by periods of four years as well as of the assessment of the annual performance.

Prof. Dr. Martin Kaltschmitt
Institute for Environmental Engineering and Energy Economics
Hamburg University of Technology, Germany

Prof. Dr. Antonio Monzón
Director of the Chemical Engineering and Environmental Technologies Department
University of Zaragoza, Spain

Dr. Carmen M. Rangel
Research Coordinator
National Laboratory of Energy and Geology, Portugal

Prof. Dr. Aldo Steinfeld
Full Professor of Renewable Energy Carriers, ETH Zurich, Switzerland

Dr. Francisco Girio
Coordinator of the Bioenergy Unit
National Laboratory of Energy and Geology, Portugal

Prof. Dr. Michael Froeba
Full Professor
Department of Applied Inorganic Chemistry
University of Hamburg, Germany

Prof. Dr. Manuel Berenguel
Full Professor
Department of Computing Sciences
University of Almería, Spain

Dr. José A. Olivares
Los Alamos National Laboratory, USA

Dr. Rufino Navarro
Scientist
Institute of Catalysis and Petrochemistry, CSIC, Spain

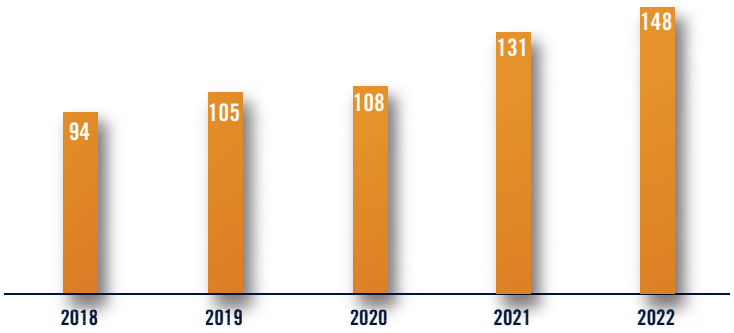
Prof. Dr. Gonzalo Guillén-Gosálbez
Professor of the Chemical and Bioengineering Institute
ETH Zurich, Switzerland

in figures

human resources

IMDEA Energy is firmly committed to the objective of providing the Institute with a world-class staff and prestigious researchers. Accordingly, the Institute is developing from the beginning a selective process for the recruitment of scientists.

Human resources evolution



Human resources distribution by the 31st of December of 2022

- 28 Researcher Professor / Senior / Assistant researcher 19%
- 26 Posdoctoral researcher 18%
- 43 Predoctoral / in training 29%
- 34 Technician 23%
- 17 Management and administration 11%

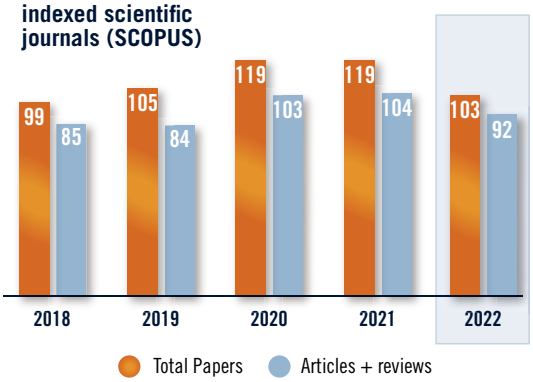
54 students in connection with the IMDEA Energy Institute in 2022

Mobility actions in 2022

13 Secondments of IMDEA Energy researchers
28 visiting researchers

R&D results

Publications in indexed scientific journals (SCOPUS)



2022

111 congres communications,
12 invited conferences
and 41 poster communications.

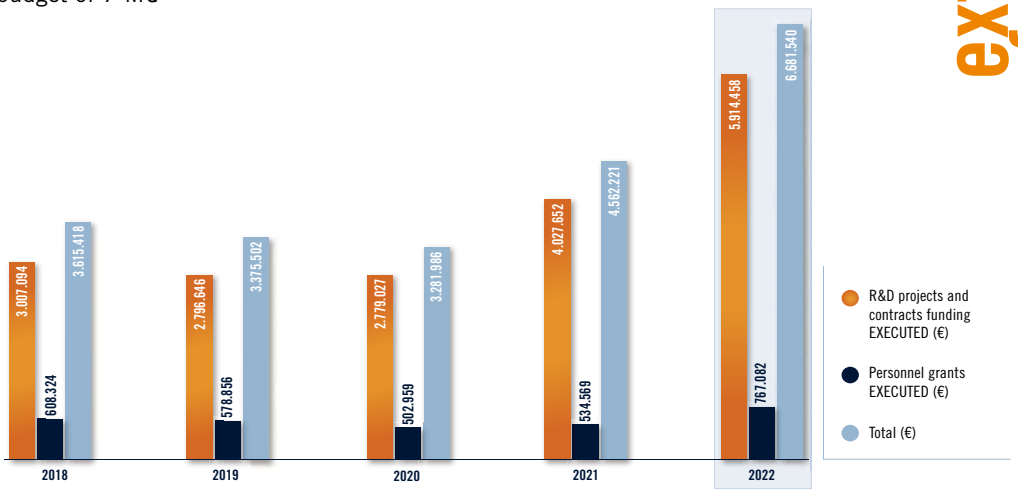
9 Ph.D. thesis defended.

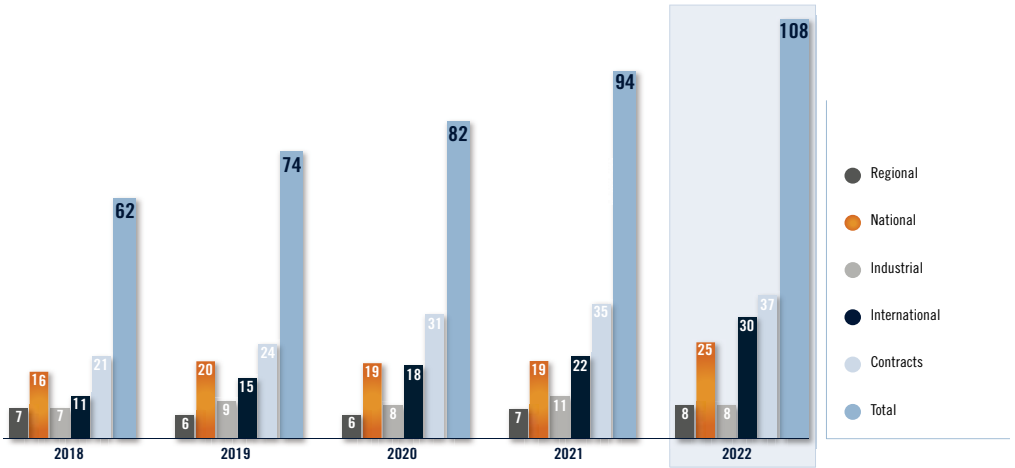
4 new patents submitted.

external funding

The portfolio of the Institute research projects is characterized by its diversity in terms of funding source, being remarkable the high degree of collaboration with industries and research institutions of the energy sector.

Along the year 2022 the Institute was hosting two Consolidator Grants, two prof of concept and one Advanced Grant awarded by the European Research Council with a total budget of 7 M€





2022

- National Projects 1.386.587€ 23%
- Industrial Projects 640.871€ 11%
- Regional Projects 1.396.138€ 24%
- Contracts with companies 536.163€ 9%
- International Projects 1.954.699€ 33%

2022

- 21 National personnel grants 338.795€ 44%
- 25 Regional personnel grants 204.210€ 27%
- 4 International personnel grants 224.077€ 29%

in figures

cooperation

Cooperation with industry, research centers and academia in R&D and innovation is one of the key objectives of the IMDEA Energy Institute. In 2022, active cooperation was developed with more than 29 companies from Spain, France, Germany, Belgium, Greece, UK, Switzerland, Austria, Japan and Qatar. Effective collaboration took place in funded collaborative projects with more than 60 Universities and R&D institutions from Spain, France, Germany, Italy, Belgium.

COOPERATION WITH COMPANIES 2022

AENOR
appa renovables
Canal de Isabel II
CEDRION
alju
DAM Depuración de Aguas del Mediterráneo
ZEMPER
E22
GORD
ingelia
KEYSIGHT TECHNOLOGIES
MASTER BATTERY
Mercedes-Benz
EvoEnzyme Customized Biocatalysts
FCC Aqualia
persea biotechnology
Galea
REPSOL
Sacyr
ISC3
Naturgy
odqa
PLEIONE
SECURITAS Direct
SEENSO
SIEMENS Gamesa RENEWABLE ENERGY
synhelion
INNOVATION TREE

institute IMdea energy

COOPERATION WITH RESEARCH INSTITUTIONS 2022

COOPERATION WITH UNIVERSITIES 2022

networking

The IMDEA Energy Institute considers its participation in associations, technology platforms, expert groups and associations in the energy sector as a very important activity, materializing its membership in 42 national and 12 international associations and networks. This is an essential point to increase the external visibility of the Institute, establish new links with companies and research organizations and obtain updated information on the initiatives that are planned and executed in the different fields of energy.

The following lists summarizes the main associations in which IMDEA Energy Institute has participated in 2022:

NATIONAL

AEBIG
AEDES
AEH2
AEPIBAL
ALINNE
BATTERYPLAT
Bioplat
E3TECH
CLUB ESPAÑOL DE LA ENERGÍA
enerTIC
feiQue
FOTOPLAT
FutuRed
gasnam
MADRID FORO EMPRESARIAL
materplat
M2F
PROTERMO SOLAR
pteco2
PTFE
RSEQ
Secartys
SECAT
SmartLivingPlat
Solar Concentra
SOMM EXCELLENCE ALLIANCE
SUSCHEM ES
SusPlast

INTERNATIONAL

Bio-based Industries Consortium
EUROPEAN BATTERY ALLIANCE EBA250
EERA
BATTERIES EUROPE
ETIP SNET
European Clean Hydrogen Alliance
Hydrogen Europe Research
ISES
IWA
SolarPACES
ASPIRE
Life Cycle Initiative

research lines

Energy storage coupled to renewable energy and transport

Technologies and systems for the storage of energy enabling the increased penetration of renewable energies and the distributed generation of electricity.

Electrochemical energy storage

- Nanostructured materials for electrochemical capacitors and advanced batteries.
- Electrochemical capacitors with high energy density.
- Low-cost redox flow batteries.
- Development of testing protocols for batteries and supercapacitors.

Thermal and thermochemical energy storage

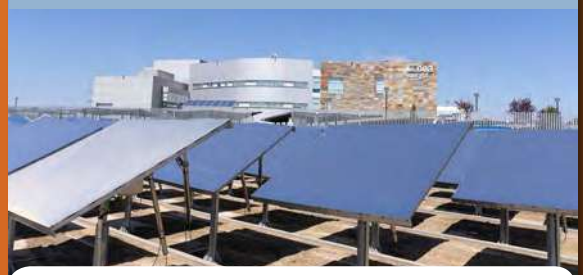
- Phase change materials (PCM) with macro-encapsulated structures and storage systems for solar thermal power plants and industrial waste heat recovery.
- Thermal energy storage with gas/solid systems in thermoclines and moving bed exchangers.
- Thermochemical storage systems making use of high temperature redox reactions.

Production of sustainable fuels

Biofuels, alternative fuels and bioproducts aiming at the decarbonisation of the transport sector.

- Biofuels and bio-products from microalgae carbohydrates.
- Biofuels via fast pyrolysis or catalytic pyrolysis of lignocellulose biomass and residues.
- Upgrading of bio-oils by catalytic hydrodeoxygenation processes.
- Development of CO_2-free fuels by solar driven thermochemical cycles.
- Solar fuels production by artificial photosynthesis.
- Valorization and dehalogenation of plastic wastes.

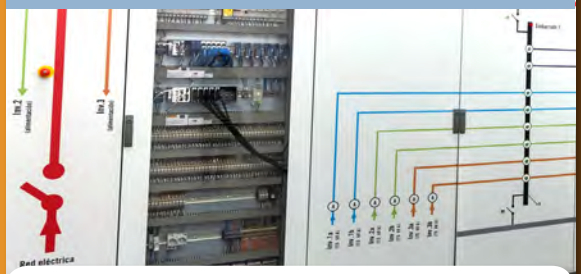
Concentrated solar power



Efficient and dispatchable solar concentrating technologies for power generation, industrial process heat and production of solar fuels and chemicals.

- Optical design of modular schemes for solar thermal power plants.
- Solar receivers and reactors for new heat transfer fluids.
- Solar technologies for fuels and chemicals production with CSP.
- Increasing solar-to-electricity conversion efficiency and dispatchability.

Smart management of electricity demand



Management, reliability and stability aspects of future electricity networks and new algorithms for demand management and renewable integration.

- Demand forecasting and network management algorithms.
- Reliability of power systems with high penetration of renewables.
- Building and residential demand modelling.
- Distribution network applications and services.
- Power electronics and power interfaces.

Energy systems with enhanced efficiency

Technologies and strategies for efficient end-use of energy in buildings, industrial processes and environmental applications.

- Control systems and algorithms for energy efficiency in industrial applications.
- Capacitive deionization for energy efficient water treatment.
- Solar heat for medium and high temperature industrial processes.
- Integration of renewable energy technologies in buildings.

Valorization of CO_2 emissions

CO_2 valorization routes by its transformation into high-demand valuable products.

- CO_2 photoreduction for energy storage and fuels production.
- Multifunctional materials and solar reactors for photoactivated processes.
- Thermo-catalytic routes for CO_2 transformation in industrial processes.

Techno-economic evaluation of energy systems

Sustainability assessment, optimisation of processes and modelling for energy planning.

- Process simulation and optimization.
- Life cycle management, sustainability and social aspects.
- System modelling and technology roadmapping.

research lines

scientific facilities

Instrumental Techniques

- Chemical characterization techniques: mass spectrometry; gas/mass chromatography; NOx chemiluminescence analyzer; pyrolyzer / gas chromatography- mass spectrometry (Py/GC-MS); elemental analysis ICP – OES; AOD decomposition system (calorimetric pump) and CHONS.
- Thermogravimetric analysis (TG-DTA) in an oxidising (air), inert (Ar) or reductive (10% H_2/Ar) atmosphere.
- Properties of solids: textural and chemisorption.
- X-ray diffraction with PDF structural analysis and controlled atmosphere chamber up to 900 °C and 10 bar.
- Spectroscopy: IR (DRIFT, ATR and VEEMAX), UV-vis-NIR, Raman and fluorescence.
- Thermal diffusivity determination.
- Microscopy: atomic force, SEM, FEG-SEM.
- Biotechnological characterisation techniques: GC, HPLC equipped with different columns and detectors (IR, MS, UV-VIS, HPAEC-PAD). Electrophoresis instrumentation for recombinant DNA technology, protein purification and analysis.
- Near-ambient pressure (NAP) XPS which allows the in-situ characterisation of photocatalytic processes under illumination at different gas atmospheres and pressures up to 25 mbar.

scientific facilities

Pilot Plants Facilities

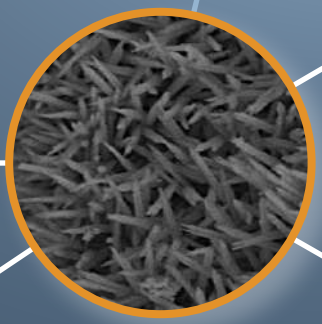
- High Flux Solar Simulator Kiran-42 with an electrical power of 42 kW that with the use of seven 6- kWe short-arc Xenon lamps is able to reach irradiances at the focal point near 4,000 kW/m^2 and a total power of 12 kW.
- Test bench of batteries for the programming of different test procedures and charge and discharge cycles. It allows analyzing the electrochemical devices performance, cyclability, aging and failure modes.
- Smart Grids Laboratory for the simulation of electrical systems operation, including the integration of renewable energies, storage systems and electric vehicle in order to get an efficient management of the energy resources.
- Pilot plant for the production of advanced biofuels via thermochemical transformations of biomass: catalytic pyrolysis and hydrodeoxygenation.
- Photobioreactors pilot plant which has been designed in order to compare and optimise the most common algae cultivation systems.
- Solar fuels photoreactor formed by a compound parabolic concentrator (CPC) coupled to a gas chromatograph.

Solar Field

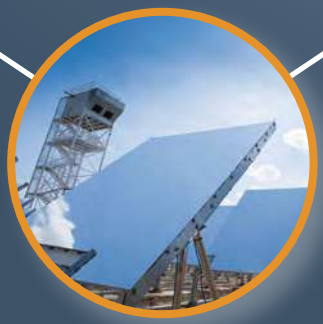
- Consisting of 169 heliostats, 3 m^2 each, with an experimental platform located on top of an18 m height tower. This facility allows testing receivers, reactors and materials up to 250 kW thermal power under irradiances above 2000 kW/m^2.

research units

Thermochemical Processes Unit



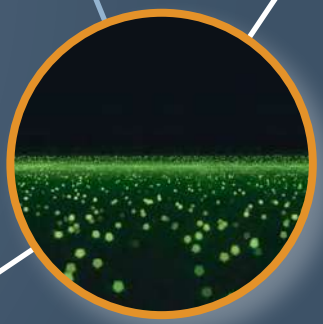
Electrochemical Processes Unit



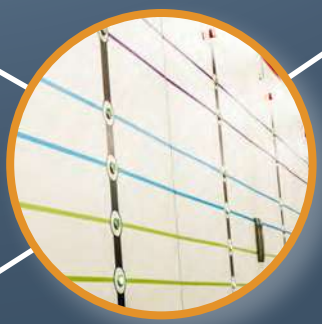
High Temperature Processes Unit

Biotechnological Processes Unit

System Analysis Unit



Photoactivated Processes Unit



Electrical Systems Unit

Advanced Porous Materials Unit

Thermochemical Processes Unit

Prof. Dr. David P. Serrano
Research Professor
Head of the Unit

Dr. Patricia Pizarro
Senior Researcher
(Associated)

Dr. Javier Fermoso
Senior Assistant
Researcher

Dr. Inés Moreno
Senior Assistant
Researcher
(Associated)

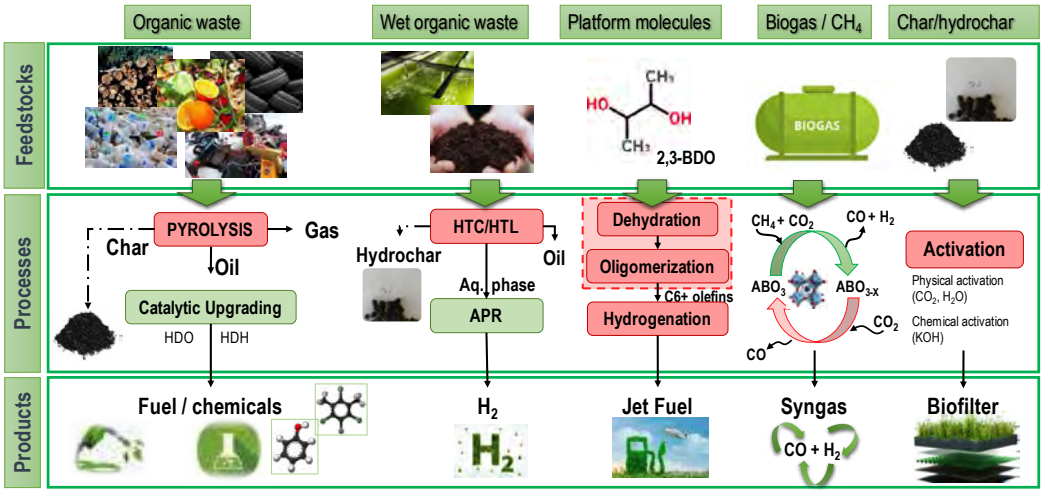
thermochemical

R&D Objectives

- Development of materials for application as catalysts and/or adsorbents in thermochemical processes.
- Valorisation of wastes of different origin (mainly biomass and plastics) by their conversion in fuels or chemical products of commercial interest.

Research lines

- Synthesis and advanced applications of dendritic zeolites.
- Conversion of residues not suitable for pyrolysis by other thermochemical routes.
- Dry reforming of biogas to hydrogen or synthesis gas by thermochemical cycles.
- Valorization of biochars and hydrochars for their application as biofilters for air decontamination (NOx) in urban environments.
- Conversion of organic solid waste (biomass, plastics, Organic Fraction of Municipal Solid Waste, etc.) into fuels or chemical products of interest through routes based on pyrolysis.



Relevant projects and networking

In 2022 the TCPU has participated in 13 research projects distributed in the following research lines: 10 about organic waste valorization; 2 about biofilters development from biochars and hydrochars, 1 about the synthesis and applications of dendritic zeolites. The Regional Government of Madrid supports 4 projects: BIOCHARFILT (Grant to attract young research talent), BIO3 (Program for R&D Activity between Research Groups of the Community of Madrid), the project MADRID + CIRCULAR and 1 industrial doctorate. The national government supports 6 research projects: REDEFINERY, 0-EMISION, ADBIOCAP, UPGRES and two new project started in 2022: CIRPLACAR and HYWARE.

In addition, the TCPU has been actively involved in three EU projects: NONTOX ending in 2022, the ERC Advanced Grant project TODENZE of Prof. David Serrano and started the new project BIOCTANE coordinated by IMDEA Energy on synergetic integration of biotechnology and thermochemical catalysis for the cascade conversion of organic waste to jet-fuel.

In addition, the Thermochemical Processes Unit (TCPU) participates in the Spanish Technological Platform of Biomass (BIOPLAT) and the Spanish Platform of Sustainable Chemistry (SUSCHEM).

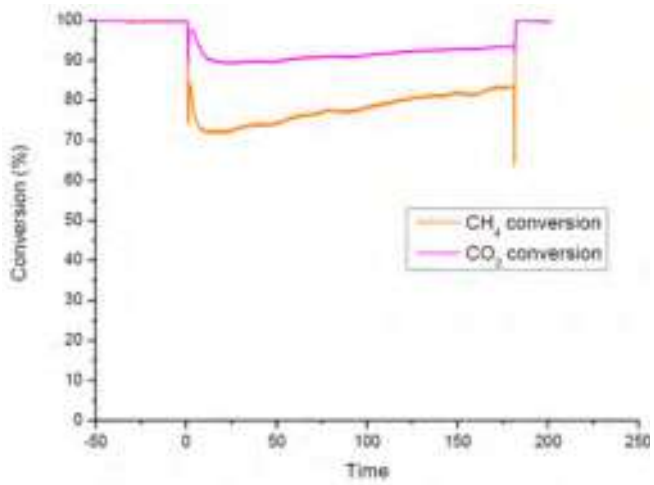
Scientific and technical results

Conversion of organic solid waste through pyrolysis-based and other routes

- A series of catalysts based on MFI zeolite have been prepared by impregnation of active phases, showing that a moderate increase in pressure is favoring the efficient elimination of oxygen in the bio-oil.
- A continuous reaction system has been developed to co-feed different liquids, such as oils or alcohols together with biomass wastes from different sources during thermal or catalytic pyrolysis reactions.
- In the recovery process of plastic wastes with a high halogen content, catalytic pyrolysis (PC) and hydrodehalogenation HDH catalysts, in tandem configuration, reduce the halogen content of pyrolysis oil to minimums that meet the specifications for their introduction in refineries.
- A new sub-line of research has been initiated based on the conversion of wastes not suitable for pyrolysis through other thermochemical routes, such as hydrothermal liquefaction (HTL) and hydrothermal carbonization (HTC).

Dry biogas reforming

- Different oxides or perovskites have been synthesized and characterized, being $La_{0.9}Sr_{0.1}Fe_{0.95}Ni_{0.05}O_3$ material selected for further studies. It has been proven that the co-feeding of CH_4 and CO_2 drastically improves the stability of the perovskite.

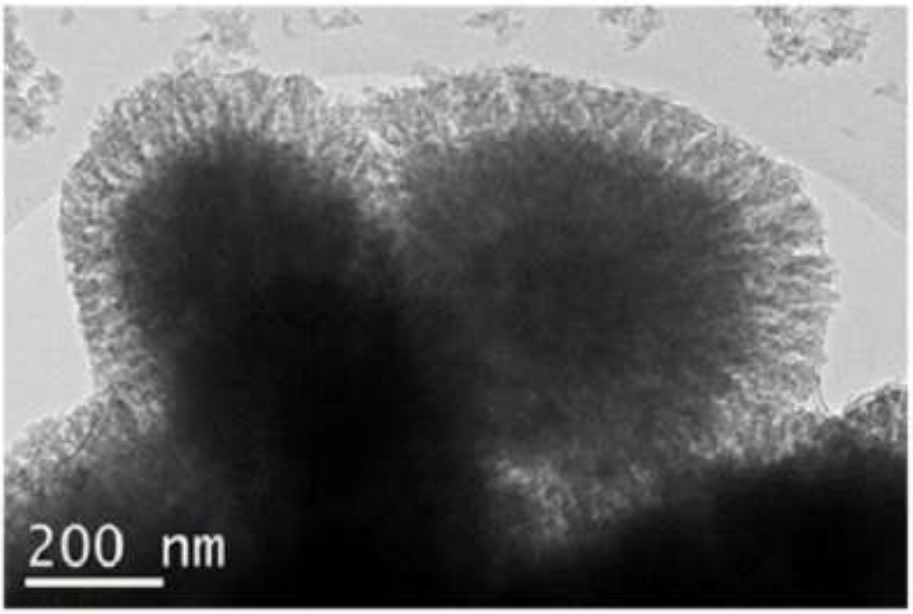


Valorization of hydrochars and/or pyrolysis biochars and their application in biofilters for the removal of pollutants (NOx, CO) in gaseous streams

- Activation tests of different biochars and hydrochars have continued, and their characterization has been completed. In addition, larger-scale batches have been prepared.
- Activated materials have been evaluated as CO and NO adsorbents at different concentrations and under different conditions of temperature and humidity.

Synthesis of dendritic zeolites

- The role of organosylanes in the development of the zeolite morphology has been analyzed.
- In the case of the ZSM-5 zeolite, the synthesis conditions were studied in detail to determine when the formation of a dendritic nanostructure occurs.
- A methodology has been established to measure accessible acidity to quantify the acid centers located on the external/mesoporous surface of the ZSM-5 zeolite.
- Vapour adsorption tests have been performed to determine the adsorption and diffusion properties of dendritic zeolites and their possible application for the removal of VOCs.



High Temperature Processes Unit

Dr. José González-Aguilar
Senior Researcher
Head of the Unit

Dr. Manuel Romero
Research Professor

high temperature

R&D Objectives

- Modular, efficient, dispatchable and cost-effective high temperature solar concentrating technologies for production of solar fuels and chemicals, industrial process heat and power generation.

Research lines

- Modular schemes of solar thermal systems for their integration into urban and industrial environments;
- Advanced solar receivers and reactors (pressurized, volumetric and particles) and heat exchangers.
- High temperature thermal storage (thermochemical, sensible and phase change).
- Synthesis of solar fuels and chemicals through solar and electrolytic processes at high temperature.
- Analysis of integration of solar energy in industrial processes, heat recovery and environmental impact (advanced thermodynamic cycles, water-energy nexus, glint and glare).

Relevant projects and networking

The High Temperature Processes Unit (HTPU) focuses its research on solar thermal technologies with special emphasis on applications involving high temperature and very high concentred sunlight. In 2022, HTPU maintained the coordination of this topic in the Comunidad de Madrid by the regional research programme ACES2030-CM (2019-2023). In addition, at regional level, within the Repsol HUB-MADRID+CIRCULAR, the HTPU started the development of new concepts for H_2 production via solar-driven dry reforming of biogas and high temperature electrolysis and started the coordination of a line of research on solarized SOEC at the GreenH2-CM project. It developed solar tower concentrating research at the national R&D project HECTOR. In terms of industrial cooperation, good examples are the solar heat with SEENSO Renoval; corona discharge devices for cooling in solar power plants and in vehicles with the company CEDRION and worth noting has been the continued collaboration with Synhelion and CEMEX on the production of solar clinker.

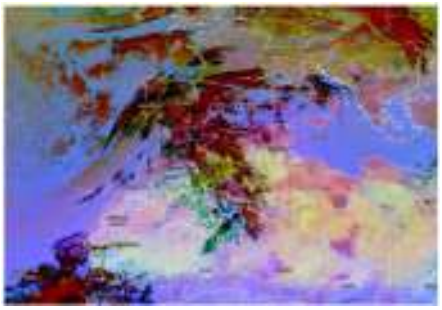
EU collaborations continued in the project FCH/JU PROMETEO on solar heat and power for SOE and in the H2020 SFERA III project (Solar Facilities for the European Research Area – Third Phase). Two new EU projects started in 2022, the project HE Sharp-sCO2 on the development of highly efficient Solar Hybrid Air-sCO2 Power Plants and the project SUNER-C Community and eco-system for accelerating the development of solar fuels and chemicals, where HTPU focuses on the solar thermochemical production route.

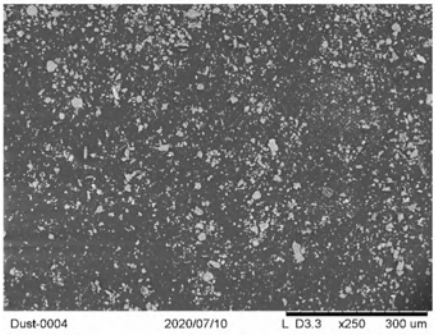
Besides HTPU participates in the Joint Programme on Concentrated Solar Power (EERA JP-CSP). In the national arena, HTPU is also involved in the Spanish technological platform on CSP (SolarConcentra) and the Working Group on Energy Storage (GIA), an initiative of the Spanish Ministry of Economy and Competitiveness, and participates in the IEA SolarPACES Task II. Dr. José González is member of the International Solar Energy Society (ISES) Board of Directors.

Scientific and technical results

Innovative modular concepts with minimum environmental impact

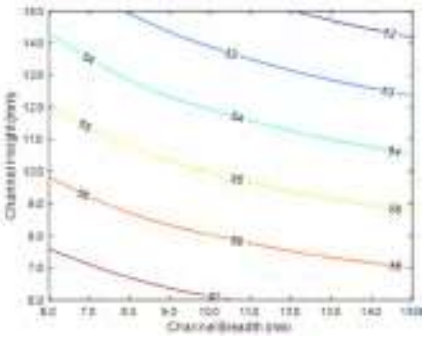
- Monitoring of soiling in the facets of the solar field providing insights on soiling in urban sites, combining daily measurements of the reflectivity on the facets and the soiling characterization of small samples.
- A methodology has been developed for the analysis of glare in point-focus solar concentration technologies based on image processing of pictures obtained by CCD and CMOS cameras, leading to optical designs of the solar tower to mitigate its visual impact.

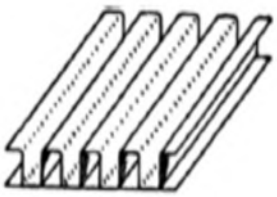




Solar receivers & new heat transfer fluid

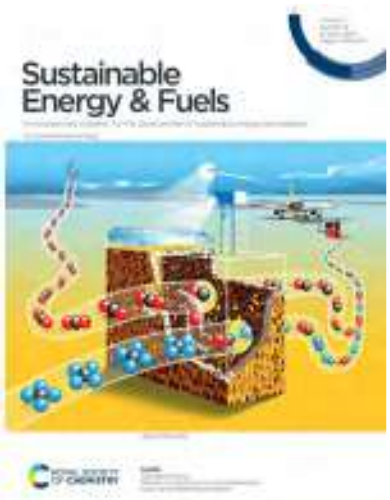
- The experimental analysis of various pressurized absorbers composed by flat rectangular fin structures and manufactured by 3D printing has been completed, resulting in the elaboration of guidelines for the development of a new concept of pressurized receiver.
- A test bench for aerothermal characterization of advanced heat exchangers using air pumps without moving parts based on corona-type electrical discharges has been completed. As result, a specific design for dry cooling towers in solar thermal power plants has been carried out.

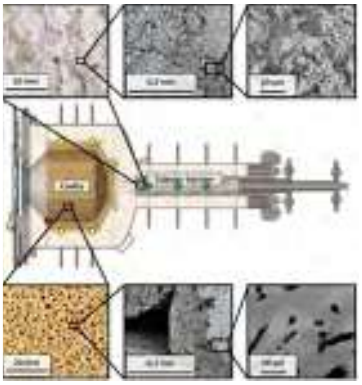




Energy storage & solar thermo-chemistry

- The milestone achieved on production of solar kerosene within the framework of the Sun-To-Liquid project has been published in Joule and received the 2022 Technological Award of IEA SolarPACES.
- The experimental campaign of a 10kW solar dry reformer through redox cycles in the solar tower installation achieved a peak CH_4 molar conversion of 70% and a peak H_2 selectivity of 68%.
- In thermochemical storage based on perovskites, the compound $CaMn_{0.9}Fe_{0.1}O3_{-\delta}$ demonstrated the complete reversibility of oxidation/reduction cycles and the structural integrity of the material between 500 and 1100 ºC with a thermal storage capacity of ~ 400 kWh/m^3.
- A manufacturing method for highly-porous (eco)ceramic materials using cotton-based materials to be used as filling material between blocks and porous ceria foams in solar reactors has been developed.





Solar thermal processes integration & environmental impact (advanced cycles, water, glint, glare)

- The dynamic analysis of the annual behavior of multitower solar thermal power plants based on suspensions of particles and supercritical fluids (mainly, sCO_2) as working fluids has been performed.
- The study of the dynamic behavior of solar thermal power plants equipped with microturbines for electricity production and polygeneration in sites disconnected from the grid, was applied to a 500 kWe obtaining an efficiency of 32%.
- The analysis of the integration of high-temperature electrolysers with parabolic trough collector systems and thermal storage in molten salts and renewable electricity confirms solar to hydrogen efficiencies of over 13.9%.

Electrochemical Processes Unit

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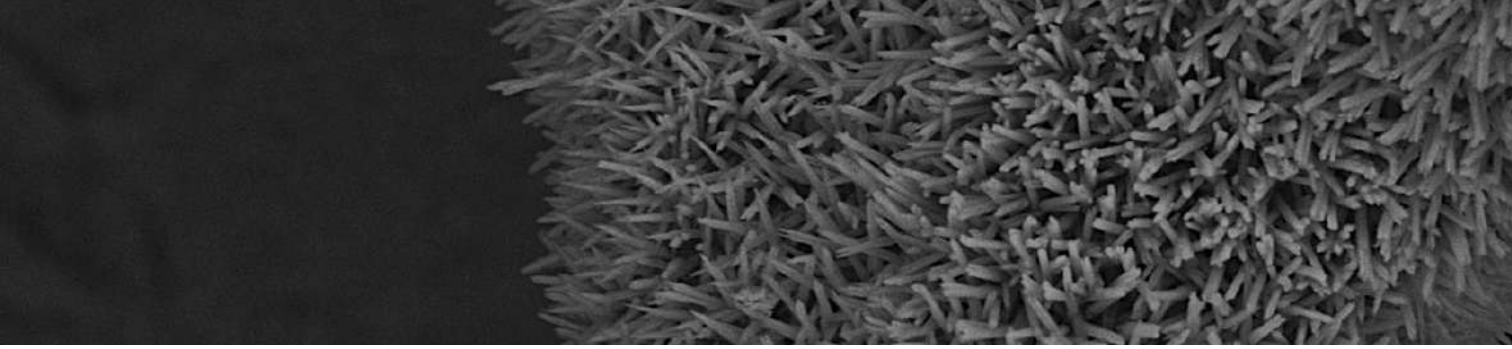


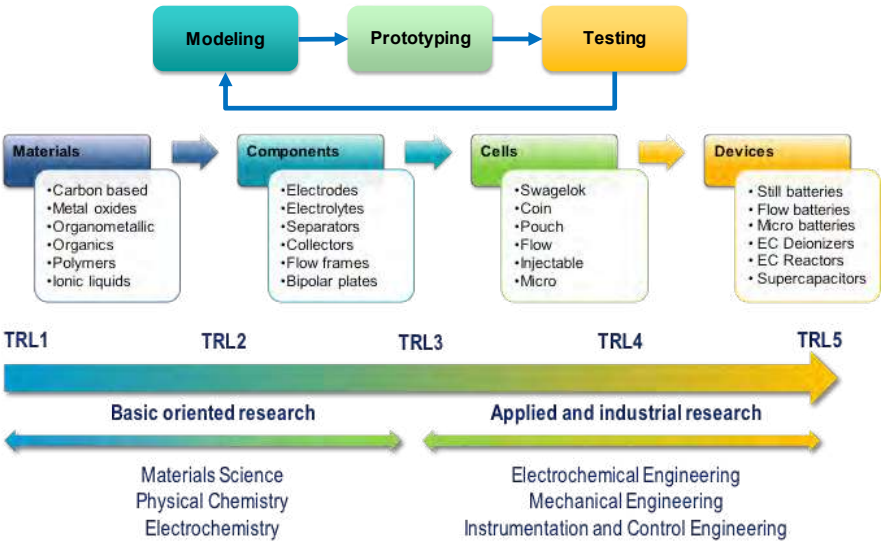
electrochemical

R&D Objectives

- Electrochemical energy storage devices and systems for stationary and transport applications.
- Electrochemical energy-efficient devices and processes for energy and environmental applications.

Research lines

- Design and construction of flow batteries with novel chemicals free of critical materials to improve efficiency, increasing energy density and reducing costs per kWh stored.
- Materials and components to improve the performance, cyclability and recycling of lithium-ion batteries and other metals.
- New methodologies for accelerated testing of batteries and supercapacitors to determine their aging depending on storage and use conditions.
- Design and scale-up of capacitive and faradaic deionization processes to capture value-added or potentially hazardous ionic species dissolved in natural or wastewater of high salinity and in industrial effluents from, for example, battery recycling.
- Application of electrochemical methods for the electro-oxidation of organic pollutants.
- Production of renewable hydrogen by electrochemical methods.



Relevant projects and networking

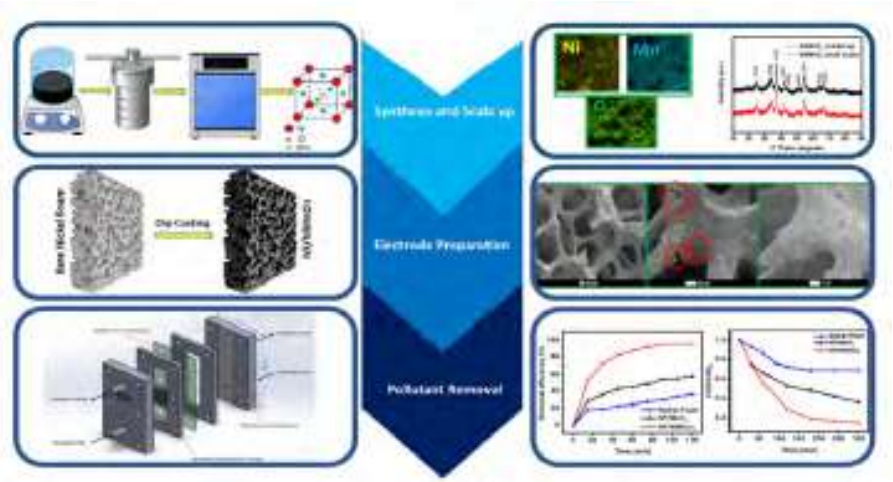
In 2022 the Electrochemical Processes Unit (ECPU) has been involved in 23 research projects and 9 grants. There were 6 direct contracts with companies such as Securitas Direct, Aqualia, Master Battery, B5Tec and HFC Company, 3 Regional projects and 7 national projects. At regional level, it should be highlighted the participation in the Hub Madrid+Circular and the project GreenH2-CM on hydrogen production. In 2022, the national government funded three new projects in the extraordinary call on Energy and Digital Transition. Finally, the Unit has participated in 7 European projects, five of them continued from 2021 MFreeB (ERC-Consolidator), Polystorage (ITN-Marie Curie), NanoBat (NMBP), HySolChem (FETOPEN), Light-Cap (FETOPEN) and two more started in 2022, NOMAD (EDF European Defense Funds) and MeBattery (EIC-PATHFINDER).

The ECPU has participated in associations such as the European technology platforms on Smart Grids (ETIP-SNET) and Batteries (Batteries Europe), the Spanish Technology Platform on Energy Storage (BatteryPlat) and the Spanish Association of Batteries and Storage (AEPIBAL).

Scientific and technical results

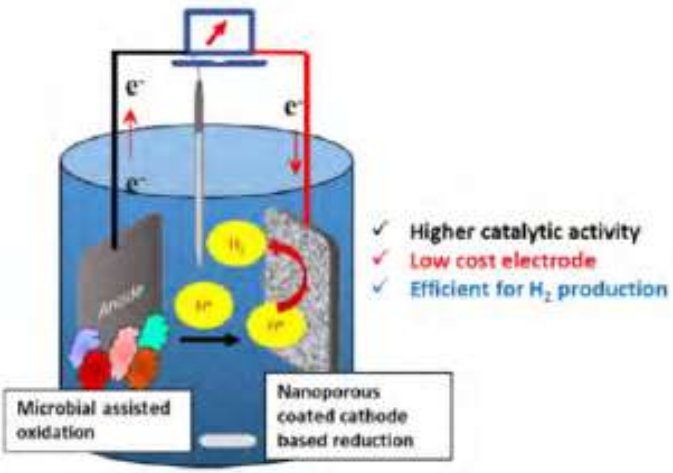
Water deionization

- Demonstration of a device with injectable battery-type electrodes able to selectively capture and concentrate the ions of interest.
- New 3D anodes for electrochemical oxidation of organic pollutants made of oxides composites. Binary metal oxides based on $NiMnO_3$ deposited over Ni foam shown 100% phenol removal and 80% COD removal.



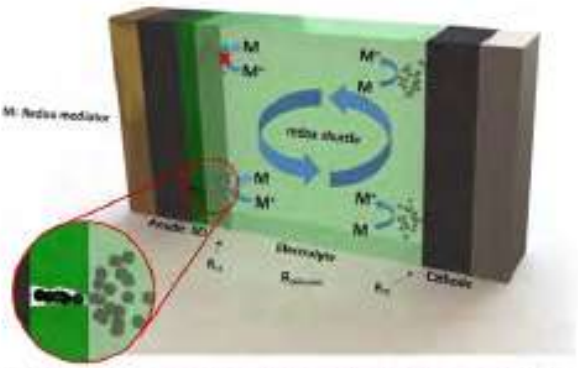
Renewable hydrogen production

- New nanoporous oxide coatings for hydrogen production in microbial electrolyzers.
- The use of VRFBs in solid oxide electrolyzers could potentially increase the efficiency of these devices and reduce their operating costs.



Battery testing protocols

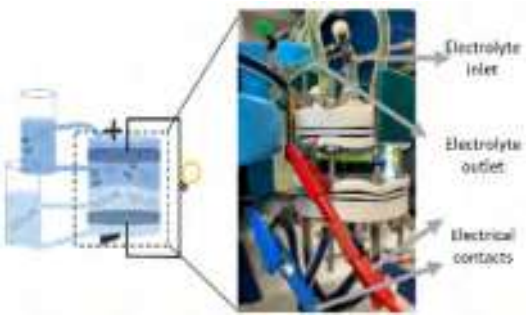
- Addition of a redox mediator in the electrolyte during the degassing step leads to a self-discharge process, which provides different Coulombic efficiencies depending on the protecting character of the SEI.

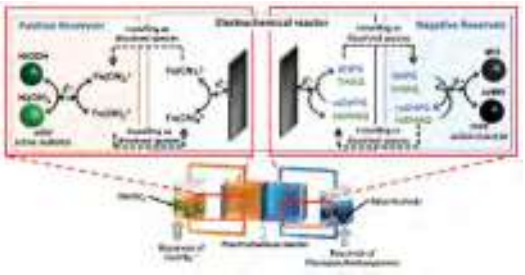


Graphical description of the Mediator-Enhanced Coulometry

Redox flow Batteries

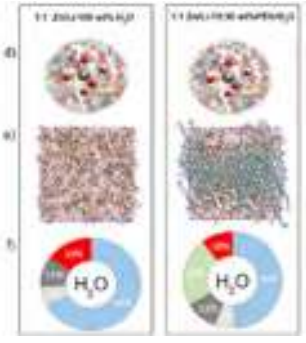
- A methodology to increase the solubility of organic species in aqueous electrolytes has been developed and successfully tested in AORFB.
- "Photo-electro" materials and concepts aimed at the development of solar flow batteries have been investigated.
- New immiscible redox electrolytes with suitable partition coefficients and electrochemistry have been developed and tested in a flow reactor specifically designed for membraneless immiscible flow batteries.
- The concept of immiscible electrolytes in hybrid flow batteries has been explored. Metallic zinc has been used as the anode (Zn-hybrid RFB) in combination with a catholyte containing redox-active species.
- "Mediated" Flow batteries with improved energy density have been developed and applied to organic and vanadium flow batteries.

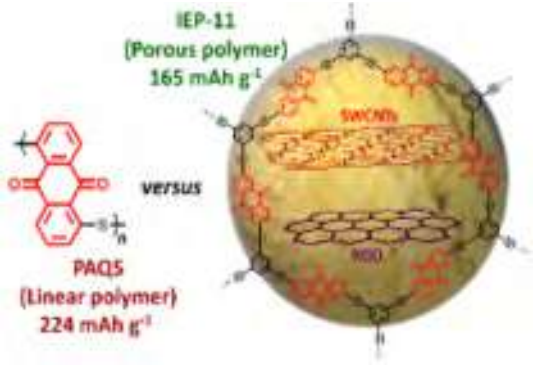




Metal-ion Batteries

- Development of high performing electrolytes based on molecular crowding concept.
- Molecular dynamics techniques have been used to explain the "molecular crowding" phenomenon in electrolytes with different types of salt.
- Application of conjugated microporous redox (anthraquinone, phenazynes, etc) in aqueous electrolytes.
- Advanced cathodes (graphene/sulfur hybrids) synthesized by electrochemical techniques (electrophoresis + electrodeposition) successfully used in alkaline batteries.





Biotechnological Processes Unit

Dr. Cristina González
Senior Researcher
Head of the Unit

Dr. Elia Tomás
Senior Assistant Researcher

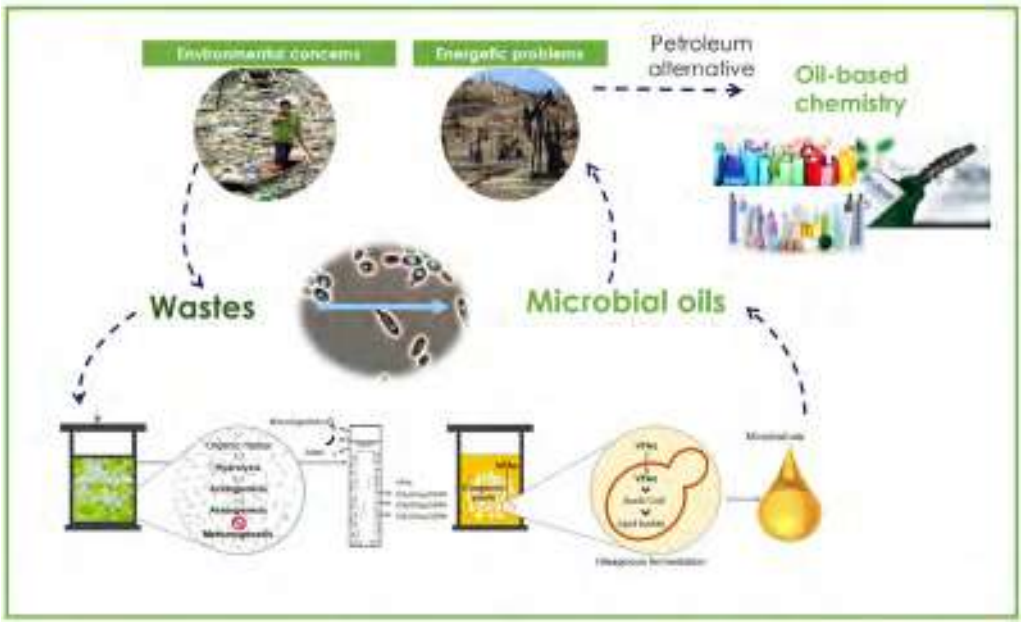
biotechnological

R&D Objectives

- Recovery of C (N and P) from wastes to produce biofuels and bioproducts.

Research lines

- Anaerobic digestion of waste streams for biogas production.
- Anaerobic fermentation of waste streams to produce short-chain fatty acids (SCFAs).
- Biofuels and lignocellulosic bioproducts.
- Use of the carboxylate platform: production of hydrogen and microbial oils.



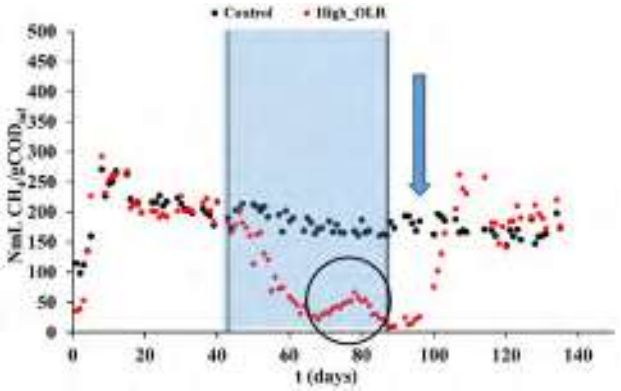
Relevant projects and networking

The BTPU has participated in several national and international projects related with the use of different residual streams for the production of alternative compounds (short chain fatty acids and microbial oils) as well as energy products (ethanol and biogas). In this period, BTPU has participated in 9 projects, out of which 2 were European (PRODIGIO H2020 (2021-2023) and OLEOFERM- ERA CoBioTech (2021-2024)), 5 national (BIOMIO-2021-2024, UPGRES_2021-2024, RAVIOLIC 2022-2024, RESOPLA 2022-2024 and PERSEO 2022) and 2 regionals (ALGATEC-2019-2022 via their services offered in the BIOPEN Lab and Madrid+Circular-2021-2023). Acknowledging the importance of gaining international visibility and stablishing key collaboration, BTPU is actively participating in several networking COST Actions (Greenering and Euromicroph). In this sense, BTPU leads the European project YEAST4BIO (2019-2023), supported COST Action of H2020, which involves more than 150 researchers from 34 countries. Also, at international level, the Unit participates in RENUWAL (2019-2022), a Latin-American network focused on microalgae cultivated in wastewater. As a result of the participation in the above-mentioned projects, BTPU actively collaborates with leading Research Groups and companies along Europe. Besides, BTPU is member of the Biobased Industries Consortia (BIC) and BIOPLAT.

Scientific and technical results

Anaerobic digestion of microalgae and waste streams for biogas production

- A stepwise organic loading rate OLR disturbance only damages the methanogenesis stage while a sudden OLR increase was harmful to acidogenesis and methanogenesis.
- Microalgae composition shocks created a robust microbiome able to deal with common macromolecular oscillations of the feedstock without resulting in a biogas decline.
- The presence of common pesticides used for microalgae culture was identified to be innocuous for the subsequent anaerobic digestion of this biomass. On the other hand, the antibiotic presence severely damaged the anaerobic process.

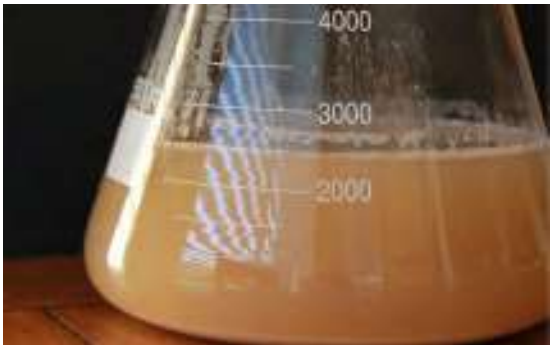


Lignocellulose based biofuels and biochemicals

- Pomegranate peels (lignocellulosic residue) particle size affected the enzymatic hydrolysis rates of the material at early stages, however, it did not have any effect on the final glucose and fructose hydrolysis yields.

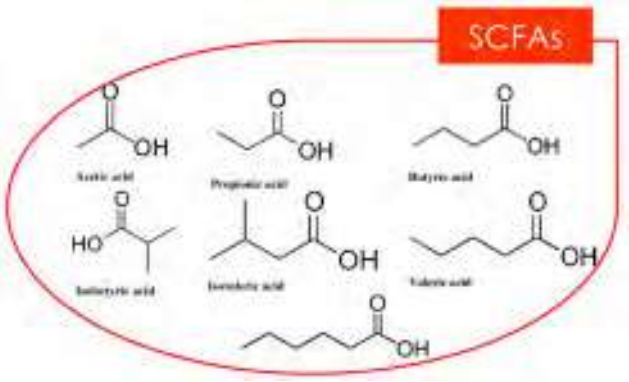
Fermentation of waste streams for SCFAs production

- Metagenome-assembled genomes was employed to assess the effect of slight pH variations on microbial dynamics and the corresponding functions when food wastes (76% w/w carbohydrate content) were subjected to anaerobic fermentation.
- When working with a food waste mixture composition exhibiting a high carbohydrate content, the organic matter bioconversion into SCFA was barely affected by small changes in pH (5.8 vs 6.2) and HRTs (20 vs 30 days).



Use of the carboxylic platform (SCFAs): microbial oils and hydrogen production

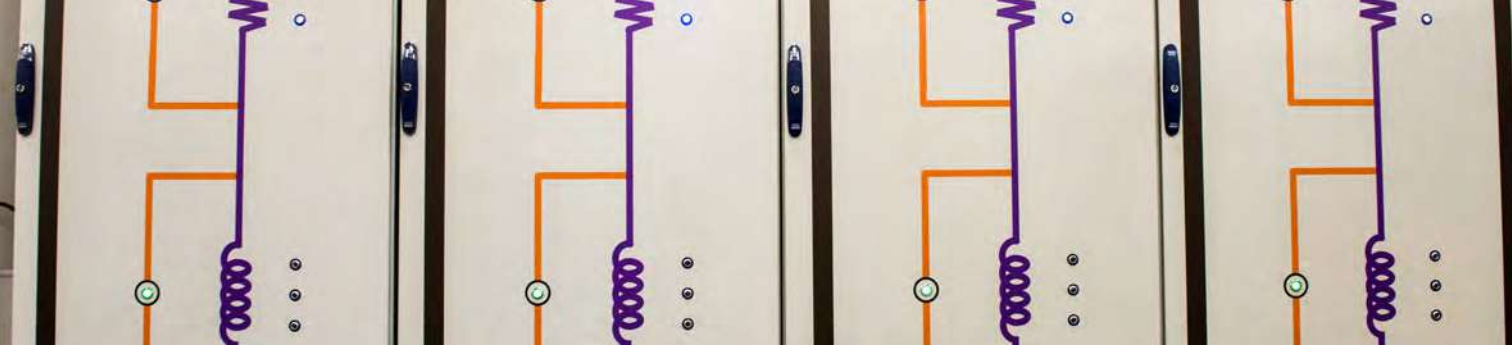
- Fluorescence quantum yield was demonstrated to be a key factor when determining lipid content in yeasts.
- The prevalence of short chain SCFAs (i.e. acetic acid) and high C:N ratio are crucial to boost yeast metabolism towards lipid production.
- When using SCFAs as carbon source in microbial electrolytic cells, carbon electrodes with nanoporous coating (TiO_2, ZrO_2 and SiO_2) as a cathode can be a low cost alternative for hydrogen production instead of expensive metallic electrodes.



Electrical Systems Unit

Dr. Milan Prodanovic
Senior Researcher
Head of the Unit

Dr. Javier Roldán
Senior Assistant
Researcher



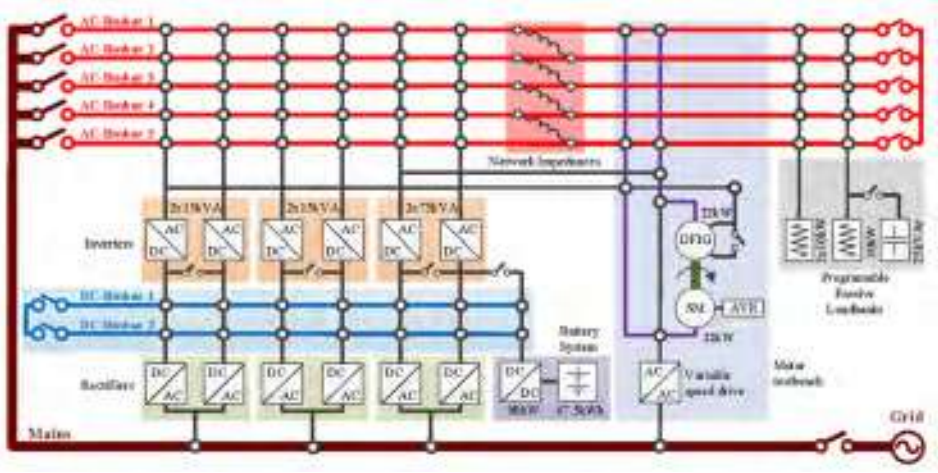
electrical systems

R&D Objectives

- Improved control and stability aspects of future electricity networks with high share of renewable and storage technologies.
- Optimisation based algorithms for demand management and renewable integration.
- Increased energy efficiency in industrial applications.

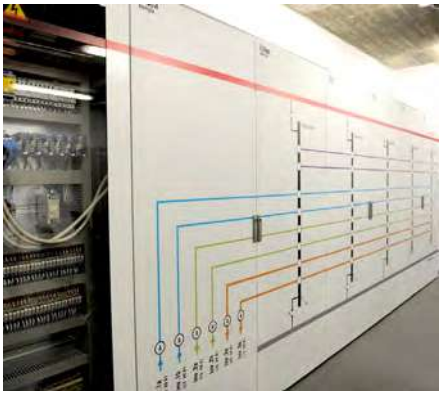
Research lines

- Smartgrids and integration of renewable energies and storage.
- Control of power electronics converters for applications in electrical networks.
- Stability of electricity grids with high penetration of renewable energies.
- Optimal energy management and energy efficiency applications.

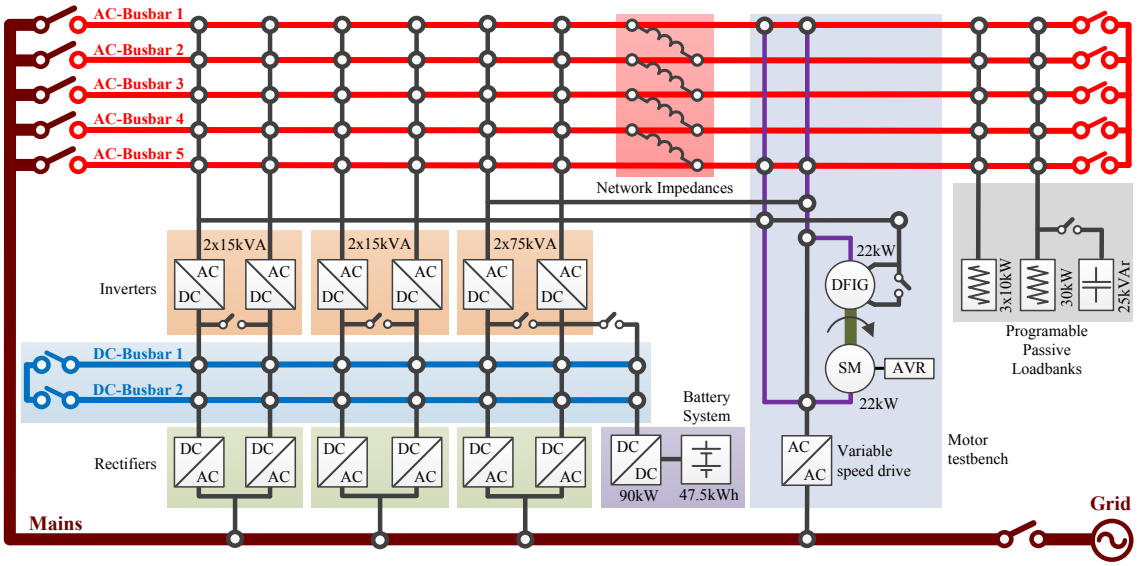


Relevant projects and networking

In 2022, Electrical Systems Unit (ESU) participated in several research and development projects. Principal research activities were performed within the frameworks of regional project PROMINT (2019-2023), European project DRES2MARKET (2020-2023) and national project FLEXENER led by Iberdrola (2021-2023). These projects addressed control, stability and flexibility aspects of renewable and storage integration to power networks as well as control of power electronics interfaces in grid applications. With respect to industrial collaborations, the main projects were COPOWCO with IMV Corporation in Japan on Control of Power Electronics Converter in Vibration Test Systems, and GFSTORAGE – Study on Grid Forming and Ancillary Services Battery Applications with the Spanish company Naturgy.



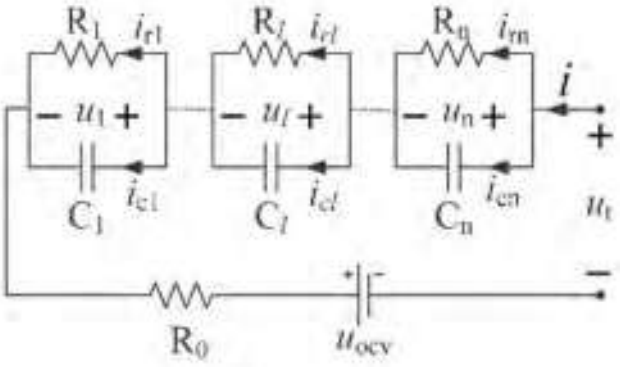
ESU participated in activities of the Spanish Platform for Power Networks (FUTURED) and established contacts with the national platform for development of railway services (PTFE). In 2022, ESU continued its role in the Spanish Platform on ICT applications in Energy Efficiency (EnerTIC) as an associated member.



Scientific and technical results

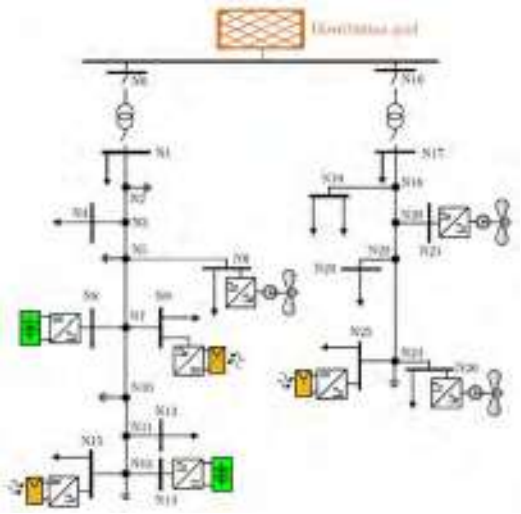
Smartgrids and renewable and energy storage integration

- Analyses of distribution networks for massive deployment of renewable energy.
- Coordinated management of aggregated and distributed storage applications.
- Battery sizing for inertial services in power systems.
- Wind energy integration using Doubly Fed Induction Generators.
- Local Demand Flexibility Markets for grid congestion management.



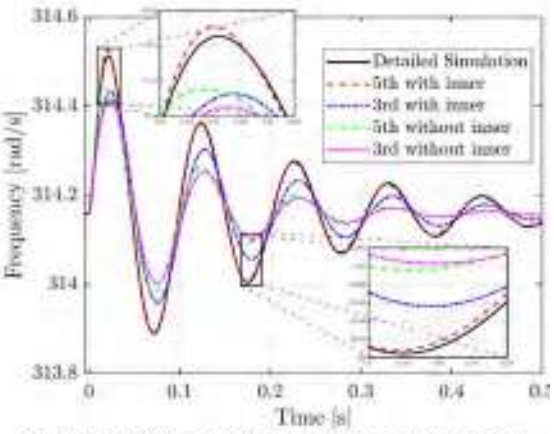
Control of power converters for applications in electricity networks

- Grid-Forming and Grid-Following control methods for renewable and energy storage interfaces in power systems and microgrids.
- Implementation of Virtual Synchronous Machine in weak grids.
- Improvement of primary, secondary and tertiary control algorithms for power converters in AC and DC microgrids.
- Converter grid synchronization techniques based on the oscillator theory.



Stability of power networks with high penetration of renewables

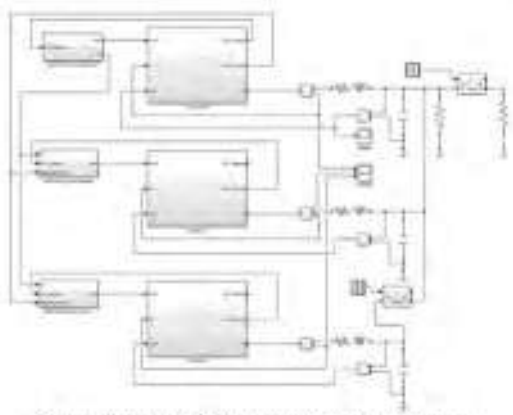
- Power Oscillation Damping for transmission network using converter interfaced generation.
- Power electronics converter interaction with the grid and rotating generators.
- Frequency and voltage stability of power networks and microgrids.
- Small-signal modelling of AC, DC and hybrid power networks.
- Bifurcation theory application in power systems and microgrids.



Comparison of the performance of different reduced order models of a microgrid

Energy management and energy efficiency applications

- Energy Management Systems for microgrids and self-consumption.
- Energy saving in generator testing and vibration testing systems.
- Application of power converters for energy efficiency.



Dynamic model of 3 power modules sharing the load

System Analysis Unit

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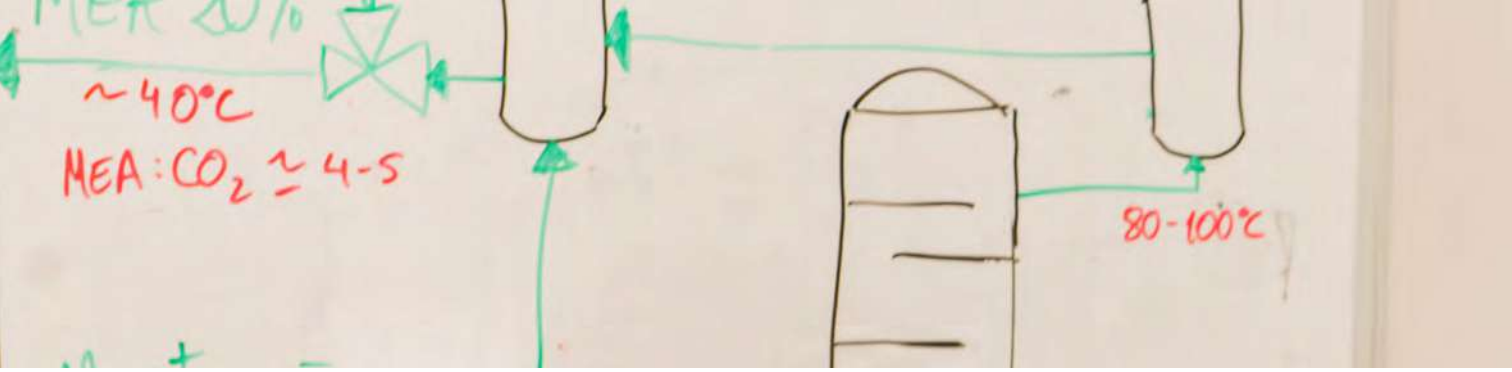
Research Professor
Head of the Unit

Dr. Diego Iribarren
Senior Researcher

Dr. José Luis Gálvez
Senior Assistant Researcher



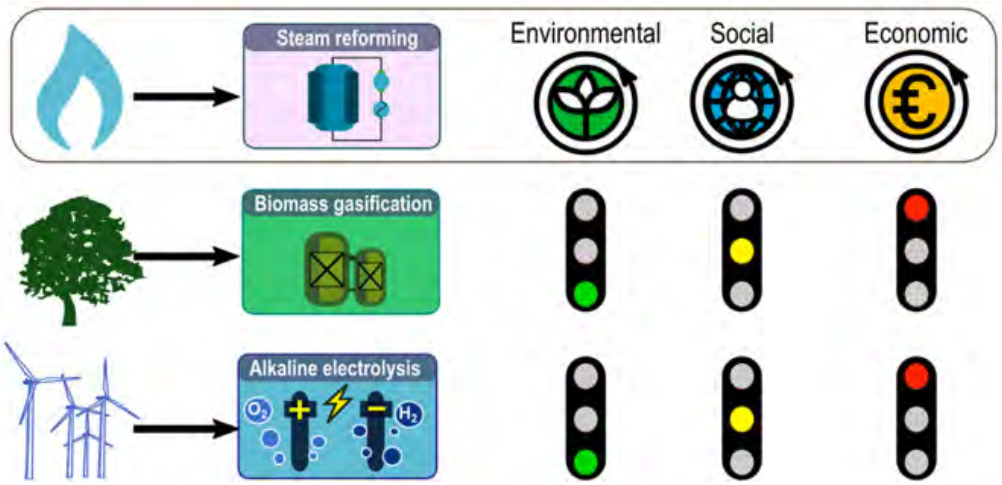
system analysis

R&D Objectives

- Global analysis of the different energy alternatives and problems, including technological-scientific aspects, but also economic, social, environmental and circularity issues.

Research lines

- Evaluation of the sustainability (environmental, economic and social) of energy systems, applying and developing life cycle methodologies.
- Design, simulation, thermodynamic analysis and techno-economic and environmental optimization of energy processes.
- Prospective analysis of energy systems and scenarios.



Relevant projects and networking

In 2022, the Systems Analysis Unit (SAU) has participated in 17 research projects and 8 research contracts, with an important increment in the number of projects related to hydrogen systems. At European level, two important projects related to hydrogen (SH2E and eGHOST) are coordinated by SAU and are related to the development of harmonized life cycle sustainability assessment and the eco-design of hydrogen systems, respectively. In 2022 started the project NOUVEAU on sustainable and reusable SOEC. Other important EU projects are the HYSOLCHEM and OLEOFERM projects, where SAU is in charge of the life cycle sustainability assessment of novel chemical and energy products. SAU completed its participation in the EU CEF ECO-GATE project about the deployment of compressed and liquid natural gas infrastructure for transportation, and continued the activity in the LIFE SUPERBIODIESEL project, which is focused on the deployment of a supercritical process for the production of biodiesel from waste animal fats.

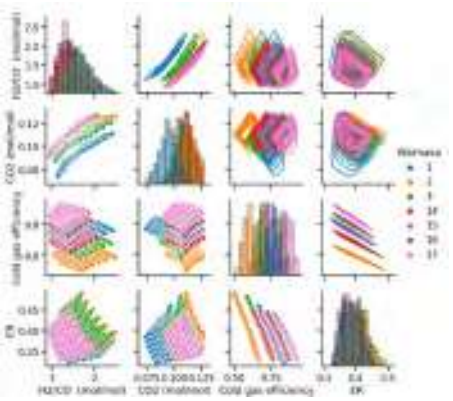
At domestic level, three regional and seven national projects registered activity in 2022, three of them starting in this year, HYWARE on renewable hydrogen from wastes; UPGRES on production of sustainable fuels by upgrading of both digestate and stillage residues and SOLFUTURE on solar catalysis for a renewable energy future. At regional level, it should be highlighted the participation in the Hub Madrid+Circular coordinated by Repsol and the project GreenH2-CM.

Regarding networking, Javier Dufour acted as Deputy Leader of TC5 Cross-Cutting Research Activities of Hydrogen Europe Research, and Diego Iribarren as Chairman of the Spanish Life Cycle Analysis Network (esLCA).

Scientific and technical results

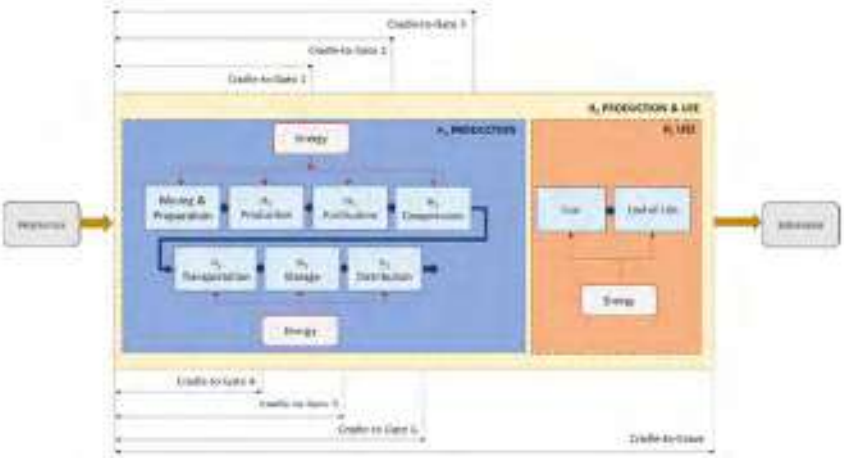
Role of waste and waste-to-energy technologies in the framework of circular economy and production of clean fuels

- Modelling of wastes pyrolysis.
- Life cycle assessment of bio-ethanol production from municipal solid waste and supercritical biodiesel production from waste animal fats
- Potential pathways for syngas transformation towards kerosene range hydrocarbons in a dual Fischer-Tropsch-Zeolite bed.
- Technoeconomic assessment of alternative process configuration for SAF production from cameline oil hydrotreatment.



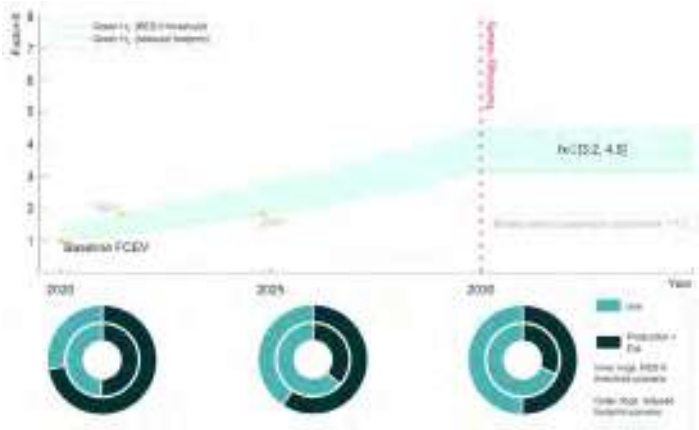
Hydrogen systems analysis

- Formulation of guidelines for LCA and LCC of hydrogen-related systems.
- Assessment of eco-efficiency and the role of circularity and criticality indicators in the ecodesign of fuel cells and hydrogen technologies.
- Prospective life cycle assessment of hydrogen from high-temperature electrolysis coupled with concentrated solar power.
- Social life cycle assessment of green methanol produced with CO_2 directly captured from the air and hydrogen from wind power electrolysis.



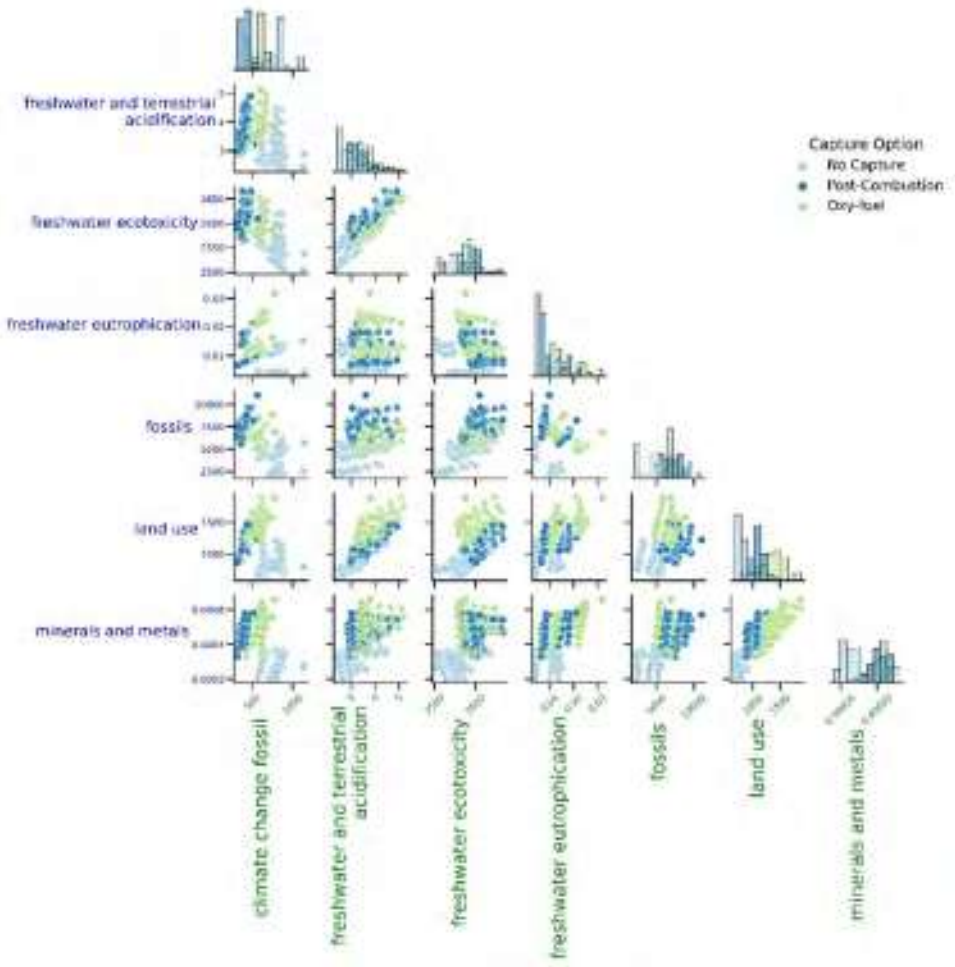
Development of sustainability-oriented energy models

- Integration of Life Cyle Assessment into a taxonomy to classify models of hydrogen energy systems.
- Discussion of the potentials of energy systems modelling for informing policy-makers in managing an efficient, secure, and fair energy transition.
- Strategy for national hydrogen production on a regional basis with time horizon 2050.



Sustainability of CO_2 capture and use processes. Industrial decarbonization

- Novel methodological approaches for the environmental evaluation of CO_2 utilization with low TRL technologies
- The eco-efficiency of new cement formulations with a low carbon footprint has been evaluated against decarbonisation through CO_2 capture.
- Studied the production of carbon nanotubes from CO_2 electrolysis coupled to cement production with oxycombustion and/or post-combustion capture.



Photoactivated Processes Unit

Dr. Victor A. de la Peña
Senior Researcher
Head of the Unit

Dr. Marta Liras
Senior Researcher

Dr. Fernando Fresno
Senior Assistant Researcher

Dr. Mariam Barawi
Senior Assistant Researcher

Dr. Laura Collado
Senior Assistant Researcher

Dr. Freddy Oropeza
Senior Assistant Researcher

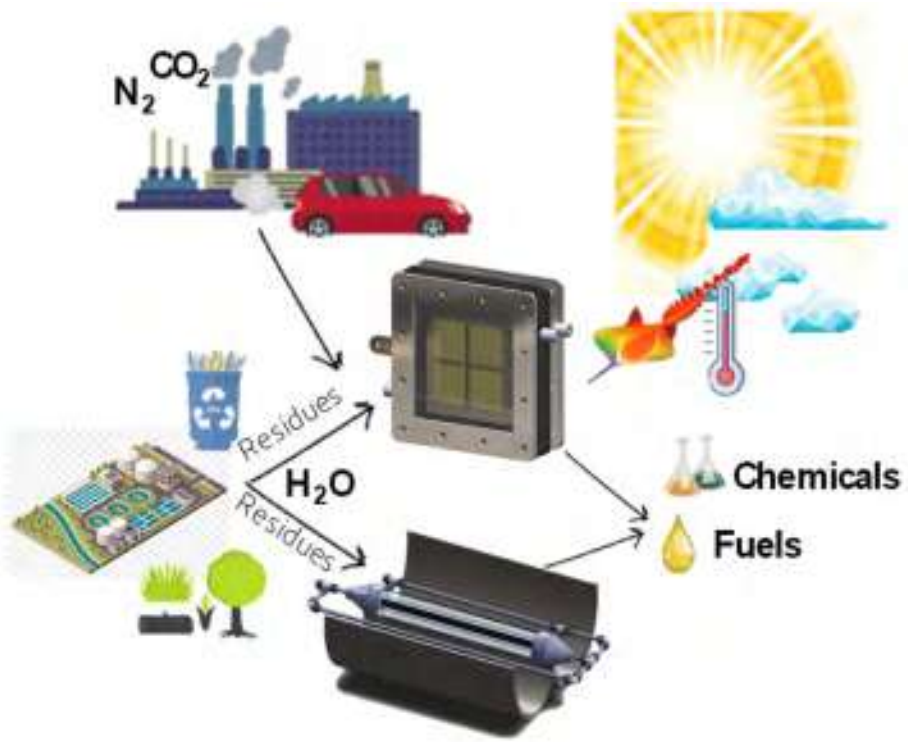
photoactivated

R&D Objectives

- Covering the materials, processes and technologies that allow a smart and efficient light harvesting to drive photo-activated processes for energy and environmental applications.

Research lines

- Production of solar fuels through CO_2 photoreduction, water splitting, N_2 fixation and photoreforming of products derived from biomass.
- Optimization of reactivity through knowledge of the physicochemical properties of materials under reaction conditions.
- Development of inorganic and hybrid multifunctional materials.
- Process automation through the use of Artificial Intelligence (AI) and machine learning.
- Evaluation and up-scaling of processes.

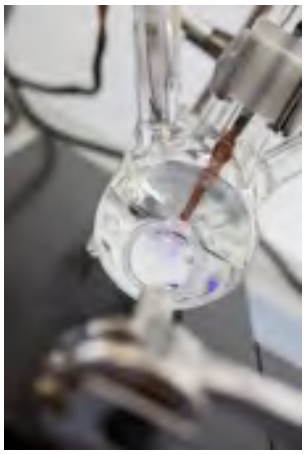


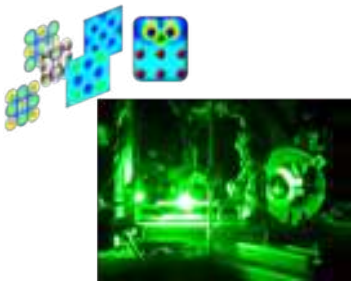
Relevant projects and networking

In 2022 the Photoactivated Processes Unit (PAPU) has participated in 11 research projects and contract and 6 grants funded at regional, national and European level. Dr. Víctor A. de la Peña O´Shea, senior researcher and head of the PAPU, had until 2022 the support of a European project, HYMAP, corresponding to the call ERC-2014- Consolidator Grant under the European Union's Horizon 2020 research and innovation programme. Furthermore, an ERC-PoC associated to HYMAP, NanoCPP, related with manufacture of nanostructured conjugated porous polymers has been finalized. It should be highlighted HYSOLCHEM a FET ProActive Project (H2020) coordinated by the PAPU team. In 2022, a new ERC-PoC, DEMONIA, started with the objective to develop photoelectrochemical technologies to synthesize ammonia.

At the national level, PAPU is funded and supported through several projects such as Nhympha (Retos, 2020-2023) and Art Leaf (Ramón Areces, 2019-2022). Also continued the development in projects such as Nova CO2 (Retos, 2021-2024) and ARMONIA (JIN, 2021-2024). It deserves to be highlighted a Strategic lines project (SOLFUTURE) coordinated by PAPU and focused in the development of Solar catalysis for a renewable future.

In the regional framework, the unit is coordinating the FotoArt program (New Generation of Multifunctional Materials for Artificial Photosynthesis). Also, at industrial level, PAPU holds a project with Daimler Benz company and a project with HFC company. On the other hand, PAPU participates in the Spanish CO_2 technological platform (PTECO2) where the head of the Unit coordinates the CO_2 uses working group, and in the Iberian Photocatalysis Association. In addition, the PI is also vocal in the Specialized Group on Crystallography and Crystal Growth (GE3C) of Spanish Royal Society of Chemistry.

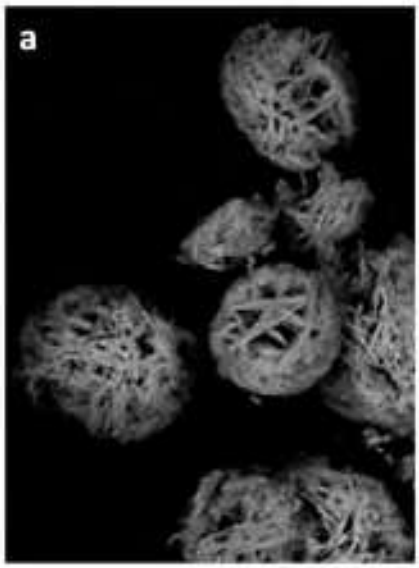




Scientific and technical results

Development of novel inorganic photo(thermo)catalysts and photoelectrodes

- Band-gap engineering synthesis of UV- and visible-light-absorbing metallates.
- Prepared novel oxide-oxide heterojunctions with improved photocatalytic activity and extended absorption spectrum.
- Controlled deposition of metal nanoparticles as co-catalysts in mono- and bimetallic catalytic systems.
- Developed new synthesis of pure and doped colloidal inorganic semiconductor as electrochromic materials.
- Development of new metal oxides and oxihalures as photo(thermal) catalyst



Fundamental studies of reaction mechanisms

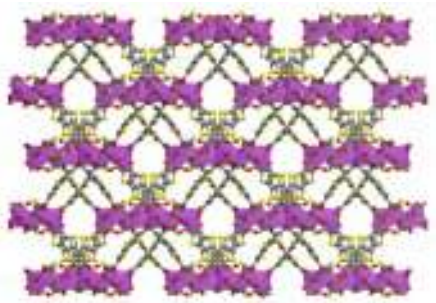
- Determined the structural, textural and morphological properties of multifunctional materials.
- Performed the optoelectronic characterization by time-resolved optical techniques to correlate these intrinsic properties with the efficiency of the devices for light-driven technologies.
- Conducted in-situ characterization under working conditions using vibrational and optical spectroscopies with both laboratory and synchrotron radiation-based techniques.
- The electrical properties of different systems have been studied, being able to decouple the physical processes taking place at different time scales.
- Carried out ab-initio and QM Theoretical calculation to study the influence of electronic properties in the reaction mechanism.

Design and synthesis of conjugated porous polymers and its hybrids

- Design and synthesis of Conjugated Porous Polymers (CPPs).
- Design and synthesis of Covalent Organic Frameworks (COFs) based on BODIPY, BOPHY and DTT dyes.
- Synthesized nanostructured CPPs and COFs to obtain thin film photoelectrodes as well as electrochromic windows.
- Prepared and characterized hybrid materials based on conjugated porous polymers and inorganic semiconductors, including thin film configuration.

MOFS

- Implemented the design and synthesis of novel UV- and visible-light-absorbing building blocks as organic MOF linkers.
- Design and synthesize organic ligands based on rotaxanes as organic linkers to Metal Organic Rotaxane Frameworks (MORFs)



- Carried out post-functionalization including metal nanoparticles, redox coordination compounds and organic polymers.

Process evaluation and scale-up

- Achieved synergistic improvement of solar fuels production using hybrid photocatalysts including organic-inorganic hybrid and MOFs.
- Isotopic experiments to determine the source of product have been carried out.
- Conducted scalability studies for CO_2 photoreduction catalysts.
- Realized the preparation of thin films of new synthesised materials and evaluation as photoelectrodes.
- Photoelectrocatalysis experiment of materials from other collaborative groups (ie. Carbonaceous, C3N4, MOFs, nanostructured TiO_2, etc.) have been carried out.

Advanced Porous Materials Unit

Dr. Patricia Horcajada
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Head of the Unit

Dr. Yolanda Pérez
Senior Researcher
(Associated)

Dr. Tania Hidalgo
Senior Assistant Researcher

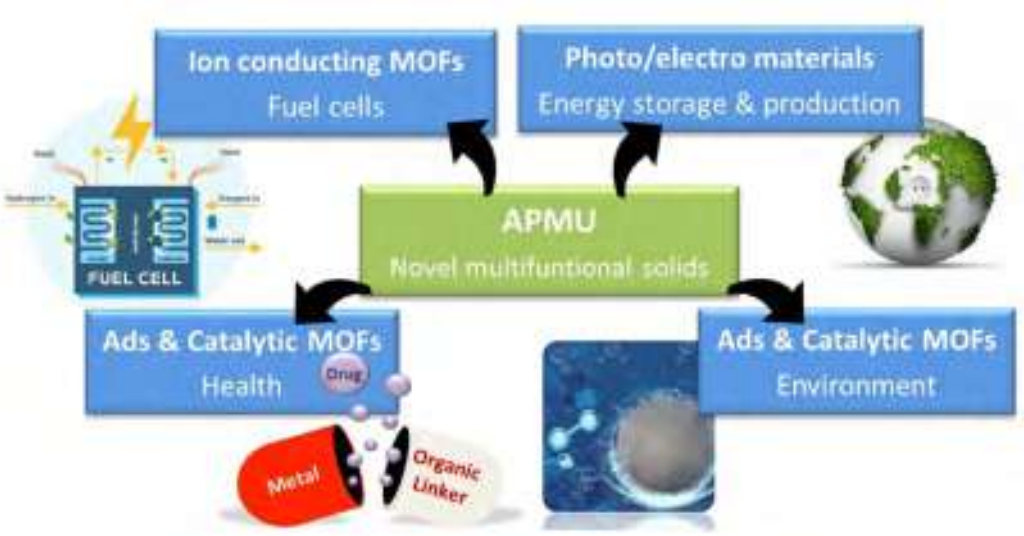
porous materials

R&D Objectives

- Development of innovative multifunctional solids.
- Full understanding of the structural features for improving and/or adapting the materials properties to specific applications.
- Adapted devices for their final applications (scale-up and shaping).

Research lines

- Fuel cells: new materials with ionic conductivity.
- Production and storage of energy: photo/electroactive solids.
- Health: adsorbent and catalytic biomaterials.
- Environmental: adsorbent and catalytic materials.



Relevant projects and networking

During 2022, the Advanced Porous Materials Unit (APMU) has been involved in different projects:

- Coordinating 2 European projects: a MSCA-ITN project *HeatNMof* (2020-2024) focused on the heating triggered drug release using nanometric inorganic-metal organic framework (MOF) composites and a M-ERA.NET *C-MOF.Cell* (2020-2023) working on MOF composites as efficient electrolytes in fuel cells.

- 4 national projects: *ESENCE* (2020-2023, MINECO), involving a company, dealing with the preparation of new multifunctional materials for the removal of emerging contaminants from wastewater; *MOFseidon* (2020-2023, MINECO), focused on the development of MOFs for the combined removal of emerging organic contaminants from wastewater; *H+MOF* (2019-2022, Ramón Areces Foundation), which aims to develop fuel cells based on novel composite MOFs; and a collaboration networking *MetalloDrug* dealing with the development of multifunctional metallodrugs in diagnosis and therapy (2019-2023).

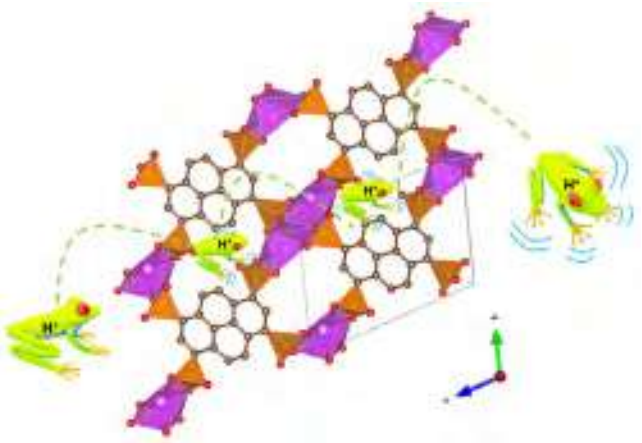
- 4 regional fundings: *Madrid-PV2-CM* (2019-2022) dealing with the investigation of materials, devices and technologies for the development of the photovoltaic industry; *Clorato* (2020-2023) an industrial doctorate in coll. with Canal de Isabel II for drinking water purification; *HUBS* (2021-2023) developing new catalyst for hydrotreatment of pyrolytic and catalytic oils; and *VirMOF* (2021-2022) dealing with the pulmonary combined multitherapy of Covid.

APMU is also involved in the MATERPLAT platform, promoting innovation in advanced materials Spanish system, and in different chemical-related associations (RSEQ, AEBIN, IAAM, IWA, SECAT,etc.).

Scientific and technical results

Ion conductive materials: Fuel cells

- Novel Bi phosphonate MOF (IEF-7) with a completely new topology based on an unusual Bi coordination, exhibiting an ultra-high proton conductivity.
- Implementing the proton conductivity performance of MOFs by ionic exchange of labile protons.
- Development of mixed matrixed membranes based on MOFs and different proton conductive polymers for their testing in fuel cells.

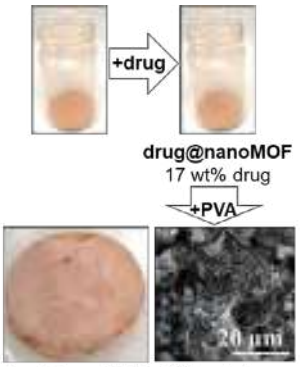


Photo/Electroactive materials: Energy storage and production

- Design and synthesis of two novel MOF structures based on the photoactive pyrene ligand and copper, exhibiting high photocatalytic performance on the hydrogen evolution reaction in absence of cocatalyst.
- Synthesis of photoactive porous MOFs based on porphyrin derivatives and Zr or Hf, evidencing very high conversion in the CO_2 cycloaddition reactions.
- Fe and SO_4^{2-} doped-TiO_2 for the efficient visible-light active photocatalyst to remove pollutants from transportation fuels and water.

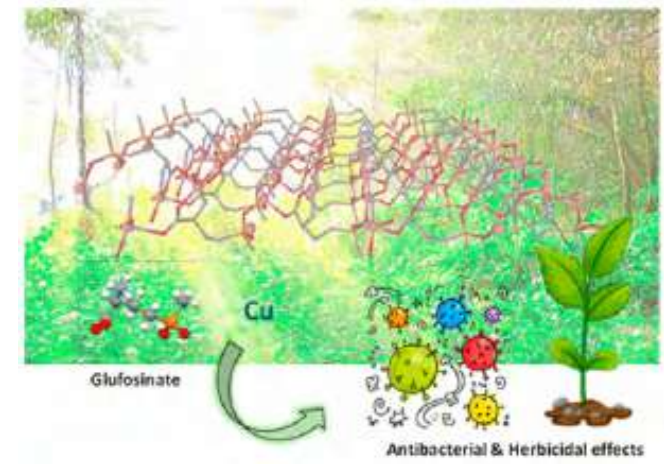
Adsorbent and catalytic biomaterials: biomedical applications

- Association of immune/chemo active ingredients for an efficient combined therapy against SARS-CoV-2.
- Combining metal and metal-oxide nanoparticles to nanoscaled MOFs for the triggered release of drugs in cancer therapy.
- Improving the intestinal and blood brain barriers bypass of MOFs by tuning their particle size and chemical surface.
- Two novel Zn-MOF structures exhibiting relevant antibacterial effects.



Adsorbent and catalytic materials: environmental applications

- A novel agroMOF based on the herbicide glufosinate and the antibacterial & fungicide Cu^{2+}, proving a selective combined bactericidal and herbicidal effect.
- Set-up of a continuous flow reactor for the evaluation of real water decontamination conditions.
- Optimization of the operation conditions for testing dehydrohalogenation catalytic activity of MOFs and MOF-based composites



annex

annex

1. R&D projects and contracts

1.1. Regional projects

1. Title/Acronym: Concentrated solar thermal energy in the transport sector and heat and electricity production / ACES2030-CM (S2018/EMT-4319)
Partners: IMDEA Energy Institute (Coordinator); CIEMAT; ICP-CSIC; Carlos III University; UNED, Polytechnic University of Madrid; Rey Juan Carlos University; Lab 327
Period: 2019-2023
Funding Institution/Program: Comunidad de Madrid / Program of R&D activities between research groups in Technology 2018
IMDEA Energy Institute external funding: 251.671 €

2. Title/Acronym: New generation of multifunctional materials for artificial photosynthesis / FotoArt-CM (S2018/NMT-4367).
Partners: IMDEA Energy Institute (Coordinator); ICMM-CSIC; Autonoma University of Madrid; IMDEA Nanoscience Institute; ICP-CSIC; IMDEA Materials Institute; Lab 369; Lab 150; Lab 442; Lab 433
Period: 2019-2023
Funding Institution/Program: Comunidad de Madrid / Program of R&D activities between research groups in Technology 2018
IMDEA Energy Institute external funding: 303.774 €

3. Title/Acronym: Smart Microgrids Programme for Community of Madrid / PROMINT-CM (S2018/EMT-4366).
Partners: University of Alcalá (Coordinator); Carlos III University; Pontificia Comillas University of Madrid; IMDEA Energy Institute; Lab 169; Lab 368
Period: 2019-2023
Funding Institution/Program: Comunidad de Madrid / Programa de Actividades de I+D entre Grupos de Investigación de la Comunidad de Madrid en Tecnologías 2018
IMDEA Energy Institute external funding: 169.728 €

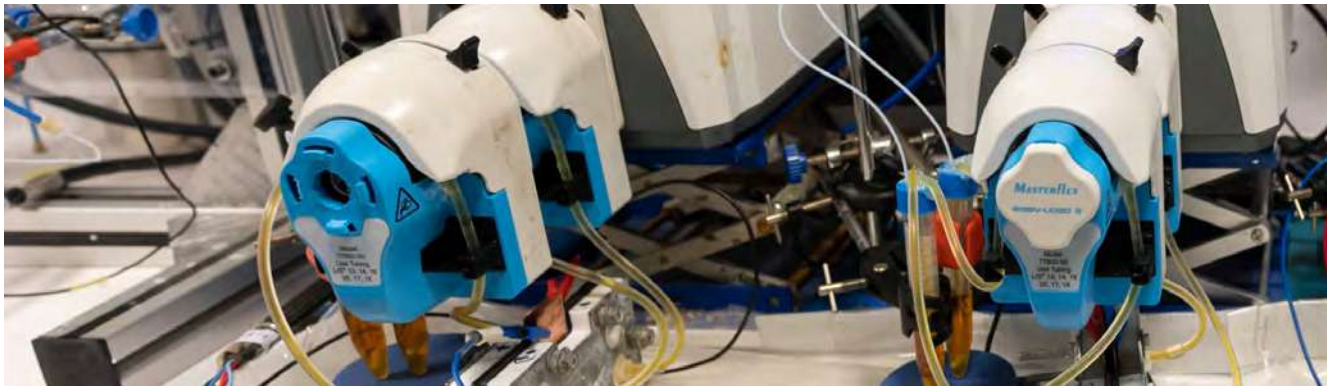
4. Title/Acronym: Materials, devices and technologies for the development of the photovoltaic industry / MADRID-PV2-CM (S2018/EMT-4308)
Partners: Polytechnic University of Madrid (Coordinator); IMDEA Nanoscience Institute; Complutense University of Madrid; INM-CSIC; Lab 270; Lab 439
Period: 2019-2023
Funding Institution/Program: Comunidad de Madrid / Programa de Actividades de I+D entre Grupos de Investigación de la Comunidad de Madrid en Tecnologías 2018
IMDEA Energy Institute external funding: 79.585 €

5. Title/Acronym: Development of advanced microalgae technologies for a circular economy / ALGATEC-CM (S2018/BAA-4532)
Partners: Rey Juan Carlos University (Coordinator); CIB-CSIC; CIEMAT; Autonoma University of Madrid; Polytechnic University of Madrid; Lab 370
Period: 2019-2023
Funding Institution/Program: Comunidad de Madrid / Programa de Actividades de I+D entre Grupos de Investigación de la Comunidad de Madrid en Tecnologías 2018
IMDEA Energy Institute external funding: 131.000 €

6. Title/Acronym: Urban bioeconomy: transformation of bio-waste into biofuels and bioproducts of industrial interest / BIOTRES-CM (S2018/EMT-4344)
Partners: Rey Juan Carlos University (Coordinator); ICP-CSIC; Autonoma University of Madrid; CIEMAT; Lab 165; Lab 444
Period: 2019-2023
Funding Institution/Program: Comunidad de Madrid / Programa de Actividades de I+D entre Grupos de Investigación de la Comunidad de Madrid en Tecnologías 2018
IMDEA Energy Institute external funding: 120.433 €

7. Title/Acronym: NanoMOFs inmuno/quimio-activos para la multiterapia pulmonar anti-COVID / VIRMOF-CM
Partners: IMDEA Energy Institute
Periodo: 2011-2022
Funding Institution/Program: Comunidad de Madrid / Proyectos de I+D+i en materia de respuesta a COVID-19
IMDEA Energy Institute external funding: 1.065.000 €

8. Title/Acronym: Strategic positioning of the Community of Madrid in R&D&i of green hydrogen and fuel cells / GREENH2-CM
Partners: CIEMAT (Coordinator); IMDEA Energy Institute; UCM; CEU-San Pablo; UPM; INTA; UC3M
Period: 2021-2025
Funding Institution/Program: Comunidad de Madrid / PRTR / European Union NextGenerationEU
IMDEA Energy Institute external funding: 2.181.212 €



1.2. National projects

1. Title/Acronym: Nanostructured multifunctional membranes for solar fuels production by artificial photosynthesis / Art-LEAF (CIVP19A5951)
Partners: IMDEA Energy Institute
Period: 2019-2022
Funding Institution/Program: Fundación Ramón Areces / XVII Concurso Nacional para la adjudicación de ayudas a la Investigación en Ciencias de la Vida y de la Materia 2018
IMDEA Energy Institute external funding: 126.568 €

2. Title/Acronym: Novel proton-conducting MOF composites for fuel cell devices / H+MOFs (CIVP19A5950)
Partners: IMDEA Energy Institute
Period: 2019-2022
Funding Institution/Program: Fundación Ramón Areces / XVII Concurso Nacional para la adjudicación de ayudas a la Investigación en Ciencias de la Vida y de la Materia 2018
IMDEA Energy Institute external funding: 126.568 €

3. Title/Acronym: Computer-aided macromolecular design of redox-active polymers: promising paradigm for sustainable battery research and development / SUSBAT (RTI2018-101049-B-I00)
Partners: IMDEA Energy Institute
Period: 2019-2022
Funding Institution/Program: Ministry of Science, Innovation and Universities / Research Challenges 2018
IMDEA Energy Institute external funding: 145.200 €

4. Title/Acronym: Redefining the waste-energy nexus: a new concept of regional refinery for the circular economy / REDEFINERY (RTI2018-097227-B-I00)
Partners: IMDEA Energy Institute
Period: 2019-2022
Funding Institution/Program: Ministry of Science, Innovation and Universities / Research Challenges 2018
IMDEA Energy Institute external funding: 181.500 €

5. Title/Acronym: Ionic systems for energy sustainability / SISE (RED2018-102679-T)
Partners: Universidade da Coruña (Coordinator); Universidade de Santiago de Compostela; Fundación Universidad San Jorge; University of País Vasco; University of Vigo; University of Cantabria; Fundación Tecnalia; University of Murcia; IIAG-CSIC; Universitat Rovira I Virgili; Universitat Jaume I De Castello; Complutense University of Madrid; University of Valencia; Polytechnic University of Cartagena; IMDEA Energy Institute
Period: 2020-2022
Funding Institution/Program: Ministry of Science, Innovation and Universities / State Program for Promotion of Scientific and Technical Reseach Excellence. Acciones de dinamización "Redes de excelencia" 2018

6. Title/Acronym: Concentrating Solar Thermal Systems / SolTerCo (RED2018-102460-E)
Partners: CIEMAT (Coordinator); Carlos III University of Madrid; Universidat Politécnica de Catalunya; Fundación Tekniker; IMDEA Energy Institute; University of Sevilla; CIC Energigune; Fundación CENER-CIEMAT
Period: 2020-2022
Funding Institution/Program: Ministry of Science, Innovation and Universities / State Program for Promotion of Scientific and Technical Reseach Excellence. Acciones de dinamización "Redes de excelencia" 2018

7. Title/Acronym: Combined separation and (photo)degradation of water contaminants using Metal-Organic Framework devices / MOFSEIDON (PID2019-104228RB-I00)
Partners: IMDEA Energy Institute
Period: 2020-2024
Funding Institution/Program: Ministry of Science and Innovation / Research Challenges 2019
IMDEA Energy Institute external funding: 193.600 €

8. Title/Acronym: Nano-Structured Hybrid Materials for Solar Fuels Photoelectrocatalytic / NHyMPha (PID2019-106315RB-I00)
Partners: IMDEA Energy Institute
Period: 2020-2023
Funding Institution/Program: Ministry of Science and Innovation / Research Challenges 2019
IMDEA Energy Institute external funding: 249.260 €

9. Title/Acronym: Unit of Excellence Maria de Maeztu (CEX2019-000931-M)
Partners: IMDEA Energy Institute
Period: 2020-2024
Funding Institution/Program: Ministry of Science and Innovation / "Severo Ochoa Centres of Excellence" and the "María de Maeztu Units of Excellence" 2019
IMDEA Energy Institute external funding: 2.000.000 €

10. Title/Acronym: Catalytic upgrading and co-processing of holocellulose-derived bio-oils / AdBioCap (PID2020-114740RB-C21)
Partners: IMDEA Energy Institute (Coordinator); Rey Juan Carlos University
Period: 2021-2024
Funding Institution/Program: Ministry of Science and Innovation / Research Challenges 2020
IMDEA Energy Institute external funding: 213.686 €

11. Title/Acronym: Biowaste conversion to H2 and microbial oils for fuel production / BIOMIO (PID2020-119403RB-C21)
Partners: IMDEA Energy Institute (Coordinator); CIEMAT
Period: 2021-2024
Funding Institution/Program: Ministry of Science and Innovation / Research Challenges 2020
IMDEA Energy Institute external funding: 133.100 €

12. Title/Acronym: High-efficiency and modular solar fields for high-solar flux densities / HECTOR (PID2020-119693RB-C31)
Partners: IMDEA Energy Institute
Period: 2021-2024
Funding Institution/Program: Ministry of Science and Innovation / Research Challenges 2020
IMDEA Energy Institute external funding: 145.200 €

13. Title/Acronym: Photochemical technologies for CO2 valorization / novaCO2 (PID2020-118593RB-C22)
Partners: ICP-CSIC (Coordinator); IMDEA Energy Institute
Period: 2021-2024
Funding Institution/Program: Ministry of Science and Innovation / Research Challenges 2020
IMDEA Energy Institute external funding: 145.200 €

14. Title/Acronym: Powering the Future with Solar Ammonia: Innovative light-mediated routes over nanostructured hybrid materials / ARMONIA (PID2020-119125RJ-I00)
Partners: IMDEA Energy Institute
Period: 2021-2024
Funding Institution/Program: Ministry of Science and Innovation / Research Challenges 2020
IMDEA Energy Institute external funding: 181.500 €

15. Title/Acronym: Organic Redox-Active Materials for Redox Flow Batteries / OMBAT (PID2021-124974OB-C21)
Partners: IMDEA Energy Institute (Coordinator); University of Burgos
Period: 2022-2025
Funding Institution/Program: Ministry of Science and Innovation / FEDER-UE / Knowledge Generation Projects 2021
IMDEA Energy Institute external funding: 211.750 €

16. Title/Acronym: Renewable hydrogen from wastes: a circular solution for regions without land availability / HYWARE (PID2021-124705OB-I00)
Partners: IMDEA Energy Institute
Period: 2022-2025
Funding Institution/Program: Ministry of Science and Innovation / FEDER-UE / Knowledge Generation Projects 2021
IMDEA Energy Institute external funding: 181.500 €

17. Title/Acronym: Novel Hybrid Photoelectrodes Against Climate Change / PEC2Change (TED2021-129999A-C33)
Partners: ICMM-CSIC (Coordinator), Autonoma University of Madrid, IMDEA Energy Institute
Period: 2022-2024
Funding Institution/Program: Ministry of Science and Innovation / European Union NextGenerationEU / PRTR. / TED 2021
IMDEA Energy Institute external funding: 170.502,45 €

18. Title/Acronym: Battery Energy Storage Digital Twin - Models and Data / BEST-MODA (TED2021-131777B-C21)
Partners: IMDEA Energy Institute (Coordinator), University of Alcalá de Henares
Period: 2022-2024
Funding Institution/Program: Ministry of Science and Innovation / European Union NextGenerationEU / PRTR. / TED 2021
IMDEA Energy Institute external funding: 184.000 €

19. Title/Acronym: Next Generation of MOF-Based Membranes for H2 Technologies: fuel cells and electrolyzers / H2-MOF (TED2021-132092B-C21)
Partners: IMDEA Energy Institute (Coordinator), University of Alcalá de Henares
Period: 2022-2024
Funding Institution/Program: Ministry of Science and Innovation / European Union NextGenerationEU / PRTR / TED 2021
IMDEA Energy Institute external funding: 206.899,95 €

20. Title/Acronym: Municipal green residues as novel substrates for sustainable bioplastic production via anaerobic fermentation / RESOPLA (TED2021-132024B-C21)
Partners: IMDEA Energy Institute (Coordinator), University of Alcalá de Henares
Period: 2022-2024
Funding Institution/Program: Ministry of Science and Innovation / European Union Next-GenerationEU / PRTR / TED 2021
IMDEA Energy Institute external funding: 206.899,95 €

21. Title/Acronym: Towards Digital Transition in Solar Chemistry (TED2021-130173B-C41) / SOLARCHEM5.0
Partners: IMDEA Energy Institute (Coordinator), Politécnica University of Madrid, CIE-MAT, University of Girona
Period: 2022-2024
Funding Institution/Program: Ministry of Science and Innovation / European Union Next-GenerationEU / PRTR / TED 2021
IMDEA Energy Institute external funding: 203.550 €

22. Title/Acronym: Modeling and Development of Membraneless Microfluidic Redox Flow Batteries Based on Immiscible Electrolytes / MICROBAT (TED2021-129378B-C22)
Partners: Calos III University (Coordinator), IMDEA Energy Institute
Period: 2022-2024
Funding Institution/Program: Ministry of Science and Innovation / European Union Next-GenerationEU / PRTR / TED 2021
IMDEA Energy Institute external funding: 184.000 €

23. Title/Acronym: Circularity of end-of-life vehicles plastic wastes: Chemical recycling / CIRPLACAR (TED2021-130820B-C22)
Partners: Rey Juan Carlos University (Coordinador), IMDEA Energy Institute
Period: 2022-2024
Funding Institution/Program: Ministry of Science and Innovation / European Union Next-GenerationEU / PRTR / TED 2021
IMDEA Energy Institute external funding: 172.500 €

24. Title/Acronym: Flexible and autonomous operation of photovoltaic SOLAR power plants by using Hybrid FLow-battery-based Energy Storage Systems / SOLARFLESS (TED2021-132854A-I00)
Partners: IMDEA Energy Institute
Period: 2022-2024
Funding Institution/Program: Ministry of Science and Innovation / European Union Next-GenerationEU / PRTR / TED 2021
IMDEA Energy Institute external funding: 137.885 €

25. Title/Acronym: "AgRoindustrial wAste ValorIsation into bioethanOL by an innovative anaerobIC mixed-culture / RAVIOLIC (TED2021-132809A-I00)
Partners: IMDEA Energy Institute
Period: 2022-2024
Funding Institution/Program: Ministry of Science and Innovation / European Union Next-GenerationEU / PRTR / TED 2021
IMDEA Energy Institute external funding: 149.500 €

1.3. Industrial projects

1. Title/Acronym: Advanced fuels and polymers from municipal solid wastes / RESUCAP (IND2018/AMB-9594)
Partners: Repsol; IMDEA Energy Institute
Period: 2019-2022
Funding Institution/Program: Comunidad de Madrid / Industrial Doctorates 2018
IMDEA Energy Institute external funding: 89.000 €

2. Title/Acronym: Porous materials for the minimization of chlorates in treated waters / CLORATO (IND2019/AMB-17129)
Partners: Canal Isabel II; IMDEA Energy Institute
Period: 2020-2023
Funding Institution/Program: Comunidad de Madrid / Industrial Doctorates 2019
IMDEA Energy Institute external funding: 89.995 €

3. Title/Acronym: Modeling and reformulation of batteries for emergency lighting devices / BAILEM (IND2019/AMB-17189)
Partners: Electrozemper; IMDEA Energy Institute
Period: 2020-2023
Funding Institution/Program: Comunidad de Madrid / Industrial Doctorates 2019
IMDEA Energy Institute external funding: 90.000 €

4. Title/Acronym: Hybridization of geothermal energy and flow batteries for heating and cooling of zero-energy tertiary use buildings / GeoBATT (RTC-2017-5955-3)
Partners: Sacyr Industrial (Coordinator); PVH Energy Storage; IMDEA Energy Institute; Polytechnic University of Madrid; Carlos III University of Madrid
Period: 2018-2022
Funding Institution/Program: Ministry of Science, Innovation and Universities / Collaboration Challenges 2017
IMDEA Energy Institute external funding: 255.476 €

5. Title/Acronym: New technologies for the removal and in situ detection of emerging contaminants in wastewater / ESENCE (RTC-2019-007254-5)
Partners: Depuración de Aguas del Mediterráneo (Coordinator); IMDEA Energy Institute; Fundación Centro Tecnológico de Investigación Multisectorial
Period: 2020-2023
Funding Institution/Program: Ministry of Science and Innovation / Collaboration Challenges 2019
IMDEA Energy Institute external funding: 82.288 €

6. Title/Acronym: Production of sustainable fuels by UPGrading of both digestate and stillage RESidues through the integration of thermochemical, catalytic and biotechnological processes / UPGRES (PLEC2021-007761)
Partners: IMDEA Energy Institute (Coordinator); Rey Juan Carlos University; Ingelia; Repsol
Period: 2021-2024
Funding Institution/Program: Ministry of Science and Innovation / European Union NextGenerationEU / PRTR / Proyectos en líneas estratégicas 2021
IMDEA Energy Institute external funding: 262.940 €

7. Title/Acronym: Solar catalysis for a renewable energy future / SOL-Future (PLEC2021-007906)
Partners: IMDEA Energy Institute (Coordinator); ICMM; ICIQ; CIEMAT; Apria Systems; CEPSA
Period: 2021-2024
Funding Institution/Program: Ministry of Science and Innovation / European Union NextGenerationEU / PRTR / Proyectos en líneas estratégicas 2021
IMDEA Energy Institute external funding: 253.630 €

8. Title/Acronym: Circular Economy Innovation HUB of the Community of Madrid / HUB-MADRID+CIRCULAR
Partners: Repsol (Coordinator); IMDEA Energy Institute; Evoenzyme; Ariema Energía y Medioambiente; Seenso Renoval
Period: 2021-2023
Funding Institution/Program: Comunidad de Madrid
IMDEA Energy Institute external funding: 970.589 €

1.4. International projects

1. Title/Acronym: Hybrid materials for artificial photosynthesis / HyMap (648319)
Partners: IMDEA Energy Institute
Period: 2015-2022
Funding Institution/Program: European Union / H2020. ERC-2014-CoG
IMDEA Energy Institute external funding: 2.506.738 €

2. Title/Acronym: Membrane-free redox flow batteries / MFreeB (726217)
Partners: IMDEA Energy Institute
Period: 2017-2023
Funding Institution/Program: European Union / H2020. ERC-2016-CoG
IMDEA Energy Institute external funding: 1.998.407 €

3. Title/Acronym: Solar facilities for the european research area - third phase / SFERA-III (823802)
Partners: Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT) (Coordinator); Centre National de la Recherche Scientifique (CNRS); Agenzia Nazionale per le Nuove Tecnologie; L`Energia e lo Sviluppo Economico Sostenibile (ENEA); Deutsches Zentrum für Luft – und Raumfahrt e.V. (DLR); Commissariat à L´Énergie Atomique et aux Énergies Alternatives (CEA); Universidade de Évora; Eidgenössische Technische Hochschule Zürich (ETHZ); Fundación IMDEA Energía; The Cyprus Institute; Fraunhofer Gesellschaft zur Förderung der angewandten Forschung; Laboratorio Nacional de Energia e Geologia I.P. (LNEG); Middle East Technical University; Universidad de Almería; Euronovia; European Solar Thermal Electricity Association (ESTELA)
Period: 2019-2023
Funding Institution/Program: European Union / H2020-INFRAIA-2018-2020 (H2020-INFRAIA-2018-1)
IMDEA Energy Institute external funding: 467.065 €

4. Title/Acronym: Removing hazardous substances to increase recycling rates of WEEE, ELV and CDW plastics / NONTOX (820895)
Partners: Teknologian tutkimuskeskus VTT Oy (Coordinator); Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung; Università degli studi della Campania Luigi Vanvitelli; Relight srl; Fundación IMDEA Energía; AIMPLAS - Asociación de Investigación de Materiales Plásticos y Conexas; Stena Recycling International ab; Galea Polymers sl; Ecodom - Consorzio Italiano per il Recupero e Riciclaggio Elettrodomestici; Norner Research as; Aalto-Korkeakoulusäätiö; Coolrec bv
Period: 2019-2022
Funding Institution/Program: European Union / H2020-SC5-2018-2019-2020 (H2020-SC5-2018-2)
IMDEA Energy Institute external funding: 538.321 €

5. Title/Acronym: European training network in innovative polymers for next-generation electrochemical energy storage / POLYSTORAGE (860403)
Partners: Friedrich-Schiller-Universitat JENA (Coordinator), Universidad del País Vasco/ Euskal Herriko Unibertsitateam; Karlsruher Institut fuer technologie; Uppsala Universitet; Universite Catholique de louvain; Politecnico di Torino; Fundación IMDEA Energía; Lithops; Universite de pau et des pays de l'adour; Aalto korkeakoulusaatio; Kemijski Institut; Energy Storage Solutions. Partner Organisations: Deakin University; Scania CV AB; Toyota Motor Europe; Evonik Creavis GmbH; TCI Europe; CALIXHE; Chemspeed Technologies AG; NETZSCH Gerätebau GmbH; Solvionic; Repsol; University of Ljubljana
Period: 2019-2023
Funding Institution/Program: European Union / H2020-MSCA-ITN-2019 (ETN)
IMDEA Energy Institute external funding: 376.357 €

6. Title/Acronym: Non-conventional yeasts for the production of bioproducts / Yeast4Bio (CA18229)
Partners: IMDEA Energy Institute (Coordinator); more than 70 researchers of 50 companies, universities, research centres, associations, from all over the world
Period: 2019-2023
Funding Institution/Program: European Union / COST actions
IMDEA Energy Institute external funding: 80.000 €(estimated)

7. Title/Acronym: Heating triggered drug release from nanometric inorganic-metal organic framework composites / HeatNMof (860942)
Partners: IMDEA Energy Institute (Coordinator); Universidad de Santiago de Compostela; Centre National de la Recherche Scientifique CNRS; Universiteit Antwerpen; Immaterial labs ltd; Institut National des Sciences Appliquees de Toulouse; Universitaet Hamburg; Fondazione istituto italiano di tecnologia; Nanoscale biomagnetics; Isern patentes y marcas. Partner Organizations: Universidad Rey Juan Carlos; Universidad de Zaragoza; University of Cambridge; Universite de Nantes; Universita degli studi di Genova; Oncodesign
Period: 2020-2024
Funding Institution/Program: European Union / H2020-MSCA-ITN-2019 (ETN)
IMDEA Energy Institute external funding: 501.810 €

8. Title/Acronym: GHz nanoscale electrical and dielectric measurements of the solid-electrolyte interface and applications in the battery manufacturing line / NanoBat (861962)
Partners: Keysight Technologies Gmbh (Coordinator); Ruhr-universitaet bochum; Qwed Spolka z Ograniczona Odpowiedzialnoscia; Universitat Linz; Pleione Anonymi Etairia Kainotomon Energeiakon Efarmogon; Eidgenossisches Institut fur Metrologie Metas; AIT Austrian Institute of Technology Gmbh; IMDEA Energy Institute; Technische Universitaet Braunschweig; Kreisel Electric Gmbh & co kg; Centro Ricerche Fiat Scpa; Eurice European Research and Project Office Gmbh
Period: 2020-2023
Funding Institution/Program: European Union / H2020-NMBP-TO-IND-2018-2020 (DT-NMBP-08-2019)
IMDEA Energy Institute external funding: 190.937 €

9. Title/Acronym: Production of advanced biodiesel from animal wastes using supercritical technologies / LIFE Superbiodiesel (LIFE19 CCM/ES/001189)
Partners: Asociación de Investigación de la Industria del Juguete, Conexas y Afines (AIJU) (Coordinator); Compañía Española de Petróleos; IMDEA Energy Institute; Asociación de Investigación para la Industria del Calzado y Conexas; Agencia Estatal Consejo Superior de Investigaciones Científicas; ORGANOVAC; Universidad de Murcia
Period: 2020-2023
Funding Institution/Program: European Union / H2020. LIFE 2019 - Climate change and mitigation
IMDEA Energy Institute external funding: 57.867 €

10. Title/Acronym: Technical, business and regulatory approaches to enhance the renewable energy capabilities to take part actively in the electricity and ancillary services markets / DRES2Market (952851)
Partners: Asociación de empresas de energías renovables, APPA (Coordinator); Institute of communication and computer systems; Fronius International; Etaireia Parohis Aeriou Attikis - Elleniki Anonymi Energeias Fysiko Aerio - Elleniki Etaireia Energeias; IMDEA Energy Institute; Gesternova; Commissariat à l'énergie atomique et aux énergies alternatives; Instytut Energetyki; OMI, Polo Español S.A.; ENEA Operator sp. z o.o.; Deloitte Advisory; PKP Energetyka; Centre National de la Recherche Scientifique, CNRS; Høgskulen på Vestlandet; Instituto para la diversificación y ahorro de la energía, IDAE
Period: 2020-2023
Funding Institution/Program: European Union / H2020-LC-SC3-2018-2019-2020 (LC-SC3-RES-28-2018-2019-2020)
IMDEA Energy Institute external funding: 332.125 €

11. Title/Acronym: Manufacture of nanostructured Conjugated Porous Polymers for energy applications / NanoCPPs (899773)
Partners: IMDEA Energy Institute
Period: 2020-2022
Funding Institution/Program: European Union / H2020. ERC-2019-PoC
IMDEA Energy Institute external funding: 150.000 €

12. Title/Acronym: Novel materials as electrode and electrolyte components in fuel cell technology / C-MOF.cell (PCI2020-111998)
Partners: IMDEA Energy Institute (Coordinator); University of La Laguna; University of Tartu (UT-Estonia); Institut Charles Gerhardt Montpellier (ICGM-France)
Period: 2020-2023
Funding Institution/Program: Ministry of Science and Innovation / M-ERA.NET Call 2019/ PCI 2020
IMDEA Energy Institute external funding: 100.000 €

13. Title/Acronym: Developing early-warning systems for improved microalgae PROduction and anaerobic DIGestIOn / PRODIGIO (101007006)
Partners: Agencia Estatal Consejo Superior de Investigaciones Científicas (Coordinator), Alfred-Wegener-Institut, Helmholtz-Zentrum für Polar- und Meeresforschung; Association pour la Recherche et le Développement des Méthodes et Processus Industriels; Idconsortium; IMDEA Energy Institute; Norges Miljo-Og Biovitenskaplige Universitet; National Taiwan University; Universidad de Almería
Period: 2021-2023
Funding Institution/Program: European Union / H2020-LC-SC3-2018-2019-2020 (LC-SC3-RES-1-2019-2020)
IMDEA Energy Institute external funding: 324.920 €

14. Title/Acronym: Sustainability Assessment of Harmonised Hydrogen Energy Systems: Guidelines for Life Cycle Sustainability Assessment and Prospective Benchmarking / SH2E (101007163)
Partners: MDEA Energy Institute (Coordinator); The Institute of Applied Energy; Greendelta GmbH; Forschungszentrum Jülich GmbH; Commissariat à l'énergie atomique et aux énergies alternatives; Fundación para el Desarrollo de las Nuevas Tecnologías del Hidrógeno en Aragón; Symbio
Period: 2021-2024
Funding Institution/Program: European Union / H2020-JTI-FCH-2020-1 (FCH-04-5-2020)
IMDEA Energy Institute external funding: 544.764 €

15. Title/Acronym: Establishing Eco-design Guidelines for Hydrogen Systems and Technologies / eGHOST (101007166)
Partners: IMDEA Energy Institute (Coordinator); The Institute of Applied Energy; Commissariat à l´énergie atomique et aux énergies alternatives; Univerza v Ljubljani; Fundación para el Desarrollo de las Nuevas Tecnologías del Hidrógeno en Aragón; Symbio
Period: 2021-2023
Funding Institution/Program: European Union / H2020-JTI-FCH-2020-1 (FCH-04-3-2020)
IMDEA Energy Institute external funding: 275.890 €

16. Title/Acronym: Hydrogen PROduction by MEans of solar heat and power in high TEmperature Solid Oxide Electrolysers / PROMETEO (101007194)
Partners: Agenzia Nazionale per le Nuove Tecnologie, L'energia e lo Sviluppo Económico Sostenibile, ENEA (Coordinador); Capital Energy; Fondazione Bruno Kessler; Solidpower; IMDEA Energy Institute; Snam S.p.A.; École Polytechnique Fédérale de Lausanne; Nextchem SRL; Stamicarbon B..
Period: 2021-2024
Funding Institution/Program: European Union / H2020-JTI-FCH-2020-1 (FCH-02-2-2020)
IMDEA Energy Institute external funding: 150.625 €

17. Title/Acronym: A Hybrid Reactor for Solar CO2 and N2 Conversion Coupled to Waste-Water Treatment / HYSOLCHEM (101017928)
Partners: IMDEA Energy Institute (Coordinator); Rey Juan Carlos University; Innova SRL; Katholieke Universiteit Leuven; Amer-Sil Sa; Diamond Light Source Limited; Apria Systems.
Period: 2021-2023
Funding Institution/Program: European Union / H2020-FETPROACT-2018-2020 (FET-PROACT-EIC-07-2020)
IMDEA Energy Institute external funding: 801.875 €

18. Title/Acronym: Multi-Electron Processes for Light Driven Electrodes and Electrolytes in Conversion and Storage of Solar Energy / LIGHT-CAP (101017821)
Partners: Fondazione Istituto Italiano Di Tecnologia; École Polytechnique Fédérale de Lausanne (Coordinator); Technische Universität Dresden; Justus-Liebig-Universität Giessen; Politecnico Di Milano; IMDEA Energy Institute
Period: 2021-2024
Funding Institution/Program: European Union / H2020-FETPROACT-2018-2020 (FETPROACT-EIC-07-2020)
IMDEA Energy Institute external funding: 402.190 €

19. Title/Acronym: Sustainable oleochemicals bioproduction from carboxylates via oleaginous fermentation / OLEOFERM (PCI2021-121936)
Partners: IMDEA Energy Institute (Coordinator); Université Clermont, University of Ljubljana, Jožef Stefan Institute, BIO-VALO
Period: 2021-2023
Funding Institution/Program: Ministry of Science and Innovation / ERA CoBiotech. Call 2020/ PCI 2021
IMDEA Energy Institute external funding: 199.964 €

20. Title/Acronym: Opening the pathway towards dendritic zeolites / TODENZE (101021502)
Partners: IMDEA Energy Institute
Period:2021-2026
Funding Institution/Program: European Union / ERC-2020-ADG
IMDEA Energy Institute external funding: 2.378.438 €

21. Title/Acronym: Mediated biphasic Battery / MeBattery (101046742)
Partners: University of Burgos (Coordinator); IMDEA Energy Institute; Institute of Science and Technology Austria; Universidade de Aveiro; Ruhr-Universität Bochum; Eurice European Research and Project Office GmbH
Period: 2021-2025
Funding Institution/Program: European Union / HORIZON-EIC-2021-PATHFINDEROPEN-01
IMDEA Energy Institute external funding: 484.079 €

22. Title/Acronym: Researchers and citizens: facing together the European challenges / MADRIDNIGHT (101061343)
Partners: Fundación para el Conocimiento Madri+d (Coordinator); CNIO; UCM; Fundación IMDEA Alimentación; UAM; UC3M; Fundación IMDEA Energía; CSIC; UAH; Fundación IMDEA Agua; UPM; Fundación IMDEA Software; URJC; OEI
Period: 2022-2024
Funding Institution/Program: European Union / HORIZON-MSCA-2022-CITIZENS-01
IMDEA Energy Institute external funding: 10.000 €

23. Title/Acronym: Tuning Ion Selectivity and Recovery with Advanced Nanostructured Materials / Mind the Gap (19415)
Partners: Wageningen University (Coordinador); Fundación IMDEA Energía; Wetsus, Voltea; Water Future; Van der Knaap
Period: 2022-2024
Funding Institution/Program: Dutch Research Council (NWO) / NWO Talent Programme Vici AES 2021

24. Title/Acronym: SUNERGY Community and eco-system for accelerating the development of solar fuels and chemicals / SUNER-C (101058481)
Partners: Universiteit UTRECHT (Coordinator); Commissariat A l'Energie Atomique Et Aux Energies Alternatives; European Research Institute of Catalysis A.I.S.B.L.; Universiteit Gent ; Universiteit Leiden; Uniwersytet Warszawski; Fundacio Privada Institut Catala D'investigacio Química; Siemens Energy Global Gmbh & Co. KG; DECHEMA Gesellschaft für Chemische Technik und Biotechnologie; Fraunhofer Gesellschaft Zur Foerderung Der Angewandten Forschung; Carbyon; Turun Yliopisto; Ustav Fyzikalni Chemie J. Heyrovskeho; Uppsala Universitet; Covestro Deutschland; CO2 Value Europe A.I.S.B.L.; IMDEA Energy Institute; Alma Digit SRL; Interuniversitair Micro-Electronica Centrum; Avantium Chemicals BV; NextChem S.p.A; Alliance Europeenne De Recherche Dans Le Domaine De L'energie; Synest Idiotiki Kefalaiouchiki Etaireia; Universitatea Din Bucuresti; Arcelormittal Belgium NV; Assoc. partner Total Research & Technology Feluy; Vicat; Climate Action Network Europe Asbl; Belgisch Laboratorium Van de Elektriciteitsindustrie Laborelec CVBA; Engie; Solvay - Rhodia Operations
Period: 2022-2025
Funding Institution/Program: European Union / HORIZON-CL4-2021-RESILIENCE-01-16
IMDEA Energy Institute external funding: 70.300 €

25. Title/Acronym: Development of a photoelectrochemical device for Ammonia production / DEMONIA (101069268)
Partners: IMDEA Energy Institute
Period: 2022-2024
Funding Institution/Program: European Union / HORIZON-ERC-POC (ERC-2022-POC1)
IMDEA Energy Institute external funding: 150.000 €

26. Title/Acronym: Novel electrode coatings and interconnect for sustainable and reusable SOEC / NOUVEAU (101058784)
Partners: Vlaamse Instelling Voor Technologisch Onderzoek N.V. (VITO) (Coordinador); Forschungszentrum julich GMBH, FZL; Marion Technologies S.A.; Coatema Coating Machinery GMBH; Technische Universiteit Eindhoven; QSAR Lab Spolka Z Ograniczona Odpowiedzialnoscia; Fundación IMDEA Energía; Centre National de la Recherche Scientifique CNRS; Fiaxell Sarl
Period: 2022-2025
Funding Institution/Program: European Union / HORIZON-CL4-2021-RESILIENCE-01-12
IMDEA Energy Institute external funding: 218.380 €

27. Title/Acronym: Synergetic integration of BIOteChnology and thermochemical CaTalysis for the cAscade coNvErsion of organic waste to jet-fuel / BIOCTANE (101084336)
Partners: IMDEA Energy Institute (Coordinator); Technische Universitat Hamburg; Institut National de Recherche pour L'agriculture, L'alimentation et L'environnement; Paul Scherrer Institut (Associated); Universidad Rey Juan Carlos; Aviation Initiative for Renewable Energy in Germany e.V.
Periodo: 2022-2026
Funding Institution/Program: European Union / HORIZON-CL5-2021-D3-03-03
IMDEA Energy Institute external funding: 594.274 €

28. Title/Acronym: Direct co-processing of CO2 and water to sustainable multicarbon energy products in novel photocatalytic reactor / DESIRED (101083355)
Partners: Consorzio Interuniversitario Reattivita Chimica e Catalisi (Coordinator); Institut fur Nachhaltige Technologien; Univerzita Karlova; EBOS Technologies LTD; IMDEA Energy Institute; Innovative Catalysis for Carbon Recycling and Biopolymers; Uniwersytet Warszawski
Period: 2022-2026
Funding Institution/Program: European Union / HORIZON-CL5-2021-D3-03-02
IMDEA Energy Institute external funding: 239.313 €

29. Title/Acronym: Solar Hybrid Air-sCO2 Power Plants / SHARP-sCO2 (101083899)
Partners: Kungliga Tekniska Hoegskolan KTH (Coordinador); Fundación IMDEA Energía; Rina Consulting SPA; Odqa Renewable Energy Technologies Limited; The Chancellor, Masters and Scholars of the University of Oxford; Technische Universitaet Dresden; Seico Heizungen GMBH; Ethniko Kentro Erevnas Kai Technologikis Anaptyxis; Moroccan Agency for SolEr Energy SA; Universita Degli Studi Di Genova.
Period: 2022-2025
Funding Institution/Program: European Union / HORIZON-CL5-2021-D3-03-06
IMDEA Energy Institute external funding: 410.000 €

30. Title/Acronym: NOvel energy storage technologies usable al MilitAry Deployments in forward operating bases / NOMAD (101074995)
Partners: Equipos Moviles De Campana SA (Coordinador); Commissariat A L Energie Atomique Et Aux Energies Alternatives;Fraunhofer Gesellschaft Zur Foerderung Der Angewandten Forschung E.v.; Fundación IMDEA Energía; Instituto Nacional De Tecnica Aeroespacial Esteban Terradas; Intracom Defense Single Member S A; Interneshanal Pauar Saplay Ad; Pipistrel Vertical Solutions Doo Podjetje Za Napredne Letalske Resitve; Quinteq Energy B.V.; Skeleton Technologies Ou; Skoon Energy B.V.; Teces, Tehnološki Center Za Električne Stroje ; Thales Programas De Electronica y Comunicaciones SA; Thales; Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek Tno; Jenoptik Power Systems Gmbh; Institutt For Energiteknikk; Gmbh; F4ster - Future 4 Sustainable Transport And Energy Research Institute Zartkoruen Mukodo Tarsasag
Period: 2022-2027
Funding Institution/Program: European Union / EDF-2021-ENERENV-D-NGES
IMDEA Energy Institute external funding: 1.031.810,43 €

1.5. Contracts with companies and organizations

1. Title/Acronym: Technical advice for the determination of polluting substances in a paint application process
Company: Mercedes Benz Spain (Spain)
Period: 2018-2023
IMDEA Energy Institute external funding: 12.650 €

2. Title/Acronym: Testing of batteries for wireless surveillance devices / BAMOWI
Company: Securitas Direct Spain (Spain)
Period: 2019-2022
IMDEA Energy Institute external funding: 59.080 €

3. Title/Acronym: Services RedLab Biopen
Period: 2020-present
IMDEA Energy Institute external funding: 10.030 €

4. Title/Acronym: Services RedLab OperandoLab
Period: 2020- present
IMDEA Energy Institute external funding: 240 €

5. Title/Acronym: Services RedLab TermoCat
Period: 2020- present
IMDEA Energy Institute external funding: 59.620,20 €

6. Title/Acronym: Solar thermal conversion of CO2 into valuable nanomaterials (NPRP12S-0322-190433)
Partners: Gulf Organisation for Research and Development QSTP LLC (Coordinator); IMDEA Energy Institute
Period: 2020-2023
IMDEA Energy Institute external funding: 51.108 $ (45.271 €)

7. Title/Acronym: Development of a low carbon and economically-competitive cement (NPRP12S-0319-190413)
Partners: Gulf Organisation for Research and Development QSTP LLC (Coordinator); IMDEA Energy Institute; Bauhaus Universitat Weimar; Eddymir Ltd.
Period: 2020-2024
IMDEA Energy Institute external funding: 76.873 $ (68.098 €)

8. Title/Acronym: Renewable technologies for energy storage based on new photovoltaic-thermal systems / TRANSFER
Company: CEDRIÓN (Spain) / MISIONES CDTI
Period: 2020-2023
IMDEA Energy Institute external funding: 40.000 €

9. Title/Acronym: New generation of waste biomass energy use systems without emissions. Towards carbon negative energy sources / Oe-mision
Company: INGELIA (Spain) / MISIONES CDTI
Period: 2020-2023
IMDEA Energy Institute external funding: 125.040 €

10. Title/Acronym: New flexible energy system for the efficient integration of new decarbonisation technologies / FLEXENER
Company: Siemens Gamesa (Spain) / MISIONES CDTI
Period: 2021-2023
IMDEA Energy Institute external funding: 87.000 €

11. Title/Acronym: Thermal control system based on the corona effect for hybrid and electric vehicles / eVEHICOOL
Company: CEDRION (Spain) / Start-up's y pymes
Period: 2021-2023
IMDEA Energy Institute external funding: 30.000 €

12. Title/Acronym: Test Specification Ni-MH backup pack new manufacturer approval testing / TEST-Ni-MH
Company: Master Battery (Spain)
Period: 2021-2022
IMDEA Energy Institute external funding: 7.000 €

13. Title/Acronym: Technical assistance service for a prospective study of renewable hydrogen production, logistics and demand in Spain (2020-2050) / DESHEO
Institution: Fundación para el desarrollo de las nuevas tecnologías del hidrógeno en Aragón (Spain)
Period: 2021-2022
IMDEA Energy Institute external funding: 30.000 €

14. Title/Acronym: Economic and environmental analysis of train parts / E2TRAIN
Company: Innovation Tree (Spain)
Period: 2021-2022
IMDEA Energy Institute external funding: 18.900 €

15. Title/Acronym: Solar tailings transformation / STT
Institution: SMI-ICE-Chile (Chile)
Period: 2021-2022
IMDEA Energy Institute external funding: 6.683 €

16. Title/Acronym: EFESTO-C
Company: Synhelion (Switzerland)
Period: 2021-2022
IMDEA Energy Institute external funding: 123.000 €

17. Title/Acronym: Life cycle analysis of Perseo Biotechnology's distillation process for the production of bioethanol from FORSU, in the framework of the URBIOFIN project / PERACV
Company: Perseo Biotechnology (Spain)
Period: 2021-2022
IMDEA Energy Institute external funding: 8.900 €

18. Title/Acronym: Application of capacitive deionisation to the treatment of ground and surface waters / ReWaise-CDI
Company: FCC Aqualia (Spain)
Period: 2021-2022
IMDEA Energy Institute external funding: 99.000 €

19. Title/Acronym: Control of power converters in vibration systems / COPOWCO4
Company: IMV Corporation (Japan)
Period: 2021-2022
IMDEA Energy Institute external funding: 22.361 €

20. Title/Acronym: Services of Central Research Laboratories
Period: 2021-present
IMDEA Energy Institute external funding: 250 €

21. Title/Acronym: New materials, technologies and processes for the generation, storage, transport and integration of renewable hydrogen and biomethane from biowaste / ECLOSIÓN
Company: GHENOVA INGENIERÍA (Spain) / MISIONES CDTI
Period: 2021-2024
IMDEA Energy Institute external funding: 45.011 €

22. Title/Acronym: Research on Innovative and Efficient Green Hydrogen Production and Storage Technologies based on the Circular Economy / ZEPPELIN
Company: Perseo Biotechnology (Spain) / MISIONES CDTI
Period: 2021-2024
IMDEA Energy Institute external funding: 14.736 €

23. Title/Acronym: Producción de etanol mediante fermentación anaerobia a partir de residuos orgánicos / PERETANOL
Company: Perseo Biotechnology (Spain)
Period: 2022
IMDEA Energy Institute external funding: 2.000 €

24. Title/Acronym: Nueva tecnología de lixiviación electroquímica de minerales de Litio / LIXELI
Company: Lithium Iberia (Spain)
Period: 2022
IMDEA Energy Institute external funding: 14.600 €

25. Title/Acronym: Huella de carbono de bioetanol producido en el proceso Perseo / PERHU
Company: Perseo Biotechnology (Spain)
Period: 2022
IMDEA Energy Institute external funding: 7.965 €

26. Title/Acronym: Análisis ambiental del ciclo de vida de sistemas de hidrógeno / ACV-H2
Company: Contrato con Centro Nacional del Hidrógeno (Spain)
Period: 2022-2023
IMDEA Energy Institute external funding: 9.000 €

27. Title/Acronym: Evaluación de nuevas tecnologías de almacenamiento eléctrico: Análisis de la batería de polímeros no metálicos de PolyJoule para almacenamiento estacionario / TECNOBAT
Company: Naturgy Nuevas Energías (Spain)
Period: 2022
IMDEA Energy Institute external funding: 1.000 €

28. Title/Acronym: EFESTO-C_2
Company: Synhelion (Switzerland)
Period: 2022-2023
IMDEA Energy Institute external funding: 168.000 €

29. Title/Acronym: Control of power converters in vibration systems / COPOWCO5
Company: IMV Corporation (Japan)
Period: 2022
IMDEA Energy Institute external funding: 19.677,32 €

30. Title/Acronym: Consultoría sobre baterías para aplicaciones de grid forming y servicios auxiliares de red / GFSTORAGE
Company: Naturgy Nuevas Energías (Spain)
Period: 2022
IMDEA Energy Institute external funding: 4.105 €

31. Title/Acronym: Accelerated Testing of Large Li-ion Battery Cells / ATELIB
Institution: Laboratório Nacional de Energia e Geologia (Portugal)
Period: 2022
IMDEA Energy Institute external funding: 4.500 €

32. Title/Acronym: Análisis de alternativas de reducción de huella de carbono del proceso Perseo / PERHU-2
Company: Perseo Biotechnology (Spain)
Period: 2022
IMDEA Energy Institute external funding: 2.280 €

33. Title/Acronym: Síntesis del material tipo MOF necesario para la prueba piloto de materiales adsorbentes de clorato en ETAP Colmenar de Canal de Isabel II / 88-NH2
Company: Canal de Isabel II (Spain)
Period: 2022-2023
IMDEA Energy Institute external funding: 14.995 €

34. Title/Acronym: Estudio del estado del arte sobre la producción y utilización de combustibles alternativos en la metalurgia del cobre 1992/0120/HV/01 / AENORAC
Company: AENOR (Spain)
Period: 2022
IMDEA Energy Institute external funding: 4.000 €

35. Title/Acronym: Control of power converters in vibration systems / COPOWCO6
Company: IMV Corporation (Japan)
Period: 2022-2023
IMDEA Energy Institute external funding: 33.896,68 €

36. Title/Acronym: Formación en análisis de sostenibilidad del ciclo de vida (LCSAtraining) / CuAINIA
Institution: AINIA (Spain)
Period: 2022
IMDEA Energy Institute external funding: 5.000 €

37. Title/Acronym: Carbonate Plasterboard: Development of a Locally-Sourced and Carbon-Negative Construction Material" (NPRP14S-0418-210229)
Partners: GORD - Gulf Organisation for Research and Development QSTP LLC (Coordinator); IMDEA Energy Institute; Empa - Swiss Federal Laboratories for Material Science and Technology
Company: Gulf Organisation for Research and Development (Qatar) / NPRP-S 14th cycle. Qatar National Research Fund (QNRF)
Period: 2022-2025
IMDEA Energy Institute external funding: 38,133 $ (31.765 €)

2. Personnel grants

1. Program: Recruitment of experienced doctors 2017 (Modality 1)
Project/Acronym: Computer-aided design of functional nanomaterials for energy storage applications / CADFUNES (2017-T1/AMB-5264)
Period: 2018-2022
Funding Institution: Comunidad de Madrid
IMDEA Energy Institute external funding: 110.000 €(Total: 306.976 €)
Dr. Andreas Mavrantonakis

2. Program: Contract FPI2017 (BES2017-082749)
Project/Acronym: CO2 photoconversion to solar fuels using multifunctional materials / Ra-Phuel (ENE2016-79608-C2-1-R)
Period: 2018-2022
Funding Institution: Ministry of Science, Innovation and Universities
IMDEA Energy Institute external funding: 82.000 €(Total: 88.250 €)
Mr. Giacomo Armani

3. Program: Recruitment of experienced doctors 2018 (Modality 1)
Project/Acronym: Development of biochar-based materials for their application in bio-filters for the treatment of polluted air (nox, vocs) in urban environments / BioCharFilt (2018-T1/AMB-10023)
Period: 2019-2023
Funding Institution: Comunidad de Madrid
IMDEA Energy Institute external funding: 110.000 €(Total: 310.000 €)
Dr. Javier Fermoso

4. Program: Recruitment of laboratory technicians 2018 (PEJ2018-004809-A)
Period: 2019-2022
Funding Institution: Ministry of Science, Innovation and Universities
IMDEA Energy Institute external funding: 43.205 €
Mr. Christian Sánchez

5. Program: Recruitment of laboratory technicians 2018 (PEJ2018-004828-A)
Period: 2019-2022
Funding Institution: Ministry of Science, Innovation and Universities
IMDEA Energy Institute external funding: 43.205 €
Mr. Manuel Ortega

6. Program: Contract FPI2018 (PRE2018-086502)
Project/Acronym: Microbial-oils production via anaerobic digestion: bioconversion of volatile fatty acids by oleaginous yeasts / ACMIBIO-DA (ENE2017-86864-C2-2-R)
Period: 2019-2023
Funding Institution: Ministry of Science, Innovation and Universities
IMDEA Energy Institute external funding: 82.000 €(88.250 €)
Mr. Sergio Morales

7. Program: Juan de la Cierva-Formación 2018 (FJC2018-037781-I)
Period: 2020-2022
Funding Institution: Ministry of Science, Innovation and Universities
IMDEA Energy Institute external funding: 58.219 €
Dr. Nagaraj Patil

8. Program: Juan de la Cierva-Incorporación 2018 (IJC2018-038426-I)
Period: 2020-2022
Funding Institution: Ministry of Science, Innovation and Universities
IMDEA Energy Institute external funding: 61.337 €(Total: 67.337 €)
Dr. Senthilkumar Sirugaloor

9. Program: Recruitment of research assistants and laboratory technicians 2019 (PEJ-2019-TL/AMB-14824)
Period: 2020-2022
Funding Institution: Comunidad de Madrid
IMDEA Energy Institute external funding: 38.000 €
Mr. Amir Jnaini

10. Program: Ramón y Cajal 2019
Project: Producción de Biocombustibles y Bioproductos a partir de lignocelulosa y ácidos grasos volátiles (RYC2019-027773-I)
Period: 2021-2025
Funding Institution: Ministry of Science, Innovation and Universities/FSE
IMDEA Energy Institute external funding: 168.600 €(Total: 208.600 €)
Dr. Elia Tomás

11. Program Ramón y Cajal 2014 / IED
Project: Bioaplications of porous materials (RYC-2014-15039)
Period: 2021-2023
Funding Institution: Ministry of Science and Innovation
IMDEA Energy Institute external funding: 100.000 €
Dr. Patricia Horcajada

12. Program: Juan de la Cierva-Formación 2019 (FJC2019-040159-I)
Period: 2021-2022
Funding Institution: Ministry of Science, Innovation and Universities
IMDEA Energy Institute external funding: 50.000 €
Dr. Teresa Naranjo

13. Program: Juan de la Cierva-Incorporación 2019 (IJC2019-042430-I)
Period: 2021-2023
Funding Institution: Ministry of Science, Innovation and Universities
IMDEA Energy Institute external funding: 87.000 €(Total: 93.000 €)
Dr. Mariam Barawi

14. Program: Juan de la Cierva-Incorporación 2019 (IJC2019-042342-I)
Period: 2021-2023
Funding Institution: Ministry of Science, Innovation and Universities
IMDEA Energy Institute external funding: 87.000 €(Total: 93.000 €)
Dr. Javier Roldán

15. Program: Recruitment of research assistants and laboratory technicians 2020 (PEJ-2020-TL/AMB-19678)
Period: 2021-2022
Funding Institution: Comunidad de Madrid
IMDEA Energy Institute external funding: 31.389 €
Ms. Antártida Rodríguez

16. Program: Contract FPI2020 (PRE2020-094445)
Project/Acronym: Nano-Structured Hybrid Materials for Solar Fuels Photoelectrocatalytic / NHyMPha (PID2019-106315RB-I00)
Period: 2021-2025
Funding Institution: Ministry of Science and Innovation
IMDEA Energy Institute external funding: 90.600 €(Total: 97.460 €)
Ms. Tania Mazuelo

17. Program: H2020-MSCA-IF-2019 (EF-ST)
Project/Acronym: Self-propelled Metal-Organic Framework nanocarriers as promising brain delivery platform / NeuroMOF (897678)
Period: 2021-2023
Funding Institution: European Union
IMDEA Energy Institute external funding: 160.932 €
Dr. Tania Hidalgo

18. Program: Contract FPI2020 (PRE2020-094485)
Project/Acronym: Fourth generation fuels (fuels from residues and wastes) (CEX2019-000931-M-20-1)
Period: 2021-2025
Funding Institution: Ministry of Science and Innovation
IMDEA Energy Institute external funding: 90.600 €(Total: 97.460 €)
Mr. Adrián Lago

19. Program: Contract FPI2020 (PRE2020-094485)
Project/Acronym: New concepts for electromobility (CEX2019-000931-M-20-2)
Period: 2021-2022
Funding Institution: Ministry of Science and Innovation
IMDEA Energy Institute external funding: 11456 €(Total: 11.846 €)
Mr. Manuel del Barrio

20. Program: H2020-MSCA-IF-2020 (EF-RI)
Project/Acronym: High-temperature angular-selective radiant surfaces for the de-carbonisation of energy intensive industries / HEASeRS (101027316)
Period: 2021-2023
Funding Institution: European Union
IMDEA Energy Institute external funding: 160.932 €
Dr. Charles-Alexis Asselineau

21. Program: H2020-MSCA-IF-2020 (EF-ST)
Project/Acronym: Organic/Inorganic Hybrid Photoelectrodes for sustainable CO2 reduction / HyPhoCO (101030782)
Period: 2022
Funding Institution: European Union
IMDEA Energy Institute external funding: 80.466,24 €
Dr. Freddy Oropeza

22. Program: Recruitment of experienced doctors 2020 (Modality 1)
Project/Acronym: SELECTVALUE (2020-T1/AMB-19799)
Period: 2022-2026
Funding Institution: Comunidad de Madrid
IMDEA Energy Institute external funding: 137.500 €(Total: 321.158,60 €)
Dr. Julio Lado

23. Program: Juan de la Cierva-Formación 2020 (FJC2020-043159-I)
Period: 2021-2022
Funding Institution: Ministry of Science and Innovation / European Union NextGenerationEU / PRTR
IMDEA Energy Institute external funding: 52.600 €
Dr. Ricardo Carrao Conceiçao

24. Program: Juan de la Cierva-Incorporación 2020 (IJC2020-043076-I)
Period: 2022-2025
Funding Institution: Ministry of Science and Innovation / European Union NextGenerationEU / PRTR
IMDEA Energy Institute external funding: 91.500 €(Total: 97.800 €)
Dr. Nagaraj Patil

25. Program: H2020-MSCA-COFUND-2020
Project/Acronym: ENERGY FOR FUTURE / E4F (101034297)
Period: 2022
Funding Institution: European Union / Fundación Iberdrola España
IMDEA Energy Institute external funding: 61.092,41 €
Dr. Sergio Pinilla

26. Talent Programme Year 5 (Modality 1)
Project/Acronym: Computer-aided design of functional nanomaterials for energy storage applications / CADFUNES (2021-5A/AMB-20946)
Period: 2022-2026
Funding Institution: Comunidad de Madrid
IMDEA Energy Institute external funding: 55.000 €(Total: 85.000 €)
Dr. Andreas Mavrantonakis

27. Program: Contract FPI2021 (PRE2021-099191)
Project/Acronym: Catalytic upgrading and co-processing of holocellulose-derived bio-oils / AdBioCap (PID2020-114740RB-C21)
Period: 2022-2026
Funding Institution: Ministry of Science and Innovation
IMDEA Energy Institute external funding: 92.400 €(Total: 99.260 €)
Mr. Daniel de la Calle

28. Program: Contract FPI2021 (PRE2021-100022)
Project/Acronym: Biowaste conversion to H2 and microbial oils for fuel production / BIOMIO (PID2020-119403RB-C21)
Period: 2022-2026
Funding Institution: Ministry of Science and Innovation
IMDEA Energy Institute external funding: 92.400 €(Total: 99.260 €)
Ms. Marta de Vicente

29. Program: Contract FPI2021 (PRE2021-100528)
Project/Acronym: New concepts for electromobility including life cycle analysis and sustainability studies (CEX2019-000931-M-21-3)
Period: 2022-2026
Funding Institution: Ministry of Science and Innovation
IMDEA Energy Institute external funding: 92.400 €(Total: 99.260 €)
Ms. Alicia Mortera

30. Program INVESTIGO
Period: 2022-2023
Funding Institution: Comunidad de Madrid
IMDEA Energy Institute external funding: 366.198,08 €
13 fellows

31. Program Ramón y Cajal 2015 / IED
Proyecto/Acrónimo: Design and synthesis of hybrid materials for advances applications: solar fuels generation (RYC-2015-18677)
Period: 2022-2024
Funding Institution: Ministry of Science and Innovation
IMDEA Energy Institute external funding: 100.000 €
Dr. Marta Liras

32. Program: Recruitment of research assistants and laboratory technicians 2021 (PEJ-2021-AI/IND-22349)
Period: 2022-2024
Funding Institution: Comunidad de Madrid
IMDEA Energy Institute external funding: 45.000 €
Mr. Javier Ferrando

33. Program: Recruitment of research assistants and laboratory technicians 2021 (PEJ-2021-TL/AMB-23078)
Period: 2022-2024
Funding Institution: Comunidad de Madrid
IMDEA Energy Institute external funding: 38.000 €
Mr. Daniel Cuevas

34. Program: Recruitment of research assistants and laboratory technicians 2021 (PEJ-2021-TL/AMB-23430)
Period: 2022-2024
Funding Institution: Comunidad de Madrid
IMDEA Energy Institute external funding: 38.000 €
Mr. Alejandro López

3. Mobility actions

3.1. IMDEA Energy research stays

1. Stay at Centre National de la Recherche Scientifique - Institut des Materiaux Nantes, CNRS-IMN, France.
Period: 2 months, 2022
Funding Institution: ITN: HeatNMoF.
Sorraya Lelouche.

2. Stay at National Institute of Chemistry, Slovenia
Period: 3 months, 2022
Funding Institution: ITN: POLYSTORAGE
Rebecca Grieco

3. Stay at Santiago de Compostela University, Spain
Period: 4 months, 2022
Funding Institution: ITN: HeatNMoF
Darina Francesca Pichi

4. Stay at Dublin University, Ireland
Period: 3 months, 2022
Funding Institution: María de Maeztu
Dionysios Moutevelis

5. Stay at Imperial College, UK
Period: 3 months, 2022
Funding Institution: María de Maeztu
Pablo Rodríguez

6. Stay at Denmark University, Denmark
Period: 3 months, 2022
Funding Institution: María de Maeztu
Sergio Morales

7. Stay at Charles University, Czech Republic
Period: 3 months, 2022
Funding Institution: María de Maeztu
Julio López

8. Stay at SINTEF Energy AS, Norway
Period: 3 months, 2022
Funding Institution: María de Maeztu
Njegos Jankovic

9. Stay at Porto University, Portugal
Period: 3 months, 2022
Funding Institution: María de Maeztu
Débora Ruiz

10. Stay at Porto University, Portugal
Period: 2 months, 2022
Funding Institution: María de Maeztu
Miguel García

11. Stay at Imperial College, UK
Period: 2 months, 2022
Funding Institution: María de Maeztu
Miguel Gómez

12. Universidad de Antwerp, Bélgica
Period: 2 months, 2022
Funding Institution: ITN HeatNMoF.
Sorraya Lelouche.

13. ALBA synchroton, España.
Period: 2 months, 2022
Funding Institution: NovaCO2.
Mariam Barawi.

3.2. Visiting researchers

1. Cai Shi
Home institution: Institute of Materials Science - CSIC, Spain
Host Unit: Photoactivated Processes Unit
Period:3 months, 2022

2. Ekin Demiray
Home institution: Ankara University, Turkey
Host Unit: Electrochemical Processes Unit
Period: 12 months, 2022-2023

3. Matias Blanco
Home institution: Autonomous University of Madrid, España
Host Unit: Photoactivated Processes Unit
Period: 5 months, 2022

4. Luminita Andronic
Home institution: Brasov University, Romania
Host Unit: High Temperature Processes Unit
Period: 1 week, 2022

5. Cristina Cazan
Home institution: Brasov University, Romania
Host Unit: High Temperature Processes Unit
Period: 1 week, 2022

6. Marino Mauro
Home institution: Oviedo University, Spain
Host Unit: Thermochemical Processes Unit
Period: 1 month, 2022

7. Andrea Rubino
Home institution: Institute of Technology, Italy
Host Unit: Electrochemical Processes Unit
Period: 1 month, 2022

8. Luca Rebecchi
Home institution: Institute of Technology, Italy
Host Unit: Electrochemical Processes Unit
Period: 1 month, 2022

9. Philipp Honegger
Home institution: ETH, Switzerland
Host Unit: High Temperature Processes Unit
Period: 7 months, 2022

10. María Pozzi
Home institution: Hamburg University, Germany
Host Unit: Advanced Porous Materials Unit
Period: 2 months, 2022

11. Javier Prieto
Home institution: Institute of Materials Science - CSIC, Spain
Host Unit: Photoactivated Processes Unit
Period: 12 months

12. Alejandro Pérez
Home institution: Rey Juan Carlos University, Spain
Host Unit: High Temperature Processes Unit
Period: 7 months, 2022

13. Ersin Aytaç
Home institution: Complutense University of Madrid, Spain
Host Unit: Electrochemical Processes Unit
Period: 6 months, 2022

14. Benoît Rousseau
Home institution: Nantes Thermal Sciences and Energy Laboratory, France
Host Unit: High Temperature Processes Unit
Period: 1 week, 2022

15. Maitane Ferreres
Home institution: Fraunhofer Institute, Germany
Host Unit: High Temperature Processes Unit
Period: 1 week, 2022

16. Moritz Bitterling
Home institution: Fraunhofer Institute, Germany
Host Unit: High Temperature Processes Unit
Period: 1 week, 2022

17. Petru Adrian Coftas
Home institution: Brasov University, Romania
Host Unit: High Temperature Processes Unit
Period 1st saty: 2 weeks, 2022

18. Daniel Tudor Coftas
Home institution: Brasov University, Romania
Host Unit: High Temperature Processes Unit
Period 1st saty: 2 weeks, 2022

19. Petru Adrian Coftas
Home institution: Brasov University, Romania
Host Unit: High Temperature Processes Unit
Period: 2 weeks, 2022

20. Daniel Tudor Coftas
Home institution: Brasov University, Romania

Host Unit: High Temperature Processes Unit
Period 2nd stay: 2 weeks, 2022

21. Sibele Pergher
Home institution: Federal University of Rio Grande do Norte, Brazil
Host Unit: Thermochemical Processes Unit
Period 2nd stay: 2 weeks, 2022

22. Adolfo Anta
Home institution: Austrian Institute of Technology, Austria
Host Unit: Electrical Systems Unit
Period: 1 week, 2022

23. Louis de Smet
Home institution: Wageningen University, The Netherlands
Host Unit: Electrochemical Processes Unit
Period: 2 weeks, 2022

24. Pablo Docampo
Home institution: Glasgow University, UK
Host Unit: Advanced Porous Materials Unit
Period: 3 weeks, 2022

25. Paula Pérez
Home institution: Mines University, France
Host Unit: Systems Analysis Unit
Period: 2 weeks, 2022

26. Vinicius Patricio Santos
Home institution: University Federal de Rio Grande do Norte, Brasil
Host Unit: Thermochemical Processes Unit
Period: 5 months, 2022 – 2023

27. Iván Bravo Gonzalo
Home institution: Ommatidia LiDAR - Netherlands
Host Unit: High Temperature Processes Unit
Period: 1 week, 2022

28. José Luis Rubio Guivernau
Home institution: Ommatidia LiDAR - Netherlands
Host Unit: High Temperature Processes Unit
Period: 1 week, 2022

4. Indexed scientific publications (SCOPUS)

1. Alvarez, A. O.; García-Tecedor, M.; Montañés, L.; Mas-Marzá, E.; Giménez, S.; Fabregat-Santiago, F. "New Views on Carrier Diffusion and Recombination by Combining Small Perturbation Techniques: Application to BiVO4 Photoelectrodes". Solar RRL, **2022**, 6 (12), art. no. 2200826.

2. Alvarez-Galvan, C.; Lustemberg, P.G.; Oropeza, F.E.; Bachiller-Baeza, B.; Dapena Ospina, M.; Herranz, M.; Cebollada, J.; Collado, L.; Campos-Martin, J.M.; De La Peña-O'Shea, V.A.; Alonso, J.A.; Ganduglia-Pirovano, M.V. "Highly Active and Stable Ni/La-Doped Ceria Material for Catalytic CO2 Reduction by Reverse Water-Gas Shift Reaction". ACS Applied Materials & Interfaces, **2022**, 14 (45), 50739-50750.

3. Arcas, R.; Cardenas-Morcoso, D.; Spadaro, M.C.; García-Tecedor, M.; Mesa, C. A.; Arbiol, J.; Fabregat-Santiago, F.; Giménez, S.; Mas-Marzá, E. "Direct Observation of the Chemical Transformations in BiVO4 Photoanodes upon Prolonged Light-Aging Treatments". Solar RRL, **2022**, 6 (7), art. no. 2200132.

4. Barawi, M.; Alfonso-González, E.; López-Calixto, C.G.; García, A.; García-Sánchez, A.; Villar-García, I.J.; Liras, M.; de la Peña O'Shea, V.A. "Advanced Nanostructured Conjugated Microporous Polymer Application in a Tandem Photoelectrochemical Cell for Hydrogen Evolution Reaction". Small, **2022**, 18 (37), art. no. 2201351.

5. Barawi, M.; Gomez-Mendoza, M.; Oropeza, F.E.; Gorni, G.; Villar-Garcia, I.J.; Giménez, S.; de la Peña O'Shea, V.A.; García-Tecedor, M. "Laser-Reduced BiVO4 for Enhanced Photoelectrochemical Water Splitting". ACS Applied Materials & Interfaces, **2022**, 14 (29), 33200-33210.

6. Bargiacchi, E.; Campos-Carriedo, F.; Iribarren, D.; Dufour, J. "Social Life Cycle Assessment of a Proton Exchange Membrane Fuel Cell stack". E3S Web of Conferences, **2022**, 334, art. no. 09001. Conference paper

7. Berling, S.; Mavrikis, S.; Patil, N.; García-Quismondo, E.; Palma, J.; Ponce de León, C. "Lignin as redox-targeted catalyst for the positive vanadium electrolyte". Electrochemistry Communications, **2022**, 142, art. no. 107339.

8. Blanco, H.; Leaver, J.; Dodds, P.E.; Dickinson, R.; García-Gusano, D.; Iribarren, D.; Lind, A.; Wang, C.; Danebergs, J.; Baumann, M. "A taxonomy of models for investigating hydrogen energy systems". Renewable & Sustainable Energy Reviews, **2022**, 167, art. no. 112698.

9. Boaretto, N.; Dávila, B.; Sevilla, S.; García, G.; Mikhalchan, A.; Rana, M.; Yusuf, A.; Ubierna Martinez, L.; Castillo García, M.; Palma, J.; Wang, D.-Y.; Marcilla, R.; Vilatela, J.J. "Thermoconformable, Flexible Lithium-Ion Batteries". Advanced Materials Technologies, **2022**, 7 (9), art. no. 2101635.

10. Briones, L.; Valverde-Pizarro, C.M.; Barras-García, I.; Tajuelo, C.; Sanz-Pérez, E.S.; Sanz, R.; Escola, J.M.; González-Aguilar, J.; Romero, M. "Development of stable porous silica-coated Ca(OH)2/γ-Al2O3 pellets for dehydration/hydration cycles with application in thermochemical heat storage". Journal of Energy Storage, **2022**, 51, art. no. 104548.

11. Campos-Carriedo, F.; Puig-Samper, G.; Bargiacchi, E.; Iribarren, D.; Dufour, J. "Social life cycle assessment of a solid oxide electrolysis cell stack". Proceedings of WHEC 2022 - 23rd World Hydrogen Energy Conference: Bridging Continents by H2, **2022**, 1490-1492. Conference paper.

12. Cazcarro, I.; García-Gusano, D.; Iribarren, D.; Linares, P.; Romero, J.C.; Arocena, P.; Arto, I.; Banacloche, S.; Lechón, Y.; Miguel, L.J.;

Zafrilla, J.; López, L.A.; Langarita, R.; Cadarso, M.A. "Energy-socio-economic-environmental modelling for the EU energy and post-COVID-19 transitions". Science of the Total Environment, **2022**, 805, art. no. 150329.

13. Čelič, T.B.; Škrjanc, A.; Coronado, J.M.; Čendak, T.; de la Peña O'Shea, V.A.; Serrano, D.P.; Zabukovec Logar, N. "New Insight into Sorption Cycling Stability of Three Al-Based MOF Materials in Water Vapour". Nanomaterials, **2022**, 12 (12), art. no. 2092.

14. Chen, R.; Romero, M.; González-Aguilar, J.; Rovense, F.; Rao, Z.; Liao, S. "Optical and thermal integration analysis of supercritical CO2 Brayton cycles with a particle-based solar thermal plant based on annual performance". Renewable Energy, **2022**, 189, 164-179.

15. Ciurduc, D.E.; Cruz, C.D.L.; Patil, N.; Mavrandonakis, A.; Marcilla, R. "Molecular crowding bi-salt electrolyte for aqueous zinc hybrid batteries". Energy Storage Materials, **2022**, 53, 532-543.

16. Collado, L.; Reñones, P.; Fermoso, J.; Fresno F.; Garrido L.; Pérez-Dieste V.; Escudero C.; Hernández-Alonso M.; Coronado J.M.; Serrano, D.P.; de la Peña O'Shea, V.P. "The role of the surface acidic/basic centers and redox sites on TiO2 in the photocatalytic CO2 reduction". Applied Catalysis B: Environmental, **2022**, 303, art. no. 120931.

17. Conceição, R.; González-Aguilar, J.; Merrouni, A. A.; Romero, M. "Soiling effect in solar energy conversion systems: A review". Renewable & Sustainable Energy Reviews, **2022**, 162, art. no. 112434.

18. Corpas, J.; Gomez-Mendoza, M.; Ramírez-Cárdenas, J.; de la Peña O'Shea, V.A.; Mauleón, P.; Gómez Arrayás, R.; Carretero, J.C. "One-Metal/Two-Ligand for Dual Activation Tandem Catalysis: Photoinduced Cu-Catalyzed Anti-hydroboration of Alkynes". Journal of the American Chemical Society, **2022**, 144 (28), 13006-13017.

19. De Las Heras, I.; Dufour, J.; Coto, B. "Simulation of the deasphalting process of crude oils: Models development and extraction conditions analysis". Journal of Petroleum Science and Engineering, **2022**, 208, art. no. 109615.

20. Duan, Y.; Chordiya, K.; Kahaly, M.U.; Oropeza, F.E.; de la Peña O'Shea, V.A.; Wang, D.-Y.; Costa, R.D. "Rational Amphiphilic Ligand Engineering Enables Enhanced Stability and Efficiency of CsPbBr3 Nanocrystals Based Light Emitting Diodes". Advanced Optical Materials, **2022**, 10 (20), art. no. 2201176.

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5. Intelectual property

5.1. Granted

1. Patent: ES2832528_B2
Title: "Redes metal-orgánicas a base de pireno-fosfonato".
Date of application: 10/12/2019 (OEPM) (Application number: P201931095).
Date of grant: 20/12/2022.
Holders: Fundación IMDEA Energía.
Inventors: Horcajada, P.; Salcedo, P.; Rojas, S.; Felipe-Vilela, S.

2. Patent: WO2022043542
Title "Recyclable electrode".
Date of application: 30/08/2021 (Application number PCT/EP2021/073842).
Date of grant: 03/03/2022.
Holders: Fundación IMDEA Energía.
Inventors: Lado, J.; Palma J.; Garcia, E.

3. Utility model: U202231203
Título: "Cerramiento activo para controlar las cargas térmicas de los edificios".
Date of application: 19/07/2022 (OEPM).
Date of grant: 01/12/2022.
Holders: Universidad Politécnica de Madrid, Fundación IMDEA Energía.
Inventors: González, C.; Greses, S.

5.2. Submitted

1. Application number: PCT/EP2022/083100 (extension PCT)
Title: "Supercapacitor for energy storage".
Date of application: 24/11/2022 (OEP).
Holder: Fundación IMDEA Energía.
Inventors: Navalpotro, P.; Palma, J.; Marcilla, R.

2. Application number: EP22383051.4
Title: "Method for culturing oleaginous yeasts".
Date of application: 02/11/2022 (OEPM).
Holders: Fundación IMDEA Energía.
Inventors: Morales, S.; Tomás-Pejó, E.; González, C.

3. Application number: PCT/ES2022/070705 (extension PCT)
Title: "Solar receiver made up of absorber panels based on compact structures".
Date of application: 02/11/2022 (OEPM).
Holders: Universidad Nacional de Educación a Distancia (UNED), Fundación IMDEA Energía.
Inventors: Montes, M.J; Rovira, A.J; González, J.; Romero, M.

4. Solicitud de patente: Nº solicitud: EP22382566.2
Título: "Method for preparing conjugate porous polymers and uses thereof".
Fecha de solicitud: 14/06/2022 (OEPM).
Entidad titular: Fundación IMDEA Energía.
Inventores: Liras, M.; Naranjo, T.; Palenzuela, S.; Barawi, M.; de la Peña-O'Shea, V.A.

6. Books and chapters of books

1. Álvarez-Rodríguez, C.; Martín-Gamboa, M.; Iribarren, D. (2022). "Enhancing Life Cycle Management through the symbiotic use of Data Envelopment Analysis: novel advances in LCA + DEA". En: Towards a Sustainable Future – Life Cycle Management: Challenges and Prospects. Springer, Cham (Switzerland). ISBN 978-3-030-77126-3

2. Muñoz-Torrero, D.; Marcilla, R.; Ventosa, E. (2022). "Al-ion Battery" En: Battery Technologies: Materials and Components. Ed. Willey-VCH. ISBN: 978-3527348589

3. Navas-Anguita, Z.; Martín-Gamboa, M.; Cruz, P. L.; García-Gusano, D.; Iribarren, D. (2022). "A Techno-Economic and Environmental Perspective on the Role of Green Diesel in a Prospective Fuel Production Mix for Road Transport". En: Green Diesel: An Alternative to Biodiesel and Petrodiesel. Ed. Springer. eBook ISBN978-981-19-2235-0. Hardcover ISBN: 978-981-19-2234-3.

4. Carrasco, S.; Rico-Yuste, A. (2022). "Chemoresponsive Molecularly Imprinted Polymers". En: Chemoresponsive Materials: Smart Materials for Chemical and Biological Stimulation: Edition 2. Ed. Royal Society of Chemistry. ISBN: 978-1839162770.

7. Other publications

1. "SFERA-III: Solar Facilities for the European Research Area". European Energy Innovation - Summer 2022 Edition, 27.

2. Di Persio, F.; Perez, A.; Gramendola, F.; Palma, J.; Acosta, M.; Ferret, R.; Viera, J.C.; Benveniste, G.; Pérez, J.M.; Casasola, R. "Reciclado de baterías de iones de litio de vehículo eléctricos". Iniciativa Tecnológica Prioritaria a 01-2022. December 2022.

8. Congress communications

8.1. Invited lectures

1. Title: Conjugated Porous Polymers: Ground-Breaking Materials for Solar Energy Conversion
Authors: Liras, M.; López-Calixto, C. G.; Mazuelo, T.; Naranjo, T.; Barawi, M.; Collado, L.; Gomez-Mendoza, M.; Oropeza, F. E.; de la Peña O'Shea, V. A.
Congress: VI International Conference on Catalysis and Chemical Engineering
Venue: San Francisco, USA (Híbrido)
Date: 22-26 February 2022
Organizer: United Scientific Group

2. Title: Organic Batteries: The Fascinating Trip Towards More Sustainable Batteries
Authors: Marcilla, R.
Congress: 1st Symposium "Chemistry at the Frontier"
Venue: Santiago de Compostela, Spain
Date: 30 March-1 April 2022
Organizer: CiQUS, University of Santiago de Compostela

3. Title: Redox- Active Conjugated Microporous Polymer as High Performing Electrodes for More Sustainable Batteries (Keynote)
Authors: Marcilla, R.; Patil, N.; Molina, A.; Alván, D. A.; Grieco, R.; Liras, M.
Congress: GEP-SLAP 2022
Venue: San Sebastián, Spain
Date: 8-12 May 2022
Organizer: Real Sociedad Española de Química (RSEQ) and Real Sociedad Española de Física (RSEF)

4. Title: Energía Solar de Concentración (Plenaria)
Authors: Romero, M.
Congress: XVIII Congreso Ibérico y XIV Congreso Iberoamericano de Energía Solar (CIES 2022)
Venue: Palma de Mallorca, Spain
Date: 20-22 June 2022
Organizer: Asociación Española de Energía Solar (AEDES) and Universitat de les Illes Balears (UIB)

5. Title: Short overview on concentrating solar energy (Plenaria)
Authors: González-Aguilar, J.
Congress: Journées Nationales sur l'Energíe Solaire – JNES2022
Venue: Albí, Francia
Date: 29 June-1 July 2022
Organizer: Fédération de recherche sur l'énergie solaire (FédEsol) and IMT Mines Albi

6. Title: Metal Organic Frameworks: from drug vectorization to decontamination
Authors: Horcajada, P.
Congress: 44th International Conference on Coordination Chemistry
Venue: Rimini, Italy
Date: 28 August-2 September 2022
Organizer: AIM Group International

7. Title: Recent activities of Advanced Porous Materials Unit
Authors: Horcajada, P.
Congress: International Japanese-French Workshop on MOFs
Venue: Lyon, France
Date: 8-10 September 2022
Organizer: Ircelyon

8. Title: Tratamento E Valorização De Águas Residuais Através Da Processo De Reforma Em Fase Aquosa
Authors: Oliveira, A. S.
Congress: 28th Ibero-American Catalysis Congress (CICAT 2022)
Venue: Online
Date: 18-23 September 2022
Organizer: Sociedad Brasileña de Catálisis (SBCat) and Universidad Federal de Río Grande del Norte (UFRN)

9. Title: Conceptualization and application of an environmental dashboard to benchmark technical aspects in photocatalytic hydrogen production
Authors: Cruz, P. L.; Dufour, J.; Iribarren, D.
Congress: Hydrogen Power Theoretical & Engineering Solutions International Symposium (HYPOTHESIS XVII)
Venue: Taipei, Taiwan (Híbrido)
Date: 26-29 September 2022
Organizer: Taiwan Association for Hydrogen Energy and Fuel Cells (THEFC)

10. Title: Battery storage systems for frequency and voltage support in microgrids
Authors: Prodanovic, M.
Congress: 2022 IEEE PES Innovative Smart Grid Technologies Conference Europe (ISGT Europe 2022)
Venue: Novi Sad, Serbia
Date: 10-12 October2022
Organizer: IEEE Power & Energy Society (PES) and University of Novi Sad

11. Title: Advances and challenges in the development of redox materials for thermochemical solar fuels production
Authors: Romero, M.
Congress: 6th International Symposium on Innovative Materials and Processes in Energy Systems (IMPRES 2022)
Venue: Barcelona, Spain
Date: 25-27 October 2022
Organizer: University of Barcelona

12. Title: Expanding the use of Anaerobic Digestion for the production of alternative chemicals
Authors: Gonzalez-Fernandez, C.
Congress: 10th International Conference on Bioprocessing (IBA-IFIBiop 2022)
Venue: Kaohsiung, Taiwan
Date: 27-30 October 2022
Organizer: National Kaohsiung University of Science and Technology

8.2. Oral communications

1. Title: Catalytic pyrolysis of real WEEE plastics in a continuos reaction system
Authors: López, J.; Amodio, L.; Hernando, H.; Fermoso, J.; Moreno, J.M.; Serrano, D.P.
Congress: The 3R International Scientific Conference on Material Cycles and Waste Management (3RINCs)
Venue: Online
Date: 14-18 March 2022
Organizer: Japan Society of Material Cycles and Waste Management (JSMCWM)

2. Title: Pyrolysis and vapor phase hydrodehalogenation of a WEEE plastic over Ni-based catalysts
Authors: Amodio, L.; López, J.; Fermoso, J.; Hernando, H.; Serrano, D.P.
Congress: The 3R International Scientific Conference on Material Cycles and Waste Management (3RINCs)
Venue: Online
Date: 14-18 March 2022
Organizer: Japan Society of Material Cycles and Waste Management (JSMCWM)

3. Title: Selecting the objective function in optimisation of power generation and energy transmission systems
Authors: Kazemi, A.; Moreno, J.; Iribarren, D.
Congress: World Online Conference on Sustainable Technologies
Venue: Online
Date: 21 March 2022
Organizer: CGS and AMWEB

4. Title: Electrophoretic Fabrication of Graphene-LiFePO4 based Cathodes for Structural Battery Composites
Authors: Sanchez, J.S.; Xu, J.; Xia, Z.; Sun, J.; Asp, L.E.; Palermo, V.
Congress: LIGHTer International Conference
Venue: Gotemburgo, Sweden
Date: 6-7 April 2022
Organizer: LIGHTer

5. Title: Eliminación de NOx del aire en baja concentración empleando biochars activados
Authors: Díaz-Maroto, C.G.; Sáenz de Miera, B.; Pizarro, P.; Serrano, D.P.; Moreno, I.; Fermoso, J.
Congress: XV Reunión del Grupo Español del Carbón (GEC-2020)
Venue: Granada, Spain
Date: 24-27 April 2022
Organizer: Grupo Español del Carbón (GEC)

6. Title: All-Electrochemical Nanofabrication of Stacked Ternary Metal Sulfide/Graphene Electrodes for Aqueous Batteries
Authors: Sanchez, J.S.
Congress: ChemOnTubes 2022
Venue: San Sebastián, Spain
Date: 24-28 April 2022
Organizer: CIC biomaGUNE

7. Title: Hybrid materials based on Conjugated Porous Polymers (CPPs) as photocatalysts in artificial photosynthesis
Authors: López-Calixto, C. G.; Collado, L.; Barawi, M.; Gomez-Mendoza, M.; Oropeza, F.E.; Fresno, F.; Marugán, J.; de la Peña O'Shea, V. A.; Liras, M.
Congress: GEP-SLAP 2022
Venue: San Sebastián, Spain
Date: 8-12 May 2022
Organizer: Real Sociedad Española de Química (RSEQ) and Real Sociedad Española de Física (RSEF)

8. Title: Novel hybrid Cu2O-polymer based photocathodes for solar fuel generation
Authors: García-Eguizábal, A.; García-Tecedor, M.; Oropeza, F. E.; Barawi, M.; Liras, M.; De La Peña O'Shea, V. A.
Congress: GEP-SLAP 2022
Venue: San Sebastián, Spain
Date: 8-12 May 2022
Organizer: Real Sociedad Española de Química (RSEQ) and Real Sociedad Española de Física (RSEF)

9. Title: A Significantly Improved Polymer||Ni(OH)2 Alkaline Rechargeable Battery Using Anthraquinone-based Conjugated Microporous Polymer Anode
Authors: Grieco, R.; Patil, N.; Molina, A.; Palma, J.; Liras, M.; Sanchez, J. S.; Marcilla, R.
Congress: GEP-SLAP 2022
Venue: San Sebastián, Spain
Date: 8-12 May 2022
Organizer: Real Sociedad Española de Química (RSEQ) and Real Sociedad Española de Física (RSEF)

10. Title: Aging effect on catechol redox polymer nanoparticles and its application as organic electrode in an aqueous hybrid supercapacitor (Flash)
Authors: Camara, O.; Gallastegui, A.; Minudri, D.; Patil, N.; Grieco, R.; Mecerreyes, D.; Marcilla, R.
Congress: GEP-SLAP 2022
Venue: San Sebastián, Spain
Date: 8-12 May 2022
Organizer: Real Sociedad Española de Química (RSEQ) and Real Sociedad Española de Física (RSEF)

11. Title: Proton Trap Effect on Catechol-Pyridine Redox Polymer Nanoparticles as Organic Electrodes for Lithium Batteries
Authors: Gallastegui, A.; Minudri, D.; Casado, N.; Goujon, N.; Patil, N.; Marcilla, R.; Detrembleur, C.; Mecerreyes, D.
Congress: GEP-SLAP 2022
Venue: San Sebastián, Spain
Date: 8-12 May 2022
Organizer: Real Sociedad Española de Química (RSEQ) and Real Sociedad Española de Física (RSEF)

12. Title: The role of circularity and criticality indicators in the eco-design of fuel cells and hydrogen technologies
Authors: Bargiacchi, E.; Campos-Carriedo, F.; Puig-Samper, G.; Iribarren, D.; Rey, L; Cor, E.; Dufour, J.
Congress: European Hydrogen Energy Conference 2022 (EHEC 2022)
Venue: Madrid, Spain
Date: 18-20 May 2022
Organizer: Asociación Española del Hidrógeno (AeH2)

13. Title: Modelling and Perfomance Analysis of a SOE System Integrating PV, Concentrating Solar and Thermal Energy Storage
Authors: Herrero, B.; González-Aguilar, J.; Romero, M.
Congress: European Hydrogen Energy Conference 2022 (EHEC 2022)
Venue: Madrid, Spain
Date: 18-20 May 2022
Organizer: Asociación Española del Hidrógeno (AeH2)

14. Title: Green hydrogen production by means of solar heat and power in high temperature solid oxide electrolyzers
Authors: Giaconia, A.; Della Pietra, M.; Moreno, P.; Testi, M.; Pellegrini, C.; Diethelm, S.; Romero, M.; González-Aguilar, J.; Robino, M.; van Herle, J.; Morico, J.; Dobrée, J.
Congress: European Hydrogen Energy Conference 2022 (EHEC 2022)
Venue: Madrid, Spain
Date: 18-20 May 2022
Organizer: Asociación Española del Hidrógeno (AeH2)

15. Title: Metal-Organic Frameworks as novel electrolytes for proton exchange membrane fuel cells
Authors: Biglione, C.; Salcedo-Abraira, P.; Ureña, N.; Salles, F.; Várez, A.; Horcajada, P.
Congress: European Hydrogen Energy Conference 2022 (EHEC 2022)
Venue: Madrid, Spain
Date: 18-20 May 2022
Organizer: Asociación Española del Hidrógeno (AeH2)

16. Title: IMDEA-Energy Frameworks as promising next-generation materials for green hydrogen production
Authors: Carrasco, S.; Salcedo-Abraira, P.; Montero-Lanzuela, E.; Cabrero-Antonino, M.; Navalón, S.; García, H.; Horcajada, P.
Congress: European Hydrogen Energy Conference 2022 (EHEC 2022)
Venue: Madrid, Spain
Date: 18-20 May 2022
Organizer: Asociación Española del Hidrógeno (AeH2)

17. Title: CO2-free hydrogen production by catalytic methane decomposition over rice husk-derived silica
Authors: Gómez-Pozuelo, G.; Moreno, I.; Pizarro, P.; Botas, J.A.; Serrano, D.P.
Congress: European Hydrogen Energy Conference 2022 (EHEC 2022)
Venue: Madrid, Spain
Date: 18-20 May 2022
Organizer: Asociación Española del Hidrógeno (AeH2)

18. Title: Enhancing the production of hydrocarbons through pressurized catalytic pyrolysis of biomass
Authors: Artillo, F.; Cueto, J.; Hernando, H.; Pizarro, P.; Serrano, D.
Congress: School of Catalysis
Venue: Liblice, Czech Republic
Date: 24-26 May 2022
Organizer: Charles University

19. Title: Valorization of end-of-life tyres by catalytic pyrolysis (Flash presentation)
Authors: González-Pernas, F.M.; Moreno, I.; Serrano, D.P.; Pizarro, P.
Congress: School of Catalysis
Venue: Liblice, Czech Republic
Date: 24-26 May 2022
Organizer: Charles University

20. Title: Close Contact Without Mixing: All-aqueous Membrane-Free Flow Battery
Authors: Ibáñez, S. E.; Navalpotro, P.; Almonacid, I.; Pedraza, E.; Marcilla, R.
Congress: 241st ECS Meeting
Venue: Vancouver, Canadá
Date: 29 May-2 June 2022
Organizer: The Electrochemical Society (ECS)

21. Title: Understanding the Interaction between Flow Field Geometries and Porous Electrode Microstructures in Redox Flow Batteries
Authors: Muñoz Perales, V.; Ibañez, S. E.; Vera, M.; Forner-Cuenca, A.
Congress: 241st ECS Meeting
Venue: Vancouver, Canadá
Date: 29 May-2 June 2022
Organizer: The Electrochemical Society (ECS)

22. Title: The Role of Viscosity Variations: Analyzing and Modelling Microfluidic Membrane-Free Laminar Flow Batteries
Authors: de las Heras, M.; Quintero, A. E.; Ibañez, S. E.; Vera, M.
Congress: 241st ECS Meeting
Venue: Vancouver, Canadá
Date: 29 May-2 June 2022
Organizer: The Electrochemical Society (ECS)

23. Title: Eliminación de NOx en baja concentración del aire empleando biochars activados
Authors: Díaz-Maroto, C.G.; Sáenz de Miera, B.; Pizarro, P.; Serrano, D.P.; Moreno, I.; Fermoso, J.
Congress: III Congreso de la Escuela Internacional de Doctorado Universidad Rey Juan Carlos
Venue: Móstoles, Spain
Date: 31 May 2022
Organizer: Escuela Internacional de Doctorado URJC

24. Title: Effect of temperature on VFAs production by anaerobic fermentation of molasses
Authors: Lago, A.; Gonzalez-Fernández, C.; Moreno, I.
Congress: III Congreso de la Escuela Internacional de Doctorado Universidad Rey Juan Carlos
Venue: Móstoles, Spain
Date: 31 May 2022
Organizer: Escuela Internacional de Doctorado URJC

25. Title: Sobrenadante de digestión anaerobia seca como fuente de nitrógeno para la producción de biomasa algal
Authors: Greses, S.; Tomás-Pejó, E.; González-Fernández, C.
Congress: XIV Congreso Español de Tratamiento de Aguas (META 2022)
Venue: Sevilla, Spain
Date: 1-3 June 2022
Organizer: red META

26. Title: Diversifying products portfolio of anaerobic digestion: Fermentative pH as key factor
Authors: González-Fernández, C.; Greses, S.; Tomás-Pejó, E.
Congress: 18th International Conference on Renewable Resources and Biorefineries (RRB 2022)
Venue: Brujas, Belgium
Date: 1-3 June 2022
Organizer: EuropaBio

27. Title: Improving microbial oils production from short-chain fatty acids by evolutionary engineering: Caproic-rich media as challenging substrate
Authors: Tomás-Pejó, E.; Morales-Palomo, S; González-Fernández, C.
Congress: 18th International Conference on Renewable Resources and Biorefineries (RRB 2022)
Venue: Brujas, Belgium
Date: 1-3 June 2022
Organizer: EuropaBio

28. Title: Hydraulic retention time as an operational tool for the production of high-value-added bioproducts via anaerobic fermentation of carbohydrate-rich organic wastes
Authors: Aboudi, K.; Greses, S.; Tomás-Pejó, E.; González-Fernández, C.
Congress: 9th International Conference on Sustainable Solid waste Management
Venue: Corfú, Greece
Date: 15-18 June 2022
Organizer: National Technical University of Athens

29. Title: Organic waste valorisation into bioenergy and bioproducts through a cascade combination of bioprocesses
Authors: Greses, S.; Tomás-Pejó, E.; González-Fernández, C.
Congress: 9th International Conference on Sustainable Solid waste Management
Venue: Corfú, Greece
Date: 15-18 June 2022
Organizer: National Technical University of Athens

30. Title: Study of fluid-dynamic problems related to Membrane-Free Redox Flow Batteries
Authors: Ibáñez, S. E.; Vera, M.; Marcilla, R.
Congress: 1st Spanish Fluid Mechanics Conference
Venue: Cádiz, Spain
Date: 19-22 June 2022
Organizer: University of Cádiz

31. Title: Plantas Termosolares Basadas En Receptores De Aire Presurizado Acoplado A Ciclos Supercrítico
Authors: D'Souza, D.; González-Aguilar, J.; Montes, M. J.; Romero, M.; Linares, J.
Congress: XVIII Congreso Ibérico y XIV Congreso Iberoamericano de Energía Solar (CIES 2022)
Venue: Palma de Mallorca, Spain
Date: 20-22 June 2022
Organizer: Asociación Española de Energía Solar (AEDES) and Universitat de les Illes Balears (UIB)

32. Title: Durabilidad de materiales usados en ciclos termoquímicos para producción de hidrógeno y combustibles solares
Authors: Sánchez-Redero, M.; González-Aguilar, J.; Romero, M.
Congress: XVIII Congreso Ibérico y XIV Congreso Iberoamericano de Energía Solar (CIES 2022)
Venue: Palma de Mallorca, Spain
Date: 20-22 June 2022
Organizer: Asociación Española de Energía Solar (AEDES) and Universitat de les Illes Balears (UIB)

33. Title: Innovative Nanomaterials to design Solar Redox Flow Batteries
Authors: Ruiz-Martínez, D.; Marcilla, R.
Congress: Photo- and ElectroCatalysis at the Atomic Scale (PECAS 2022)
Venue: San Sebastián, Spain
Date: 22-23 June 2022
Organizer: Donostia International Physics Center (DIPC)

34. Title: Social life cycle assessment of a solid oxide electrolysis cell stack
Authors: Campos-Carriedo, F.; Puig-Samper, G.; Bargiacchi, E.; Iribarren, D.; Dufour, J.
Congress: 23rd World Hydrogen Energy Conference (WHEC-2022)
Venue: Estambul, Turkey
Date: 26-30 June 2022
Organizer: International Association for Hydrogen Energy, Turkish National Hydrogen Association and OntarioTech University

35. Title: Assessing renewable hydrogen production capacity on a regional basis
Authors: Puig-Samper, G.; Campos-Carriedo, F.; Iribarren, D.; Dufour, J.
Congress: 23rd World Hydrogen Energy Conference (WHEC-2022)
Venue: Estambul, Turkey
Date: 26-30 June 2022
Organizer: International Association for Hydrogen Energy, Turkish National Hydrogen Association and OntarioTech University

36. Title: Sustainability assessment of a proton-exchange membrane fuel cell stack as a basis for the development of eco-design guidelines
Authors: Mori, M.; Iribarren, D.; Cren, J.; Monnier, E.; Stropnik, R.; Lotrič, A.; Sekavčnikc, M.; Cortés, D.; Giménez, L.; Rey, L.; Puig-Samper, G.; Campos-Carriedo, F.; Bargiacchi, E.; Dufour, J.; Cor, E.
Congress: 23rd World Hydrogen Energy Conference (WHEC-2022)
Venue: Estambul, Turkey
Date: 26-30 June 2022
Organizer: International Association for Hydrogen Energy, Turkish National Hydrogen Association and OntarioTech University

37. Title: New insights into Phenazine-based redox flow batteries with high-throughput Density Functional Theory modelling
Authors: Mavrantonakis, A.; de la Cruz, C.; Marcilla, R.
Congress: XXXVIII Reunión Bienal de la Real Sociedad Española de Química
Venue: Granada, Spain
Date: 27-30 June 2022
Organizer: Real Sociedad Española de Química (RSEQ)

38. Title: Advanced Nanostructured Conjugated Microporous Polymer application in a tandem photoelectrochemical cell
Authors: Barawi, M.; Alfonso, E.; López-Calixto, C. G.; García, A.; García, A.; Villar-García, I. J.; Liras, M.; de la Peña O´Shea, V. A.
Congress: XXXVIII Reunión Bienal de la Real Sociedad Española de Química
Venue: Granada, Spain
Date: 27-30 June 2022
Organizer: Real Sociedad Española de Química (RSEQ)

39. Title: The electronic structure of transition metal (TM) oxides for the oxygen evolution reaction: the critical role of TM 3d hole state
Authors: Wang, H.; Zhang, K. H. L.; Hofmann, J. P.; de la Peña O'Shea, V. A.; Oropeza, F. E.
Congress: XXXVIII Reunión Bienal de la Real Sociedad Española de Química
Venue: Granada, Spain
Date: 27-30 June 2022
Organizer: Real Sociedad Española de Química (RSEQ)

40. Title: A heterogeneous BODIPY based conjugated porous polymer that works as photocatalyst: The Victory of Crystallinity
Authors: Naranjo, T.; Liras, M.; Gómez, M.; Gándara, F.; de la Peña O´Shea, V. A.
Congress: XXXVIII Reunión Bienal de la Real Sociedad Española de Química
Venue: Granada, Spain
Date: 27-30 June 2022
Organizer: Real Sociedad Española de Química (RSEQ)

41. Title: Metal-Organic Framewoks: from water decontamination to their potential use in natural environments
Authors: Rojas, S.; Arenas-Vivo, A.; Torres, A.; Dato, V.; Rodríguez-Diéguez, A.; Horcajada, P.
Congress: XXXVIII Reunión Bienal de la Real Sociedad Española de Química
Venue: Granada, Spain
Date: 27-30 June 2022
Organizer: Real Sociedad Española de Química (RSEQ)

42. Title: Engineering the pore size distribution of carbon-based electrode materials through the clhorination of Metal Organic Frameworks
Authors: del Barrio Jímeno, M.; Armani-Calligaris, G.; García Chamocho, E.; Horcajada, P.; Ávila Brande, D.
Congress: XXXVIII Reunión Bienal de la Real Sociedad Española de Química
Venue: Granada, Spain
Date: 27-30 June 2022
Organizer: Real Sociedad Española de Química (RSEQ)

43. Title: Nanostructuration as key to design Conjugated Porous Polymers for energy applications (Flash communication)
Authors: Liras, M.; García, A.; Palenzuela, S.; Mazuelo, T.; Naranjo, T.; Barawi, M.; de la Peña O´Shea, V. A.
Congress: XXXVIII Reunión Bienal de la Real Sociedad Española de Química
Venue: Granada, Spain
Date: 27-30 June 2022
Organizer: Real Sociedad Española de Química (RSEQ)

44. Title: Elucidation of the charge transfer mechanism in multifunctional inorganic-organic hybrid materials (Flash communication)
Authors: Gomez-Mendoza, M.; García-Eguizábal, A.; Naranjo, T.; García-Sánchez, A.; López-Calixto, C. G.; Liras, M.; de la Peña O´Shea, V. A.
Congress: XXXVIII Reunión Bienal de la Real Sociedad Española de Química
Venue: Granada, Spain
Date: 27-30 June 2022
Organizer: Real Sociedad Española de Química (RSEQ)

45. Title: Thin film polymer for upgrading hybrid Cu2O photocathode performance in solar fuel generation
Authors: García-Eguizábal, A.; García-Tecedor, M.; Oropeza, F. E.; Barawi, M.; Liras, M.; de la Peña O´Shea, V. A. (Flash communication)
Congress: XXXVIII Reunión Bienal de la Real Sociedad Española de Química
Venue: Granada, Spain
Date: 27-30 June 2022
Organizer: Real Sociedad Española de Química (RSEQ)

46. Title: Understanding ultrafast charge transfer processes in SnS and SnS2: using the core hole clock method to measure attosecond orbital-dependent electron delocalisation in semiconducting layered materials (Flash communication)
Authors: Villar-Garcia, I. J.; Oropeza, F. E.; Barawi, M.; Alfonso González, E.; de la Peña O'Shea, V. A.; Trigo, J. F.; Guillén, C.; Saiz, F.
Congress: XXXVIII Reunión Bienal de la Real Sociedad Española de Química
Venue: Granada, Spain
Date: 27-30 June 2022
Organizer: Real Sociedad Española de Química (RSEQ)

47. Title: Silica-coated Ca(OH)2-Al2O3 pelletes for thermochemical energy storage in CSP plants (Flash communication)
Authors: Briones, L.; Escola, J. M.; Barras-García, I.; Tajuelo, C.; Sanz-Pérez, E.; Sanz, R.; Valverde-Pizarro, C. M.; González-Aguilar, J.; Romero, M.
Congress: XXXVIII Reunión Bienal de la Real Sociedad Española de Química
Venue: Granada, Spain
Date: 27-30 June 2022
Organizer: Real Sociedad Española de Química (RSEQ)

48. Title: Propelling fine chemicals production in continuous catalytic pyrolysis over activated biochar
Authors: Pagano, M.; Hernando, H.; Serrano, D.P.
Congress: 9th International Symposium on Carbon for Catalysis, CarboCat–IX
Venue: Zaragoza, Spain
Date: 28-30 June 2022
Organizer: Instituto de Carboquímica-CSIC y UNED

49. Title: Robust and efficient bismuth-based MOF for adsorption and photocatalytic degradation of emerging organic contaminants (EOCs) under visible light irradiation
Authors: Chacón-García, A. J.; Rojas, S.; Pérez, Y.; Svensson Grape, E.; Ken Inge, A.; Horcajada, P.
Congress: 20th International Zeolite Conference (IZC-2022)
Venue: Valencia, Spain
Date: 3-8 July 2022
Organizer: Grupo Español de Zeolitas (GEZ) de la Sociedad Española de Catálisis (SECAT)

50. Title: Bench-scale catalytic pyrolysis of WEEE: enhanced oil dehalogenation over CAO and Fe2O3 modified zeolites
Authors: López, J.; Amodio, L.; Hernando, H.; Moreno, J. M.; Fermoso, J.; Serrano, D. P.
Congress: 20th International Zeolite Conference (IZC-2022)
Venue: Valencia, Spain
Date: 3-8 July 2022
Organizer: Grupo Español de Zeolitas (GEZ) de la Sociedad Española de Catálisis (SECAT)

51. Title: Boosting the deoxygenation and aromatization activity of ZSM-5 zeolite via pressurized catalytic pyrolysis
Authors: Artillo, F.; Hernando, H.; Pizarro, P.; Serrano, D. P.
Congress: 20th International Zeolite Conference (IZC-2022)
Venue: Valencia, Spain
Date: 3-8 July 2022
Organizer: Grupo Español de Zeolitas (GEZ) de la Sociedad Española de Catálisis (SECAT)

52. Title: Synthesis of ZSM-5 zeolite with intrinsic mesoporosity: catalytic assessment in fast-pyrolysis of WEEE plastics
Authors: Marino, A.; Aloise, A.; Migliori, M.; Fermoso, J.; Pizarro, P.; Serrano, D. P.; Giordano, G.
Congress: 20th International Zeolite Conference (IZC-2022)
Venue: Valencia, Spain
Date: 3-8 July 2022
Organizer: Grupo Español de Zeolitas (GEZ) de la Sociedad Española de Catálisis (SECAT)

53. Title: Universal Anthraquinone Microporous Polymer for organic and aqueous electrolytes
Authors: Grieco, R.; Patil, N.; Molina, A.; Palma, J.; Liras, M.; Sanchez J. S.; Marcilla, R.
Congress: Power Our Future 2022
Venue: Vitoria-Gasteiz, Spain
Date: 5-8 July 2022
Organizer: CIC energiGUNE

54. Title: Membrane-free Battery: From a water solution to a Real Flow Battery
Authors: Navalpotro, P.; Ibáñez, S. E.; Pedraza, E.; Marcilla, R.
Congress: Power Our Future 2022
Venue: Vitoria-Gasteiz, Spain
Date: 5-8 July 2022
Organizer: CIC energiGUNE

55. Title: New Insights into Phenazine-based Redox Flow Batteries High-throughput Computational Screening
Authors: Mavrantonakis, A.; de la Cruz, C.; Marcilla, R.
Congress: Power Our Future 2022
Venue: Vitoria-Gasteiz, Spain
Date: 5-8 July 2022
Organizer: CIC energiGUNE

56. Title: Additive manufacturing of batteries: Comparison between fabrication processes
Authors: Pinilla, S.; Ryan, S.; McKeon, L.; Lian, M.; Roy, A.; Vaesen, S.; Nicolosi, V.
Congress: Power Our Future 2022
Venue: Vitoria-Gasteiz, Spain
Date: 5-8 July 2022
Organizer: CIC energiGUNE

57. Title: Outstanding desalination performance using activated carbon from chloride-doped polyaniline modified with a F127 template
Authors: Oliveira, K.S.G.C.; Barcelos, K. M.; Lado, J. J.; Palma, J.; Ruotolo, L. A. M.
Congress: XLII Reunión del Grupo Especializado de Electroquímica de la Real Sociedad Española de Química (42 GERSEQ 2022)
Venue: Santander, Spain
Date: 6-8 July 2022
Organizer: Grupo Especializado de Electroquímica de la Real Sociedad Española de Química (GERSEQ)

58. Title: Nuevos electrolitos acuosos con especies activas orgánicas y su aplicación en baterías de flujo redox
Authors: Pedraza, E.; de la Cruz, C.; Navalpotro, P.; Senthilkumar, S.T.; Mavrantonakis, A.; Marcilla, R.
Congress: XLII Reunión del Grupo Especializado de Electroquímica de la Real Sociedad Española de Química (42 GERSEQ 2022)
Venue: Santander, Spain
Date: 6-8 July 2022
Organizer: Grupo Especializado de Electroquímica de la Real Sociedad Española de Química (GERSEQ)

59. Title: Uso de mediadores redox para el estudio de la calidad de la interfase sólidoelectrolito (SEI) en baterías de ión-litio
Authors: Garcia-Quismondo, E.; Alvarez-Conde, S.; Garcia, G.; Medina-Santos, J. I.; Palma, J.; Ventosa, E.
Congress: XLII Reunión del Grupo Especializado de Electroquímica de la Real Sociedad Española de Química (42 GERSEQ 2022)
Venue: Santander, Spain
Date: 6-8 July 2022
Organizer: Grupo Especializado de Electroquímica de la Real Sociedad Española de Química (GERSEQ)

60. Title: Hf/porphyrin-based Porous Coordination Network for CO2 cycloaddition reactions
Authors: Carrasco, S.; Orcajo, G.; Martínez, F.; Imaz, I.; Maspoch, D.; Calleja, G.; Horcajada, P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

61. Title: A titanium-anthraquinone 2D coordination polymer: synthesis and applications
Authors: Armani-Calligaris, G.; Svensson Grape, E.; Liras, M.; Barawi, M.; Guillou, N.; Inge, A. K.; Willhammar, T.; de la Peña O'Shea, V. A.; Horcajada, P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

62. Title: Furfural and cyclopentanone aldol condensation catalyzed by metal oxides supported on n-ZSM-5
Authors: Cueto, J.; Fernandez-Ruiz, C.; García-Muñoz, R.; Serrano, D.P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

63. Title: Immobilization of Redox Active Centres in Porous Polymers for Energy Applications
Authors: Bildirir, H.; Patil, N.; Grieco, R.; de la Peña O´Shea, V. A.; Liras, M.; Marcilla, R.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

64. Title: Elucidation of the Charge Transfer Mechanism in Multifunctional Organic-inorganic Hybrid Materials by Transient Absorption Spectroscopy
Authors: Gomez-Mendoza, M.; García, A.; Naranjo, T.; Liras, M.; de la Peña, V. A.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

65. Title: Hybrid perovskites as potential photocatalysts for H2 production
Authors: Pérez, Y.; Chacón-García, A.J.; García-Baldovi, H.; Rodríguez-Diéguez, A.; Navalón, S.; García, H.; Horcajada, P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

66. Title: Metal-Organic Framework as multifunctional platforms in the removal and efficient use of emerging organic contaminants
Authors: Rojas, S.; Arenas-Vivo, A.; Sierra-Serrano, B.; Garcia-Garcia, A.; Hidalgo, T.; Rodríguez-Diéguez, A.; Horcajada, P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

67. Title: Strategies to boost the catalytic properties of Zr-based MOFs in the production of bio-jet fuel precursors
Authors: Morales, G.; Melero, J. A.; Paniagua, M.; Leo, P.; López-Aguado, C.; de la Flor, D.; Hernando, H.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

68. Title: Enzyme@Metal-Organic Framework composites as novel approach for microplastic degradation (Flash communication)
Authors: Rincón, I.; Hidalgo, T.; Armani, G.; Rojas, S.; Horcajada, P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

69. Title: Magnetic composites of nanoMOFs and magnetic nanoparticles for drug delivery (Flash communication)
Authors: Picchi, D. F.; Biglione, C.; Carrasco, S.; Horcajada, P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

70. Title: In-situ reduction of noble metals inside of nanoMOF porosity (Flash communication)
Authors: Lelouche, S.; Biglione, C.; Horcajada, P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

71. Title: Influence of amine groups of organosilanes on the rational synthesis of hierarchical ZSM-5 zeolites (Flash communication)
Authors: Alonso-Doncel, M.; Peral, A.; Sanz, R.; Serrano, D. P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

72. Title: Exploring the performance of highly accessible Al- and Ga-ZSM-5 zeolites in LDPE and lignocellulose catalytic pyrolysis (Flash communication)
Authors: Artillo, F.; Alonso-Doncel, M.; Zhang, Y.; Mazur, M.; Pizarro, P.; Cejka, J.; Serrano, D.P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

73. Title: Adsorption equilibrium and kinetics of hydrocarbons on ZSM-5 zeolites with different pore structures (Flash communication)
Authors: Souza de Oliveira, A.; Alonso-Doncel, M.; Horcajada, P.; García-Muñoz, R.; Serrano, D.P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

74. Title: Selective hydrodeoxygenation of guaiacol over nano-ZSM-5-supported Ni and Co catalysts. Influence of the nature of the active phase (Flash communication)
Authors: Lago, A.; Fermoso, J.; Pizarro, P.; Serrano, D.P.; Moreno, I.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

75. Title: Development of Innovative Anodes for Energy-efficient Electro-oxidation of Contaminants in Wastewater (Flash communication)
Authors: Mirehbar, K.; Sanchez, J. S.; Lado, J. J.; Palma, J.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

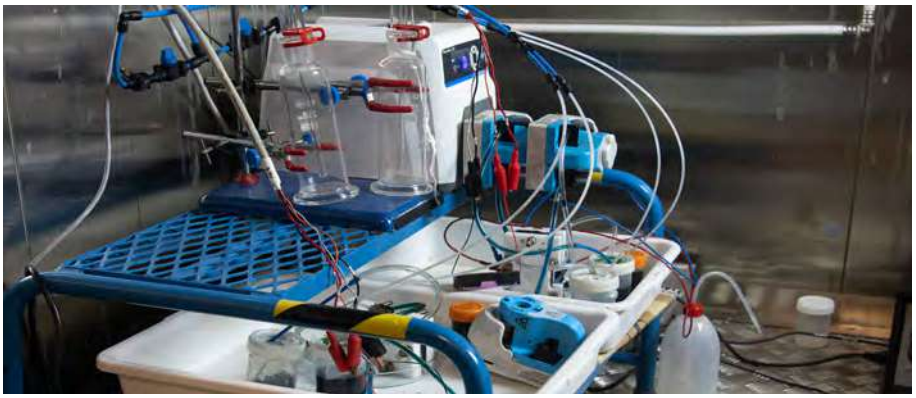
76. Title: The circularity of the European hydrogen economy
Authors: Dufour, J.
Congress: Europe-Korea Conference on Science and Technology (EKC 2022)
Venue: Marsella, France
Date: 19-22 July 2022
Organizer: Association des Scientifiques Coréens en France (ASCoF)

77. Title: Fuel cells and lithium batteries recycling in Europe: overview
Authors: Casasola, R.
Congress: Europe-Korea Conference on Science and Technology (EKC 2022)
Venue: Marsella, France
Date: 19-22 July 2022
Organizer: Association des Scientifiques Coréens en France (ASCoF)

78. Title: Towards membrane-free flow batteries based on aqueous immiscible electrolytes and organic redox active species
Authors: Navalpotro, P.; Ibáñez, S. E.; Pedraza, E.; Marcilla, R.
Congress: ACS Fall 2022
Venue: Chicago, USA (Hybrid)
Date: 21-25 August 2022
Organizer: American Chemical Society (ACS)

79. Title: PEG Based Molecular Crowding Electrolytes for Hybrid Aqueous Zinc Electrolyte
Authors: Ciurduc, D.; de la Cruz, C; Patil, N.; Mavrantonakis, A.; Palma, J.; Marcilla, R.
Congress: ACS Fall 2022
Venue: Chicago, USA (Hybrid)
Date: 21-25 August 2022
Organizer: American Chemical Society (ACS)

80. Title: IMDEA-Energy Frameworks: the next-generation photocatalysts for water splitting
Authors: Carrasco, S.; Salcedo-Abraira, P.; Montero-Lanzuela, E.; Cabrero-Antonino, M.; Navalón, S.; García, H.; Horcajada, P.
Congress: 8th International Conference on Metal-Organic Frameworks and Open Framework Compounds
Venue: Dresden, Germany
Date: 4-7 September 2022
Organizer: DECHEMA



81. Title: Governing the intestinal crossing of Metal-Organic Frameworks: an ex vivo & in vivo study
Authors: Rojas, S.; Hidalgo, T.; Luo, Z.; Ávila, D.; Laromaine, A.; Horcajada, P.
Congress: 8th International Conference on Metal-Organic Frameworks and Open Framework Compounds
Venue: Dresden, Germany
Date: 4-7 September 2022
Organizer: DECHEMA

82. Title: Promising MOF based electrolytes for proton exchange membrane fuel cells
Authors: Biglione, C.; Salcedo-Abraira, P.; Perez Prior, T.; Ureña, N.; Salles, F.; Várez, A.; Horcajada, P.
Congress: 8th International Conference on Metal-Organic Frameworks and Open Framework Compounds
Venue: Dresden, Germany
Date: 4-7 September 2022
Organizer: DECHEMA

83. Title: Metal-Organic Frameworks in the elimination of Emerging Contaminants: from the bench to natural environments
Authors: Rojas, S.; Arenas Vivo, A.; Torres, A.; Dato, V.; Rodríguez Diéguez, A.; Horcajada, P.
Congress: 8th International Conference on Metal-Organic Frameworks and Open Framework Compounds
Venue: Dresden, Germany
Date: 4-7 September 2022
Organizer: DECHEMA

84. Title: Polyphenol building units as linkers for green and stable MOFs
Authors: Svensson Grape, E.; Flores, J.; Hidalgo, T.; Martínez-Ahumada, E.; Gutiérrez-Alejandre, A.; Ibarra, I.; Horcajada, P.; Inge, A.
Congress: 8th International Conference on Metal-Organic Frameworks and Open Framework Compounds
Venue: Dresden, Germany
Date: 4-7 September 2022
Organizer: DECHEMA

85. Title: Adsorption and photodegradation of pharmaceutical pollutants by a robust and plant-derived zirconium MOF
Authors: Svensson Grape, E.; Chacón, A.; Jaworski, A.; Nero, M.; Rojas, S.; Willhammar, T.; Horcajada, P.; Inge, A.
Congress: 8th International Conference on Metal-Organic Frameworks and Open Framework Compounds
Venue: Dresden, Germany
Date: 4-7 September 2022
Organizer: DECHEMA

86. Title: Fundamental insight into the charge transfer pathway in multifunctional inorganic-organic hybrid materials by transient absoption spectroscopy
Authors: Gómez-Mendoza, M.; García Eguizabal, A.; López-Calixto, C. G.; Liras, M.; de la Peña O´Shea, V. A.
Congress: VII Jornadas Ibéricas de Fotoquímica (7'JIF)
Venue: Alcalá de Henares, Spain
Date: 5-8 September 2022
Organizer: Grupo Especializado de Fotoquímica (GRUFO) de la Real Sociedad Española de Química (RSEQ) and Grupo de Fotoquímica de la Sociedad Portuguesa de Química (SPQ)

87. Title: Covalent Organic Frameworks (COFS) based on BODIPY and BOPHY dyes as well as Hybrid thereof as photocatalysts for artificial photosynthesis processes
Authors: Liras, M.; Mazuelo, T.; Naranjo, T.; Barawi, M.; Gómez-Mendoza, M.; de la Peña O´Shea, V. A.
Congress: VII Jornadas Ibéricas de Fotoquímica (7'JIF)
Venue: Alcalá de Henares, Spain
Date: 5-8 September 2022
Organizer: Grupo Especializado de Fotoquímica (GRUFO) de la Real Sociedad Española de Química (RSEQ) and Grupo de Fotoquímica de la Sociedad Portuguesa de Química (SPQ)

88. Title: Development of an experimental testbed for Pressurised Gas Solar Receivers using a High Flux Solar Simulator
Authors: D'Souza, D.; Montes, M.J.; Romero, M.; González-Aguilar, J.
Congress: 3rd SFERA-III / 16th SOLLAB Doctoral Colloquium and Summer School 2022
Venue: Zúrich, Switzerland
Date: 12-16 September 2022
Organizer: ETH Zürich

89. Title: Modelling and Performance Analysis of a SOE System integrating PV, Concentrating Solar Heat and Thermal Energy Storage
Authors: Herrero Badorrey, B.; González-Aguilar, J.; Romero, M.
Congress: 3rd SFERA-III / 16th SOLLAB Doctoral Colloquium and Summer School 2022
Venue: Zúrich, Switzerland
Date: 12-16 September 2022
Organizer: ETH Zürich

90. Title: Redox Mediators for Solid Electrolyte Interphase (SEI) Quality Assessment in Lithium-ion Batteries
Authors: Medina, J.; Ventosa, E.; García-Quismondo, E.; Alvarez-Conde, S.; Palma, J.; García, G.
Congress: 73rd Annual Meeting of the International Society of Electrochemistry
Venue: Online
Date: 12-16 September 2022
Organizer: International Society of Electrochemistry (ISE)

91. Title: Eliminación de NOx del aire en baja concentración mediante biochars activados
Authors: González Díaz-Maroto, C.; Sáenz de Miera, B.; Pizarro, P.; Serrano, D. P.; Moreno, I.; Fermoso, J.
Congress: XLII Reunión Ibérica de Adsorción (42RIA)
Venue: Valencia, Spain
Date: 13-16 September 2022
Organizer: Grupo Especializado de Adsorción de la Real Sociedad Española de Física and Real Sociedad Española de Física

92. Title: Investigation on the adsorption of C6-C8 hydrocarbons in ZSM-5 zeolites with different porosity
Authors: Oliveira, A. S.; Alonso-Doncel, M.; Horcajada, P.; García-Muñoz, R. A.; Serrano, D. P.
Congress: XLII Reunión Ibérica de Adsorción (42RIA)
Venue: Valencia, Spain
Date: 13-16 September 2022
Organizer: Grupo Especializado de Adsorción de la Real Sociedad Española de Física and Real Sociedad Española de Física

93. Title: Lithium Recovery by Injectable Electrochemical Ion Pumping Cell
Authors: Lado, J. J.; Perez-Antolin, D.; Irastorza, C.; Gonzalez, S.; Moreno, R.; Fombona-Pascual, A.; Soto, S.; García-Quismondo, E.; Palma, J.; Ventosa, E.
Congress: 4th edition of the E3 Mediterranean Symposium: Electrochemistry for Environment and Energy (E3MS)
Venue: Orvieto, Italy
Date: 15-17 September 2022
Organizer: Sapienza University of Rome

94. Title: Organic Batteries: The Fascinating Trip Towards More Sustainable Batteries
Authors: Grieco, R.; Alvan, D. A.; Liras, M.; Patil, N.; Marcilla, R.
Congress: 2022 E-MRS Fall Meeting
Venue: Varsovia, Poland
Date: 19-22 September 2022
Organizer: European Materials Research Society (E-MRS)

95. Title: Immobilization of Redox Active Centres in Porous Polymers for Energy Storage Applications
Authors: Bildirir, H.; Alvan, D. A.; Patil, N.; Grieco, R.; de la Peña O´Shea, V. A.; Liras, M.; Marcilla, R.
Congress: 2022 E-MRS Fall Meeting
Venue: Varsovia, Poland
Date: 19-22 September 2022
Organizer: European Materials Research Society (E-MRS)

96. Title: Photo-rechargeable redox flow batteries
Authors: Ruiz-Martínez, D.; Marcilla, R.
Congress: 2022 E-MRS Fall Meeting
Venue: Varsovia, Poland
Date: 19-22 September 2022
Organizer: European Materials Research Society (E-MRS)

97. Title: Nanostructuring Conjugated Porous Polymer for solar energy conversion in photoelectrochemical cells
Authors: Barawi, M.; Alfonso, E.; López-Calixto, C. G.; García, A.; García, A.; Villar-García, I. J.; Liras, M.; de la Peña O´Shea, V. A.
Congress: 2022 E-MRS Fall Meeting
Venue: Varsovia, Poland
Date: 19-22 September 2022
Organizer: European Materials Research Society (E-MRS)

98. Title: Laser-Reduced BiVO4 for Enhanced Photoelectrochemical Water Splitting
Authors: Barawi, M.; Gómez-Mendoza, M.; Oropeza, F. E.; Gorni, G.; Villar-Garcia, I. J.; Giménez, S.; de la Peña O'Shea, V. A.; García-Tecedor, M.
Congress: 2022 E-MRS Fall Meeting
Venue: Varsovia, Poland
Date: 19-22 September 2022
Organizer: European Materials Research Society (E-MRS)

99. Title: Dual-site Alkaline HER Mechanism on In-situ Formed NiO/Ni3S2 Catalysts
Authors: Ding, X.; Oropeza, F. E.; Gorni, G.; Barawi, M.; García-Tecedor, M.; de la Peña O'Shea, V. A.; Hofmann, J. P.; Li, J.; Cheng, J.; Zhang, K. H. L.
Congress: 2022 E-MRS Fall Meeting
Venue: Varsovia, Poland
Date: 19-22 September 2022
Organizer: European Materials Research Society (E-MRS)

100. Title: Biogenic Ligands Enable Enhanced Stability and Efficiency of CsPbBr3 Nanocrystals Hybrid Light-Emitting Diodes
Authors: Duan, Y.; Chordiya, K.; Kahaly, M. U.; Oropeza, F. E.; de la Peña O'Shea, V. A.; Wang, D.-Y.; Costa, R. D.
Congress: 2022 E-MRS Fall Meeting
Venue: Varsovia, Poland
Date: 19-22 September 2022
Organizer: European Materials Research Society (E-MRS)

101. Title: Self-healing and 850 ºC stable haynes 230 alloy oxide scale with solar weigthed absorptance over 93%
Authors: Asselineau, C.-A.; Zheng, M.; Pottas, R.; Coventry, J.
Congress: SolarPACES 2022
Venue: Albuquerque, USA
Date: 27-30 September 2022
Organizer: SolarPACES

102. Title: 3D printed sub-mm geometrical surface structures for improved absorptance in high-temperature receivers
Authors: Asselineau, C.-A.; Zheng, M.; Pottas, R.; Coventry, J.
Congress: SolarPACES 2022
Venue: Albuquerque, USA
Date: 27-30 September 2022
Organizer: SolarPACES

103. Title: Accelerated Solid Electrolyte Interface Quality Assessment of Lithium-Ion Batteries By Mediator-Enhanced Coulometry
Authors: Garcia-Quismondo, E.; Alvarez-Conde, S.; García, G.; Medina-Santos, J. I.; Palma, J.; Ventosa, E.
Congress: 242nd ECS Meeting
Venue: Atlanta, USA
Date: 9-13 October 2022
Organizer: The Electrochemical Society (ECS)

104. Title: Small€Signal Analysis of a Microgrid with Secondary Control Including the Dynamics of Primary Control and Communication Delays
Authors: Morán Río, D. P.; Roldán€Pérez, J.; Prodanovic, M.; García€Cerrada, A.
Congress: 2022 IEEE PES Innovative Smart Grid Technologies Conference Europe (ISGT Europe 2022)
Venue: Novi Sad, Serbia
Date: 10-12 October 2022
Organizer: IEEE Power & Energy Society (PES) and Universidad de Novi Sad

105. Title: Quasi€Stationary Implementation of Virtual Admittance Controller for Voltage Support from Distributed Generation
Authors: Moutevelis, D.; Gothner, F.; Roldán€Pérez, J.; Prodanovic, M.
Congress: 2022 IEEE PES Innovative Smart Grid Technologies Conference Europe (ISGT Europe 2022)
Venue: Novi Sad, Serbia
Date: 10-12 October 2022
Organizer: IEEE Power & Energy Society (PES) and Universidad de Novi Sad

106. Title: Exploring the material criticality of two hydrogen-related products under different indicators
Authors: Campos, F.; Puig-Samper, G.; García, A.; Bargiacchi, E.; Iribarren, D.; Dufour, J.
Congress: SETAC Europe 25th LCA Symposium
Venue: Online
Date: 12-14 October 2022
Organizer: Society of Environmental Toxicology and Chemistry – Europe (SETAC Europe)

107. Title: Manipulating light through organic materials in solid state
Authors: Bildirir, H.
Congress: 5th International Eurasian Conference on Biological and Chemical Sciences (EurasianBioChem 2022)
Venue: Online
Date: 23-25 November 2022
Organizer: Avrasya Konferanslari

108. Title: Performance of Pd- supported catalysts in cascade pyrolysis and hydrodehalogenation process of real WEEE plastics
Authors: Amodio, L.; López, J.; Hernando, H.; Pizarro, P.; Serrano, D. P.
Congress: 11th International Symposium on Feedstock Recycling of Polymeric Materials 2022 (ISFR 2022)
Venue: Pattaya, Tailandia (Hybrid)
Date: 29 November-2 December 2022
Organizer: PETROMAT (Center of Excellence on Petrochemical and Materials Technology), Department of Chemical Technology, Faculty of Science, Chulalongkorn University, FSRJ (Research Association for Feedstock Recycling of Plastics Japan), Petroleum and Petrochemical College, and TIChE (Thai Institute of Chemical Engineering and Applied Chemistry)

109. Title: Solid Recovered Fuels Catalytic Pyrolysis: Optimization of Operation Conditions to Minimize Chlorine Content
Authors: Cueto, J.; Pérez, G.; Paniagua, M.; Morales, G.; Melero, J. A.; Serrano, D. P.
Congress: 11th International Symposium on Feedstock Recycling of Polymeric Materials 2022 (ISFR 2022)
Venue: Pattaya, Tailandia (Hybrid)
Date: 29 November-2 December 2022
Organizer: PETROMAT (Center of Excellence on Petrochemical and Materials Technology), Department of Chemical Technology, Faculty of Science, Chulalongkorn University, FSRJ (Research Association for Feedstock Recycling of Plastics Japan), Petroleum and Petrochemical College, and TIChE (Thai Institute of Chemical Engineering and Applied Chemistry)

110. Title: Servicios auxiliares para mejorar la integración masiva de fuentes renovables en redes de distribución
Authors: Jankovic, N.; Roldán Pérez, J.; Prodanovic, M.
Congress: I Congreso de Redes Inteligentes
Venue: Madrid, Spain
Date: 14 December 2022
Organizer: Instituto Tecnológico de la Energía (ITE) and CIRCE

111. Title: Porous organic polymer films for electronic applications
Authors: Bildirir, H.
Congress: 4th International Eurasian Conference on Science, Engineering and Technology (EurasianSciEnTech 2022)
Venue: Online
Date: 14-16 December 2022
Organizer: Avrasya Konferanslari

8.3. Poster communications

1. Title: Core shell growing of nanoMOFs onto Magnetic Nanoparticles
Authors: Picchi, D.F.; Biglione, C.; Carrasco, S.; Horcajada, P.
Congress: XVIII Escuela Nacional de Materiales Moleculares (ENMM2022)
Venue: Santiago de Compostela, Spain
Date: 20-24 March 2022
Organizer: CiQUS, Universtiy of Santiago de Compostela

2. Title: Evolution trailing of embryonic zeolites into hierarchical ZSM-5
Authors: Alonso-Doncel, M.; Peral, A.; Ochoa-Hernández, C.; Sanz, R.; Serrano, D.P.
Congress: Understanding crystallization: Faraday Discussion
Venue: York, United Kingdom (Hybrid)
Date: 28-30 March 2022
Organizer: Royal Society of Chemistry

3. Title: Aging effect on catechol redox polymer nanoparticles and its application as organic electrode in an aqueous hybrid supercapacitor
Authors: Camara, O.; Gallastegui, A.; Minudri, D.; Patil, N.; Grieco, R.; Mecerreyes, D.; Marcilla, R.
Congress: GEP-SLAP 2022
Venue: San Sebastián, Spain
Date: 8-12 May 2022
Organizer: Real Sociedad Española de Química (RSEQ) y Real Sociedad Española de Física (RSEF)

4. Title: Prospective carbon footprint of hydrogen from grid-powered electrolysis in different countries
Authors: Valente, A.; Navas-Anguita, Z.; Iribarren, D.; Dufour, J.
Congress: European Hydrogen Energy Conference 2022 (EHEC 2022)
Venue: Madrid, Spain
Date: 18-20 May 2022
Organizer: Asociación Española del Hidrógeno (AeH2)

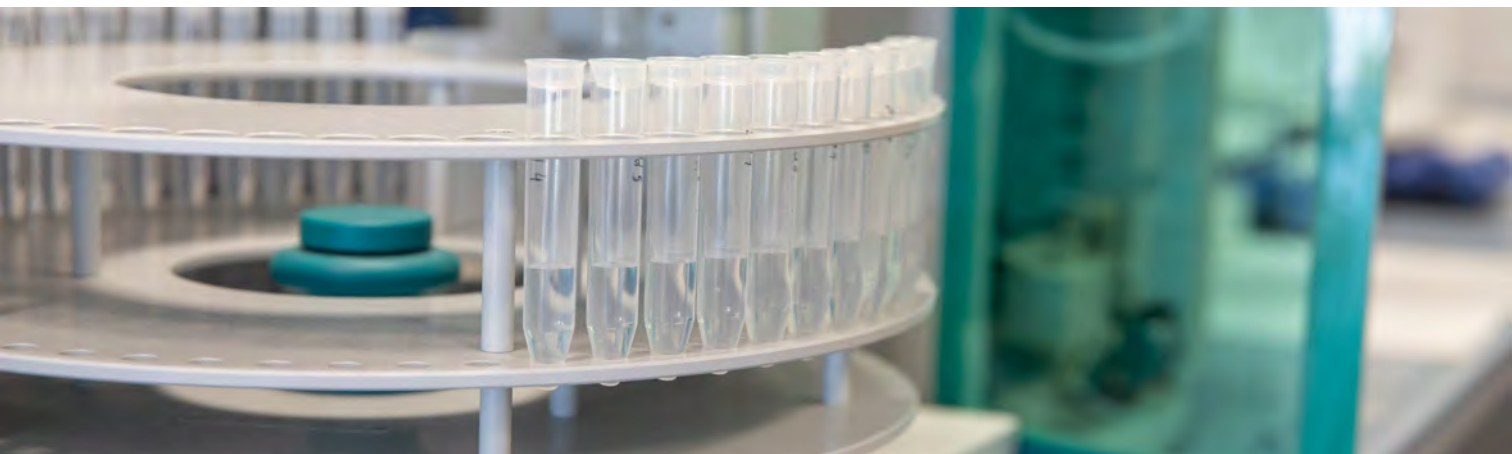
5. Title: Valorization of end-of-life tyres by catalytic pyrolysis
Authors: González-Pernas, F.M.; Moreno, I.; Serrano, D.P.; Pizarro, P.
Congress: School of Catalysis
Venue: Liblice, Czech Republic
Date: 24-26 May 2022
Organizer: Charles University

6. Title: Investigating the Role of Temperature on the Performance of Vanadium Redox Flow Batteries Using a Steady Validated Unit-Cell Model
Authors: Muñoz Perales, V.; Berling, S.; Ibañez, S. E.; Garcia-Quismondo, E.; Palma, J.; Vera, M.
Congress: 241st ECS Meeting
Venue: Vancouver, Canadá
Date: 29 May-2 June 2022
Organizer: The Electrochemical Society (ECS)

7. Title: Caracterização Experimental da Deposição de Poeiras e Modelação num Campo Solar em Ambiente Urbano
Authors: Conceição, R.; González-Aguilar, J.; Romero, M.
Congress: XVIII Congreso Ibérico y XIV Congreso Iberoamericano de Energía Solar (CIES 2022)
Venue: Palma de Mallorca, Spain
Date: 20-22 June 2022
Organizer: Asociación Española de Energía Solar (AEDES) y Universitat de les Illes Balears (UIB)

8. Title: MOF based electrolytes for proton exchange membrane fuel cells
Authors: Horcajada, P.; Biglione, C.; Salcedo-Abraira, P.; Perez Prior, T.; Ureña, N.; Salles, F.; Várez, A.
Congress: XXXVIII Reunión Bienal de la Real Sociedad Española de Química
Venue: Granada, Spain
Date: 27-30 June 2022
Organizer: Real Sociedad Española de Química (RSEQ)

9. Title: Drinking water purification using Metal-Organic Frameworks: selective removal of disinfection by-products
Authors: Sanchez-Cano, G.; Lastra, A.; Saez, L.; Amado, M.; Arozamena, E.; Rojas, S.; Horcajada, P.
Congress: XXXVIII Reunión Bienal de la Real Sociedad Española de Química
Venue: Granada, Spain
Date: 27-30 June 2022
Organizer: Real Sociedad Española de Química (RSEQ)



10. Title: Photo-assisted rechargeable redox flow batteries
Authors: Ruiz-Martínez, D.; Marcilla, R.
Congress: XXXVIII Reunión Bienal de la Real Sociedad Española de Química
Venue: Granada, Spain
Date: 27-30 June 2022
Organizer: Real Sociedad Española de Química (RSEQ)

11. Title: Black BiVO4: A Novel Material for PEC Applications
Authors: Barawi, M.; Gomez€Mendoza, M.; Oropeza, F. E.; Gorni, G.; Villar-Garcia, I. J.; Giménez, S.; de la Peña O›Shea, V. A.; García-Tecedor, M.
Congress: XXXVIII Reunión Bienal de la Real Sociedad Española de Química
Venue: Granada, Spain
Date: 27-30 June 2022
Organizer: Real Sociedad Española de Química (RSEQ)

12. Title: Nanostructured Conjugated Porous Polymers for Photocatalytic and Photoelectrochemical Applications
Authors: Palenzuela, S.; Naranjo, T.; Barawi, M.; Liras, M.; de la Peña O´Shea, V. A.
Congreso: XXXVIII Reunión Bienal de la Real Sociedad Española de Química
Venue: Granada, Spain
Date: 27-30 June 2022
Organizer: Real Sociedad Española de Química (RSEQ)

13. Title: New BOPHY-based Covalent Organic Framework for Energetic Applications
Authors: Mazuelo, T.; Naranjo, T.; Liras, M.; de la Peña O´Shea, V. A.
Congress: XXXVIII Reunión Bienal de la Real Sociedad Española de Química
Venue: Granada, Spain
Date: 27-30 June 2022
Organizer: Real Sociedad Española de Química (RSEQ)

14. Title: Understanding the Impact of the Crystallization Mechanism on a Mixed Metal Multivariate Metal-Organic Framework
Authors: Vasile, R. L.; Nemes, N.; Puente-Orench, I.; Martínez, J. L.; de la Peña-O'Shea, V.; Gutiérrez, E.; Monge, M. A.; Gándara, F.
Congress: XXXVIII Reunión Bienal de la Real Sociedad Española de Química
Venue: Granada, Spain
Date: 27-30 June 2022
Organizer: Real Sociedad Española de Química (RSEQ)

15. Title: NOx removal from air by activated biochars from different biomass feedstocks
Authors: Díaz-Maroto, C.G.; Sáenz de Miera, B.; Pizarro, P.; Serrano, D.P.; Moreno, I.; Fermoso, J.
Congress: 9th International Symposium on Carbon for Catalysis, CarboCat–IX
Venue: Zaragoza, Spain
Date: 28-30 June 2022
Organizer: Instituto de Carboquímica-CSIC y UNED

16. Title: Nuevos MOFs como prometedores electrolitos en pilas de combustible de membrana de intercambio protónico
Authors: Serrano-Nieto, R.; Salcedo-Abraira, P.; Biglione, C.; Ureña, N.; Perez-Prior, T.; Salles, F.; Várez, A.; Horcajada, P.
Congress: XVI Congreso Nacional de Materiales (CNMAT2022)
Venue: Ciudad Real, Spain
Date: 28 June-1 July 2022
Organizer: Sociedad Española de Materiales (SOCIEMAT) and University of Castilla-La Mancha

17. Title: Staged catalytic fast pyrolysis of wheat straw coupling acid H-ZSM-5 zeolite with basic MGO to produce valuable biobased chemicals
Authors: López-Renau, L. M.; Hernando, H.; Gómez-Pozuelo, G.; Botas, J. A.; Serrano, D. P.
Congress: 20th International Zeolite Conference (IZC-2022)
Venue: Valencia, Spain
Date: 3-8 July 2022
Organizer: Grupo Español de Zeolitas (GEZ) de la Sociedad Española de Catálisis (SECAT)

18. Title: Thermal and catalytic lignocellulose pyrolysis using a continuous reaction system
Authors: Pagano, M.; Hernando, H.; Serrano, D. P.
Congress: 20th International Zeolite Conference (IZC-2022)
Venue: Valencia, Spain
Date: 3-8 July 2022
Organizer: Grupo Español de Zeolitas (GEZ) de la Sociedad Española de Catálisis (SECAT)

19. Title: Enzyme@Metal-Organic Framework composites as novel approach for microplastic degradation
Authors: Rincón, I.; Hidalgo, T.; Armani, G.; Rojas, S.; Horcajada, P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

20. Title: Magnetic composites of nanoMOFs and magnetic nanoparticles for drug delivery
Authors: Picchi, D. F.; Biglione, C.; Carrasco, S.; Horcajada, P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

21. Title: In-situ reduction of noble metals inside of nanoMOF porosity
Authors: Lelouche, S.; Biglione, C.; Horcajada, P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

22. Title: Influence of amine groups of organosilanes on the rational synthesis of hierarchical ZSM-5 zeolites
Authors: Alonso-Doncel, M.; Peral, A.; Sanz, R.; Serrano, D. P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

23. Title: Exploring the performance of highly accessible Al- and Ga-ZSM-5 zeolites in LDPE and lignocellulose catalytic pyrolysis
Authors: Artillo, F.; Alonso-Doncel, M.; Zhang, Y.; Mazur, M.; Pizarro, P.; Cejka, J.; Serrano, D.P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

24. Title: Adsorption equilibrium and kinetics of hydrocarbons on ZSM-5 zeolites with different pore structures
Authors: Souza de Oliveira, A.; Alonso-Doncel, M.; Horcajada, P.; García-Muñoz, R.; Serrano, D.P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

25. Title: Selective hydrodeoxygenation of guaiacol over nano-ZSM-5-supported Ni and Co

catalysts. Influence of the nature of the active phase
Authors: Lago, A.; Fermoso, J.; Pizarro, P.; Serrano, D.P.; Moreno, I.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

26. Title: Development of Innovative Anodes for Energy-efficient Electro-oxidation of Contaminants in Wastewater
Authors: Mirehbar, K.; Sanchez, J. S.; Lado, J. J.; Palma, J.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

27. Title: Drinking water purification using Metal-Organic Frameworks: selective removal of disinfection by-products
Authors: Sanchez-Cano, G.; Lastra, A.; Saez, L.; Amado, M.; Arozamena, E.; Rojas, S.; Horcajada, P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

28. Title: Hydrodehalogenation of model pyrolytic oil using MOF catalysts
Authors: Fernandez-Ruiz, C.; Mulero, R.; Perez, Y.; Pizarro, P.; Horcajada, P.; Serrano, D. P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

29. Title: Ni nanoparticles supported over AC and SiO2 for simultaneous pyrolysis and vapor phase hydrodehalogenation of a real WEEE plastic
Authors: Amodio, L.; López, J.; Hernando, H.; Fermoso, J.; Pizarro, P.; Serrano, D.P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

30. Title: Combining nano and layered materials with acid-basic features for the upgrading of bio-oil vapours produced by wheat straw catalytic pyrolysis
Authors: López-Renau, L.M.; Hernando, H.; Gómez-Pozuelo, G.; Botas, J.A.; Serrano, D.P.
Congress: 8th International Workshop of Layered & Nanostructured Materials 2022 (IWLNM 2022)
Venue: Toledo, Spain
Date: 10-13 July 2022
Organizer: IMDEA Energy

31. Title: Transfering the protein repellent properties of pN-AM from macroscale to nanoscale
Authors: Biglione, C.; Neumann-Tran, T.M.P.; Navarro, L.; Achazi, K.; Klinger, D.
Congress: XXI Encuentro de Superficies y Materiales Nanoestructurados (NANO 2022)
Venue: Online
Date: 9-11 August 2022
Organizer: Universidad Nacional de Río Cuarto

32. Title: Disentangling microbial changes upon organic loading rate disturbances in anaerobic reactors
Authors: Walter, J. M.; Greses, S.; Hagen, L. H.; Pope, P. B.; González-Fernández, C.; Ø Arntzen, M.
Congress: 18th International Symposium on Microbial Ecology (ISME18)
Venue: Lausana, Switzerland
Date: 14-19 August 2022
Organizer: International Society for Microbial Ecology

33. Title: Enzyme@Metal-Organic Framework composites as novel approach for plastic degradation

Authors: Horcajada, P.; Rincon, I.; Hidalgo, T.; Rojas, S.
Congress: 8th International Conference on Metal-Organic Frameworks and Open Framework Compounds
Venue: Dresden, Germany
Date: 4-7 September 2022
Organizer: DECHEMA

34. Title: Drinking water purification using Metal-Organic Frameworks: selective removal of disinfection by-products
Authors: Sanchez-Cano, G.; Lastra, A.; Saez, L.; Amado, M.; Arozamena, E.; Rojas, S.; Horcajada, P.
Congress: 8th International Conference on Metal-Organic Frameworks and Open Framework Compounds
Venue: Dresden, Germany
Date: 4-7 September 2022
Organizer: DECHEMA

35. Title: Experimental test bench for Pressurised Gas Solar Receivers using a High Flux Solar Simulator
Authors: D'Souza, D.; Montes, M.J.; González-Aguilar, J.; Romero, M.
Congress: SolarPACES 2022
Venue: Albuquerque, USA
Date: 27-30 September 2022
Organizer: SolarPACES

36. Title: High-Temperature Angular-Selective Radiant Surfaces (H2020 MSCA IF HEASeRS): Project Overview
Authors: Asselineau, C.-A.
Congress: SolarPACES 2022
Venue: Albuquerque, USA
Date: 27-30 September 2022
Organizer: SolarPACES

37. Title: Electrochemical lithium recovery using GF-LMO electrodes: insights and perspectives
Authors: Oliveira, K.S.G.C.; Palma, J.; Lado, J. J.; Augusto, L.; Ruotolo, M.
Congress: European Summer School of Electrochemical Engineering (ESSEE 2022)
Venue: Online
Date: 3-7 October 2022
Organizer: University of Southampton

38. Title: Ancillary Frequency and Voltage Support Provision by Renewable Energy Sources in a Medium Voltage Distribution Network
Authors: Jankovic, N.; Prodanovic, M.; Roldán€ Pérez, J.
Congress: 2022 IEEE PES Innovative Smart Grid Technologies Conference Europe (ISGT Europe 2022)
Venue: Novi Sad, Serbia
Date: 10-12 October 2022
Organizer: IEEE Power & Energy Society (PES) y Universidad de Novi Sad

39. Title: Proyecto NONTOX: creando una cadena de valor limpia y circular en el sector del plástico
Authors: Amodio, L.; Pizarro, P.; Serrano, D.P.
Congress: Congreso Nacional de Medio Ambiente 2022 (CONAMA 2022)
Venue: Madrid, Spain
Date: 21-24 November 2022
Organizer: Fundación CONAMA

40. Title: Ruminococcus as key bacteria for in situ carbon chain elongation without the need of adding external electron donors
Authors: Greses, S.; Tomás-Pejó, E.; González-Fernández, C.
Congress: 2nd International Chain Elongation Conference
Venue: Bad Boll, Germany (Hybrid)
Date: 2-4 November 2022
Organizer: Universität Tübingen

41. Title: Microbial indicators of anaerobic digestion failure upon organic loading rates disturbances
Authors: Greses, S.; Walter, J. M.; Hagen, L. H.; Pope, P. B.; Tomás-Pejó, E.; Arntzen, M. Ø.; González-Fernández, C.
Congress: III Congreso IWA YWP - Young Water Professionals Spain 2022
Venue: Valencia, Spain
Date: 16-19 November 2022
Organizer: Red estatal de los Young Water Professionals (YWP)

9. PhD thesis defended

1. Title: High energy density flow batteries based on redox mediators
Author: Mª Teresa Páez Viñas
Director: Dr. Jesús Palma, Dr. Edgar Ventosa
Venue: Online, Polytechnic University of Madrid, Spain
Date: 24 February 2022

2. Title: New Battery Technology Concepts Based on Semi-Solid Electrodes
Author: Daniel Pérez Antolín
Director: Dr. Edgar Ventosa
Venue: University of Burgos, Spain
Date: 20 June 2022

3. Title: Waste-to-Energy in a Circular Economy: Assessing the Energy Recovery Potential and Economic and Environmental Optimal Pathways
Author: Ioan-Robert Istrate
Director: Dr. Javier Dufour, Dr. José L. Gálvez
Venue: Rey Juan Carlos University, Spain
Date: 5 September 2022

4. Title: New methods of theragnosis for the treatment of tumors using hyperspectral fluorescence techniques
Author: Edelweiss Moyano Rodríguez
Director: Dr. Antonio José Caamaño Fernández / Dr. Víctor A. de la Peña O´Shea
Venue: Rey Juan Carlos University, Spain
Date: 11 november 2022

5. Title: De-asphalting of heavy oil crudes as pre- treatment of a refinery: applied thermodynamics and proposal of a simulation model
Author: Igor de las Heras López
Director: Dr. Baudilio Coto / Dr. Javier Dufour
Venue: Rey Juan Carlos University, Spain
Date: 20 june 2022

6. Title: Study of the stability of asphaltenes in crude oils
Author: Raúl Giménez Aguirre
Director: Dr. José Antonio Calles / Dr. Javier Dufour
Venue: Rey Juan Carlos University, Spain
Date: 4 july 2022

7. Title: Performance analysis of supercritical CO2 solar thermal power system;
Author: Rui Chen
Director: Prof. Shengming Liao / Dr. Manuel Romero
Venue: Central South University, China;
Date: 31 may 2022

8. Title: New lung delivery platform based on metal-organ networks with potential application in the treatment of tuberculosis
Author: Cristina Fernández Paz
Director: Dr. Patricia Horcajada / Dr. M. Carmen Remuñan
Venue: Santiago de Compostela University, Spain
Date: 30 march 2022

9. Title: Ex-situ catalytic fast pyrolysis of wheat straw over acid-base catalysts for the production of high-added value bio-based chemicals
Author: Luis Miguel López-Renau
Director: Dr. David Serrano / Dr. Juan A. Botas
Venue: Universidad Rey Juan Carlos, España
Date: 1 december 2022

10. Organization of scientific and industrial events

1. Transfiere Fair
Venue: FYCMA, Málaga, Spain
Date: 16- 17 February 2022
Organizer: FYCMA
Stand IMDEAs

2. Solar heat generation for industrial processes
Venue: Feria Genera 2022, IFEMA, Madrid, Spain
Date: 14 June 2022
Organizer: IMDEA Energy

3. Challenges of the grid integration of renewable energy sources
Venue: Feria Genera 2022, IFEMA, Madrid, Spain
Date: 16 June 2022
Organizer: IMDEA Energy

4. Webinar EUREKA Canada Spain call for innovative projects in energy technologies
Venue: IMDEA Energy Institute Madrid, Spain
Date: 21 June 2022
Organizer: IMDEA Energy

5. Relationship between scientists and investors
Lugar: IMDEA Energy Institute Madrid, Spain
Fecha: 19 September 2022
Organizer: IMDEA Energy

6. 3rd Annual Workshop of Senior Researchers of IMDEA Energy
Venue: IMDEA Energy Institute Madrid, Spain
Date: 27 September 2022
Organizer: IMDEA Energy

7. Patents for Innovation International Summit & Expo 2022
Venue: La Nave, Madrid, Spain
Date: 26-27 October 2022
Organizer: Universidad Autónoma de Madrid, Phantoms foundation, BeAble Capital y Knode.
Stand IMDEAs

8. PuzzleX (Smart City Expo World Congress)
Venue: FIRA Barcelona, Spain
Date: 15 November 2022
Organizer: Matter, Inc. / Puzzle X / FIRA Barcelona
"Sustainable Future" panel on materials for sustainability from Puzzle X, a global platform of frontier technologies for a sustainable future. Organized by: IMDEA Water, Energy, Materials and Nanoscience

9. Batteryplat General Assembly
Venue: IMDEA Energy Institute Madrid, Spain
Date: 25 November 2022
Organizer: Batteryplat, IMDEA Energy

10. 11th Annual Workshop of Young Researchers
Venue: IMDEA Energy Institute Madrid, Spain
Date: 15-16 December 2022
Organizer: IMDEA Energy

11. XVIII Iberian Congress and XIV Iberoamerican Congress of Solar Energy
Venue: Palma de Mallorca, Spain
Date: 20-22 june 2022
Organizer: AEDES (Sapinsh Solar Energy Association) y UIB (Illes Balears University)
Chairs: Manuel Romero / José González

12. International Conference on Metal-Organic Frameworks and Open Frameworks Compounds
Venue: Dresden, Germany
Date: 6 september 2022
Organizer: Dechema
Chair: Patricia Horcajada

13. 8th international workshop of Layered and nanostructured materials
Venue: Toledo, Spain
Date: 12 – 13 june 2022
Organizer: IMDEA Energy

14. VI Conference for the Promotion of Basic Research for Science and Engineering students
Venue: Móstoles, Spain
Date: 2 – 3 june 2022
Organizer: Universidad Rey Juan Carlos
Chair: Yolanda Pérez

15. Symposium on Materials for Emerging Energy Technologies (MEET Symposium)
Venue: IMDEA Energy, Madrid, Spain
Date: 19-20 may 2022
Organizer: proyectos LIGHT-CAP, EPISTORE, ELECTRO-INTRUSION y HYSOLCHEM

16. Simposium S3 Materials for energy, XXXVIII biennial meeting RSEQ
Venue: Granada, Spain
Date: 27-30 june 2022
Organizer: IMDEA Energy

17. 20th International Zeolite Conference (IZC-2022)
Venue: Valencia, Spain
Date: 3-8 July
Organizer: International Zeolite Association
Co – chair: David Serrano

11. Organization of internal seminars

1. Conference: Integrated tools supporting decision-making: energy and process systems for the planet
Speaker: Dr. Pedro L. Cruz (IMDEA Energy)
Date: 28 January 2022

2. Conference: Dendritic zeolites: a major step forward towards the development of highly accessible zeolites
Speaker: Dr. Maria del Mar Alonso (IMDEA Energy)
Date: 28 January 2022

3. Webinar Herramientas de Vigilancia Tecnológica
Speakers: Dr. David Serrano and Dr. Félix Marín (IMDEA Energy)
Date: 1 February 2022

4. Conference: From lignocellulosic biomass to high added value compounds: aqueous-phase transformations vs. pyrolysis
Speaker: Dr. Jennifer Cueto (IMDEA Energy)
Date: 28 February 2022

5. Conference: Catalytic hydrodehalogenation of halogenated compounds for the production of valuable hydrocarbons
Speaker: Dr. Carlos Fernández (IMDEA Energy)
Date: 28 February 2022

6. Conference: Algae biotechnology to solve environmental problems
Speaker: Dr. Leonardo Rubi (Universidad Federal de Santa Catarina, Brasil)
Date: 3 March 2022

7. Conference: Synchronization Techniques, Introduction and Program for IMDEA ENERGY
Speaker: Dr. Erick Vázquez (IMDEA Energy)
Date: 25 March 2022

8. Conference: Porous polymers for catalytic and (opto)electronic applications
Speaker: Dr. Hakan Bildirir (IMDEA Energy)
Date: 25 March 2022

9. Conference: Design, characterisation and optimisation of complex optical and radiant systems for renewable energy applications
Speaker: Dr. Charles-Alexis Asselineau (IMDEA Energy)
Date: 29 April 2022

10. Conference: Organic synthesis for tuning dendritic zeolites morphology
Speaker: Dr. Elena Alonso (IMDEA Energy)
Date: 29 April 2022

11. Course: Introducción a los laboratorios centrales de IMDEA Energy: Técnicas y Equipamientos
Speaker: Dr. Marta Arroyo (IMDEA Energy)
Date: 19 May 2022

12. Conference: Hybrid two-dimensional materials for energy storage and conversion
Speaker: Dr. Gonzalo Abellán (Instituto de Ciencia Molecular – ICMOL, UV)
Date: 29 May 2022

13. Conference: Catalytic hydrotreatments in aqueous phase with metallic catalysts
Speaker: Dr. Alejandro Herrero (IMDEA Energy)
Date: 3 June 2022

14. Conference: The potential of anaerobic digestion to produce bioenergy and value-added products
Speaker: Dr. Kaoutar Aboudi (IMDEA Energy)
Date: 3 June 2022

15. Course: Introduction to Matlab
Speaker: Dr. Milan Prodanovic (IMDEA Energy)
Date: 10 June 2022

16. Conference: MOFs and Jerry at IMDEA, a new biomedical challenge based on real life
Speaker: Dr. Inés Álvarez (IMDEA Energy)
Date: 24 June 2022

17. Conference: Importance of Interfaces in Enabling Fast Charging Solid State Batteries
Speaker: Dr. Ainara Aguadero (Instituto de Ciencia de Materiales de Madrid, CSIC)
Date: 29 September 2022

18. Conference: Thermochemical Properties of Non-Stoichiometric Perovskites for Solar Fuel Generation
Speaker: Dr. Sossina Haile (Northwestern University).
Date: 3 October 2022.

19. Conference: Molecular Sieves: versatile materials for catalysts design
Speaker: Dr. Sibele Pergher (Universidad Federal de Río Grande del Norte, Brasil)
Date: 10 October 2022

20. Conference: Research Activities at the Austrian Institute of Technology (Storage Projects)
Speaker: Dr. Adolfo Anta (Austrian Institute of Technology)
Date: 20 October 2022

21. Conference: Dye based Carbon Nanocages for supramolecular applications
Speaker: Dr. María Eugenia Pérez-Ojeda (Friedrich Alexander Universität Erlangen-Nürnberg)
Date: 4 November 2022

22. Conference: Advanced Materials and Methods for Chemical Selectivity
Speaker: Dr. Louis de Smet (Wageningen University)
Date: 7 November 2022

23. Conference: Towards a sustainable energy transition: Understanding the life cycle impacts from individual systems to full energy scenarios
Speaker: Dr. Paula Pérez (Center Observation, Impacts, Energy (O.I.E.) of Mines Paris)
Date: 10 November 2022

24. Course: Introduction to Electrochemical Processes
Speaker: Dr. Jesús Palma (IMDEA Energy)
Date: 24 November 2022

25. Conference: Stability and fundamentals of hybrid perovskite in photovoltaics
Speaker: Dr. Pablo Docampo (University of Glasgow)
Date: 27 November 2022

12. Participation in science dissemination activities

1. International Day of Women and Girls in Science
Activity: La Energía de las Mujeres
Venue: IMDEA Energy Institute, Madrid, Spain (Online)
Date: 11 February 2022
Organizer: IMDEA Energy

2. Madrid Fair for Science and Innovation 2021
Activity: Energy, the key to sustainability
Venue: IFEMA Madrid, Spain
Date: 2-3 March 2022
Organizer: IMDEA Energy Institute, Fundación para el conocimiento madri+d

3. European researchers' night 2022
Activity: Moving towards a circular economy
Venue: IMDEA Energy Institute, Madrid, Spain
Date: 30 September 2022
Organizer: IMDEA Energy

4. European researchers' night 2022
Activity: The 5 EU missions as seen by IMDEA researchers (I)
Venue: Residencia de Estudiantes de Madrid, Spain
Date: 30 September 2022
Organizer: Fundación para el conocimiento madri+d

5. European Researchers' Night 2022
Activity: Would you like to discover what life is like in a laboratory?
Venue: Círculo de Bellas Artes de Madrid, Spain
Date: 30 September 2022
Organizer: Fundación para el conocimiento madri+d

6. Science and Innovation Week 2022
Activity: Energy for a sustainable world
Venue: Institute IMDEA Energy, Madrid, Spain
Date: 15,16, 17, and 18 November 2022
Organizer: IMDEA Energy

7. Visit of students of the Master in Renewable Energies and Environment of the Polytechnic University of Madrid.
Venue: IMDEA Energy Institute, Madrid, Spain
Date:14 March 2022
Organizer: IMDEA Energy

8. Visit of students of IES Antonio Fraguas, Forges (Madrid).
Venue: IMDEA Energy Institute, Madrid, Spain
Date: 2 April 2022
Organizer: IMDEA Energy

9. Visit of students of the Degree in Energy Engineering of the Universidad Carlos III de Madrid.
Venue: IMDEA Energy Institute, Madrid, Spain
Date:21 April 2022
Organizer: IMDEA Energy

10. Visit of students from the Master in Applied Plant Biology of the Complutense University of Madrid.
Venue: Institute IMDEA Energy, Madrid, Spain
Date: 23 November 2022
Organizer: IMDEA Energy

13. Training of students

INTERNSHIPS

1. Noelia Herrero Verdejo
Vocational Training, IES-Virgen de la Paloma
Internship: Support tasks in the Photoactivated Processes Unit
Supervisor: Dr. Marta Liras, PAPU
Period: March-May 2022

2. Marcos Gancedo Pérez
Vocational Training, IES-Palomeras-Vallecas
Internship: Support tasks in the Electrochemical Processes Unit
Supervisor: Dr. Enrique García-Quismondo, ECPU
Period: March-June 2022

3. Javier Morón Chamtal
Vocational Training, IES-Benjamín Rúa
Internship: Support tasks in the Electrical Systems Unit
Supervisor: Dr. Milan Prodanovic, ESU
Period: March-June 2022

4. Daniel de la Cruz Domingo
Vocational Training, IES-Salesianos de Carabanchel
Internship: Support tasks in the High Temperature Processes Unit
Supervisor: Dr. José González, HTPU
Period: March-June 2022

5. María Jesús Medina Duque
Vocational Training, IES-Lope de Vega
Internship: Support Tasks in the Biotechnological Processes Unit
Supervisor: Albert Martínez, BTPU
Period: March-June 2022

6. Ana Martín Palomo
Vocational Training, IES-Lope de Vega
Internship: Support tasks in the Photoactivated Processes Unit
Supervisor: Dr. Marta Liras, PAPU
Period: March-June 2022

7. Erica María Palumbo
Internship Erasmus, University of Naples Federico II, Italy
Supervisor: Dr. José González, HTPU
Period: March-June 2022

8. Dionysios Raptis
Internship Erasmus, Technical University of Crete, Greece
Supervisor: Dr. Andreas Mavrantonakis, ECPU
Period: February-April 2022

9. Davide Mario Pisano
Internship Erasmus, University of Naples Federico II, Italy
Supervisor: Dr. José González, HTPU
Period: April-September 2022

10. Chiara Designi
Internship Erasmus, University of Naples Federico II, Italy
Supervisor: Dr. José González, HTPU
Period: April-June 2022

11. Sumanth Kumar Reddy Maddula
Internship Erasmus, University of Cassino and Southern Lazio, Italy
Supervisor: Dr. Javier Dufour, ASU
Period: May-August 2022

12. Georgios Karanikas
Internship Erasmus, Technical University of Crete, Greece
Supervisor: Dr. José González, HTPU
Period: October-December 2022

13. Gavriella Voutsina
Internship Erasmus, Technical University of Crete, Greece
Supervisor: Dr. José González, HTPU
Period: October-December 2022

14. Brendt Stephens
Internship MIT, Massachusetts Institute of Technology
Supervisor: Dr. José González, HTPU
Period: June-August 2022

15. Sergio Guerra Delgado
BSc Chemical Engineering and Environmental Engineering, Rey Juan Carlos University of Madrid
Internship: Support in the development of techno-economic analyses of novel technologies for the production of biofuels, chemicals from biomass, and low carbon footprint processes
Supervisor: Dr. José Luis Gálvez, ASU
Period: March-May 2022

16. Álvaro García Díaz
BSc Environmental Engineering and Industrial Organisation Engineering, Rey Juan Carlos University of Madrid
Internship: Participation in the development of the regional hydrogen deployment plan
Supervisor: Dr. Diego Iribarren, ASU
Period: March-July 2022

17. Álvaro Moreno de la Calle
M.Sc Environmental Engineering and Industrial Organisation Engineering,
Internship: Conducting electrochemical experiments on flow battery characterization.
Supervisor: Dr. Santiago Ibañez, ECPU
Period: March-August 2022

18. Felipe José Landazábal Santiago
M.Sc Chemical Engineering, Rey Juan Carlos University of Madrid
Internship: Development of graphite electrodes on different substrates with the doctor blade technique.
Supervisor: Dr. Rebeca Marcilla, ECPU
Period: May-August 2022

19. José Manuel Hidalgo Gutiérrez
M.Sc Industrial Engineering, Rey Juan Carlos University of Madrid
Internship: Investigate the impact of commercial lithium-ion battery operation following unconventional profiles that provide a realistic idea of capacity loss per cycle.
Supervisor: Dr. Santiago Ibañez, ECPU
Period: May 2022

20. Alicia Mortera Canga
M.Sc Energy and Fuels for the Future, Autonomous University of Madrid
Internship: Technical study of hydrogen producing or consuming systems.
Supervisor: Dr. Diego Iribarren, ASU
Period: May – June 2022

21. José Miguel Córdoba
M.Sc Electronic Systems Engineering and Applications, Carlos III University of Madrid
Internship: Development of models for real-time emulation of renewable generation sources.
Supervisor: Dr. Javier Roldán, ESU
Period: June – July 2022

22. Teresa Estefanía Hernández Lamor
M.Sc Industrial Engineering, Rey Juan Carlos University of Madrid
Internship: Technical study of hydrogen producing or consuming systems.
Supervisor: Dr. Javier Dufour, ASU
Period: June – July 2022

23. Alejandra Tejedor Rubio
M.Sc Information and communication electronic systems, UNED
Internship: Engineering tasks necessary for the start-up and operation of the laboratory.
Supervisor: Dr. Víctor de la Peña, PAPU
Period: June – July 2022

24. Laura Ferrero Antón
M.Sc Biotechnology for Environment and Health, Oviedo University
Internship: Enzymatic polymerisation of lactic acid as a sustainable method of polylactic acid production.
Supervisor: Dr. Elia Tomás, BTPU
Period: June – July 2022

25. Saloa Vaquero Vílchez
M.Sc New materials, University of the Basque Country
Internship: Application of lithium-ion batteries in intermittent power generation systems.
Supervisor: Dr. Enrique García-Quismondo, ECPU
Period: July 2022

26. Alejandro García Cañas
M.Sc Energy, Complutense University of Madrid
Internship: Synthesis of different materials (BiVO4, WO3 and TiO2) in thin film configuration with optoelectronic properties suitable for use as photoelectrodes.
Supervisor: Dr. Mariam Barawi, PAPU
Period: July - August 2022

27. Irene Molina Gilarranz
M.Sc Industrial and Environmental Biotechnology, Complutense University of Madrid
Internship: Separation of carboxylates from anaerobic effluents by capacitive deionisation.
Supervisor: Dr. Julio J. Lado, ECPU / Dr. Cristina González BTPU
Period: September - December 2022

28. Tomás Lebkowski Jiménez
M.Sc Chemical Science and Technology
Internship: Collaboration in the synthesis of metalloorganic based catalysts (MOFs) in the scales requeridas para su posterior aplicación.
Supervisor: Dr. Carlos Fernandez, UPTQ
Period: June-August 2022

BACHELOR'S PROJECTS DEFENDED

1. Alejandro Marduck Aguilar Fuertemoreno
B Sc. Software Engineering, Rey Juan Carlos University of Madrid
Project Title: Redesign of a Multi-User Application for Control of Experimental Electrical Laboratory.
Supervisor: Dr. Milan Prodanovic, ESU
Reading date: Noviembre, 2022

2. David Sáez Hernández
B Sc. Chemical Engineering, Rey Juan Carlos University of Madrid
Project Title: Methanol production from wastes.
Supervisor: Dr. Javier Dufour, ASU
Reading date: October, 2022

3. Alba Rubio Domínguez
B Sc. Chemical and Environmental Engineering, Rey Juan Carlos University of Madrid
Project Title: Optimization of the operational conditions of a solar reactor for photocatalytic H2 evolution.
Supervisor: Dr. Laura Collado, PAPU
Reading date: March, 2022

4. Daniel Hernanz Moreno
B Sc. Chemistry, Autonomous University of Madrid
Project Title: Optimization of CO2 photoreduction by visible light and its use to obtain products of industrial interest.
Supervisor: Dr. Miguel Gómez Mendoza, PAPU
Reading date: March, 2022

MASTER'S PROJECTS DEFENDED

1. Miguel Jiménez Duro
Msc. Chemical Sciences and Technologies, Complutense University of Madrid
Project Title: Metal-Organic Frameworks (MOFs) as a novel remediation for wastewater decontamination.
Supervisor: Dr. Patricia Horcajada, UMPA
Reading date: July, 2022

2. Jose Miguel Córdoba Méndez
Msc. Electronic Systems Engineering and Applications, Carlos III University of Madrid
Project Title: Alternatives for the Emulation of Synchronous Machines with Photo-Voltaic Power Plants.
Supervisor: Dr. Javier Roldán, ESU
Reading date: September, 2022

3. Richard Patricio Rivas Berrones
Msc. Industrial Engineering, Rey Juan Carlos University of Madrid
Project Title: Study of Demand Flexibility and its Opportunities.
Supervisor: Dr. Milan Prodanovic, ESU
Reading date: July, 2022

4. Marcelo Nogales Balderrama
Msc. Renewable Energies in Electrical Systems, Carlos III University of Madrid
Project Title: Frequency Stability Improvements Using Distributed Generation.
Supervisor: Dr. Milan Prodanovic, ESU
Reading date: July, 2022

5. Ronald Sousa Miliani
Msc. Renewable Energies in Electrical Systems, Carlos III University of Madrid
Project Title: Battery Based Ancillary Services for Low Inertia Power Networks.
Supervisor: Dr. Milan Prodanovic, ESU
Reading date: September, 2022

6. Alejandro Sáez Gómez
Msc. Chemical Engineering, Rey Juan Carlos University/ Autonomous University of Madrid
Project Title: NOx removal from gaseous streams by activated hydrochars.
Supervisor: Dr. Javier Fermoso, UPTQ
Reading date: July, 2022

7. Elena Ramírez Borreguero
Msc. Chemical Engineering, Rey Juan Carlos University/ Autonomous University of Madrid
Project Title: Polymeric Electrolytes Development for Aqueous Rechargeable Zinc Batteries Rocking Chair Type.
Supervisor: Dr. Rebeca Marcilla, ECPU
Reading date: July, 2022

8. Sara Pacheco Cano
Msc. Industrial Engineering, Rey Juan Carlos University of Madrid
Project Title: Electrochemical ion pumping for lithium recovery from battery recycling.
Supervisor: Dr. Julio J. Lado / Dr. Enrique García-Quismondo, ECPU
Reading date: July, 2022

9. Victor Ciria Bellot
Msc. Industrial Engineering, Rey Juan Carlos University of Madrid
Project Title: Development of Electrolyte Characterization Techniques for Vanadium Redox Flow Batteries.
Supervisor: Dr. Julio J. Lado / Dr. Enrique García-Quismondo, ECPU
Reading date: November, 2022

10. Marcos Rodríguez Morán
Msc. Industrial Engineering, Rey Juan Carlos University of Madrid
Project Title: High Energy-efficiency injectable batteries based on NMO for brackish water desalination.
Supervisor: Dr. Julio J. Lado / Dr. Enrique García-Quismondo, ECPU
Reading date: December, 2022

11. Adrián Borrego Fernández
Msc. Microbiology and Parasitology, Complutense University of Madrid
Project Title: Study of the use of volatile fatty acids as carbon source by genetically-modified yarroqia lipolytica strains.
Supervisor: Dr. Elia Tomás, BTPU
Reading date: June, 2022

12. Aitor Verdejo Arévalo
Msc. Microbiology and Parasitology, Complutense University of Madrid
Project Title: Production of microbial oils from carboxylates in mixed cultures of microalgae-yeast..
Supervisor: Dr. Cristina González Fernández / Dr. Silvia Greses, BTPU
Reading date: June, 2022

13. Anatoli Cibotaru Budistean
Msc. Chemical Engineering, Autonomous University of Madrid
Project Title: Synthesis and characterization of photoelectrodes of CuBi2O4 for the generation of solar fuels.

Supervisor: Dr. Miguel García-Tecedor / Dr. Mariam Barawi, PAPU
Reading date: January, 2022

14. Nerea Moldes Bóveda
Msc. Chemical Engineering, Rey Juan Carlos University/ Autonomous University of Madrid
Project Title: Mechanistic study of DNA photorepair by visible light with future applications in phototherapy and pharmacological industry.
Supervisor: Dr. Miguel Gómez Mendoza, PAPU
Reading date: March, 2022

15. Antonio Marcos de León
Msc. Nanophysics and Advanced Materials, Complutense University of Madrid
Project Title: Synthesis and characterization of novel Cu-based oxide photoelectrodes for solar fuels generation.
Supervisor: Dr. Miguel Gómez Mendoza, PAPU
Reading date: September, 2022

16. Oier Beaskoetxea
Msc. Artificial Intelligence, Complutense University of Madrid
Project Title: Photocatalystic Ontology.
Supervisor: Dr. Victor de la Peña, PAPU
Reading date: October, 2022

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