

Hydrogen in Europe's energy transition: EU partnerships, national ecosystems and the skills pipeline.

A4U - R&I for H2 Skills



What is **Alliance** **4 Universities?**

A strategic partnership of 4 research leading Spanish Public Universities... **since 2009**

4 Universities
2 Cities

1 Alliance



MADRID

Universidad Autónoma
de Madrid

Universidad Carlos III
de Madrid



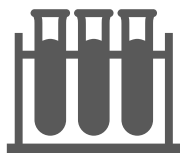
BARCELONA

Universitat Autònoma
de Barcelona

Universitat Pompeu Fabra
de Barcelona

A-4U

Objectives and Joint Actions



1. **Promotion of European research**
activities through a permanent office
in Brussels (OPERA), which facilitates
participation of A-4U researchers in
European programmes and decision-
making



2. **IUNE Observatory**
an information database for the
evaluation of research in Spanish
universities, recognised by the
Ministry of Education of Spain

3. **Common strategy of internationalisation**
Africa (South, West), India



4. **Joint undergraduate programmes**
Philosophy, Politics and Economics (since 2013)
Sciences (since 2020)
Science, Technology and Humanities (since 2021)
Partially English-taught



Research at Alliance 4 Universities

A-4U enhances the strategic collaboration between Madrid and Barcelona as the two most R&D intensive regions in Spain



6%

of the Permanent Research and Teaching Staff in the Spanish University System



17%

of the scientific production (papers) in the Spanish University System



63%

Open Access Publications (2013-2022)



59%

of the sci papers with International Collaboration



600 H2020

projects with a total EU-funding of **273 M €**



12%

funding from Spanish R&I National Program



456 HE

projects with a total EU-funding of **210 M €**

H2 Researchers and Training





Eva Pellicer

Full Professor – Chemistry

[Group of smart nanoengineered materials, nanomechanics and nanomagnetism \(Gnm3\)](#)

[*Magnetic field-enhanced hydrogen electrocatalysis : Unveiling the role of electrolyte concentration*](#)



Carolina Gimbert.

Associate Professor and co-leader of the CatSyNanoMat group in the Chemistry Department of UAB working in the field of photocatalysis as well as organic and hybrid materials with application to artificial photosynthesis.

[*High Solar-to-Hydrogen Conversion Efficiency at pH 7 Based on a PV-EC Cell with an Oligomeric Molecular Anode*](#)



Albert Rimola.

Full Professor. His research focuses on atomistic simulations of chemical processes with accurate quantum chemical methods using molecular and periodic modelling approaches. His expertise covers the atomistic modeling of physico-chemical surface phenomena directed to Astrochemistry field, specifically the formation of interstellar species on grain surfaces, receiving funding from national and international agencies (e.g., ERC-QUANTUMGRAIN project).



Laia Francàs

Ramon y Cajal fellowship at UAB. She is currently leading projects devoted to the design of ligand functionalized (photo)electrodes for solar fuels applications to study their activity, properties, and mechanism by means of electrochemistry and UV–vis spectroelectrochemistry



Xavier Solans Monfort

He is working on applying computational models based on quantum mechanics to understand and design new electrocatalyst for energy conversion and storage.



Lluís Escriche Martínez

Associate Professor

His primary research interests focus on coordination chemistry, nanomaterials, and selective oxidation catalysis, particularly in the development of catalytic processes for energy conversion and oxidative transformations.

Insights into the light-driven hydrogen evolution reaction of mesoporous graphitic carbon nitride decorated with Pt or Ru nanoparticles.



Albert Guisasola

The topic of his research was to gain understanding on the biological nutrient removal processes via an engineering approach based on experimental assays, on-line monitoring through respirometry and titrimetry and modelling.

Scale-up of novel configurations for energy (**hydrogen**) and resource (P as struvite and N as ammonium salts) recovery from real wastewater.

Bioelectrochemical **hydrogen** production



TRAMPOLINE-: A training programme to promote the industrial adoption of microbial electrochemical technologies

Use of microorganisms for sustainable applications

Microbial electrochemical technologies (METs) use microorganisms to drive electrochemical reactions, offering innovative solutions for environmental and **energy applications**. These technologies harness the metabolic activities of microorganisms to convert organic waste into electrical energy or chemicals, or to treat wastewater. With the support of the Marie Skłodowska-Curie Actions programme, **the TRAMPOLINE project will enhance METs towards pressing environmental issues such as freshwater contamination, anthropogenic CO₂ emissions, and renewable energy**. In collaboration with companies, the consortium will train young researchers on cutting-edge MET-based technologies for bioremediation, desalination and resource recovery. By promoting the utilisation of METs in industry, the project envisions a more sustainable future.



MSCA

Marie Skłodowska-Curie Actions
Developing talents,
advancing research

Doctoral Networks

We are an alliance of 13 universities united by a joint goal to make an impact. Here, learners, teachers, and researchers work with cities, communities, and businesses to solve real-life challenges – and foster change.



MICRO-MODULE

Closed for application

Geopolitics of Hydrogen

ONLINE MICRO-MODULE ABOUT HOW GEOPOLITICS
INFLUENCES THE EMERGING HYDROGEN ECONOMY AND HOW
HYDROGEN SHAPES THAT GEOPOLITICS

All seats filled

There are no available seats for this learning opportunity.

Description

This course examines the emerging geopolitics of hydrogen. This involves political risks along with economic and power political competition among producer and consumer countries of hydrogen and related derivative fuels. This competition in turn influences the operating environment of firms in various sectors and value chains of hydrogen business. The course offers a global level outlook into these matters, scrutinising the key concepts of hydrogen geopolitics with illustrative case studies on the EU context, North America, and the Asian context, as well as on the role of fossil fuel producers and implications for energy security and energy diplomacy.

Topics

Energy and sustainability
Critical and innovative thinking

Study format

① Online

Application period

16 September – 9 October 2025

Study period

20 October – 7 December 2025

Credits

5 ECTS

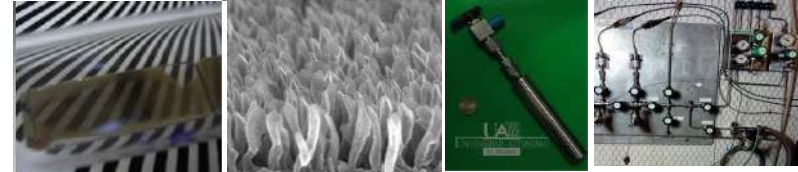
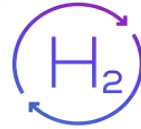
Hosting university

Tampere University

**Got questions?**

Reach out to us via this
[contact form](#)

Jose Ramon Ares, leader of a group on synthesis and characterization of materials for hydrogen research i.e. hydrogen generation, storage and monitoring



MASTER'S DEGREE IN ENERGY AND FUELS FOR THE FUTURE

Duration

1 year (60 ECTS)

Category

Professionalizing/Investigator

Language of instruction

Spanish

Teaching modality type

In-person teaching

Number of places

30

Tuition fees (first enrollment)

€2,736; non-resident non-EU citizens: €5,079

Center

Science Faculty



31940 - HIDRÓGENO. PRODUCCIÓN ACUMULACIÓN Y
USO. SISTEMA SOLAR- HIDRÓGENO

Master's Programme in Transdisciplinary Studies of Climate, Environment and Energy (TRACEE)

Learn how to lead the charge against some of the world's most pressing challenges with a pioneering Master's programme





MARIO SANCHEZ SANZ

HyCoTec-CM - Quantitative Characterization Techniques for Hydrogen-based Fuel Combustion Projects

MASTER IN RENEWABLE ENERGY IN THERMAL SYSTEMS

Masters / Programs / Master in Renewable Energy in Thermal Systems

Graduate School of Engineering and Basic Sciences

Direction: Prof. Andrés Anca Couce, Prof. Antonio Soria Verdugo

Language: Spanish

Attendance: On-campus

Credits: 60

Campus: Leganes

Applications: **CLOSED**

Places available: 40

Departments: Thermal and Fluids Engineering Department



New Talent Generation for the Future of Hydrogen Research and Innovation in Catalonia and Baden-Württemberg

(TALENT H2 CAT-BW)

Objectives:

- Recruit and train the next generation of young researchers in H2.
- Address the challenges and needs related to hydrogen research and innovation in Catalonia and Baden Württemberg
- Strengthen cooperation on hydrogen between the two regions, as well as between academic and non academic organizations.

Nº of fellows to be recruited:

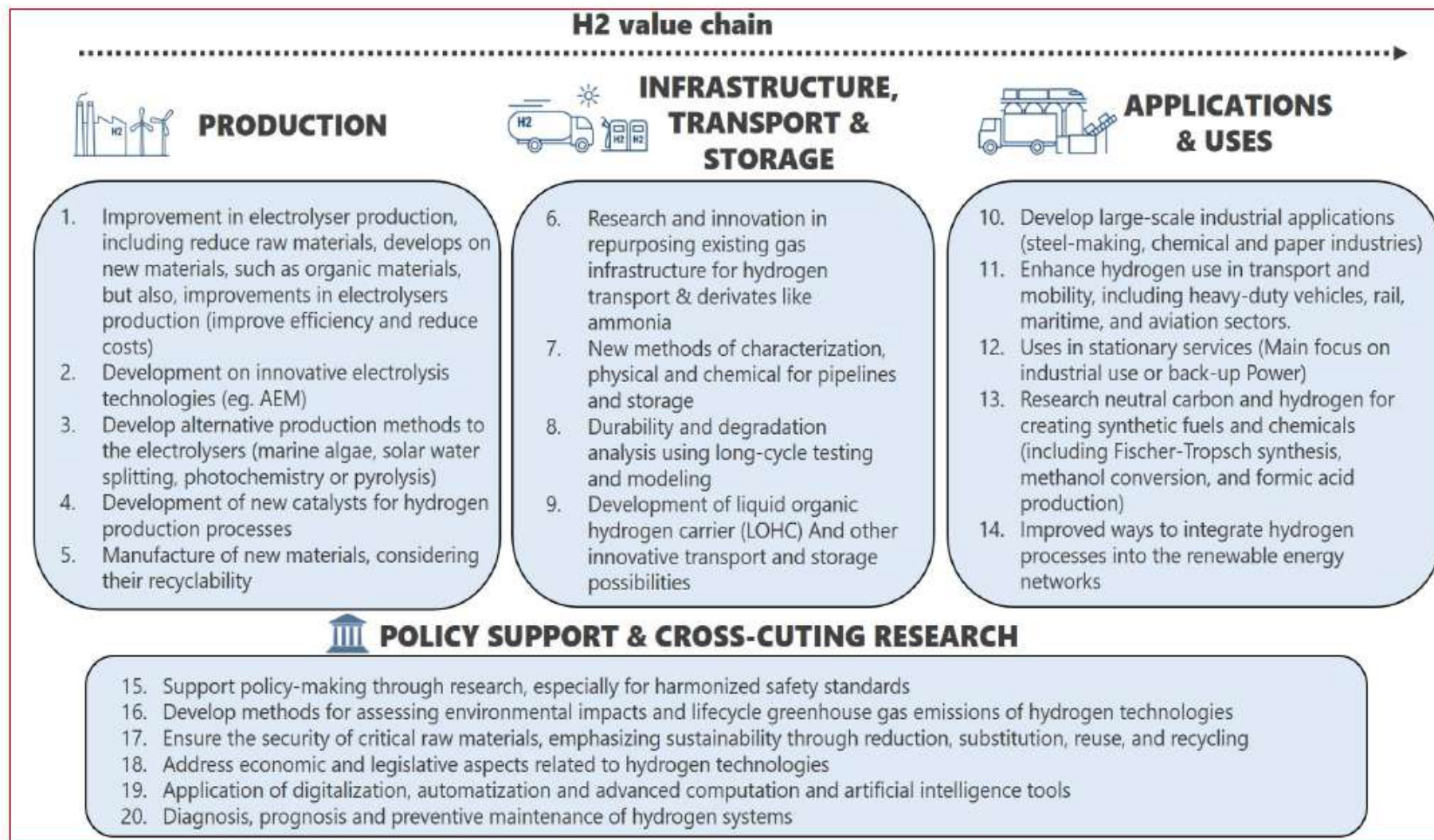
40 fellows (20 each region)

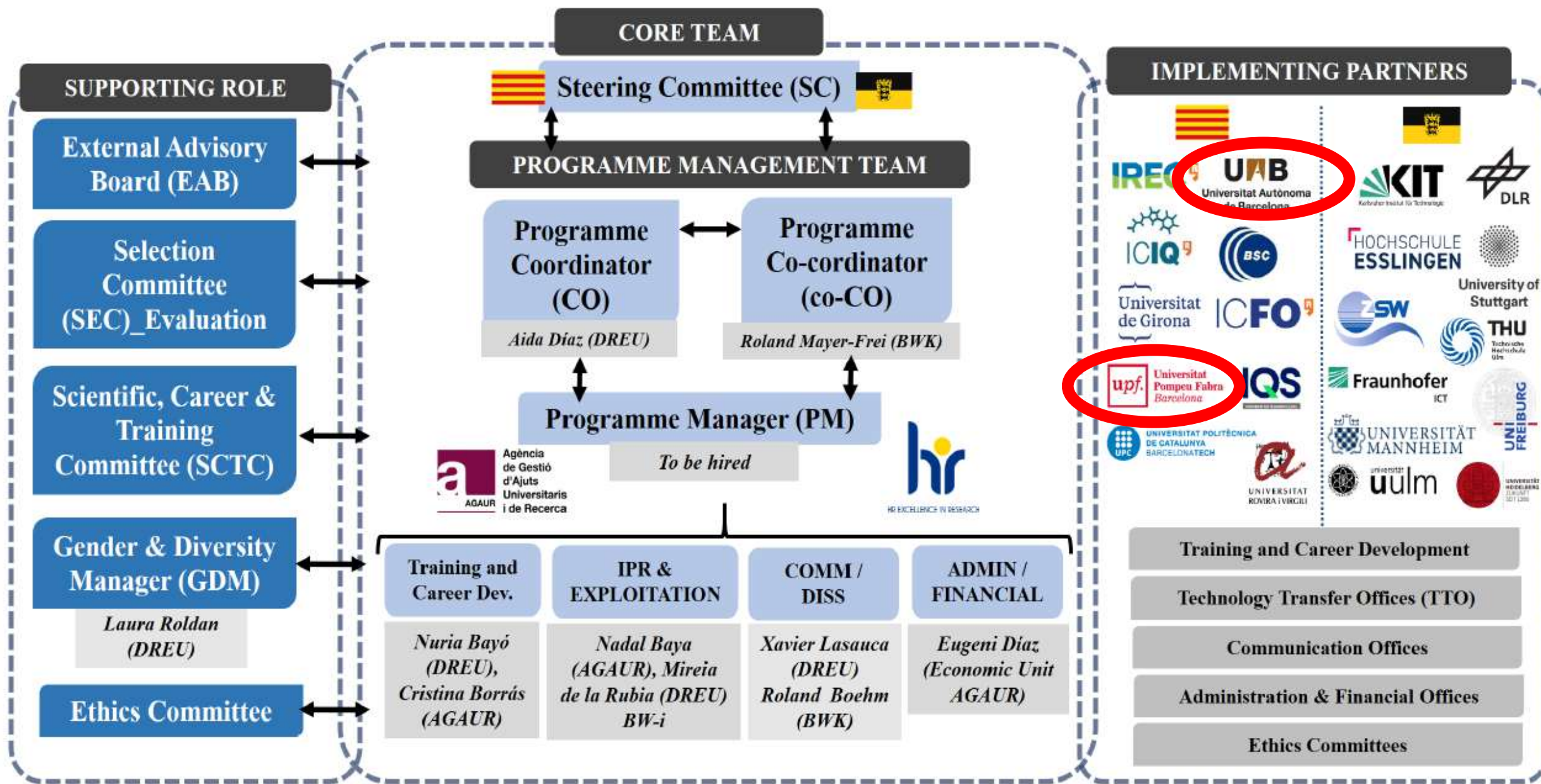
Duration of the project :

5 years (fellows contract 36 months)



PhD Topics







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Thank you
for your attention

For more information:

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UAM
**Universidad Autónoma
de Madrid**

uc3m
**Universidad
Carlos III
de Madrid**