JOB OFFER

JUNIOR RESEARCHER

Position: Junior researcher in hydrogen storage
Offer date: CIIAE web
Project: CIIAE - REF IJ-HIDRÓGENO (HIDRÓGENO Y POWER-TO-X)
Department: Hydrogen and Power-to-X
Estimated starting date: 2023

Workplace:	University of Extremadura. Cáceres campus	
Tasks to be develped:	Green hydrogen is a key energy carrier for a sustainable society. Large quantities of green hydrogen are expected to decarbonise sectors that are difficult to abate, such as long-distance transport and industry. To make optimal use of hydrogen in these applications, but also to balance electricity generation and demand on a seasonal basis, more efficient and secure methods for hydrogen storage are needed. The successful candidate will be expected to perform the following tasks: – To develop materials (porous, metal alloys...) for solid hydrogen storage that compete in storage density with traditional methods (compressed and liquefied) but using less severe and safer operating conditions. – Demonstrate, on a laboratory scale, the technical feasibility of the studied materials. – Collaborations with experimental researchers at CIIAE and beyond – Daily supervision of pre-doctoral researchers in related subjects – Successful collaborations with universities, research institutes and companies at national and international levels – Writing publications as first author and co-author (e.g., 1.5 papers per year in high impact journals) – Writing research proposals and contributing to the acquisition of competitive funding, both private and public – Project management and administration of projects (internal and external), also towards the department and CIIAE — Gradually become more independent, to conduct, manage and lead an independent project. Challenges: The main scientific challenges in hydrogen storage include the development of reversible methods that are safer and more energy-efficient than traditional compressed gas and liquefied hydrogen, and which achieve similar or higher storage densities. In addition, the technical feasibility of such systems will have to be demonstrated through experiments and proofs of concept.	
Duration of the contract and salary:	Temporary Contract Initial duration: September 2025, with the possibility of extension	Gross Salary + S.S. Fees Gross Salary Range: 35.000 € - 38.000 €
Academic background required:	A PhD in inorganic chemistry, organometallic chemistry, nanotechnology, chemical engineering, materials engineering, or similar.	
Other education:	Experience or knowledge in process or energy engineering will be positively evaluated	
Professional experience:	Supervision of undergraduate and postgraduate students	

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Job requirements (have to be fulfilled):	**Specific techniques (analytical, software, calculations, prototyping, etc.)**	- Experience in the synthesis and characterisation of materials for hydrogen storage (solid hydrogen storage in metal hydrides/complexes, porous carbon-based materials, polymers, MOFs, COFs...) - Excellent lab and analytical skills - Knowledge of the specific analytical techniques to measure the amount of stored hydrogen such as volumetric/gravimetric pressure-composition-temperature (PCT) analysis and interpretation of results - Experience in the measurement or calculation of thermal properties such as heat of adsorption/desorption, heat capacity, and thermal conductivity - Experience with analytical techniques for textural/porous properties, mainly N_2 and Ar adsorption/desorption, as well as calculation of solid surface area (SSA), pore volume (Vp) and pore size distribution (PSD) - Knowledge of energy technologies including renewables, storage, hydrogen and power-to-X
	Participation and/or collaboration in R&D&I/business projects	Demonstrated participation in 1 R&D project
	Languages	Excellent oral and written skills in English
	Cross-cutting competences	– Ability to lead a team towards financing and objectives – Commitment to open science in terms of research methods, data and publications – Proven experience with industrial collaborations and/or previous experience working on industry – Experience on collaborating with other colleagues from the same department and beyond
	Willingness to travel and stay abroad	The candidate is expected to travel, both nationally and internationally, in the context of projects and conferences
	Publications: scientific articles (in journals indexed in Web of Science and/or Scopus), theses (PhD and/or Master's), presentations at conferences, reports, technical reports, technical guides, etc.	A strong publication record as first author and co-author is expected as the candidate should publish in leading journals in his/her field. At least 3 publications in Scopus indexed journals. Alternatively, a monographic thesis as well as conference publications may also be considered.

To be evaluated (adds points to the final evaluation):

– Structural resolution of crystalline phases from diffraction of X-ray, electrons, neutrons, etc.
– Evaluation of lattice defects by means of X-ray scattering.
– Synthesis of multimodal materials for hydrogen storage (MTV-MOFs, high entropy alloys...).
– Experience or knowledge of materials synthesis techniques based on sustainable chemistry practices.

– Experience in pre-industrial large-scale synthesis techniques of nanomaterials (MOF, zeolites, carbons, etc.) – Experience or knowledge of chemical instrumental analysis by techniques such as elemental analysis (EDX, X-ray fluorescence, HCNS...) and/or spectroscopy (FT-IR, RAMAN, UV-VIS, ICP-AES/OES, NMR...). – Experience with materials databases, statistical learning models or machine learning. – Knowledge of molecular simulation tools (GC-MC, dynamics...). – Knowledge of Spanish and/or Portuguese. — Proven experience in supervising PhD and/or master students (daily supervisor). — Experience with industrial collaborations and/or previous experience working on industry. — Grades in Master's degree (to be included in the job application). – Motivation letter (maximum 2 pages) included in the application form. – Evaluation provided by 2 references through telephone conversation. The contact details of the references (email and telephone) are provided by the candidates in their application.
Selection process details: **Technical test:** NO **Language (English):** yes **(will be evaluated during the interview)** **Job interview: yes**

Interested candidates:

Please, send all the documents requested by the terms and conditions of the call for the proposal, with the deadline being 15 calendar days from the day following the publication in the CIIAE web indicating the following reference: **Ref IJ-HIDRÓGENO (HIDRÓGENO Y POWER-TO-X)**

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