

SENIOR RESEARCHER

Position: Senior researcher on development of sorption systems for thermal energy storage
Offer date: WEB publication
Project: CIIAE -Refª IS- SORCIÓN (ALMACENAMIENTO DE ENERGÍA TÉRMICA)
Department: Thermal Energy Storage
Estimated starting date: 2023

Workplace:	University of Extremadura. Cáceres campus.	
Tasks to be developed:	<p>Storage using thermochemical materials (TCM) is based on the reversible union of molecules in the gas phase with a solid. The gas can be water, ammonia, methanol, CO₂, etc. The solid can be a crystalline material (for example, a salt) that incorporates gas molecules into its crystal lattice, but it can also be a nanoporous material (for example, zeolites, MOFs, activated carbons) that binds gas molecules to its inner surface</p> <p>Energy is released when the gas unites with the solid and is stored through the reverse reaction.</p> <p>TCM storage has two main advantages. First, TCMs have a high energy density at the material level (>1 GJ/m³). Second, energy is stored loss-free as long as the gas and solid are kept separate.</p> <p>The selected candidate is expected to perform the following tasks:</p> <ul style="list-style-type: none"> - Design and synthesis of new materials optimized for long-term storage of solar or waste heat. - Scale-up of materials for further testing in storage heating/cooling systems. - Study of reversible gas-solid reactions such as hydration/dehydration and carbonation/decarbonation. - Study of the interaction between materials and containers (thermal storage tanks, pipes, ducts, etc.). - Close interdisciplinary collaboration with CIIAE colleagues. As well as collaboration with universities, research institutes and companies at a national and international level. - Support, supervision and tutoring of doctoral/posdoctoral researchers and master's students. - Writing scientific publications and presentation of results at international conferences. - Acquisition of competitive funding, both private and public. Project management and administration. <p>Challenges:</p> <ul style="list-style-type: none"> - To develop new thermochemical materials with the desired thermal and physical properties - To improve the output power considering that solid-state reactions are usually slow - To guarantee the cyclical stability of the developed materials 	
Duration of the contract and salary (per annum):	Fixed-term contract. End: September 2025. Possibility of extension.	Gross Salary: 45 000 €
Academic background required:	A PhD in Materials Science, Chemistry, Chemical engineering, Physics or similar	
Other education:	<p>Valuable master's degree in</p> <ul style="list-style-type: none"> - Materials for Energy Storage and Conversion - Chemical engineering - Materials Science - Nanophysics and advanced materials - Physics/Chemistry of interfaces 	

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	- Inorganic chemistry	
Professional experience:	At least 2 years of post-doctoral experience	
Job requirements (have to be fulfilled):	Specific techniques (analytical, software, calculations, prototyping, etc.)	<ul style="list-style-type: none"> - Demonstrated competence in the synthesis and characterization of nano/micro-porous materials including metal-organic frameworks, zeolites, ceramics, carbon materials, etc. will be valued - Experience in characterization techniques: Gas Adsorption (SSA, DVS), Porosimetry, X-ray Diffraction (XRD), Microscopy (TEM, SEM, AFM, XPS), FTIR, Raman, Differential Scanning Calorimetry (DSC), Thermogravimetric Analysis (TGA), Nuclear magnetic resonance (NMR) etc. will be valued - Competence in characterization and control of wettability, will be valued.
	Participation and/or collaboration in R&D&I/business projects	Demonstrated experience in participation and/or collaboration in R+D+i projects will be valued
	Languages	English. Valuable: Spanish and Portuguese.
	Cross-cutting competences	<ul style="list-style-type: none"> - Excellent leadership and communication skills - Ability to supervise and work in a team - Commitment to open science practices, e.g. open access publishing, dissemination activities, development of open educational resources, open source software development - Experience in collaborations inside and outside the own department
	Willingness to travel and stay abroad	This position requires occasional participation in events outside of Extremadura
	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.	Solid track record of publications in scientific journals. The number and relevance of scientific publications / congresses related to the main topic of the position (PCMs, TES) will be valued.
To be evaluated (adds points to the final evaluation)		
<ul style="list-style-type: none"> - Motivation letter: please include a letter describing the skills you consider of value for the position, as well as some general objectives of the research you would like to develop at the CIIAE. - Personal references: please provide two reference letters (from employers and/or professors, together with their contact information, e-mail and telephone number) highlighting the technical and soft skills identified by the reference in the candidate, and that are of relevance for the position. - Research projects: please include a list of the R+D+i projects you have been involved - Experience in writing proposals for competitive calls (even if funding has not been obtained, in this case, please attach the evaluation letter). - Having obtained funding or competitive research contracts, such as FPU, FPI, Torres Quevedo, Juan de la Cierva, Ramón y Cajal, Marie Skłodowska Curie, or equivalent - Having been a principal investigator in R+D+i projects - Demonstrated experience in supervising work teams - Having supervised end-of-degree projects (TFGs), end-of-master projects (TFMs) or PhD thesis - Being the first author or the corresponding author in scientific articles 		

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- Having completed specific training courses, relevant to the offered position
- Experience in synthesis of hierarchical porous materials
- Experience in Post-functionalization of porous materials
- Experience in the study of solid-liquid interfacial interactions
- Experience with energy storage applications
- Experience in scaling from laboratory to prototypes
- Experience in modeling/simulations either directly or through collaborations
- Experience in industrial collaborations and/or previous experience working in industry.
- Patents.
- Awards, mentions or other achievements

Note: To facilitate the evaluation process, it is recommended to include a list or table, itemizing the merits you consider that should be evaluated for each of the requirements (Ex: Requirement: Experience in measuring surface area. Candidate: brief description of experience in surface area measurements, reflected in scientific articles, theses, courses, projects, etc.)

TECHNIQUES: Oral knowledge test YES NO X

LANGUAGE: ORAL YES X NO

It will be evaluated during the interview.

JOB INTERVIEW: YES X NO

Interested candidates

Please send all the documentation required in THE CONDITIONS OF THE CALL and THE JOB OFFER, no later than 15 calendar days from the day after publication on the WEB, indicating: **Ref^a IS- SORCIÓN (ALMACENAMIENTO DE ENERGÍA TÉRMICA)** to:

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