

JOB OFFER

PhD Researcher

Position: Predoctoral researcher in the development of sorption systems for thermal energy storage.

Offer date: WEB publication

Project: CIIAE -Refª PD- SORCION (ALMACENAMIENTO DE ENERGÍA TÉRMICA)

Department: Thermal Energy Storage

Estimated starting date: First quarter of 2024

Workplace:	Campus University of Extremadura, 10003 Cáceres (Spain).	
Tasks to be developed:	<p>One of the key technologies to boost the use of renewable energy and develop more efficient energy systems is thermal energy storage (TES), which contribute to overcoming the existing mismatch between energy production from intermittent renewable sources and variable demand/loads. In addition to sensible heat and latent heat systems, the use of thermochemical materials (TCM), based on the reversible adsorption of gas molecules in a solid, is one of the most efficient technologies for long-term storing of heat (e.g., CSP plants or intensive industries). The adsorbate can be water, ammonia, methanol, CO₂, etc., whereas the solid can be a nano/microporous material (e.g., zeolites, MOFs, activated carbons, etc.) that binds gas molecules to its internal surface. Energy is released when the gas binds to the solid and is stored through the reverse reaction.</p> <p>The main advantages of TES systems based on TCM are, among others, high energy density, low thermal loss during storage, low investment costs and strategic operating temperature in the range 25-200 °C. Research activities for long-term thermal energy storage have increased considerably in recent years, making it necessary to delve deeper into the preparation, characterization and validation techniques for searching new materials and systems' designs. The selected candidate must perform the following tasks (in collaboration with other research colleagues and supervisors):</p> <ul style="list-style-type: none"> • Development of new TCM for adsorption cycles in TES applications. • Development of specific synthesis and functionalization procedures for these materials. • Characterization of the main physical-chemical characteristics of the prepared materials. • Carrying out validation tests in TES applications at laboratory, prototype and pilot plant scales. • Optimize TCM design and performance by conducting experimental research to improve cycle's efficiency and stability. • Writing scientific publications, participating in research events and presenting the obtained results at international conferences. <p>The candidate is expected to acquire the title of doctor by reading his or her research work before a court in public session.</p>	
Duration of the contract and salary (per annum):	Fixed-term contract. End: September 2025. Possibility of extension.	Gross Salary: 19,065.34 €
Academic background required:	Bachelor's degree in Chemical Engineering, Chemistry, Industrial Engineering, Materials Engineering, Environmental Sciences or similar. Be able to access a doctoral program.	
	Note: Candidates about to finish the master (or equivalent degree that guarantee access to the PhD program) can submit the application. The grade certificate will be required by the time of signing the contract	
Other education:	Valuable master's degree in <ul style="list-style-type: none"> - Chemical Engineering. - Material Science. - Materials for Energy Storage and Conversion. - Environmental Chemistry / Sustainable Chemistry. - Renewable Energies, Energy Management and Efficiency. 	

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Professional experience:	NA	
Job requirements (have to be fulfilled):	Specific techniques (analytical, software, calculations, prototyping, etc.)	-Microsoft Office tools
	Participation and/or collaboration in R&D&I/business projects	-NA
	Languages	-English. Valuable Spanish and Portuguese
	Cross-cutting competences	-Communication ability. -Capacity for teamwork
	Willingness to travel and stay abroad	-The offered position requires occasional participation in events outside the Extremadura region. Periodical short stays in international centres of research are foreseeing during the PhD period.
	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.	-NA
To be evaluated (adds points to the final evaluation)		
<ul style="list-style-type: none"> - Experience in synthesis and functionalization techniques of porous materials, e.g.; zeolites, mesostructured materials, carbonaceous materials, etc. - Experience in materials characterization techniques, e.g.; TGA, XRD, TEM, SEM, XPS, DVS, gas physisorption, chemisorption, ICP, FTIR, Raman, etc. - Training courses relevant to the offered position. - Familiarity with thermodynamics, thermal conversion and/or thermal energy storage equipment and system (sensible, latent heat or thermochemical cycles). - Publication of articles in indexed scientific journals. - Participation in research conferences. - Obtaining competitive scholarships. - Awards, mentions or other achievements. - Comments from the 2 references provided by the candidate. Include 2 letters of reference (e.g. university researchers, lecturers or professors) highlighting the candidate's technical and personal skills relevant to the position. - Motivation letter. Include a motivation letter describing the qualities that the candidate considers suitable for the position. <p>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 (Experience in synthesis and functionalization techniques of porous materials – Candidate Response: brief description of the experience in the area justified by TFG, TFM, courses, projects, articles, etc.</p>		
TECHNIQUES: Oral knowledge test YES <input type="checkbox"/> NO X		
LANGUAGE: ORAL YES X NO <input type="checkbox"/>		
It will be evaluated during the interview.		
JOB INTERVIEW: YES X NO <input type="checkbox"/>		

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Interested candidates

Please, send all the documents requested by the terms and conditions of the call for proposals, together with all the documents requested by this job offer, and the Application Form. Deadline is 15 calendar days from the day following the publication in the CIAE web, and indicating the following reference: **Refª PD-SORCION (ALMACENAMIENTO DE ENERGÍA TÉRMICA)** to:

FUNDECYT-PCTEX (Edificio Parque Científico Tecnológico), Avda. de la Investigación, s/n – Edificio PCTEX, Campus de la Universidad de Extremadura - 06006 Badajoz (Spain)

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