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# JUNIOR RESEARCHER

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**Position: Junior researcher on solid-state Phase Change Materials (PCM) for thermal energy storage**

**Offer date: WEB publication**

**Project: CIIAE -Refª IJ- Solid-PCMs (ALMACENAMIENTO DE ENERGÍA TÉRMICA)**

**Department: Thermal Energy Storage**

**Estimated starting date: 2023**

<b>Workplace:</b>	University of Extremadura. Cáceres campus.	
<b>Tasks to be developed:</b>	<p>Solid-state phase change materials (PCMs) absorb or release heat through <u>reversible transitions</u> between a crystalline or semi-crystalline (solid) phase, and another crystalline, semi-crystalline or amorphous (solid) phase. The selected researcher will study PCMs showing structural transitions at different temperature ranges, as well as the enthalpy and thermal conductivity of these materials.</p> <p>The selected candidate is expected to perform the following tasks:</p> <ul style="list-style-type: none"> <li>- Rational design, synthesis and characterization of PCMs showing high enthalpy solid-solid phase transitions.</li> <li>- Evaluation and screening of the PCMs under development</li> <li>- Optimization for long-term storage.</li> <li>- Scaled up for further testing on storage heating/cooling systems</li> <li>- Study of the interaction between the PCMs and their containers (thermal storage tanks, pipes, ducts, etc.)</li> <li>- Close interdisciplinary collaboration with CIIAE colleagues. As well as collaboration with universities, research institutes and companies at a national and international level.</li> <li>- Support, supervision and tutoring of doctoral students and master's students.</li> <li>- Writing scientific publications and presentation of results at international conferences.</li> <li>- Acquisition of competitive funding, both private and public.</li> </ul> <p>Challenges: to increase the thermal conductivity, and to improve stability and cyclability for a higher system performance</p>	
<b>Duration of the contract and salary (per annum):</b>	Fixed-term contract. End: September 2025. Possibility of extension.	Gross Salary Range: 35 000 € - 38 000 €
<b>Academic background required:</b>	A PhD in Physics, Chemistry, Chemical engineering, Mechanical Engineering or similar	
<b>Other education:</b>	Valuable master's degree in Materials for Energy Storage and Conversion, crystallography or Nanotechnology	
<b>Professional experience:</b>	Post-doctoral experience not required	

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<b>Job requirements (have to be fulfilled):</b>	<b>Specific techniques (analytical, software, calculations, prototyping, etc.)</b>	<p>Experience/competence to be valued:</p> <ul style="list-style-type: none"> <li>- Demonstrated competence in synthesis and characterization of inorganic and hybrid materials (organic-inorganic).</li> <li>- Experience in thermal analyses: Differential scanning calorimetry (DSC) and thermogravimetric analysis (TGA), thermal conductivity.</li> <li>- Experience in characterization techniques: XRD, TEM, SEM, FTIR, Raman, NMR, AFM, XPS, etc.</li> <li>- Experience in the study of PCMs for thermal energy storage applications, phase change kinetics, charge/discharge rate, etc.</li> </ul>
	<b>Participation and/or collaboration in R&amp;D&amp;I/business projects</b>	Demonstrated experience in participation and/or collaboration in R+D+i projects will be valued
	<b>Languages</b>	English. Valuable: Spanish and Portuguese.
	<b>Cross-cutting competences</b>	<ul style="list-style-type: none"> <li>- Communication skills</li> <li>- Ability work in a team</li> <li>- Experience in collaborations inside and outside the own department</li> </ul>
	<b>Willingness to travel and stay abroad</b>	This position requires occasional participation in events outside of Extremadura
	<b>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.</b>	The number and relevance of scientific publications / congresses related to the main topic of the position (PCMs, TES) will be valued.
<b>To be evaluated (adds points to the final evaluation)</b>		
<ul style="list-style-type: none"> <li>- Motivation letter: please include a letter describing the skills you consider of value for the position of Junior researcher in solid-state PCMs, as well as some general objectives of the research you would like to develop at the CIIAE.</li> <li>- 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.</li> <li>- Research projects: please include a list of the R+D+i projects you have been involved</li> <li>- Experience in writing proposals for competitive calls (even if funding has not been obtained, in this case, please attach the evaluation letter).</li> <li>- 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</li> <li>- Having been a principal investigator in R+D+i projects</li> <li>- Demonstrated experience in supervising work teams</li> <li>- Having supervised end-of-degree projects (TFGs), end-of-master projects (TFMs)</li> <li>- Being the first author or the corresponding author in scientific articles</li> <li>- Having completed specific training courses, relevant to the offered position</li> <li>- Experience in scaling from laboratory to prototypes</li> <li>- Experience in industrial collaborations and/or previous experience working in industry.</li> <li>- Patents.</li> <li>- Awards, mentions or other achievements</li> </ul> <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 (Ex: Requirement: Experience in thermal analysis. Candidate: brief description of experience in thermal analysis reflected in scientific articles, theses, courses, projects, etc.)</p>		

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**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<sup>a</sup> IJ- Solid-PCMs (ALMACENAMIENTO DE ENERGÍA TÉRMICA)** to:

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