

Company Description

CIC energiGUNE is a research center specialized in energy, electrochemical storage (batteries and supercapacitors), thermal energy solutions and hydrogen, a member of the Basque Research and Technology Alliance- BRTA, and, a strategic initiative of the Basque Government. CIC energiGUNE was created in 2011 to generate excellent knowledge and at the same time useful for the Basque business network, being a reference in knowledge transfer. CIC energiGUNE has a dynamic research team of more than 100 researchers and is extremely well equipped with a wide range of up-to-date facilities that are fully available for all its researchers. Also, the European Commission has recently (2019) awarded CIC energiGUNE with the 'HR Excellence in Research' which reflects its commitment to achieving fair and transparent recruitment and appraisal procedures and certifies the existence of a stimulating and favorable work environment for researchers in the institution. For more details on CIC energiGUNE's research activities please visit our website at <http://www.cicenergigune.com>

Information

 **Deadline:** 2023-07-06
 **Category:** Academia
 **Province:** Araba / Álava

 **Country:** Basque Country
 **City:** Vitoria-Gasteiz

Company

CIC energiGUNE



Main functions, requisites & benefits

Main functions

PROJECT DESCRIPTION: CIC energiGUNE is seeking for a person interested in pursuing a PhD in physicochemical phenomena of wetting-drying (intrusion-extrusion) of nanoporous materials with non-wetting liquids. The fundamental questions targeted in this project are motivated by the applicability of intrusion-extrusion process to thermomechanical-to-electrical energy conversion [1, 2], thermal actuation [3], sensing [4], negative compressibility [4-6], negative thermal expansion [7] and column chromatography. The position is funded by the ERC (European Research Council) in the context of the proof-of-concept project NoDry. The project aims at investigating the effect of solutes (different gases, in particular) on spontaneous extrusion of non-wetting liquids from nanopores for the benefit of the applications mentioned above. This exciting project promotes an active collaboration between CIC energiGUNE and the theoretical team of Professor Alberto Giacomello at Sapienza University in Rome and other world-leading experimental and engineering teams. **JOB FUNCTIONS:** Performing high-quality research within the scope of the project Manuscript preparation for submission to peer reviewed journals Presenting results in international conferences Providing guidance to Master's and visiting students when required **PUBLICATIONS:** Grosu Y, Mierzwa M, Eroshenko VA, Pawlus S, Chorażewski M, Nedelec JM, Grolier JPE Mechanical, Thermal, and Electrical Energy Storage in a Single Working Body: Electrification and Thermal Effects upon Pressure-Induced Water Intrusion-Extrusion in Nanoporous Solids. ACS Appl. Mater. Interfaces 2017 9(8) 7044-7049 Lowe A, Tsyryn N, Chorażewski M, Zajdel P, Mierzwa M, Leão JB, Bleuel M, Feng T, Luo D, Li M, Li D., Grosu Y Effect of Flexibility and Nanotriboelectrification on the Dynamic Reversibility of Water Intrusion into Nanopores: Pressure-Transmitting Fluid with Frequency-Dependent Dissipation Capability. ACS Appl. Mater. Interfaces 2019 11 40842-9 Chorażewski M, Zajdel P, Feng T, Luo D, Lowe AR, Brown CM, Leão JB, Li M, Bleuel M, Jensen G, Li D, Grosu Y Compact Thermal Actuation by Water and Flexible Hydrophobic Nanopore. ACS Nano 2021 5 9048-9056 Anagnostopoulos A, Knauer S, Ding Y, Grosu Y Giant Effect of Negative Compressibility in a Water-Porous Metal-CO₂ System for Sensing Applications. ACS Appl. Mater. Interfaces 2020 12(35) 39756-39763 Tortora M, Zajdel P, Lowe AR, Chorażewski M, Leão JB, Jensen GV, Bleuel M, Giacomello A, Casciola CM, Meloni S, Grosu Y Giant Negative Compressibility by Liquid Intrusion into Superhydrophobic Flexible Nanoporous Frameworks. ACS Nano letters 2021 21(7) 2848-2853 Zajdel P, Chorażewski M, Leão JB, Jensen GV, Bleuel M, Zhang HF, Feng T, Luo D, Li M, Lowe AR, Geppert-Rybczynska M, Grosu Y Inflation Negative Compressibility duri Intrusion-Extrusion of a Non-Wetting Liquid into a Flexible Nanoporous Framework. J Phys Chem Lett 2021 12 4951-7 Grosu Y, Faik A, Nedelec JM, Grolier JP Reversible Wetting in Nanopores for Thermal Expansivity Control: From Extreme Dilatation to Unprecedented Negative Thermal Expansion. J Phys Chem C 2017 121(21) 11499-11507

Requisites

QUALIFICATION REQUIREMENTS: MSc in Physical, Chemical or Engineering sciences Excellent academic record Excellent verbal and written communication skills in English A team player who can collaborate with other groups, technical centers, and industries Experience in research projects will be considered as a plus Demonstrated self-motivation and autonomy