

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 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: 2021-09-30
  Country: Basque Country
 Category: Business
  City: VITORIA-GASTEIZ
 Province: Araba / Álava

Company

CIC energiGUNE



Main functions, requisites & benefits

Main functions

This PhD Project aims to develop a competitive solid state battery-technology based on the development of innovative polymer and lithium salts. The work will be performed in close collaboration with an industrial partner, making possible the integration of developed materials in small prototypes. Rechargeable batteries are the key to transitioning away from fossil fuel dependence. Current Li-ion batteries use carbonate-based liquid electrolytes which are flammable and can leak (making them inherently unsafe). On this regard, solid polymer electrolytes (SPEs), which comprise a lithium salt and an elastic polymer matrix, have been investigated as important candidates for enhancing the energy density and safety of the next-generation rechargeable lithium metal batteries (LMBs), due to their good flexibility, no-leakage, less-flammability, light weight, and good compatibility with Li metal. However, before we can see the full potential of SPEs, important fundamental limitations must first be addressed, such as the low ionic conductivity, lithium dendritic growth, polarization of the battery during operation at high currents related to low transport number, and overall short battery life. Thus, the search of new polymer and lithium salt chemistries raises as a promising strategy to solve aforementioned issues. The selected candidate will be part of a multidisciplinary team of researchers and a secondment of 3 months in another institution is foreseen. TECHNIQUES TO BE USED: Standard operating procedures for organic and polymer synthesis. Structural and physico-chemical characterization: nuclear magnetic resonance spectroscopy (NMR), Fourier transform infrared spectroscopy (FTIR), Raman, ICP, X-ray diffraction, elemental analysis, gel permeation chromatography (GPC), differential scanning calorimetry (DSC), thermogravimetric analysis, scanning electron microscopy (SEM). Electrolyte/electrode preparation, cell integration, and component characterization. Electrochemical testing.

Requisites

Holding a Master's degree, ideally with academic background in synthetic chemistry, polymers or materials science, and/or electrochemistry. A good team player who can collaborate well with other scientists. A Highly motivated person with an interest in research. A good level of spoken and written English.

Benefits

A predoctoral employment contract that covers the whole period of the thesis elaboration with a competitive salary within the category. Access to a complete set of existing laboratory infrastructure and equipment, as well as to the needs identified during the project development to ensure a fruitful stay and the fulfillment of the objectives in due time. Candidates will join an integrated, enthusiastic, and multidisciplinary institute making high quality research and impactful contributions to the energy storage and sustainability fields. CIC energiGUNE is located close to the city of Vitoria-Gasteiz (Spain), in the heart of the Basque Country. The Basque Country is the region with the highest R&D investment in Spain, with more than 20.000 researchers. The Basque Research ecosystem comprises a solid and collaborating community composed of universities, technology and cooperative research centers