PHD IN DIRECT RECYCLING OF LI-ION BATTERY CELLS

Company Description

DESCRIPTION OF THE INSTITUTION: 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: 2022-06-30
Category: Academia
Province: Araba / Álava
Country: Basque Country
City: Vitoria-Gasteiz

Company

CIC energiGUNE

Main functions, requisites & benefits

Main functions

DESCRIPTION OF THE PROJECT: As Li-ion battery (LIB) technology expands rapidly (primarily driven by the electrification of the automotive sector), the topic of battery recycling becomes pivotal for enabling the circularity of this economy which will ensure environmental sustainability, circumvent resource scarcity and allow for further cost reduction. The concept of the project is to develop a competitive direct recycling process of lithium-ion batteries (LIBs), based on different cathode materials and graphite- and silicon-based anodes, with the aim to achieve healed materials for renewed positives and negatives electrodes to be reused in LIBs. In order to improve the cost-efficiency and safety of the recovery process, we propose to explore different methods to both harvest and separate negative and positive electrodes active materials. The tasks of the student will include literature research, physical-chemical and structural characterizations of the electrode materials, synthesis of electrode materials and electrochemical evaluation. CIC energiGUNE has a world-class research facility and cutting-edge equipment, which will be fully accessible for the student within the frame of her/his project. The student will join the Advanced Electrode Materials group in the Electrochemical Energy Storage area, which currently hosts more than 8 PhD students. This group gathers international, young, talented and dynamic researchers, who have expertise in synthesis of inorganic materials, electrochemical characterizations and advanced structural and surface characterizations. The techiques to be used in this project include: Soft chemistry and Inorganic synthesis (e.g. mechanical milling, co-precipitation, sol-gel, wet chemical synthesis approaches), in ambient, inert and/or reducing atmospheres Physicochemical characterization (incl. TGA, ICP analyses), Electron microscopy (SEM and TEM), liquid and solid-state NMR spectroscopy. X-ray diffraction (incl. advanced characterizations: Rietveld refinements, ex situ and in situ experiments) Electrochemical characterization of LIBs using cycling voltammetry, impedance spectroscopy and galvanostatic tests Materials processing Battery post-mortem analysis HOW TO APPLY: The candidates are invited to send their CV (including academic record) and a motivation letter through this website: https://cicenergigune.com/en/employment-opportunities/86302504 The selecting process will end once a candidate is selected. CIC energiGUNE is committed to affirmative action, equal opportunity and the diversity of its workforce.

Requisites

The candidate should hold a degree with majors in at least one of the following topics: inorganic chemistry, materials science, electrochemistry, chemical engineering, or similar. Any additional knowledge/experience in the field of batteries and/or characterization techniques would be a plus. We look for an ambitious, motivated and committed student. He/she should be able to carry out rigorous research, both as a team member and independently. He/she should have a good English level.

Benefits

We are offering a 3-year PhD position based at CIC energiGUNE research center. The student will be enrolled at the University of the Basque Country from October 2022 onwards. This research work will be done in the frame of a granted European project conducted