

PhD position (#2/5)

Title: Advanced Electrodes for New Battery Systems

Character: Experimental

Context

In the present framework, it is undeniable that the world has to face energy challenges in a sustainable way. For this reason, new systems that deliver higher energy density must be developed for electric transportation, such as Li-sulfur. On the other hand, and taking into account recent concerns about a possible lithium shortage with the spread of electric vehicles, it is urgent to search for alternative energy storage systems that could complement the existing Li-ion technology. For this purpose, Na or Mg-based battery technology can be a suitable choice in terms of battery cost, safety and raw material abundance. Although these systems would be of lower energy density, they could be applied in static storage to buffer renewable energy. In order to be ready to introduce new alternative energy storage systems in the market, knowledge on these promising systems must be deeply explored.

Tasks

In this project, new materials for Na, Mg or lithium-sulfur based batteries will be searched, with the aim of getting, high energy, high voltage, safe and economic electroactive phases. For this purpose, a wide variety of synthesis methods will be used (hydrothermal, ceramic, sol-gel, freeze-drying, microwave processing, etc.), characterization of the materials will be done by X-ray diffraction, elemental analysis, UV and infrared spectroscopy, electron microscopy, magnetic susceptibility and electron paramagnetic resonance measurements, Mössbauer spectroscopy and X-ray photoelectron spectroscopy. Electrochemical measurements, including cyclic voltammetry and galvanostatic cycling will be performed on both Swagelok and coin cells.

Requirements

A graduate on Chemistry, Chemical Engineer or Environmental Science is needed. A Master on Materials Science, Materials and Surfaces or similar is required. Candidates without a Master can also apply, provided they have been accepted into the Master on New Materials of the University of the Basque Country (UPV/EHU). Fluent English will be considered and other languages will be considered.

Application

Send a CV, motivation letter and two references to jobs@bcmaterials.net

Dead line: August 15th, 2012, 24:00 h GMT