

Post-doc position (#1/3)

Title: Advanced Materials for Energy Storage

Character: Experimental

Context

Energy production and storage have become key issues concerning our welfare in daily life. Present challenges for batteries are twofold. In the first place, the increasing demand for powering systems of portable electronic devices and zero-emission vehicles stimulates research towards high energy density and high voltage systems. In the second place, low cost batteries are required in order to advance towards smart electric grids that integrate discontinuous energy flow from renewable sources, optimizing the performance of clean energy sources. In this context, energy market needs optimizing the existing electrode materials or searching new electroactive phases or new storage systems that can fulfill these two features: high energy density, safety and low cost.

Tasks

In this project, there will be two tasks. First, the optimization of known electrode materials used in Li-ion batteries and the search for new electroactive phases that could work on new energy storage systems, such as Li or Na-air batteries. Second, the search of new electrodes for advanced new battery systems, such as those based on Na, Mg, etc. that could represent an alternative to lithium in the near future. For this purpose, all kind 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 PhD on Materials Science, Materials and Surfaces or similar is required. A solid background on Li-ion batteries is also required and experience on sodium-based new battery systems will also be considered. Affinity of the publications of the candidate with the proposed project will be considered. Experience on the aforementioned synthesis and characterization techniques is demanded. Fluent English 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