



2 PhD student positions in thin film nanostructures for a new generation of Solid Oxide Fuel cells

Future generations of portable devices (laptop computers, palm PC, mobile phones...) require higher power consumption, lighter weight, and longer lasting battery refill. Solid Oxide Fuel cell technology devices have two distinct advantages over present Li batteries: higher energy density per weight unit and rapid refuelling. To achieve the technical performances, which make this technology competitive, it is necessary to explore new materials and architectures. The present research focuses in the thin film deposition of advanced nanostructured and/or multifunctional oxygen conducting materials to improve the electrochemical performance of the materials in relation to the bulk form. Besides, if micro-fabricated fuel cells could be integrated onto a single chip with other electronic devices, this could enable to extend the remote operation of a wide range of micromachined sensors and actuators. To attain this technologic objective it is necessary to produce freestanding thin film fuel cell stacks by vapour deposition techniques which are compatible with already developed micro-fabrication techniques (silicon MEMS technologies). The first difficulty for the production of these devices relays on the thermo-mechanical stability of the thin membranes.

The research will be mainly carried out at the recently created *Nanoscience and Nanotechnology Research Center* (CIN2) at the UAB Campus in Bellaterra, Barcelona, Spain, under the supervision of Dr. Jose Santiso, from the Nanoionics – Thin film Laboratory Group. The research is enclosed in a collaborative project between several institutions in the UAB campus area (CIN2, UAB, CNM), and in close relation with some internationally renowned groups in Europe.

Applicants (Postgraduate students with a Physics, Chemistry or Materials Engineering degree) are requested to send their CV and the contact details of two referees by email to santiso@icmab.es (Ref.: PhD Nanoionics)