Postdoctoral Fellowships in PEM Fuel Cell Catalyst Development

The Center for Electrochemical Engineering (http://www.che.sc.edu/centers/CEE/), Department of Chemical Engineering (http://www.che.sc.edu/) at University of South Carolina (www.sc.edu) is launching an international search for two Postdoctoral Fellowships in the area of electrochemical engineering. The research objective is to develop proton exchange membrane (PEM) fuel cell catalysts for oxygen reduction reaction (ORR) having ultra-low Pt loading on activated carbon and non-carbon supports. The most promising materials will be subjected to Accelerated Stress Test (AST) protocols developed by the Fuel Cell Technical Team (FCTT) and FreedomCar and Fuel Partnership. In the first phase of the project, the accelerated lifetime tests will be performed on single cells (50 cm²); while in the second phase short stacks (50 cm², up to 10 cells) will be constructed to determine the long-term durability of new cathode catalysts under realistic conditions.

Successful candidates will join outstanding researchers in the area of electrochemical engineering who perform research in development of batteries, capacitors, fuel cells and mathematical modeling of electrochemical systems and interfaces. The Center for Electrochemical Engineering is recruiting these Postdoctoral Fellowships positions with tentative start dates beginning as early as November 2011 or January 2012. The appointment will be initially for one year with an opportunity for renewal in the subsequent years.

Responsibilities: These positions require individuals who can support the technical work for the on-going projects in the area of (i) development of non-platinum cathode catalyst for fuel cells, (ii) development of cathode catalyst using ultra low platinum on activated carbon supports and (iii) development of ultra low platinum cathode catalyst on non-carbon supports. The responsibilities of these positions include (a) catalyst synthesis, (b) electrochemical rotating disc electrode (RRDE) and fuel cell performance evaluation of the catalyst, (c) surface and structural characterization of the cathode catalyst using XRD, TEM, XPS and SEM, (d) performance evaluation in single cells (50 cm²) using DOE accelerated stress tests for the catalysts and the supports and (e) development of advanced theory to explain the deterioration processes at the cathode interface. Experience in construction and testing short-stacks for automotive application (50 cm², up to 10 cells) is a plus.

The candidates should have the ability to prepare research plans and to generate and develop new ideas; ability to design and perform proper experimental setups and ability to guide graduate and undergraduate students working on various fuel cells related projects. It is also expected from the candidate to be dependable and to have professional conduct in experimentation, writing reports, manuscripts and proposals and to help in supervision and management of the laboratory.

Knowledge/Skills/Expertise Required: Ph.D. in Chemical Engineering, Material Science or Electrochemistry. Preference will be given to candidates with experience in
Pt and Pt-alloy catalysts development for PEM fuel cells and MEA preparation using decal transfer method. Stack testing for automotive application is a plus.

Applications must include the following materials for consideration: (1) A letter of interest that summarizes the candidate's research program and qualifications for the position and (2) curriculum vitae.

Review of application will begin immediately and will last until the positions are filled. Please send materials to: popov@cec.sc.edu.

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