

PhD Fellowship in Fuel Cell and Battery Numerical Analysis



The Energy Systems Design Laboratory at the University of Alberta, Canada, is currently looking for a PhD student to work on the development of our open-source polymer electrolyte fuel cell simulation framework. The framework is designed for finite element modelling of multi-scale, multi-phase mass and charge transport in electrochemical systems. Our research group has been developing the framework for several years (see openfcst.mece.ualberta.ca) and now we would like to extend our micro-scale and macro-scale fuel cell models to account for transient phenomena, such as start-up and degradation, as well as to extend the framework to other electrochemical systems, such as batteries. You would be in charge of working in this area in combination with at least four other developers.

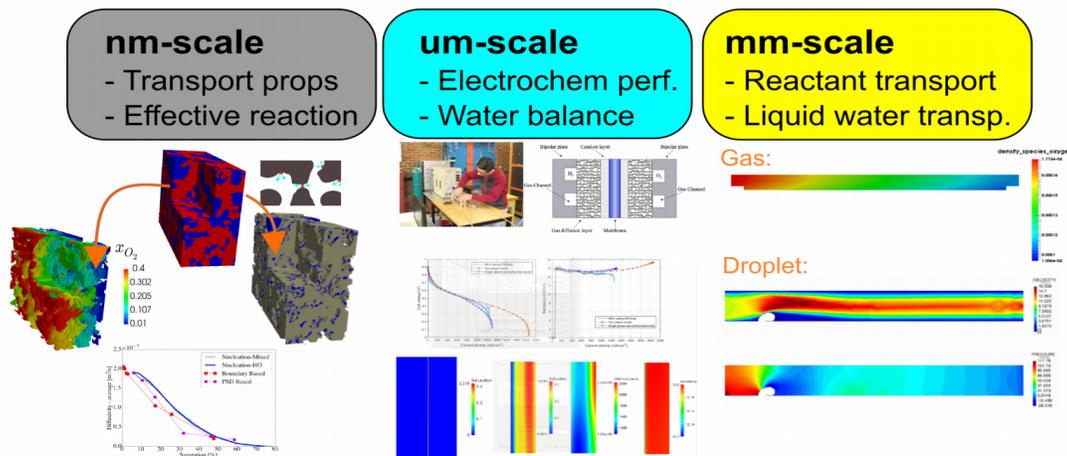
The PhD student would have a fellowship for four years with a minimum stipend of \$25,000/yr to cover tuition and living expenses. The starting date would be as early as January 2019, but it could be as late as September 2019. The position is at the Energy Systems Design Laboratory in the Mechanical Engineering Department at the University of Alberta (One of the top research intensive universities in Canada). Dr. Marc Secanell would be your primary supervisor (see <https://bit.ly/2NrH9zq>).

Applicants should hold an M.Sc. degree in either Mechanical/Chemical Engineering or Mathematics in the last five years and: a) have experience in the finite element method and programming in C++; b) have strong communication and writing skills; c) be ready to work in a team.

If you are interested, please email your detailed CV to secanell@ualberta.ca along with your most significant journal/conference publication.

For more information about my research laboratory please go to: <http://www.esdlab.mece.ualberta.ca/>

OpenFCST: Fuel Cell Simulation Toolbox



About the Energy Systems Design Laboratory (<http://esdlab.mece.ualberta.ca>)

Founded in 2009, the ESDLab is a research team at the University of Alberta focused on the design of sustainable electrochemical energy systems. The laboratory has both a numerical and an experimental group. The numerical group is responsible for the development of OpenFCST, an open-source fuel cell and electrolyzer simulation framework, and CoolIT, a wet cooling tower analysis software. The experimental group is responsible for the fabrication, characterization and testing of polymer electrolyte fuel cells and electrolyzers to provide validation data to the modeling team.

About the University of Alberta

Founded in 1908, University of Alberta is one of Canada's foremost research-intensive universities with an operating budget of over one billion dollars annually; external research funding is approximately \$500 million per year. The University has about 37,000 students at BSc, MSc, and PhD levels. The Faculty of Engineering is among the top 5% in size in North America with over 4,000 undergraduate and 1,500 graduate students. The Department of Mechanical Engineering has more than 750 undergraduate and over 250 graduate students. For more information see the Department of Mechanical Engineering website.

About the City of Edmonton

The Greater Edmonton area has a population of over one million people and offers a diverse array of cultural and sporting activities year round, which has earned Edmonton the nickname of Festival City. Edmonton is an international city, as evident by over seventy cultures from all over the world that were represented in the recent annual Heritage Festival. Edmonton's cost of living is competitive and favourable when compared with other major cities in Canada. Edmonton is only few hours from the Rocky Mountains and Jasper and Banff National Parks, which offer some of the finest skiing, kayaking, cycling, hiking, and camping in the world. The University is located centrally on the banks of the North Saskatchewan River near downtown Edmonton.