

Research project for a master's or a PhD student in Smart Materials

Project title: *Next generation smart nanomaterials*

Project description: *Developing smart multifunctional nanomaterials and nanocomposites to be used for the next generation applications for sensors and actuators, as well as for energy generation and storage and information processing.*

Research area: *Multifunctional materials heterostructures and thin films*

Research environment: *The Ferroic-Lab, headed by Professor Alain Pignolet is a leading research group in the field of smart ferroelectric, magnetic and multiferroic materials, with huge potential in spintronics and information storage. We are the first group worldwide to have synthesized epitaxial thin films of the novel multiferroic double perovskite material $\text{Bi}_2\text{FeCrO}_6$ as well as one of the only group able to synthesize thin films of the metastable phase $\varepsilon\text{-Fe}_2\text{O}_3$ (epsilon ferrite) with giant magnetic anisotropy stabilized via epitaxial strains. Alongside these materials, we are also working on magnetoelectric thin films exhibiting both ferroelectric and magnetic properties as well as a sizable coupling between them, at room temperature or above.*

Starting date: *winter 2018 session or summer 2018 session*

Research advisor: *Professor Alain Pignolet, www.emt.inrs.ca/alain-pignolet*

Institution: *Centre Énergie Matériaux Télécommunications de l'INRS, 1650 Boulevard Lionel-Boulet, Varennes, Quebec, J3X 1S2, Canada*

Financial support: *INRS offers several scholarship programs. All students are entitled to receive financial support during their graduate studies.*

Profile: *Highly-motivated applicants for a M.Sc. or a Ph.D. should have a degree (B.Sc./M.Sc.) in Materials Science, Physics or Chemistry, as well as interest, experience and skills in materials science. They should be able to work independently as well as with a team, and their ability to communicate (orally as well as in written) and to demonstrate critical and independent thinking will be invaluable assets.*

For more information: *Prof. Alain Pignolet, +1 (514) 228-6805, pignolet@emt.inrs.ca, www.emt.inrs.ca/alain-pignolet*

How to apply: *Interested candidates should send a detailed CV, their academic records as well as a statement of interest and the name and contact details of at least one reference at pignolet@emt.inrs.ca*

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