



International Institute for Multifunctional Materials for Energy Conversion (IIMEC)
2013 SECOND WINTER SCHOOL ON COMPUTATIONAL MATERIALS SCIENCE

Modeling Multiple Scales and Multi-Physics Coupling

College Station, Texas, USA

January 6-15, 2013

Rationale

Throughout history, the development of technology-enabling materials has been carried out using mostly experimental approaches. Thanks to recent advances at the theory, software and hardware level, computational materials science has emerged as an extremely valuable tool in the development of new materials.

Goals

The goal of this week-and-a-half Winter School is to introduce some of the most important methods within the Computational Materials Science toolkit to undergraduate and graduate students interested in this emerging field. This Winter School will offer modules focused on different methods used to investigate physical phenomena at multiple scales. The school will also provide introductory lectures on approaches to simulate materials systems in which multiple physical phenomena are tightly coupled.

Organization and Topics

Themes will be organized as follows:

1. Atomistic Simulation
2. Thermodynamics and Kinetics of Materials at the Mesoscale
3. Microstructural Evolution
4. Mesoscale Phenomena: Point and Extended Defects
5. Continuum Response of Microstructures
6. General Approaches for Multi-Physics Modeling
7. Basics of Electro-Mechanical Coupling
8. Electro-mechanical Coupling at Atomic, Meso and Continuum Scales

The School will consist of theoretical modules offered by experts in the field, followed by practical laboratories where the participants will have the opportunity of using the methods reviewed to simulate specific material phenomena. The newly established IIMEC Computer Cluster acquired with financial support from the National Science Foundation will be used during the hands-on sessions.

Interactions among participants is fundamental to achieve the full potential of the Winter School and social activities will be planned to provide ample opportunity to exchange experiences and ideas as well as to initiate collaborations that can be fostered within the IIMEC program.

Application Information

Go to <http://www.iimecwinterschool.org> to fill out the application. Final application's deadline: **November 15th, 2012.**

Applicants may be graduate students, post docs, researchers or IIMEC junior faculty.

It is recommended that international participants complete application as soon as possible.

Financial Support

A limited number of fellowships will be made available to qualified applicants, as follows:
International participants: flight up to \$1,500, hotel booked by the IIMEC, and registration fee.

Domestic participants non-TAMU: flight up to \$500, hotel booked by the IIMEC, and registration fee.

Domestic TAMU participants: registration fee.

Registration Fee \$500.00 (Registration fee will cover teaching materials, lunch on class days, refreshments, a banquet, and out of classroom activities).

Organizers

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