

Spring University Materials Council Meeting
June 23-24, 2010
ITW Room, Ford Building, Northwestern University

UMC Workshop on Computational Materials Education

Organizing committee: Richard LeSar, Iowa State University (Chair)
Susan Sinnott, University of Florida
Alejandro Strachan, Purdue University
Peter Voorhees, Northwestern University

Purpose:

The purpose of this workshop is to engage the University Materials Council (UMC) to respond to a recent National Academy report entitled *Integrated Computational Materials Engineering: A Transformational Discipline for Improved Competitiveness and National Security*, which called on the UMC to lead the educational efforts needed to make Integrated Computational Materials Engineering (ICME) a reality. Specifically, the report states

“The committee considers that the UMC is in a unique position to influence curricula and change the culture of MSE academic institutions and that it could take an active role in promoting ICME and the curricular changes that support improvements in the computational ability of the students who graduate from their departments.”

The questions before us are, in part:

- What role should computational materials engineering play in our undergraduate and graduate materials curricula?
- How should computational materials engineering education be integrated into the curriculum?
- What is the status of computational materials engineering education in our curriculum today?
- What are best practices today?
- What resources are currently available?
- Can we develop curriculum aids (instructional materials, code packages, etc.) that could be widely disseminated in the community?
- How can we begin to ally ourselves with our industrial partners to enhance computational materials engineering education?

The goal of the workshop is to begin to answer those questions.

Outcomes:

The outcome of the workshop should be a set of concrete suggestions for how best we include computational materials within the MSE curriculum, with details depending on the discussions at the workshop.

Proposed Workshop Agenda:

Wednesday 23 June 2010

Introduction: Peter Davies (Univ. Penn)

- Briefing on the ICME report: Tresa Pollock (UCSB) (or R. LeSar if needed)
- Status of computational modeling in materials education: Katsuyo Thornton (Michigan)
- Industrial: John Allison (Ford) (tentative)
- Available educational resources: Michele Manual (University of Florida)
- Available computational resources: Alejandro Strachan (Purdue)

Vignettes from successful examples:

- Greg Olson (Northwestern)
- Mark Lundstro (Purdue)
- Laura Bartolo (Kent State)

Roundtable to discuss the questions:

- What role should computational materials engineering play in our undergraduate and graduate materials curriculum?
- How should computational materials engineering education be integrated into the curriculum?

Create working groups charged with recommending findings and solutions. The goal is a set of recommendations, and path to implementation, for the community by the end of the workshop.

- We will provide teams with detailed guidelines regarding expected outcomes and how to present them in the report.

Wednesday evening: dinner plus team assignments

Thursday 24 June 2010

Working group reports

Roundtable to discuss the questions:

- Can we develop curriculum aids (instructional materials, code packages, etc.) that could be widely disseminated in the community?
- How can we begin to ally ourselves with our industrial partners to enhance computational materials engineering education?

Identification of follow up issues and assignment of teams

- We will provide teams with detailed guidelines regarding expected outcomes and how to present them in the report.

Adjournment; to be followed by a short business meeting of UMC

UMC Business Meeting

Agenda:

1. Consideration of "Memorandum of Understanding" with MRS (copy attached).
2. UMC survey results.
3. Election of UMC officers for 2010/11.