

UMC Workshop on Computational Materials Education

- 23-24 June 2010
- Northwestern University

28 Universities were represented

Carnegie Mellon University	Purdue University
Case Western University	Rensselaer Polytechnic Institute
Clemson University	Stony Brook
Cornell University	University of Michigan
Drexel University	University Alabama, Birmingham
Illinois Institute of Technology	University of Delaware
Iowa State University	University of Cincinnati
Johns Hopkins University	University of Florida
Kent State University	University of Illinois
Lehigh University	University of Kentucky
North Carolina State University	University of Maryland
Northwestern University	University of Pennsylvania
Ohio State University	University of Toronto
Princeton University	Virginia Tech

goal of workshop

- to discuss need for increased focus on computational materials science and engineering in the MSE curriculum
- to develop suggestions for a computational materials curriculum in undergraduate and graduate education
- to identify resources that could be shared between departments

workshop agenda

- discussion of ICME - LeSar (ISU) and Allison (Michigan)
- results of recent survey of CMSE in MSE curricula - Thornton (Michigan)
- educational and computational resources - Manual (Florida) and Strachan (Purdue)
- vignettes - Olson (Northwestern), Lundstro (Purdue), and Bartolo (Kent State)

outcome

- *There was a uniform consensus that MSE Departments need to include more computational materials science and engineering in both undergraduate and graduate curricula.*

The challenges ...

- there is little uniformity in current practice
- many different opinions on the best way to include computation in the curriculum
- many departments may not have local expertise to teach the material
- we need a central warehouse of computational resources to avoid duplication of efforts and to ensure some uniformity
- ...

summary of current practice

- there is no common approach:
 - some programs include modeling within existing classes, some have specialty classes, and some do both
- few (if any) departments have a systematic approach to integration of computational materials within the curriculum
- there is no consensus on modeling platforms (e.g., MATLAB, Mathematica, ...), codes, strategies, etc.
- there is as yet no consensus on whether it should be CMS, CME, CMSE, ICME, ...

working groups

- two working groups were identified to make concrete recommendations about:
 - how to use computation to enhance the materials curriculum
 - development and sharing of common computational resources, e.g.,
 - Purdue's nanohub
 - MatForge repository (Kent State)
- the working groups have yet to finish these tasks

next step

- once the working groups have made their suggestions, we will summarize the workshop in a final report