Adding Value to the New MGI Landscape

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Frontiers in Computational and Information Sciences
Seminar Series

Presented by…

Professor David McDowell

- Regents' Professor and Carter N. Paden, Jr. Distinguished Chair in Metals Processing, Georgia Institute of Technology
- Founding Director, GA Tech Institute for Materials

Abstract: Initiatives such as Integrated Computational Materials Engineering (ICME) and the Materials Genome Initiative (MGI) have drawn broad attention of industry, government research laboratories, and universities in computational materials science and materials design. MGI objectives of decreasing the time to discover, develop, certify and insert new and improved materials into products have evolved rapidly in the past decade and are part of the same "thread" that seeks to draw materials development in closer accord with the timescale for product development, thereby reducing time to market and adding value in terms of integrated multi-functionality of materials and products. Realizing the full impact of this collective vision requires a clear understanding of the need to advance a broad front of supporting technologies, built on a foundation of distributed collaboration of academia, industry, and government. It is argued that many of these technologies require a change of culture in university materials research and, along with modes for integrating engineering, the sciences, big data, and high performance computing. Workforce development issues are central to advancing the MGI vision, in addition to the new tools and methods that must be developed to support multiscale, multiphysics modeling, which in turn informs systems-based integrated design of materials and products.

Bio: David McDowell is a Regents' Professor and Carter N. Paden, Jr. Distinguished Chair in Metals Processing at Georgia Tech. In August 2012 he was named Founding Director of the Institute for Materials, one of the university's interdisciplinary research institutes charged with fostering an innovation ecosystem for research and education. His research focuses on the synthesis of experiment and computation to develop physically-based, microstructure-sensitive constitutive models for nonlinear and time-dependent behavior of materials, with emphasis on wrought and cast metals. He is the co-editor of the International Journal of Fatigue and co-director of the NSF-sponsored Center for Computational Materials Design, a joint effort between Georgia Tech and Penn State.

More info: http://www.me.gatech.edu/faculty/mcdowell

Thursday
May 23, 2013

BSF 1007
Darwin Room

11:00 am