



**Network for Computational Nanotechnology
& c-PRIMED Seminar Series**

Seminar Notice
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BRK 2001
9:30AM

**Preparing for the Future of Computing: The Exascale Materials
Co-design Center***

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The advent of Advanced / Additive Manufacturing and the Materials Genome Initiative has placed significant emphasis on accelerating the qualification of new materials for use in real applications. Within these workflows lies both the engineering scale qualification through building and testing components at scale and full-scale modeling with integrated continuum computer codes and the materials scale qualification through revolutionary methods to non-destructively measure microstructure (3DXRD) and physics specific experiments coupled with meso-scale mechanics simulations of the same physics specific experiment using the same microstructure. This is one of the use cases that drives the Exascale Materials Co-design Center (ExMatEx). The goal of the Co-design Center is very analogous to the acceleration of new materials deployment within the MGI, rather co-design accelerates the deploying of laboratory concepts for future computer components to enable a productive exascale computer system. To enable better meso-scale understanding in the continuum models, ExMatEx is creating a direct coupling between the continuum integrated code and direct numerical simulation of the meso-scale phenomena. Here we review the ExMatEx project and its use cases.

***PIs: Jim Belak and Tim Germann**

<http://science.energy.gov/ascr/research/scidac/co-design/>

<http://www.exmatex.org>

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