Shock Compression Seminar Series
APS GSCCM Announcement

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Dynamic Materials Science at High Brilliance X-ray Light Sources

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High brilliance x-ray light sources are undergoing a transformation both in the U.S. and abroad, with facilities such as the Linac Coherent Light Source (LCLS) and Advanced Photon Source (APS) undergoing upgrades. Within NNSA, the brilliance and pulse structure of many of these sources provide an opportunity to study materials dynamics under extreme conditions of high pressures, temperatures, and strain rates. In many instances, the data obtained from x-ray diffraction and scattering fill the "micron gap," providing information on materials structures at the mesoscale, which are foundational to next generation materials physics models. Most of the measurements performed using time-resolved x-rays are setting new precedents in terms of the detailed physics and chemistry they have revealed; examples range from measurement of carbon clustering in high explosives to the dynamics of solid-solid and melt transformations in metals under shockwave compression. In this presentation, I will provide examples from Los Alamos' portfolio in dynamic materials science at U.S. light sources, providing several examples of recent work on low-Z materials using x-ray scattering, diffraction, and imaging. Lastly, information on a recent tri-lab response to NNSA of recommendations for future investments at U.S. light sources will also be provided.

For more information, or to recommend future speakers contact Seminar Organizer, Tracy Vogler at tjvogle@sandia.gov or the GSCCM Secretary/Treasurer Matt Lane at jlane@sandia.gov.