

Material Physics with Pulsed Power at Sandia

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ABSTRACT

The behavior of materials in extreme conditions is not only fascinating with many scientific challenges, a quantitative understanding is vital for our ability to model stars, planets, and nuclear weapons with high fidelity. At Sandia, we employ pulsed power technology and facilities like the Z-machine and THOR to investigate materials over a range of conditions from normal to High Energy Density (HED). In this presentation, I will describe how we utilize pulsed power to drive materials to high pressure without making them hot and present a broad range of recent work on equation of state, phase transitions, phase transition kinetics, and material strength for different materials.

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