

Abstract Submitted
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Hugoniot, shock melting and high pressure strength properties of beryllium¹ MICHAEL DESJARLAIS, MARCUS KNUDSON, RAYMOND LEMKE, Sandia National Labs — The shock melting of beryllium has gained interest of late due to its use as an ablator material in inertial confinement fusion capsules. Recently, experiments utilizing the flyer plate capability at the Sandia Z accelerator were performed to determine the Hugoniot and the shock melting properties of polycrystalline beryllium. Composite aluminum/copper flyer plates were used to shock load beryllium samples to pressures ranging from 1 to 4 Mbar. Multiple sample thicknesses allowed for the measurement of the release wave velocity, which is sensitive to the phase of the material in the shocked state. The release wave structure also provides estimates of material strength. Results of these experiments will be discussed and compared to detailed quantum molecular dynamics calculations which provide insight into the shock melting of beryllium and the extent of the coexistence region on the Hugoniot.

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