

Abstract Submitted
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Systematics of Compression of Hard Materials¹ W. J. NELLIS, T. PETACH, Harvard University — Hard materials are those for which the the Rayleigh line is close to Hugoniot, which means thermal pressures are small, which means Hugoniot, isentrope, and isotherm of a given material are nearly coincident up to 100 GPa pressures. Hard materials are used, for example, as anvils in reverberating shock experiments to look at quasi-isentropically compressed, highly-condensed low-Z fluids. For this reason, the shock impedances, optical transparencies, and electrical conductivities of these materials are of interest above 50 GPa. In this paper measured Hugoniots and isotherms of materials such as diamond, sapphire, titanium dioxide, GGG, etc will be used to derive systematic equation-of-state behavior for these materials. Major conclusions and future experiments will be discussed.

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