

Abstract Submitted
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Dynamic Studies of Phase Transitions in f-electron Materials Using Photoluminescence Spectroscopy¹ E.D. EMMONS, T.E. COWAN, S. DUVVURI, G. KAPLAN, R.G. KRAUS, K.R. MCCALL, G. MISHRA, J.S. THOMPSON, A.M. COVINGTON, Physics Department and Nevada Terawatt Facility, University of Nevada, Reno — We are currently investigating the feasibility of using photoluminescence spectroscopy to study solid-solid phase transitions in f-electron materials. Photoluminescence probes the electronic band structure of materials and is thus sensitive to temperature, pressure, and phase. Static photoluminescence studies are being performed in a diamond anvil cell in order to identify signatures of changes in the materials, particularly solid-solid phase transitions. These static studies will be used as a benchmark to guide future dynamic shock compression studies. Dynamic studies will involve using pulsed lasers both to shock f-electron materials and also to induce photoluminescence. Fast time-resolved spectroscopic techniques will be used to examine the photoluminescence emission as the shock wave compresses the material. Preliminary results will be presented.

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Erik Emmons
University of Nevada, Reno

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