

Abstract Submitted
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High Pressure-High Temperature Phase Diagram of Beryllium.¹

W.J. EVANS, M.J. LIPP, H. CYNN, B.J. BAER, C.S. YOO, Lawrence Livermore National Laboratory, A. LAZICKI, UC Davis, Y. OHISHI, SPring-8/JASRI, N. SATA, SPring-8/IFREE, JAMSTEC — A detailed understanding of the phase diagram of beryllium impacts fundamental science and technological applications. Despite a simple atomic structure, theoretical modeling of the phase diagram of beryllium has been extremely challenging and remains an area of active investigation [Kadas, ,PRB 07]. Beryllium is important to a range of applications, including structural members, x-ray windows, and nuclear reactors. Extension of the experimental understanding of beryllium will serve to inform and advance theoretical efforts and technological applications. To address these needs, we have extended our previous work [Evans, PRB 05], and performed x-ray diffraction and melt studies of high temperature beryllium. We will describe our measurements of the crystal structure, lattice constants, and melt curve of high-pressure beryllium. We will discuss insights into this simple yet challenging system.

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