

Abstract Submitted
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High Pressure-Temperature Studies of Vanadium¹ Z. JENEI, B.J. BAER, H. CYNN, J.-H. KLEPEIS, M.J. LIPP, W.J. EVANS, LLNL, H.-P. LIERMANN, Y. MENG, S.V. SINOGEIKIN, W. YANG, HPCAT — Vanadium, a seemingly simple metal, has captured the interest of high-pressure scientists following the discovery (Ding et al. PRL 2007) of a subtle pressure-induced phase transition from bcc to a rhombohedral phase. Recent first-principles electronic-structure studies (Lee et al. PRB 2007) are consistent with these experiments and extend beyond the range of the measurements, predicting a reentrant phase transition back to bcc at high pressure. Further experiments in the regime of these predictions can validate and advance the understanding of simple metals at high-pressures. We have made x-ray diffraction measurements of the crystal structure and lattice parameters of vanadium at high-pressure and temperature. Detailed comparisons will challenge/validate models and guide development of predictive codes. We will discuss our measurements including high temperature behavior, the EOS, and transitions of vanadium at high pressure.

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