

Abstract Submitted
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High-Resolution Thermal Expansion Measurements of CaFe_2As_2

ARIANA DE CAMPOS, M.S. DA LUZ, J.J. NEUMEIER, Montana State University, E.D. BAUER, F. RONNING, J.D. THOMPSON, HANOI LEE, TUSON PARK, Los Alamos National Laboratory, EUNSUNG PARK, Sungkyunkwan University — The discovery of superconductivity in doped LaFeAsO initiated a surge of interest in layered FeAs systems. The recent discoveries in CaFe_2As_2 [1,2] of: (i) suppression of the first-order structural phase transition under modest hydrostatic pressure, (ii) superconductivity under pressure and (iii) at higher pressures the suppression of superconductivity with stabilization of a potentially different high temperature phase, establish pressure as a valuable parameter for tuning the behavior of these fascinating compounds. In this work, thermal expansion measurements of a high-quality single crystal of CaFe_2As_2 are reported. A sharp transition was observed between the high temperature tetragonal and low temperature orthorhombic structures at $T_S \approx 180$ K. [1] M.S. Torikachvili, et al. PRL 101, 057006(2008). [2] Park T., et al., J. Phys.Cond.Matter, 20, 322204 (2008). This material is based upon work supported by the Brazilian Agency CNPq (Grant No. 201439/2007-7), the NSF (Grant No. DMR- 0504769) and U.S. DOE Office of Basic Energy Sciences (Grant No. DE-FG-06ER46269). Work at LANL was performed under the auspices of the U.S. DOE Office of Basic Energy Sciences and supported by the LDRD program.

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