

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

The Elastic Moduli of Monoclinic and Orthorhombic Plutonium

ALBERT MIGLIORI, JON B. BETTS, C. PANTEA, I. MIHUT, C. MIELKE, J.N. MITCHELL, Los Alamos National Laboratory, LOS ALAMOS NATIONAL LABORATORY COLLABORATION — Measurements were made of the bulk and shear moduli of high-purity polycrystalline Pu from 10K to 670K using resonant ultrasound spectroscopy. A simple dilatometer was employed to provide redundant detection of the phase transitions. We observed the expected phase transitions from monoclinic (α) to body centered monoclinic (β) to orthorhombic (γ) to face centered cubic (δ). Very accurate values were obtained for α -Pu, β -Pu was very soft and difficult to analyze, as was δ -Pu. Surprisingly, the γ -phase produced the high-Q resonances needed for accurate elastic modulus determination. We discuss also the unusual temperature dependences.

Albert Migliori
Los Alamos National Laboratory

Date submitted: 17 Nov 2006

Electronic form version 1.4