

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Phase-segregated Glass Formation Linked to Long-Range Strain using Resonant Ultrasound Spectroscopy PETER SHARMA, RIKEN (The Institute of Physical and Chemical Research), S. EL-KHATIB, I. MIHUT, J. B. BETTS, A. MIGLIORI, National High Magnetic Field Laboratory, Los Alamos, S. B. KIM, S. GUHA, S-W. CHEONG, Rutgers Center for Emergent Materials and Department of Physics and Astronomy, Rutgers University — We have observed a very large damping of ultrasonic waves in the magnetically/electronically/structurally phase segregated state of a CMR manganite that suddenly disappears upon the formation of a glassy state. A subtle stiffening of the shear modulus accompanies the putative glass transition. Our observations most explicitly link strain to the proposed formation of an unusual glass state composed of coexisting, macroscopic structural domains found in this material. These results may implicate strain as the determining factor in the formation of non-equilibrium mixed-phase states in other systems that display widely hysteretic first order magneto-structural transitions.

Peter Sharma
RIKEN

Date submitted: 19 Nov 2006

Electronic form version 1.4