Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Pressure-induced structural transition in an one-component polymer poly(4-methyl-1-pentene) in its melted state AYANO CHIBA, Keio University, Japan, NOBUMASA FUNAMORI, KAZUYA NAKAYAMA, University of Tokyo, Japan, YASUO OHISHI, Japan Synchrotron Radiation Research Institute (SPring-8), Japan, STEPHEN M. BENNINGTON, Rutherford Appleton Laboratory, UK, SANJAY RASTOGI, Loughborough University, UK, ANUJ SHUKLA, European Synchrotron Radiation Facility, France, KAZUHIKO TSUJI, Keio University, Japan, MIKIHITO TAKENAKA, Kyoto University, Japan — Liquid-liquid transitions or amorphous-amorphous transitions are well-known in systems with small molecular or structural units, such as those seen in water, phosphorus, and silica glass. We studied pressure-induced structural change for isotactic poly(4-methyl-1-pentene) in its melted state, and found a structural transition for this one-component polymer melt. High-pressure in-situ x-ray diffraction and specific-volume measurements on the polymer melt have uncovered discontinuities in the pressure dependences of microscopic structure as well as those of macroscopic density. The results suggest the occurrence of a liquid-liquid phase transition.

Ayano Chiba
Keio University

Date submitted: 11 Nov 2011 Electronic form version 1.4