

Abstract Submitted
for the CAL10 Meeting of
The American Physical Society

Studies of Melamine Under Extreme Conditions¹ MARTIN GALLEY, MICHAEL PRAVICA, UNLV, CHANGYONG PARK, HPCAT — We performed two synchrotron-based x-ray diffraction studies on melamine at high pressures and at variable temperatures. The first study utilized “white” x-ray beams to perform energy-dispersive x-ray diffraction at high pressure and high temperature. Pressure was generated using a Paris-Edinburgh Cell to employ larger sample volumes for improved signal to noise from weakly scattering organic samples such as melamine. High temperatures were created using a resistive/graphitic cup surrounding the sample under pressure. The PT phase diagram was explored by first pressurizing the sample to 3.5 GPa at room temperature and then resistively heating it up to 1197 K. Above 4.85 GPa and 967 K, an irreversible phase transition was observed. For the second study, we used monochromatic x-ray radiation to study melamine at high pressure and ambient temperature using angular-dispersive x-ray diffraction (ADXRD). A symmetric Diamond Anvil Cell was used in this study for pressures up to 16GPa and a Mao-Bell cell was used to achieve higher pressures up to 55GPa. Both of these experiments were conducted at the High Pressure Collaborative Access Team’s (HP-CAT’s) beamlines at the Advanced Photon Source: 16 BM-B and 16 ID-B.

¹DOE-BES, Contract No. DE-AC02-06CH11357

Martin Galley
UNLV

Date submitted: 01 Oct 2010

Electronic form version 1.4