Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Synchrotron Radiation Investigation in Epoxy Resin Modified with Polysiloxane System[1] WENJUN GAN, WEIZHEN LI, JINDIAN DING, College of Chemistry and Chemical Engineering, Shanghai University of Engineering Science, 333 Longteng Road, Shanghai, 201620, China, XIAODAN GU, CHENG WANG, Advanced Light Source, Lawrence Berkeley National Laboratory, 1 Cyclotron Road, Berkeley, CA 94720, USA — Epoxy resins are one of the most important classes of thermosetting polymers. Epoxy resin modified with polysiloxane is expected that the siloxane moiety may exert its qualities of thermal stability, impact toughness and surface-modification properties. Our group tried to introduce polysiloxane into epoxy resin by blending diglycidyl-ether of bisphenol-A with epoxypropoxypropyl terminated polydimethyl-siloxane and polyetherimide-siloxane in different proportion. These polysiloxane modified epoxy resins have been investigated using a combination of small- and wide angle X-ray scatterings (SAXS and WAXS) and scanning transmission soft X-ray microscopy (STXM). Nano- to micro-scale domain size, distribution and chemical composition were observed with spatial and spectroscopic sensitivities offered by both hard and soft x-ray scattering/microscopy. In-situ SAXS experiments were performed to understand the mechanism of microphase separation and dynamics of nanostructure evolution.

[1]Acknowledgment: The authors thank Shanghai Municipal Education Commission (Overseas Visiting Scholar Program 2012) and Shanghai University of Engineering Science (2011xz04) for financial supports.

Wenjun Gan
Shanghai University of Engineering Science

Date submitted: 15 Nov 2013 Electronic form version 1.4