

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

The Shear Response and Structure in Polycyanurate Networks¹

QINGXIU LI, SINDEE SIMON, Texas Tech University — The shear response of polycyanurate networks with different crosslink densities, varied by changing the ratio of difunctional to monofunctional cyanate ester, is measured from shear stress relaxation and dynamic experiments. Master curves are constructed following the time-temperature superposition principle, and the temperature dependence of the shift factors is examined. The discrete relaxation time spectra are calculated from the viscoelastic responses and are found to be independent of crosslink density. The crosslink density, determined from the rubbery modulus, and the sol content, measured from sol extraction experiments, are modeled for the fully cured polycyanurate networks using the recursive method; a monomer cyclization reaction is assumed in the modeling based upon the chemical composition of the sol which was determined by mass spectroscopy. The effect of monomer cyclization on the conversion at gelation of dicyanate esters is discussed.

¹Funding from NSF-DMR 0308762 is gratefully acknowledged.

Qingxiu Li
Texas Tech University

Date submitted: 17 Nov 2006

Electronic form version 1.4