

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Supramolecular Arrest and Activation for the Network Formation of Acid Catalyzed Epoxy Polymerization MATTHEW SPENCER, JAMES CRIVELLO, CHANG Y. RYU, Rensselaer Polytechnic Institute — Epoxy resins are limited currently as they must be externally activated by radiation in combination with a photo acid generator or implemented using the more ubiquitous two-component approach. Two component systems begin to react upon mixing are while UV cured epoxies are limited to situations where light can reach the monomer. We propose a novel one-component system that is externally activated with the application of heat. A considerable room temperature lifetime is attributed to the systems ability to sequester super acids through a system of hydrogen bonding coordination. The model system utilizes an alkyl glycidal ether which is made universal by the addition of crown ethers to non-ether epoxy monomers. Our supramolecular-based approach to retard and trigger the epoxy polymerization is likely to enable more widespread applications in microelectronic packaging.

Matthew Spencer
Rensselaer Polytechnic Institute

Date submitted: 19 Nov 2010

Electronic form version 1.4