

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Thiol-ene/methacrylate systems for mechanical damping OLIVIA MCNAIR, ASKIM SENYURT, HUANYU WEI, TRENT GOULD, SCOTT PILLAND, CHARLES HOYLE, DANIEL SAVIN, School of Polymers and High Performance Materials, University of Southern Mississippi — Ternary thiol-ene-methacrylate (TEMA) networks as materials for mechanical energy damping are unique to the sports world. Using a photoinitiation process, TEMA systems are formed via an initial thiol-ene step-growth mechanism along with traditional radical polymerization of acrylate and ene monomers. Final networks have two-part morphologies: acrylate homopolymer sectors imbedded in a multi-component mesh. Several (TEMA) systems have been synthesized and analyzed via thermal and mechanical probing. Initial studies on these ternary systems have shown excellent properties compared to traditional ethylene vinyl alcohol (EVA) copolymers. For example, PEMA networks exhibit glass transition temperatures 33 K higher than EVA, resulting in improved damping at room temperature. This research will help develop relationships between tan delta, glass transition and their effects on mechanical energy damping for ternary (TEMA) systems.

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Date submitted: 20 Nov 2009

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