Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Structure-Property Relationships in Thiol-Ene Networks Composed of Plant-Derived Phenolic Acids GUOZHEN YANG, HIRUY TESEFAY, MEGAN ROBERTSON, Univ of Houston — Polymer films prepared through thiol-ene chemistry are attracting increasing attention due to their ease of preparation and superior physical properties. We are investigating the properties of thiol-ene films which contain plant-derived allylated phenolic acids as substitutes to traditional petroleum-derived ene-bearing components. Phenolic acids are readily available through a variety of plant sources and contain rigid aromatic rings which contribute mechanical strength to the resulting polymer films. In this study, the properties of polymer films containing four phenolic acids were explored: salicylic acid, 4-hydroxybenzoic acid, gentisic acid and gallic acid. The allylated phenolic acids vary in the relative number and placement of the allyl groups used in the preparation of the polymer films, which impacts the resulting crosslinking density, glass transition temperature, and mechanical behavior of the polymer films. We have developed relationships between the chemical structures of the phenolic acids and the thermal and mechanical behavior of the polymer films.

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Date submitted: 14 Nov 2014 Electronic form version 1.4