

Abstract Submitted  
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**Mechanical properties of photo-polymerized sustainable epoxy materials from vegetable oils**<sup>1</sup> CHANG RYU, MATTHEW RAVALLI, ZHEQIN YANG, JAMES CRIVELLO, Rensselaer Polytechnic Institute — Our research program aimed at advancing our ability to tailor the photocationic polymerization and physical properties of sustainable epoxy materials derived from crosslinked epoxidized vegetable oils using onium salt photoinitiators. Specifically, we developed solventless, photopolymerizable epoxy monomer and oligomer systems derived from sustainable biorenewable sources as alternatives to existing highly polluting and energy-intensive thermal curing of epoxy resin chemistry. Two sustainable epoxy network polymer systems will be presented to investigate how the network formation can be controlled. The first system is a series of epoxidized vegetable oils that offer various degrees of crosslinking densities, and the second system represents the blends of epoxidized vegetable oils with epoxidized terpenes to tailor their photocuring and mechanical properties for the potential usage in “green” coating, adhesive, 3D printing, and composite applications.

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