Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Rheology of Hyperbranched Poly(triglyceride)-Based Thermoplastic Elastomers via RAFT polymerization MENGGUO YAN, ERIC COCHRAN, Iowa State University — In this contribution we discuss how melt- and solid-state properties are influenced by the degree of branching and molecular weight in a family of hyperbranched thermoplastics derived from soybean oil. Acrylated epoxidized triglycerides from soybean oils have been polymerized to hyperbranched thermoplastic elastomers using reversible addition-fragmentation chain transfer (RAFT) polymerization. With the proper choice of chain transfer agent, both homopolymer and block copolymer can be synthesized. By changing the number of acrylic groups per triglycerides, the chain architectures can range from nearly linear to highly branched. We show how the fundamental viscoelastic properties (e.g. entanglement molecular weight, plateau modulus, etc.) are influenced by chain architecture and molecular weight.

Mengguo Yan
Iowa State University

Date submitted: 13 Nov 2013 Electronic form version 1.4