

Abstract Submitted
for the NEF05 Meeting of
The American Physical Society

Ultrasonic Spectroscopy for Characterization of Polymer Composites CHRISTOPHER LAYMAN, University of Vermont, RUEY-BIN YANG, Feng Chia University, SANJEEVA MURTHY, JUNRU WU, University of Vermont — Ultrasonic spectroscopy can be used to quantitatively determine the role of spherulites, their size and distribution on the mechanical properties of semicrystalline polymers. As a first approximation, spherulitic polymers are modeled as a material with spherical inclusions in an amorphous matrix. This two-phase composite model is then physically realized by embedding glass microspheres in an epoxy. The dynamic mechanical properties of these composites are experimentally determined by measuring their acoustic properties, phase velocity and attenuation. Acoustic scattering theories are then applied to this model to test their predictive capabilities for the real composite's mechanical properties.

Christopher Layman
University of Vermont

Date submitted: 29 Sep 2005

Electronic form version 1.4