

## **142g Crystallization, Melting, and Dynamic Relaxation Characteristics of Ptt and Ptt Blends**

*Sumod Kalakkunnath, Terry W. Humphries, and Douglass S. Kalika*

The crystallization, melting and relaxation characteristics of semicrystalline poly(trimethylene terephthalate) [PTT] have been studied as a function of thermal processing history. Samples with bulk crystallinity ranging from 15 to 50% were prepared by various routes and their dynamic relaxation characteristics investigated by broadband dielectric relaxation spectroscopy and dynamic mechanical thermal analysis. Both cold-crystallized and melt-crystallized specimens display a sizeable rigid amorphous phase fraction, and the overall phase behavior of the specimens was quantified using calorimetric and dielectric measurements. In addition, blends of PTT with amorphous polyetherimide [PEI;  $T_g \sim 215^\circ\text{C}$ ] have been explored as a means by which to control crystallization and enhance thermal resistance of the base resin. Melt-formulated blends were prepared across the entire range of compositions, and the influence of the non-crystallizable (PEI) diluent has been assessed in terms of crystallization kinetics, bulk crystallinity, and potential amorphous phase segregation.