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Formation of nanoparticles during melt mixing a thermotropic liquid crystalline polyester and sulfonated polystyrene ionomers HYUK-SOO LEE, Samsung Electro-mechanics Co., LEI ZHU, University of Connecticut, R. A. WEISS, University of Connecticut — The formation of nanoparticles and the mechanism of their formation in a blend of a thermotropic liquid crystalline polyester (LCP) and the zinc salt of a lightly sulfonated polystyrene ionomer (Zn-SPS) were investigated using Fourier transform infrared, thermogravimetric analysis, and gas chromatograph-mass spectroscopy. Transmission electron microscopy and wide-angle X-ray scattering were used to study the morphology of the blends and structure of nanoparticles. The origin of nanoparticle formation appeared to be related to the development of phenyl acetate chain ends on the LCP that arose due to a chemical reaction between the LCP and residual catalytic amounts of zinc-acetate and/or acetic acid that were present from the neutralization step in the preparation of the ionomer. The origin of formation and kinetics of the nano-particle formation and the mechanical and rheological properties of these nanocomposites are briefly discussed.

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