

Abstract Submitted  
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**Preparation and Characterization of Electrospun Poly(Methyl Methacrylate)-QDs NanoComposite Fibers**<sup>1</sup> SUYING WEI, Lamar University, JAYANTHI SAMPATHI, DAN RUTMAN, ASHWINI KUCKNOOR, ZHANHU GUO — In this talk, we describe the simple electrospinning method to fabricate PMMA-CdSe/ZnS Quantum Dots (QDs) nanocomposite fibers followed by property analysis using a variety of techniques. The parameters that affect the electrospinning process including concentration, feed rate, applied voltage and working distance between the needle tip and the fiber collector are investigated and optimized to acquire uniform and defect-free polymer nanocomposite fibers. The surface morphology of the fiber was characterized by scanning electron microscopy, while the fluorescence emission characteristics were analyzed with fluorescence microscopy. In addition, the PMMA-QDs nanocomposite is thermally more stable than the pristine PMMA fibers as determined by the thermal-gravimetric analysis technique. The glass transition temperature and the melting temperature of the polymer are also altered due to the incorporation of QDs. This can be attributed to the interaction between the included QDs and the polymer structure, as disclosed by the surface analysis techniques attenuated total reflectance-infrared spectroscopy (ATR-IR) and X-ray photoelectron spectroscopy (XPS). It showed new vibration bands in the composite fiber in the ATR-IR spectra while the binding energy of both C1s and O1s shifted in their corresponding high-resolution XPS spectra.

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