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Electrical and structural changes during phase transitions in conducting polymer cubic phases JINGHANG WU, Macromolecular Science and Engineering, University of Michigan, Ann Arbor, WEN-SHIUE (OWEN) YOUNG, THOMAS EPPS, Chemical Engineering, University of Delaware, Newark, DE, DAVID MARTIN, Materials Science and Engineering, University of Delaware, Newark, DE — Bicontinuous cubic conducting polymer structures can be obtained by polymerization within an ordered surfactant mesophase. These materials are of interest for applications where both electronic and ionic mobilities are important such as in fuel cells, catalysts, and controlled drug delivery. This method provides a means for tailoring the morphology of polymers such as PEDOT (poly(3,4-ethylene dioxythiophene)) at the nanometer length scale. The thermal stability of cubic phases was studied as a function of EDOT monomer concentration in the non-polar phase up to 10 wt%. The microstructure was examined by temperature dependent small angle x-ray scattering. The electronic transport properties were examined on the same samples using in-situ impedance spectroscopy. The morphology was also examined using low voltage electron microscopy (LVEM).

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