109c Preparation and Characterization of Nanoporous Materials from Microemulsions Formulated with a Biocompatible Surfactant

Fen Ye, Stephanie Lopina, and H. Michael Cheung

Precursor microemulsions were formulated with methyl methacrylate (MMA) and hydroxyethyl methacrylate (HEMA) and the nonionic PEO-PPO-PEO triblock copolymer Pluronic F127 as surfactant. Conductivity and viscosity measurements of the microemulsion precursors showed that the microemulsion structure changed with the aqueous content. Transparent polymer was produced after photo initiated free radical polymerization. Nanoporous structures were observed under scanning electronic microscopy (SEM). The pore size distribution of the nanoporous polymeric materials was determined from freezing point depression (FPD) of water by differential scanning calorimetry (DSC), which indicated that the aqueous content in microemulsion precursor influenced the nanostructure. The in vitro drug release behavior of these materials was also investigated.