Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Stereocomplex Formation in Racemic Chiral Polylactide Block Copolymers[1] LU SUN, LEI ZHU, Polymer Program, Institute of Material Science and Department of Chemical Engineering, University of Connecticut, Storrs, CT 06269-3136 — Stereocomplexes can be formed for chiral polymers, *e.g.*, isotactic and syndiotactic poly(methyl methacrylate) (PMMA) and poly(L- lactide) (PLLA)/poly(D-lactide) (PDLA). Stereocomplexes in racemic chiral polylactide (PLA) block copolymers have not been widely studied. In this work, we successfully synthesized PLLA and PDLA containing block copolymers using stannous octoate as catalyst for ring opening polymerization from hydroxyl-terminated oligomers. After fractionation by preparative size-exclusion chromatograph, narrow polydispersity samples (Mw/Mn = 1.1$\sim$1.2) were obtained. Stereocomplex of PLA block copolymer blends was prepared by growing stereocomplex crystals either in solution or from the melt. The formation of stereocomplexes was confirmed by differential scanning calorimetry and wide-angle X-ray diffraction (WAXD). The evolution kinetics of stereocomplexes in the bulk was investigated by time-resolved synchrotron small-angle X-ray scattering (SAXS) and WAXD. The morphology of these stereocomplex crystals was studied by transmission electron microscopy.

[1]This work was supported by NSF CAREER award DMR-0348724.

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Date submitted: 16 Dec 2004 Electronic form version 1.4