

Abstract Submitted
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An Atomic Force Microscopy study of the thin film crystallization behavior of blends of poly-(L-lactide) and poly-(D-lactide). YURY YURYEV, PAULA WOOD-ADAMS, Concordia University, JOSEE BRISSON, Université Laval, MARIE-CLAUDE HEUZEY, CHARLES DUBOIS, Ecole Polytechnique, POLYLACTIDE RESEARCH COLLABORATION — Blends of poly-(L-lactide) and poly-(D-lactide) form a triclinic stereocomplex during racemic crystallization while the pure optical isomers crystallize in a pseudo-orthorhombic crystalline form. The triclinic stereocomplex has a high melting point of 503 K compared to 453 K for the other crystalline form. Atomic Force Microscopy (AFM) allows one to image a polymer surface with nanoscale resolution and is best suited for the studies of crystalline morphology in thin polymer films. Individual spherulitic morphology, its growth rate and its dependence on temperature and blend composition were studied using tapping mode AFM. 500-600 nm thick polylactide films were produced by solution casting. Excess nucleation sites were eliminated by melting for a short time. It is found that spherulites protrude from the surface of the film after annealing. The crystallization rate is slower when both optical isomers are present.

Yury Yuryev
Concordia University

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