Structure-Properties Relationship of Polypropylene Cast Films

Seyed Hesamoddin Tabatabaei, Abdellah Ajji*

École Polytechnique of Montreal - Quebec - Canada

Three polypropylene cast films of different initial morphologies (only spherulitic structure, coexisting rows of lamellae and spherulites, and lamellar structure) were prepared by extrusion followed by stretching using a chill roll. The effects of the original morphology on the orientation, mechanical respo-nses, tear resistance, and oxygen permeability were investigated. The precursor film with the lamellar morphology showed much larger crystalline alignment, Young modulus, tensile strength, and tensile toughness along the machine direction (MD) and greater oxygen permeability compared to the precursors with the only spherulitic structure and coexisting rows of lamellae and spherulites.