

Title: X-ray Pole Figure on Blown Linear Low Density Polyethylene and Low Density Polyethylene Blends Films

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ABSTRACT

Pole figures obtained by wide-angle X-ray diffraction were used to quantify and characterize the biaxial molecular orientation in linear low density polyethylene (LLDPE) and low density polyethylene (LDPE) blends films prepared by blowing process. The blown films of the LLDPE/LDPE blends, at compositions LLDPE/LDPE of 100/0, 90/10 and 80/20 in weight percent, were processed in a tubular extrusion line from Carnevalli model CLD-75 for a constant blow-up ratio of 3. The X-ray pole figures results demonstrated that, at all blends compositions, the a-axis was preferentially oriented along the machine direction and the orientation degree along this direction increase with increasing LDPE amount in the blends. On the other hand, the b-axis changes its preferential orientation from normal direction (film thickness) in the 100/0 LLDPE/LDPE blend to along the transverse direction with increasing LDPE in the blends. The c-axis changes its orientation from orthogonal to normal direction in the 100/0 LLDPE/LLDPE blend film to along the film thickness with increasing LDPE in the blends.