

Abstract Submitted  
for the MAR12 Meeting of  
The American Physical Society

**Phase separation of DMDBS from iPP, and controlled crystalline orientation** K. SREENIVAS, NCL, Pune, India, GURUSWAMY KUMARASWAMY, NCL, R.S. BASARGEKAR, Reliance Industries Limited — We report an unexpected dependence of DMDBS phase separation temperature on the molecular weight of the matrix isotactic polypropylene (iPP). DMDBS crystallizes out at lower temperatures for iPP with decreasing molecular weight (and correspondingly lower tacticity). This molecular weight dependence is unique to iPP, and is not observed for either syndiotactic PP or for random ethylene-PP copolymers. We show that thermodynamic Flory-type arguments are unable to rationalize the observed results. We also report results on extrusion film casting of iPP containing DMDBS and show that flow-alignment of DMDBS networks template the orientation of PP crystals. The modulus and yield strength increase on addition of DMDBS, relative to the neat iPP. Tensile modulus and yield stress of drawn films increase with the degree of orientation, and we are able to achieve a substantial increase even at relatively low draw ratios.

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Date submitted: 28 Oct 2011

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