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Partially-Functionalized Isotactic Polystyrene with Blocky Comonomer Segments ARIEL SIEGEL, WAYNE POWERS, CHANG Y. RYU, Rensselaer Polytechnic Institute, RENSSELAER POLYTECHNIC INSTITUTE COLLABORATION — Isotactic polystyrenes (iPSs) have been functionalized in solution, while the accessibility of functionalizing agent is limited by the formation of crystalline domains at various temperatures. The chemical system used is the borylated isotactic polystyrene system, and we investigated the temperature effects on reaction kinetics to ultimately control the blockiness of borylated segments in the resulting copolymer. The chemical composition of partially borylated iPS reaches a steady state that is dependent on temperature. This synthesis has been performed at many different temperatures, with different steady states being reached at different temperatures. Further analysis by differential scanning calorimetry (DSC) has shown that the higher temperature reactions have greater effect on breaking down the crystal lattice structure of the isotactic polystyrene. As a result, the lower temperature reactions affect the crystalline structure less, and the resulting copolymer has more blockiness.

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