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Borylation of Polystyrene: Random Blocky vs. Truly Random Copolymers WAYNE POWERS, Renssealer Polytechnic Institute, ZACHARIAH NORMAN, CHANG RYU, Rensselaer Polytechnic Institute, CHULSUNG BAE, University of Nevada - Las Vegas, JAN GENZER, North Carolina State University, WAYNE POWERS, ZACHARY NORMAN, CHANG RYU TEAM, CHULSUNG BAE COLLABORATION, JAN GENZER COLLABORATION — Borylated PS with tuned blockiness of borylated styrene segments has been synthesized in methylcyclohexane, using bis(pinacolato)diboron as the borylating agent, and 4,4'-di-tert-butyl-2,2'-bipyridine and bis(1,5-cyclooctadiene)diiridium(I) dichloride as catalysts. By performing the borylation reaction below and above the theta temperature of PS in methylcyclohexane, 70 degrees Celsius, the co-monomer sequence distribution in the borylated PS changed from random-blocky to random, respectively. The "chemical coloring" is carried out at low PS concentration in order to ensure that individual chains do not coagulate during the borylation at temperatures below the theta temperature. NMR, SEC, cloud point measurements, and adsorption-based interaction chromatography are used to characterize the properties of borylated PS and elucidate the effects of blockiness on solubility and surface adsorption.

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