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Well-Defined Comb Polymer for Surface Segregation Study[1] BOXI LIU, RODERIC QUIRK, MARK FOSTER, The University of Akron, DAVID WU, Colorado School of Mines — Blending polymers with different chain architectures may prove useful in controlling interfacial properties by controlling interfacial segregation. A linear response theory by Wu *et al.* predicts that a long-chain branched polymer blended with its linear analog will be preferentially segregated to the surface and interface of the blend film. The comb architecture is promising for achieving substantial surface segregation. Its high degree of branching, which makes it more prone to separate from linear analogs in the bulk, also provides a substantial driving force for surface segregation when chain ends prefer the surface. In this study comb polystyrenes with well-defined architectural details were prepared by living anionic polymerization. DSC indicates that phase separation occurs for some blends of the linear and comb analogs, and this is also seen by SANS study of these blends. Surface segregation of comb polystyrene when blended with its linear analog has been quantified using the complementary techniques of neutron reflectivity and SIMS.

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