

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Effects of Branch Points and Chain Ends on Interfacial Segregation and Bulk Thermodynamics in Blends of Branched and Linear Polymers JAE S. LEE, NAM-HEUI LEE, ALEXEI P. SOKOLOV, RODERIC P. QUIRK, MARK D. FOSTER, Maurice Morton Institute of Polymer Science, The University of Akron, Akron, Ohio ,44325-3909, BOUALEM HAMMOUDA, CHARLES F. MAJKRZAK, NIST, Gaithersburg, Maryland, 20899 — The effects of the number of branch points and number of chain ends in a branched chain on interfacial segregation and bulk thermodynamics in binary blends of well-defined, regularly branched polystyrenes with their linear analogues were studied. A novel series of molecules in which the numbers of branch points and numbers of chain ends in the branched molecule were varied in a controlled way was key to the study. The value of the effective interaction parameter determined from small angle neutron scattering data increased both with increasing the number of branch points and the number of chain ends. Neutron reflectometry and Surface Enhanced Raman Spectrometry measurements showed the preferential segregation of the branched molecules to both interfaces of blend films. The strength of the segregation generally increased by increasing the number of branch points while the number of end groups was kept constant at six. The degree of segregation also increased by increasing the number of end groups while keeping the number of branch points constant at four.

Jae S. Lee
The University of Akron

Date submitted: 01 Dec 2004

Electronic form version 1.4