

Abstract Submitted  
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**Surface Segregation of Small Macrocyclic** SHIH-FAN WANG, The University of Akron, Department of Polymer Science, XIAOPENG LI, The University of Akron, Department of Chemistry, RENFENG HU, Colorado School of Mines, Department of Chemical Engineering, BULENT AKGUN, National Institute of Standards and Technology, REBECCA AGAPOV, CHRYS WESDEMIO-TIS, The University of Akron, Department of Polymer Science, DAVID T. WU, Colorado School of Mines, Department of Chemical Engineering, MARK D. FOSTER, The University of Akron, Department of Polymer Science — Surface segregation of the thin film blends containing 20wt% 2k macrocyclic polystyrene were studied using surface MALDI-ToF mass spectrometry (MS), time of flight secondary ion mass spectrometry (ToF-SIMS), and neutron reflectometry (NR). To provide contrast between the species for these techniques, the linear polymer in the blend was deuterated. MALDI-ToF MS results show that the 2k macrocyclic chains are depleted from the surface after a film of an isotopic macrocyclic/linear blend (h-CPS2K/d-LPS2K) is annealed at 125°C for 12hrs. The surface concentration of CPS is less than 1wt%, while the surface concentration of the hydrogenous component in an analogous h-LPS2K/ d-LPS2K film is 20wt% after annealing. The isotopic effect is not significant for the 2k blends and the architecture effect determines the surface segregation. ToF-SIMS and NR results corroborate this view.

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