Abstract Submitted
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Phase Separated Polymer Systems on Surfaces and Some Applications in Super-Hydrophobicity[1] CHARLES C. HAN, Institute of Chemistry, Chinese Academy of Sciences, China, YONGHUA YAO, XIA DONG, Polymer Physics and Chemistry, Joint Laboratory of Polymer Science and Materials, Institute of Chemistry, CAS, Beijing, China — The study of the influence of temperature and confinement on surface segregation in thin films of deuterated polybutadiene and polyisoprene near the critical point for phase separation by the neutron reflectivity measurements will be discussed. The results show that polyisoprene enriches at the air and silicon interfaces in both the 1- and 2-phase regions. A transition between in-plane and surface-directed (layered) phase separation is observed with increasing film thickness. We will then describe some application with the use of phase separation of polymer blends on the surface. We demonstrate that a superhydrophobic surface can be facilely created by a simple casting process under environmental atmosphere by exploiting the different solubility of the two common polymers in the solvent. Furthermore, we will report a very attractive procedure to prepare a super-hydrophobic polymeric surface with controllable sliding angle (SA) from a single component commodity polymer, isotactic polypropylene (iPP), without further modification with low-surface-energy component under ambient atmosphere. The process we used is simply subject the iPP/decalin solution to a shear field and than lower the temperature to form a crystallized network structure.

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