Abstract Submitted
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Tuning the lateral mobility of thin block copolymer films[1] HARRY BERMUDEZ, ANDREAS KOUROUKLIS, University of Massachusetts — Polymer mobility in confined environments is of both theoretical and practical interest. The controlled formation and characterization of systems where such effects can be studied remain active areas of investigation. In this work, we created ultrathin ($<$ 50 nm) supported films of amphiphilic polybutylene-poly(ethylene) oxide diblock copolymers, through Langmuir-Blodgett and Langmuir-Schaefer techniques. To adjust the lateral mobility of these ultrathin films, short polyisobutylene homopolymer was introduced during the film assembly process. Preliminary fluorescence recovery after photobleaching (FRAP) results show that the lateral mobility of the block copolymers is proportional to the logarithm of homopolymer concentration. The mobility can be varied by up to a factor of 8 with as little as 1 mol% of homopolymer. The role of the added homopolymer on the block copolymer lateral mobility is likely to be related with several features such as chain entanglements, interfacial constraints, and interlayer friction. By varying the concentration and the molecular weight of the homopolymer introduced into the films, we attempt to explain the underlying physical mechanisms that are responsible for changes in lateral mobility.

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