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Semifluorinated Polymers Confined at the Solid-Air Interface
UMESH SHRESTHA, Clemson University, STEPHEN CLARSON, University of Cincinnati, DVORA PERAHIA, Clemson University — Effective responsive layers should exhibit stability while retaining a dynamic mode that will allow reaction of the interface to external stimuli. Semifluorinated polymers have a potential for forming energy controlled responsive interfaces. Because of the high segregation between the fluorinated and protonated segments, well defined structures are induced at relatively short chains, retaining the capability to rearrange on short time scales. Fluorinated segments affect the interfacial energies as well as enhance thermal stability and controls the refractive index and dielectric properties. The present study investigates the interfacial response of poly trifluoro propylmethyl siloxane-polystyrene diblock copolymer (PTFPMS-PS) at volume fractions varying from 0.003 to 0.5 of fluorinated block, at the interface of oxidized silicon wafers. In all volume fractions we found that the air interface is fluorine rich and the solid surface in proton rich. Layering is detected across the films for all volume fractions. Upon annealing the layering is retained, however the interfacial compositions changes.

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