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**Interfacial Effects on Pentablock Ionomer Thin Films** THUSITHA ETAMPAWALA, DILRU RATNAWEERA, NARESH OSTI, UMESH SHRESTHA, DVORA PERAHIA, Department of Chemistry, Clemson University, Clemson, SC, JAROSLAW MAJEWSKI, Lujan Neutron Scattering Center, Los Alamos National Laboratory, Los Alamos, NM — The interfacial behavior of multi block copolymer thin films results from a delicate balance between inherent phase segregation due to incompatibility of the blocks and the interactions of the individual blocks with the interfaces. Here in we report a study of thin films of ABCBA penta block copolymers, anionically synthesized, comprising of centered randomly sulfonated polystyrene block to which rubbery poly-ethylenebutalene is connected, terminated by blocks of poly-t-butylstyrene, kindly provided by Kraton. AFM and neutron reflectometry studies have shown that the surface structure of pristine films depends on film thickness and ranges from trapped micelles to thin layered films. Annealing above  $T_g$  for the styrene block results in rearrangements into relatively featureless air interface. Neutron reflectivity studies have shown that annealed films forms layers whose plane are parallel to the solid substrate with the bulky block at the air interface and the ionic block at the solid interface.

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