

Abstract Submitted
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**Solvents effect on the structure of pentablock ionic polymers:
A SANS study**¹ MANJULA SENENAYAKE, THUSITHA ETAMPAWALA, SIDDATH WIJESINGHE, NARESH OSTI, Clemson University, LILIN HE, Oak Ridge National Laboratory, DVORA PERAHIA, Clemson University — Solution structure of ionic co-polymers is critical to their processing. The difference of the interactions between blocks with the solvent results in a rich phase diagram. Here, solutions of ABCBA symmetric ionic pentablock copolymer consisting of t-butyl polystyrene end blocks, hydrogenated isoprene inner blocks and randomly and selectively sulfoated polystyrene as middle block, was studied by small angle neutron scattering (SANS). Specifically the impact of adding 1-propanol, a polar solvent to a cyclohexane-heptane solution was investigated. This polar solvent is associating ionizable block and it's expected to modify the packing of the polymer. Our results shows upon addition of 1-propanol, the spherical micelles transfer into worm like object. This transformation requires the break up of the ionic clusters formed by this polymer. These changes are in line with rheology measurements of Dr. Robert Weiss who has shown that propanol unlocks ionic clusters in polystyrene sulfonate.

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Manjula Senenayake
Clemson University

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