

## Solvent size dependent structure of diblock copolymer micelles in n-alkanes

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In theoretical description for the micelle structure considers the balance between the chain stretching of core and corona block and the unfavorable interaction between core block and assumption that the core is melt. In practical, solvent molecules can penetrate into the core by the solvent entropy effect. We investigate the detailed micelle structure of poly(styrene-*b*-ethylene-*alt*-propylene) in n-alkanes as a function of solvent size and temperature to tune the unfavorable interaction between PS core and alkane systematically. Solubility parameter calculation shows that smaller solvent results in more unfavorable interaction. For the micelles the core radii in all solvents are nearly similar to  $2 \langle R_g \rangle_{\text{core}}$ , which indicates that the core block conformation has nearly fully relaxed. The solvent fraction in the core of a smaller size solvent, which is more easily penetration into the core, appears larger at all temperatures. Also we observed that all data is overlapped when properties are plotted versus  $\text{CMT} - T$ , indicating that micelle structure is systematically controlled by solvent size of the same unit. The results are discussed in terms of current understanding of BCP micelles.