

Structure of Poly(styrene-*b*-ethylene-*alt*-propylene) Diblock Copolymer Solution in Oil

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Block copolymer solution self-assembles into various structures. In particular, the distribution of solvent plays a key role to determine the structure and characteristic length scale. Many research have used low-molecular-weight solvents due to well-known behavior. However, much less is known about the structure in oil, relatively high MW, where solvent entropic effect is significantly attenuated. In this research studies structures we investigate the structure of poly(styrene-*b*-ethylene-*alt*-propylene) (PS-*b*-PEP) in squalane, selective to PEP, and 1-phenyldodecane, a nearly neutral solvent, using Small-Angle X-ray Scattering: (1) micelle structure in the binary mixture, and (2) ordered structure in 1-phenyldodecane. Both oils are relatively high MW, which can provide a bridge between low-MW solvents and homopolymers. These results are discussed in terms of current understanding, and particular attention is paid to core (or minor) block domain structure.