

# Self-assembly and Microstructure of Core-shell Micelles from Smart Block Copolymers Modulated by Altering Solution Conditions

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Multiphase polymer systems viz. block and graft copolymers are known to form micelles in selective solvents. Block copolymers of the type AB, ABA, BAB and ABC from uncharged (hydrophilic as well as hydrophobic) and charged (polyelectrolyte as well as polyionic liquids) with different molecular characteristics can self-assemble to equilibrium or nonequilibrium structures in aqueous solutions, the solution conditions like pH, temperature, presence of additives like electrolytes and nonelectrolytes show profound effect on formation and size/shape of core-shell structures. Further, these can be suitably modified by cross-linking the shell/core or capping the shell ends by ligands. These changes can be modulated to optimise their performance .

A brief overview of the above aspects from the literature studies and our own work in recent years from scattering/thermal/microscopic/spectral techniques will be presented. Special attention will be provided on the self-assembly from different stimuli responsive block copolymers in the presence of different additives and their use industries.

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