Multiphase polymer systems: block copolymers as a special class

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Multiphase polymeric systems include a wide range of materials such as polyblends (polymer alloys), interpenetrating polymer networks (IPNs), graft polymers and block copolymers. These provide useful and desired material properties often not observed from single homopolymer.

Among such multiphase systems, block copolymers have gained much interest as these can be easily synthesized from a variety of monomers in desired structures/molecular mass/ low polydispersity and conveniently characterised.

This talk will discuss different aspects of block copolymers. Microdomain formation from block copolymers in solid state and aggregation in selective solvents that lead to several applications will be elaborated.

The main focus will be on (*i)* double hydrophilic/stimuli-responsive block copolymers and *(ii)* amphiphilic ABC type block copolymers from various thermoresponsive neutral blocks as well as pH responsive polyelectrolyte blocks. The self-assembly to core-shell nanoaggregates and the formation of polymeric / inorganic nanoparticles using different strategies will be discussed in details using examples from literature and our own studies.

(this lecture by Prof. Em. P. BAHADUR is the last of a series of three, scheduled from April 18th to 25th, 2019 at ENSCM)