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**Spheres-to-vesicles morphological transition in polymer micelles**

ZHIJUN HU, ALAIN JONAS, JEAN-FRANÇOIS GOHY, CERMIN COLLABORATION — Self-assembly of block copolymers in solution and the resultant nano-objects such as spheres, rods, and vesicles, have been the focus of much interest during the last 20 years. The ability to tune the micellar morphology and trigger the morphological transitions still remains a central challenge in this field. Here we present the possibility to control the micellar morphologies in poly(styrene)-*block*-poly(4-vinylpyridine)/surfactant complexes by dilution, which is believed to be due to the changes of order in the insoluble blocks. These complexes, that form spherical micelles at a concentration of 1 g/L, rearrange into vesicles when the solutions are diluted, as confirmed by combined dynamic light scattering, atomic force microscopy and transmission electron microscopy investigations. This morphological transition can be further used as a tool to encapsulate molecules of interest in the interior of block copolymer vesicles.

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