

Investigating vapor-induced co-nonsolvency in thin films by TOF-NR

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The diblock copolymer PMMA-b-PNIPAM in aqueous solution undergoes a reversible coil collapse transition at the lower critical solution temperature (LCST). This characteristic transition temperature can be tuned by the addition of organic co-nonsolvents such as ethanol or acetone. In order to investigate co-nonsolvency behavior in thin film geometry, we perform swelling experiments with a custom-made temperature-controlled vapor chamber. Complementary time-of-flight neutron reflectometry data and UV/Vis spectroscopic reflectometry data are used to access information about thickness and refractive index development, morphological changes, diffusion speeds and concentration gradients.

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