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Solvent annealing of Micropatterned PS-b-PEO copolymer films¹

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Yonsei University — Solvent annealing of block copolymer thin films have been known as an effective way to control both orientation of microdomains with respect to the surface and their registration into a well ordered periodic lattice structure. We have recently demonstrated hierarchically ordered microdomains in a thin poly(styrene-b-ethylene oxide)(PS-b-PEO) film combined with microcontact printing. The solvent annealing gave rise to well ordered spherical PEO microdomains in large area by the confined dewetting of thin PS-b-PEO films which had been micropatterned on chemically modified surface during solvent annealing. In this presentation, we intentionally prepare a micropatterned dewet film of PS-b-PEO by spincoating a block copolymer solution on a topographic PDMS pre-pattern. Convex lens shaped spherical caps of PS-b-PEO individually located on each PDMS mesa were successfully transferred to a Si substrate by a conventional transfer printing technique. We investigate the effect of solvent on not only film wettability but also formation of hierarchical nanostructures.

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