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Instantaneous Formation of Block Copolymer Patterns via Solvo-Thermal Casting Process HYUN JUNG JUNG, SANGHOON WOO, JUNE HUH, JOONA BANG, Department of Chemical and Biological Engineering, Korea Univ. — A self-assembly of block copolymers (BCPs) exhibits one of the most promising alternative methods for the next-generation lithography. Many semiconductor companies have explored the possibility of implementing this process in actual chip process, whereas the critical challenges such as feature size control, defect density, and long processing time need to be overcome. Regarding the BCP process, the formation of BCP patterns usually requires long processing time via thermal or solvent annealing. Herein we developed a simple processing method to promote a microphase separation of BCPs using solvo-thermal spin casting process. Spin casting has a very similar mechanism to solvent vapor annealing but its short process time prevents BCP chains from reaching equilibrium morphology. To maximize the chain mobility, we employed a high boiling point solvent and also applied the heat during spin casting. As a result, a well ordered BCP patterns were obtained within less than 5 min via solvo-thermal casting process without further additional annealing step.

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