

Self-assembly of Si-containing block copolymers for next-generation nanofabrication

정연식

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As device dimensions shrink, it is increasingly important to develop fabrication methods that can create sub-15 nm features of regular or arbitrary geometry in a rapid, parallel, and efficient process. This talk will discuss approaches based on self-assembling hybrid polymers containing Si. The thin films of those materials systems can generate well-ordered periodic arrays of dots or lines. For achieving, long-range ordering, it is helpful to use lithographically-defined templates, which are in general much larger than the length-scale of self-assembled nanostructures. For example, the self-assembly of polymer nanostructures can easily be templated using an array of nanoscale topographical elements that act as guiding templates or surrogates for one of two microdomains. The solvent-vapor-induced tunability of pattern dimension and morphology will be discussed as well. Those material systems can excellently serve for high-precision self-assembly that can provide good resolution, reliability, and controllability and be considered as an option for a future nanomanufacturing technology.



Figure 1. Various kinds of silica nanopatterns prepared with Si-containing block copolymers.

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