Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Lamellar nanostructures of diblock copolymers confined in submicro-patterns SEHEE KIM, Interdisciplinary Program in Nanoscience and Technology, NANO Systems Institute-National Core Research Center, Seoul National University, KOOKHEON CHAR, NANO Systems Institute-National Core Research Center, School of Chemical & Biological Engineering, Seoul National University, BYEONG-HYEOK SOHN, NANO Systems Institute-National Core Research Center, Department of Chemistry, Seoul National University — Diblock copolymers consisting of two immiscible polymers covalently bonded together spontaneously form periodic nanostructures such as spheres, cylinders, and lamellae. In bulk, however, these periodic nanostructures of copolymers tend to orient randomly if no external forces are applied. To obtain periodic nanostructures over large areas, copolymers can be confined into topographic patterns. When block copolymers are physically confined, structural frustration and interfacial interaction can influence molecular organizations of copolymers, leading to hierarchically ordered nanostructures. In this presentation, the lithographic method and self-assembly of lamellae-forming diblock copolymers were combined to induce hierarchical nanostructures. Confined nanostructures of copolymers were investigated by transmission electron microscopy. Diblock copolymers confined in the submicro-pattern exhibited the unique orientation of lamellar nanostructures depending on the preparation conditions of the film before the confinement.

Sehee Kim
Interdisciplinary Program in Nanoscience and Technology,
NANO Systems Institute-National Core Research Center,
Seoul National University

Date submitted: 13 Dec 2006 Electronic form version 1.4