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Defect structures in block copolymer thin films epitaxially assembled on chemically nanopatterned surfaces SANG OUK KIM, BONG HOON KIM, KWANGHYON KIM, Materials Science & Engineering, KAIST, MARK STOYKOVICH, PAUL NEALEY, Chemical & Biological Engineering, University of Wisconsin, HARUN SOLAK, Laboratory for Micro- and Nanotechnology, Paul Scherrer Institute — Epitaxial self-assembly of block copolymer thin film is gathering a lot of attention as a successful strategy for nanofabrication. Chemically nanopatterned surfaces has been applied to guide the self-assembly of block copolymer thin films to form defect-free nanoscale patterns over an arbitrarily large area [S. O. Kim et al. *Nature* **424**, 411-414, 2003]. The commensurability between the periods of block copolymer nanostructure and surface pattern has been turned out to act crucial role in determining the final nanostructure. Deviation of surface pattern period from the natural period of block copolymer nanostructure led to various types of defects. The defects in the block copolymer thin film self-assembled on the striped nanopattern of neutral/preferential wetting behavior, are presented. When the surface pattern period was slightly smaller, dipole of two edge dislocations with opposite sign appeared as a dominant defect structure. When the surface pattern period was slightly bigger, tilted lamellae appeared. The origin of the defect evolution is discussed [S. O. Kim et al. *Macromolecules* **39**, 5466-5470, 2006].

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