Directed self-assembly of diblock copolymer thin films on chemically-patterned substrates for defect-free nano-patterning MIKIHITO TAKENAKA, Department of Polymer Chemistry, Graduate School of Engineering, Kyoto University, YASUHIKO TADA, Materials Research Laboratory, Hitachi Ltd., SATOSHI AKASAKA, SYNSUKE ABURAYA, Department of Polymer Chemistry, Graduate School of Engineering, Kyoto University, HIROSHI YOSHIDA, Materials Research Laboratory, Hitachi Ltd., HIROKAZU HASEGAWA, Department of Polymer Chemistry, Graduate School of Engineering, Kyoto University, ELIZABETH DOBISZ, DAN KERCHER, San Jose Research Center, Hitachi Global Storage Technologies — We demonstrate that Polystyrene-*block*-poly(methyl methacrylate) (PS-*b*-PMMA) can self-assemble in a well-aligned, long-range ordered nano-pattern over arbitrarily large areas, commensurate with chemically pre-patterned templates prepared by electron beam (EB) lithography. We also demonstrate that the self-assembly process can interpolate points in between the EB generated pattern, thus multiplying the pattern density. Moreover, we show the results of the investigation about the time-evolution of the self-assembled structure during annealing process.

Mikihito Takenaka
Department of Polymer Chemistry,
Graduate School of Engineering, Kyoto University