Abstract Submitted
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Reducing Line Edge Roughness of PS-b-PMMA pattern by inducing hydrogen bonding at the interface of the block copolymer microdomains KYU SEONG LEE, SUNG HYUN HAN, SANGSHIN JANG, JICHEOL PARK, JONGHEON KWAK, JIN KON KIM, POSTECH — Sharp interface between two blocks in block copolymer nano pattern is one of the important issues in industrial applications to nano-patterning. We utilized hydrogen bonding between N-(4-aminomethyl-benzyl)-4-hydroxymethyl-bezamide (BA) and urea (U) at the interface of polystyrene-*block*-poly(methyl methacrylate) copolymer (PS-PMMA). For this purpose, we first synthesized PS by ATRP, then the end group was converted to amino group. Next, it was reacted with BA, followed by reaction with 4-pentynoic acid, resulting in alkyne-terminated group (PS-U-BA-alkyne). Also, azide-terminated PMMA was prepared by anionic polymerization followed by end functionalization. Finally, by the azide-alkyne click reaction between PS-U-BA-alkyne and PMMA-azide, PS-U-BA-PMMA was synthesized. We prepared vertical oriented lamellar nanopatterns on pre-patterned wafers and investigated line edge roughness (LER) after removing PMMA block by dry etching process. We found that LER was reduced compared with PS-PMMA without hydrogen bonding.

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