

The Effect of Hydrogen Bonding Sites on the interfacial width of PS-b-PMMA Thin Film Microdomains

이규성, 장상신, 박지철, 곽종현, 김진곤<sup>†</sup>

포항공과대학교

(jkkim@postech.ac.kr<sup>†</sup>)

Sharp interface between two blocks in block copolymer nano pattern is one of the important issues because of strong demand in industrial applications to nano-lithography and 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 synthesized PS by ATRP method, then the end group was converted to amino group. Then, it was reacted with BA, followed by reaction with 4-pentynoic acid, resulting in alkyne-terminated group (PS-U-BA-alkyne). Finally, through the azide-alkyne click reaction between PS-U-BA-alkyne and azide-terminated PMMA prepared by anionic polymerization and end functionalization, PS-U-BA-PMMA was synthesized. We investigated, via small angle X-ray scattering and transmission electron microscopy, the phase behavior of PS-U-BA-PMMA depending on molecular weight and compared with general PS-b-PMMA.