

## Preferred Orientations of Diblock Copolymer Thin Films on Magnetic Nanoparticle Monolayers

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Preferred orientations of cylinder-forming diblock copolymer thin films on magnetic nanoparticle (mNP) monolayers were investigated. Iron oxide mNPs were deposited on silicon substrates using the Langmuir-Blodgett (LB) method. The orientations of PS-*b*-PMMA thin films on mNP monolayers were characterized with AFM, SEM and GISAXS techniques. The perpendicular orientation of PS-*b*-PMMA thin films was observed on 22 nm sized mNP sublayers, whereas the parallel orientation of PS-*b*-PMMA thin films was observed on 6 nm sized mNP sublayers. Our results imply that the preferred orientations of PS-*b*-PMMA depend on the size of the mNPs.