

Supporting Information

Investigation of Roughness Correlation in Polymer Brushes via X-Ray Scattering

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GISAXS results of PS brushes

Polystyrene brushes on silicon substrates were synthesized as reported in the corresponding article. The brush layer thickness was measured with ellipsometry, giving a value of 27.1 nm. Roughness correlation of PS brushes was proven with GISAXS as to be seen in the oscillations in 1D q_z line cut (Fig. 1).

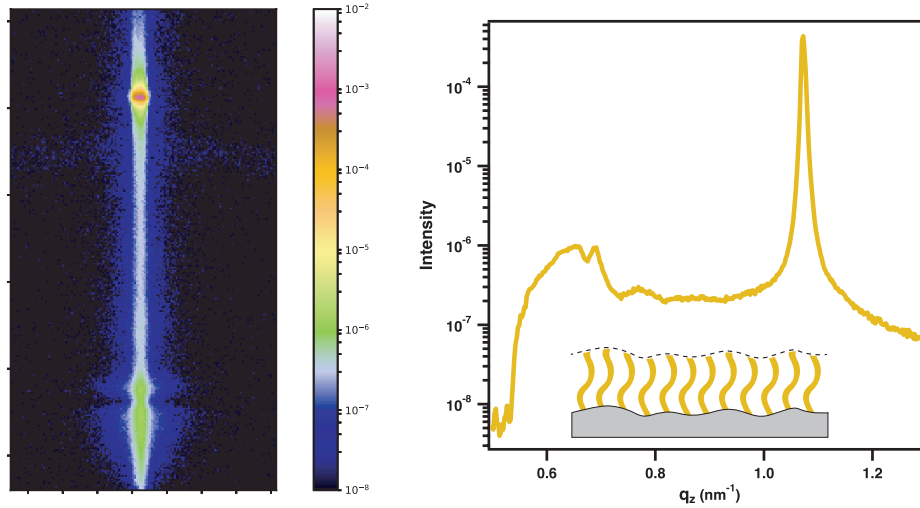


Figure 1: Detector image and q_z line cut of PS brushes, to prove roughness correlation.

Lateral cut-off lengths of polymer thin films

For correlated spin-coated PS films, PMMA brushes, PMMA-*b*-PS brushes and spin-coated PS films on top of PMMA brushes, the lateral cut-off lengths were calculated, using q_z line cuts as a function of q_y .

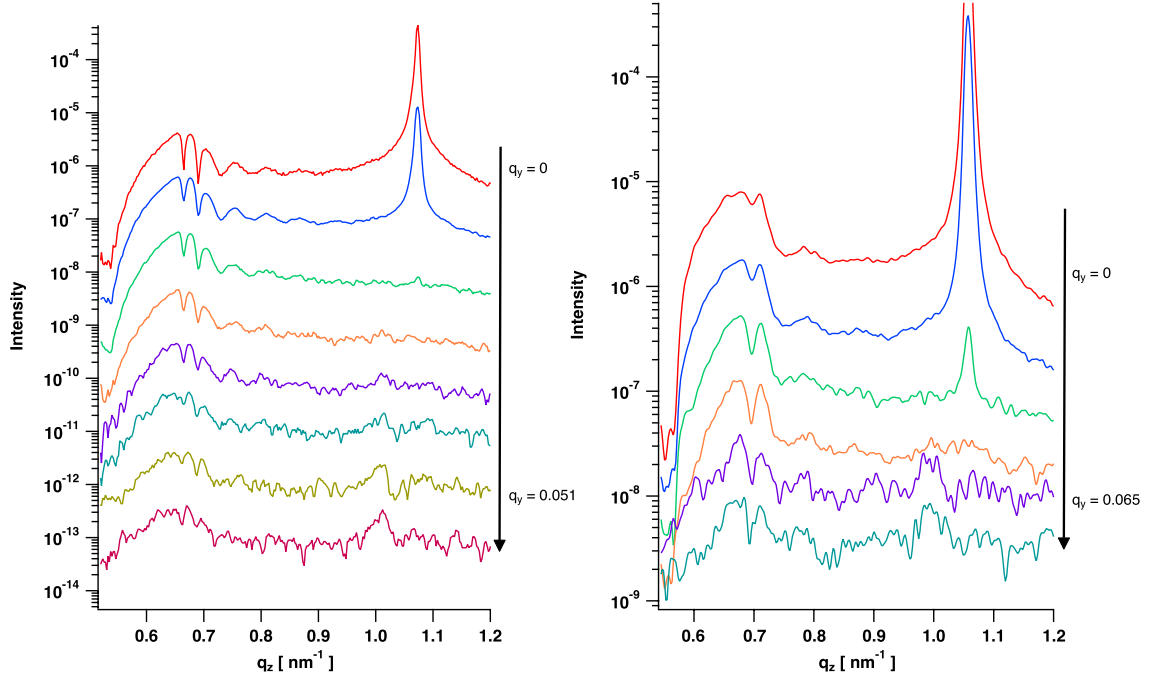


Figure 2: Determination of the lateral cutoff length Λ_c of PMMA brushes (left) and PS brushes (right) via q_z line cuts as a function of q_y . All curves are shifted for better visibility and represent the mean value of scattering intensities of four pixels with additional smoothing afterwards. Modulations origin from roughness correlation disappear at $q_y = 0.051$ for PMMA and $q_y = 0.065$ for PS.

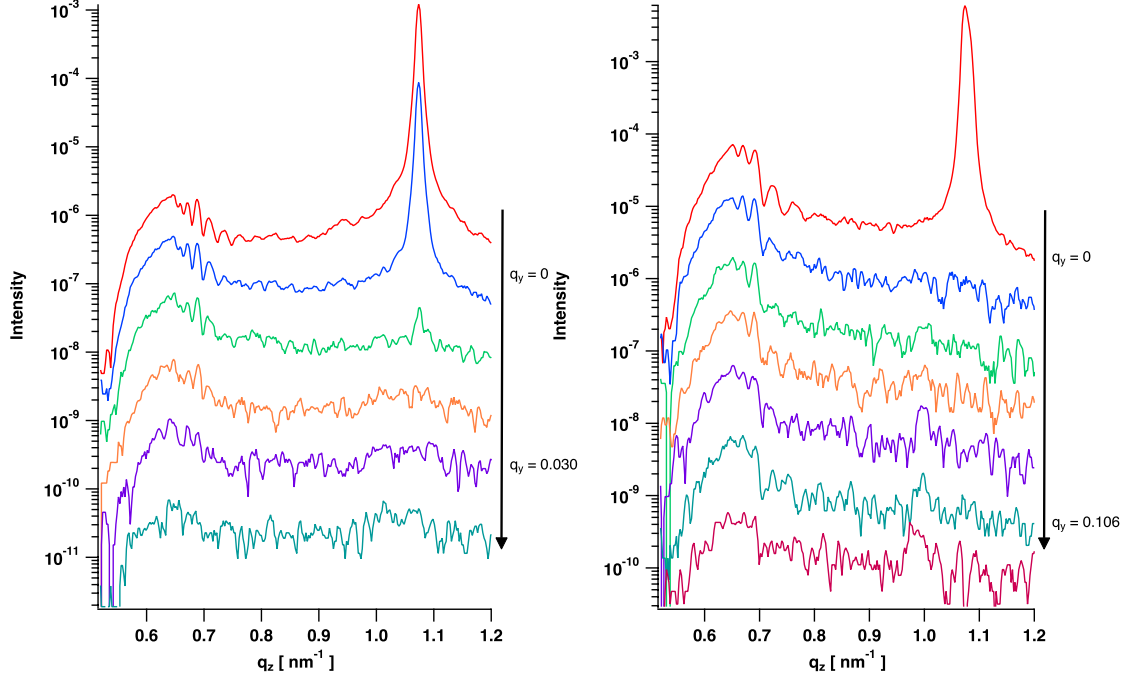


Figure 3: Determination of the lateral cutoff length Λ_c of PMMA-*b*-PS diblock copolymer brushes (left) and PMMA brushes with a spin-coated PS film on top (right) via q_z line cuts as a function of q_y . All curves are shifted for better visibility and represent the mean value of scattering intensities of four pixels with additional smoothing afterwards. Modulations origin from roughness correlation disappear at $q_y = 0.106$ for copolymer brushes and $q_y = 0.030$ for the PMMA-PS multilayer system.