Supplementary Information for:

Grafting Density Dominant Glass Transition of Dry Polystyrene Brushes

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Fig. S1 XPS Br 3d spectra of initiator-functionalized substrates after different reaction times by TBAF.



Fig. S2 AFM height images of brush films with different grafting densities (shown by decreasing Br/O ratio).



Fig.S3 Normalized brush thickness as a function of temperature measured by spectroscopic ellipsometry for (blue) $\sigma_p=0.61 \text{ nm}^{-2}$ and (red) $\sigma_p=0.13 \text{ nm}^{-2}$ with the same thickness (20 nm). The solid black lines are the best fits for the rubbery and glassy region data.



Fig. S4 (a) DSC heating curves for bulk PS samples at a constant heating rate of 2 K/min. (b) the glass transition temperatures of bulk PS as a function of molecular weight. The M_n dependent T_g was fitted with the Fox-Flory equation ($T_g = T_g^{\infty} - A/M_n$).



Fig. S5 Thermal expansion coefficient (above T_g) as a function of thickness for PS brush films of various grafting densities measured by ellipsometry.