Supplemental Material For:

Dynamics of Lubricous, Concentrated PMMA Brush Layers Studied by Surface Forces and Resonance Shear Measurements

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Fig. S1  Plots of force/radius ($F/R$) vs surface separation distance ($D$) between PMMA brush layers fabricated on silica surfaces. The force profiles were obtained with driving speeds of 8 nm/s (filled and open circle) and 0.5 nm/s (filled and open diamond). The $D$ was obtained by measuring relative distance ($D'$) from the dry contact of PMMA, and by adding the two PMMA layer thicknesses ($2L_D$).
Fig. S2  Plots of shear amplitudes vs load ($L$) obtained for PMMA-PMMA brush layers (blue filled circle) as well as for PMMA brush-silica surface (red filled triangle).
Fig. S3  (a) Plots of the elastic ($k_2$, filled circle) and damping ($b_2$, filled triangle) parameters (top), and distance ($D$) before (open square) and after (filled square) shear measurements (bottom) against the shear amplitude ($A_{\text{shear}}$) obtained at the applied loads of 0.85 mN.  (b) Schematic illustration of PMMA brushes drawn based on the results at the shear amplitudes of (i) $A_{\text{shear}} = 20$ nm, (ii) $A_{\text{shear}} = 120$ nm, and (iii) $A_{\text{shear}} = 230$ nm.
Fig. S4  Plots of the elastic ($k_2$, filled circle) and damping ($b_2$, filled triangle) parameters (top), and distance ($D$) before shear (open square) and after (filled square) shear measurements (bottom) against the shear amplitude ($A_{\text{shear}}$) obtained at the applied loads of 0.79 mN for PMMA brush-silica.
**Fig. S5** Plots of force/radius ($F/R$) vs surface separation distance ($D$) between a PMMA brush layer and a silica surfaces. The force profile was obtained with driving speeds of 8 nm/s (filled circle for approach and open circle for retraction). The $D$ was obtained by measuring relative distance ($D'$) from the dry contact of PMMA, and by adding a PMMA layer thickness ($L_D$).