

Supplemental Material For:

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

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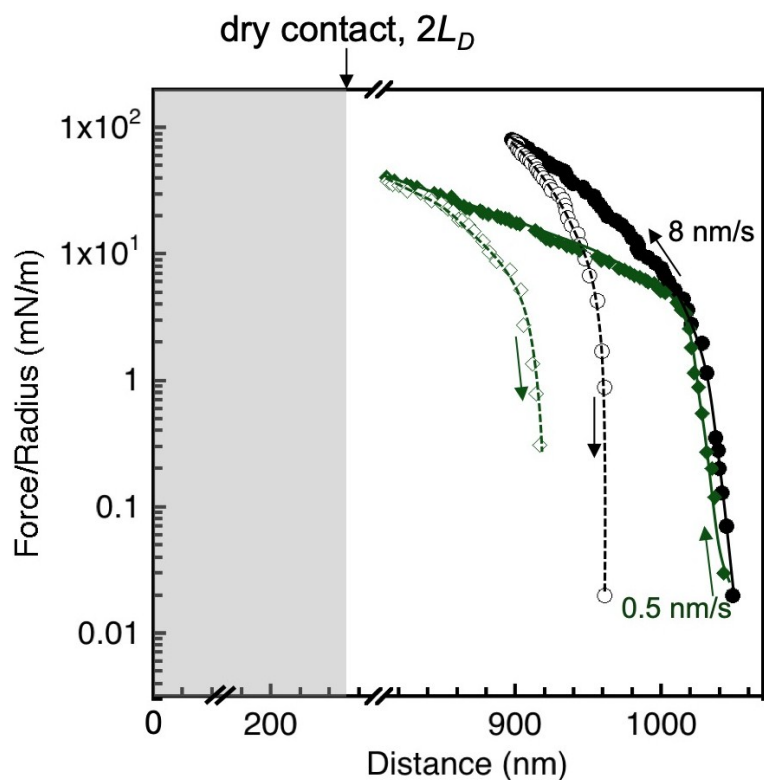


Fig. S1 Plots of force/radius (F/R) vs surface separation distance (D) between PMMA brush layers fabricated on silica surfaces. The force profiles were obtained with driving speeds of 8 nm/s (filled and open circle) and 0.5 nm/s (filled and open diamond). The D was obtained by measuring relative distance (D') from the dry contact of PMMA, and by adding the two PMMA layer thicknesses ($2L_D$).

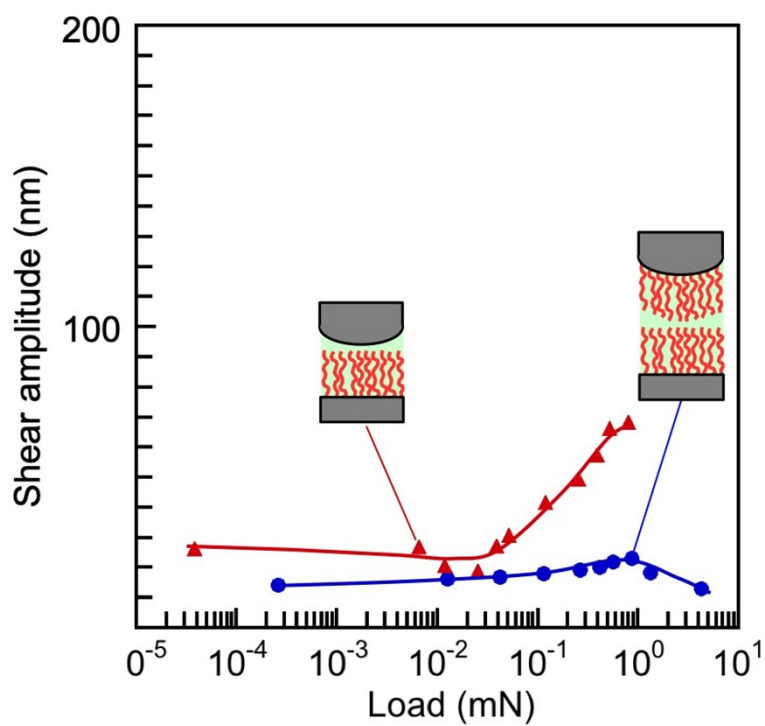


Fig. S2 Plots of shear amplitudes vs load (L) obtained for PMMA-PMMA brush layers (blue filled circle) as well as for PMMA brush-silica surface (red filled triangle).

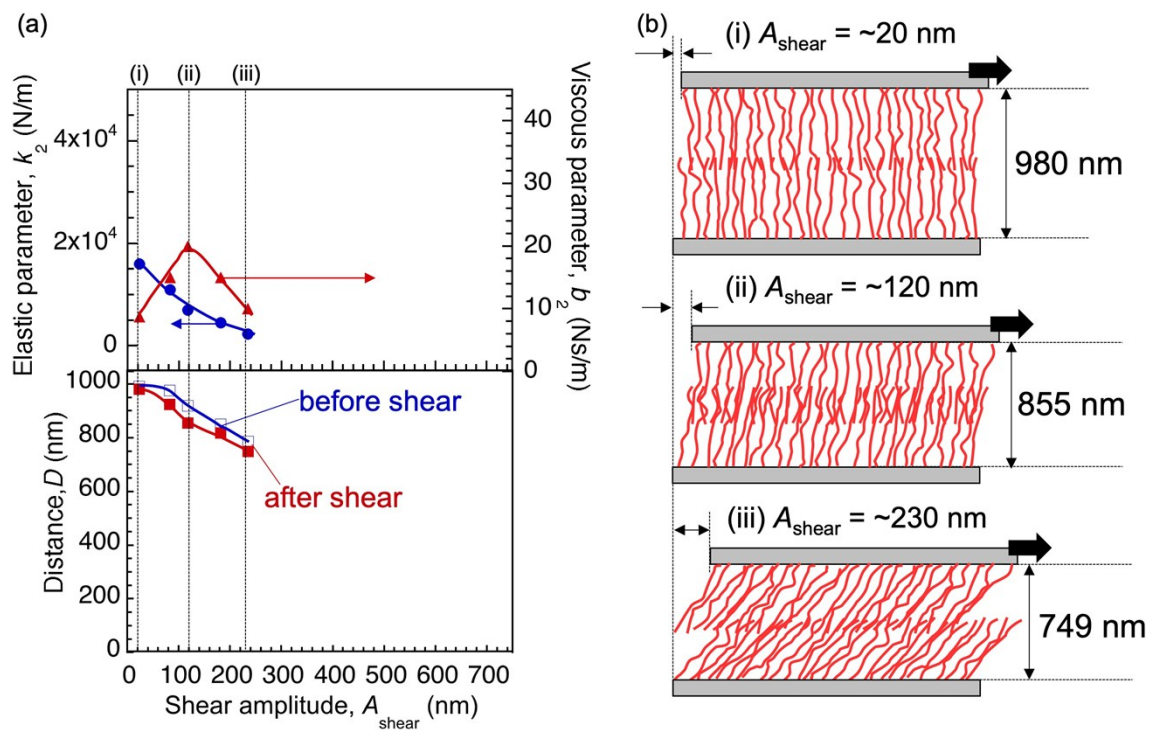


Fig. S3 (a) Plots of the elastic (k_2 , filled circle) and damping (b_2 , filled triangle) parameters (top), and distance (D) before (open square) and after (filled square) shear measurements (bottom) against the shear amplitude (A_{shear}) obtained at the applied loads of 0.85 mN. (b) Schematic illustration 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.

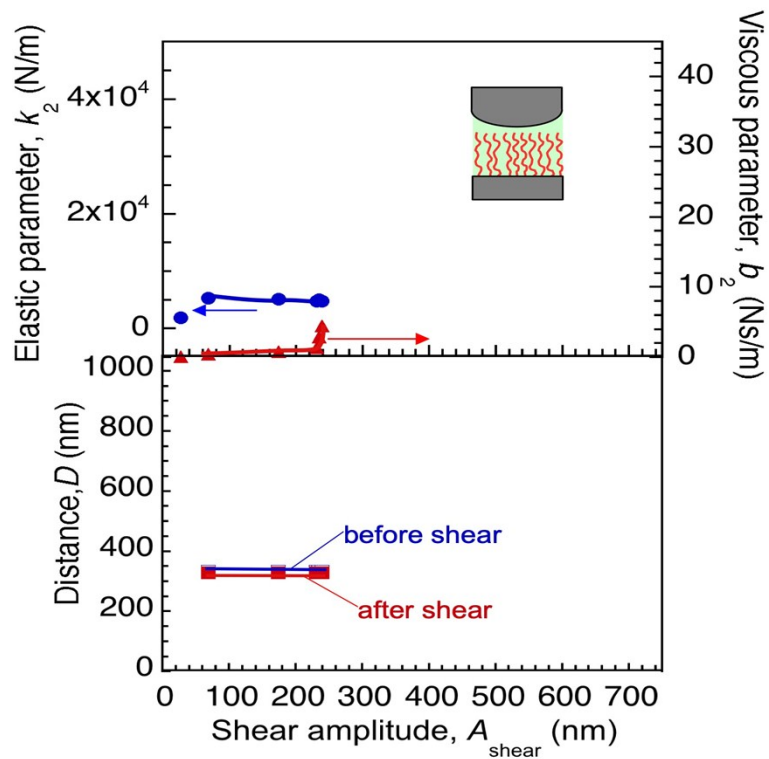


Fig. S4 Plots of the elastic (k_2 , filled circle) and damping (b_2 , filled triangle) parameters (top), and distance (D) before shear (open square) and after (filled square) shear measurements (bottom) against the shear amplitude (A_{shear}) obtained at the applied loads of 0.79 mN for PMMA brush-silica.

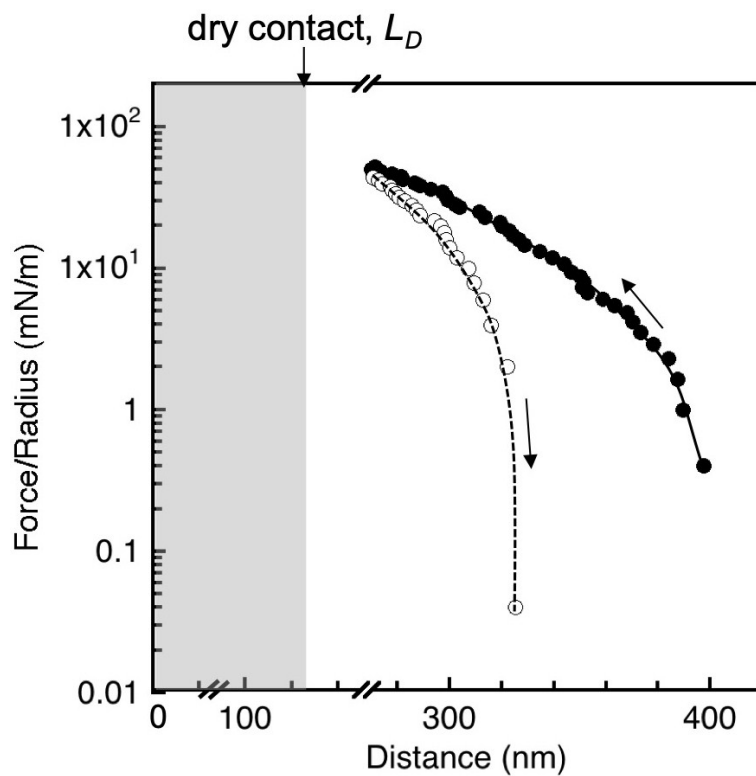


Fig. S5 Plots of force/radius (F/R) vs surface separation distance (D) between a PMMA brush layer and a silica surfaces. The force profile was obtained with driving speeds of 8 nm/s (filled circle for approach and open circle for retraction). The D was obtained by measuring relative distance (D') from the dry contact of PMMA, and by adding a PMMA layer thickness (L_D).