Supporting Information

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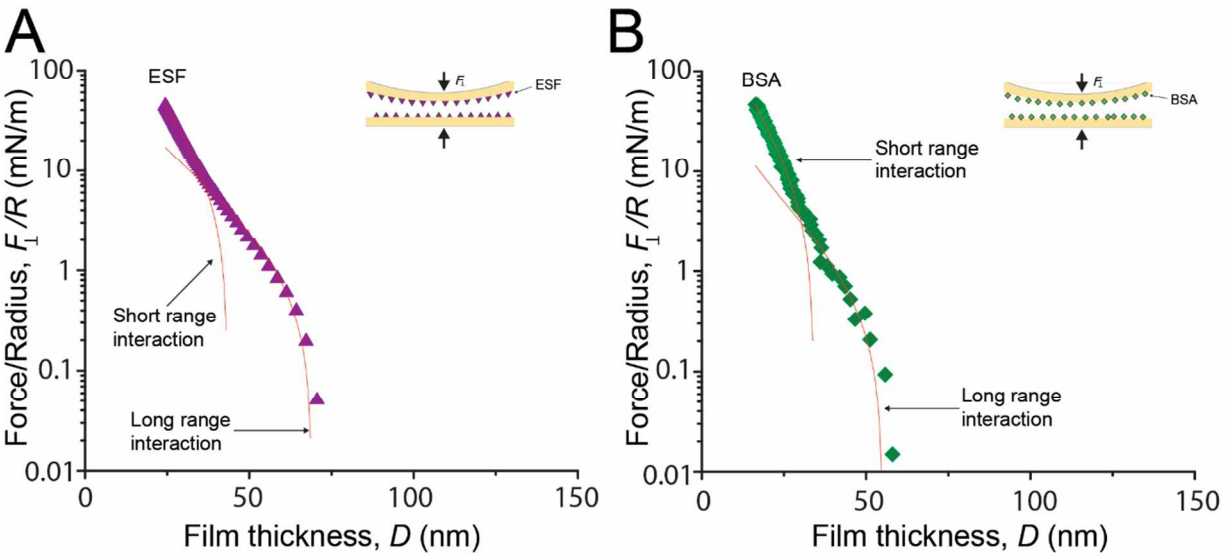

Figure S1. Semi-log plots of representative curves of the normal force $F_\perp$ normalized by the surface radius of curvature *R* as a function of the film thickness *D.* (A) ESF (purple triangles) and (B) BSA (dark green diamonds) adsorbed to mica (no Fn). Red lines indicate AdG fits to Eq. 1 from main text.

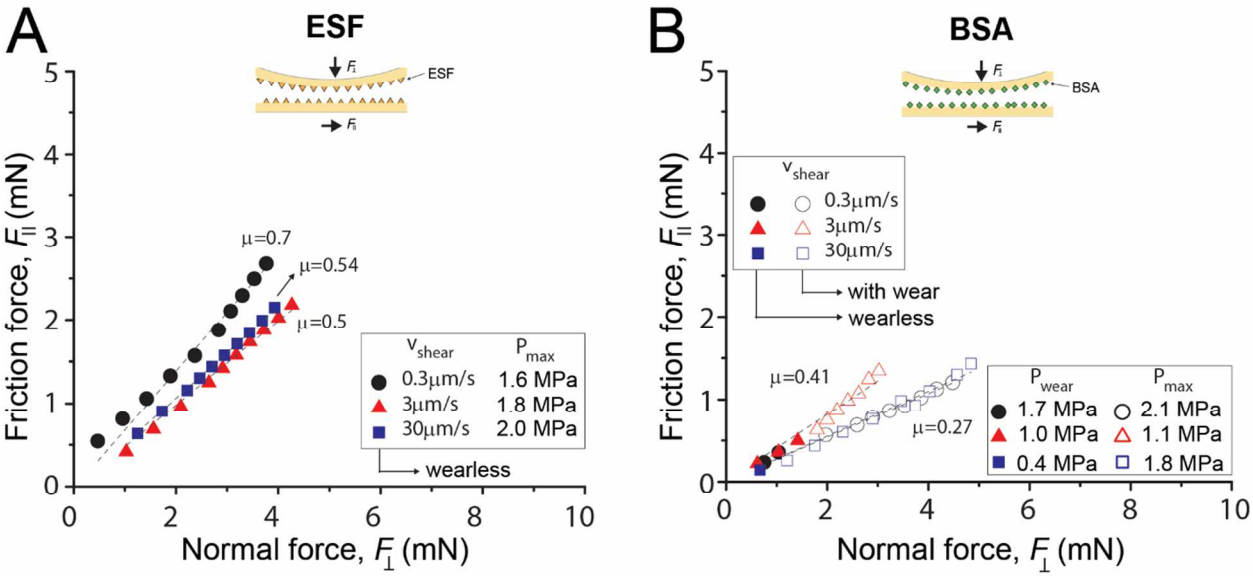

Figure S2. Friction force $F_\parallel$ as a function of normal force $F_\perp$ between (A) mica surfaces with adsorbed ESF and (B) with adsorbed BSA sheared in PBS. The surfaces were sheared at sliding velocities of V = 0.3 μm/s (black circles), V = 3 μm/s (red triangles), and V = 30 μm/s (blue squares). Open symbols for BSA indicate measurements after the surfaces became damaged.

Particulate formation and evolution

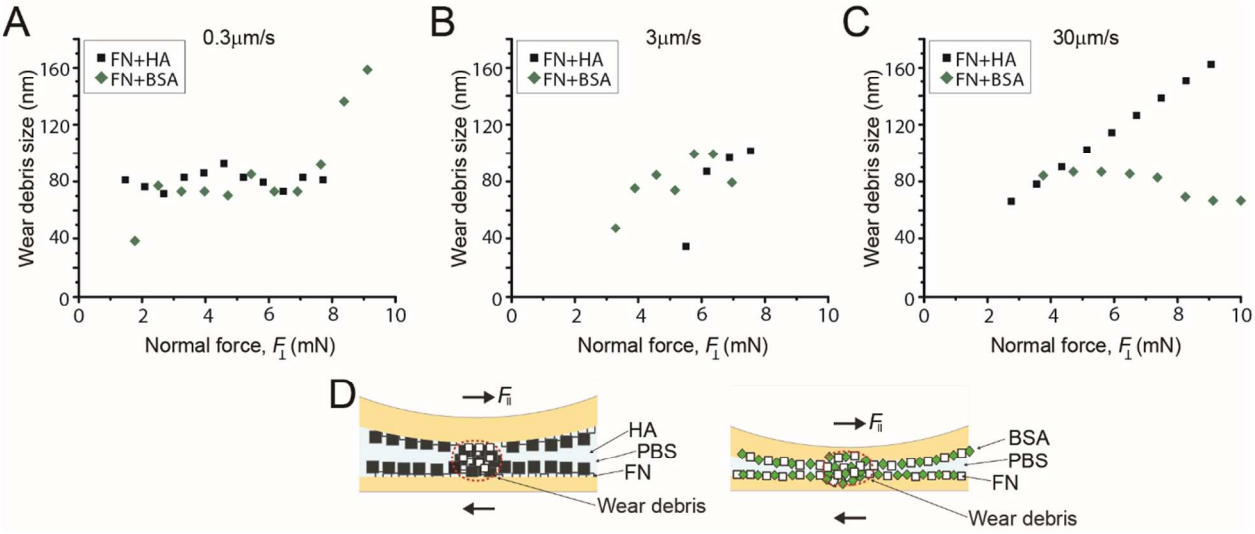

Figure S3. Average size of debris measured in the shearing junction as a function of normal force $F_\perp$ at sliding velocities of (A) V = 0.3 μm/s, (B) V = 3 μm/s, and (C) V = 30 μm/s for mica surfaces with adsorbed FN and HA (black squares), and with adsorbed FN and BSA (green diamonds). (D) Schematic representation of FN+HA+mica and FN+BSA+mica debris confined between surfaces. White squares indicate the presence of FN.