Supplementary materials

Indentation and detachment in adhesive contacts between soft elastomer and rigid indenter at simultaneous motion in normal and tangential direction: experiments and simulations

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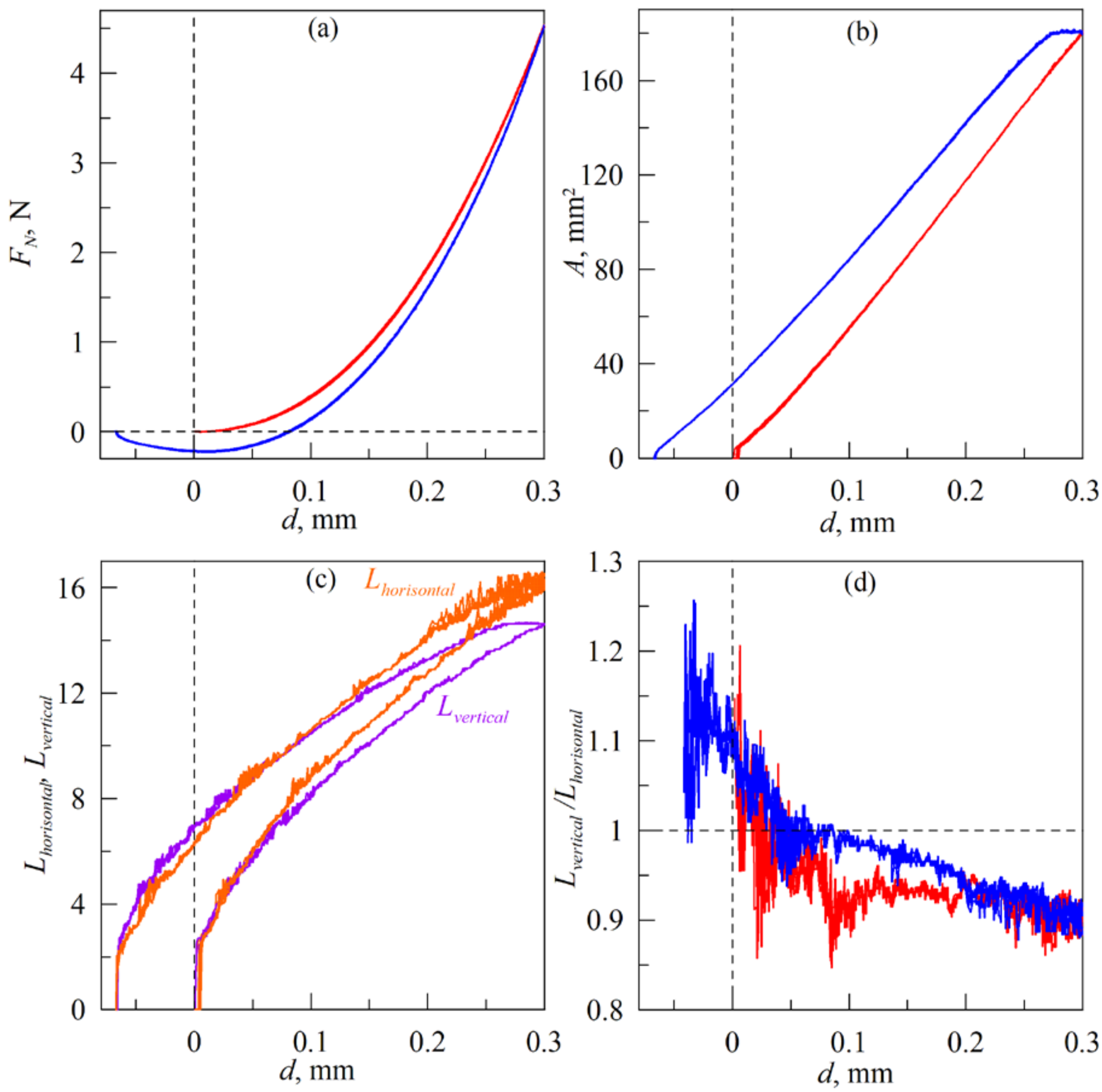

Figure S1. Dependencies of a normal force F_N (a), contact area A (b), size of the contact in vertical $L_{vertical}$ and horizontal $L_{horisontal}$ directions (c) and ratio $L_{vertical}$ /$L_{horisontal}$ (d) on indentation depth d. Radius of a steel indenter R = 100 mm, elastomer thickness (TARNAC CRG N3005) h = 5 mm. Supplementary Video S5 is also available (presented data is similar to dependencies obtained with indenter R = 30 mm that are shown in Figure 3 in main article).

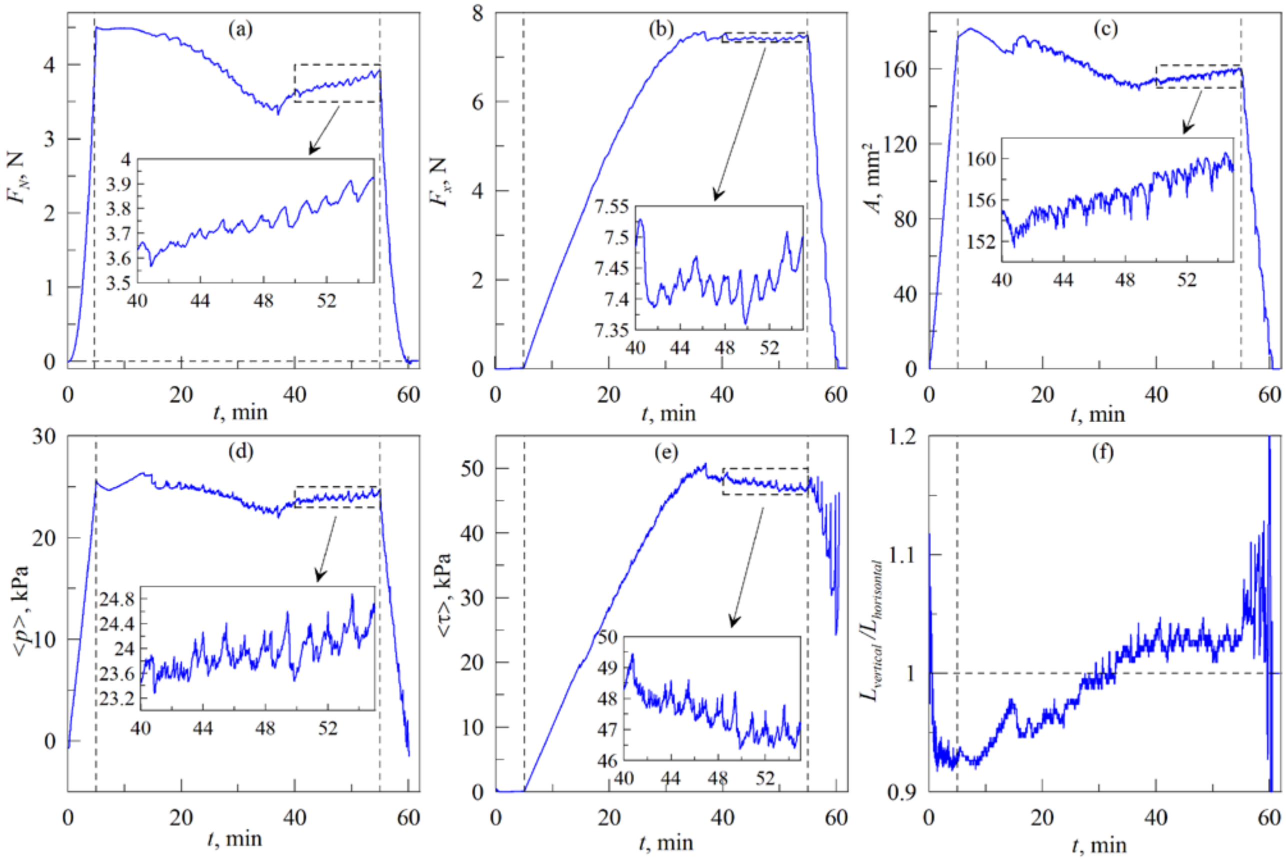

Figure S2. Time dependencies of the normal F_N (a) and tangential F_x (b) forces, contact area A (c), average contact pressure <p> (d), averaged tangential stresses <τ> (e) and ratio $L_{vertical}$ /$L_{horisontal}$ (f). Radius of the indenter $R = 100$ mm, elastomer thickness (TARNAC CRG N3005) h = 5 mm, indentation depth during tangential shift $d_{\max} = 0.3$ mm, velocity of the indenter motion v = 1 μm/s. Supplementary Video S6 is also available (presented data is similar to dependencies obtained with indenter $R = 30$ mm that are shown in Figure 4 in main article).

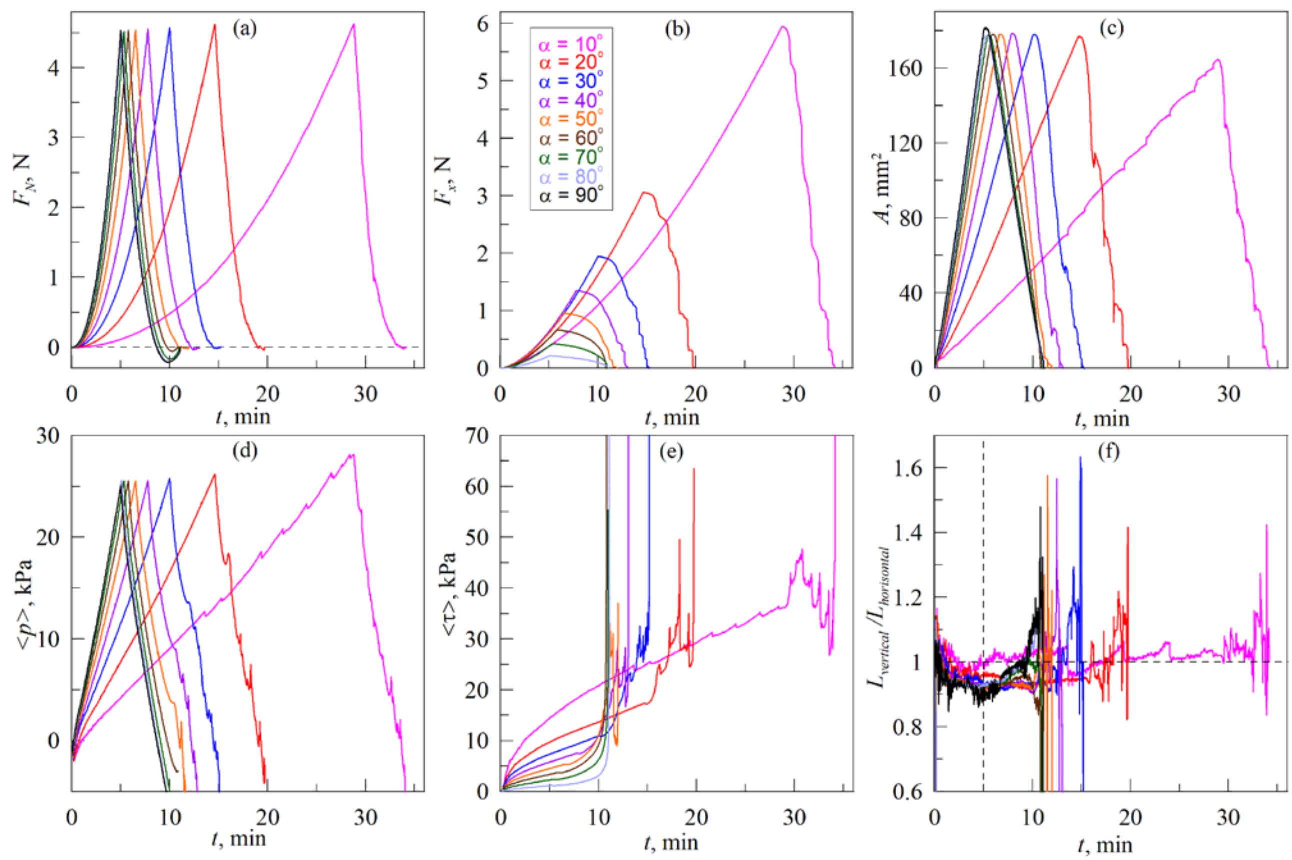

Figure S3. Time dependencies of the normal F_N (a) and tangential F_x (b) forces, contact areas A (c), average contact pressures $<p>$ (d), tangential stresses $<\tau>$ (e) and ratios $L_{vertical}/L_{horisontal}$ (f). Radius of the indenter $R = 100$ mm, elastomer thickness (TARNAC CRG N3005) h = 5 mm, maximal indentation depth $d_{\max} = 0.3$ mm, in the experiment according to scenario (A). Supplementary Video S7 is also available (presented data is similar to dependencies obtained with indenter R = 30 mm that are shown in Figure 5 in main article).

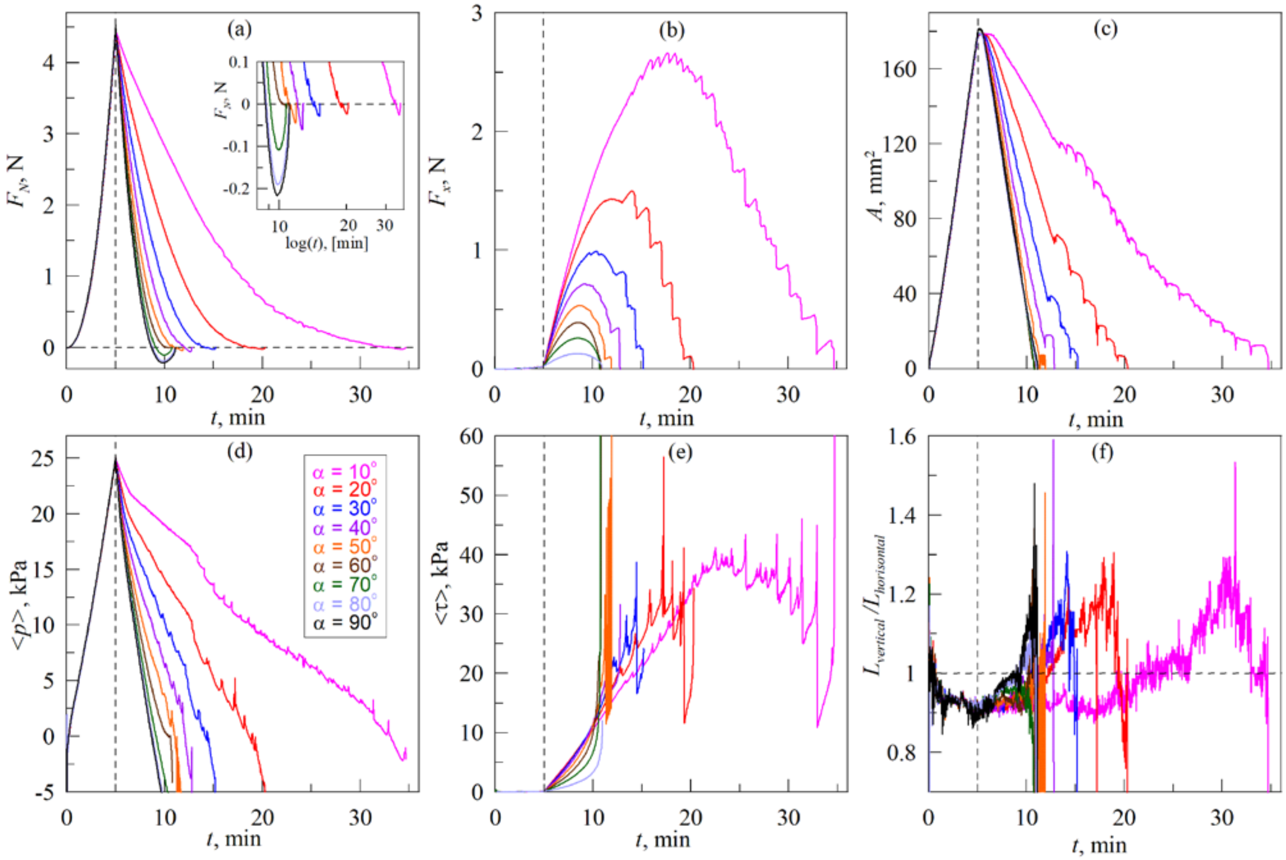

Figure S4. Time dependencies of the normal F_N (a) and tangential F_x (b) forces, contact areas A (c), average contact pressures <p> (d), tangential stresses τ (e) and ratios $L_{vertical}$ /$L_{horisontal}$ (f). Radius of the indenter R = 100 mm, elastomer thickness (TARNAC CRG N3005) h = 5 mm, maximal indentation depth $d_{\max} = 0.3$ mm, in the experiment according to scenario (B). Supplementary Video S8 is also available (presented data is similar to dependencies obtained with indenter $R = 30$ mm that are shown in Figure 6 in main article).