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Supporting Information

Friction of zwitterionic hydrogel by dynamic polymer adsorption

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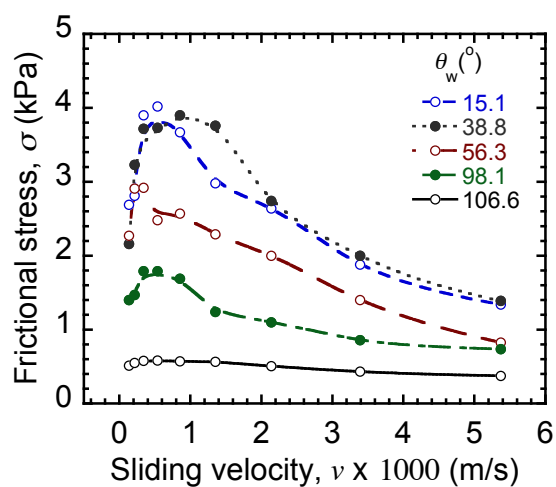


Figure S1. Frictional stress σ vs. sliding velocity v for PCDME hydrogel sliding over glass substrates with varied wettability. Contact angles of glass substrates to water θ_w are shown in figure. Hydrogel: PCDME (S-16.0). Substrates: G1 and G3 series, Normal pressure: 2.75 kPa.

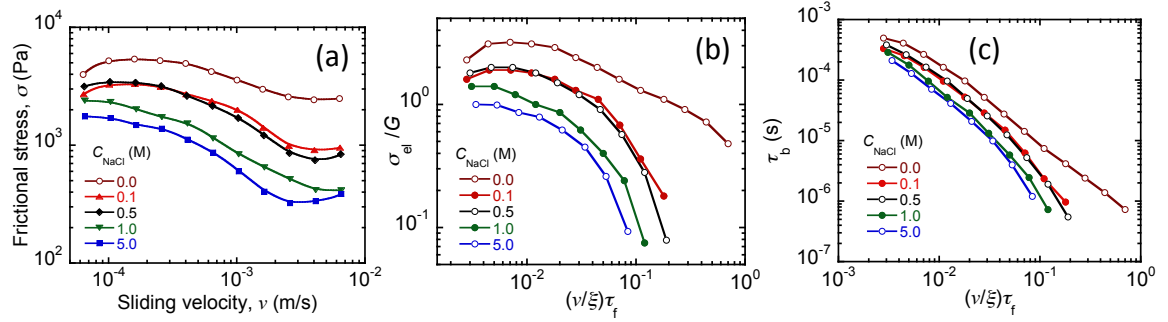


Figure S2. Dependence of frictional behavior of PCDME hydrogel on the ionic strength of the medium. (a) Overall frictional stress σ vs. sliding velocity v , (b) Ratio of elastic component of frictional stress σ_{el} to shear modulus G vs. Weissenberg number $W_e=(v/\xi)\tau_f$, (c) Adsorption time τ_b vs. Weissenberg number. The adsorption time τ_b was estimated from the results of Figure S2a using Equation (15). Concentrations of NaCl are shown in figure. Hydrogel: PCDME with swelling degree $q=20.1$. Substrates: G2-1, Normal pressure: 5.5 kPa. Figure S2a is cited from reference 23.

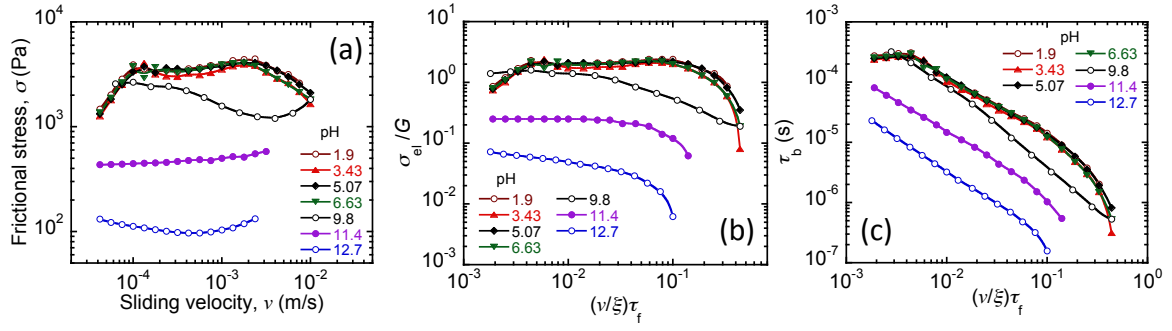


Figure S3. Dependence of frictional behavior of PCDME hydrogel on pH of the medium. (a) Overall frictional stress σ vs. sliding velocity v , (b) Ratio of elastic component of frictional stress σ_{el} to shear modulus G vs. Weissenberg number $We=(v/\xi)\tau_f$, (c) Adsorption time τ_b vs. Weissenberg number. The adsorption time τ_b was estimated from the results of Figure S3a using Equation (15). pH of the medium are shown in figure. Hydrogel: PCDME with swelling degree $q=20.1$. Substrates: G2-1, Normal pressure: 5.5 kPa. Figure S3a is cited from reference 23.