Electronic Supplementary Material (ESI) for Soft Matter.

Supporting Information

Chondroitin Sulfate Hydrogels Based on Electrostatic Interaction with enhanced adhesive property: Exploring the Bulk and Interfacial Contributions

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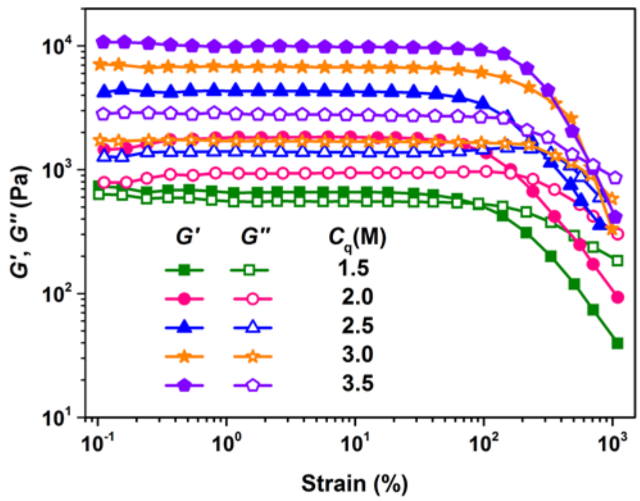

Figure S1. Changes of shear moduli (G', G'') of gels with different C_q as a function of strain at fixed frequency = 0.1 Hz and room temperature.

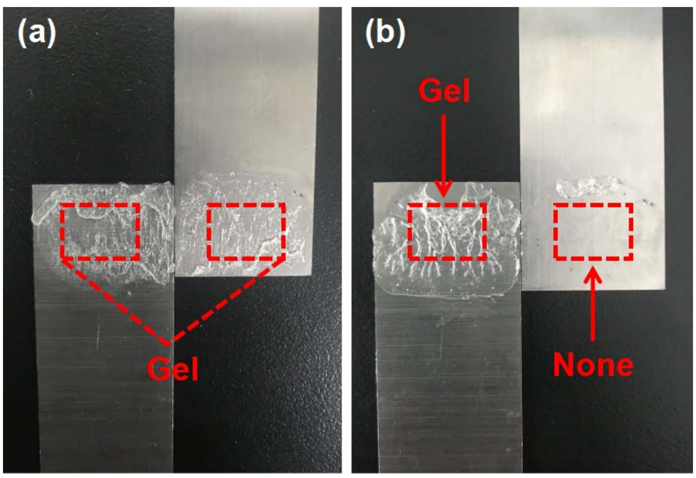

Figure S2. Cohesive failure for 1.5 M gel and interfacial failure for 2.5 M gel after peeling off.

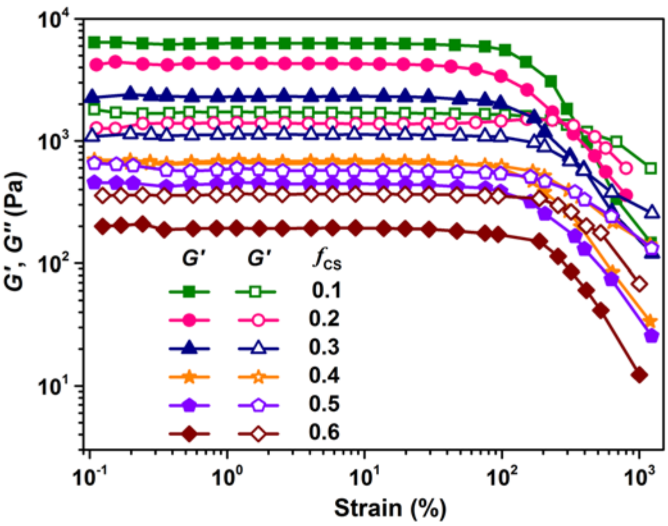

Figure S3. Changes of shear moduli (G', G'') of gels with different f_{CS} as a function of strain at fixed frequency = 0.1 Hz and room temperature.

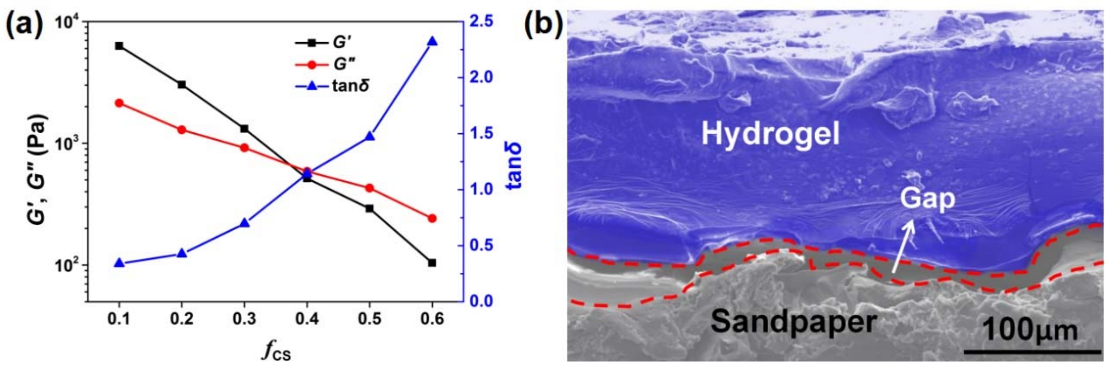

Figure S4. (a) G', G'' and tan δ for gels with different f_{CS} at 0.5 Hz. (b) Cross-sectional scanning electron microscope (SEM) image of DC-2.5-0.1 sample placed on the top of 400-grit sandpaper for 24 h.

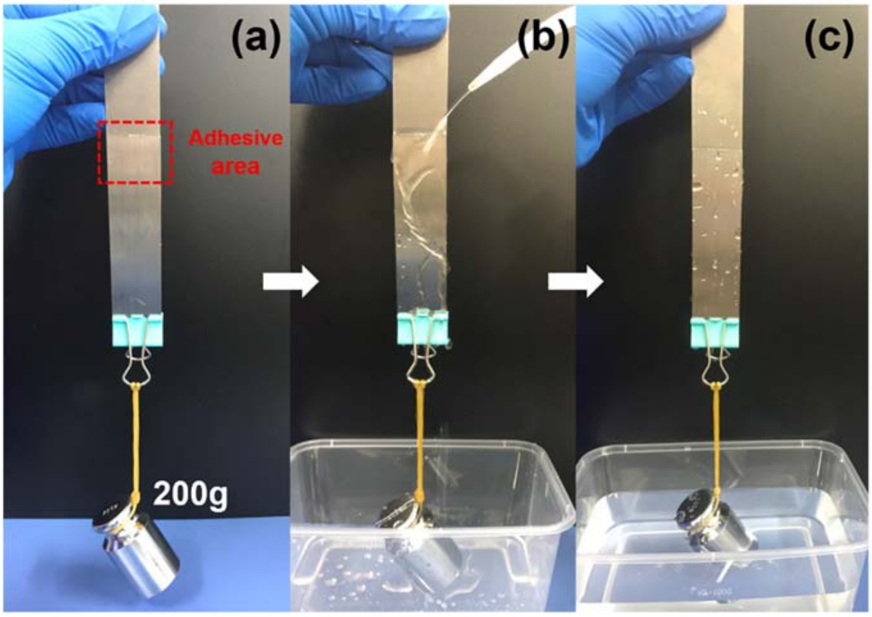

Figure S5. The stainless steel plates bonded by 0.1 g of hydrogel can still bear the weight of 200 g after washing with 5% H_2O_2 (to simulate long-term atmospheric oxidation) for 5 min.

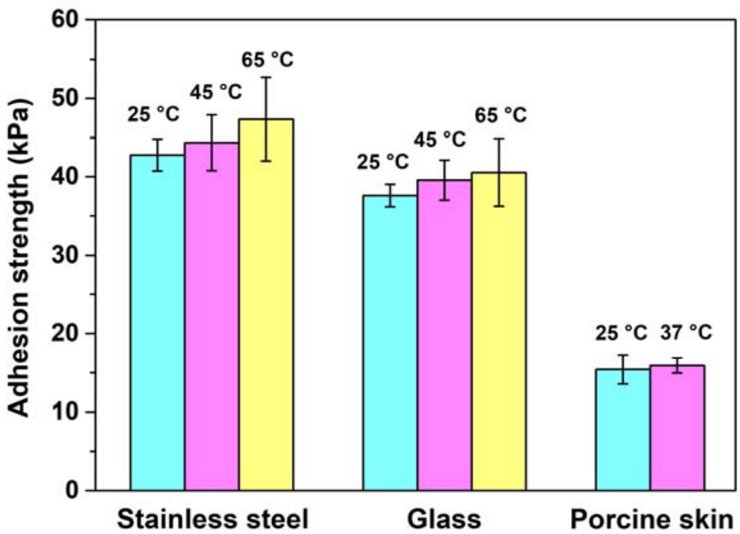

Figure S6. Adhesion strength of gels on stainless steel, glass and porcine skin at different temperatures.

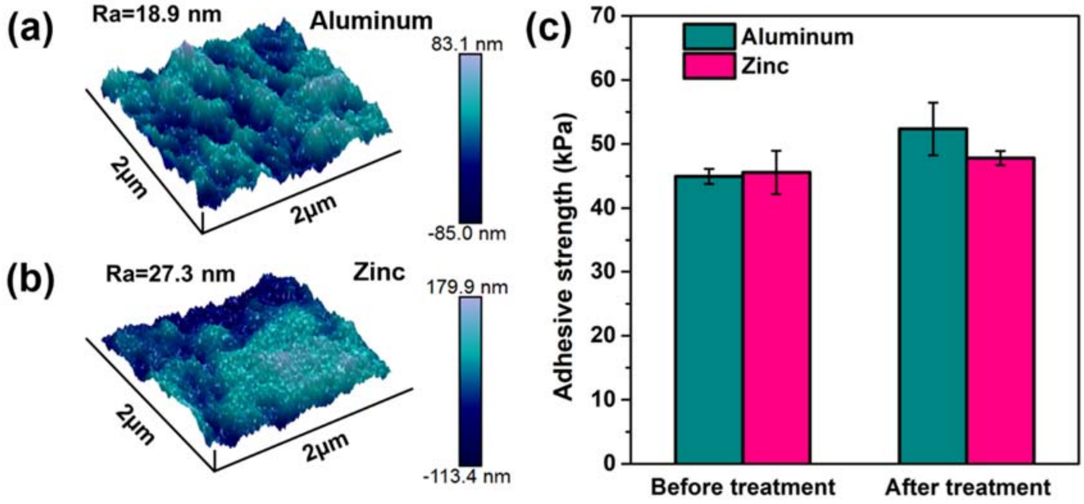

Figure S7. Surface roughness of aluminum (a) and zinc plates (b) measured by AFM. (c) The adhesion strength of the gel to the zinc and the aluminum plates before and after the 1500 grit sandpaper treatment.

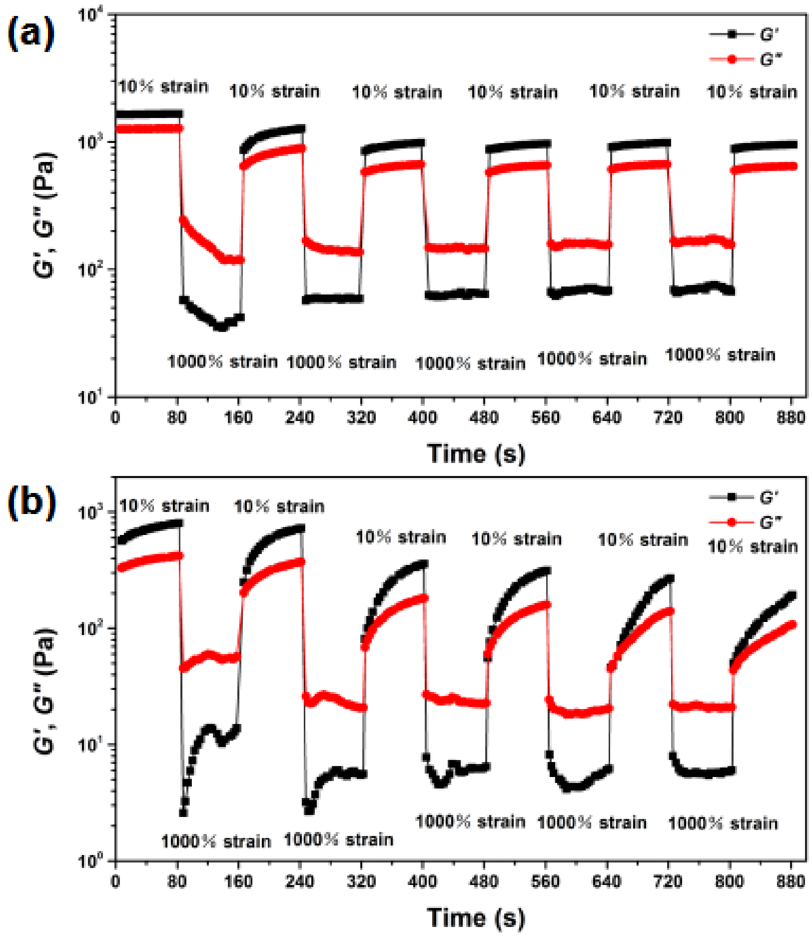

Figure S8. G' and G'' values of the DC-2.5-0.3 (a) and DC-2.5-0.4 (b) at alternate step strain at 25 °C, respectively (the frequency was fixed at 1 Hz).

Table S1. Surface energy of the various adhered substrates at room temperature[1].

Substrates	iron	stainless steel	brass	glass	aluminum (Al_2O_3)	zinc (ZnO)	PP	silicone rubber	PTFE
Surface energy (mJ/m^2)	115	100	95	89	78 (108)	73 (102)	30	23	19

1. S. J. Huang, H. M. Pan, J. Liu, *Polymer Materials Science & Engineering*, 1987 (01): 36-44.