

Supporting Information

Multiple hydrogen bonds endow single-component solvent-free adhesives with high flexibility and self-healing properties

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Characterization

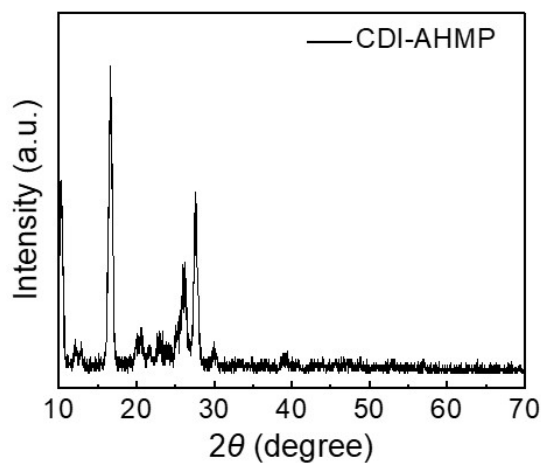


Fig. S1 PXRD patterns of the CDI-AHMP.



Fig. S2 Macroscopic photograph of USSP₄₀₀ adhesive obtained in small batches.

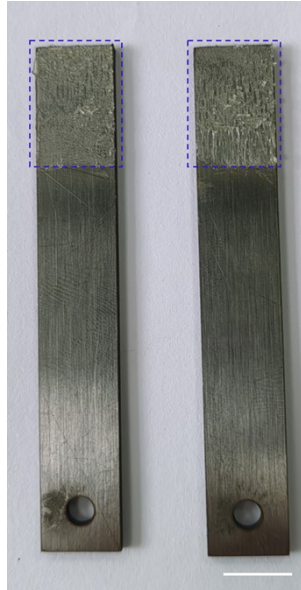


Fig. S3 The distribution image of USSP₄₀₀ adhesive on SS substrate after detachment (scale bar, 1 cm).

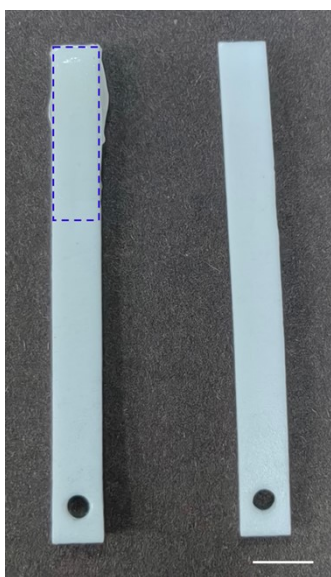


Fig. S4 The distribution image of USSP₄₀₀ adhesive on PTFE substrate after detachment (scale bar, 1 cm).

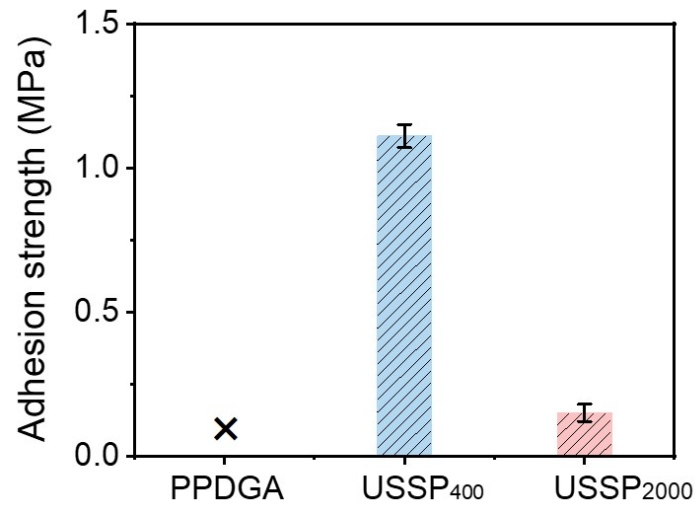


Fig. S5 Adhesion strengths of PPDGA, USSP₄₀₀, USSP₂₀₀₀ adhesives on SS substrates.

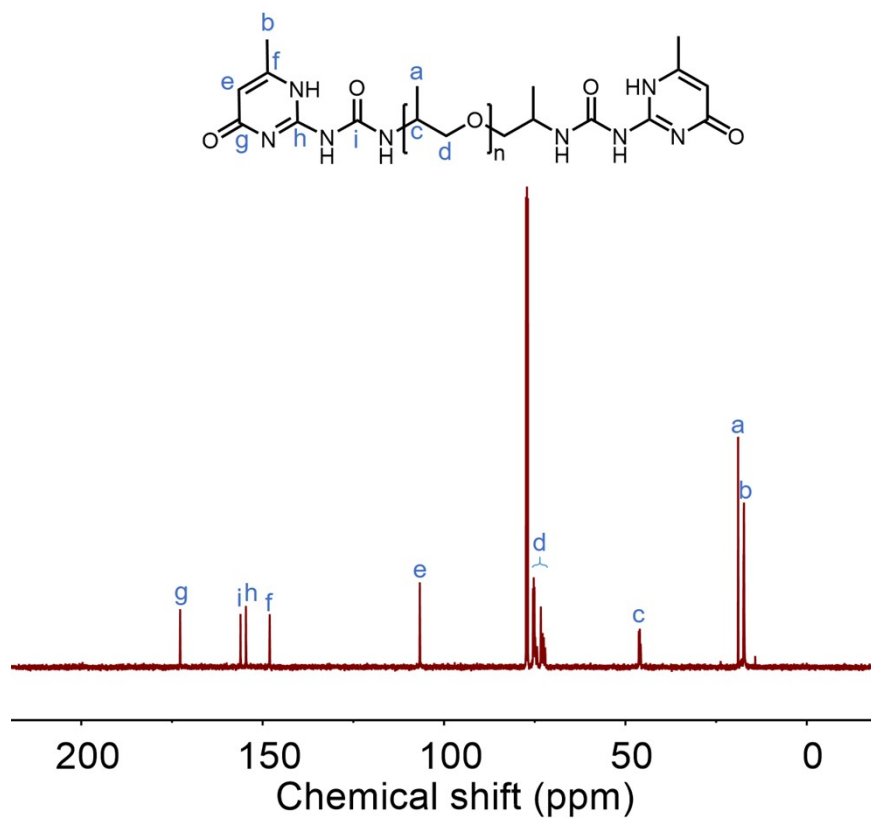


Fig. S6 ¹³C NMR spectra of USSP₂₃₀ in CDCl₃ (500 MHz, CDCl₃, 0.1 mg/ml).

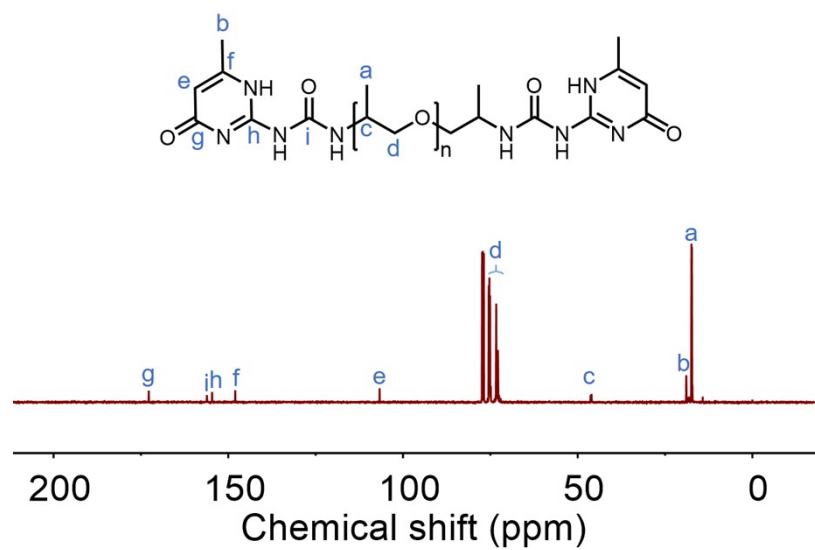


Fig. S7 ¹³C NMR spectra of USSP₂₀₀₀ in CDCl₃ (500 MHz, CDCl₃, 0.1 mg/ml).

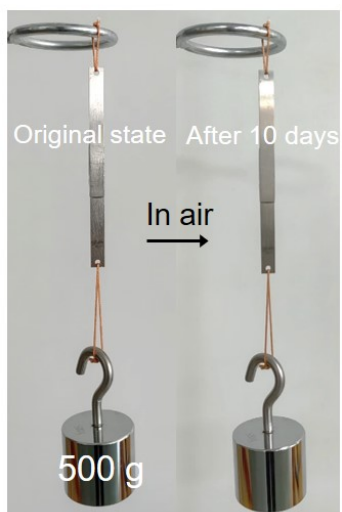


Fig. S8 Photograph of the USSP₄₀₀ adhesive in air for 10 days.

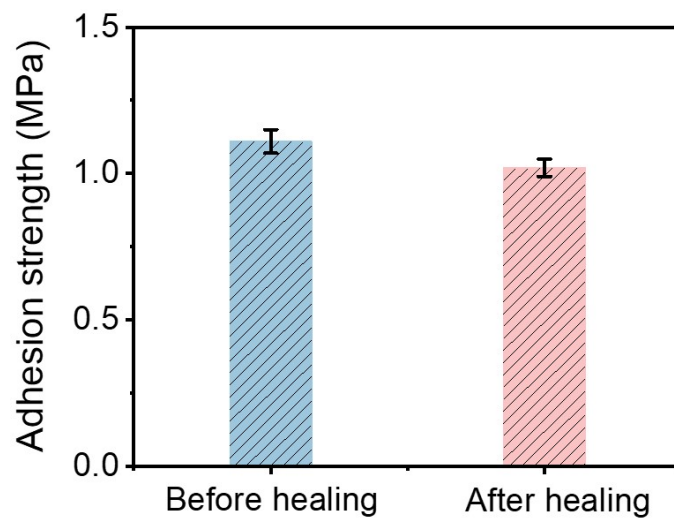


Fig. S9 Adhesion strength of USSP₄₀₀ adhesive on SS substrates before and after healing.

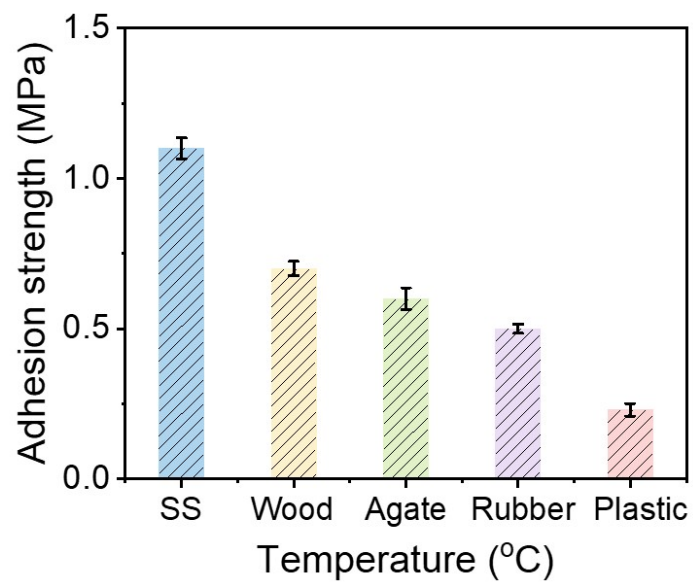


Fig. S10 Adhesion strength of USSP₄₀₀ adhesive on various substrates.

Table S1. Performance comparison of the representative single-component or solvent-free adhesives.

Sample	Composition	Type	Adhesion strength (kPa)	Temperature (°C)	Reusability	Flexibility	Moldability	Self-healing	Ref.
USSP ₄₀₀	Single	Solvent-free	500 1100	-40 60	15	YES	YES	YES	This work
EP-1-BMZ	Single	Solvent-assisted	10620	RT	N/A	N/A	N/A	N/A	1
BTA-C7	Single	Solvent-assisted	5180	RT	N/A	N/A	N/A	N/A	2
PSFA	Single	Solvent-free	2250	RT	2	N/A	N/A	N/A	3
PIL-2O-TFSI	Single	Solvent-free	1650	RT	N/A	YES	N/A	YES	4
AZO-P1	Single	Solvent-free	1340	RT 50	7	N/A	N/A	N/A	5
PCAVTri-TFS	Single	Solvent-assisted	1230	RT	N/A	YES	N/A	N/A	6
HA-3APBA	Single	Solvent-assisted	65.7	RT	15	YES	N/A	YES	7
DESPs	Dual	Solvent-free	6570 1300	-80 80	N/A	N/A	N/A	N/A	8
Poly(TtA DO-TA)-2	Dual	Solvent-free	4550	RT	10	N/A	N/A	YES	9
SSFP	Dual	Solvent-free	2741 3736	-196 RT	8	N/A	N/A	N/A	10
DPETI	Multiple	Solvent-free	1840 2200	-196 RT	10	N/A	N/A	YES	11
PNSA	Dual	Solvent-free	850 1840	-196 80	10	N/A	N/A	N/A	12
CA/PEG ₂₀₀₀	Dual	Solvent-free	850 530	-196 RT	10	N/A	N/A	N/A	13
TADP30	Dual	Solvent-free	360	25 50	10	N/A	N/A	YES	14
P-PA55-PW30	Multiple	Solvent-free	210	25	N/A	N/A	N/A	YES	15
LTFe	Multiple	Solvent-free	20	25 -196	100	YES	YES	YES	16

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