Supporting Information

Self-healing, Highly Elastic and Amphiphilic Silicone-based Polyurethane for Antifouling Coatings

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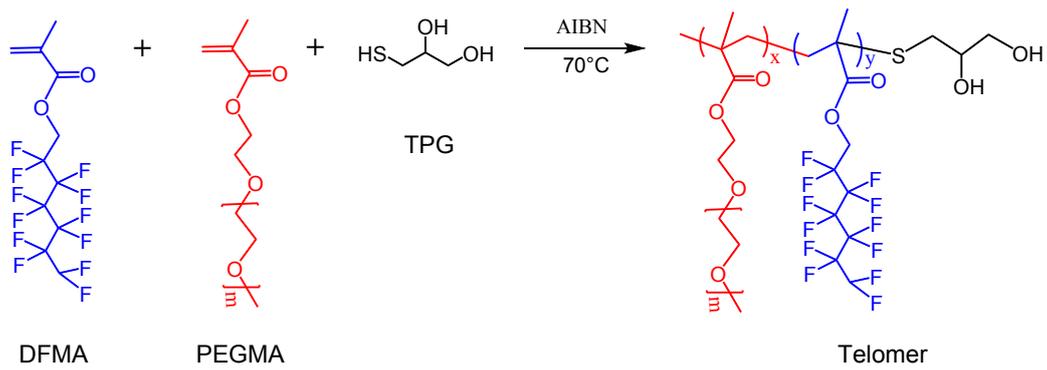
Fig. S1 Synthetic route of telomer.
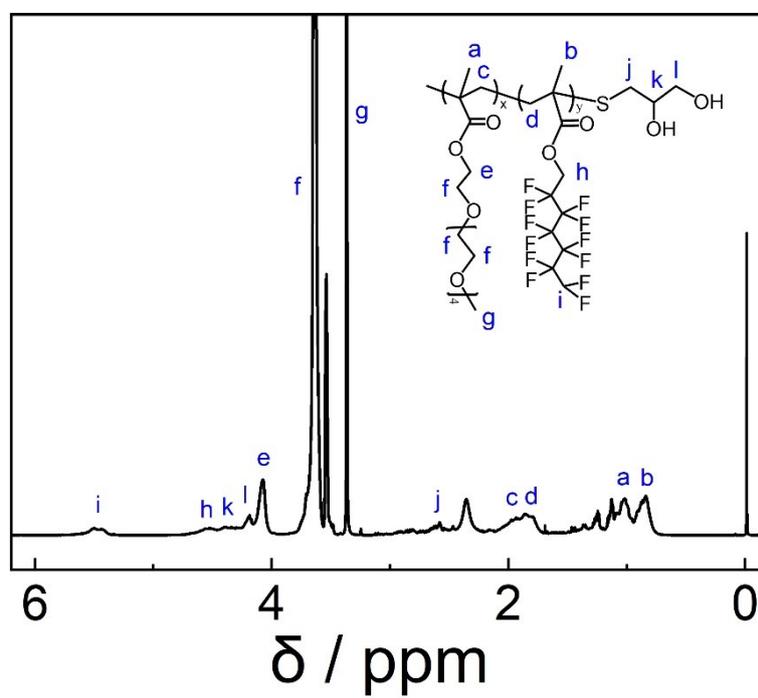
Fig. S2 ^{1}H-NMR spectrum of telomer.
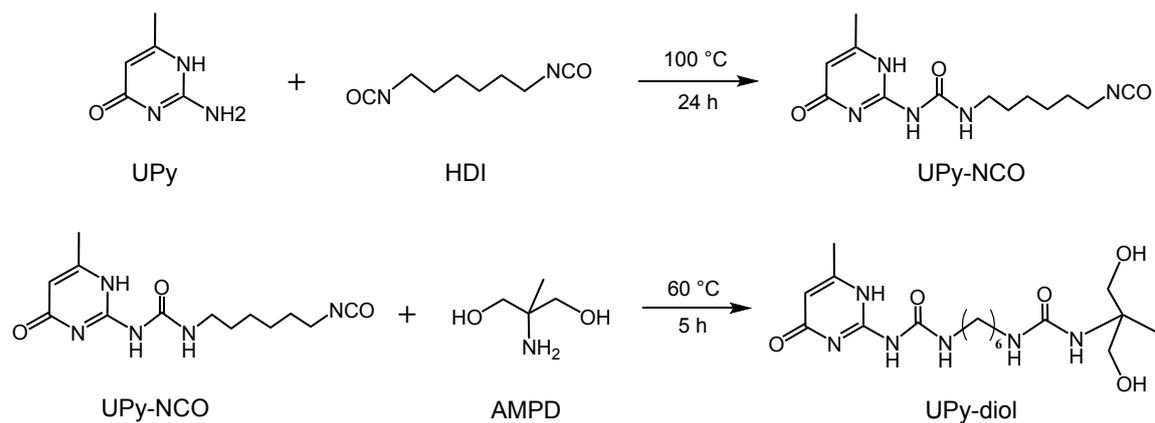
Fig. S3 Synthetic routes of UPy-NCO and UPy-diol.
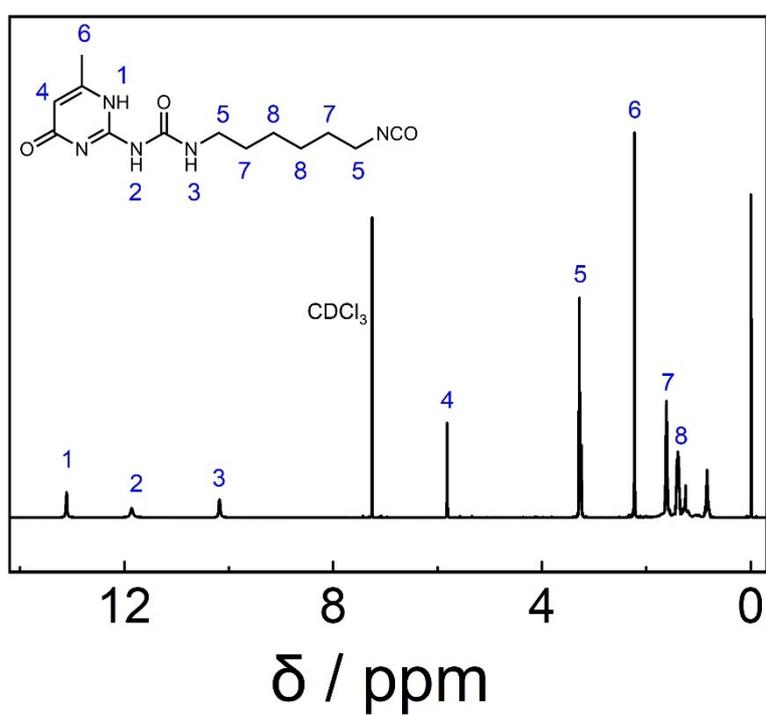
Fig. S4 ^{1}H-NMR spectrum of UPy-NCO.
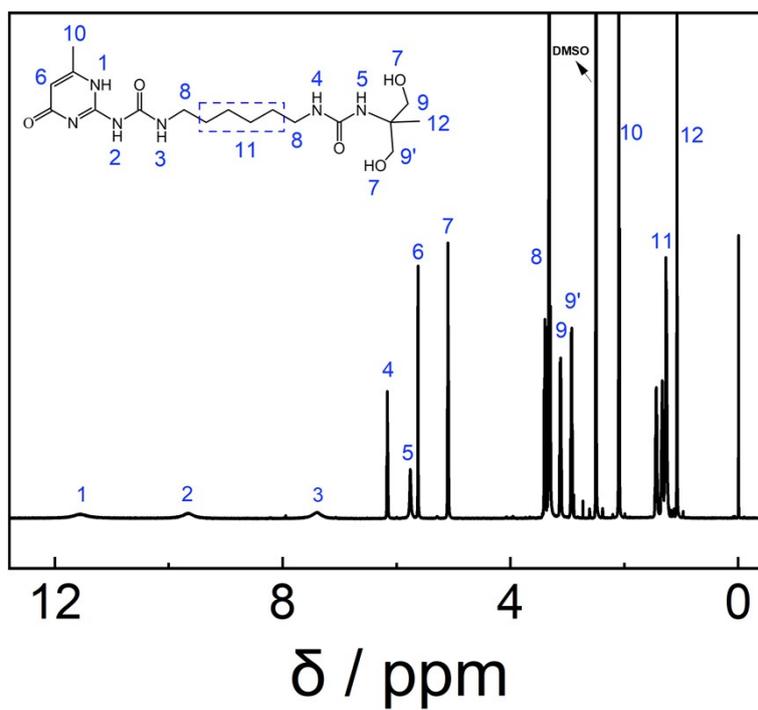
Fig. S5 ^{1}H-NMR spectrum of UPy-diol.
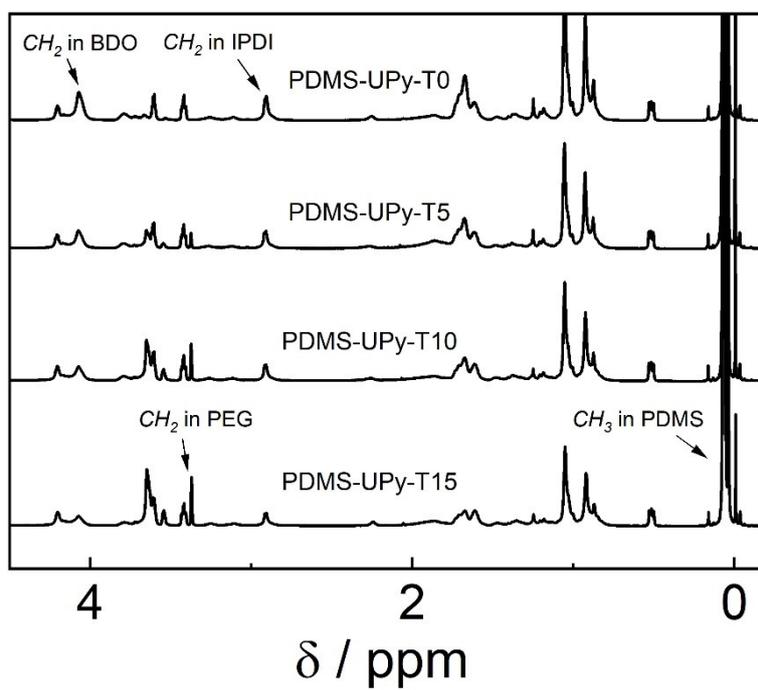
Fig. S6 ^{1}H NMR spectra of PDMS-UPy-Tx polymer.
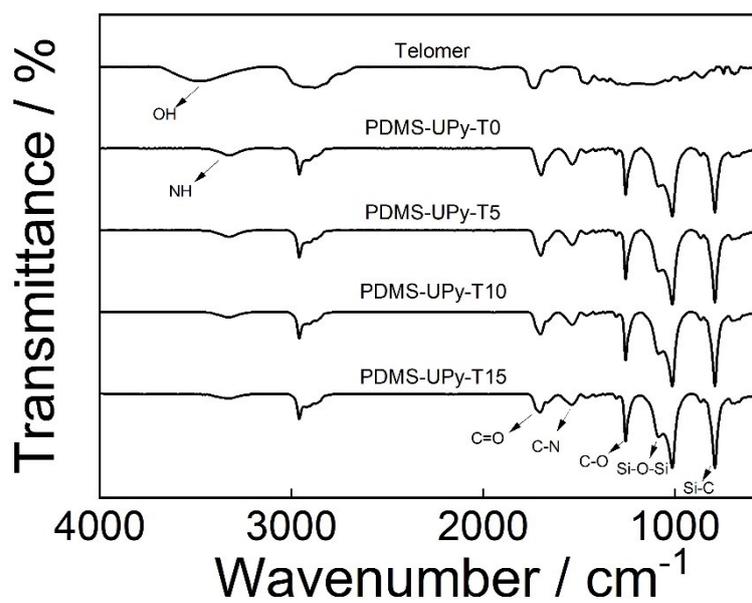
Fig. S7 FTIR spectra of telomer and PDMS-UPy-Tx polymer.
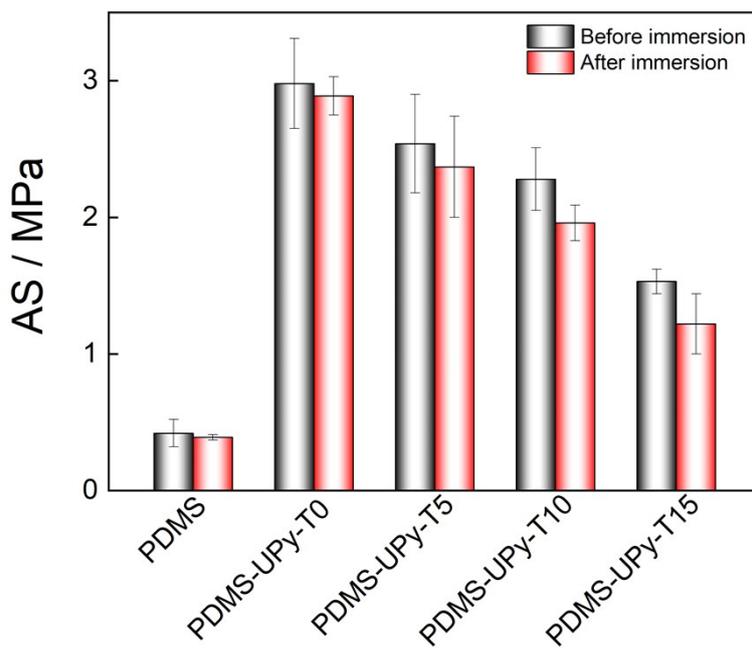
Fig. S8 Adhesion strength (AS) of PDMS-UPy-Tx on fiberglass epoxy resin panel before and

after immersion in ASW for 24 h.

Table S1 Toughness of PDMS-UPy-Tx.

Sample	Toughness (MJ·m^{-3})
PDMS	0.04 ± 0.01
PDMS-UPy-T0	17.10 ± 1.19
PDMS-UPy-T5	15.36 ± 0.83
PDMS-UPy-T10	11.18 ± 0.87
PDMS-UPy-T15	2.86 ± 0.09
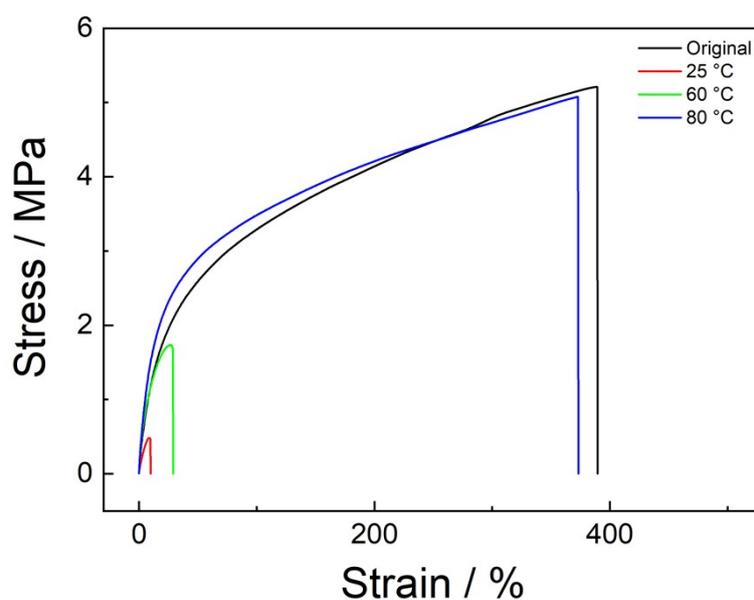
Fig. S9 Stress-strain curves of PDMS-UPy-T0 healed at different temperatures for 48 h.

Table S2 Mechanical properties and healing efficiency of PDMS-UPy-T0 healed at different temperatures for 48 h.

PDMS-UPy-T0	Tensile strength (MPa)	Elongation (%)	Elastic modulus (MPa)	Healing efficiency (%)
Original	5.34±0.13	394±15	15.77±0.04	—
25 °C	0.40±0.08	10±3	8.80±0.53	7.5
60 °C	1.58±0.11	28±11	15.49±0.20	29.5
80 °C	5.20±0.21	373±28	16.46±0.83	97.4
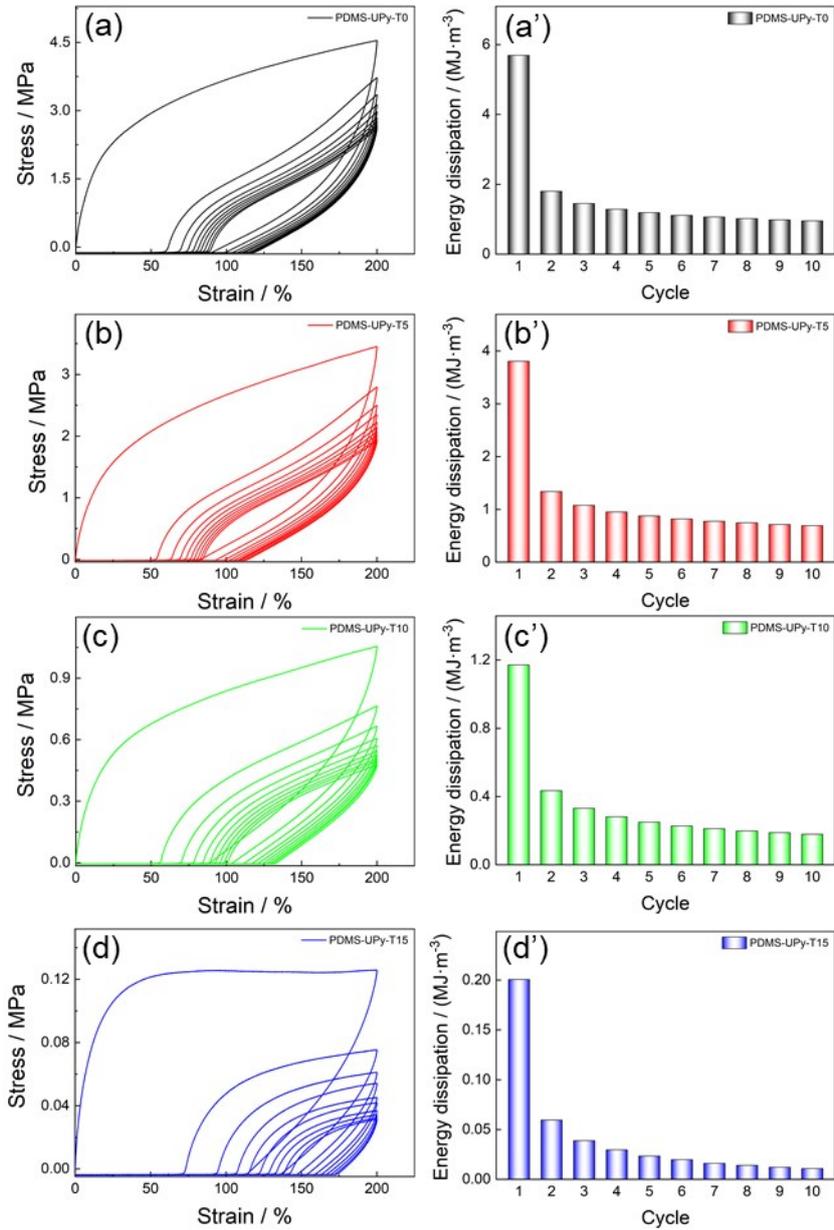
Fig. S10 Cyclic tensile test and corresponding energy dissipation of PDMS-UPy-T0 (a, a'),

PDMS-UPy-T5 (b ,b'), PDMS-UPy-T10 (d, d') and PDMS-UPy-T15 (e, e'). The samples

were loaded and unloaded for 10 successive cycles.
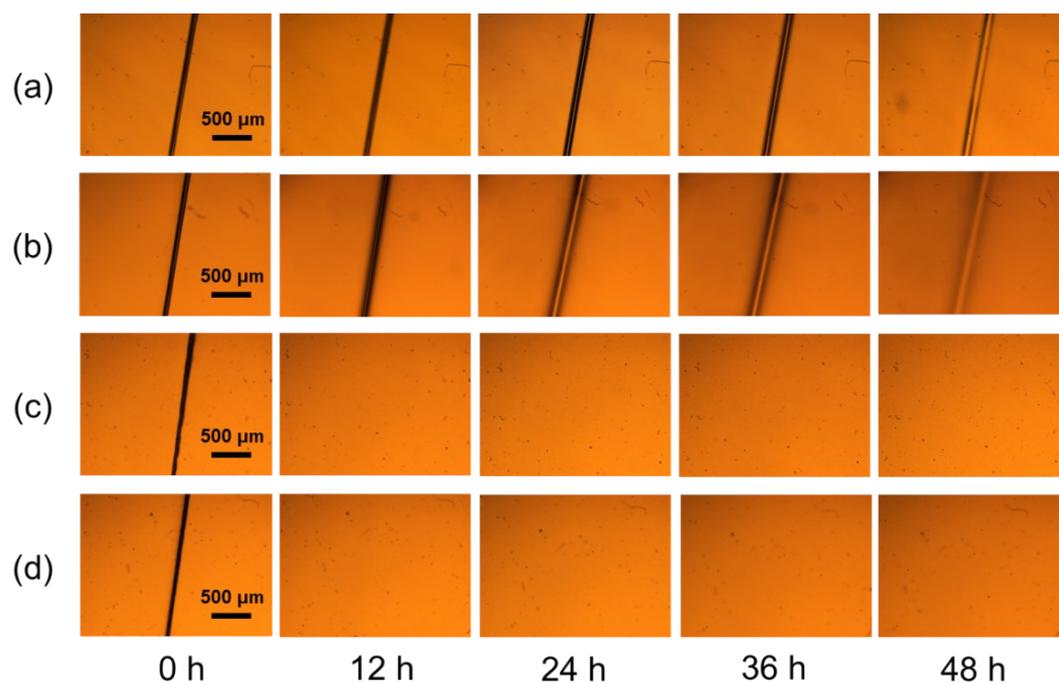
Fig. S11 Self-healing process of (a) PDMS-UPy-T0, (b) PDMS-UPy-T5, (c) PDMS-UPy-T10, and (d) PDMS-UPy-T15 at 25 °C in air.
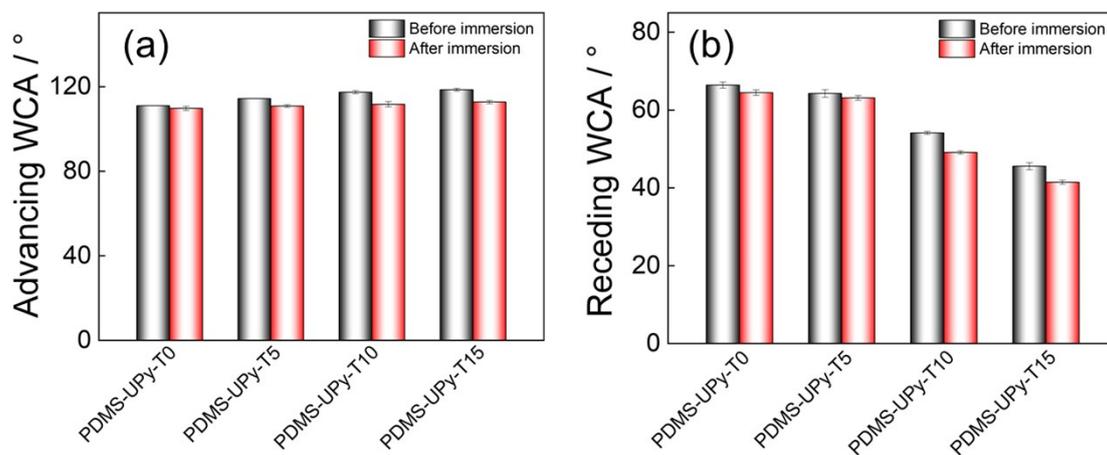
Fig. S12 (a) Advancing WCA and (b) receding WCA of PDMS-UPy-Tx coatings before and after immersion in ASW.
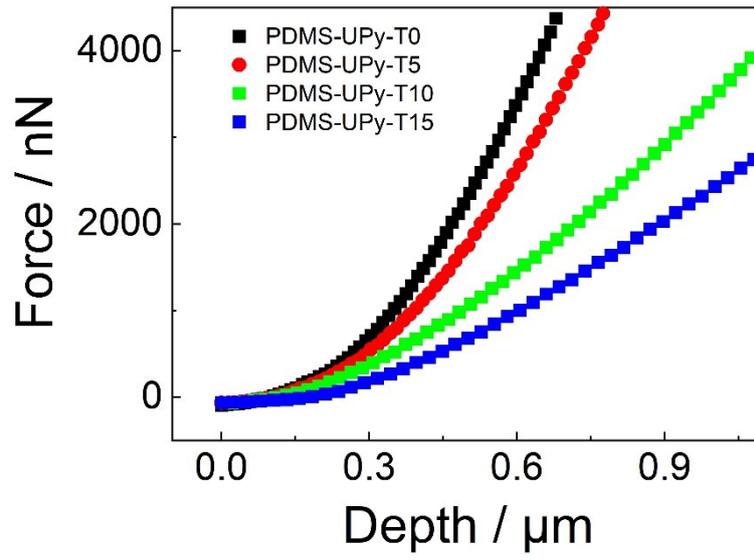
Fig. S13 Force-depth curves of PDMS-UPy-Tx coatings.