

Supplementary Information

Bringing recyclability to anti-adhesion materials via designing physically crosslinked polyurethane

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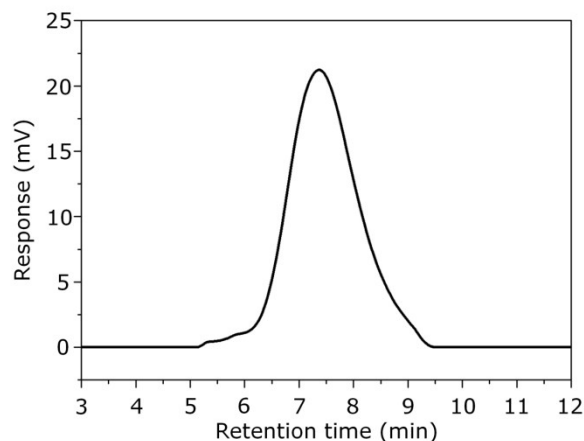


Fig. S1 SEC trace of the polyurethane.

The molecular weight was characterized via size-exclusion chromatography. The number-average molecular weight M_n of PCPN was found to be ~ 29.41 kg/mol, and the polydispersity index M_w/M_n was 1.94.

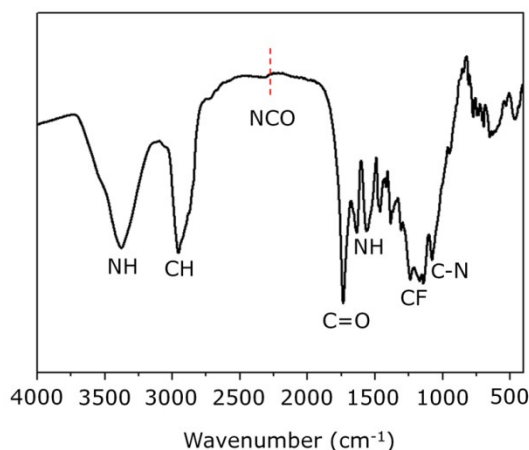


Fig. S2 FTIR spectrum of the PCPN.

The peaks corresponding to various units were observed in the FTIR spectrum. Notably, the characteristic peak corresponding to the isocyanate groups (~ 2265 cm⁻¹) disappeared from the spectrum, thus indicating that all of the isocyanate groups from IPDI were consumed during the polycondensation reaction.

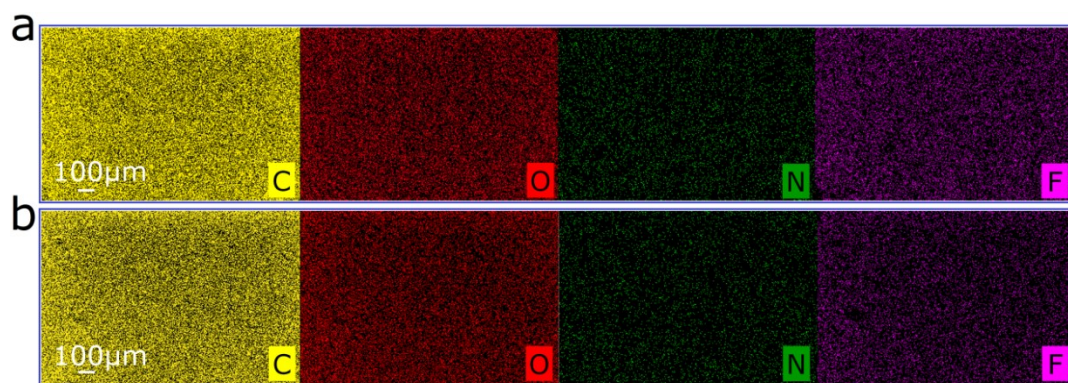


Fig. S3 EDX mapping of the (a) top and (b) opposite surfaces of the polyurethane film.



Fig. S4 Images of droplets recorded at various times after their application onto the film

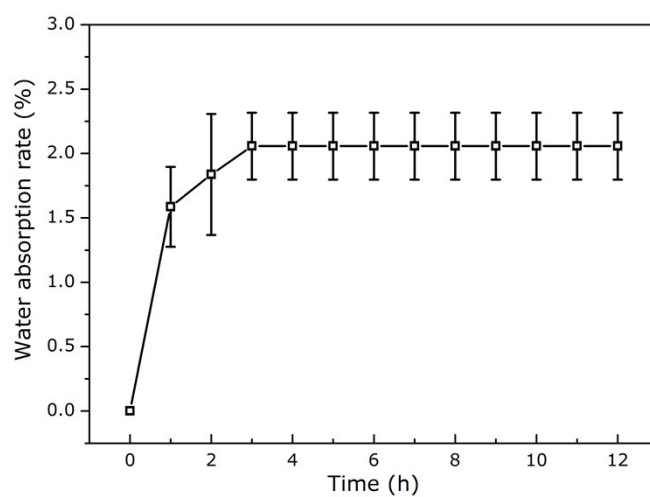


Fig. S5 Water absorption of the film after several immersion periods.

The water absorption of the film after several immersion periods was investigated, and the water absorption was calculated according to Equation 1.

$$\text{Water absorption (wt\%)} = \frac{W_1 - W_0}{W_0} \times 100\% \quad \text{Equation 1}$$

Where W_0 is the original weight of the dry film, and W_1 is that measured after the film had been immersed in water for various periods. According to these results, the water absorption values were constant to about 2% after a 12 h immersion in water (Fig. S5).

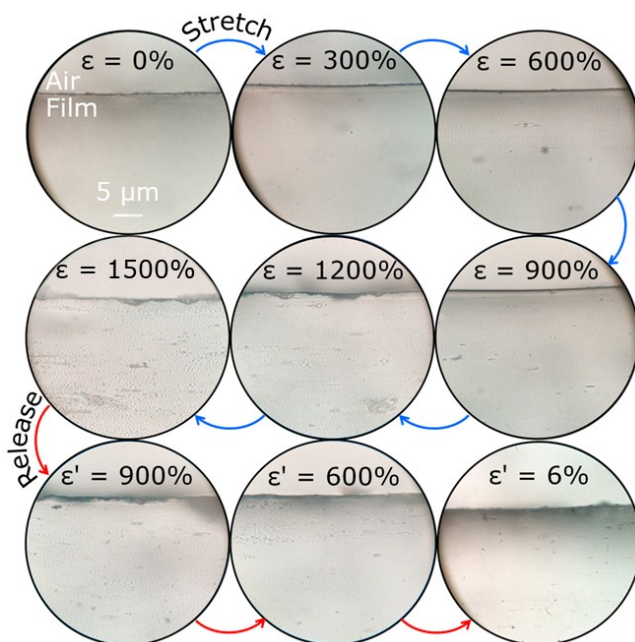


Fig. S6 Microphotographs of the polyurethane film at various strains during a stretch-and-release cycle.