Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Double-crosslinked network design for self-healing, highly stretchable and resilient polymer hydrogels

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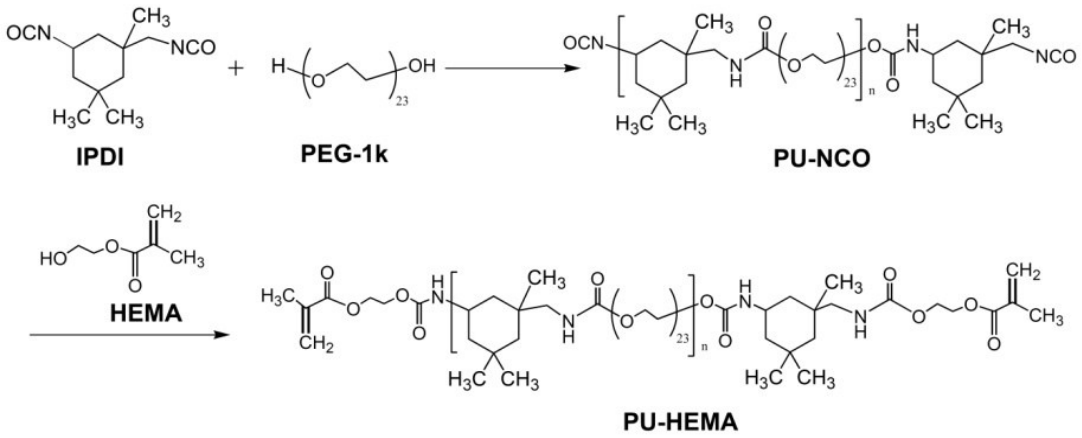

Scheme S1 The route to preparing PU-HEMA.

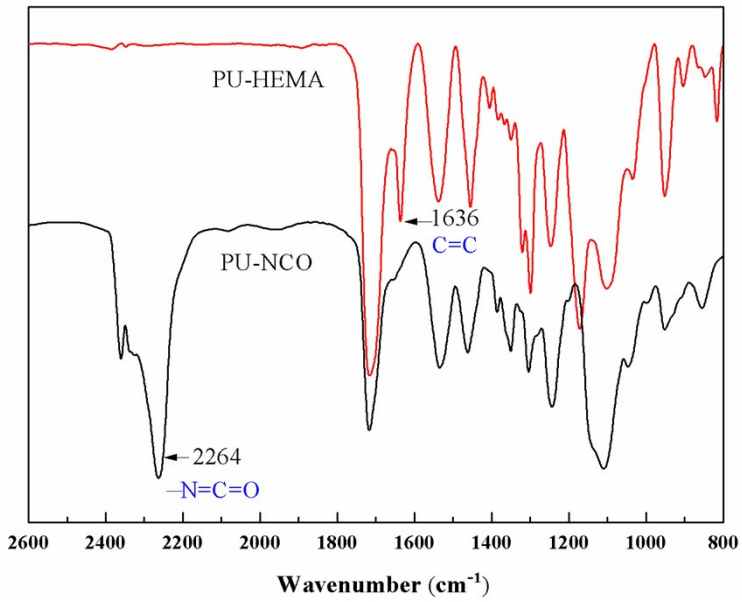

Fig. S1 FTIR spectra of PU-NCO and PU-HEMA.

The FTIR spectra of PU-NCO and PU-HEMA samples are shown in Fig. S1. From the FTIR spectrum of PU-NCO, the characteristic peak at 2264 cm^{-1} assigned to the –N=C=O asymmetric stretching vibration can be clearly observed, while in the FTIR spectrum of PU-HEMA, this peak disappears and a new peak appears at 1636 cm^{-1}, which is attributed to the stretching vibration of C=C in HEMA unit. It means that no residual PU-NCO exists in the synthesized PU-HEMA, thus confirming the formation of PU-HEMA and proving the completeness of the reaction between PU-NCO and HEMA.

Fig. S2 Photograph of the hydrogel samples.

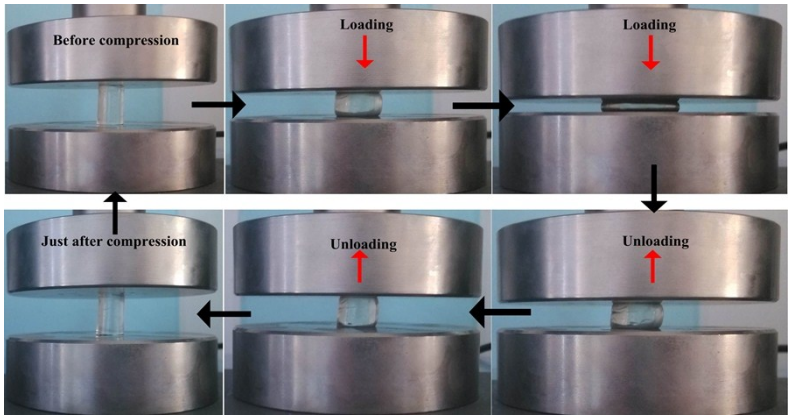

Fig. S3 Photos of the CPDN hydrogel sample during cyclic uniaxial compression tests.

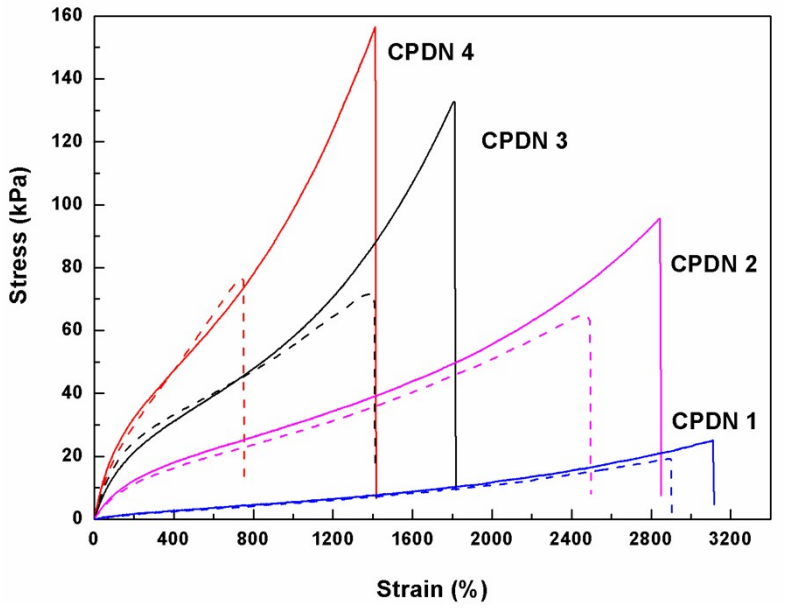

Fig. S4 Tesile stress–strain curves of the original CPDN hydrogel samples (solid line) and the corresponding self-healed CPDN hydrogel samples at 30-min healing time (dotted line).