

## *Supplementary Information*

# **A Heterocyclic Polyurethane with Enhanced Self-healing Efficiency and Outstanding Recovery of Mechanical Properties**

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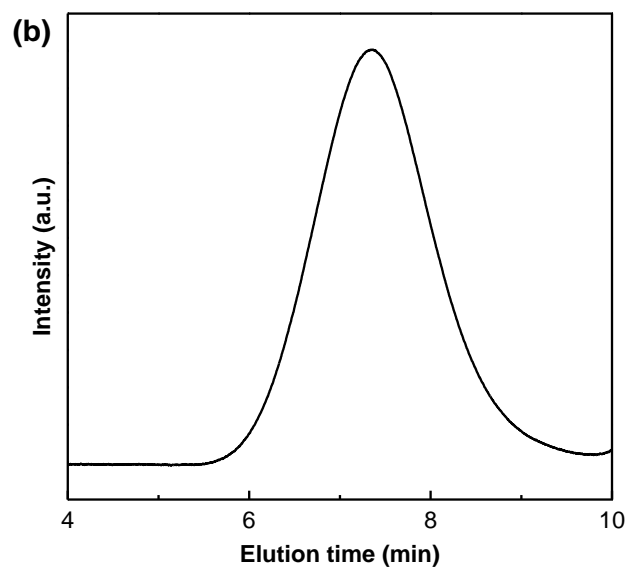
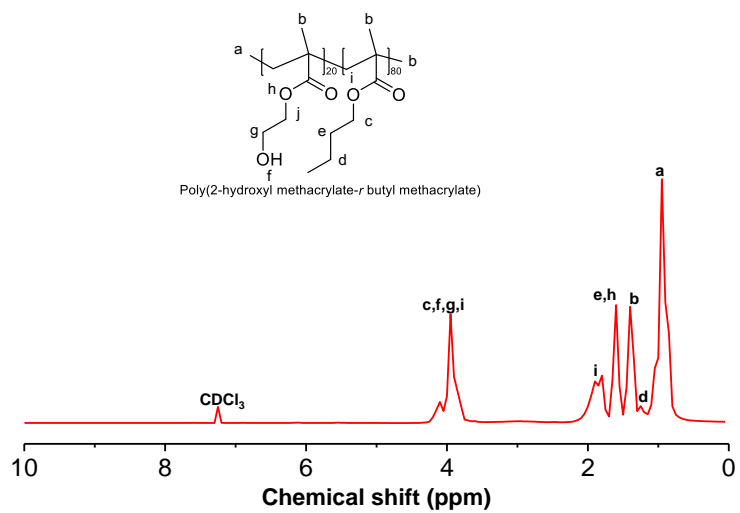
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(a)



**Figure S1.** (a) Overall scheme for synthesis and <sup>1</sup>H NMR spectrum in CDCl<sub>3</sub> and (b) GPC trace of polyol (poly(HEMA-*r*-BMA)).

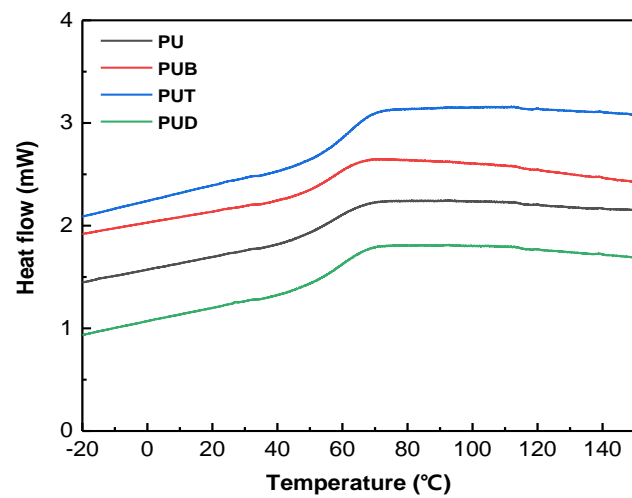


Figure S2. DSC thermograms of PU, PUB, PUT, and PUD.

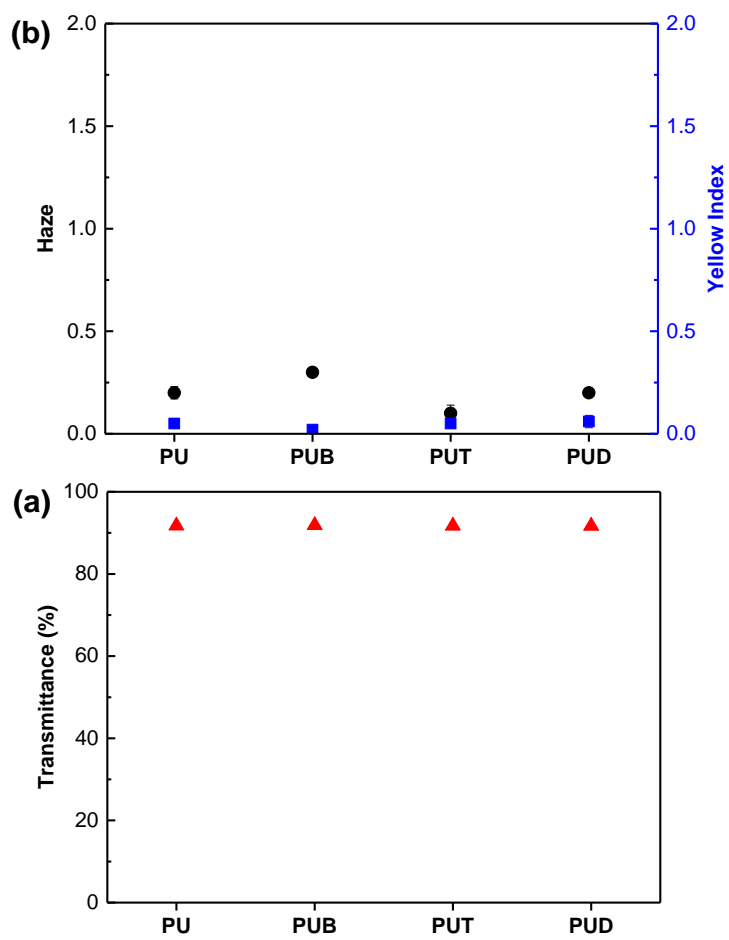
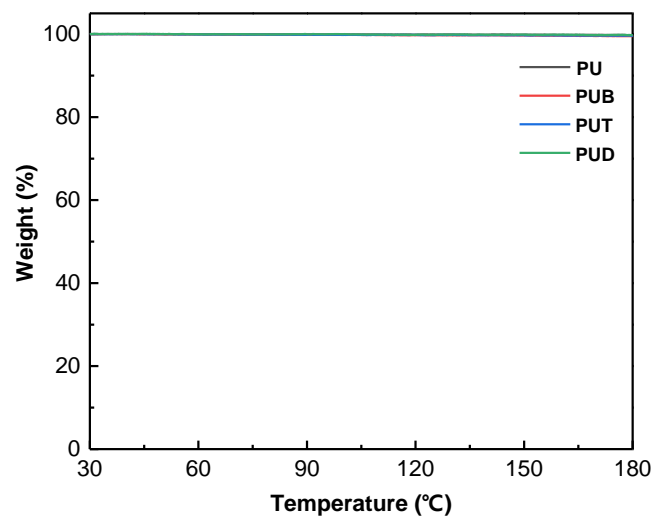
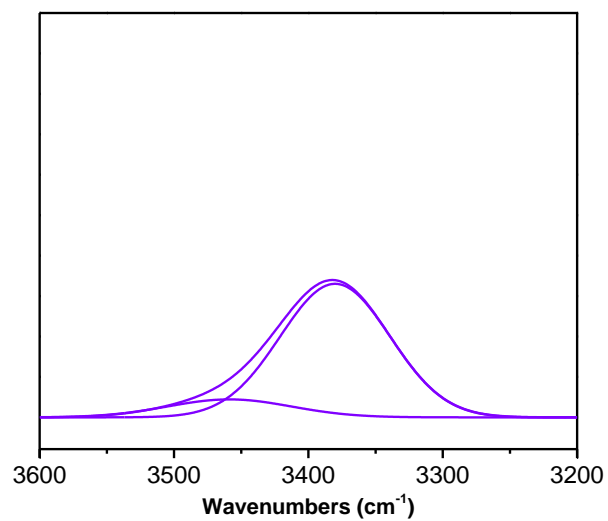


Figure S3. Optical properties of PU, PUB, PUT, and PUD: (a) transmittance; (b) haze and yellow index. All data points were obtained by averaging three measurements.



**Figure S4.** TGA curves of PU, PUB, PUT, and PUD.



**Figure S5.** The N-H stretching region of PU in the FT-IR spectra. The spectrum was resolved into its components by the curve-fitting method.