Effects of Diisocyanate Structure and Disulfide Chain Extender on Hard Segmental Packing and Self-healing Property of Polyurea Elastomers

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Supplementary Information

Figure S1. ^{1}H NMR spectrum (in $CDCl_3$) of PU-IP-A.

Figure S2. ^{1}H NMR spectrum (in $CDCl_3$) of PU-IP-M.

Figure S3. ^{1}H NMR spectrum (in CF_3COOD) of PU-H-A.

Figure S4. ^{1}H NMR spectrum (in CF_3COOD) of PU-H-M.

Table S1. Molecular weights of samples.

Figure S5. Different solubilities of four polyureas in DMF after 24 h.

Figure S6. FTIR spectra of PU-IP-A, PU-IP-M, PU-H-M, and PU-H-A.

Figure S7. Mechanical reshaping of different samples.

Figure S8. TGA profiles for the four samples.

Figure S9. FTIR spectra showing carbonyl groups of PU-IP-M, PU-H-A and PU-H-M at 25 °C before heating and after cooling to 25 °C.

Figure S10. DSC curve of the soft constituent D2000.

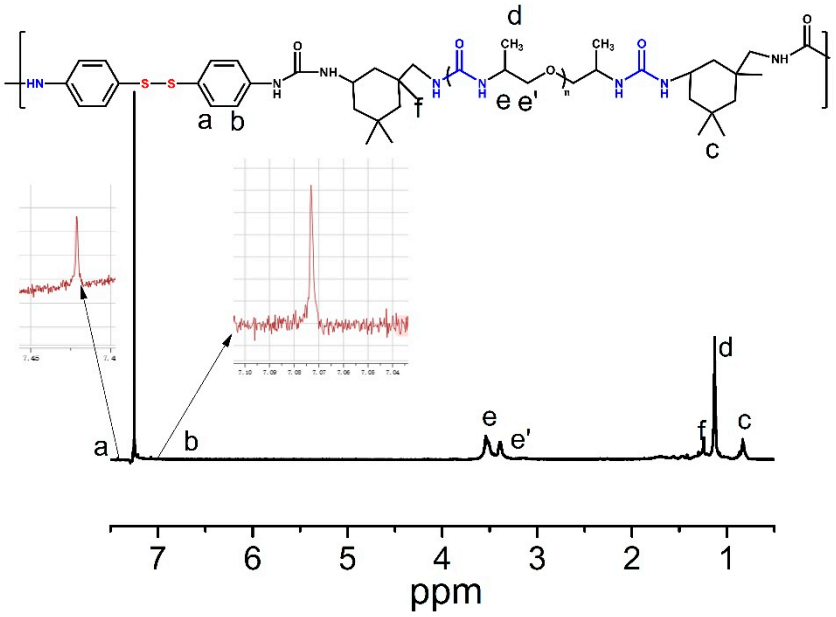

Figure S1. ^{1}H NMR spectrum (in $CDCl_3$) of PU-IP-A.

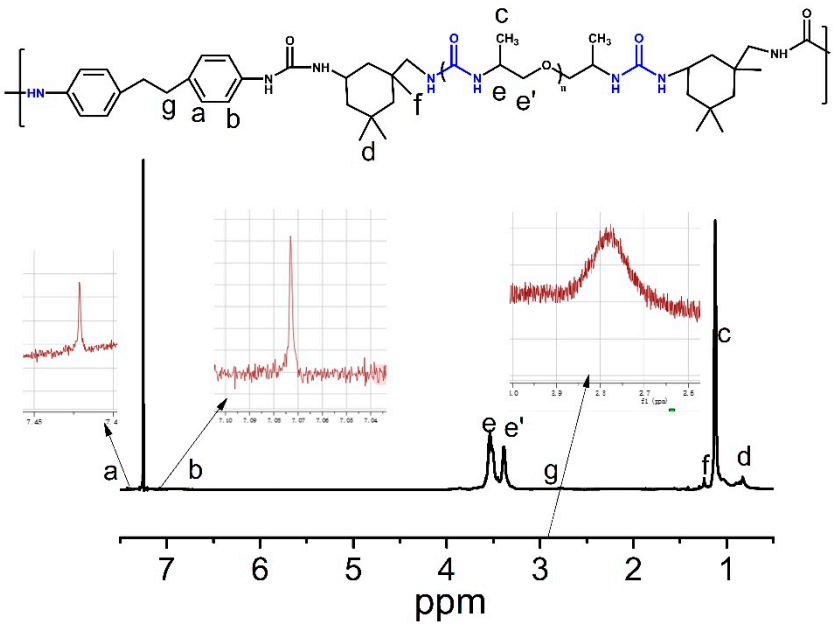

Figure S2. ^{1}H NMR spectrum (in $CDCl_3$) of PU-IP-M.

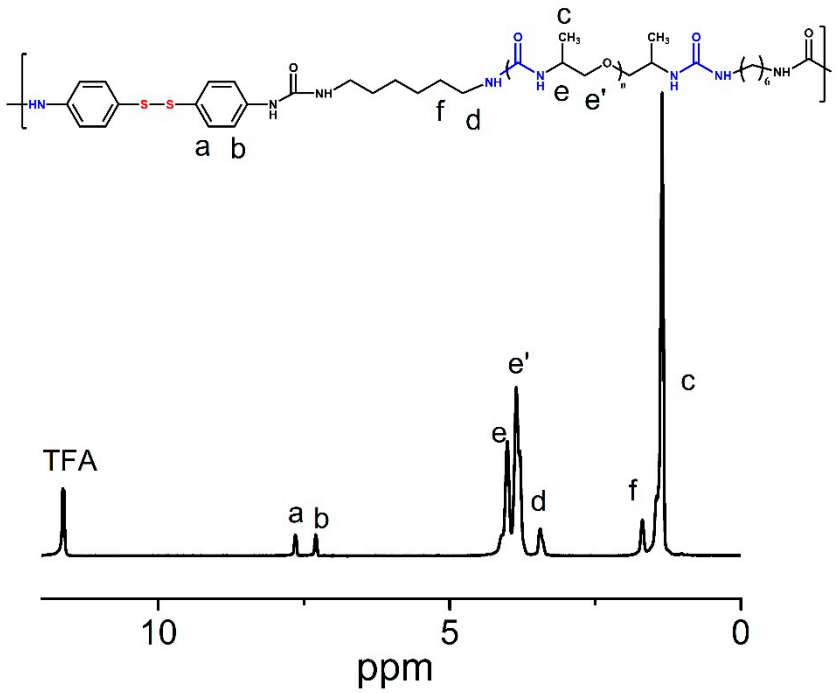

Figure S3. ^{1}H NMR spectrum (in CF_3COOD) of PU-H-A.

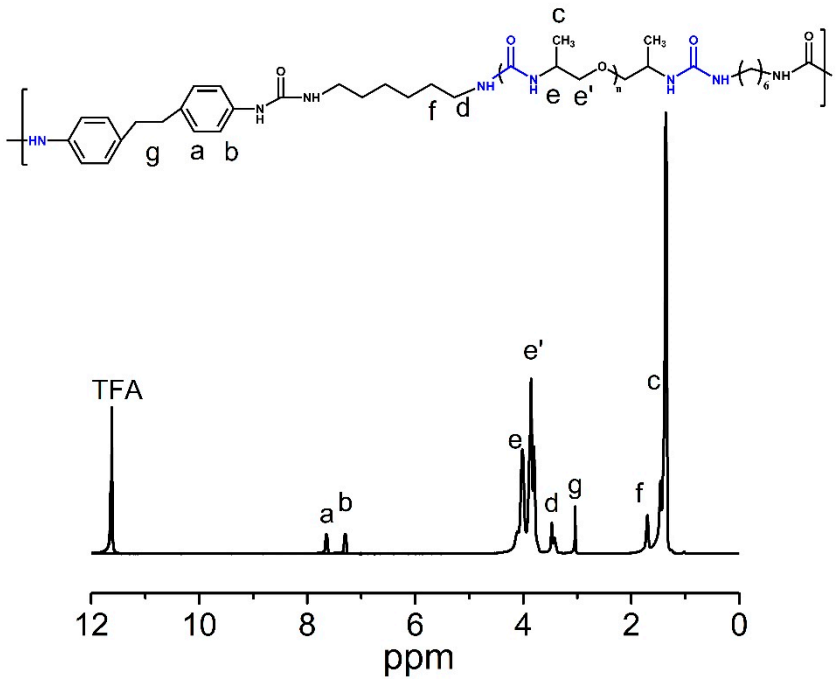

Figure S4. ^{1}H NMR spectrum (in CF_3COOD) of PU-H-M.

Table S1. Molecular weights of samples.

Samples	PU-IP-A	PU-IP-M	PU-H-A	PU-H-M*
M_n (g/mol)	12617	12883	15044	--
M_w (g/mol)	18586	19918	18038	--
Mw/Mn	1.47	1.55	1.22	--

***insoluble in THF**

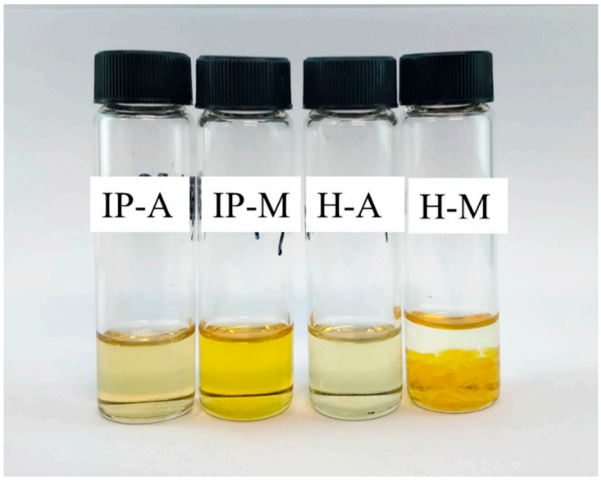

Figure S5. Different solubilities of the four polyureas in DMF after 24 h.

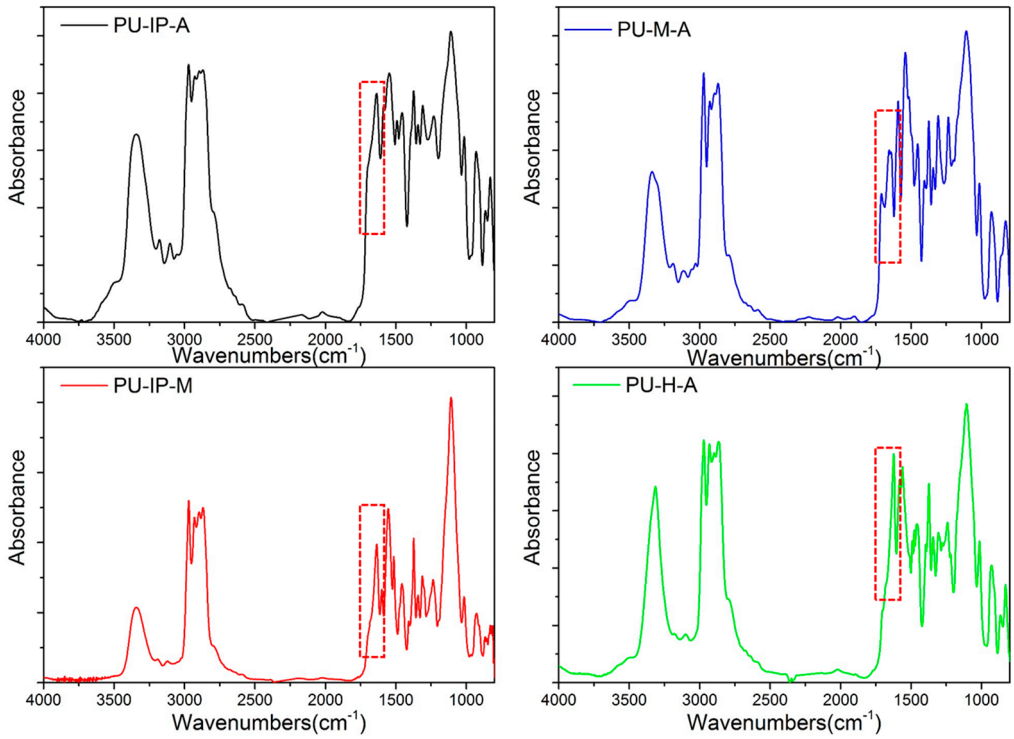

Figure S6. FTIR spectra of PU-IP-A, PU-IP-M, PU-H-M, and PU-H-A.

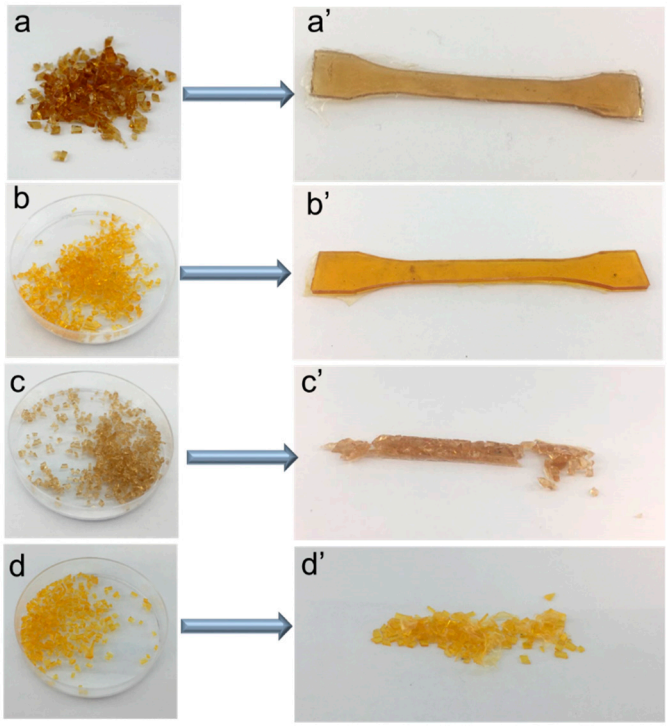

Figure S7. Mechanical reshaping of different samples, (a)~(d) particles that cut from the PU-IP-A, PU-IP-M, PU-H-A, and PU-H-M, respectively, (a')~(d') the obtained specimens after molding by hot pressing at 100 °C for 5 min.

TGA profiles

TGA curves are shown in Figure S8, confirming that the introduction of disulfide bonds would not lead to a decline of the initial decomposition temperatures.

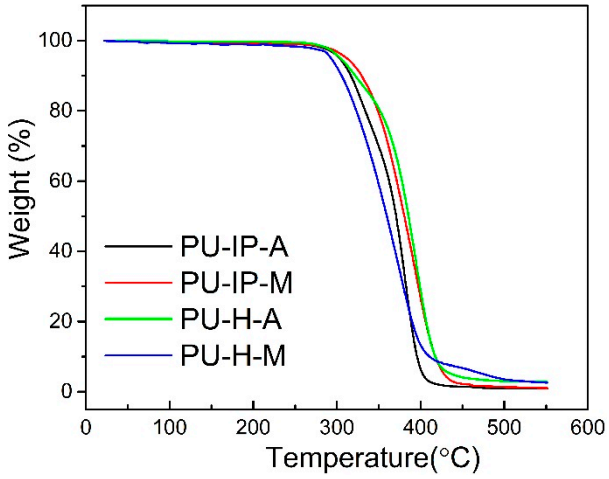

Figure S8. TGA profiles for the four samples.

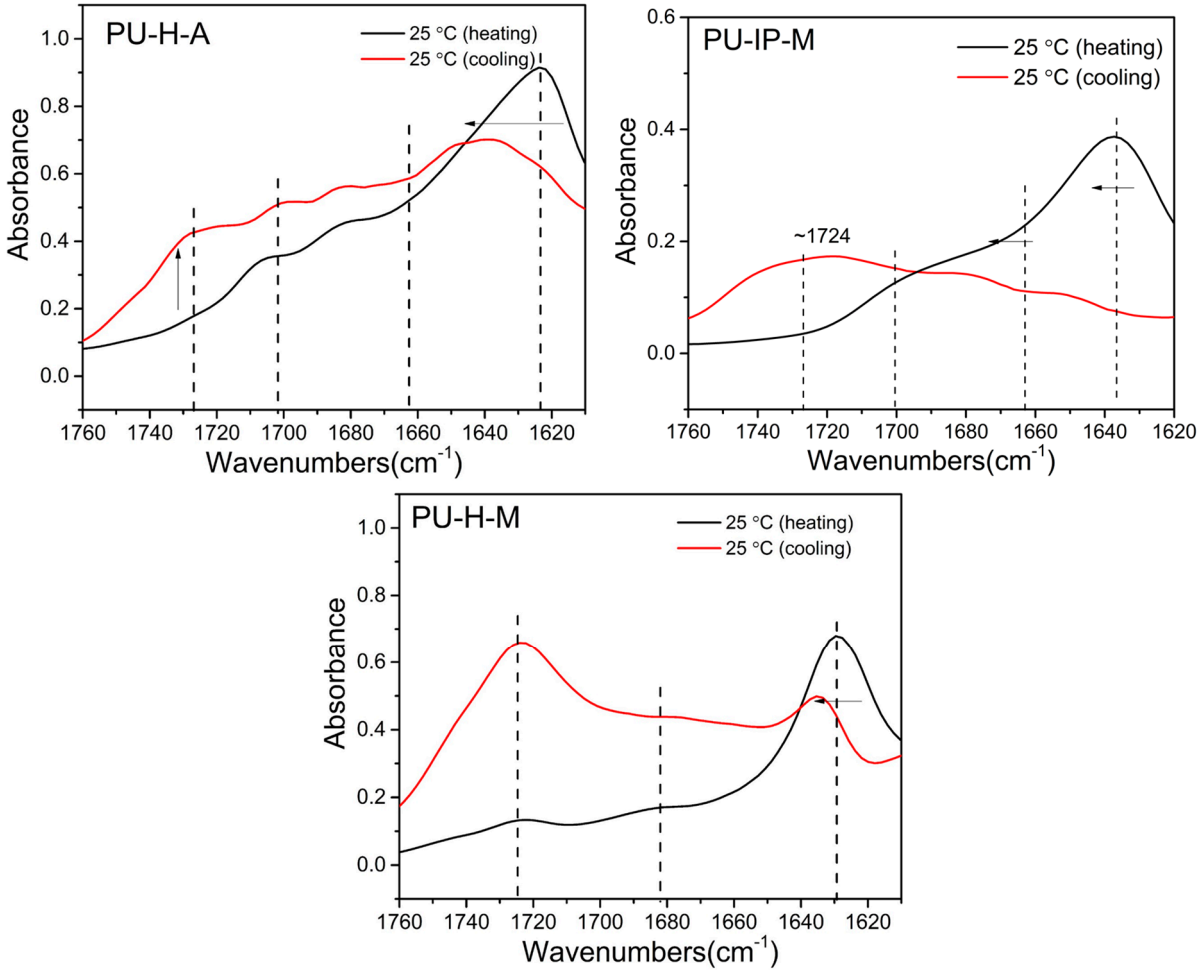

Figure S9. FTIR spectra showing carbonyl groups of PU-IP-M, PU-H-A and PU-H-M at 25 °C before heating and after cooling to 25 °C.

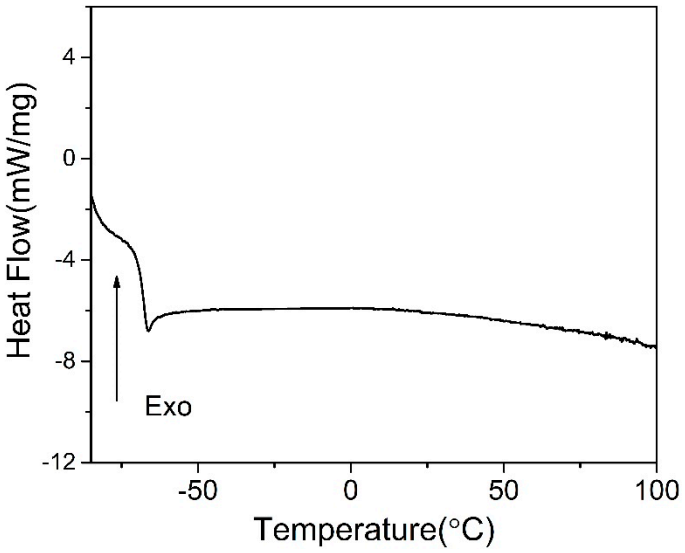

Figure S10. DSC curve of the soft constituent D2000.