Electronic Supplementary Information

Structural tuning of polycaprolactone based thermadapt shape memory polymer

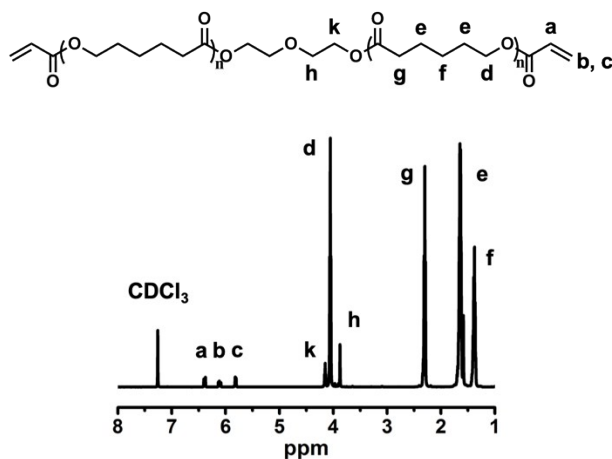Wusha Miao, Weike Zou*, Yingwu Luo, Ning Zheng, Qiao Zhao, Tao Xie*
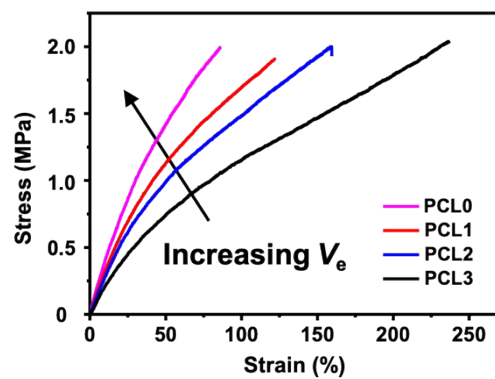
Figure S1. ^{1}H-NMR spectrum of PCLDA.

**Figure S2.** Stress strain curves of **PCL0** to **PCL3** networks at 60 °C.

Table S1. Gel content of all PCL samples.

Sample	PCL0	PCL1	PCL2	PCL3	PCL4	PCL5	PCL6
Gel content (%)	97.97	97.19	95.56	96.67	95.54	96.41	96.70

Table S2. Rubbery moduli and crosslinking density of **PCL0** to **PCL3** networks.

Sample	E^a (MPa)	V_e^b (mol/m^3)
PCL0	3.77±0.36	453.7
PCL1	3.17±0.08	381.5
PCL2	2.59±0.17	311.7
PCL3	2.23±0.06	268.4

[a]Obtained from tensile tests at 60 °C. [b]Calculated from the rubbery moduli using the equation [$V_e=E/RT$], where E is the rubber modulus, T is the absolute temperature, and R is the universal gas constant.
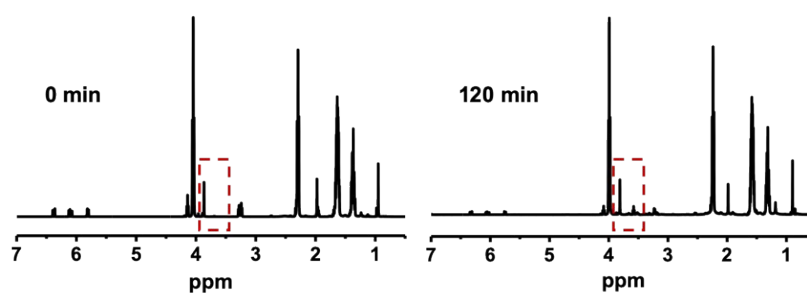
Figure S3. Full range ^{1}H-NMR spectra of the model compound experiments before and after thermal treatment at 100 °C in the presence of 4 wt% neutralized TBD.
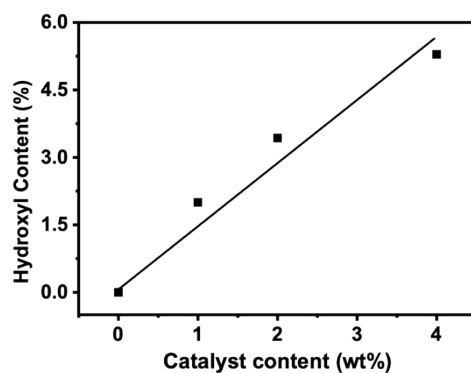
Figure S4. Correlation between produced hydroxyl contents and the amount of TBD catalyst.
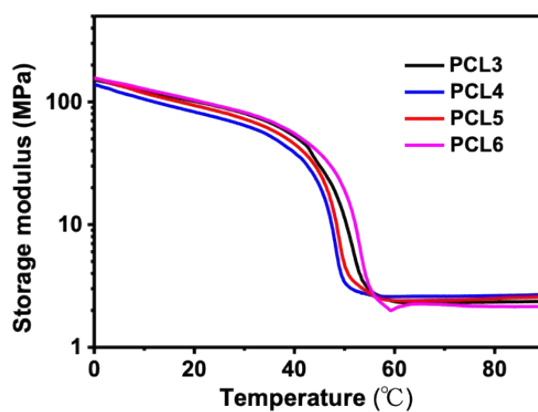
Figure S5. DMA curves for **PCL3** to **PCL6**.

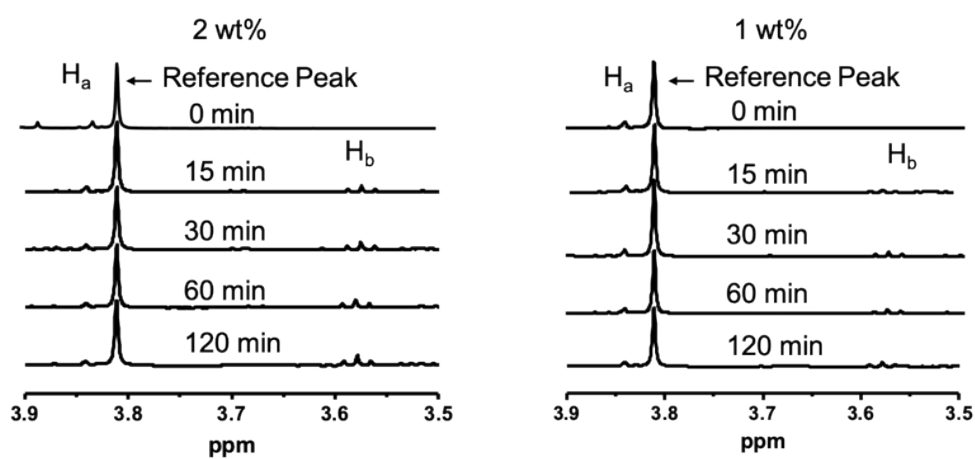**Figure S6**. ¹H-NMR spectra of the model compound experiments with different amounts of the neutralized TBD catalyst upon thermal annealing at 100 °C.