Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.
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Supporting Information

A highly stretchable bioelastomer prepared by UV curing of liquid-like poly (4-methyl-ε-caprolactone) precursors

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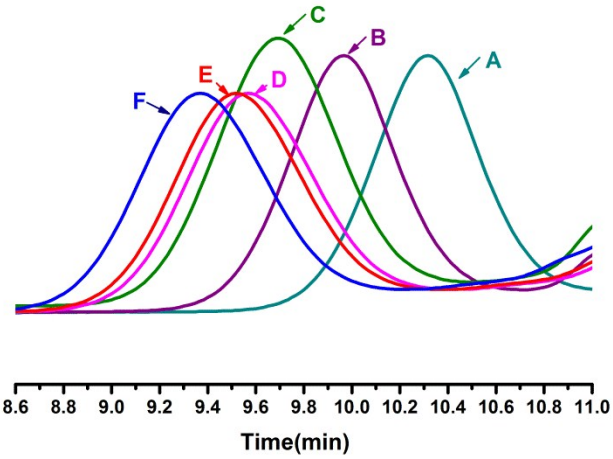

Fig. S1 GPC trace of precursors before acrylation A) $PMCL_{50}$; B) $PMCL_{100}$; C) $PMCL_{200}$; D) $PMCL_{250}$; E) $PMCL_{300}$; F) $PMCL_{400}$

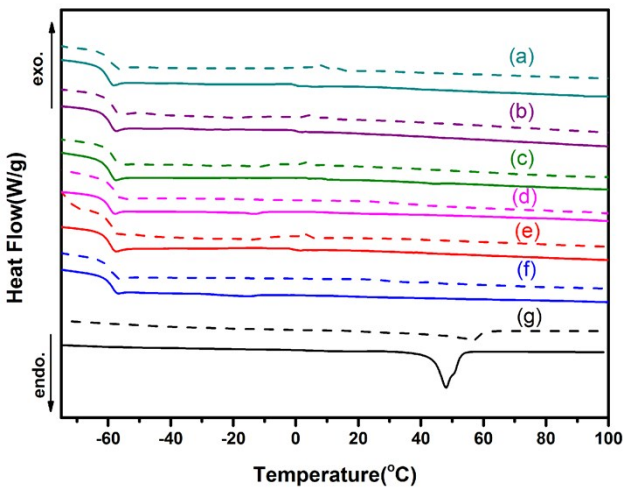

Fig. S2 Representative DSC curves for the crosslinked PMCL/PCL networks (dash lines) and PMCL/PCL diacrylates (solid lines). (a) $PMCL_{50}$, (b) $PMCL_{100}$, (c) $PMCL_{200}$, (d) $PMCL_{250}$, (e) $PMCL_{300}$, (f) $PMCL_{400}$.

The heating DSC curves of crosslinked PMCL networks and PMCL diacrylates in Fig. S2 demonstrated a single glass transition T_g while no T_m peaks, which were identified with the amorphous character. However, Both PCL network and its diacrylates exhibited obvious T_m peaks.

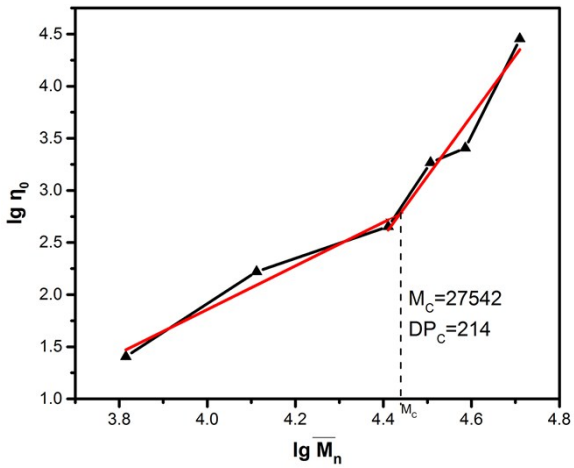

Fig. S3 A critical M_n at the intersection of lines fitting from $\lg\eta_0$ plotted against $\lg\bar{M}_n$ for PMCL precursors.

Table S1 Density of crosslinked PMCLs

Entry	Crosslinked PMCLs	ρ
1	$BDM\text{-}PMCL_{200}$	1.070
2	$BDM\text{-}PMCL_{250}$	0.86
3	$BDM\text{-}PMCL_{300}$	0.736
4	$BDM\text{-}PMCL_{400}$	0.65

The density of crosslinked PMCL networks was investigated by the drainage method using a TW 300A density tester. Sample densities were calculated for estimation of crosslinked PMCL networks (summarized

in Table S1).

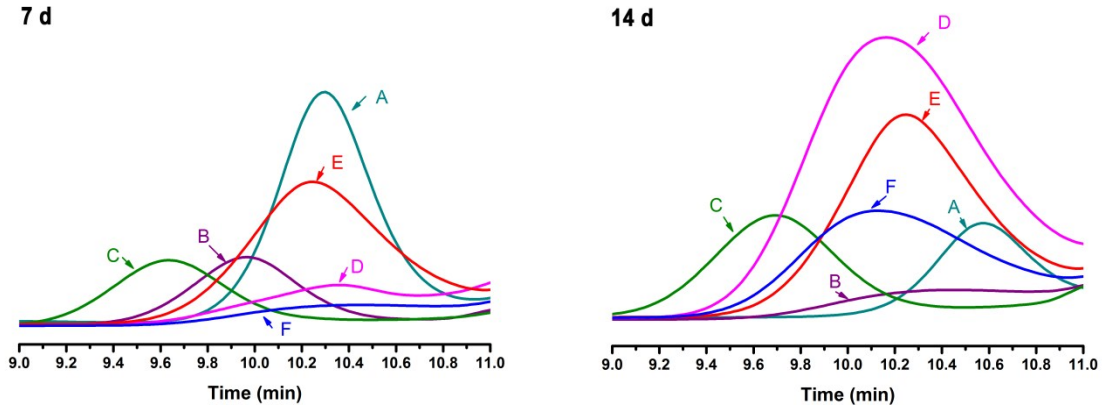

Fig. S4 GPC trace of crosslinked PMCL networks after degradation of 7 and 14 days in the alkaline and dioxane A) $PMCL_{50}$; B) $PMCL_{100}$; C) $PMCL_{200}$; D) $PMCL_{250}$; E) $PMCL_{300}$; F) $PMCL_{400}$

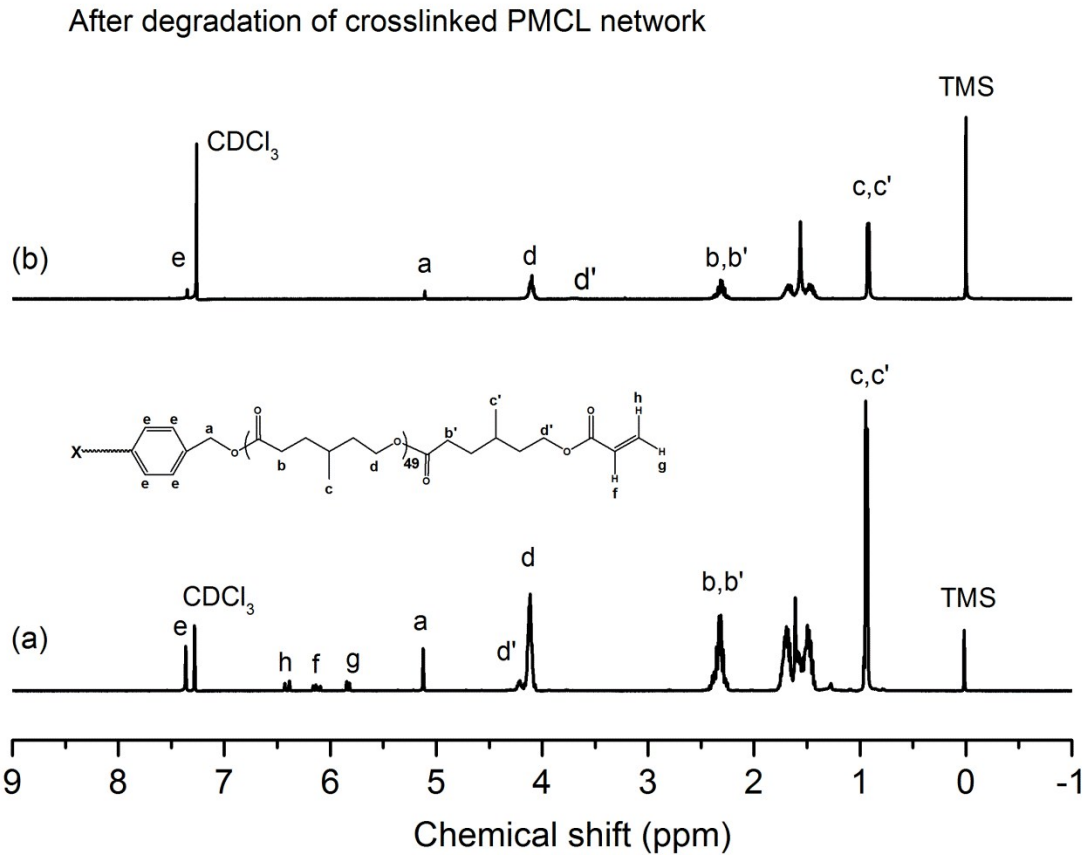

Fig. S5 ^1H NMR spectra in $CDCl_3$ of a) PMCL diacrylate and b) residue after 14 days degradation in the alkaline dioxane

Degradation behavior of crosslinked PMCL networks was further confirmed by ^1H NMR of residuals in $CDCl_3$ after 14 days degradation in the mixture of alkaline dioxane. Compared with PMCL precursor in Fig. S5 (a), the end methylene proton signals appeared at 3.72 ppm ($H_{d'}$, $-CH_2C\underline{H_2}OH$, 2 H) approved the hydrolysis of the ester bond.