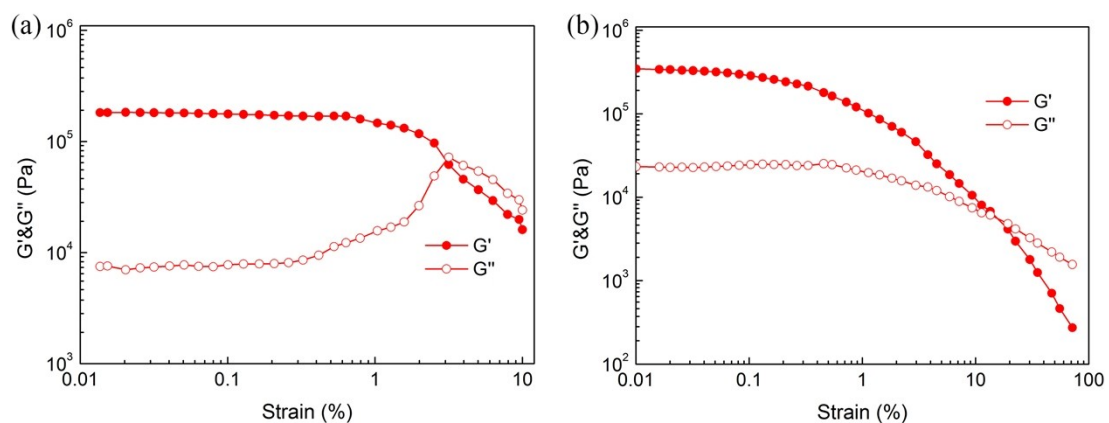
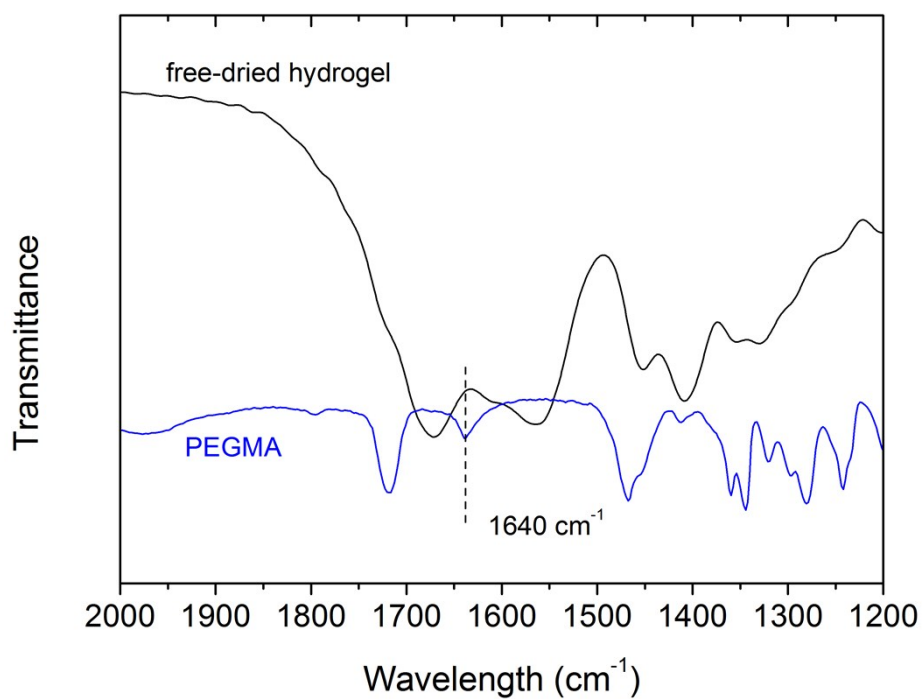


## **Supporting Information**

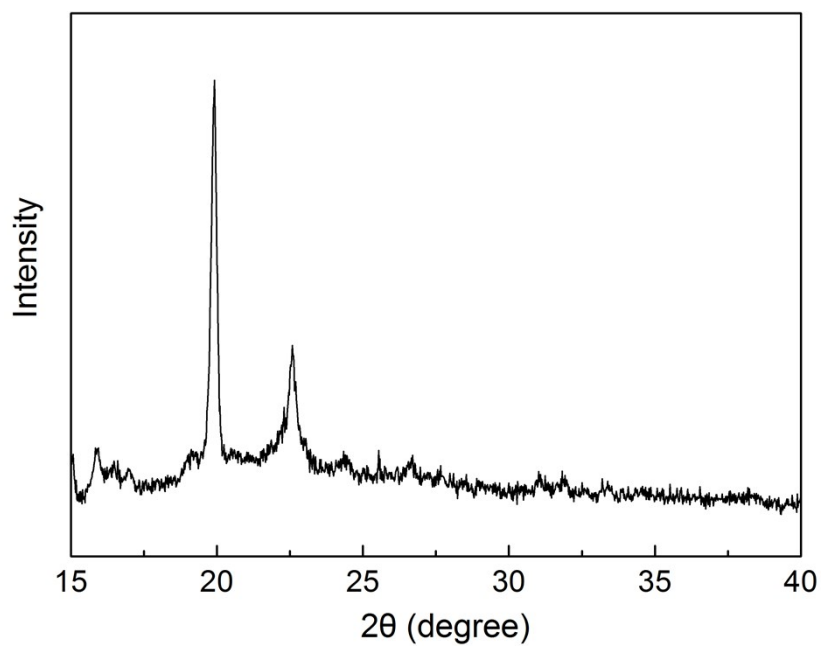
### **Tough Polypseudorotaxane Supramolecular Hydrogel With Dual-responsive Shape Memory Property**



**Fig. S1** Strain sweep of (a) as-prepared CD-PPR hydrogel, (b)  $\text{Fe}^{3+}$  cross-linked CD-PPR hydrogel



**Fig. S2** FTIR spectra of PEGMA monomer and freeze-dried hydrogel sample. The absence of peak at  $1640 \text{ cm}^{-1}$  after copolymerization demonstrates successful copolymerization of PEGMA.



**Fig. S3** XRD pattern of  $\alpha$ -CD/PEGMA inclusion precipitate in Fig. 2b. The peak at  $2\theta=19.8^\circ$  indicates the existence of channel-structured  $\alpha$ -CD/PEG inclusions.