

Figure S1 Schematic synthetic procedures of the functionalized F127 and PEG

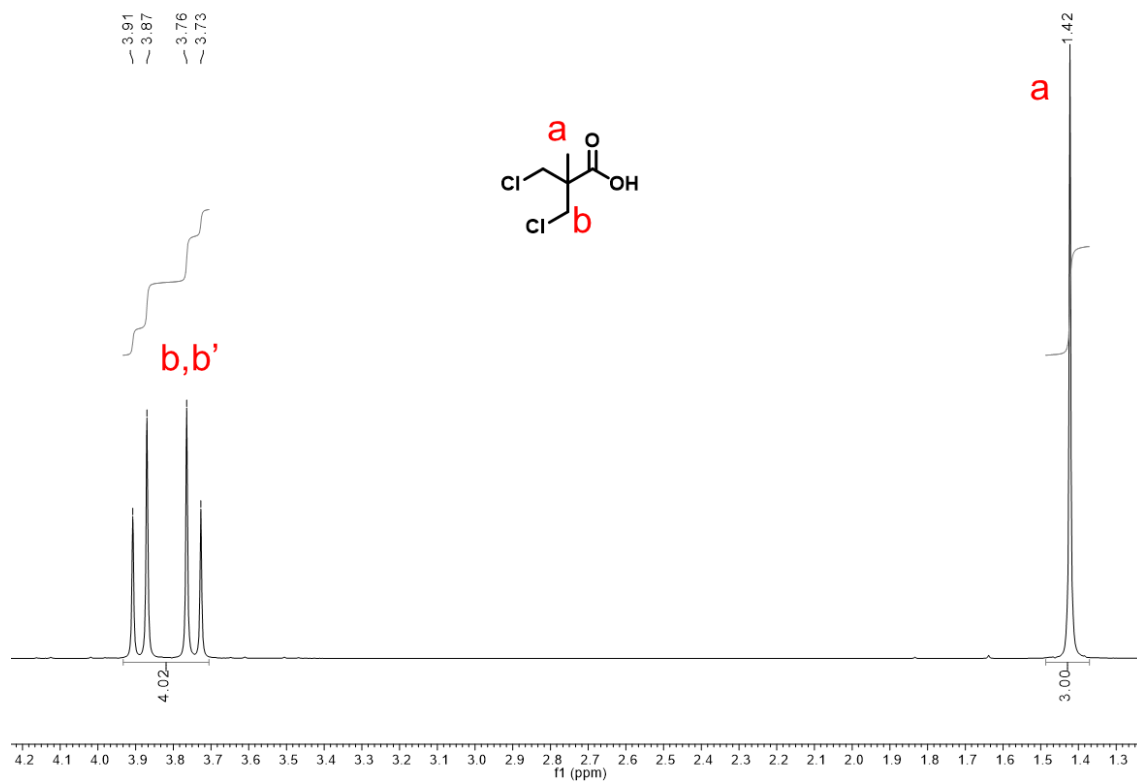


Figure S2 <sup>1</sup>H-NMR of 2,2-bis(chloromethyl)propionic acid (DCMPA)

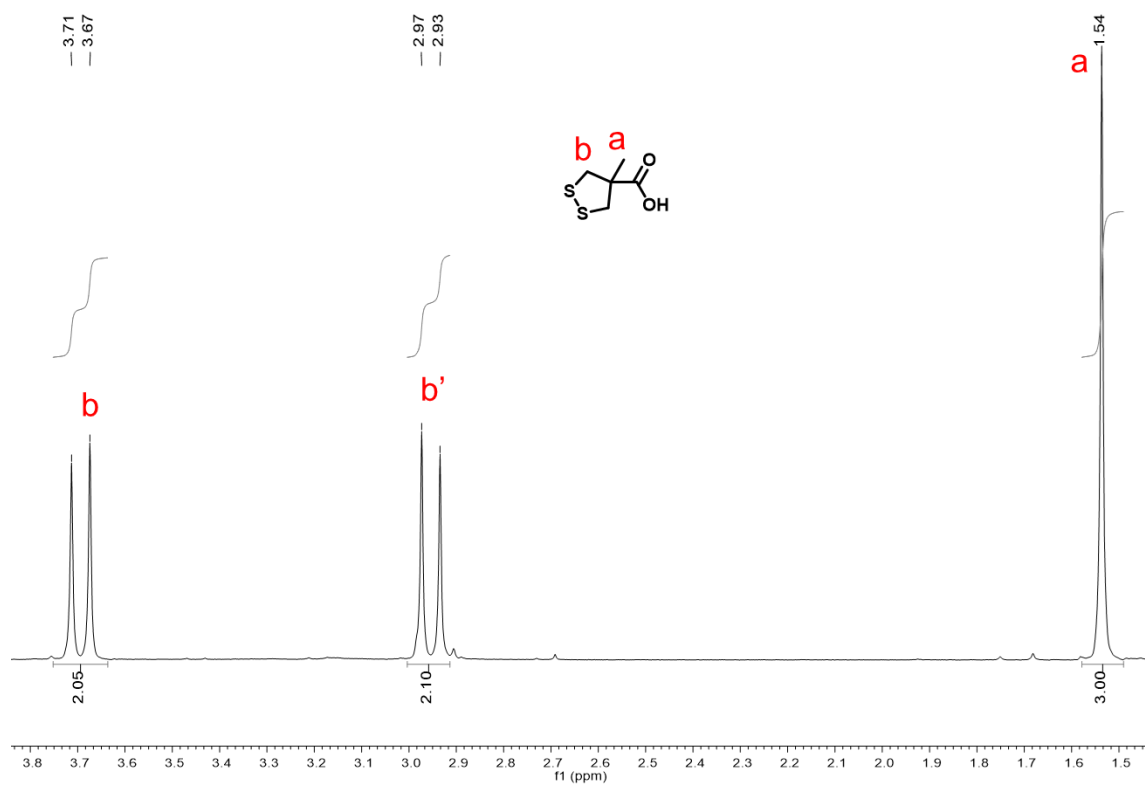


Figure S3  $^1\text{H-NMR}$  of 4-methyl-1,2-dithiolane-4-carboxylic acid(MDTCA)

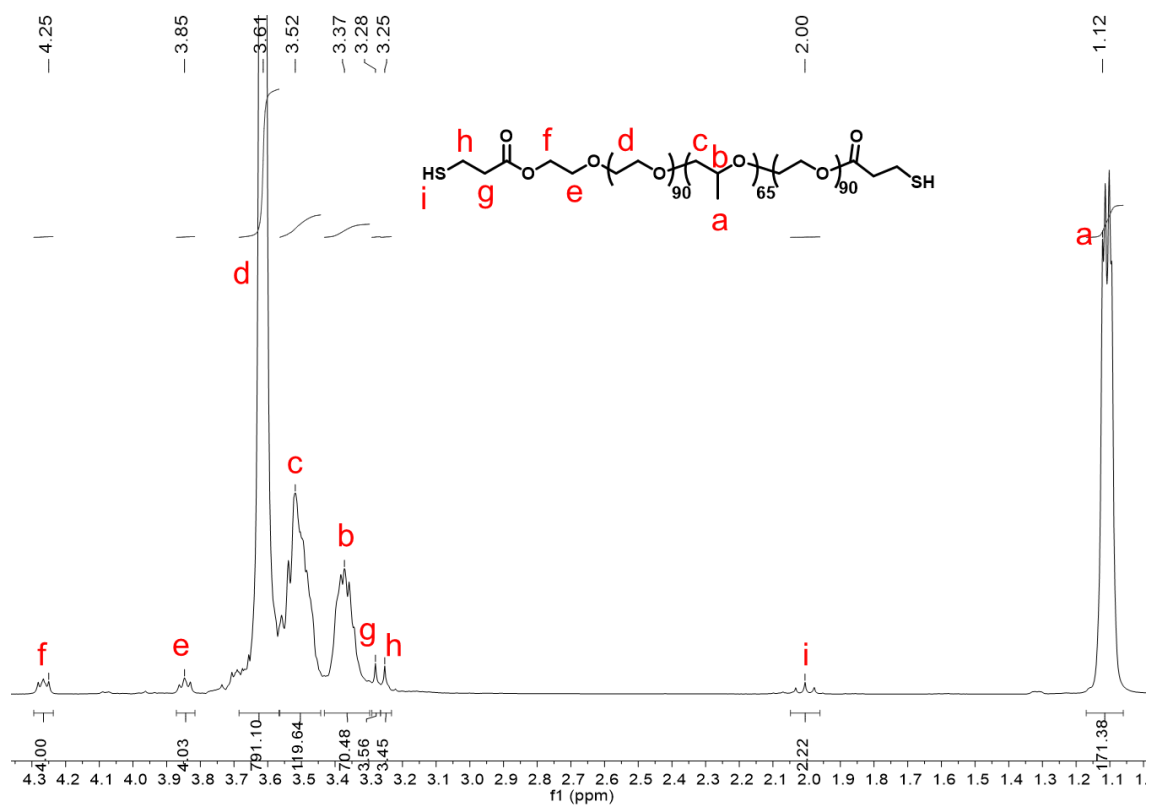


Figure S4 <sup>1</sup>H-NMR of thiol functionalized F127 (HS-F127-SH)

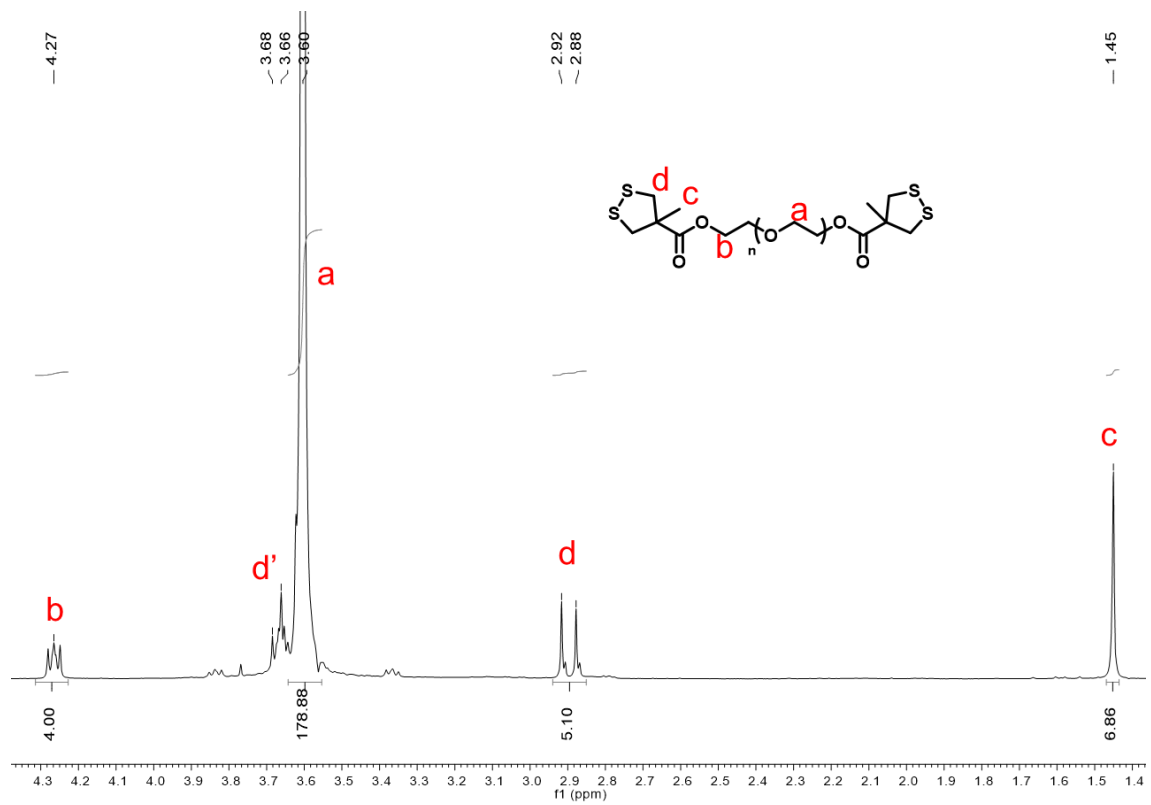
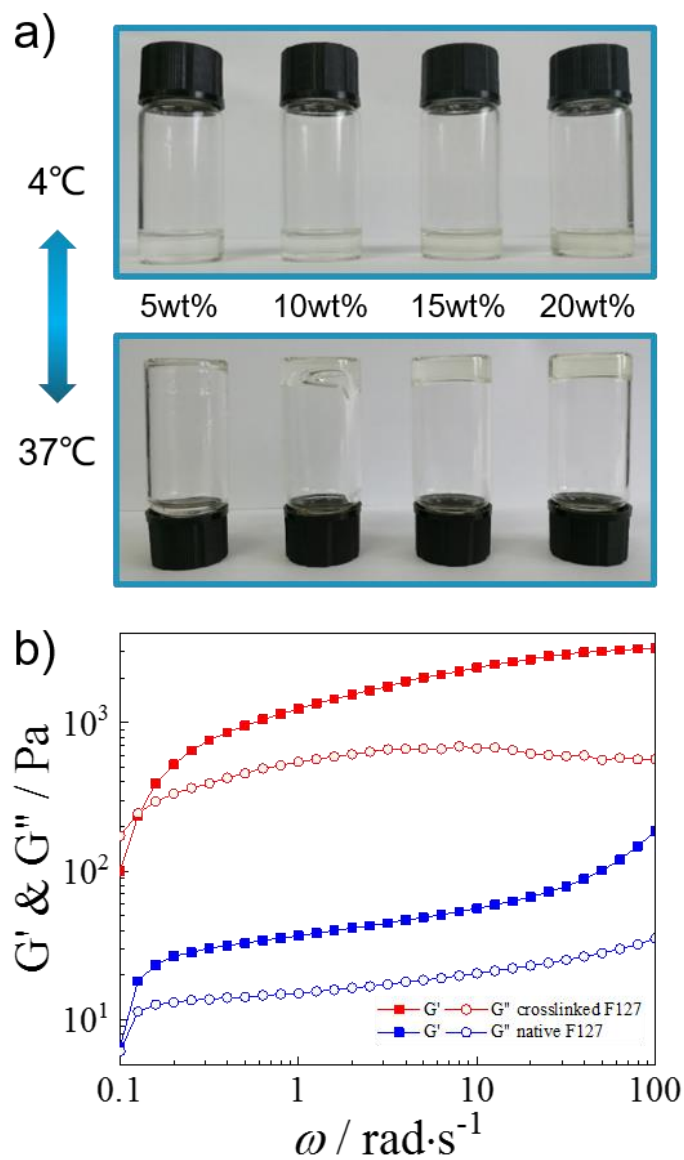


Figure S5 <sup>1</sup>H-NMR of 1,2-dithiolane functionalized PEG (DT-PEG-DT)

Ratio (Thiol/DT)	HS-F127-SH	DT-PEG-DT	PBS	wt%
4/1	1.5g	0.07g	8.90g	15wt%
2/1	1.5g	0.14g	9.28g	15wt%
1/1	1.5g	0.28g	10.06g	15wt%
1/2	1.5g	0.55g	11.63g	15wt%

**Table S1** components of the gels of different mole ratio of thiol/dithiolane



**Figure S6** a) Sol-gel transition of the hydrogels of different solid content at body temperature. b) Rheological properties of the crosslinked hydrogel and the hydrogel delivered from native F127 polymer (15 wt%).

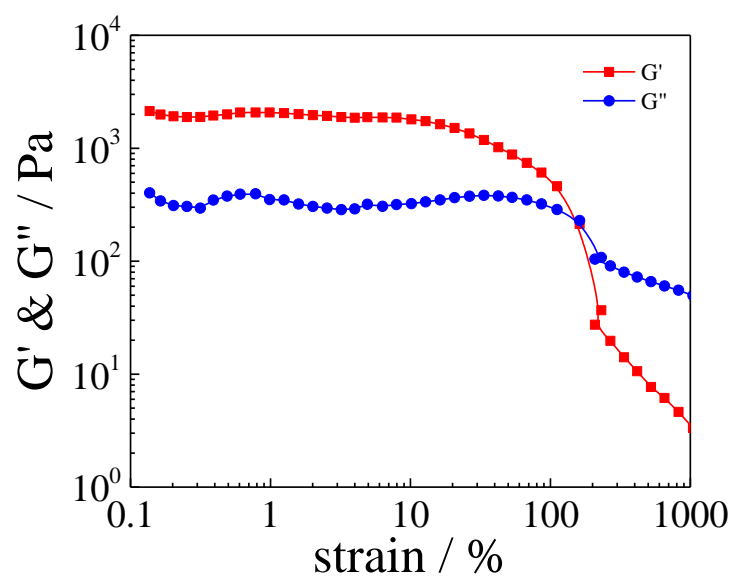
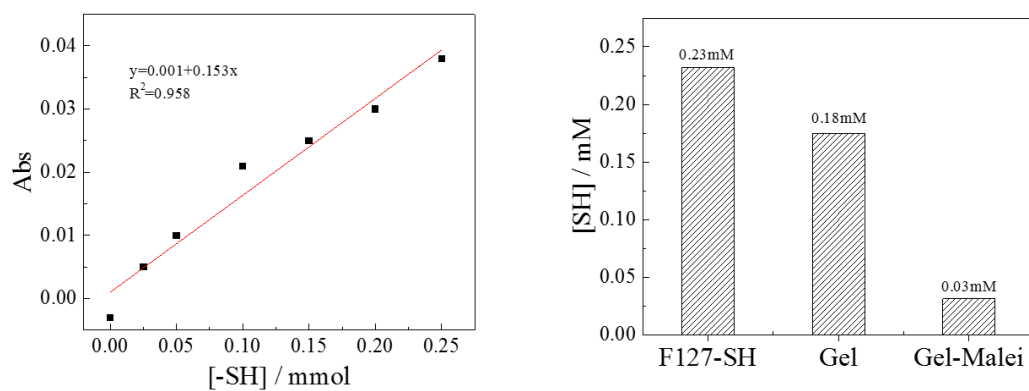
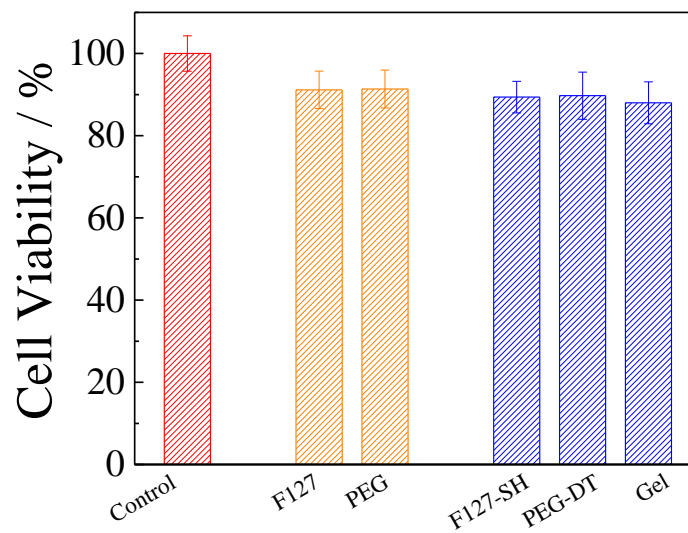


Figure S7 Strain sweep measurements of a 15wt% hydrogel treated with excess amount of maleimide at 37°C





**Figure S8** a) Calibration curve of thiol concentration using N-Acetyl cysteine as reference for the quantification of thiol groups, b) summary of the amount of free thiol in different polymer solution.



**Figure S9** In vitro cytotoxicity evaluation of original F127, original PEG, SH-F127-SH, DT-PEG-DT and diluted gel solution.