

## Electronic Supplementary Information

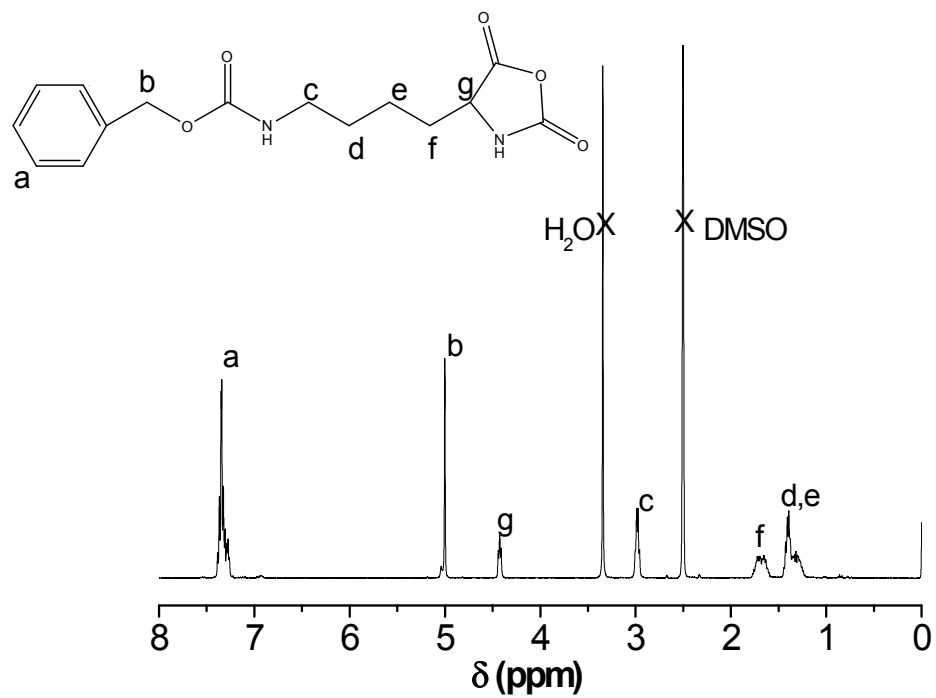
# Polymersome-hydrogel composites with combined quick and long-term antibacterial activities

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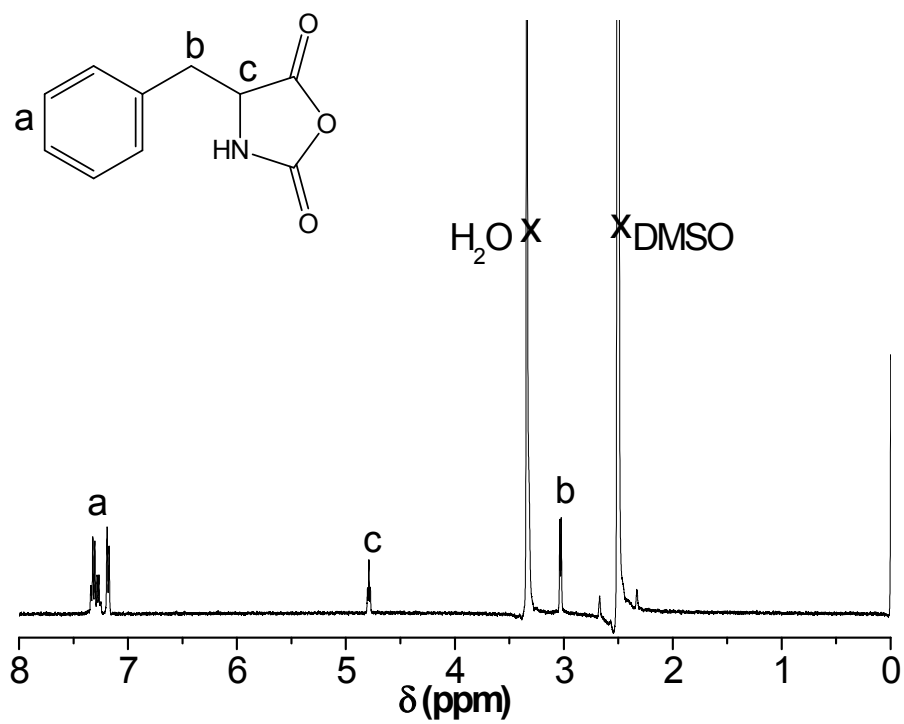
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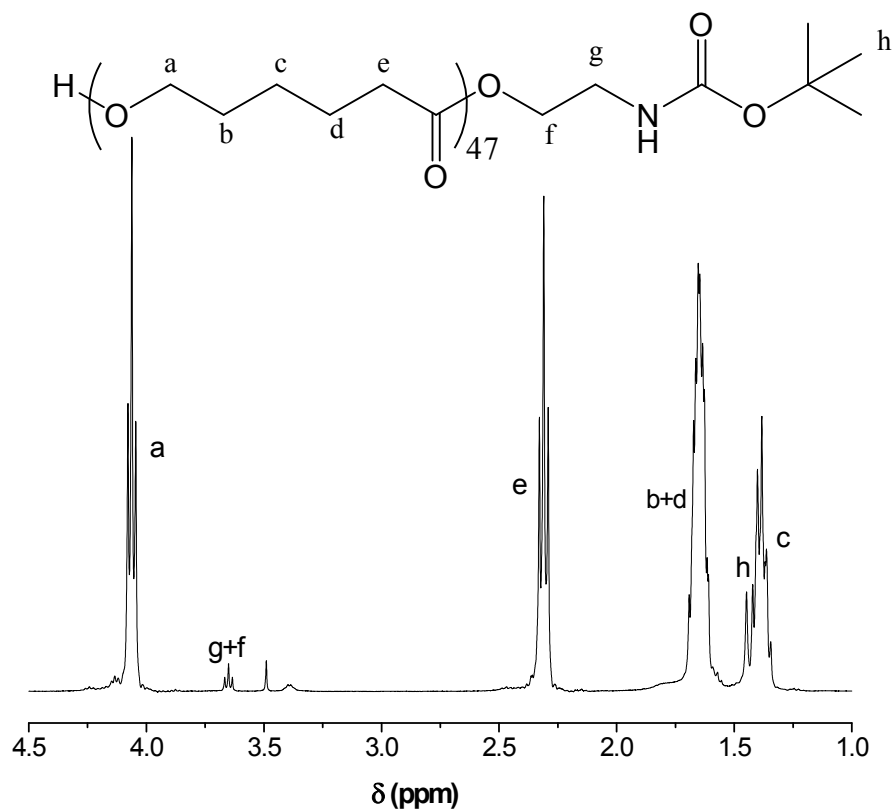
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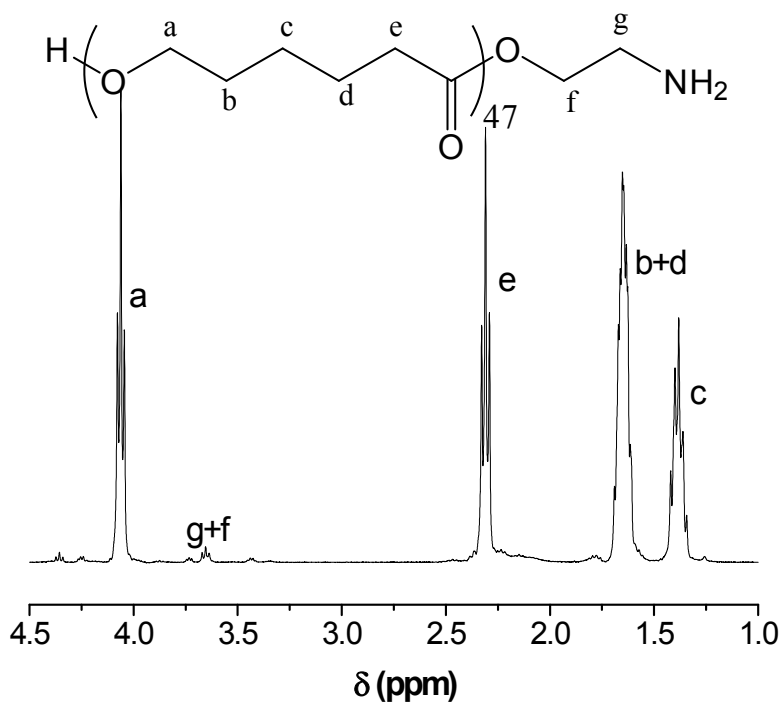
**Fig. S1.** <sup>1</sup>H NMR spectrum of Z-Lys-NCA in DMSO-*d*<sub>6</sub>.



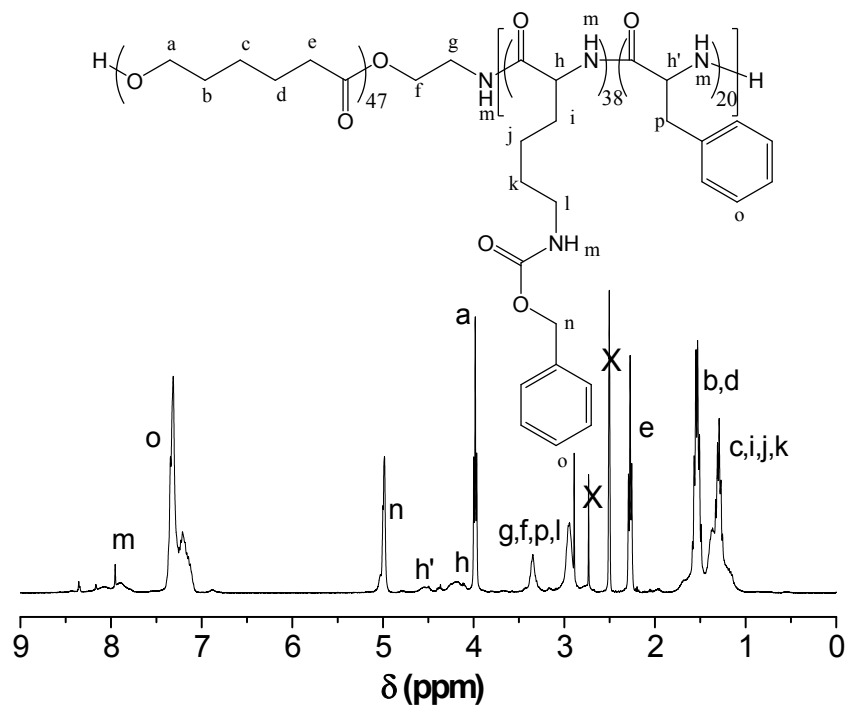
**Fig. S2.** <sup>1</sup>H NMR spectrum of Phe-NCA in DMSO-*d*<sub>6</sub>.



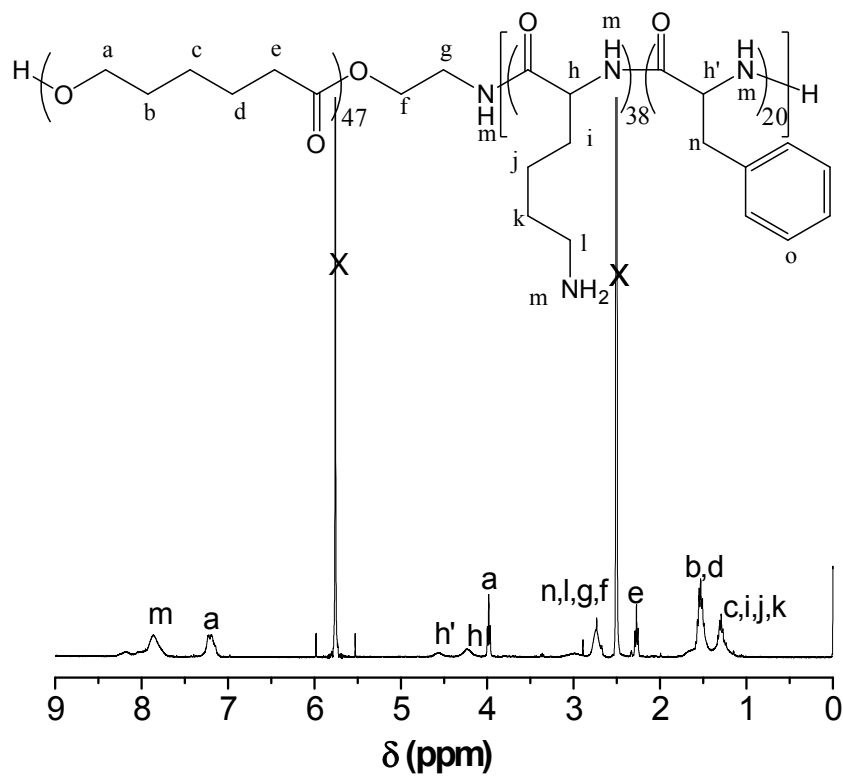
**Fig. S3.** <sup>1</sup>H NMR spectrum of PCL-NH-Boc in CDCl<sub>3</sub>.



**Fig. S4.** <sup>1</sup>H NMR spectrum of PCL-NH<sub>2</sub> in CDCl<sub>3</sub>.

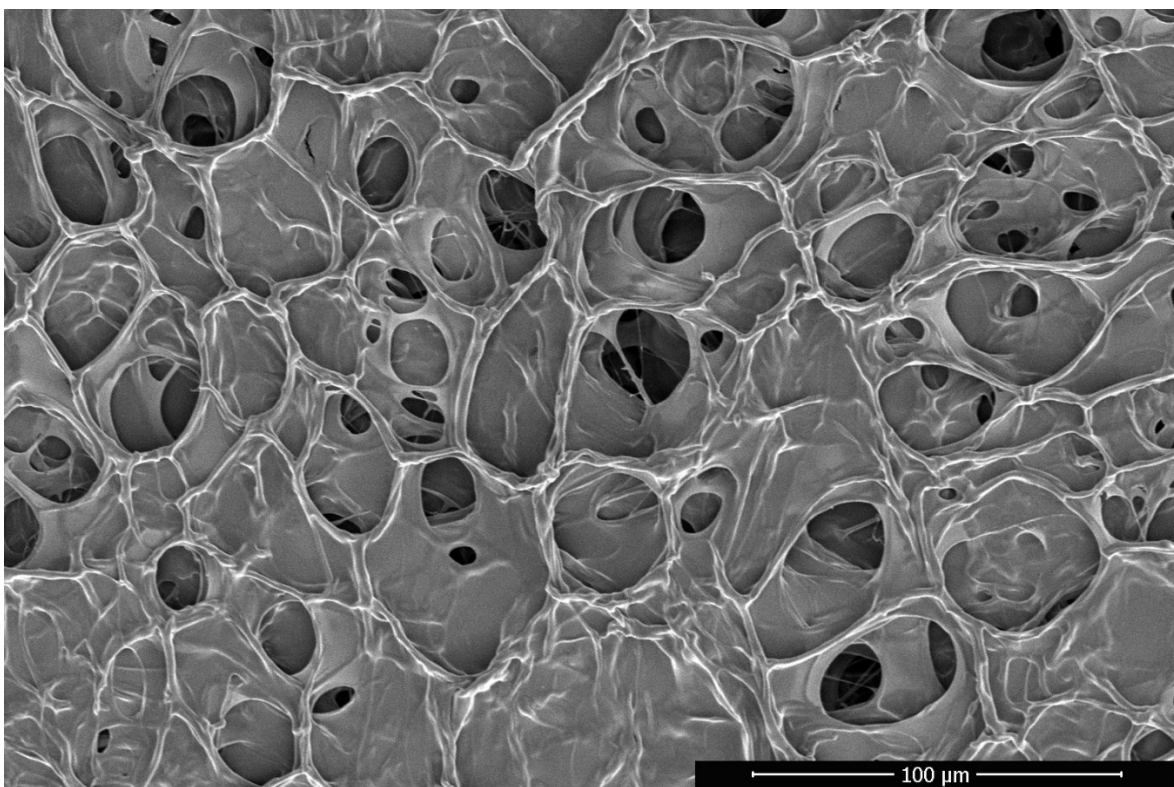
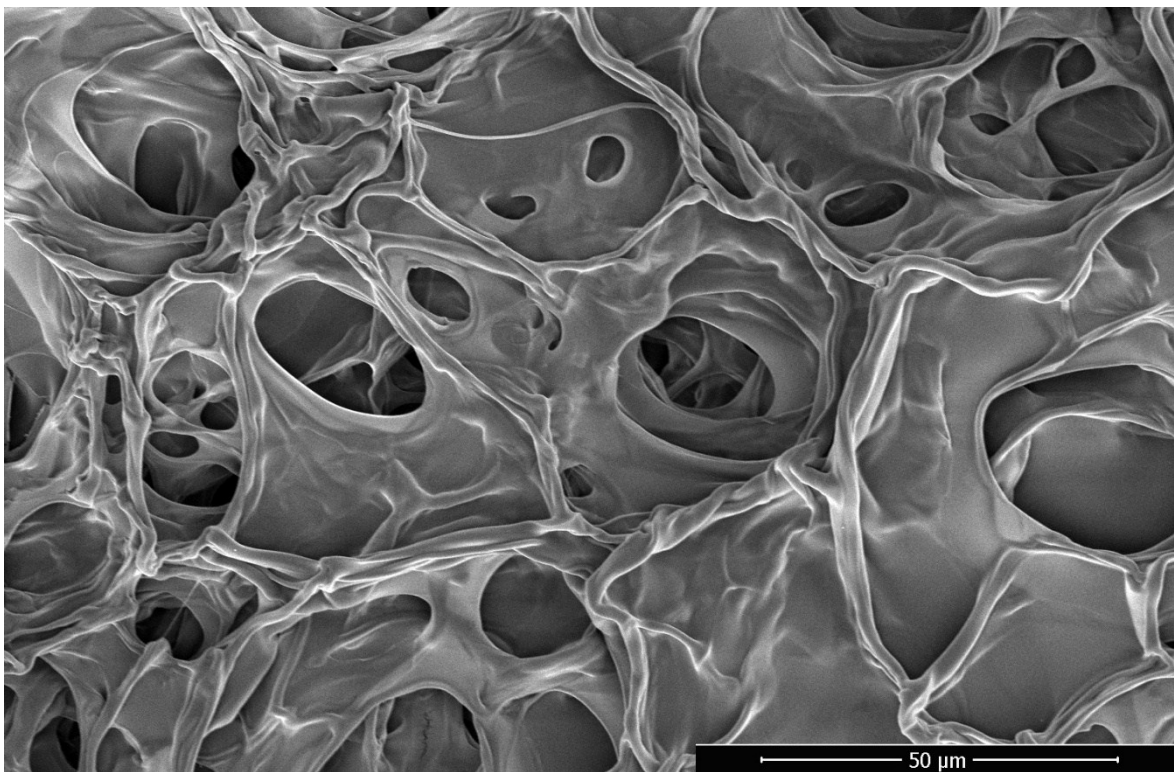


**Fig. S5.** <sup>1</sup>H NMR spectrum of PCL-*b*-P(Z-Lys-*stat*-Phe) in DMSO-*d*<sub>6</sub>.

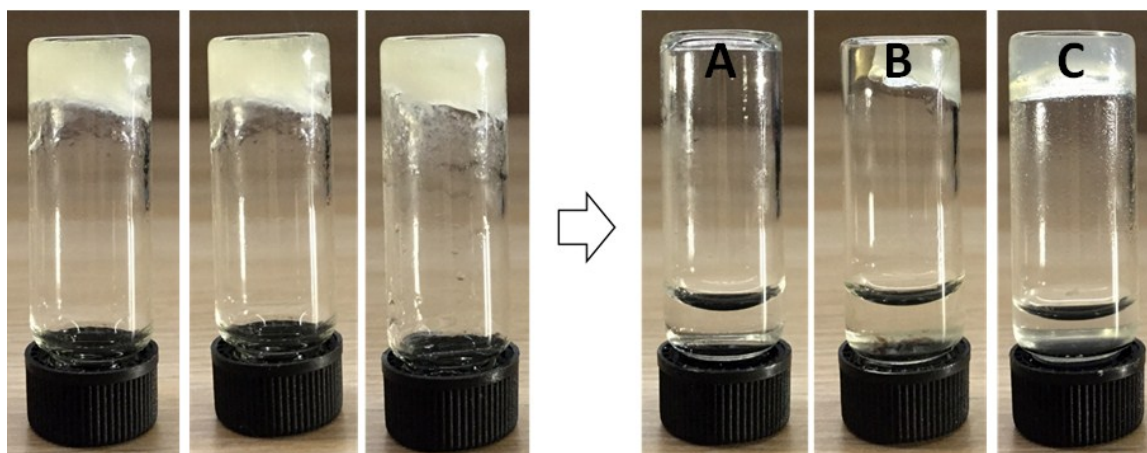


**Fig. S6.** <sup>1</sup>H NMR spectrum of PCL-*b*-P(Lys-*stat*-Phe) in DMSO-*d*<sub>6</sub>.





**Fig. S10.** Additional SEM images of freeze-dried hydrogels.



**Fig. S11.** Photographs of hydrogels immersed in (A) 0.1 M HCl; (B) 0.1 M NaOH; (C) deionized water for 12 h.