

Title	Polyethylene-glycol-modified Zwitterionic Polymers assisted Protein Aggregation Arrest and Refolding
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Citation	Molecular Systems Design & Engineering, 7(10): 1327-1335
Issue Date	2022-07-05
Type	Journal Article
Text version	author
URL	<a href="http://hdl.handle.net/10119/18768">http://hdl.handle.net/10119/18768</a>
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Description	

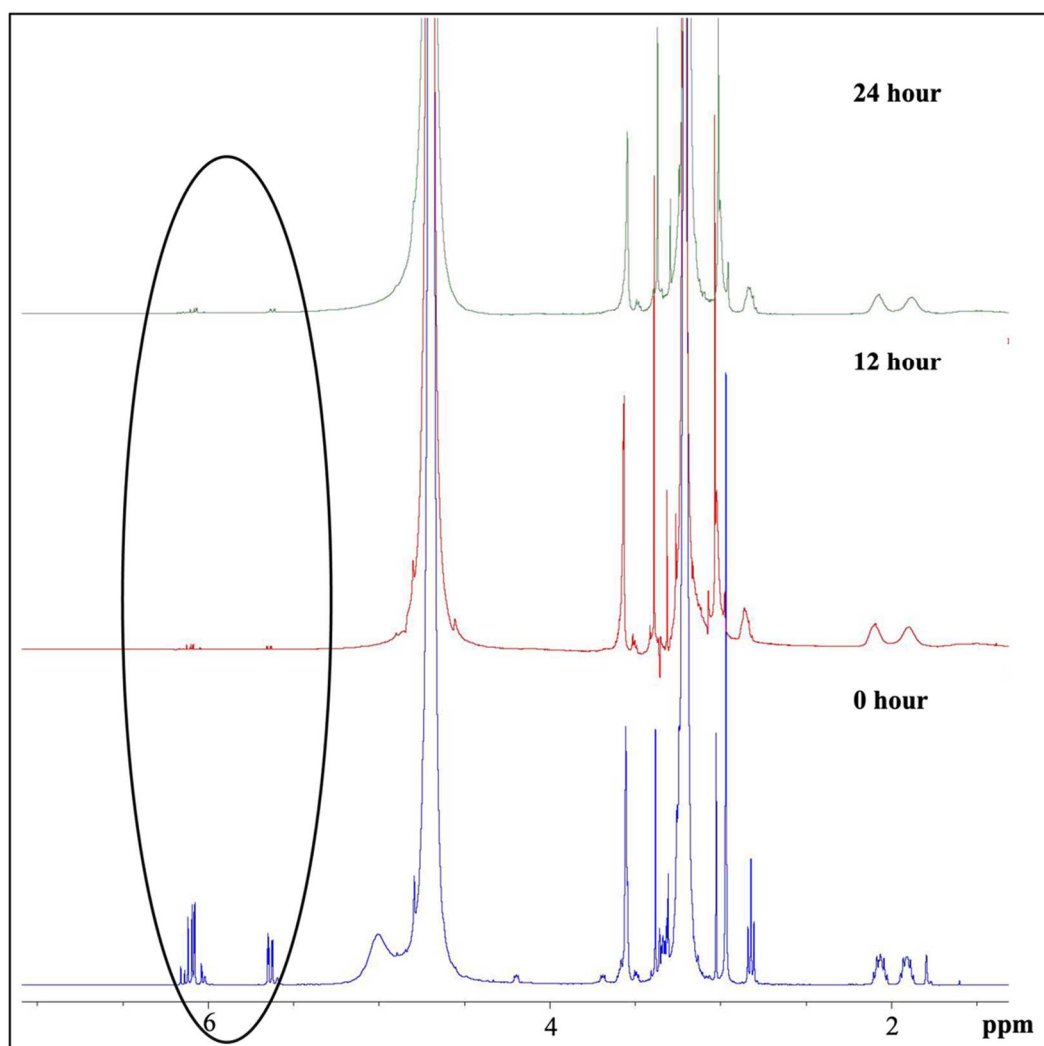
## Electronic Supplementary Information

### Polyethylene-glycol-modified Zwitterionic Polymers assisted Protein Aggregation Arrest and Refolding

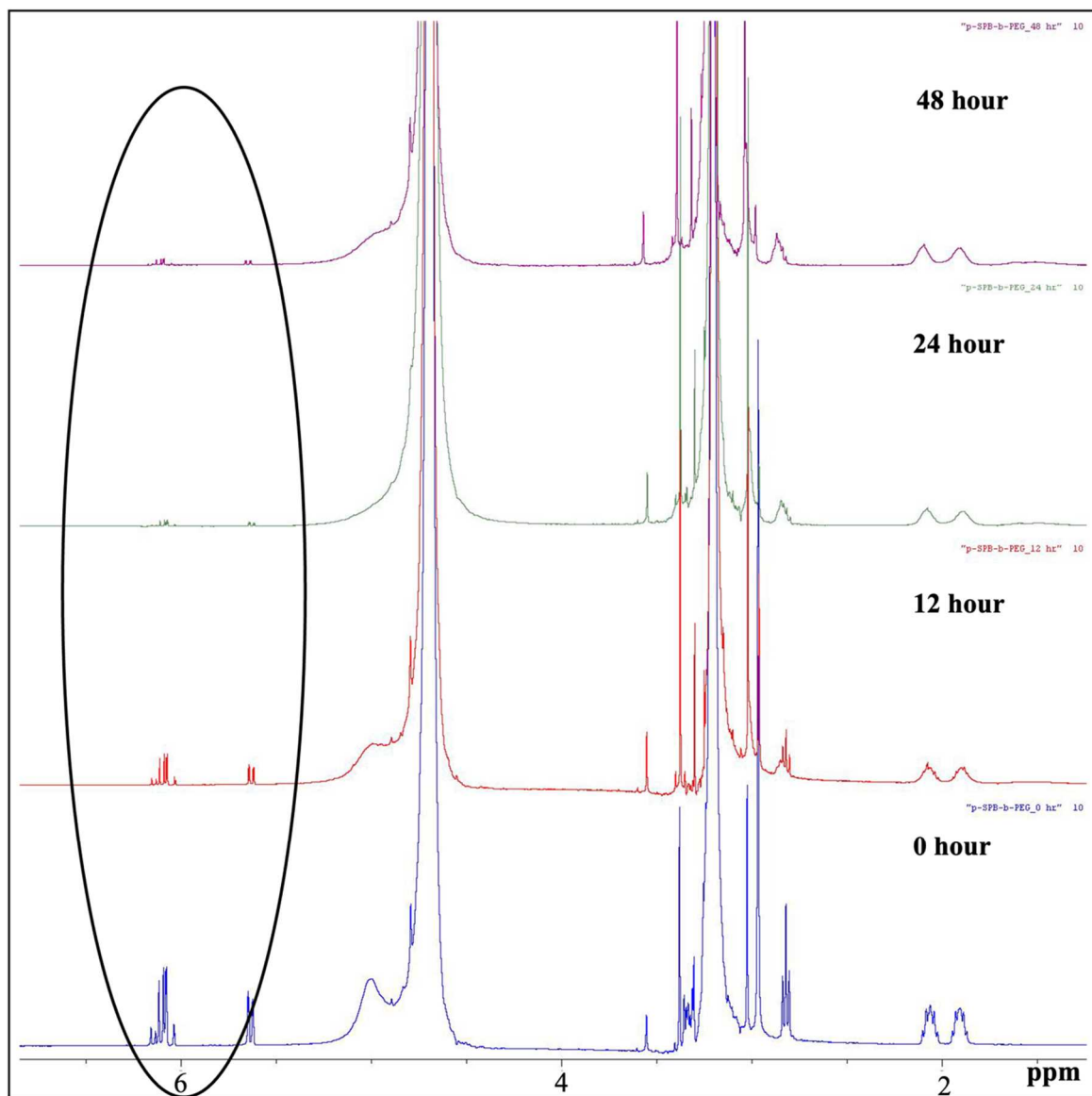
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<sup>a</sup> School of Materials Science, Japan Advanced Institute of Science and Technology, 1-1 Asahidai, Nomi, Ishikawa, 923-1292, Japan.

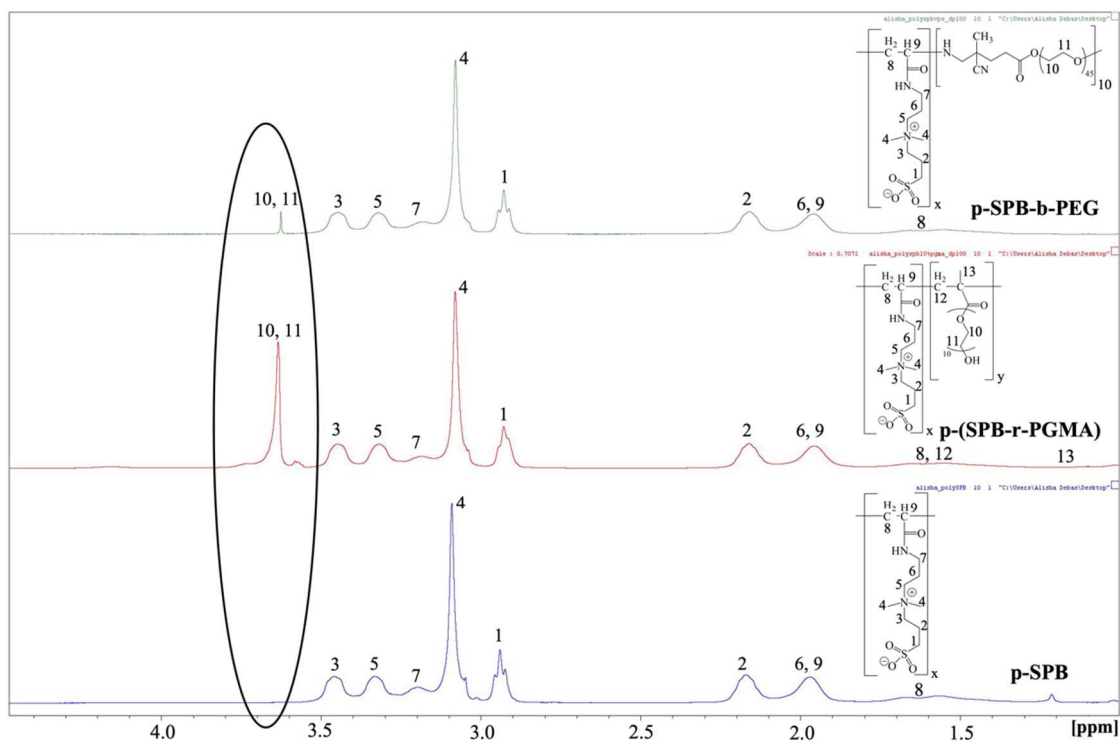
\*Corresponding author. Email: [mkazuaki@jaist.ac.jp](mailto:mkazuaki@jaist.ac.jp) (KM). [robin@jaist.ac.jp](mailto:robin@jaist.ac.jp) (RR).



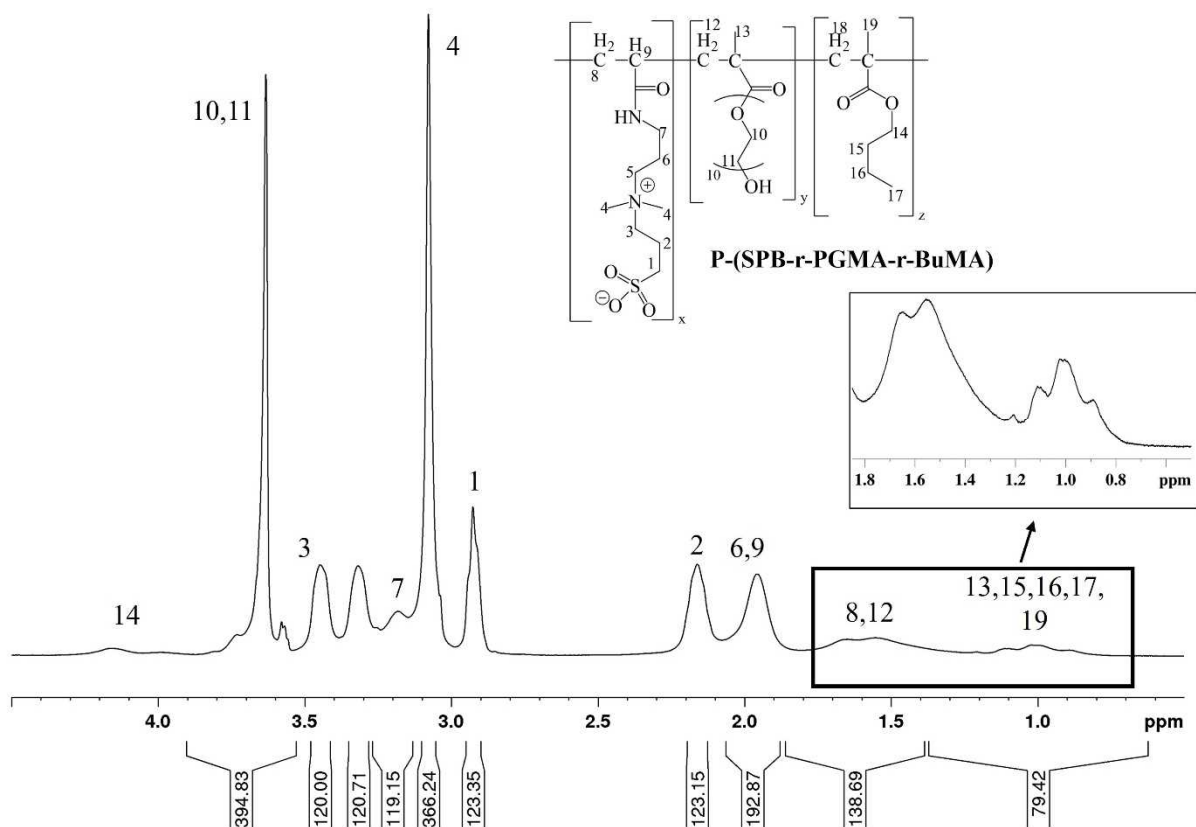
**Fig. S1** Periodic <sup>1</sup>H-NMR spectra (in deuterium oxide) of p-(SPB-r-PGMA) for evaluation of conversion rate. The disappearance of vinyl peaks suggests the conversion of the monomer.



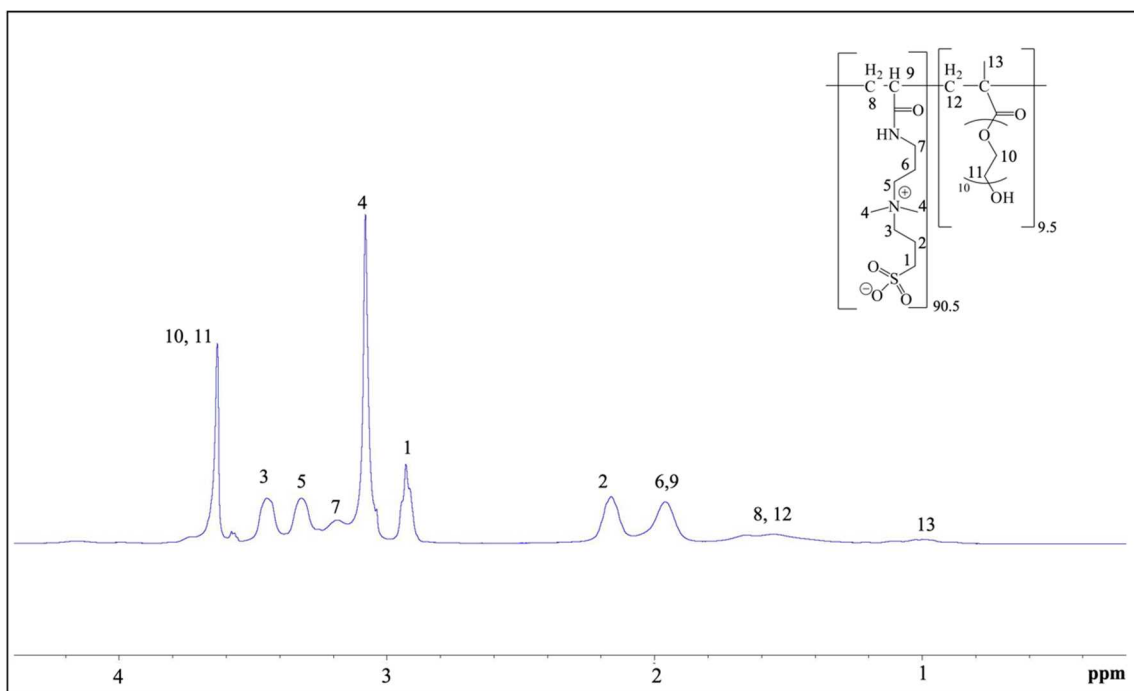
**Fig. S2** Periodic <sup>1</sup>H-NMR spectra (in deuterium oxide) of p-SPB-b-PEG for evaluation of conversion rate. The disappearance of vinyl peaks suggests the conversion of the monomer.



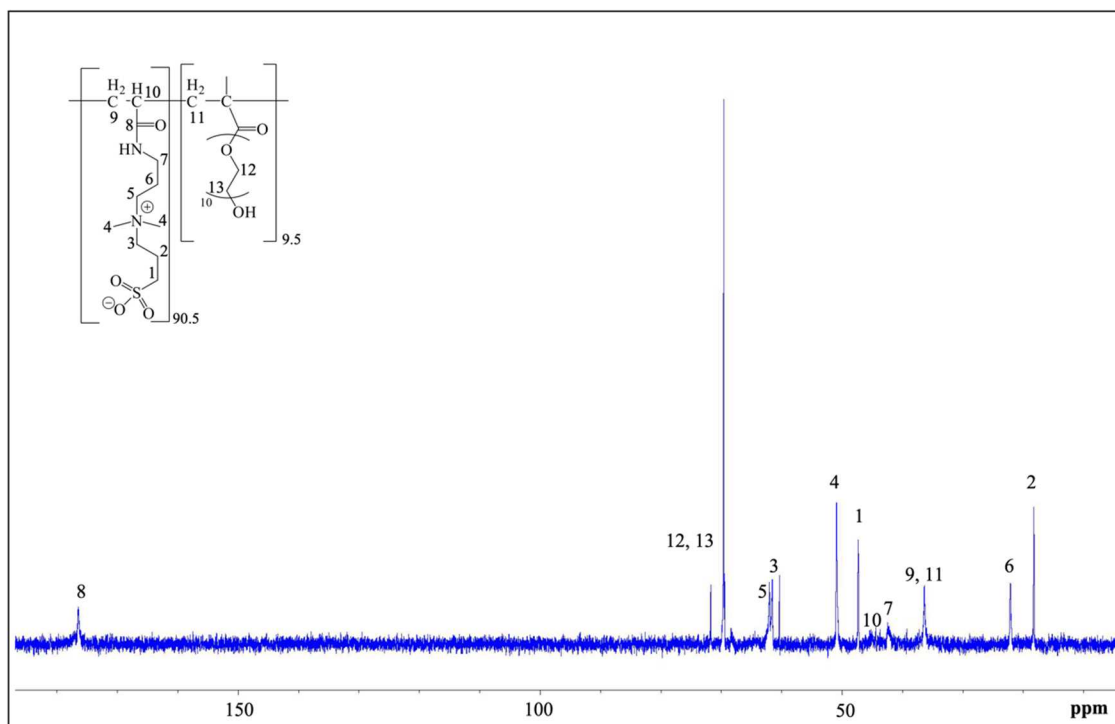
**Fig. S3** <sup>1</sup>H-NMR spectra (in deuterium oxide) of polymers showing incorporation of PEG group into poly-SPB.



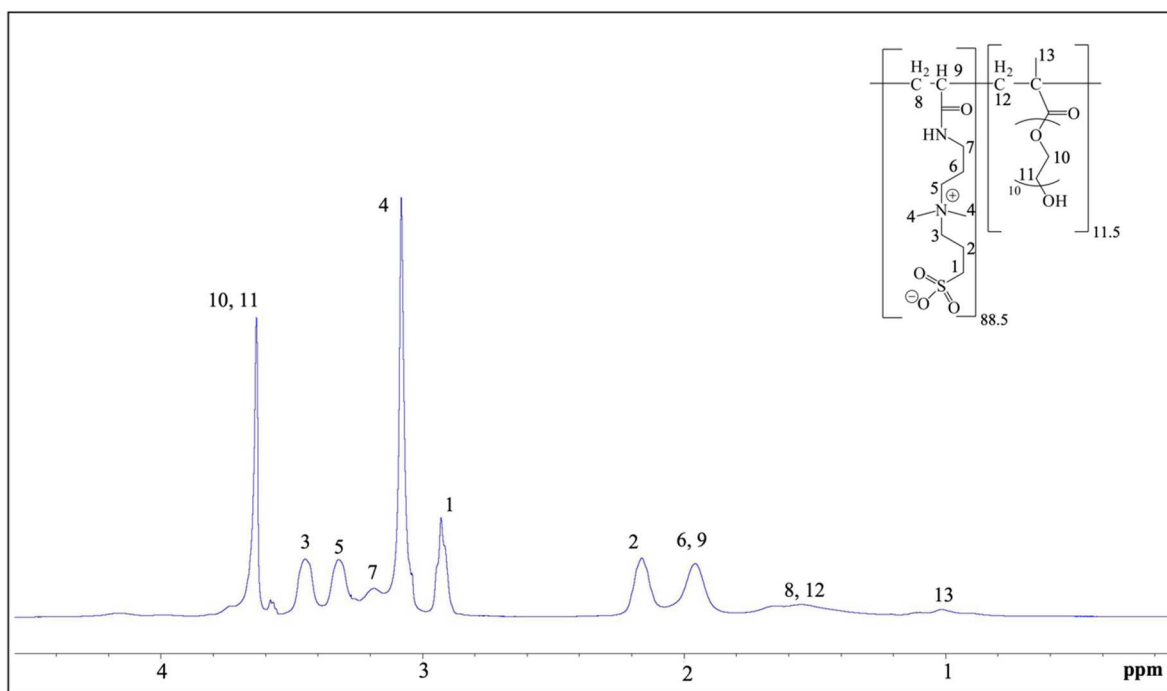
**Fig. S4** <sup>1</sup>H-NMR spectrum (in deuterium oxide) of poly-SPB with PGMA and BuMA side groups.



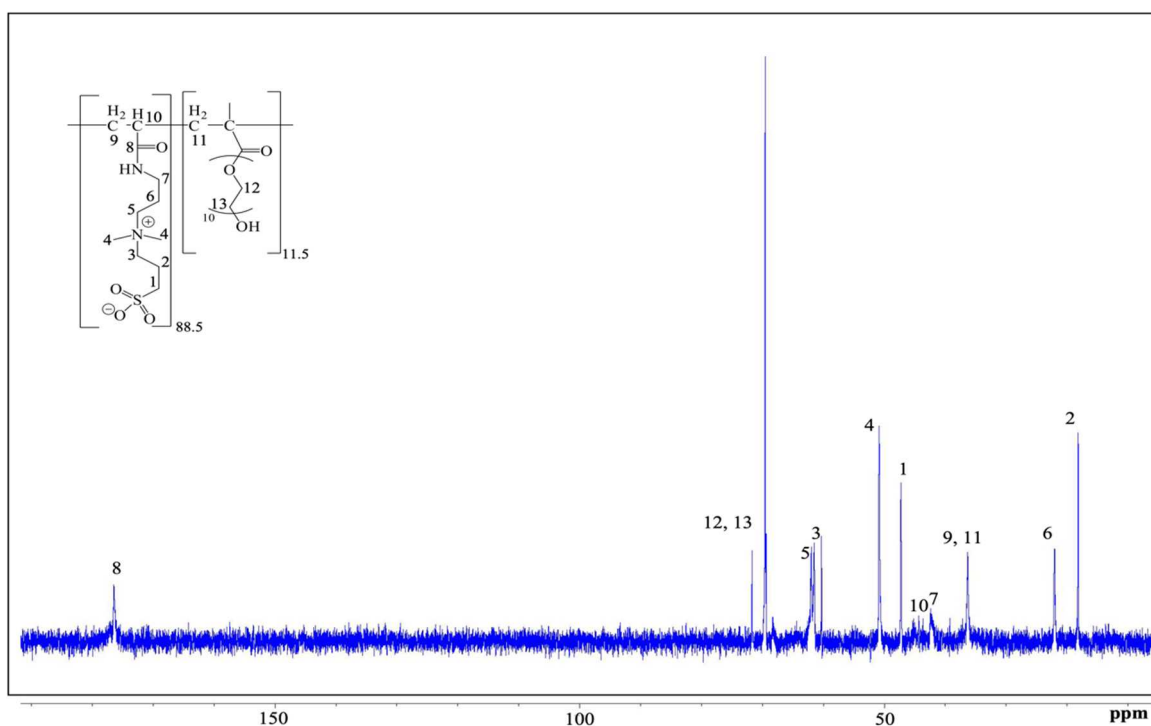
**Fig. S5**  $^1\text{H-NMR}$  spectrum (in deuterium oxide) of p-(SPB-10% PGMA) (DP60) [R1].



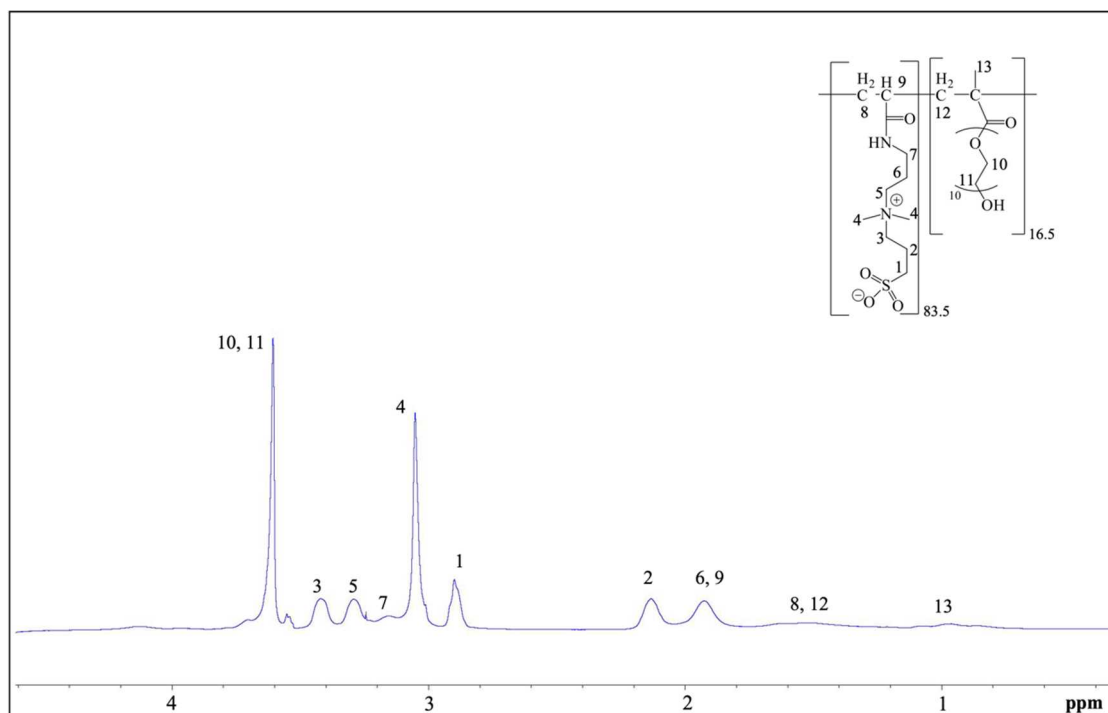
**Fig. S6**  $^{13}\text{C-NMR}$  spectrum (in deuterium oxide) of p-(SPB-10% PGMA) (DP60) [R1].



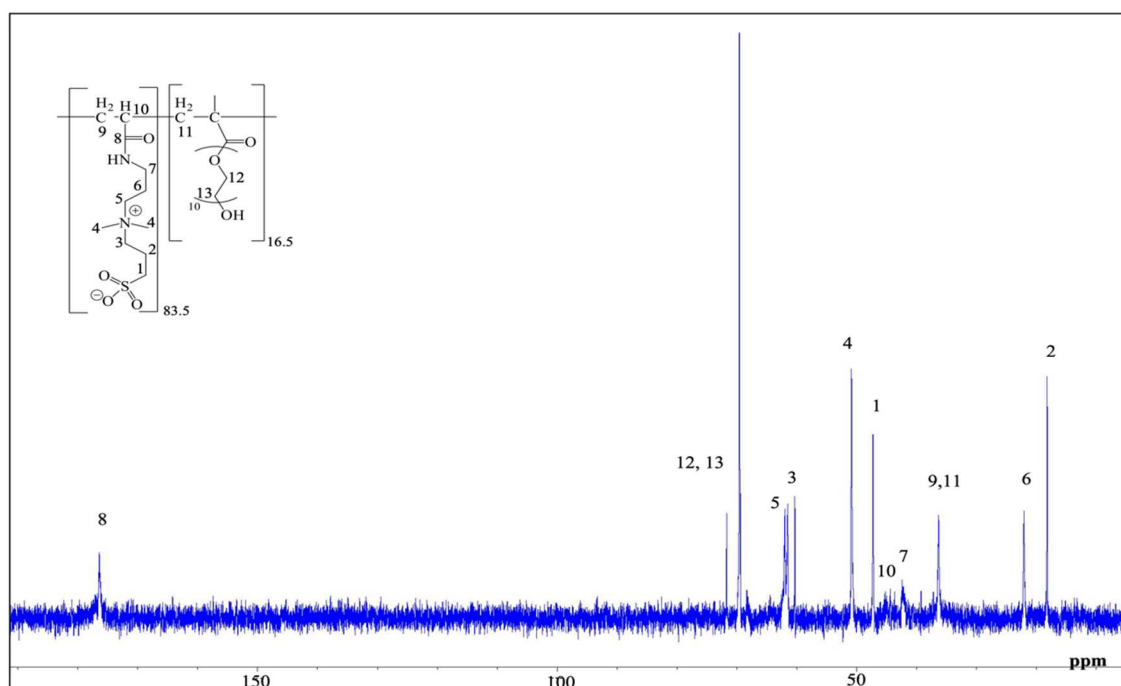
**Fig. S7**  $^1\text{H-NMR}$  spectrum (in deuterium oxide) of p-(SPB-10% PGMA) (DP100) [R2].



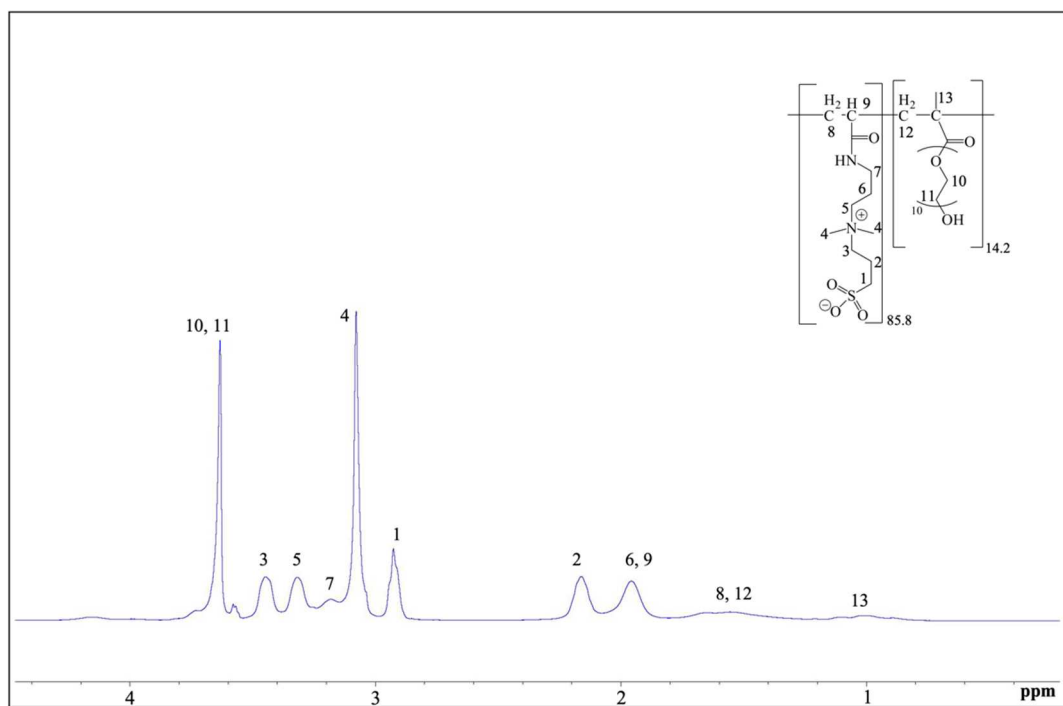
**Fig. S8**  $^{13}\text{C-NMR}$  spectrum (in deuterium oxide) of p-(SPB-10% PGMA) (DP100) [R2].



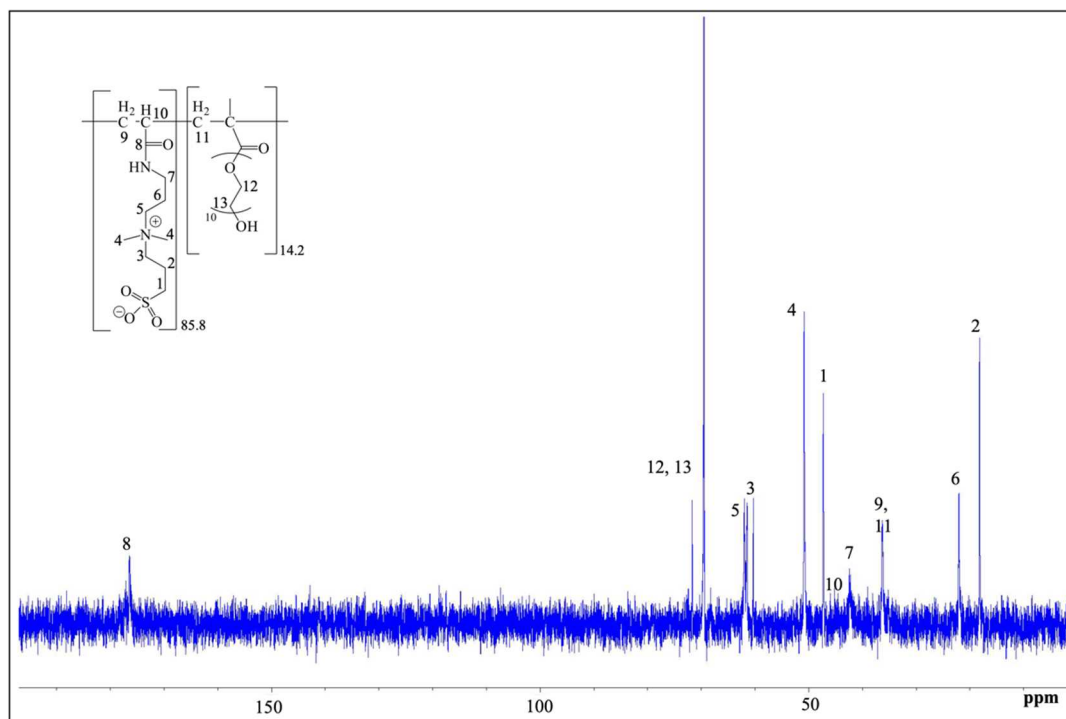
**Fig. S9**  $^1\text{H}$ -NMR spectrum (in deuterium oxide) of p-(SPB-15% PGMA) (DP60) [R3].



**Fig. S10**  $^{13}\text{C}$ -NMR spectrum (in deuterium oxide) of p-(SPB-15% PGMA) (DP60) [R3].

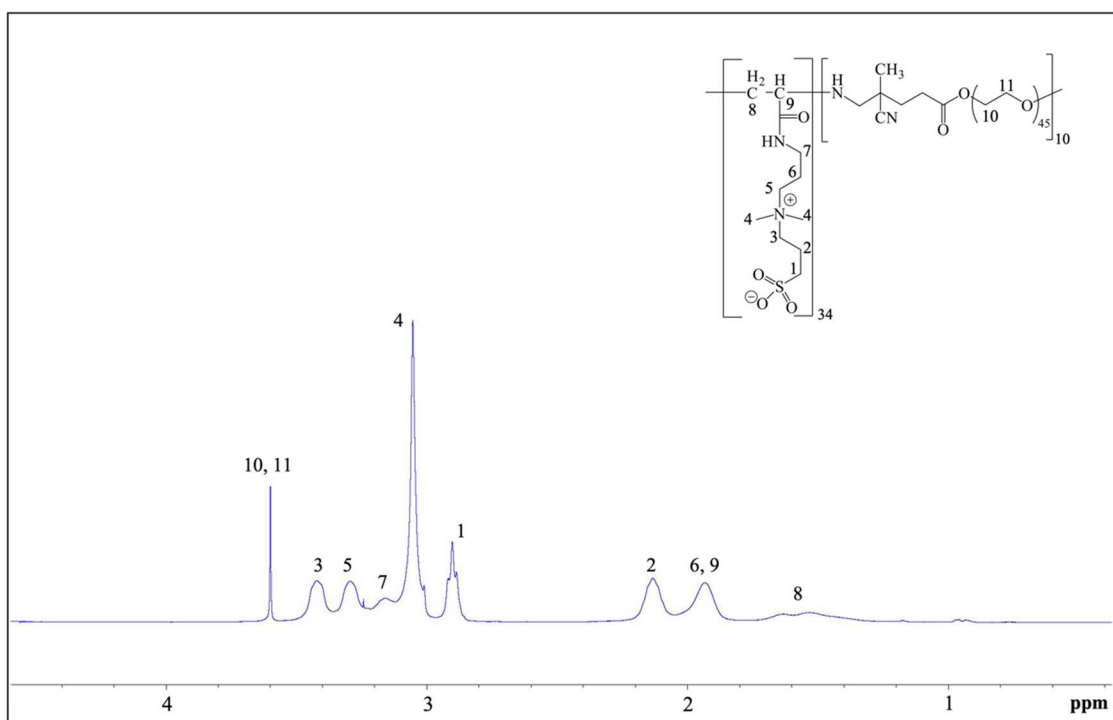


**Fig. S11**  $^1\text{H-NMR}$  spectrum (in deuterium oxide) of p-(SPB-15% PGMA) (DP100) [R4].

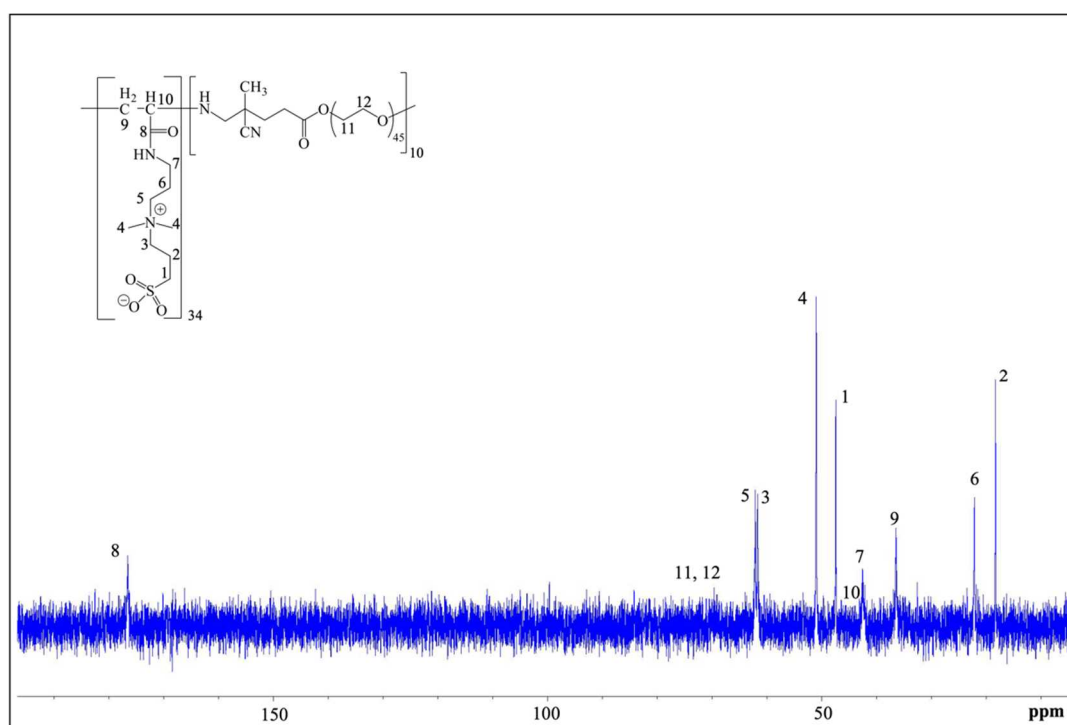


**Fig. S12**  $^{13}\text{C-NMR}$  spectrum (in deuterium oxide) of p-(SPB-15% PGMA) (DP100) [R4].

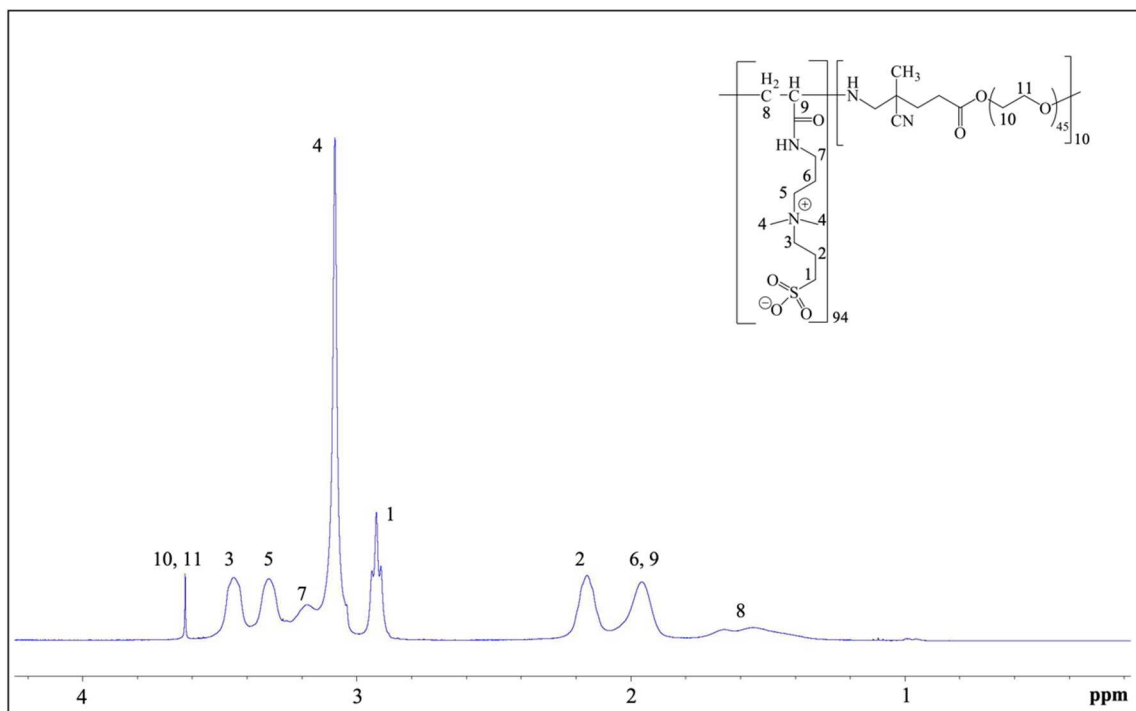




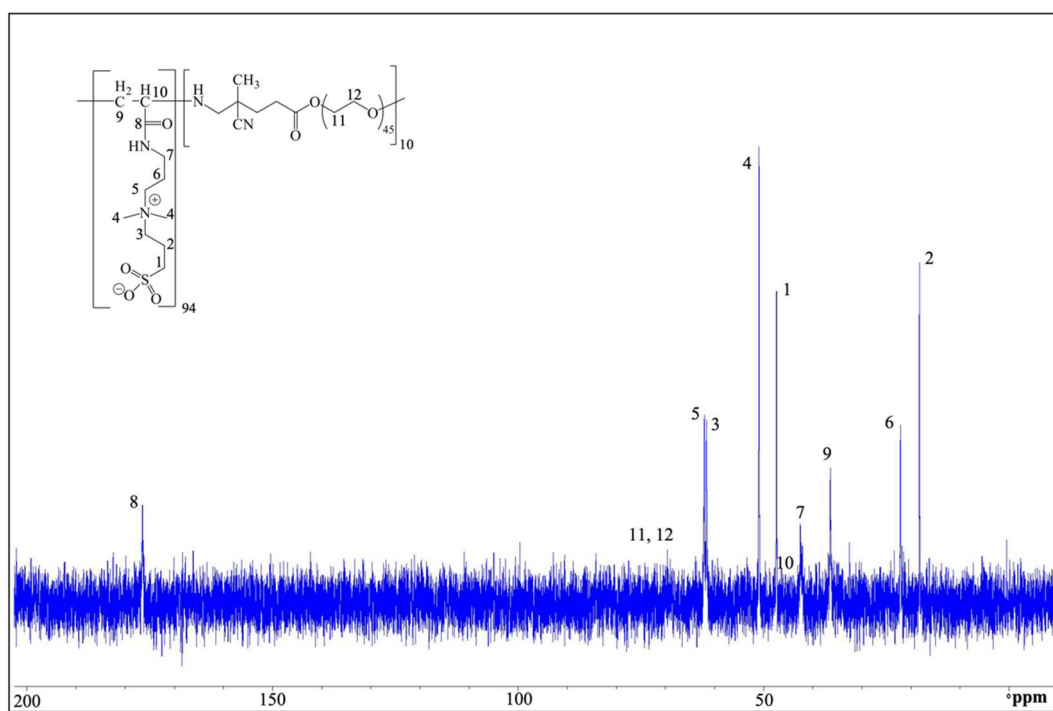
**Fig. S13** <sup>1</sup>H-NMR spectrum (in deuterium oxide) of p-SPB-b-PEG (DP60) [B1].



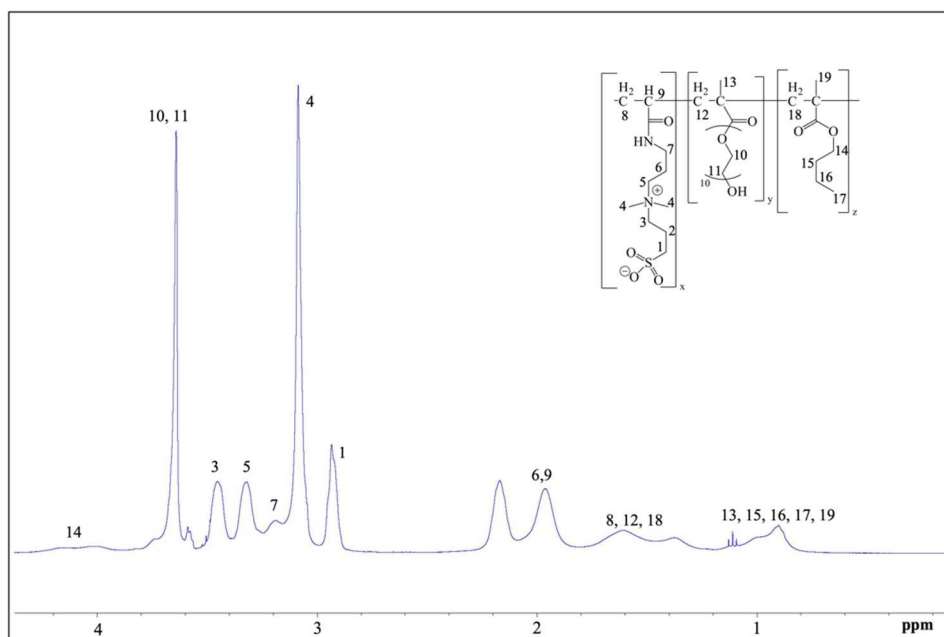
**Fig. S14** <sup>13</sup>C-NMR spectrum (in deuterium oxide) of p-SPB-b-PEG (DP60) [B1].



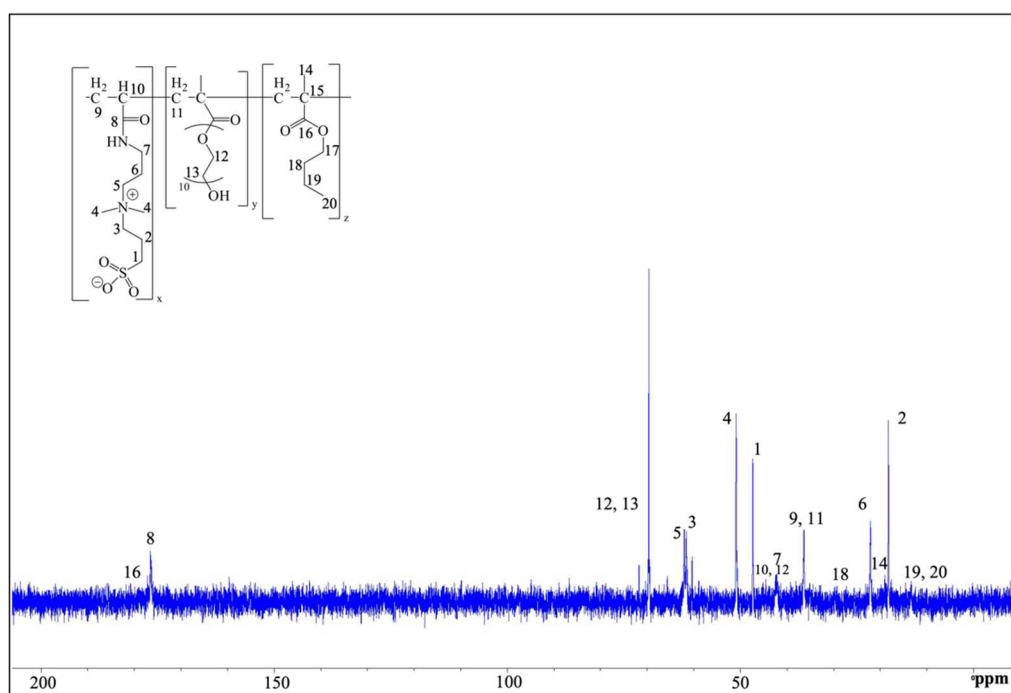
**Fig. S15**  $^1\text{H-NMR}$  spectrum (in deuterium oxide) of p-SPB-b-PEG (DP100) [B2].



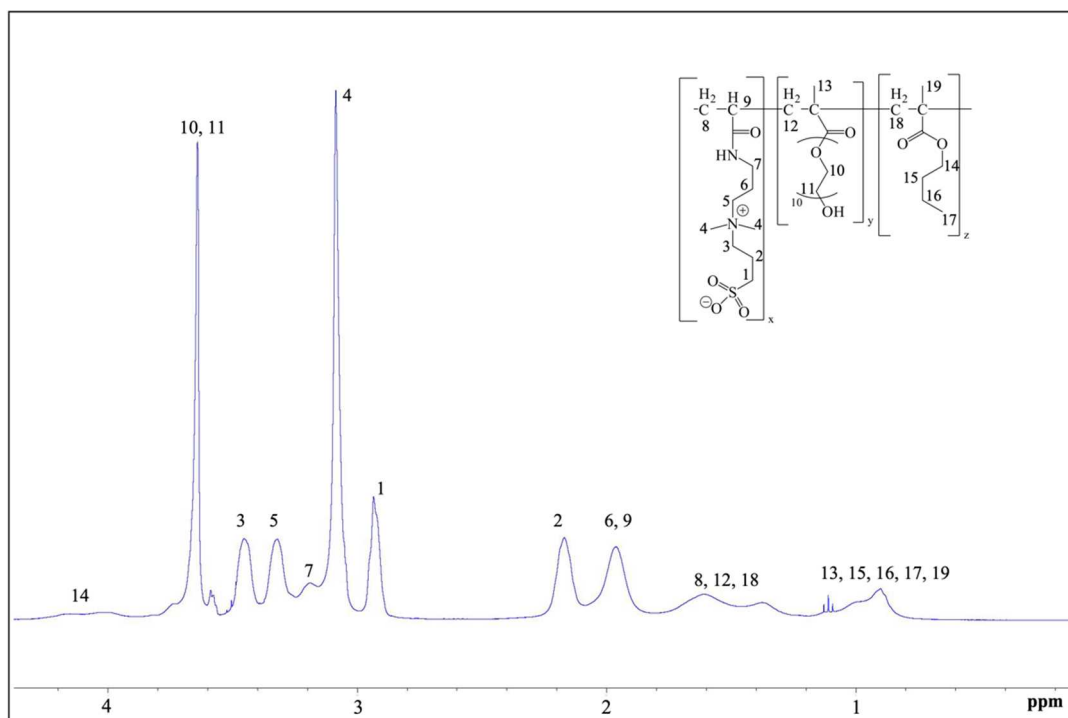
**Fig. S16**  $^{13}\text{C-NMR}$  spectrum (in deuterium oxide) of p-SPB-b-PEG (DP100) [B2].



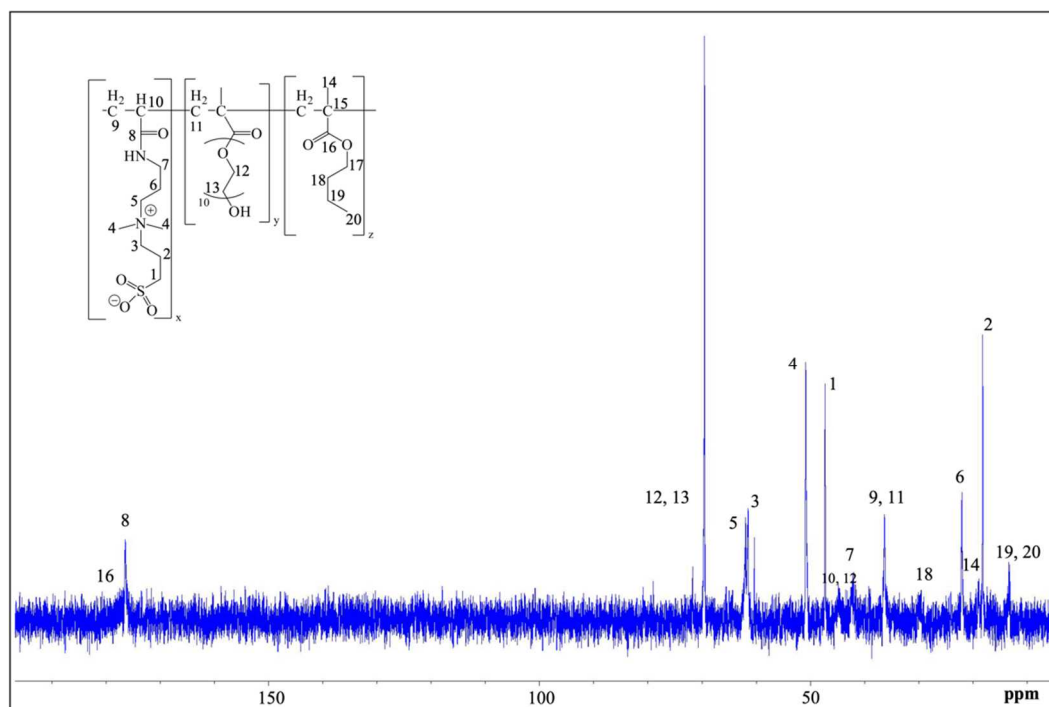
**Fig. S17** <sup>1</sup>H-NMR spectrum (in deuterium oxide) of p-(SPB-15%PGMA-10%BuMA) (DP60) [T1].



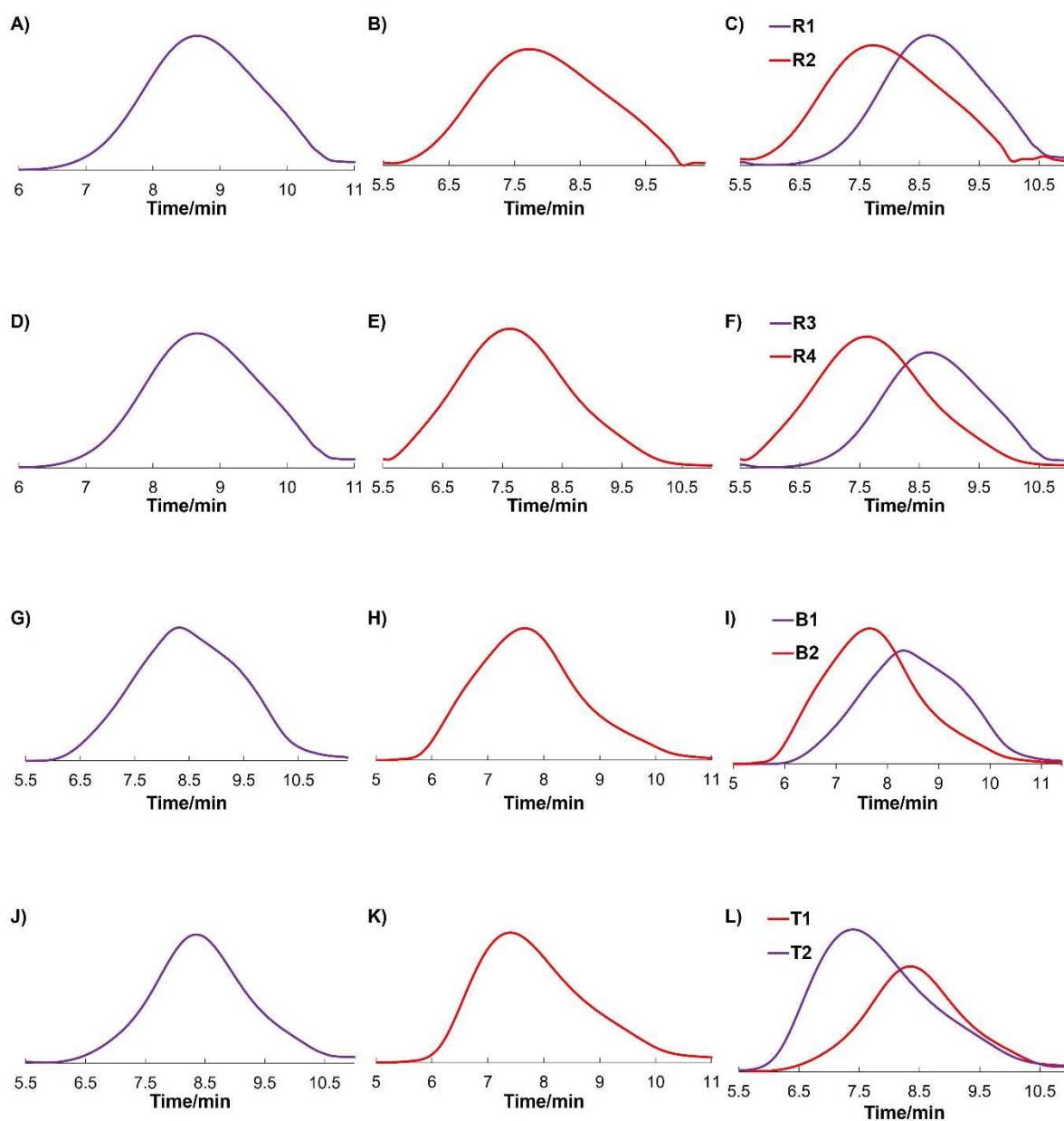
**Fig. S18** <sup>13</sup>C-NMR spectrum (in deuterium oxide) of p-(SPB-15%PGMA-10%BuMA) (DP60) [T1].



**Fig. S19**  $^1\text{H-NMR}$  spectrum (in deuterium oxide) of p-(SPB-15%PGMA-10%BuMA) (DP100) [T2].



**Fig. S20**  $^{13}\text{C-NMR}$  spectrum (in deuterium oxide) of p-(SPB-15%PGMA-10%BuMA) (DP100) [T2].



**Fig. S21** GPC elution curves of A) R1, B) R2, C) Comparison of R1 and R2, D) R3, E) R4, F) Comparison of R3 and R4, G) B1, H) B2, I) Comparison of B1 and B2, J) T1, K) T2, and L) Comparison of T1 and T2, using an aqueous 0.1 M NaBr solution (pH 7.4) as the mobile phase.