

Supporting Information

Synthesis and self-assembly of hyperbranched multiarm copolymer lysozyme conjugates based on light-induced metal-free ATRP

Jianguo Yi, Yan Qin, Yue Zhang*

Characterization: ^1H NMR measurements were carried out on a 400 MHz Varian UNITY-plus NMR spectrometer. The M_n and the dispersity were measured by a Hitachi gel permeation chromatography (GPC) with DMF as the mobile phase and PMMA as the standards. The GPC was equipped with a Hitachi L-2490 refractive index detector and a Viscotek 270 dual detector. Scanning electron microscopy (SEM) was measured with an FEI Apreo S LoVac electron microscope. The hydrodynamic diameters (D_h), the polydispersities (PDI) of the assemblies were measured by a Malvern Zetasizer Nano-ZS. LCST and lysozyme activity were determined on a Shimadzu UV-2450 spectrophotometer. The farultraviolet circular dichroism (CD) spectra were collected on a JASCO J-815 spectrometer equipped with a thermally regulated cell compartment. The measurements were performed in a quartz cuvette with an optical path of 1 mm. The scanning range was from 190 to 250 nm and the scanning speed was 100 nm min^{-1} .

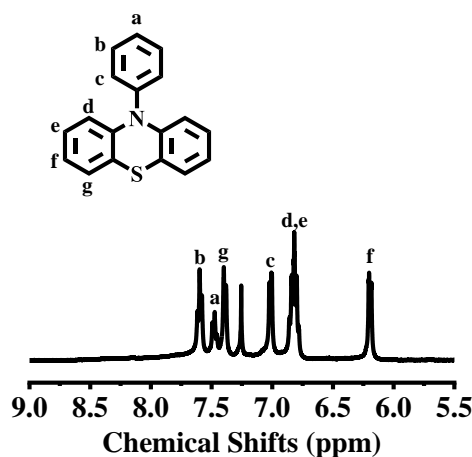


Figure S1. ^1H NMR spectrum of PTH in CDCl_3

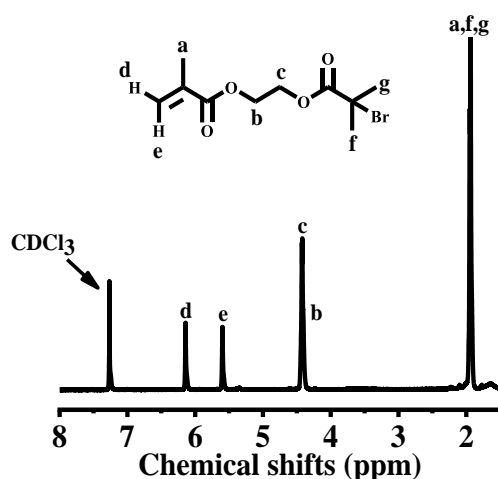


Figure S2. ^1H NMR spectrum of BMA in CDCl_3

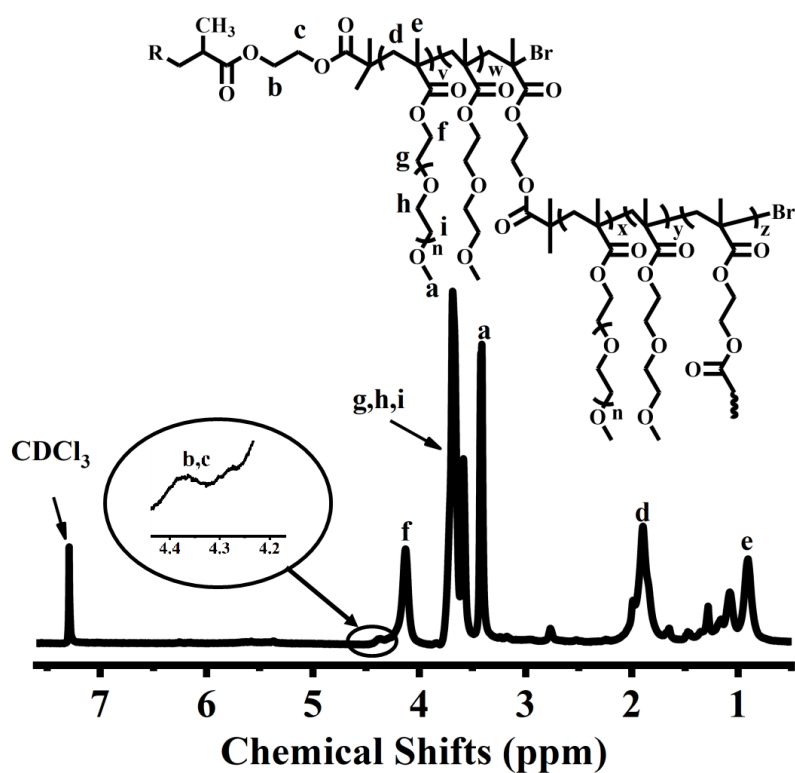


Figure S3. ^1H NMR spectrum of $\text{h}_2\text{P}(\text{DEGMA-co-OEGMA})$ in CDCl_3

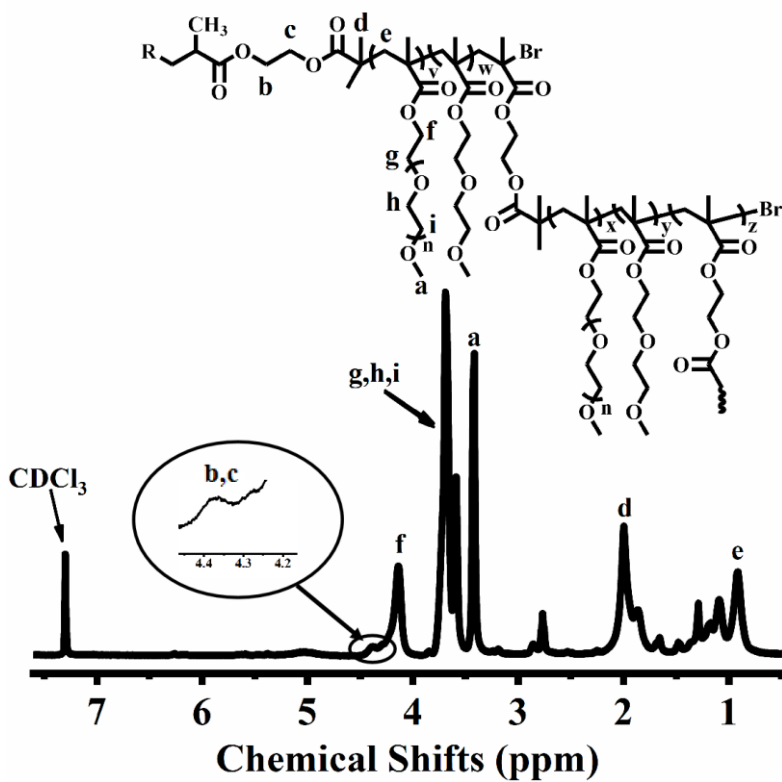


Figure S4. ^1H NMR spectrum of $\text{h}_3\text{P}(\text{DEGMA-co-OEGMA})$ in CDCl_3

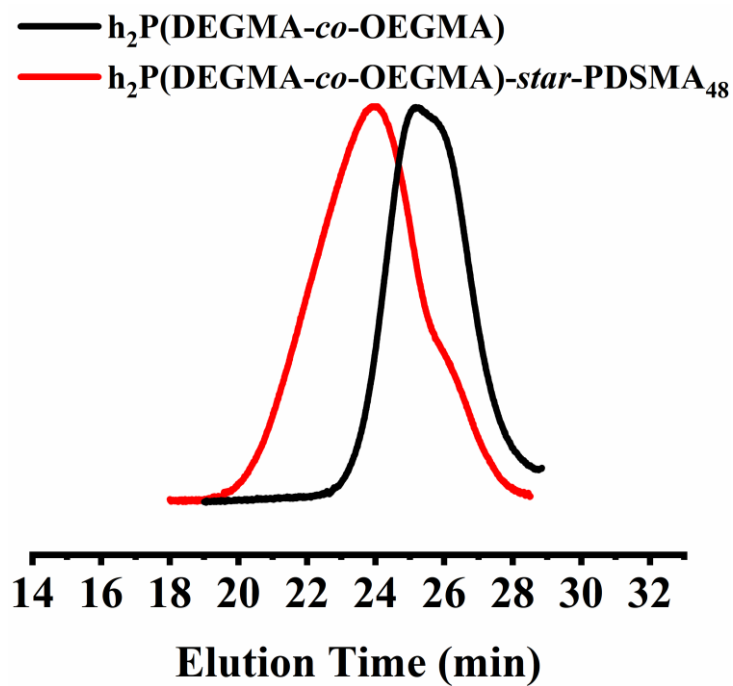


Figure S5. GPC curves of $\text{h}_2\text{P}(\text{DEGMA-}co\text{-OEGMA})$ (black line) and $\text{h}_2\text{P}(\text{DEGMA-}co\text{-OEGMA})\text{-star-PDSMA}_{48}$ (red line)

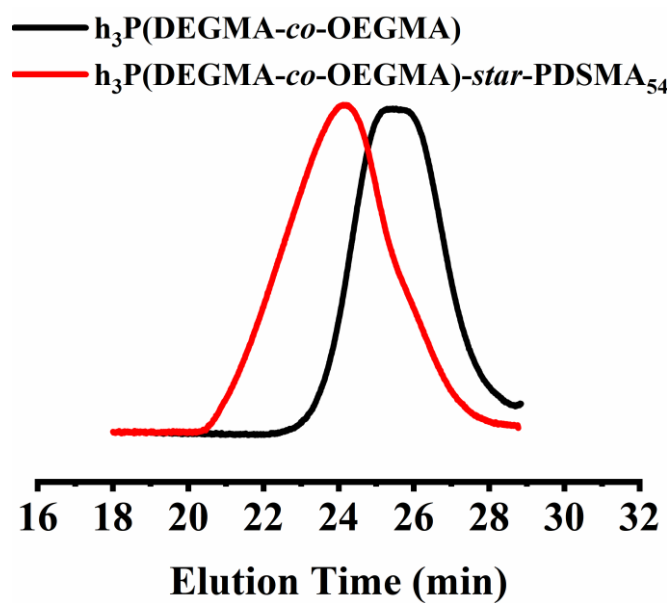


Figure S6. GPC curves of $\text{h}_3\text{P}(\text{DEGMA-}co\text{-OEGMA})$ (black line) and $\text{h}_3\text{P}(\text{DEGMA-}co\text{-OEGMA})\text{-star-PDSMA}_{54}$ (red line)

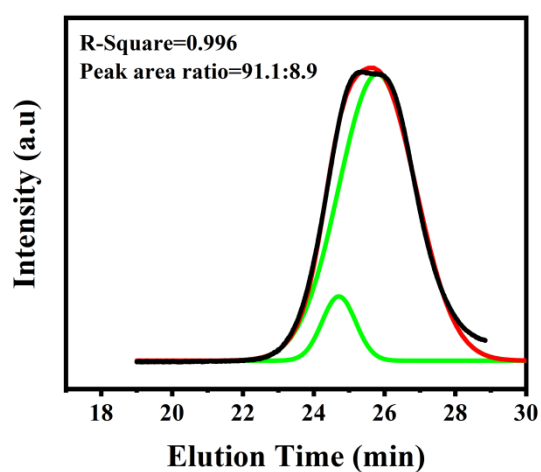


Figure S7. Fitting result of the GPC curve of $h_1P(\text{DEGMA-co-OEGMA})$. The M_n s of the two peaks are 12.2 and 24.1 kDa.

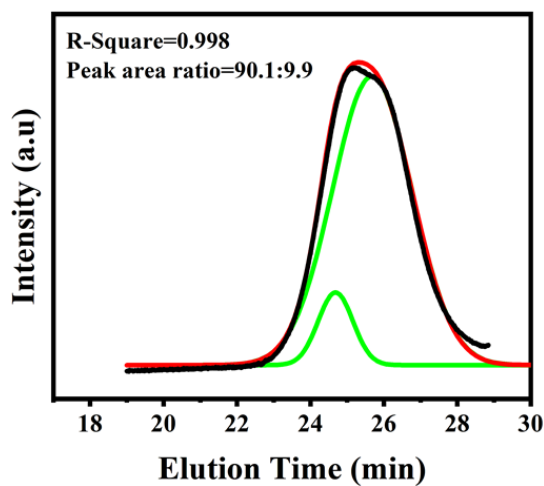


Figure S8. Fitting result of the GPC curve of $h_2P(\text{DEGMA-co-OEGMA})$. The M_n s of the two peaks are 13.3 and 24.2 kDa.

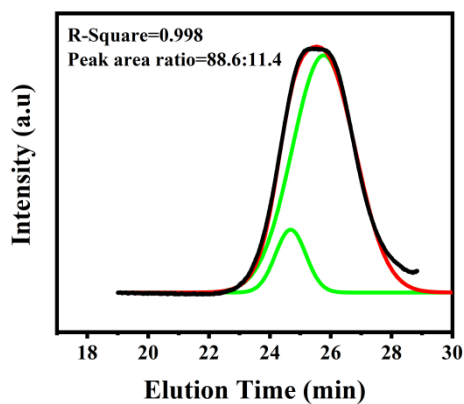


Figure S9. Fitting result of the GPC curve of $h_3P(\text{DEGMA-co-OEGMA})$. The M_n s of the two peaks are 12.5 and 24.3 kDa.

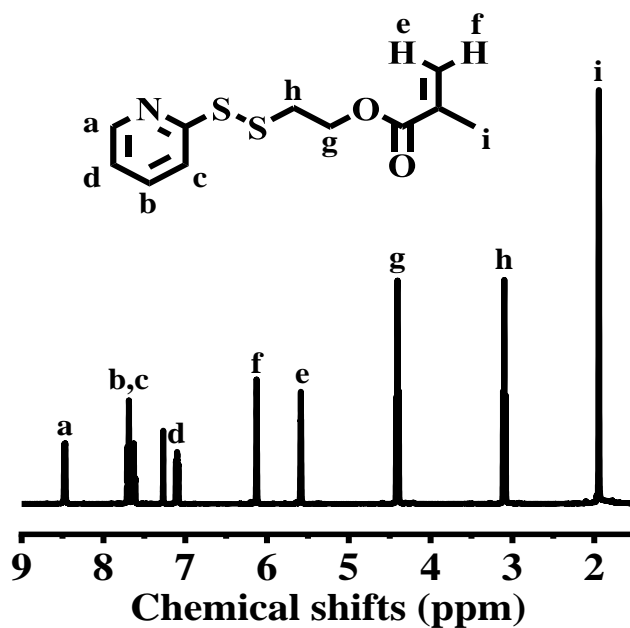


Figure S10. ^1H NMR spectrum of DSMA in CDCl_3

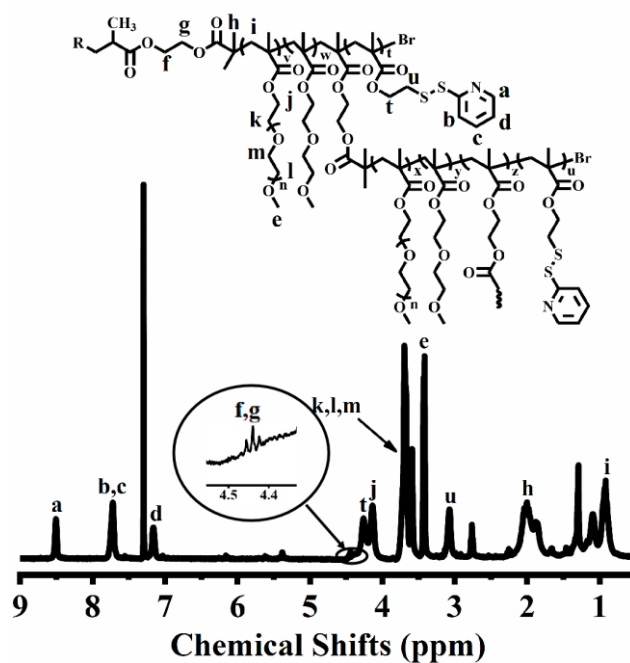


Figure S11. ^1H NMR spectrum of $\text{h}_2\text{P}(\text{DEGMA-co-OEGMA})\text{-star-PDSMA}_{48}$ in CDCl_3

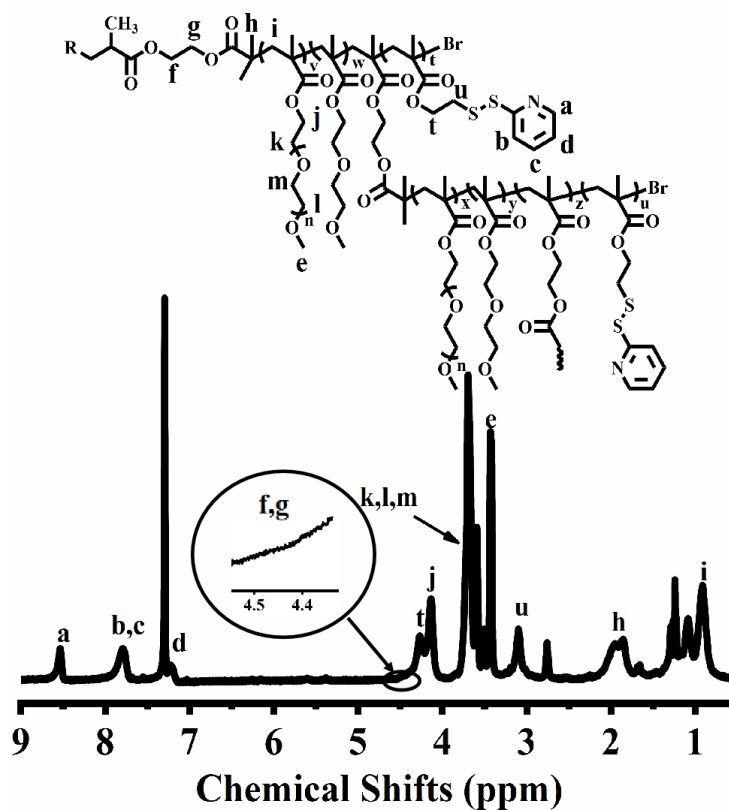


Figure S12. ^1H NMR spectrum of $\text{h}_3\text{P}(\text{DEGMA-co-OEGMA})\text{-star-PDSMA}_{54}$ in CDCl_3

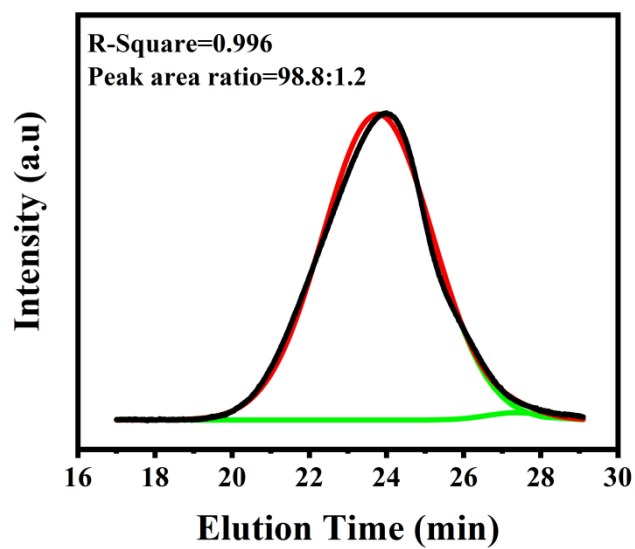


Figure S13. Fitting result of the GPC curve of $\text{h}_1\text{P}(\text{DEGMA-co-OEGMA})\text{-star-PDSMA}_{45}$. The M_n s of the two peaks are 5.1 and 35.1 kDa.

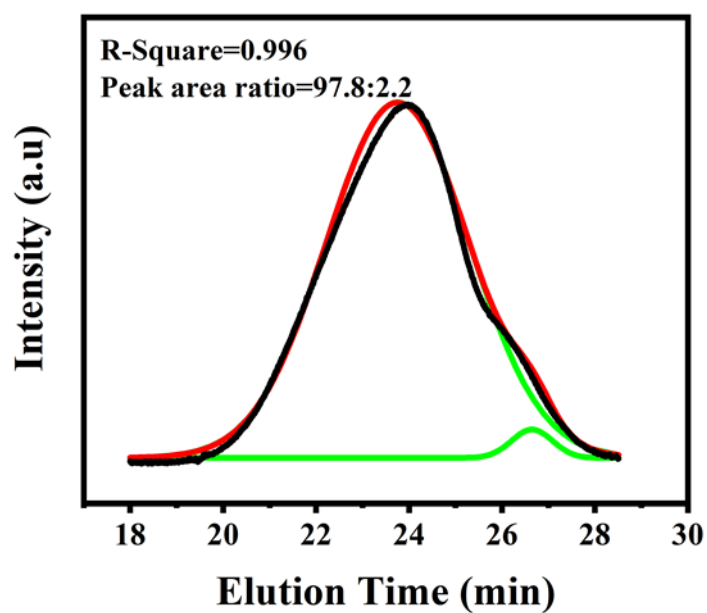


Figure S14. Fitting result of the GPC curve of $h_2P(\text{DEGMA-co-OEGMA})\text{-star-PDSMA}_{48}$. The M_n s of the two peaks are 7.2 and 34.5 kDa.

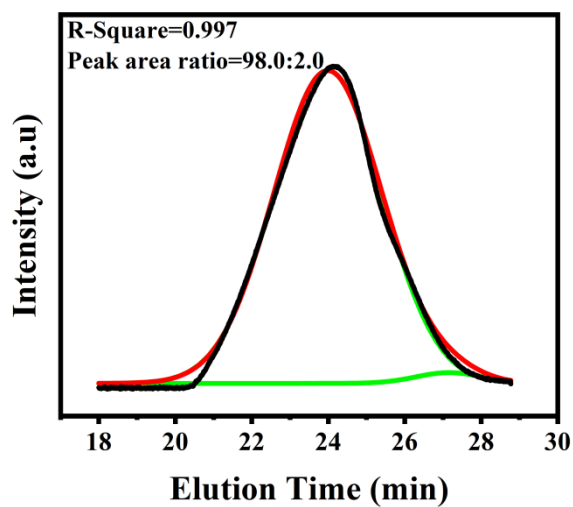


Figure S15. Fitting result of the GPC curve of $h_3(\text{DEGMA-co-OEGMA})\text{-star-PDSMA}_{54}$. The M_n s of the two peaks are 5.2 and 35.3 kDa.

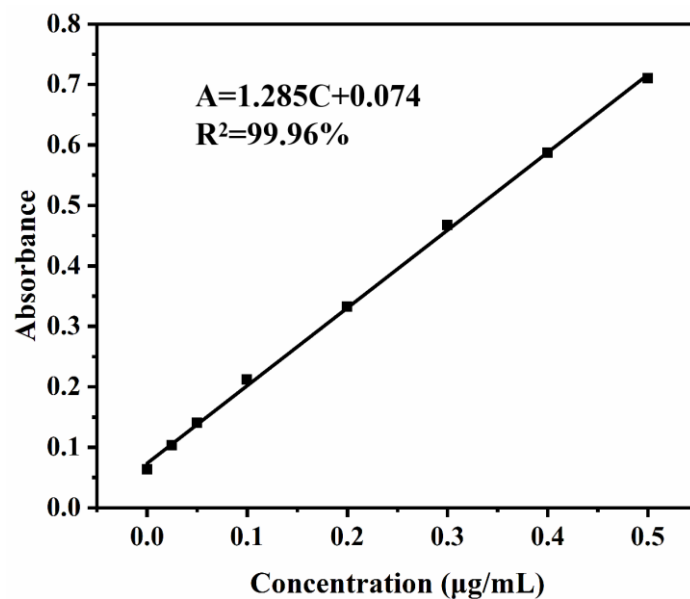


Figure S16. Standard curve of lysozyme determined by BCA method

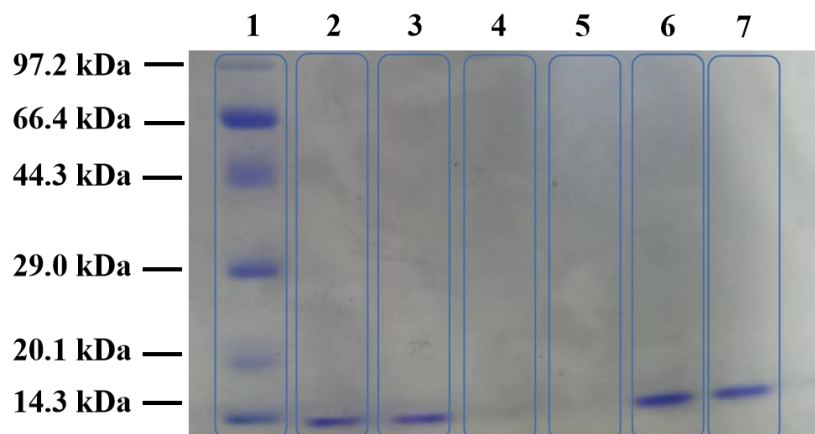


Figure S17. Polyacrylamide gel electrophoresis (SDS-PAGE) results: lane 1: Marker, lane 2: lysozyme, lane 3: lysozyme-SH, lane 4: G-2, lane 5: h₂P(DEGMA-co-OEGMA)-star-PDSMA₄₈, lane 6: lysozyme + DTT, lane 7: G-2 + DTT

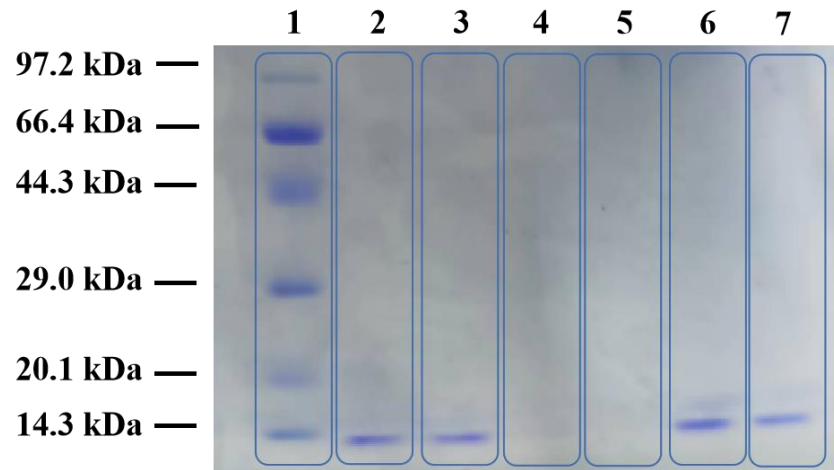


Figure S18. Polyacrylamide gel electrophoresis (SDS-PAGE) results: lane 1: Marker, lane 2: lysozyme, lane 3: lysozyme-SH, lane 4: G-3, lane 5: $h_3P(\text{DEGMA-co-OEGMA})\text{-star-PDSMA}_{54}$, lane 6: lysozyme + DTT, lane 7: G-3 + DTT