

Supplementary Information

Aromatic thioacetal -Bridged ROS-Responsive

Nanoparticles as Novel Gene Delivery Vehicles

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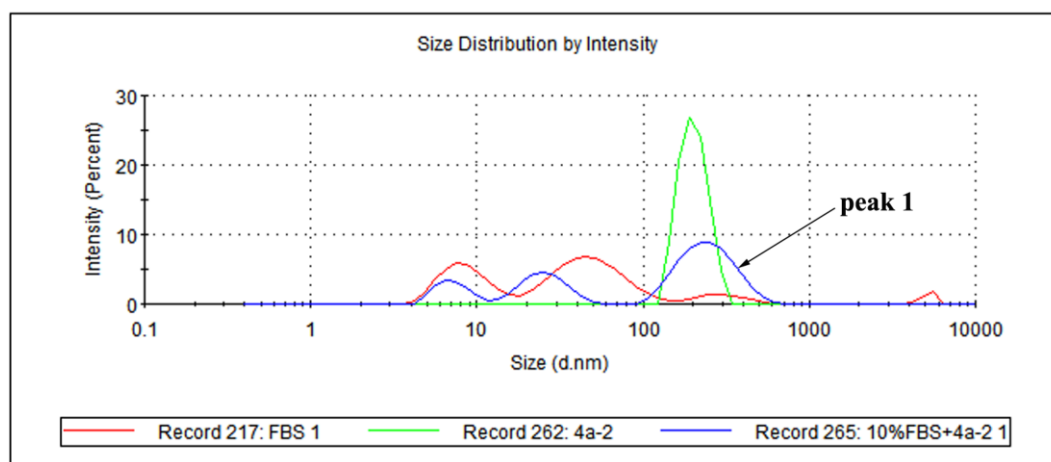
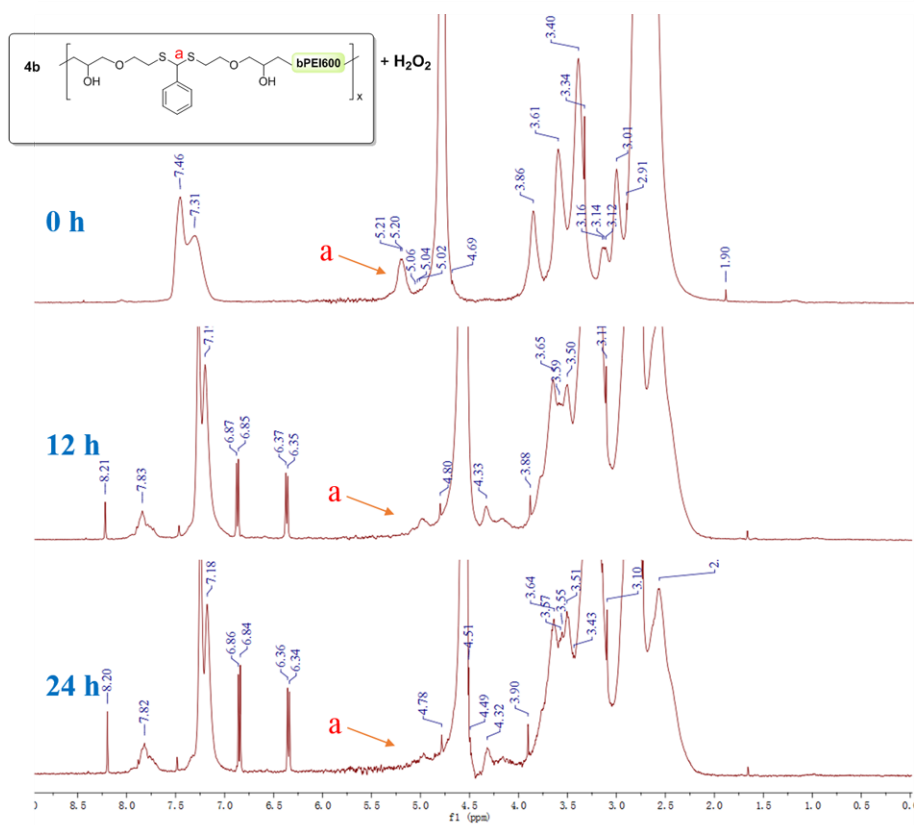
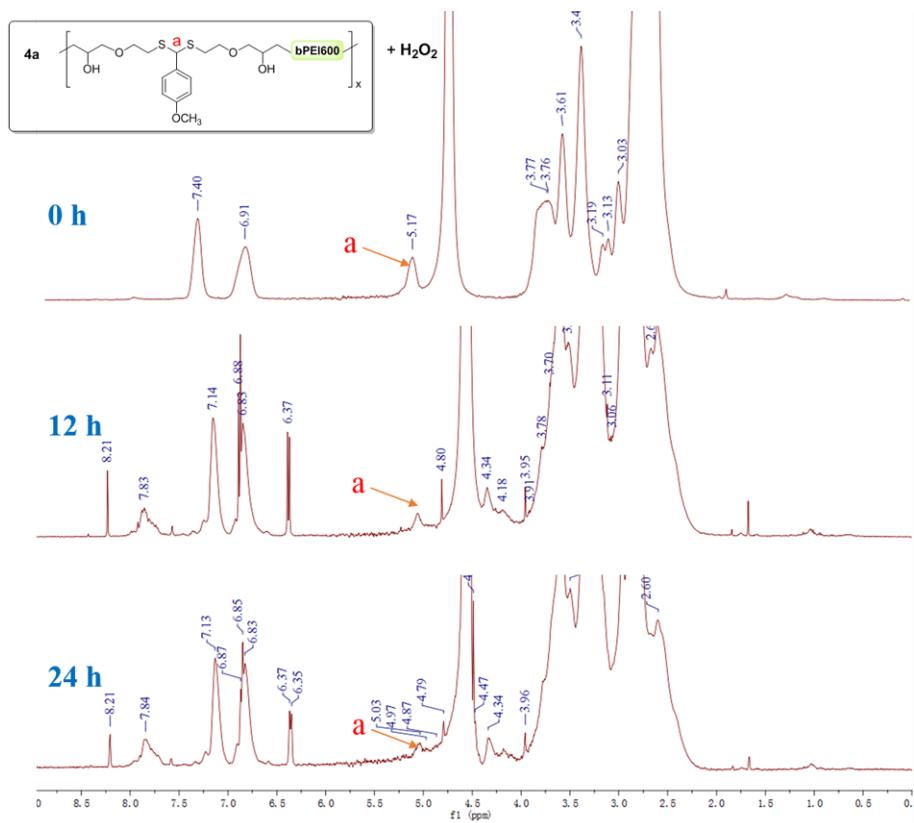


Fig. S1 The particle diameter obtained by DLS.

Green line: the diameter of **4a**/DNA complexes at w/w ratio of 2 without FBS;

red line: the diameter of 10% FBS;

blue line: the diameter of **4a**/DNA complexes at w/w ratio of 2 in presence of 10% FBS.



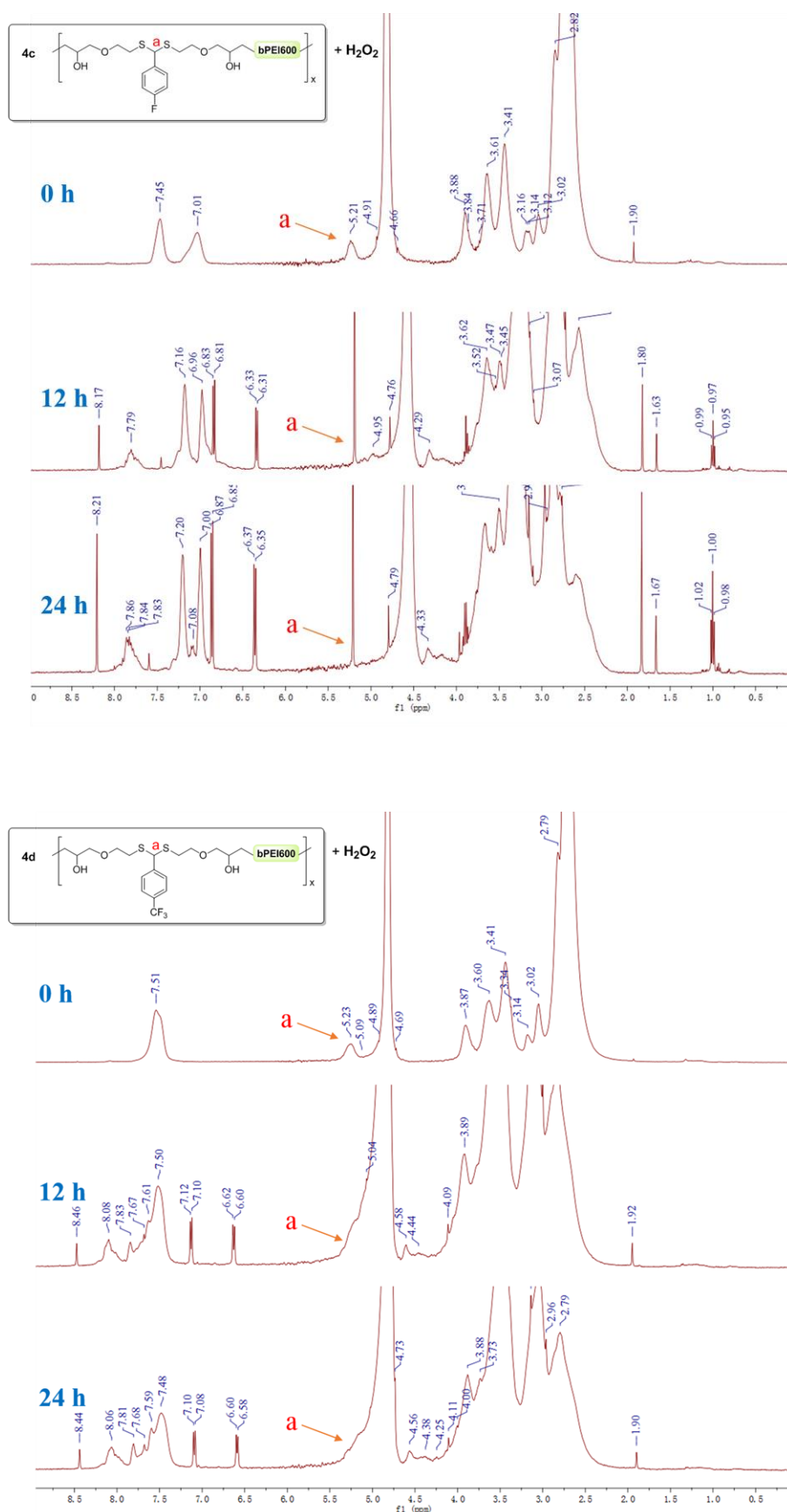


Fig. S2 Study of polymer **4** decomposition upon treatment with 100 mM H₂O₂ (simulated ROS conditions) for 0, 12 and 24 h using ¹H-NMR analysis.

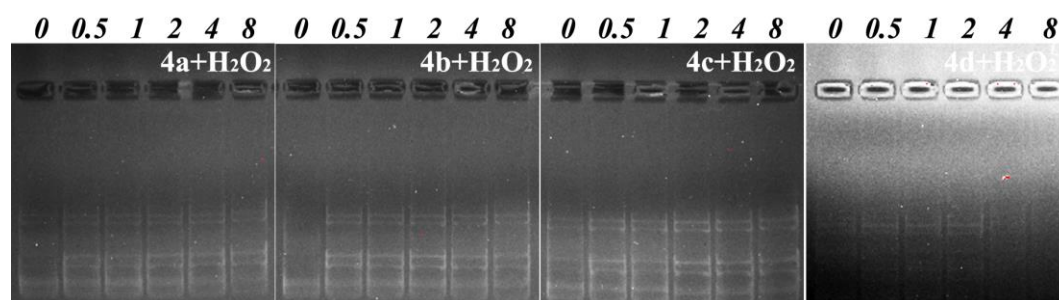


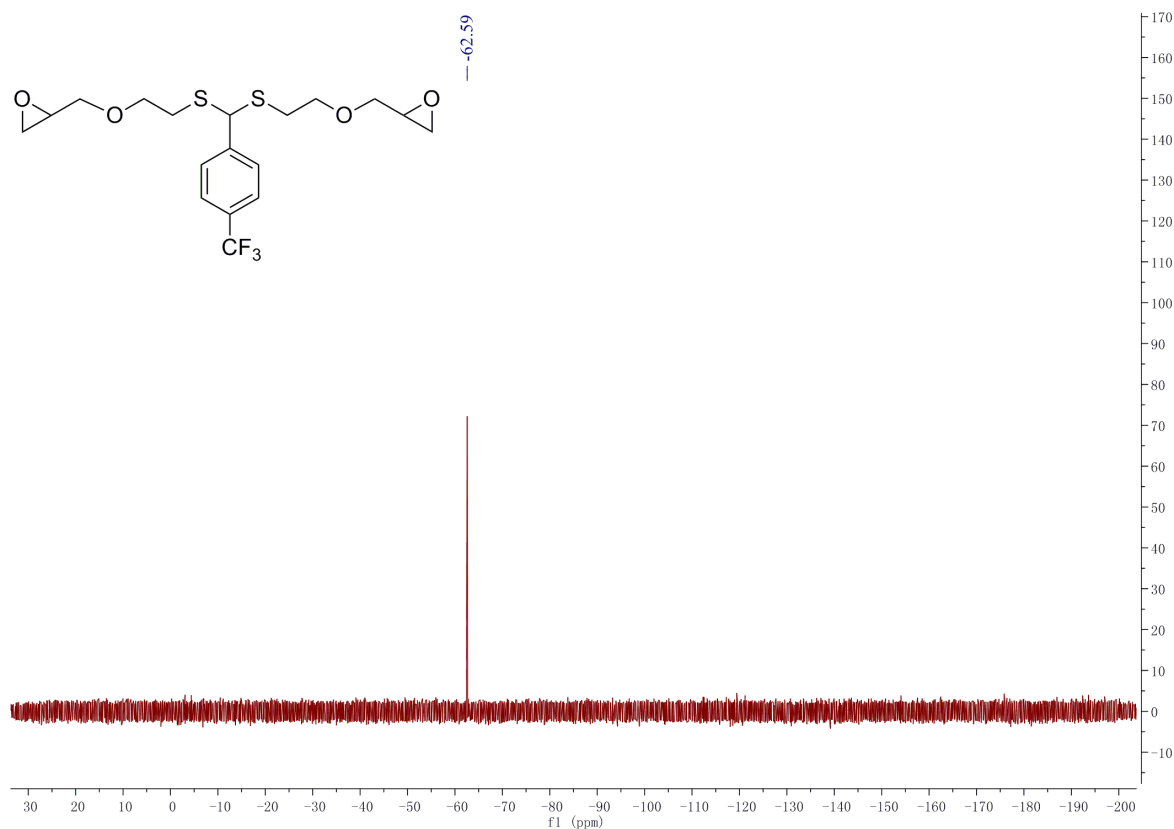
Fig. S3 Agarose gel electrophoresis of polymer/DNA polyplexes prepared at different w/w ratios after incubation with 100 mM H₂O₂ for 48 h at 37 °C. In each image, the first lane is the DNA control.

Table S1 Polymer/DNA ratio in terms of both weight ratio (w/w) and N/P ratio (polymer nitrogen/DNA phosphate) were used.

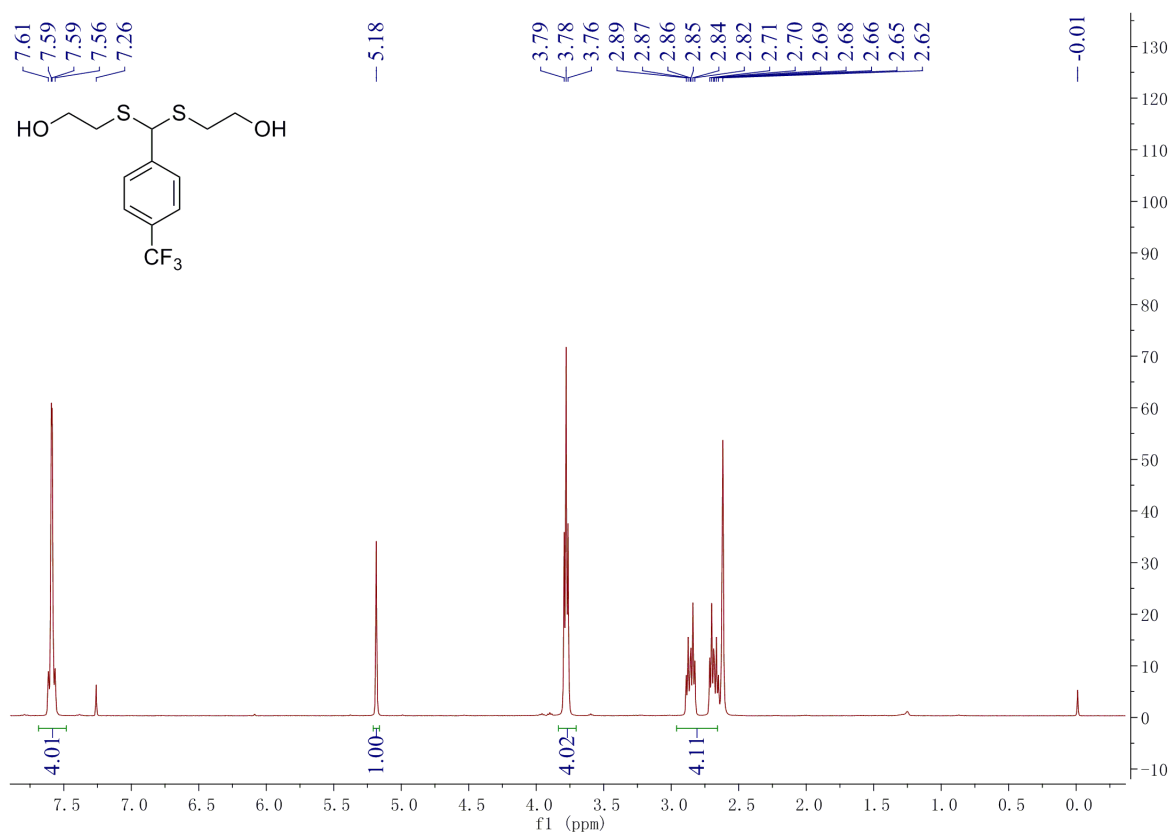
polymer	w/w ratio	1.4	2	4	6
	N/P ratio				
4a			8.74	17.49	26.22
4b			9.02	18.04	27.06
4c			8.85	17.71	26.55
4d			8.42	16.84	25.26
PEI 25K		10			
PEI 600				28.7	

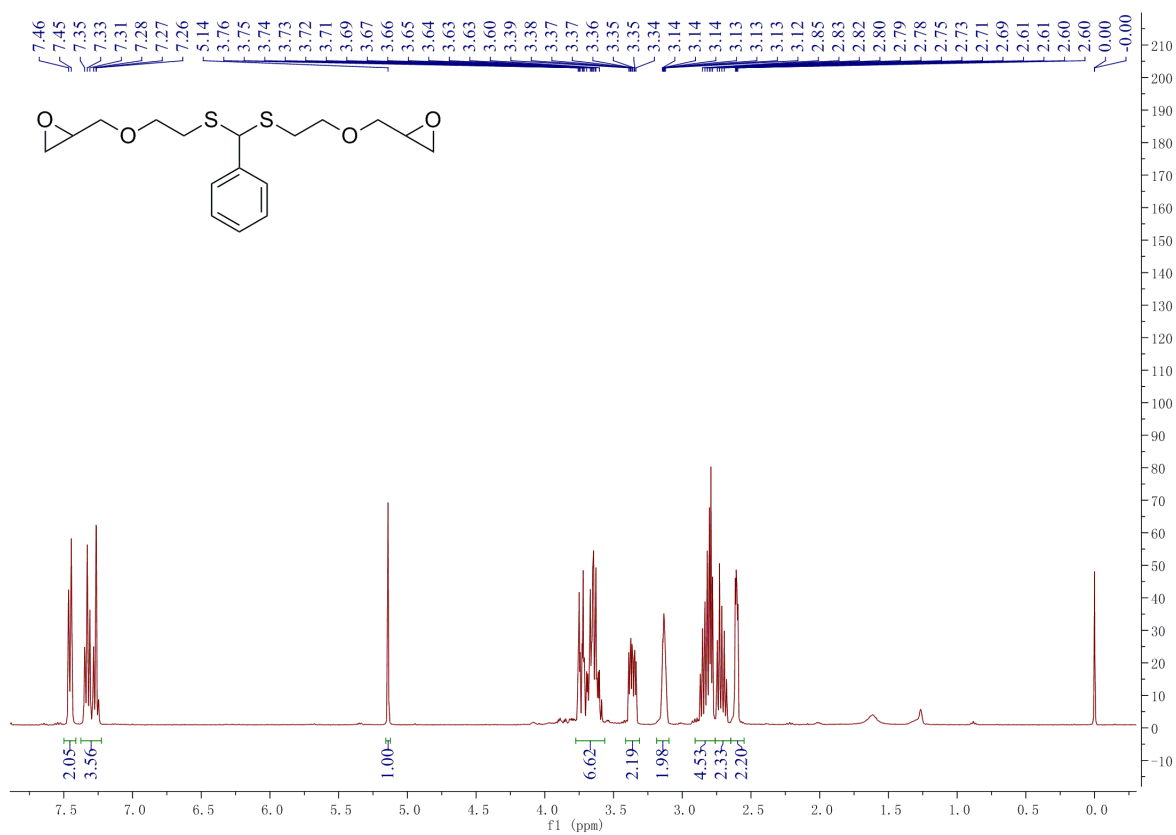
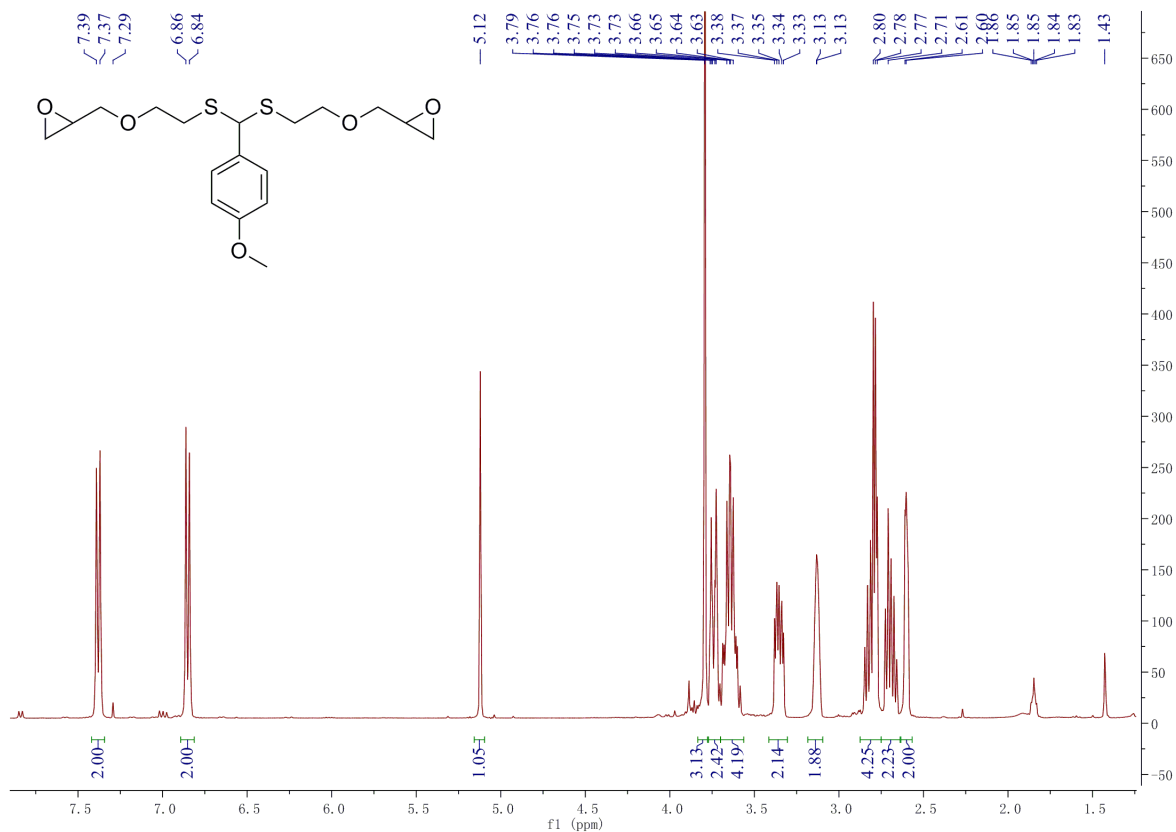
Spectra

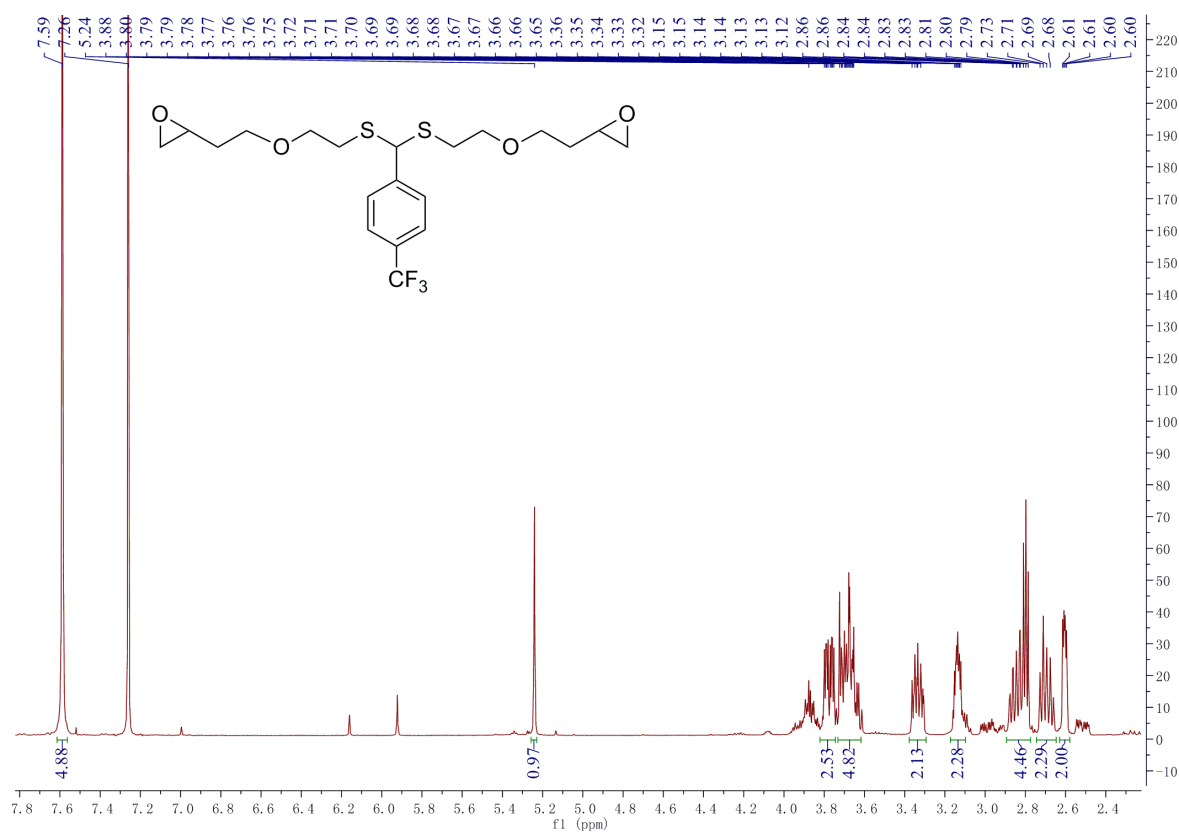
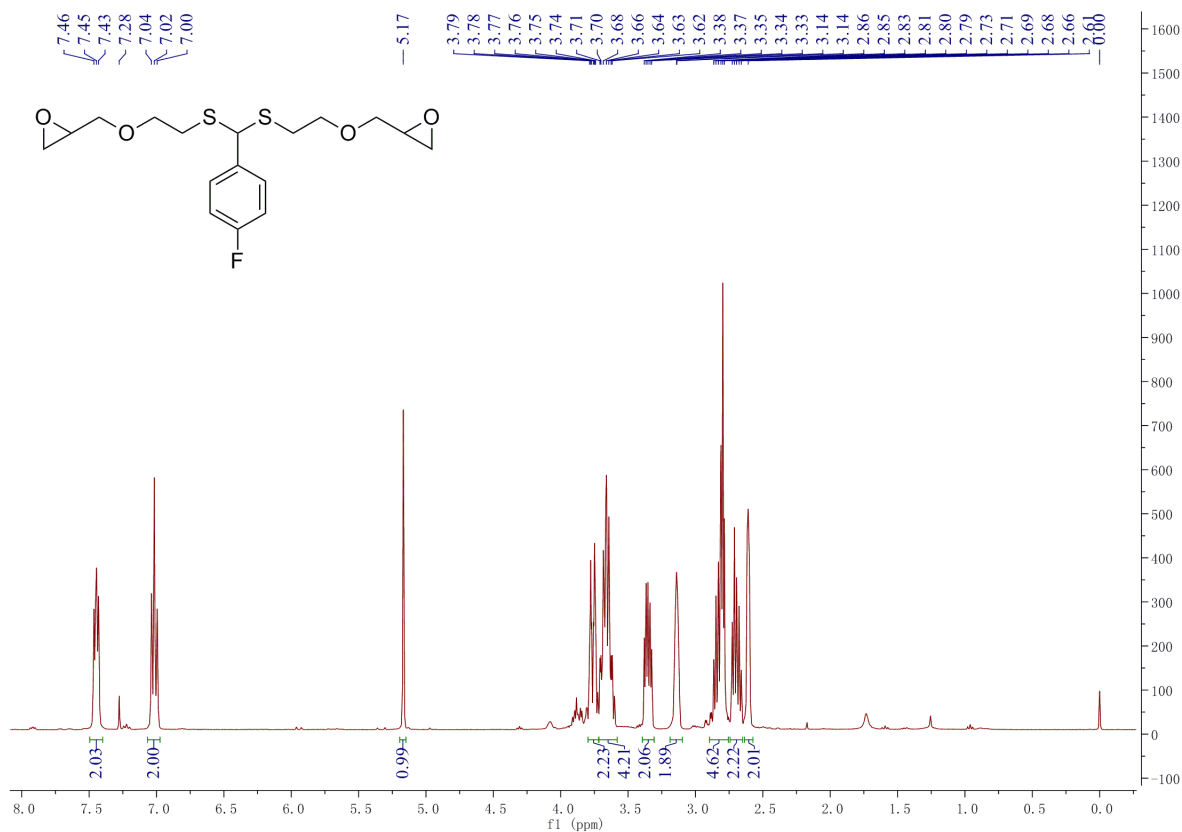
¹⁹F-NMR Spectra

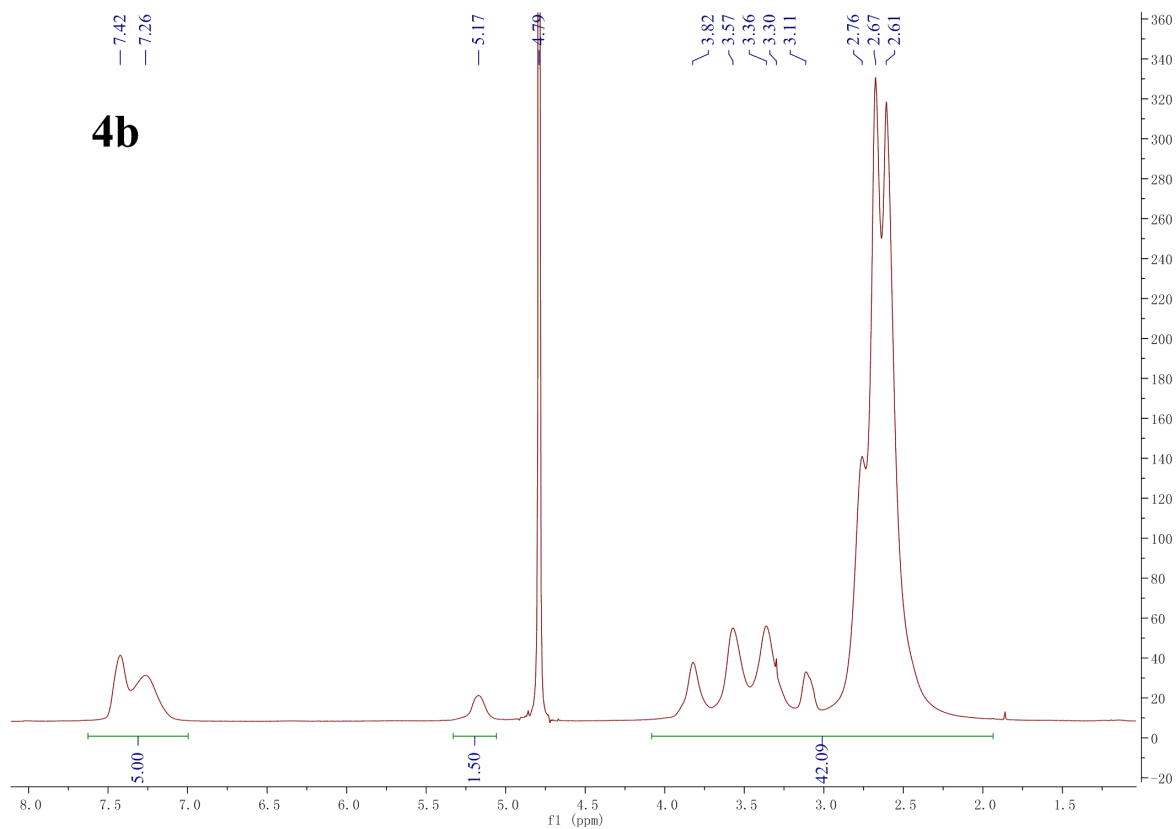
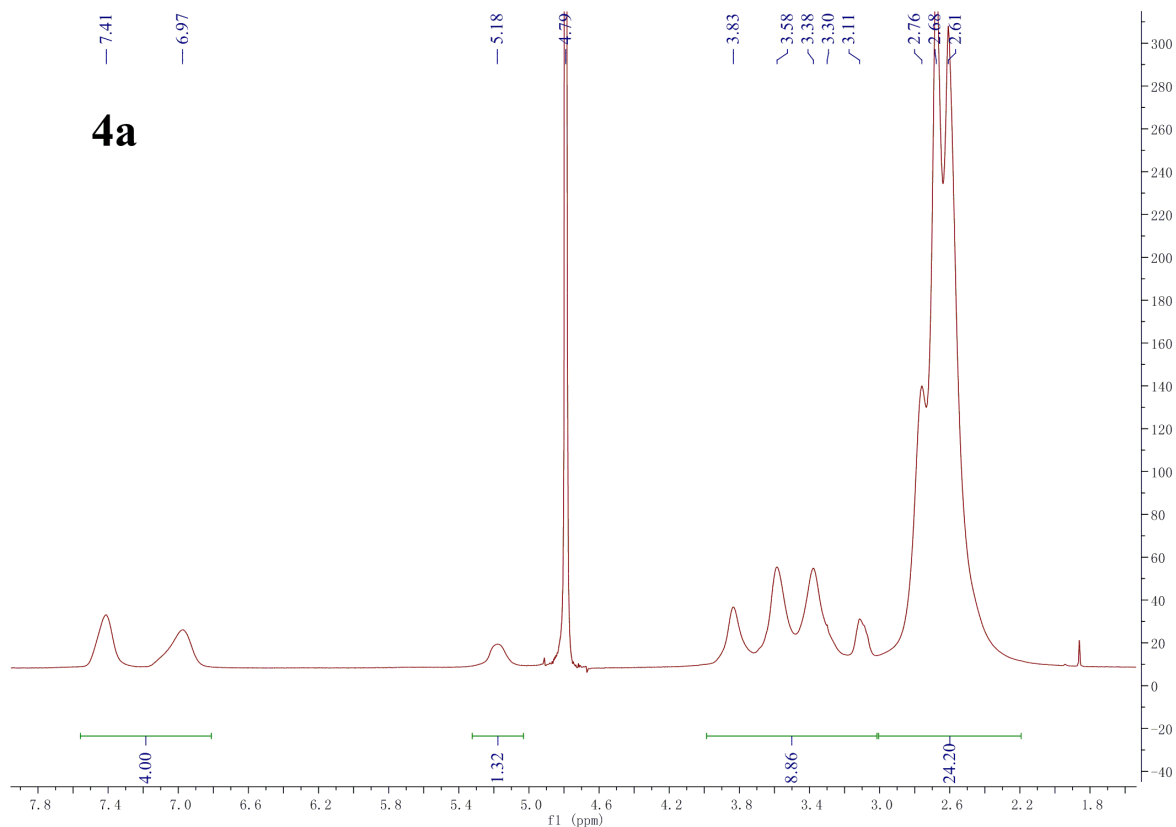


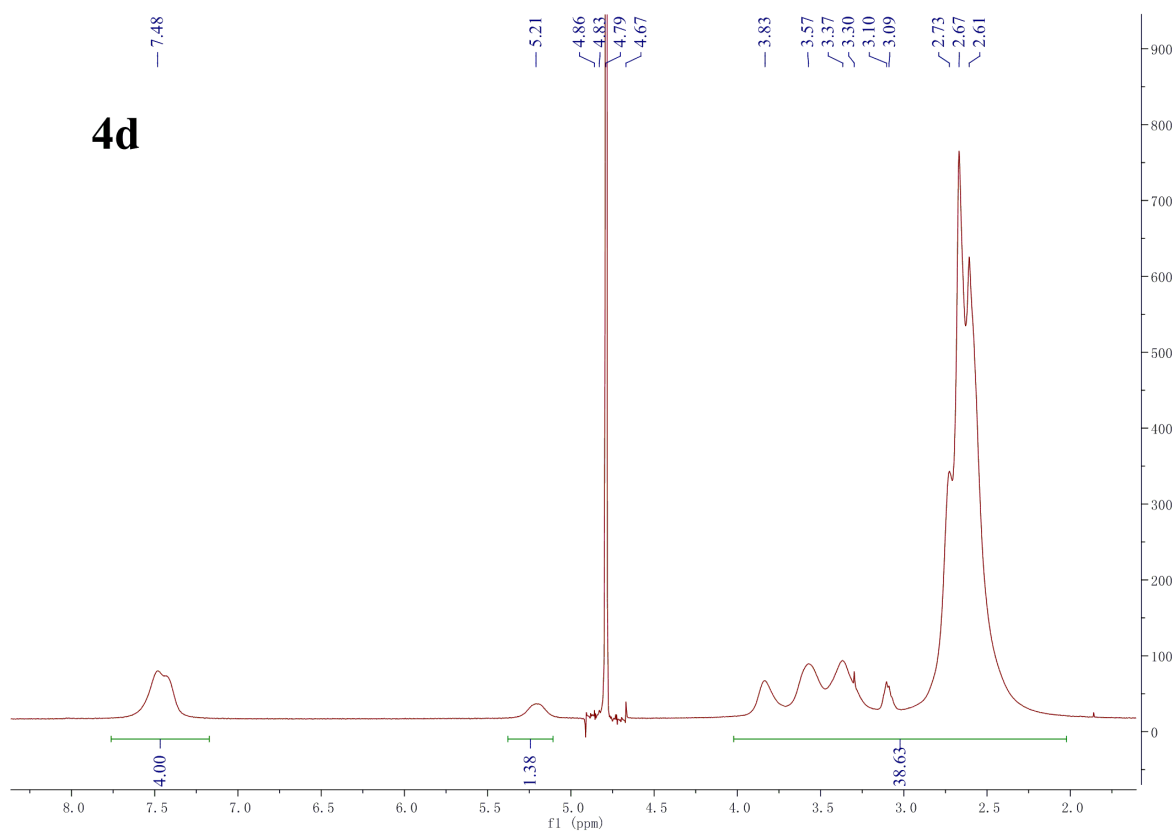
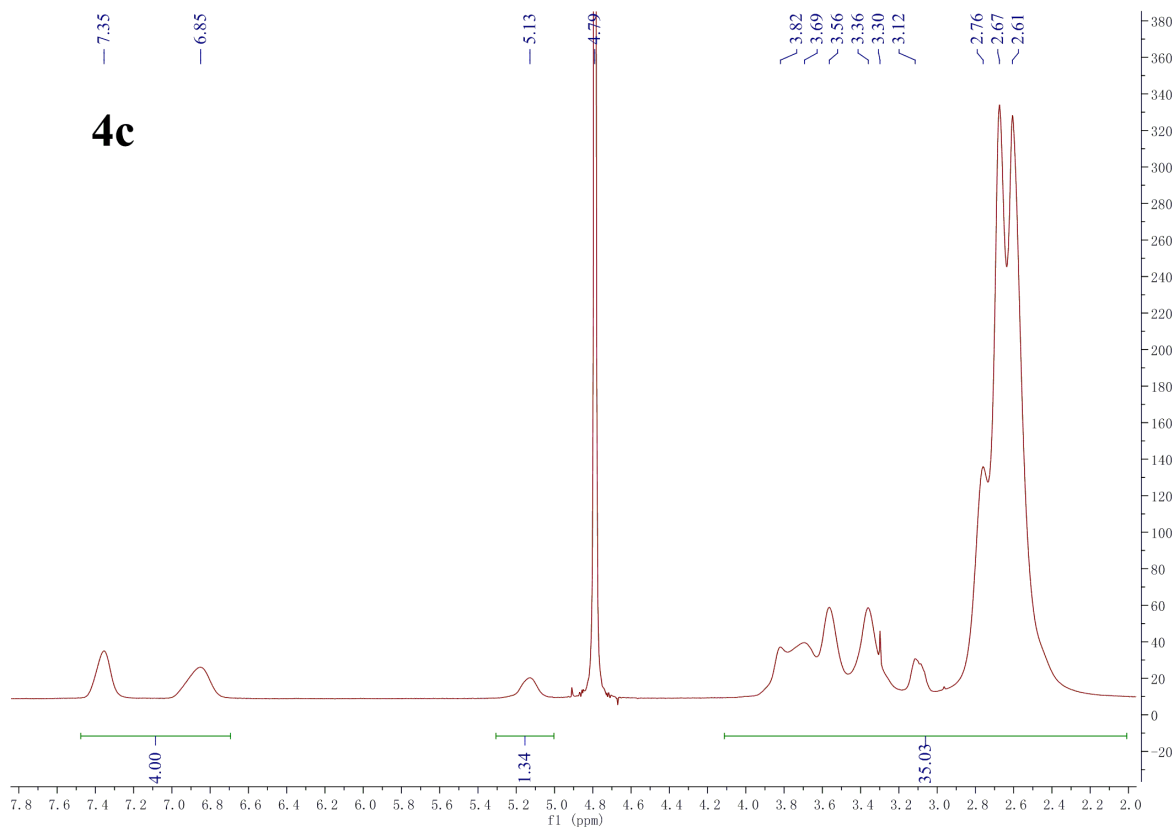
¹H-NMR Spectra



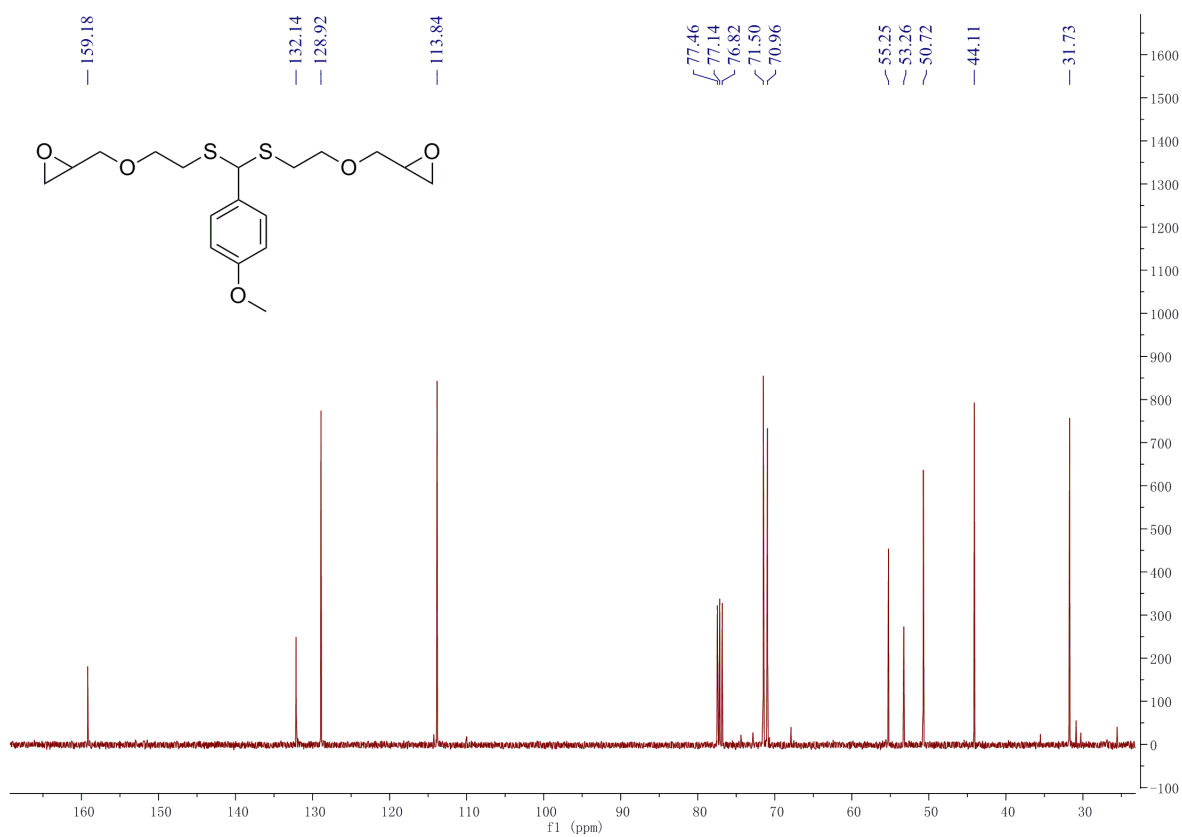
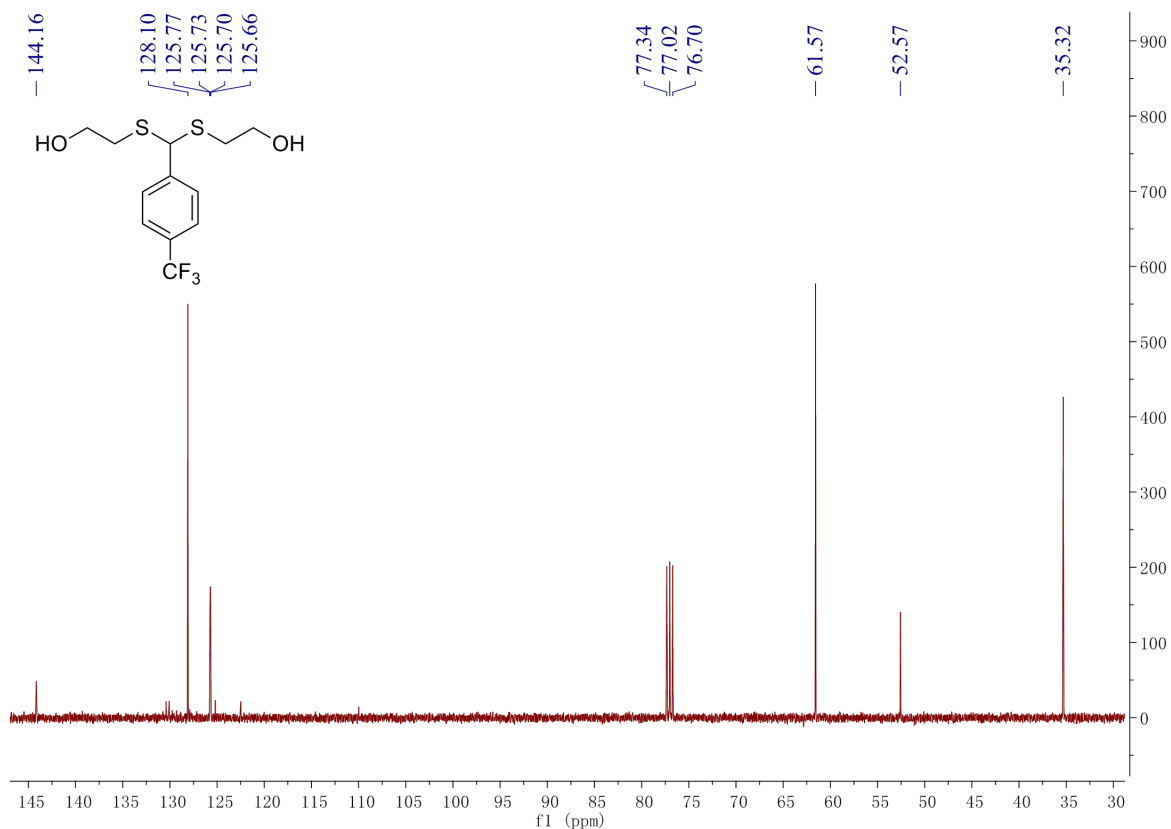


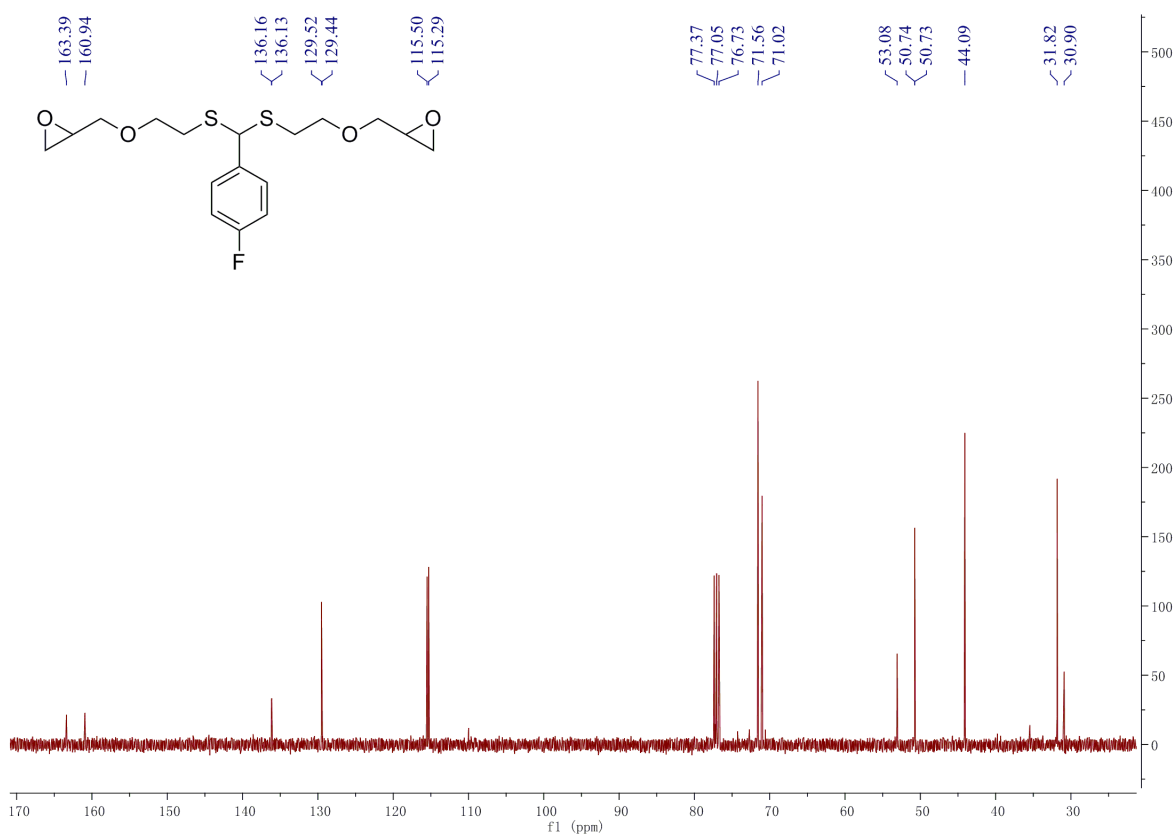
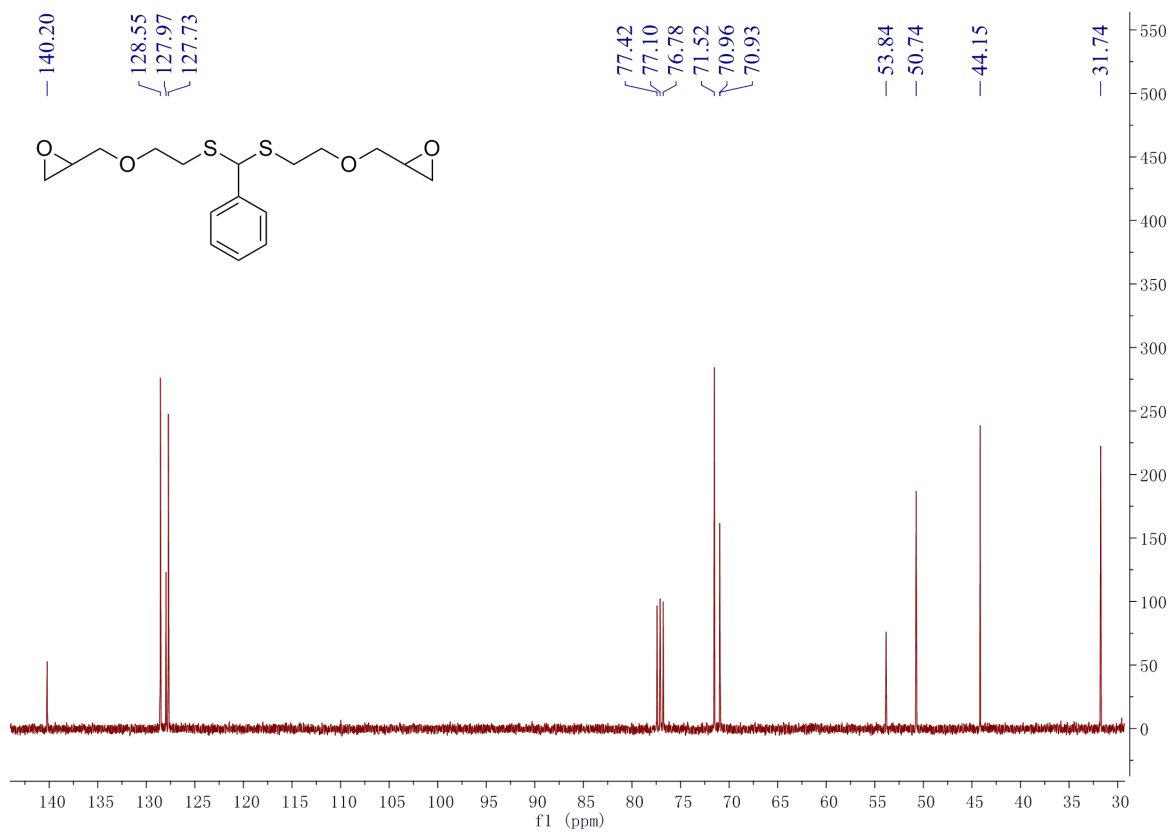


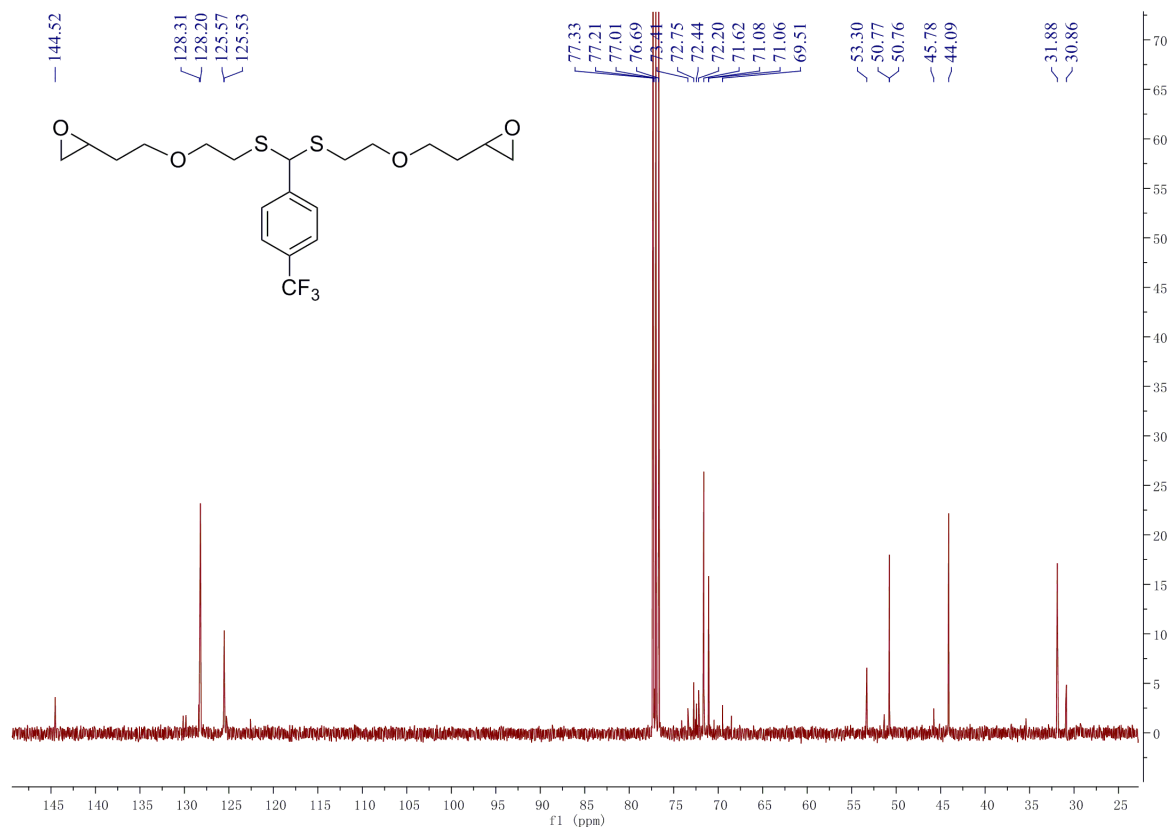




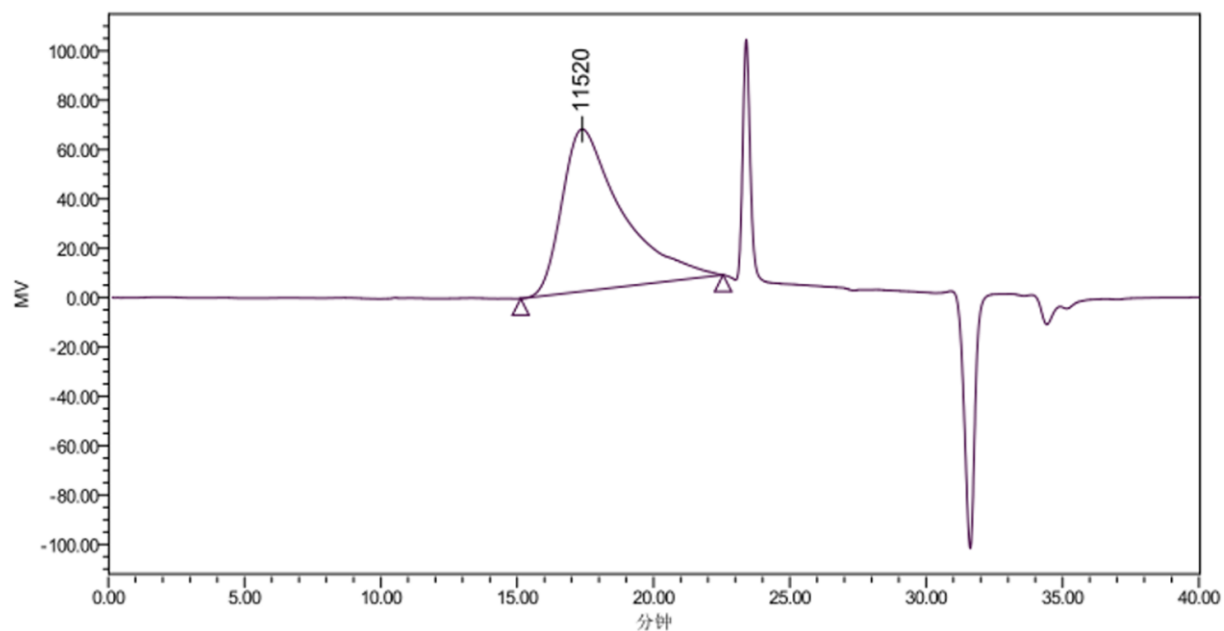
^{13}C -NMR Spectra







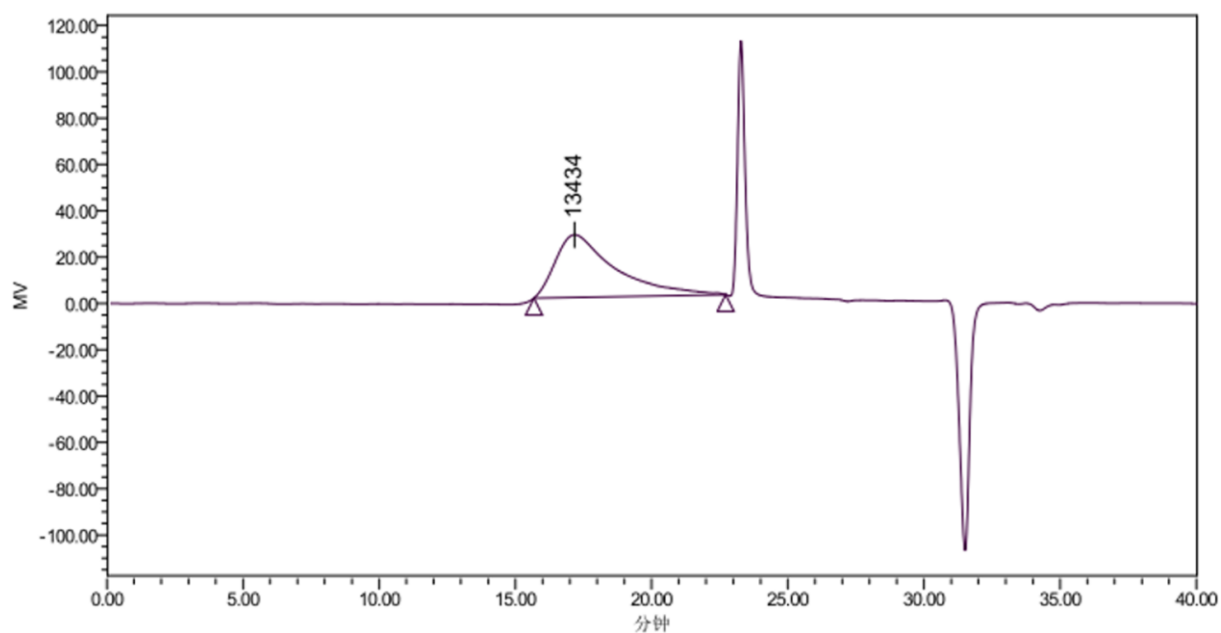
GPC



宽分布未知样相对峰表

分布名	Mn (道尔顿)	Mw (道尔顿)	MP	Mz (道尔顿)	Mz+1 (道尔顿)	多分散性	Mz/Mw	Mz+1/Mw
1	5349	9871	11520	14803	19572	1.845554	1.499636	1.982787

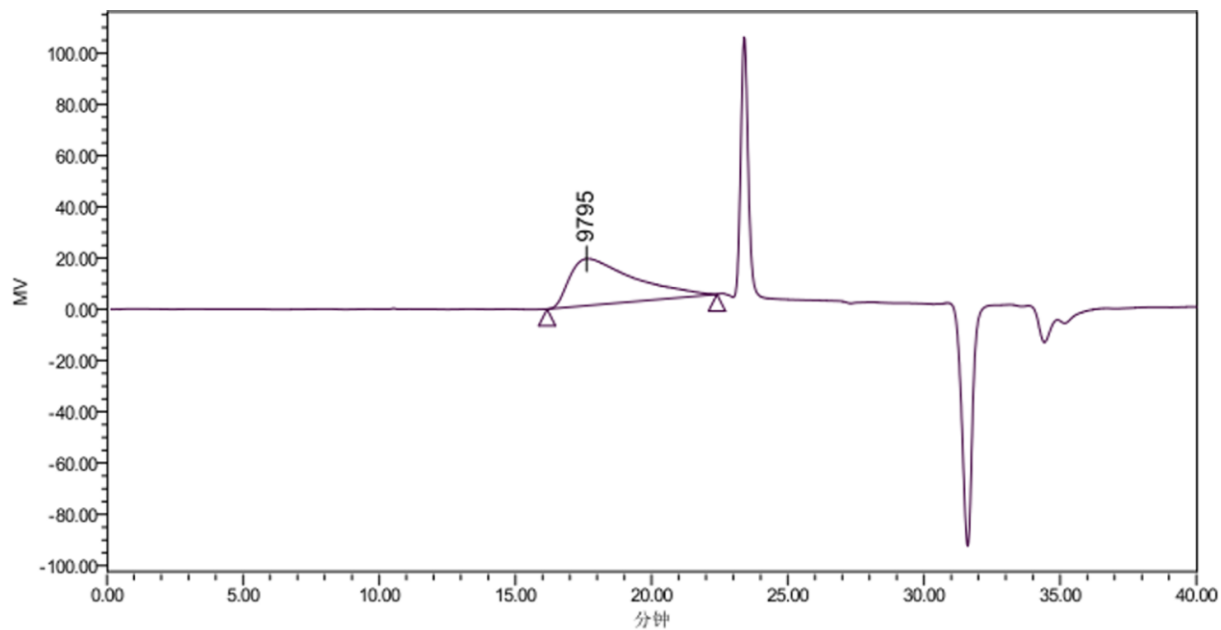
4a



宽分布未知样相对峰表

分布名	Mn (道尔顿)	Mw (道尔顿)	MP	Mz (道尔顿)	Mz+1 (道尔顿)	多分散性	Mz/Mw	Mz+1/Mw
1	5547	10916	13434	16168	20475	1.968078	1.481086	1.875709

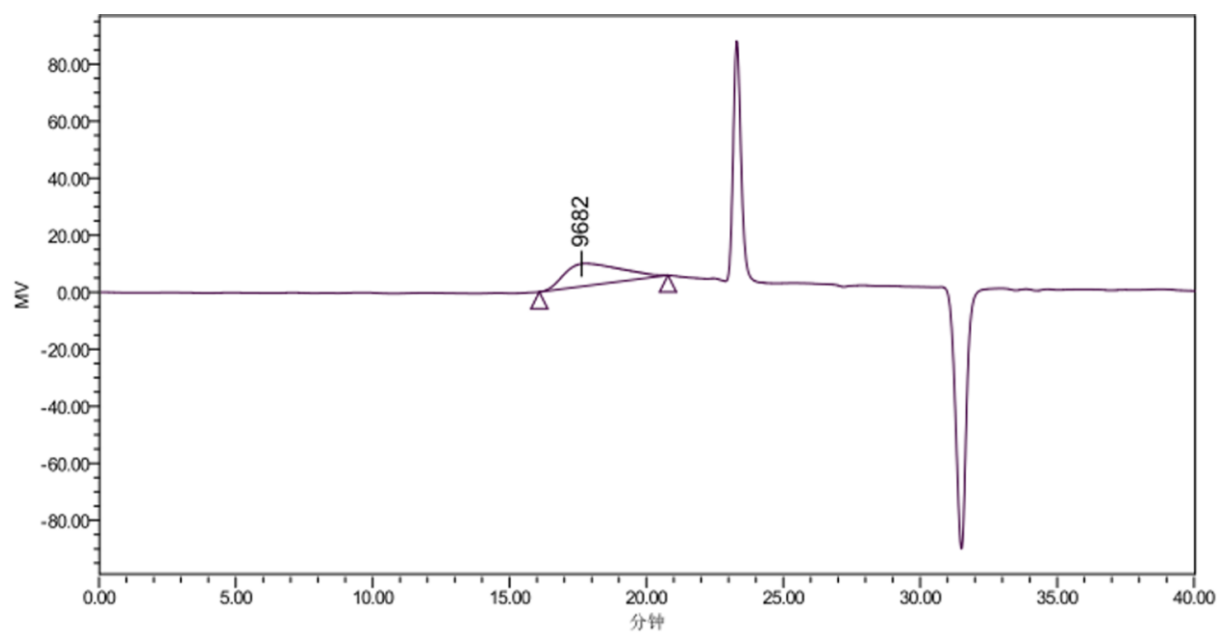
4b



宽分布未知样相对峰表

分布名	Mn (道尔顿)	Mw (道尔顿)	MP	Mz (道尔顿)	Mz+1 (道尔顿)	多分散性	Mz/Mw	Mz+1/Mw
1	4199	7123	9795	10114	12458	1.696495	1.419886	1.748911

4c



宽分布未知样相对峰表

分布名	Mn (道尔顿)	Mw (道尔顿)	MP	Mz (道尔顿)	Mz+1 (道尔顿)	多分散性	Mz/Mw	Mz+1/Mw
1	5879	8209	9682	10781	13143	1.396357	1.313374	1.601084

4d