Electronic Supplementary Information

Synthesis and characterization of novel poly(sulfone siloxane)s with good solubility and recyclability based on siloxane units

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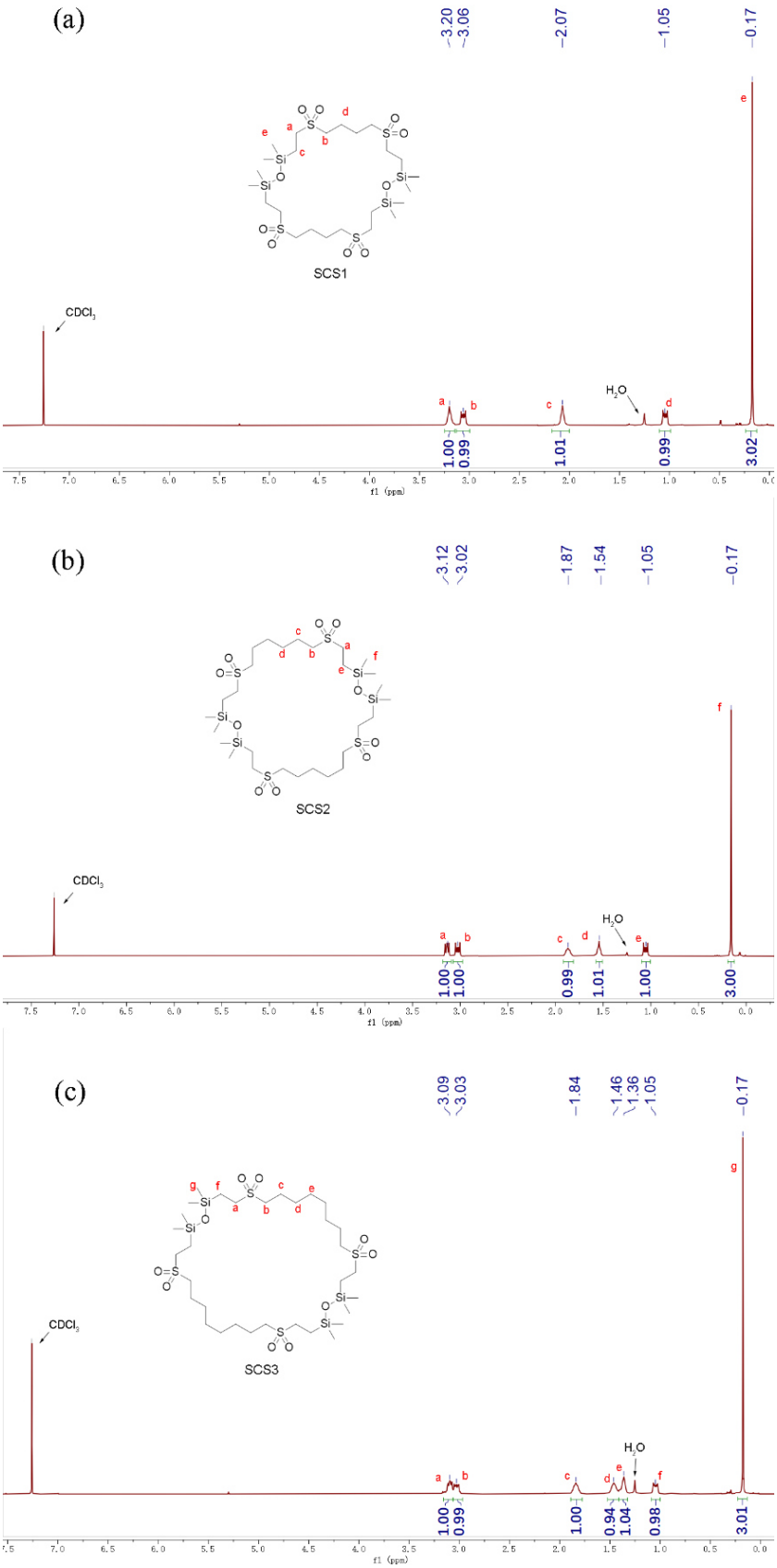

Fig. S1 ^{1}H NMR spectrum of (a) SCS1, (b) SCS2 and (c) SCS3

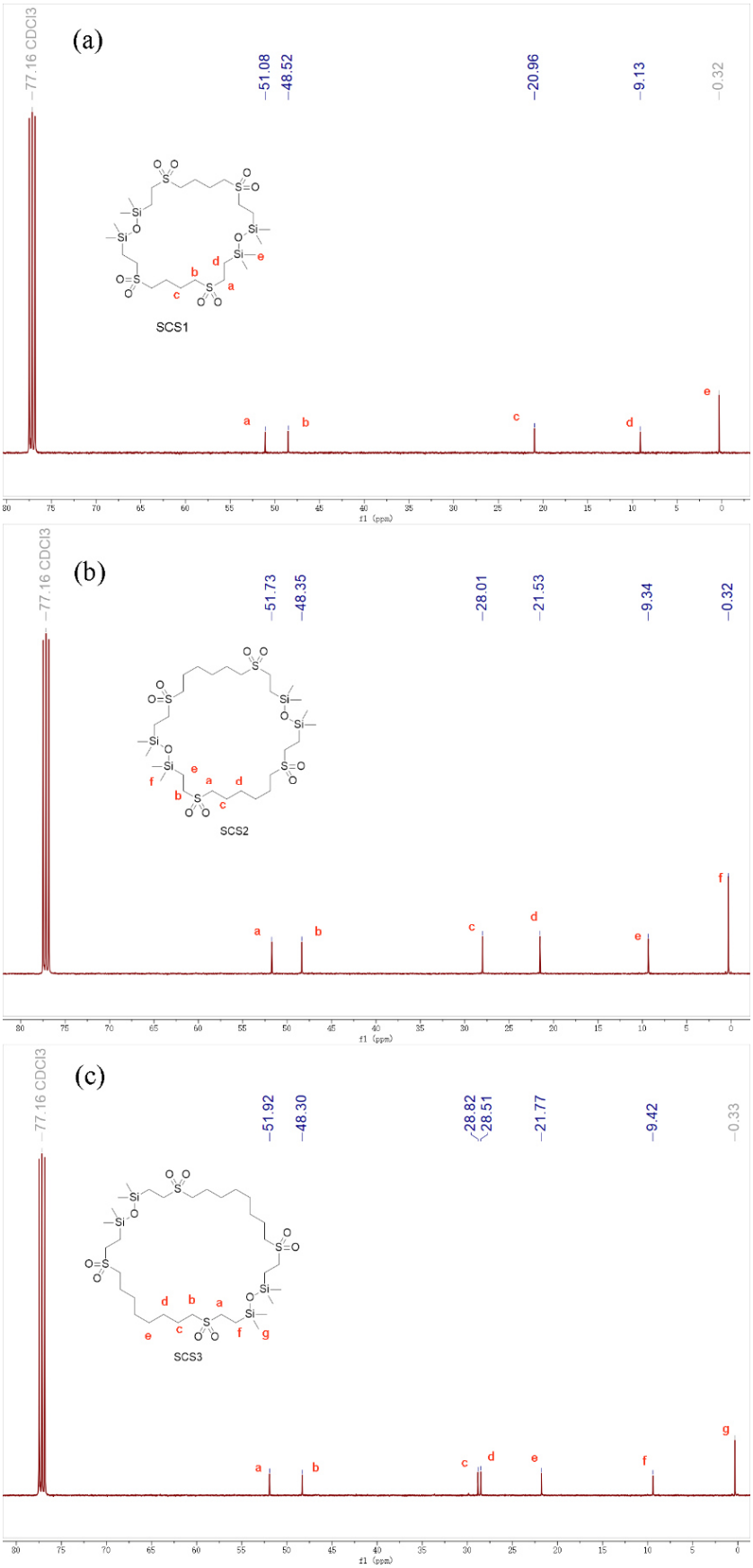

Fig. S2 ^{13}C NMR of (a) SCS1, (b) SCS2 and (c) SCS3

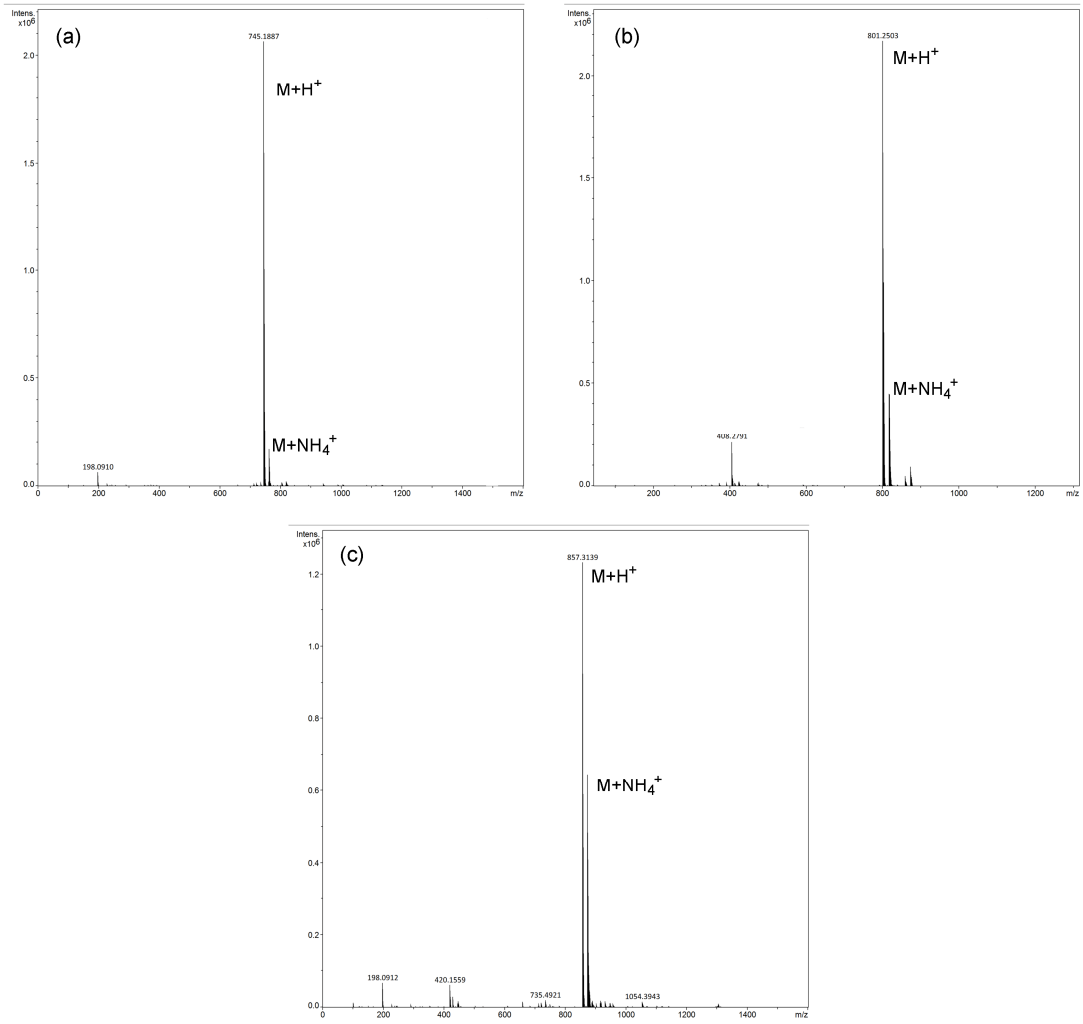

Fig. S3 UPLC-MS data of (a) SCS1, (b) SCS2 and (c) SCS3

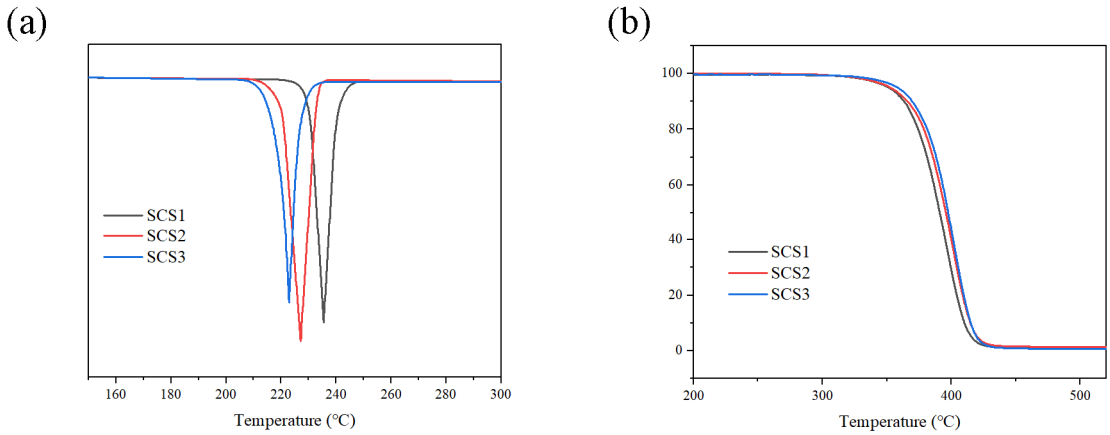

Fig. S4 (a) DSC curves of SCS1, SCS2 and SCS3; (b) TGA curves of SCS1, SCS2 and SCS3

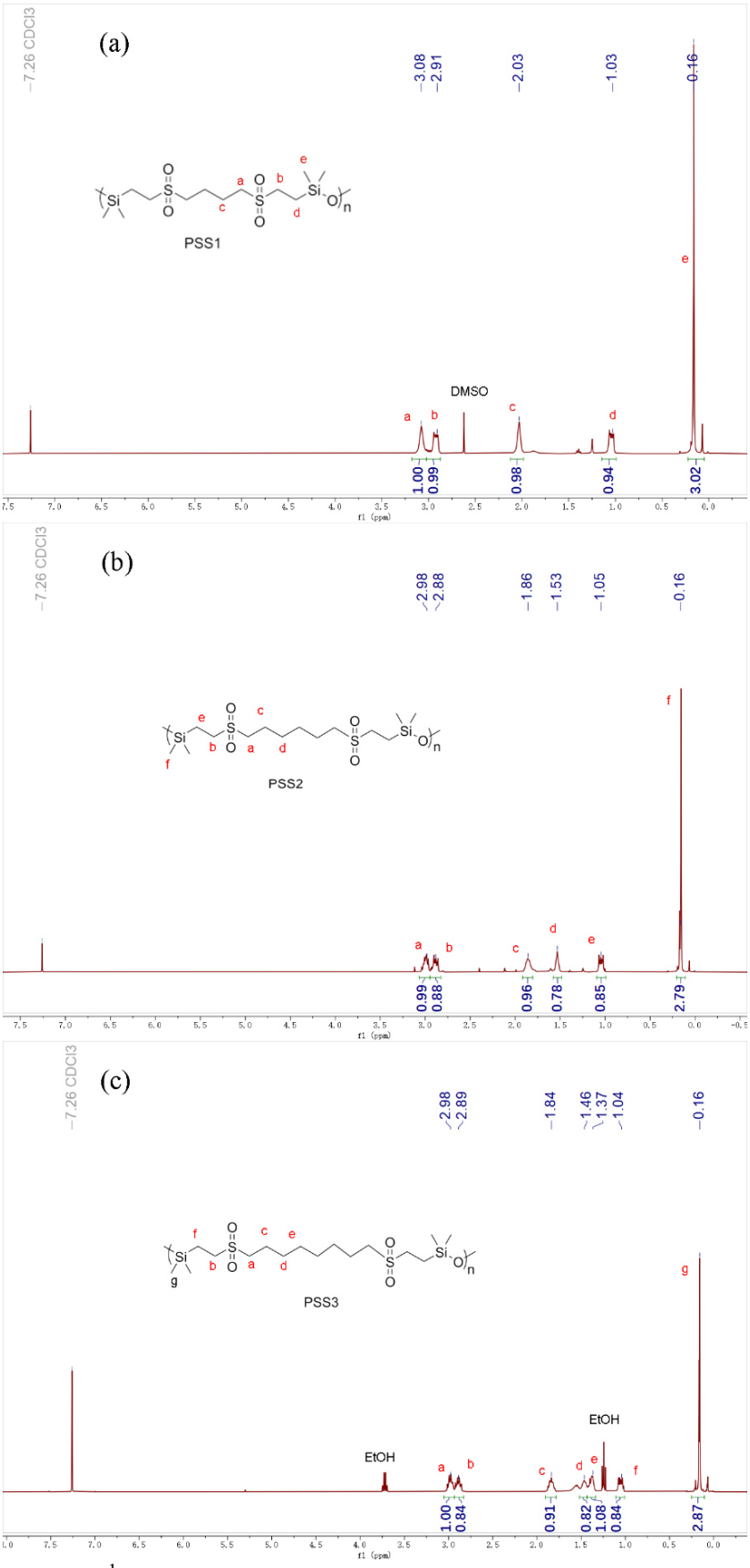

Fig. S5 ^{1}H NMR spectrum of (a) PSS1, (b) PSS2 and (c) PSS3

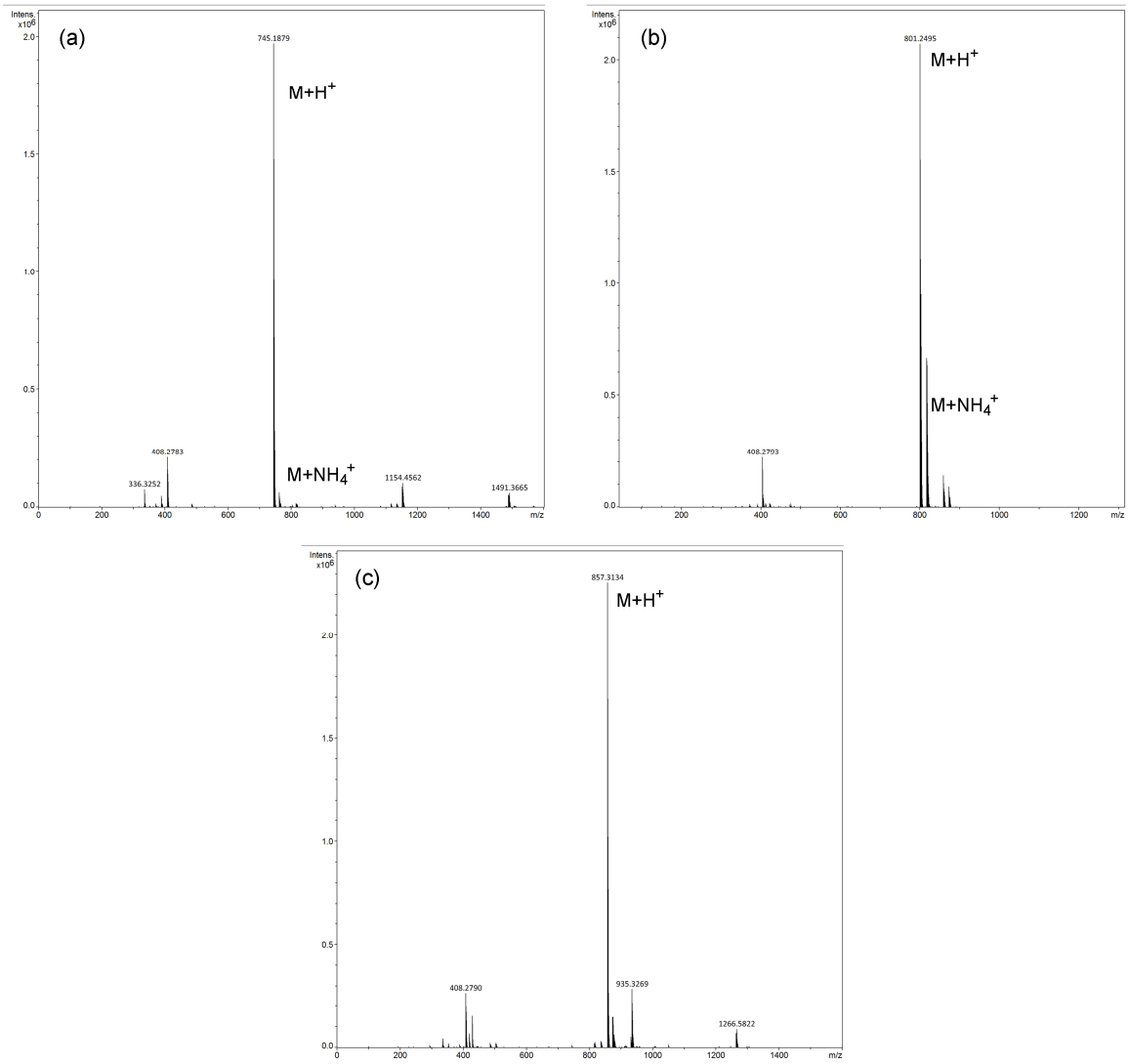

Fig. S6 UPLC-MS data of the (a) SCS1, (b) SCS2 and (c) SCS3 obtained from the depolymerization of polymers

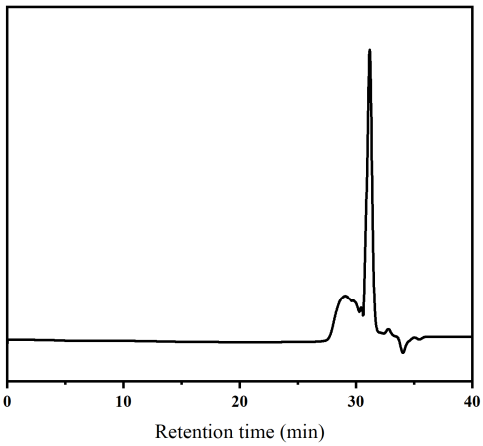

Fig. S7 GPC traces of the crude products after depolymerization

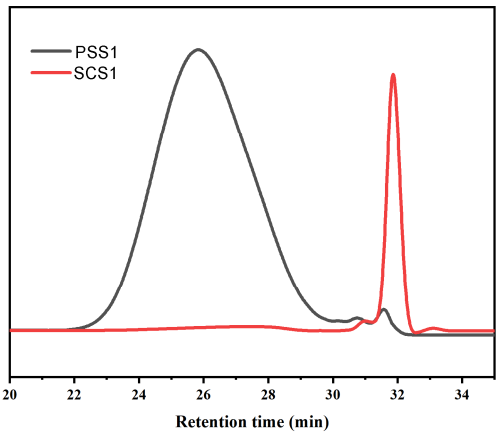

Fig. S8 GPC traces of the (a) PSS1; (b) SCS1 obtained by the depolymerization

Table S1 Results of the polymerization of monomers at different temperature

Entry	Monomers	Catalyst	M/C [a]	Solvent	Temp. (℃)	Yield (%)	M_n (kDa) [b]	Đ [b]
1	SCS1	KOH	20/1	DMSO	110	31	--	--
2	SCS1	KOH	20/1	DMSO	140	94	13.2	1.50
3	SCS1	KOH	20/1	DMSO	160	97	13.6	1.51
4	SCS2	KOH	20/1	DMSO	160	95	13.3	1.55
5	SCS3	KOH	20/1	DMSO	160	95	13.1	1.53

[a] Molar ratio of Monomer-to-catalyst

[b] M_n and Đ were determined by GPC at 40 °C in THF relative to polystyrene standards

Table S2 The solubility results of polymers in different solvents at room temperature

Monomers	$CHCl_3$ [a] (g mL^{-1})	THF [b] (g mL^{-1})	DMF [c] (g mL^{-1})	DMSO [d] (g mL^{-1})
PSS1	0.12	0.18	0.24	0.33
PSS2	0.10	0.14	0.21	0.29
PSS3	0.09	0.11	0.17	0.23

[a] *$CHCl_3$* Chloroform; [b] *THF* Tetrahydrofuran; [c] *DMF* N,N-dimethylformamide [d] *DMSO* Dimethyl sulfoxide