Electronic supplementary information (ESI) for

Inverse vulcanization employing epoxy compounds as crosslinking agents for elemental sulfur in preparation of sulfur-rich epoxy resins

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Figures and Table discussed in the main text.

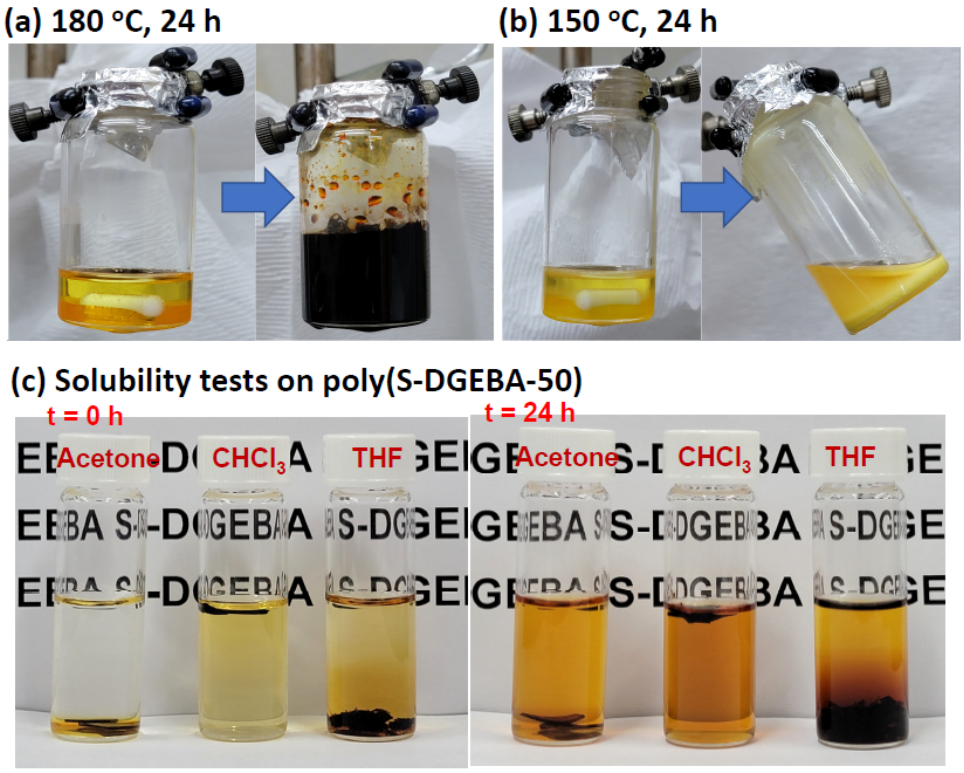

Figure S1. Photographs on the elemental sulfur/DGEBA (w/w 50/50) reaction systems (a) at 180 °C for 24 h, (b) at 150 °C for 24 h. Plot (c) shows the solubility tests on poly(S-DGEBA-50) in various solvents.

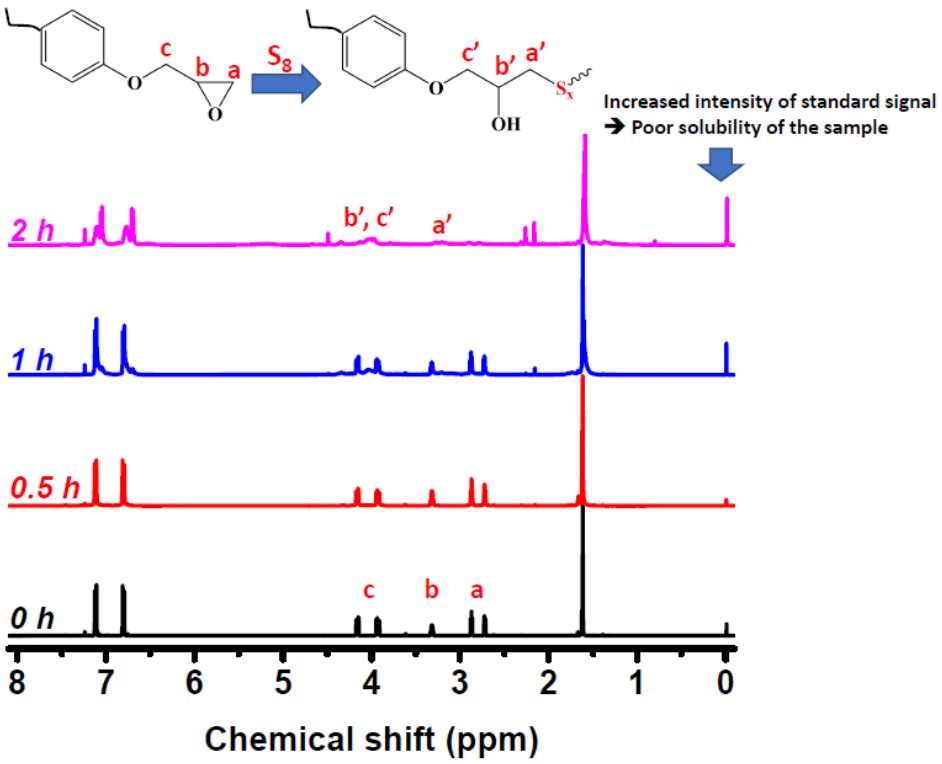

Figure S2. ^{1}H NMR spectra recorded on the mixture of elemental sulfur/DGEBA (w/w 50/50) reaction system at 180 oC for various reaction time.

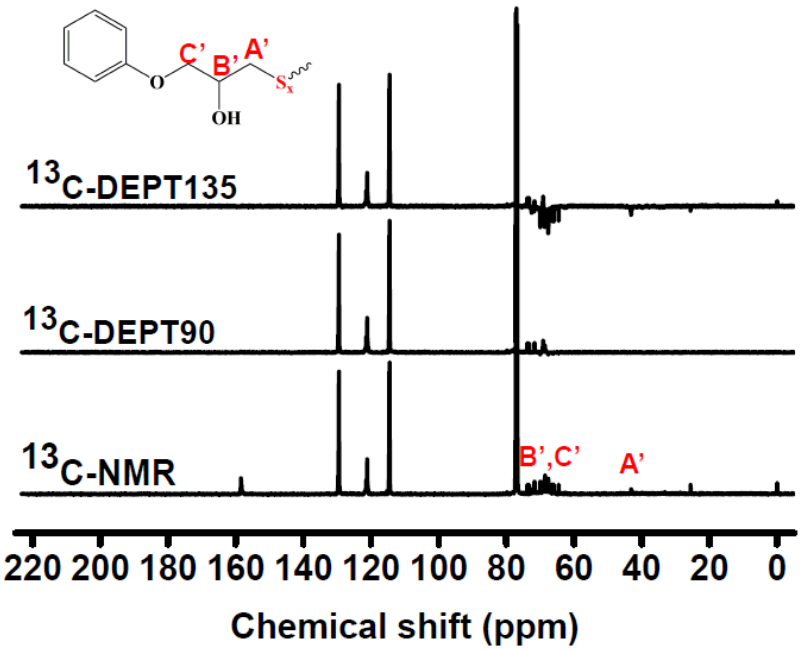

Figure S3. ^{13}C-DEPT NMR spectra of S-PGE-50.

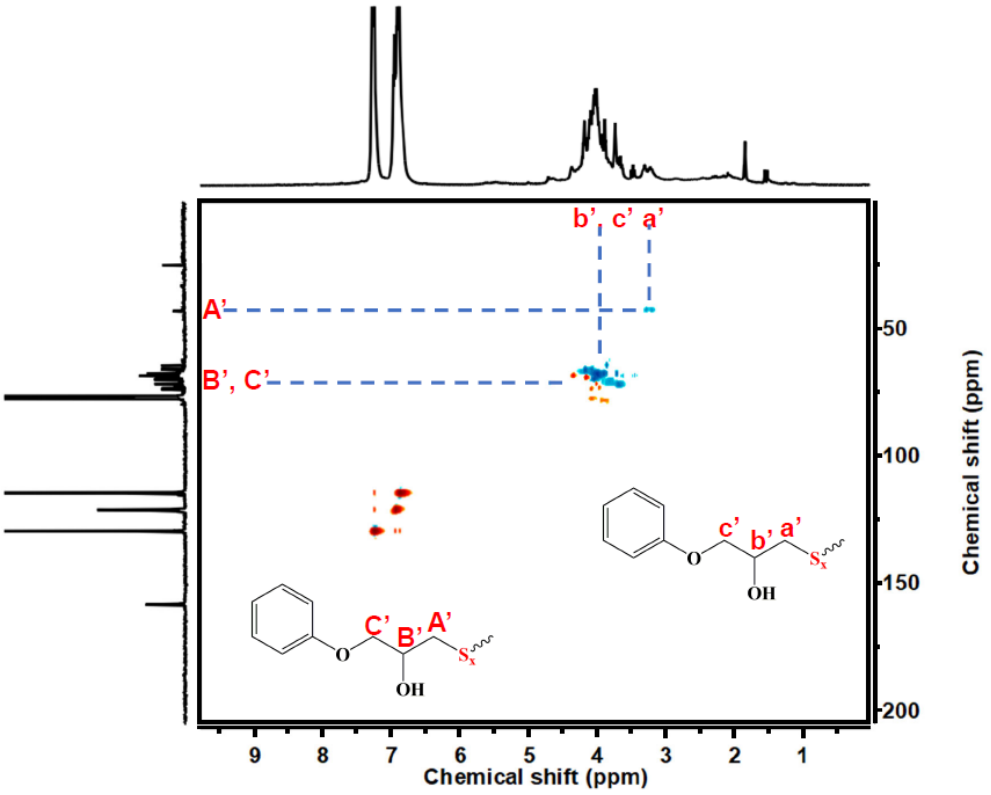

Figure S4. ^{1}H-^{13}C HSQC NMR spectra of S-PGE-50.

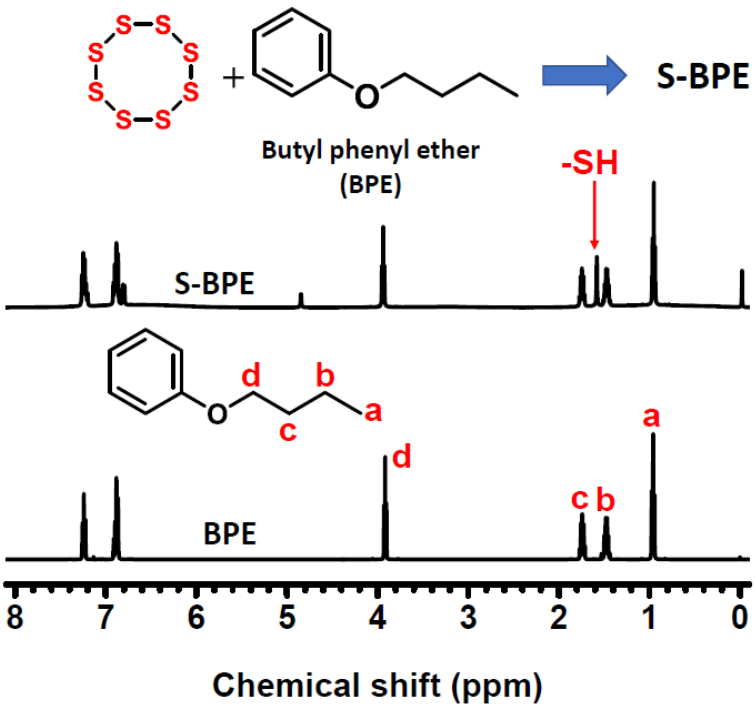

Figure S5. ^{1}H NMR spectra of BPE and S-BPE tracing the model reaction between S_8 and BPE.

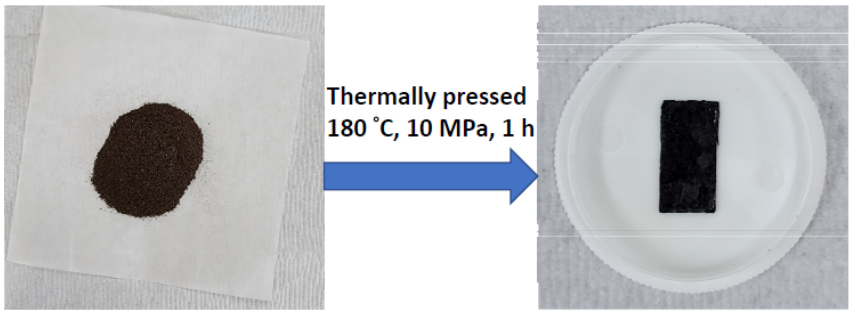

Figure S6. Photographs showing the physically recyclable and reprocessable feature of poly(S-DGEBA-50).

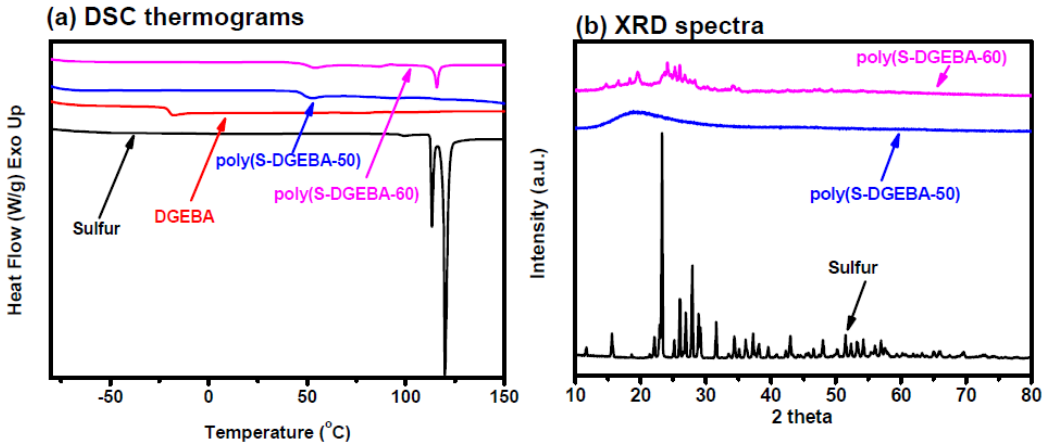

Figure S7. (a) DSC thermograms and (b) XRD spectra of poly(S-DGEBA-60) showing some crystalline sulfur remained in the sample.

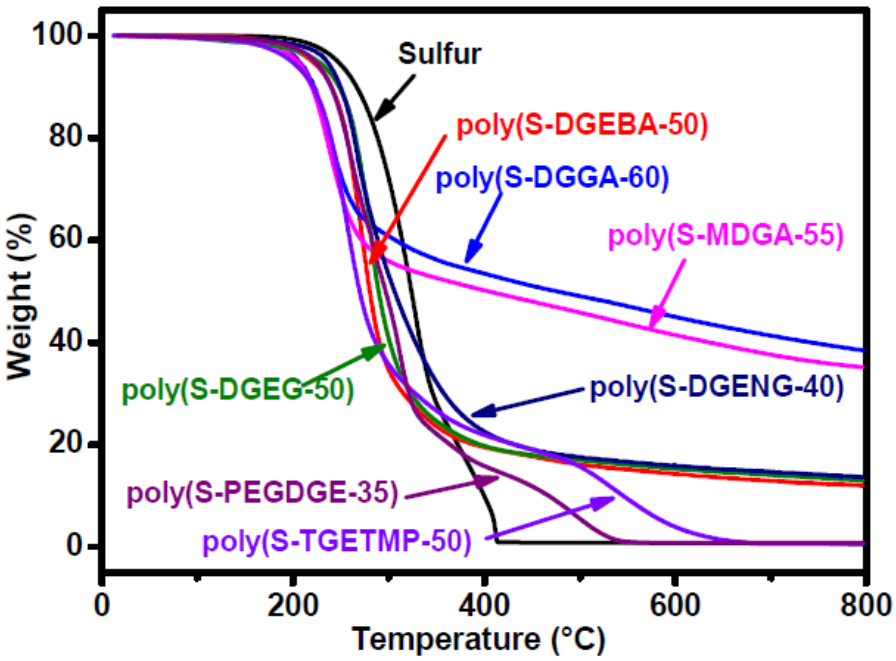

Figure S8. TGA thermograms of sulfur polymers prepared with various epoxy compounds in this work.

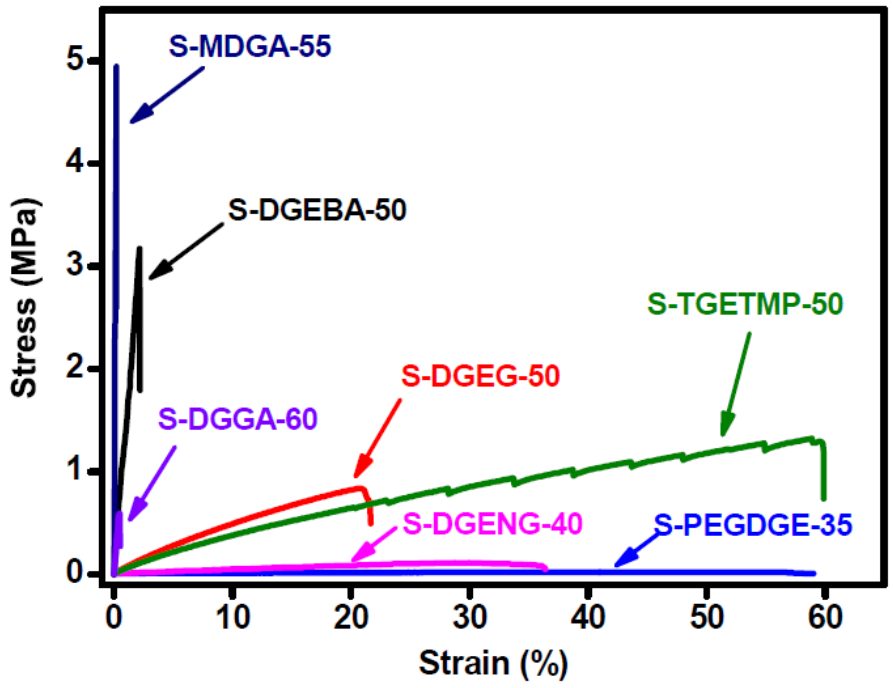

Figure S9. Stress-strain curves of the sulfur polymers from the inverse vulcanization reactions between S_8 and epoxy compounds..

Table S1. Elemental analysis data of the prepared S-DGEBA samples.

Sample	Elemental analysis (wt%)				H/C atomic ratios	
	C	H	S	O	Epoxy reagents	Sulfur polymers
Poly(S-DGEBA-10)	66.76	6.34	9.98	18.42	1.14	1.14
Poly(S-DGEBA-20)	59.84	5.72	18.85	17.49	1.14	1.14
Poly(S-DGEBA-30)	53.13	5.05	28.18	15.61	1.14	1.14
Poly(S-DGEBA-40)	48.19	4.46	35.12	14.36	1.14	1.11
Poly(S-DGEBA-50)	41.31	3.76	44.53	12.49	1.14	1.09