

Supporting Information

Redox-Regulated Fusion and Fission of Se/Te-Containing Polymer Assemblies for Compartmentalized Reactions

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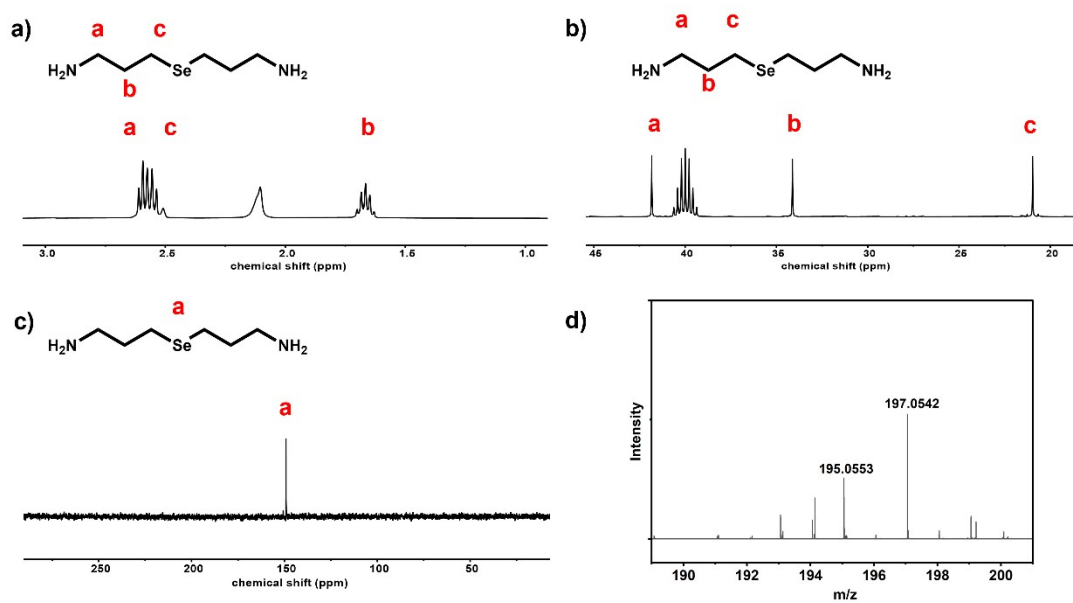


Fig. S1. Characterization of $\text{H}_2\text{N}-(\text{CH}_2)_3\text{-Se}-(\text{CH}_2)_3\text{-NH}_2$: (a) ^1H NMR spectrum; (b) ^{13}C NMR spectrum; (c) ^{77}Se NMR spectrum and (d) mass spectrum.

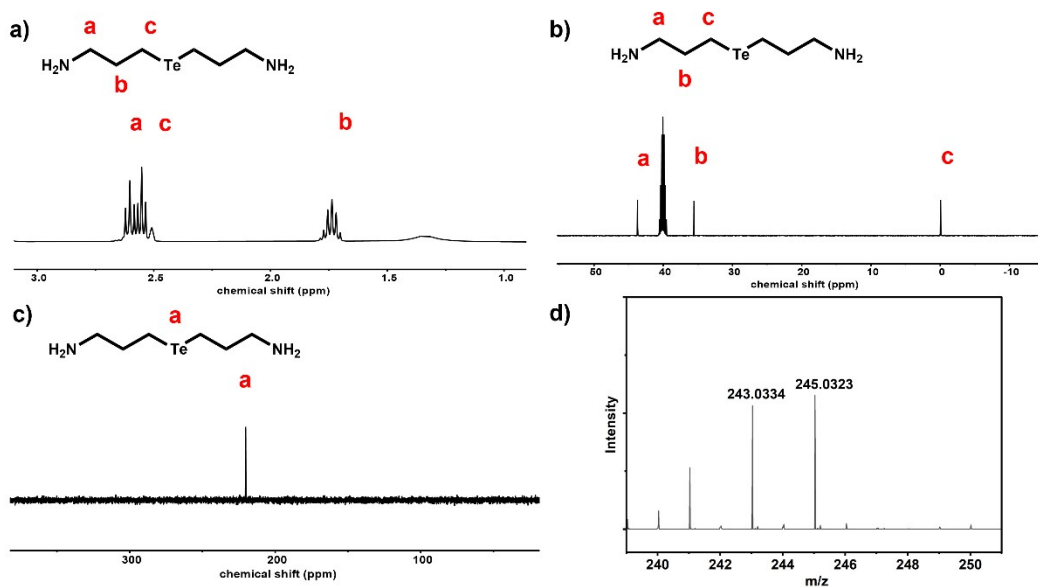


Fig. S2. Characterization of $\text{H}_2\text{N}-(\text{CH}_2)_3\text{-Te}-(\text{CH}_2)_3\text{-NH}_2$: (a) ^1H NMR spectrum; (b) ^{13}C NMR spectrum; (c) ^{125}Te NMR spectrum and (d) mass spectrum.

Sample	mPEG (g)	SeC ₃ NH ₂ (mg)	TeC ₃ NH ₂ (mg)	TDI (mg)	Cat. (μ l)	DMF (ml)
Te100PEG5000	0.500	0	244	183	20	10
Se25Te75PEG5000	0.500	49	183	183	20	10
Se50Te50PEG5000	0.500	98	122	183	20	10
Se75Te25PEG5000	0.500	146	61	183	20	10
Se100PEG5000	0.500	195	0	183	20	10
Te100PEG2000	0.200	0	244	183	20	10
Se25Te75PEG2000	0.200	49	183	183	20	10
Se50Te50PEG2000	0.200	98	122	183	20	10
Se75Te25PEG2000	0.200	146	61	183	20	10
Se100PEG2000	0.200	195	0	183	20	10
Te100PEG750	0.075	0	244	183	20	10
Se25Te75PEG750	0.075	49	183	183	20	10
Se50Te50PEG750	0.075	98	122	183	20	10
Se75Te25PEG750	0.075	146	61	183	20	10
Se100PEG750	0.075	195	0	183	20	10

Table S1. Formulation of each sample, showing the variation in ratios of mPEG, SeC₃NH₂, TeC₃NH₂, TDI, catalyst, and DMF for block copolymers with different Se/Te ratios.

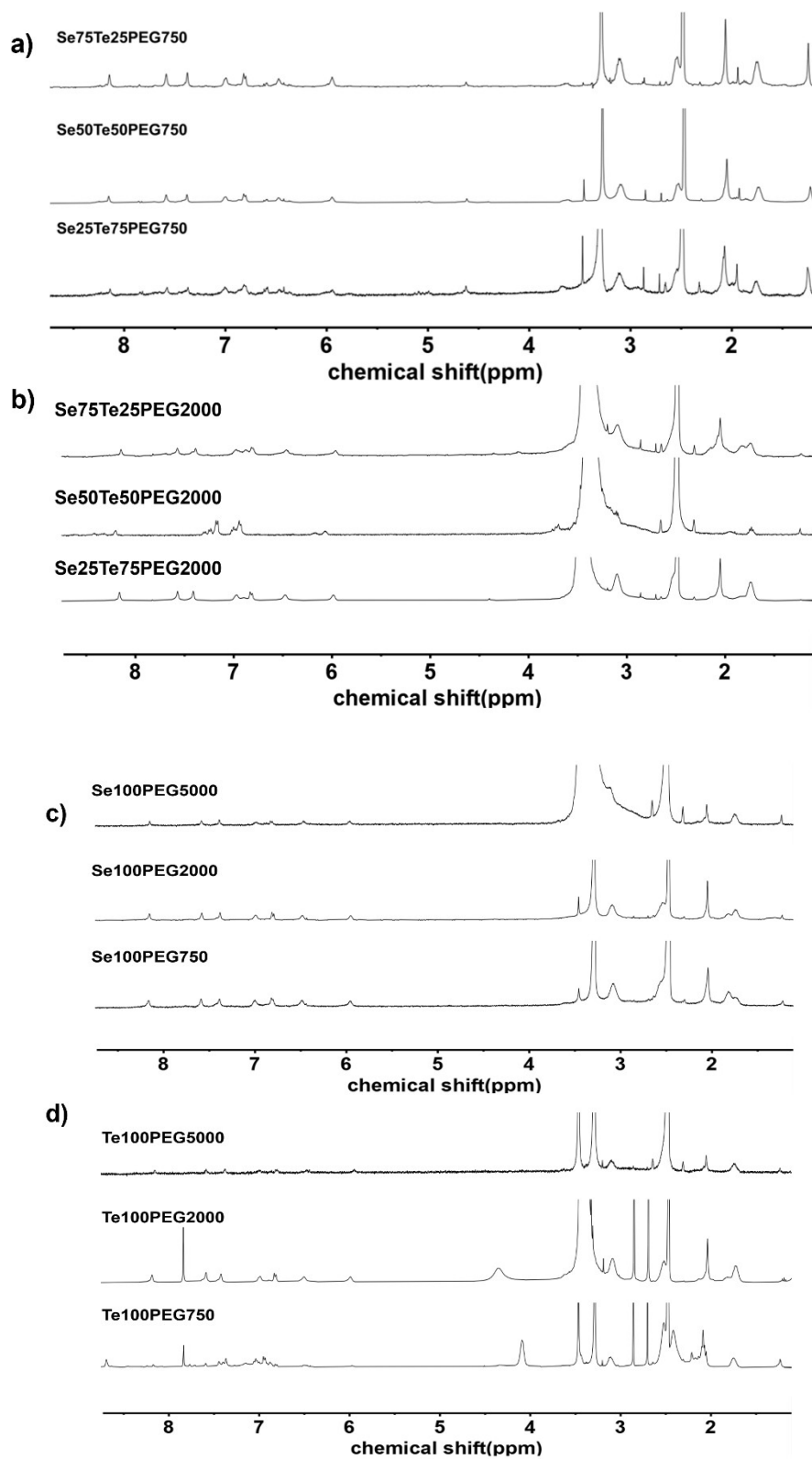


Fig. S3. ^1H NMR spectrum of block polymers.

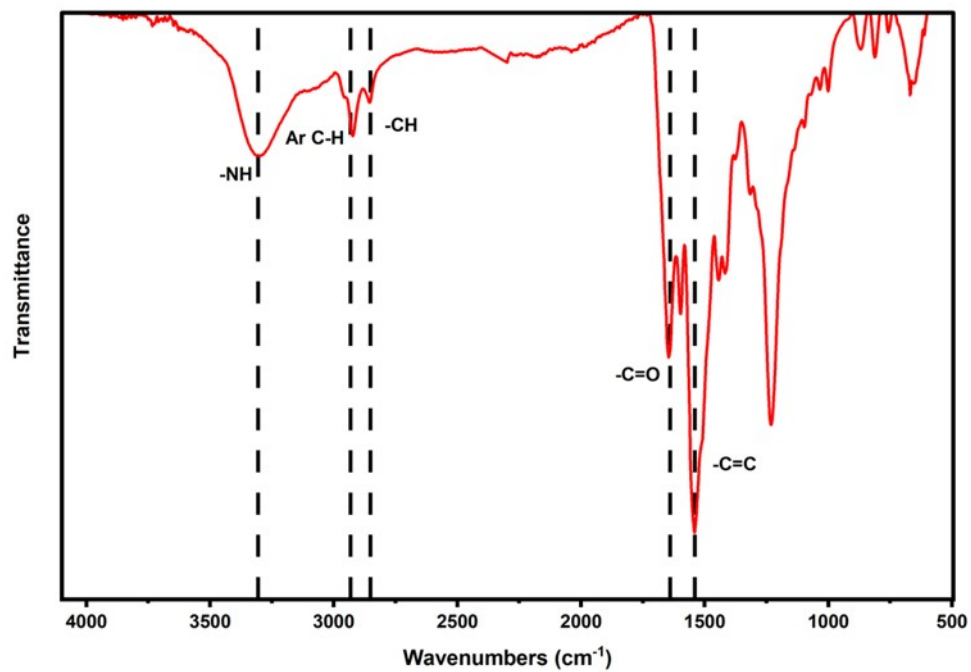


Fig. S4. FT-IR spectra of Se₂₅Te₇₅PEG5000

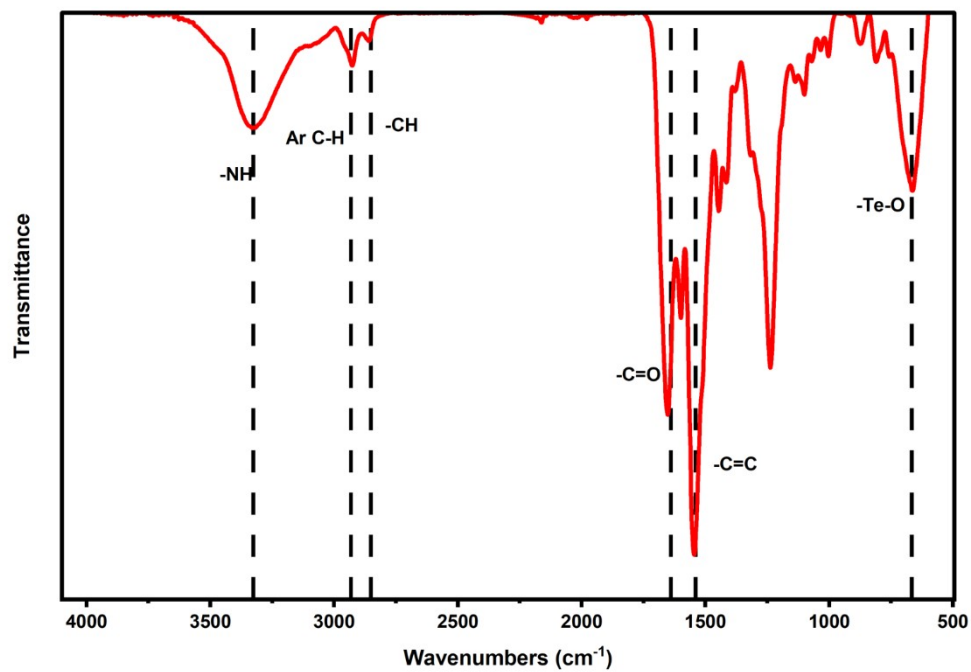


Fig. S5. FT-IR spectrum of oxidized Se₂₅Te₇₅PEG5000

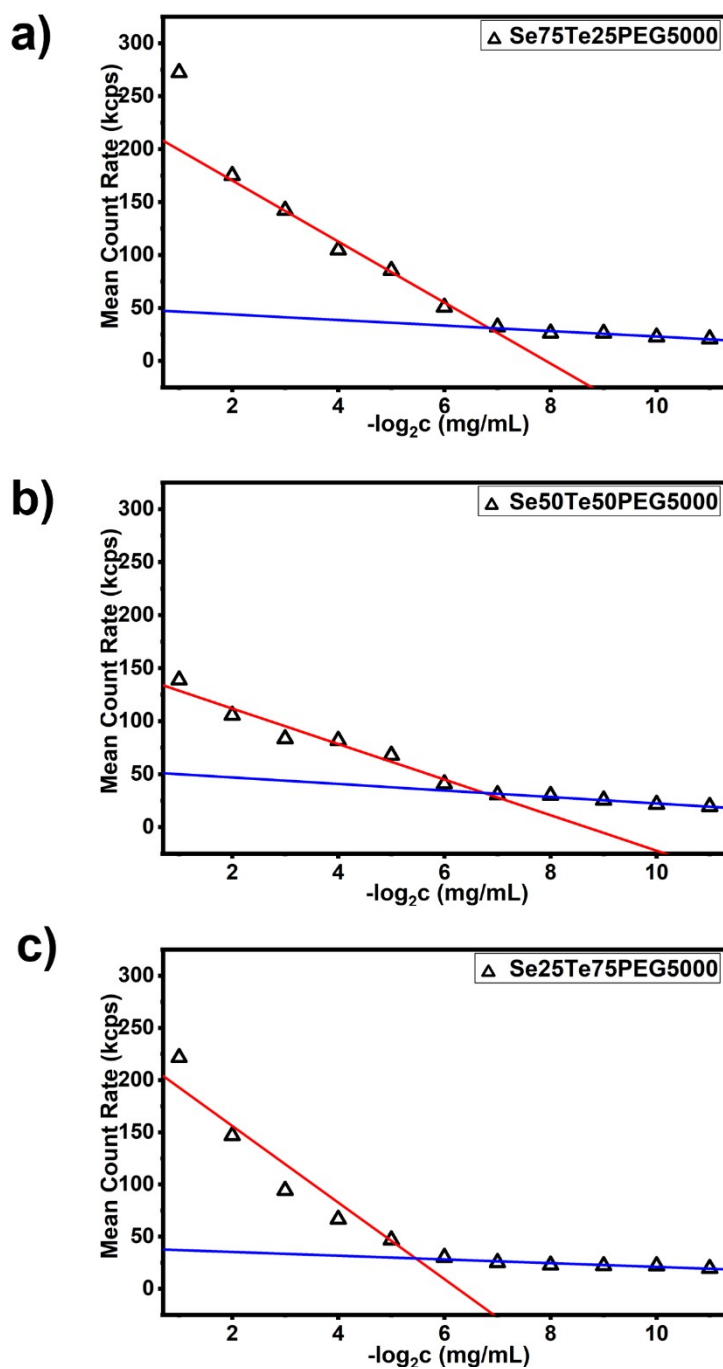


Fig. S6. a-c) Critical micelle concentration (CMC) of the assembly of three block copolymers (Se25Te75PEG5000, Se50Te50PEG5000 and Se75Te25PEG5000) measured by dynamic light scattering (DLS)

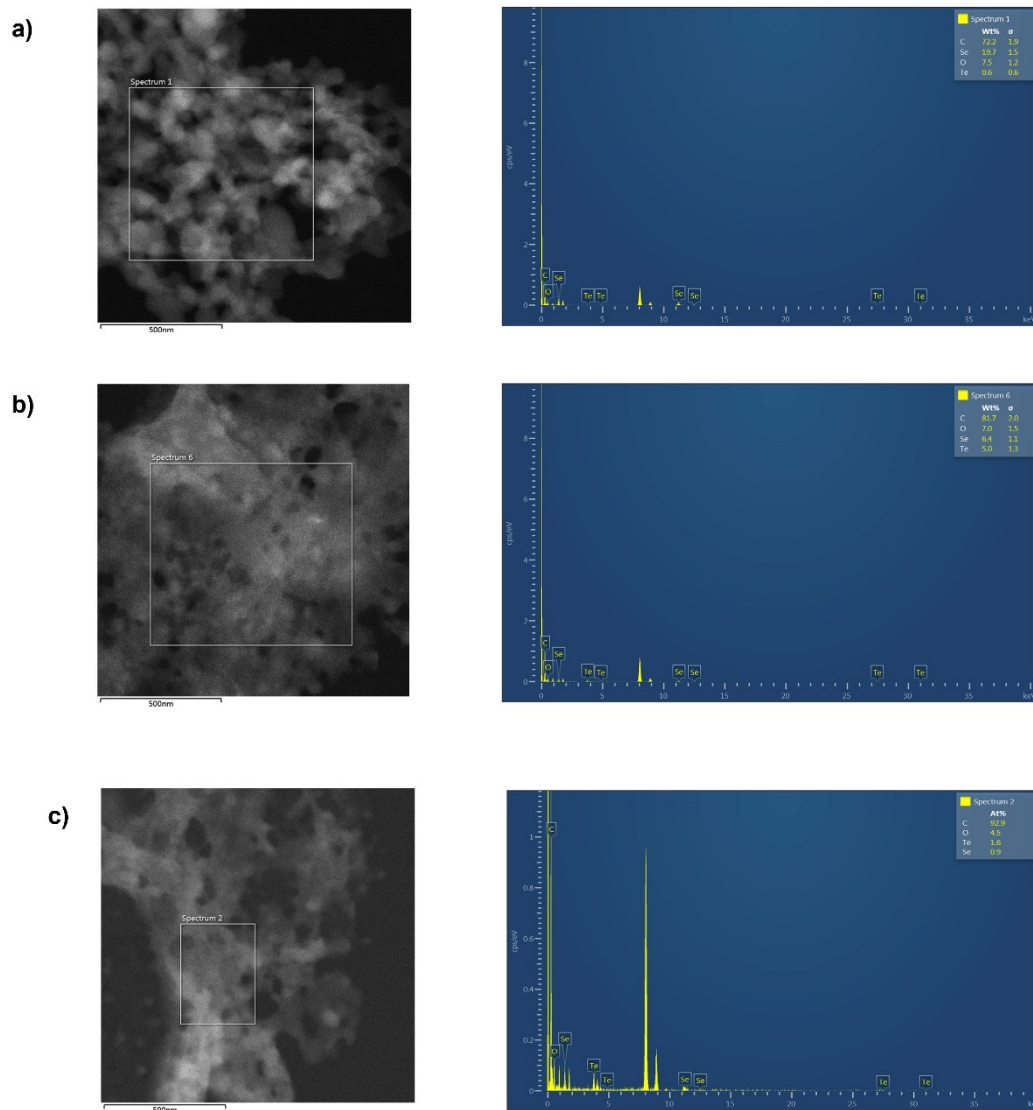


Fig. S7. EDS characterization of the assemblies. a) Se₇₅Te₂₅PEG5000 Se=80.2% Te=19.8%.
 b) Se₅₀Te₅₀PEG5000 Se=57.7% Te=42.3%. c) Se₂₅Te₇₅PEG5000 Se=36.0% Te=64.0%.

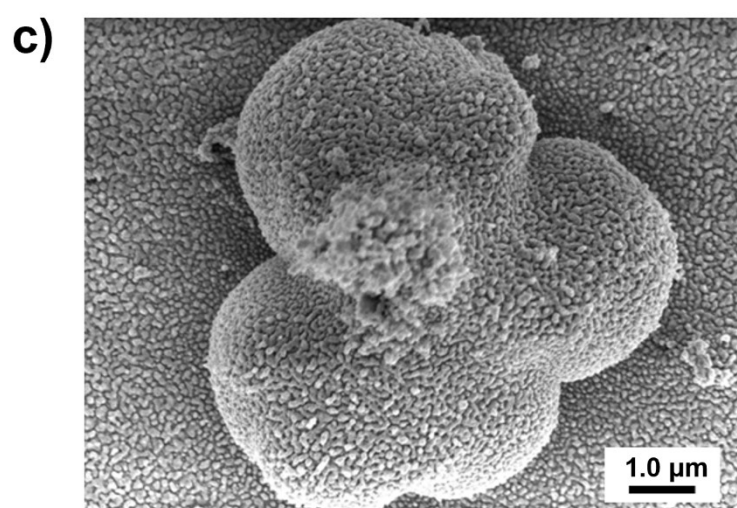
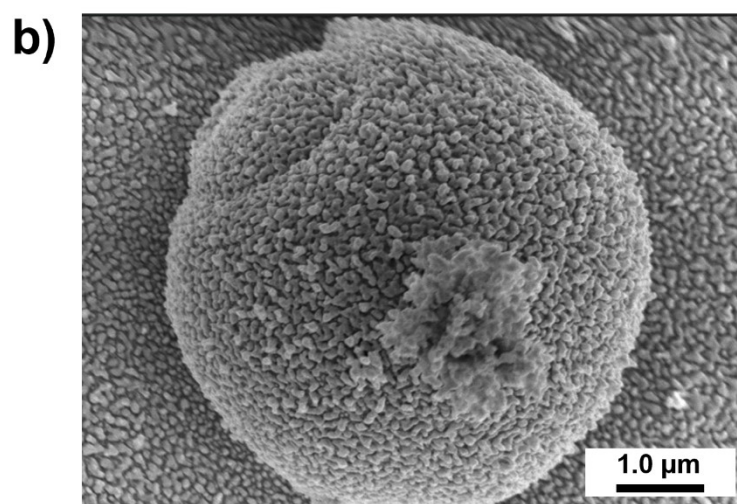
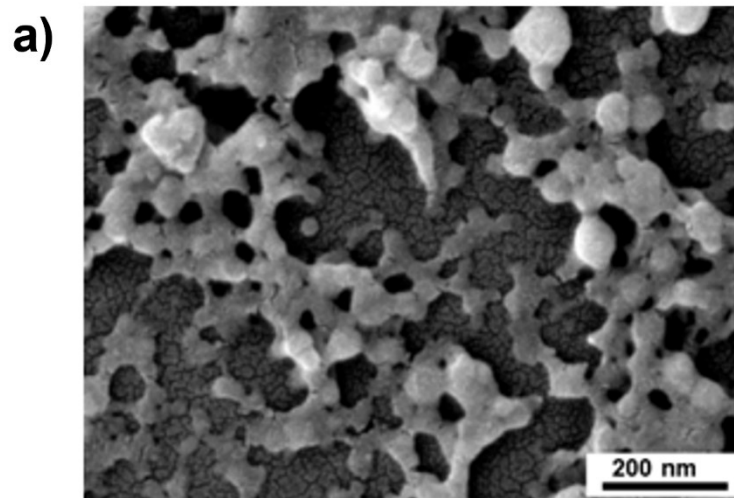


Fig. S8. SEM image of Se₂₅Te₇₅PEG5000 assembly in oxidation stage. a) Se₂₅Te₇₅PEG5000 in C oxidation stage. b) Se₂₅Te₇₅PEG5000 in E oxidation stage. c) Se₂₅Te₇₅PEG5000 in F oxidation stage.

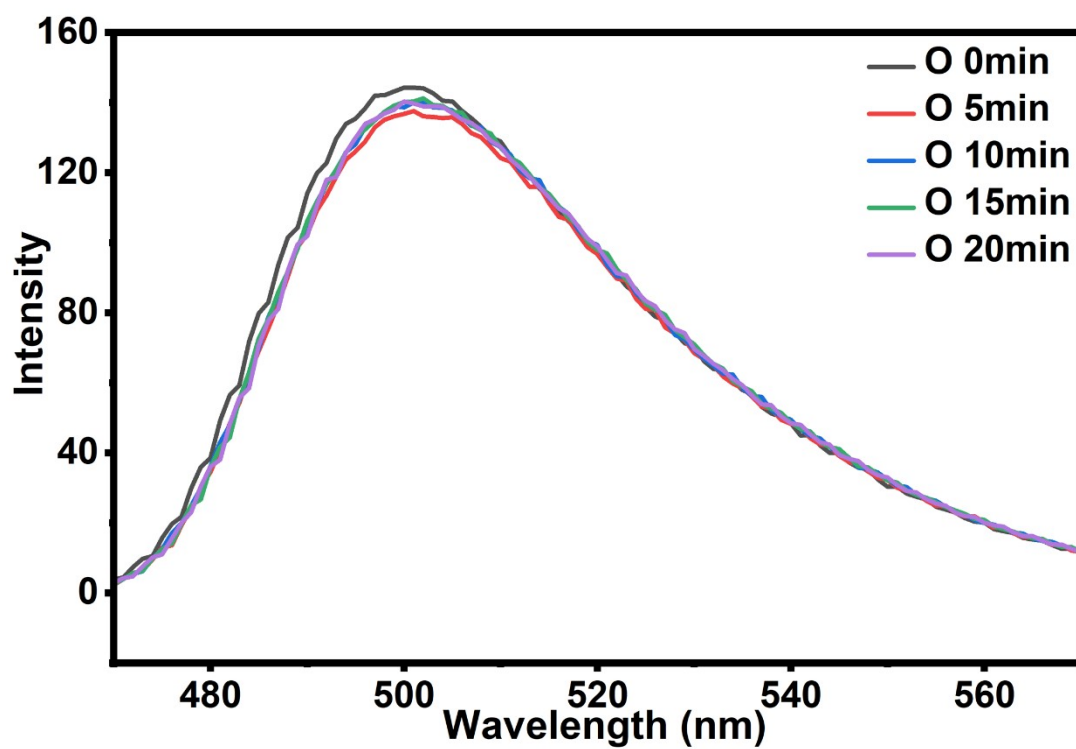


Fig. S9. Fluorescence intensity changes upon oxidation of 2-(4-(dimethylamino)benzylidene) malononitrile, generated from malononitrile and 4-(dimethylamino)benzaldehyde, in organic phase (DMSO).