

Electronic Supplementary Information

Multi-hierarchical Responsive Polymers: Stepwise Oxidation of a Selenium- and Tellurium-Containing Block Copolymer with Sensitivity to both Chemical and Electrochemical Stimuli

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Characterization and control experiment

- ¹H NMR characterization of the selenium- and tellurium-containing copolymer Se-Te-PEG2000.

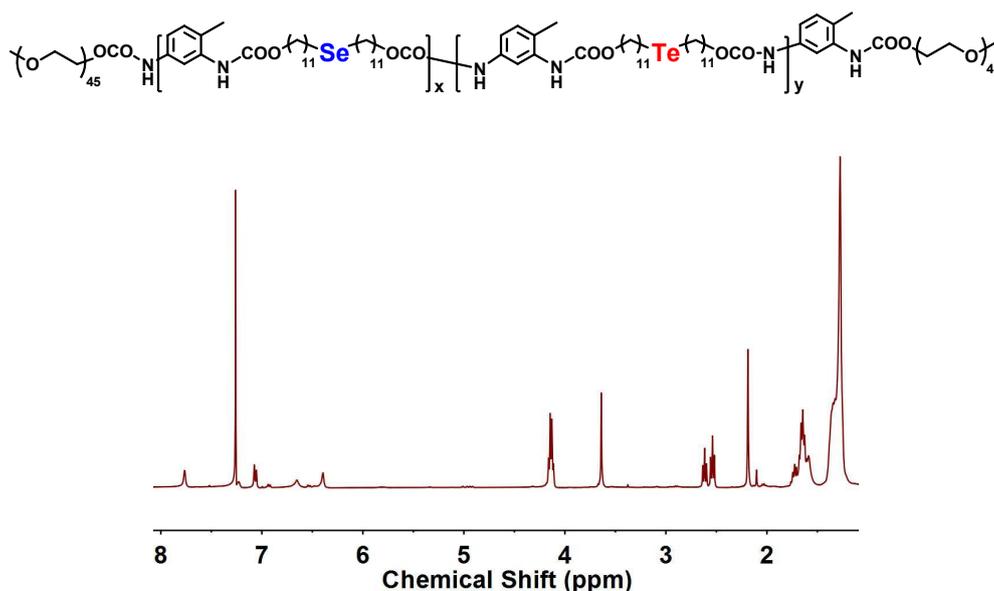


Figure S1. ¹H NMR spectrum of Se-Te-PEG2000 (400 MHz, CDCl₃).

δ (ppm): 4.15 (t, $\text{NH}_2\text{COOCH}_2(\text{CH}_2)_{10}\text{Se}$), 4.13 (t, $\text{NH}_2\text{COOCH}_2(\text{CH}_2)_{10}\text{Te}$), 3.64 (t, OCH_2CH_2 of PEG), 2.62 (t, TeCH_2CH_2), 2.54 (t, SeCH_2CH_2), 2.19 (Se CH_2CH_2 , Te CH_2CH_2), 1.77-1.19 (m, $\text{NHCOOCH}_2(\text{CH}_2)_8\text{CH}_2\text{CH}_2\text{Se}$, $\text{NHCOOCH}_2(\text{CH}_2)_8\text{CH}_2\text{CH}_2\text{Te}$).

- GPC characterization of the selenium- and tellurium-containing copolymer.

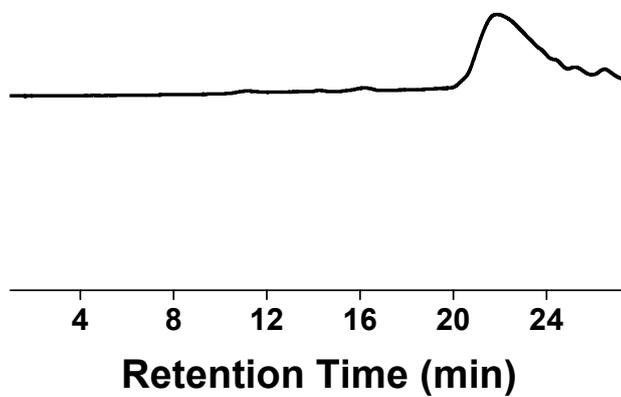


Figure S2. GPC plot of Se-Te-PEG2000.

3. CAC of Se-Te-PEG2000 measured by the concentration-dependent DLS measurement.

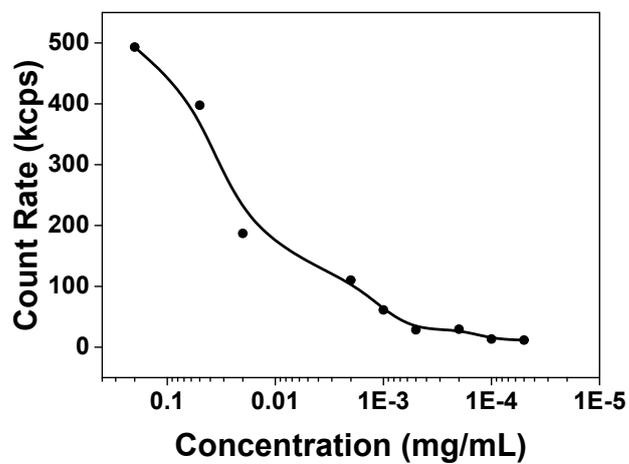


Figure S3. CAC measurements by the concentration-dependent DLS.

4. DLS measurements of micelle suspension before and after oxidation by H_2O_2 for 5 h.

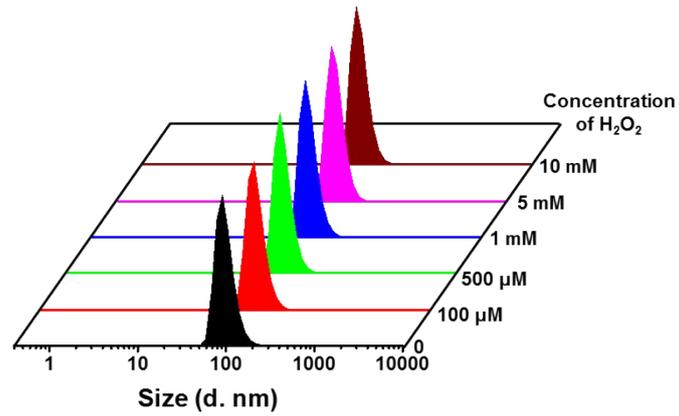


Figure S4. DLS plots of micelle suspension before and after oxidation by H₂O₂ of different concentration for 5 h.

5. Cryo-TEM images of micelle suspension after oxidation H₂O₂ of different concentrations and periods.

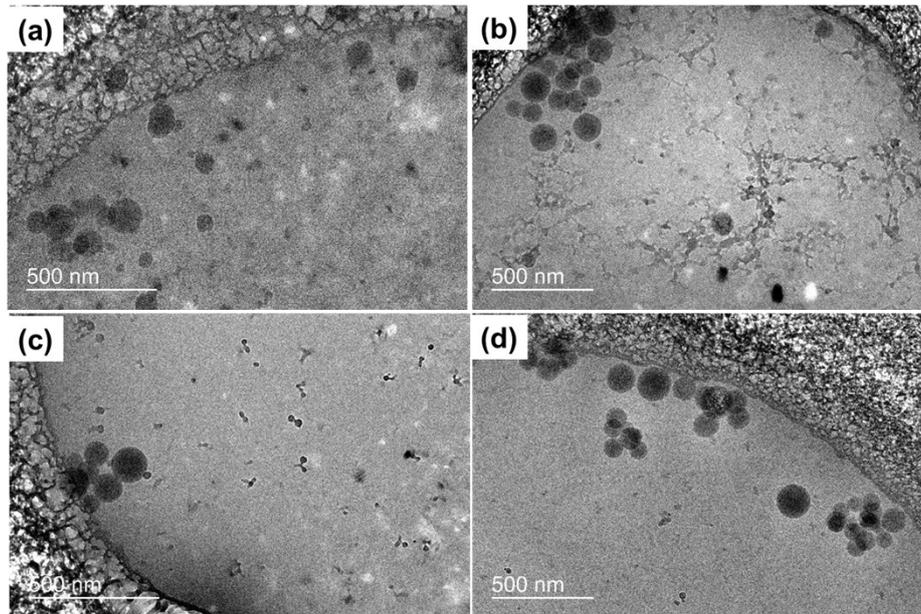


Figure S5. Cryo-TEM images of the Se-Te-PEG2000 after oxidation by H₂O₂ of different concentration and period. (a) 500 μM, 12 h. (b) 1 mM, 12 h. (c) 5 mM, 12 h. (d) 10 mM, 12 h. Scale bar: 500 nm.

6. Current-time curves during electrochemical oxidation process of Se-Te-PEG2000.

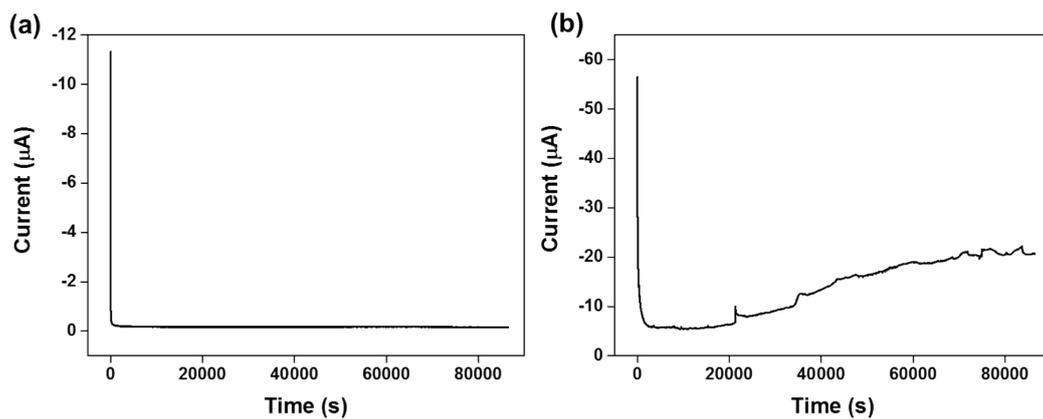


Figure S6. Current-time curves during electrochemical oxidation of Se-Te-PEG2000. (a) 0.6 V, 24 h. (b) 1.2 V, 24 h.