Supporting Information

Side-chain selenium-containing amphiphilic block copolymers: redox-controlled self-assembly and disassembly

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Three PEO-b-PAA-Se block copolymers with different grafting ratios are synthesized. The CAC of the polymers and average diameter of polymer aggregates in aqueous solution are listed in Table S1.

Table S1 The CAC and average diameter in aqueous solution of PEO-b-PAA-Se with different grafting ratios

	CAC (g/L)	Average diameter[a] (nm)
PEO-b-PAA-Se-64	0.067	33
PEO-b-PAA-Se-28	0.087	122
PEO-b-PAA-Se-100	0.060	38

[a] determined from DLS tests.

As a supplement for TEM results, we tried the Cryo-TEM experiments with PEO-b-PAA-Se-64 aggregates. The image is placed in Fig. S1.

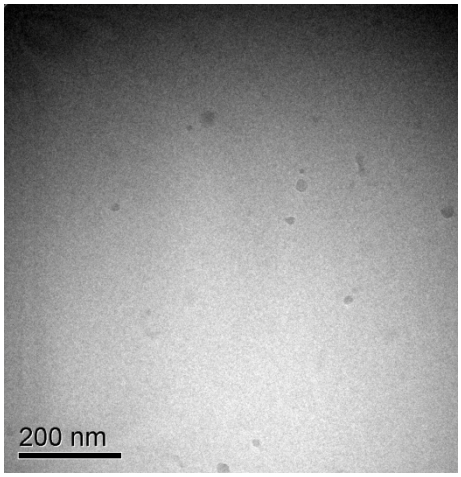

Fig. S1 Cryo-TEM image of PEO-b-PAA-Se-64 aggregates. Cryo-TEM samples were prepared in a controlled environment vitrification system (CEVS) at 28°C. The vitrified samples were then stored in liquid nitrogen until they were transferred to a cryogenic sample holder (Gatan 626) and examined by a JEM 2200FS TEM (200 kV) at about -174°C.

The ^{1}H-NMR spectra of $PhCH_2Se(CH_2)_{11}OH$ and $PhCH_2(Se{=}O)(CH_2)_{11}OH$ are shown in Fig. S2. The ^{1}H-NMR spectra of PEO-b-PAA-Se-64 before and after oxidation are given if Fig. S3.

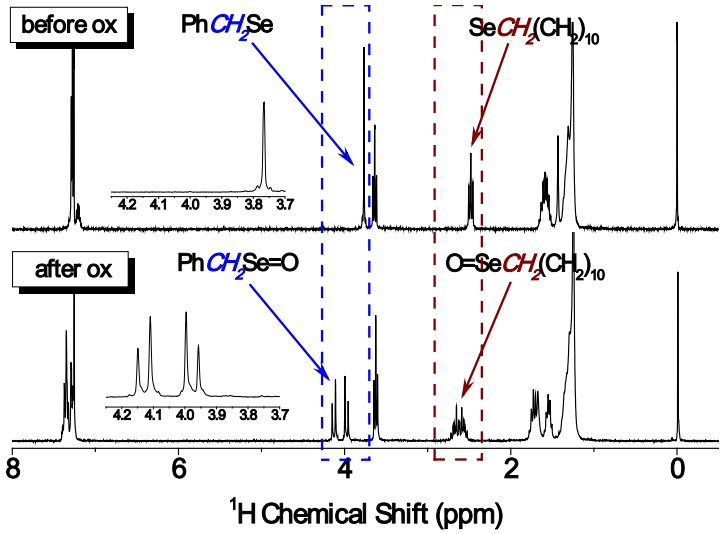

Fig. S2 ^{1}H-NMR spectra of $PhCH_2Se(CH_2)_{11}OH$ before and after oxidation

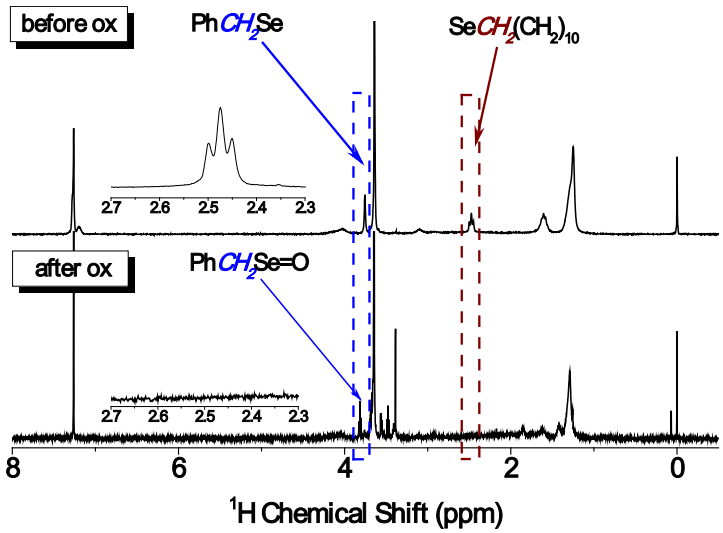

Fig. S3 ^{1}H-NMR spectra of PEO-b-PAA-Se-64 polymers before and after oxidation

The ^{77}Se-NMR spectra of $PhCH_2Se(CH_2)_{11}OH$ and $PhCH_2(Se=O)(CH_2)_{11}OH$ are shown in Fig. S4 and Fig. S5.

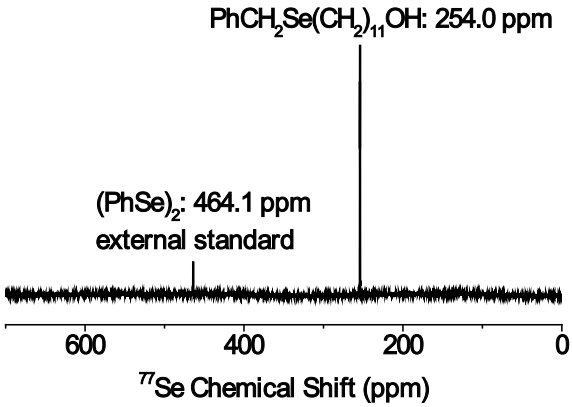

Fig. S4 ^{77}Se-NMR spectra of $PhCH_2Se(CH_2)_{11}OH$

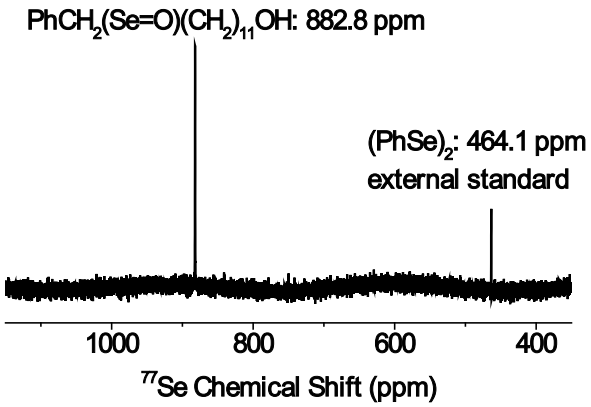

Fig. S5 ^{77}Se-NMR spectra of $PhCH_2(Se=O)(CH_2)_{11}OH$

The release curves of NR from PEO-b-PAA-Se-64 and PEO-g-PAA-Se-100 in 0.1% H_2O_2 solution are shown in Fig. S6. PEG-b-PAA-Se-28 is so hydrophilic that it fails to load Nile Red which is hydrophobic.

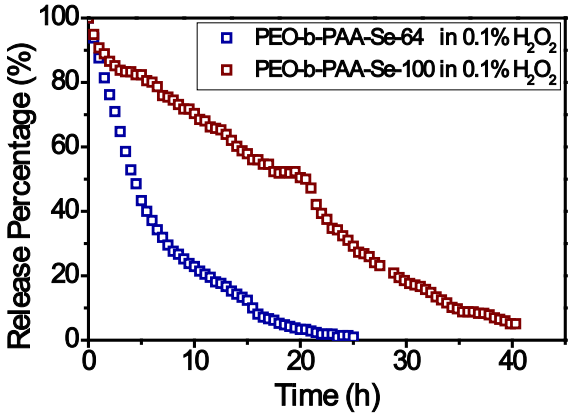

Fig. S6 Release of NR under oxidative environment.