Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supporting Information

Self-assembly and disassembly of redox-responsive ferrocene-containing amphiphilic block copolymer for controlled release

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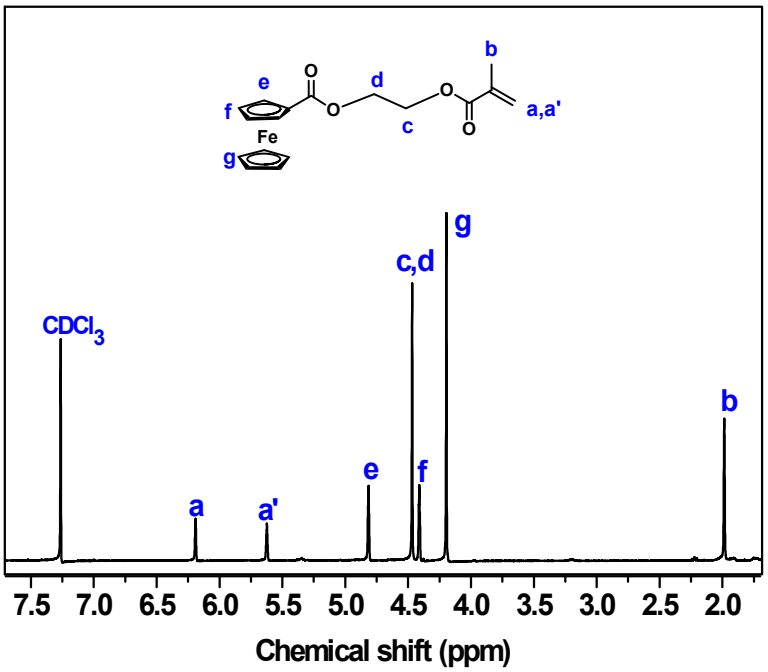

Fig. S1. ^{1}H NMR spectrum of ferrocene-containing monomer (MAEFc).

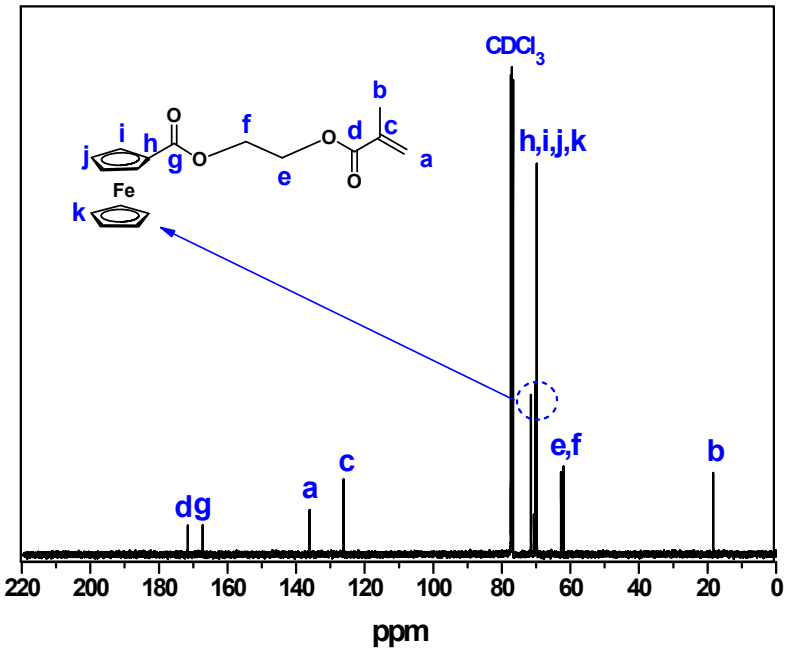

Fig. S2. ^{13}C NMR spectrum of ferrocene-containing monomer (MAEFc).

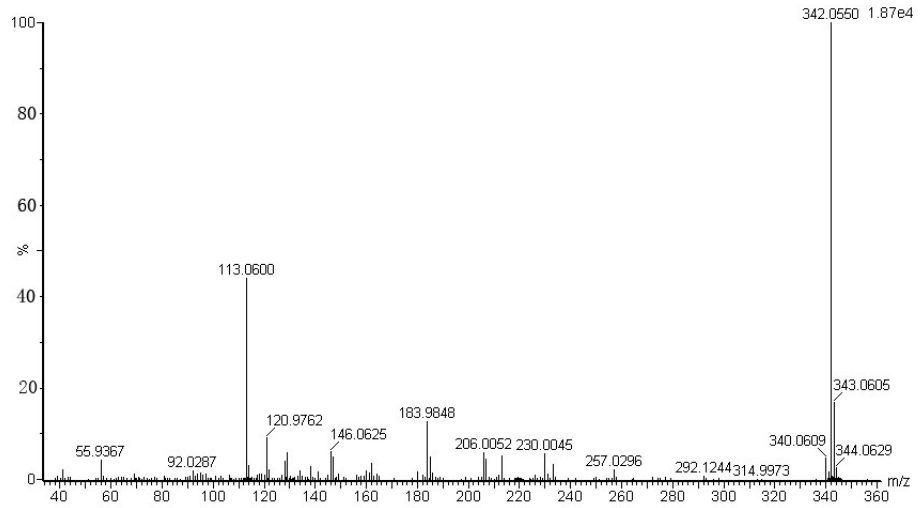

Fig. S3. HRMS spectrum of ferrocene-containing monomer (MAEFc).

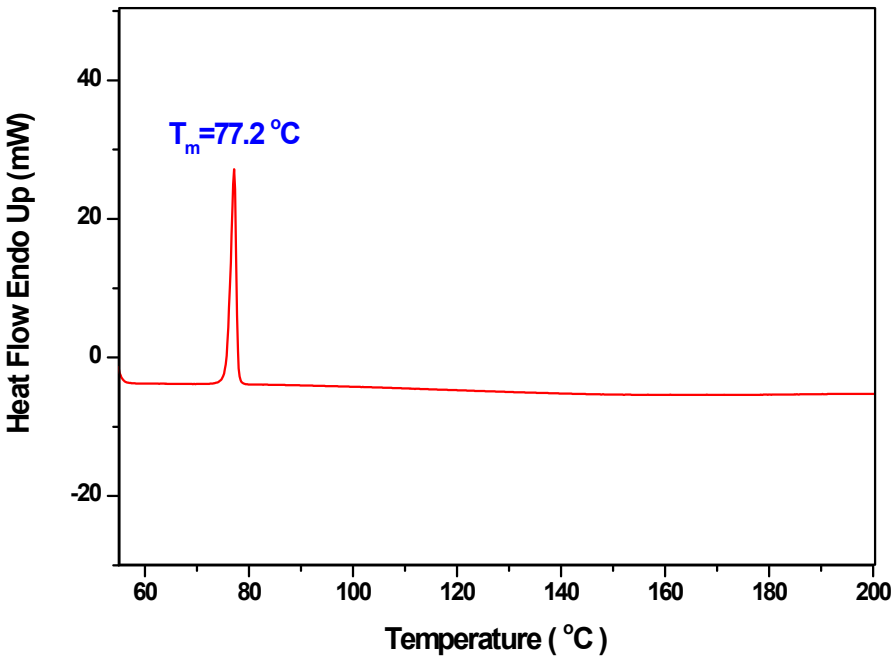

Fig. S4. The melting point of ferrocene-containing monomer (MAEFc).

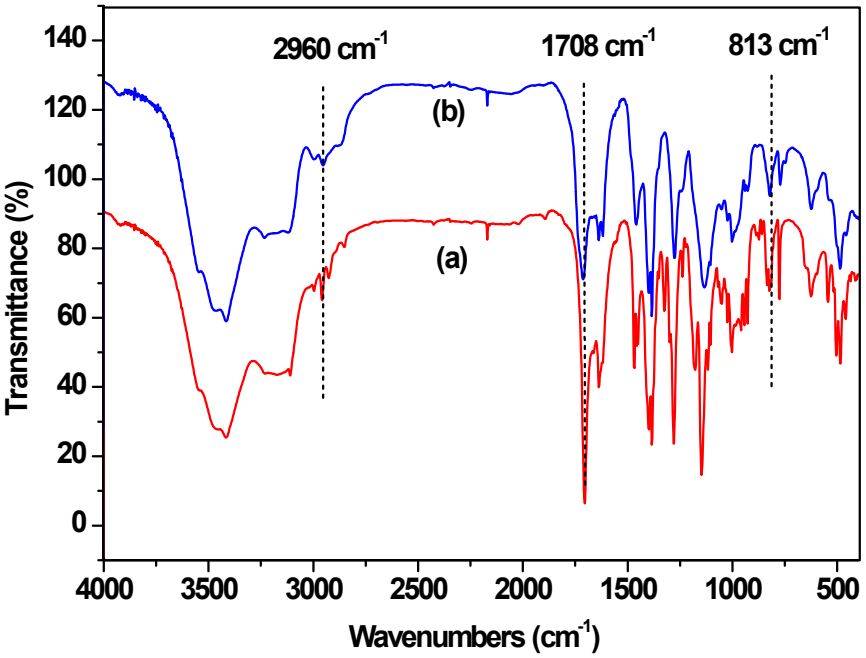

Fig. S5. FT-IR spectra of ferrocene-containing monomer MAEFc (a) and block copolymer PEG_{45}-*b*-$PMAEFc_{38}$ (b).

Critical micelle concentration (CMC) of block copolymers

The critical micelle concentration (CMC) was determined by the fluorescence absorbance of block copolymer micelles with pyrene as a hydrophobic fluorescent probe at increasing concentrations to indicate the formation of block copolymer micelles. Pyrene will preferentially partition into hydrophobic microdomains showing strong fluorescence intensity while weak fluorescence intensity in water. In addition, the increase in the intensity ratio of peaks at 382 and 372 nm (I_3/I_1) of pyrene in the excitation spectra indicates the formation of micelles as shown in **Fig. S3a**. Block copolymer aggregates aqueous solution was diluted to different concentrations to perform the fluorescent measurements with the excitation wavelength 335 nm. The critical micelle concentration (CMC) was determined to be approximately 0.0048 mg mL^{-1} as shown in **Fig. S3b**.

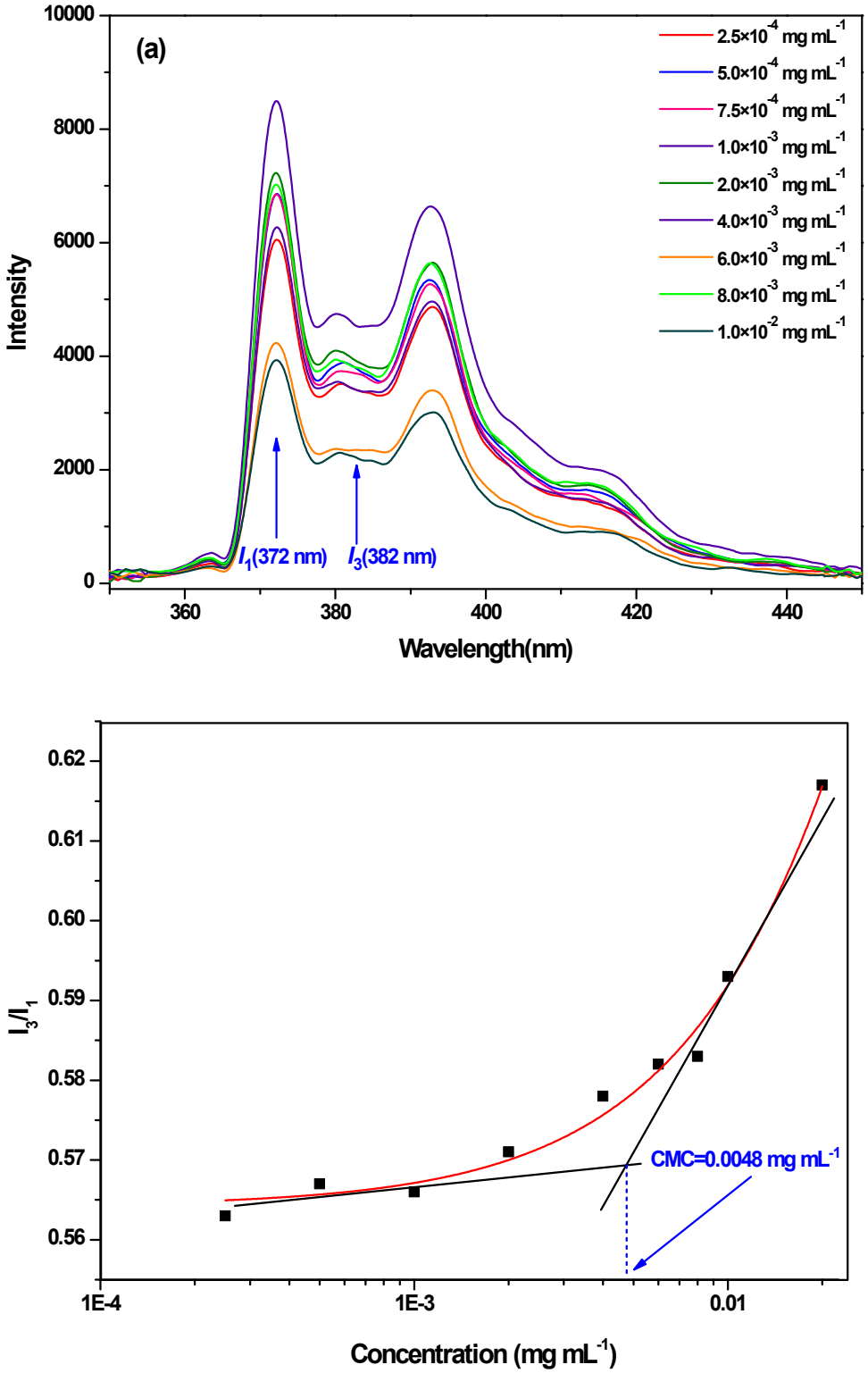

Fig. S6. (a) Fluorescence spectra of block copolymer in water with pyrene. (b) Plots of I_3/I_1 vs copolymer concentration for block copolymer in deionized water with different concentrations (from 0.00025 to 0.1 mg mL^{-1}).

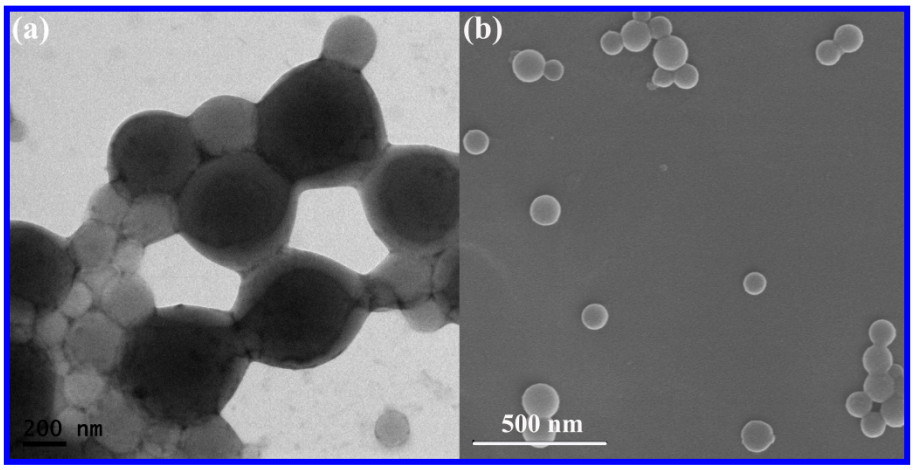

Fig. S7. The HR-TEM (a) and SEM (b) images of PEG_{45}-*b*-$PMAEFc_{38}$ vesicles (polymer concentrations: 0.3 mg mL^{-1}, common solvent: DMSO).

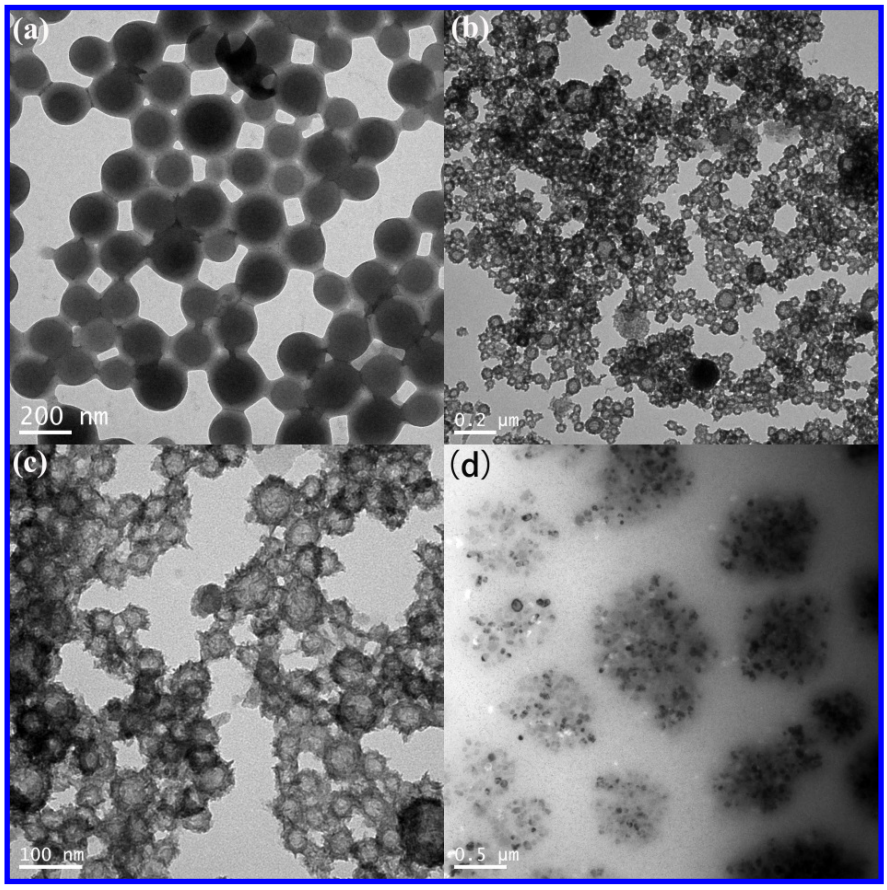

Fig. S8. The TEM images of PEG_{45}-*b*-$PMAEFc_{38}$ vesicles before oxidation (a); after oxidation with $KMnO_4$ equal amount of ferrocene units in different scale bar (b), (c); reduction with ascorbic acid (d) .