Supplementary data

A highly sensitive and reusable cyanide anion sensor based on the spiropyran functionalized polydiacetylene vesicular receptors

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Figure S1  Molecular structure and 1H NMR spectrum of SPDA recorded in CDCl3.

Figure S2  (a) DLS and (b) Negatively staining TEM image of SPFPDA vesicles.
**Figure S3** The linear changes in the colorimetric response of the SPFPDA vesicles with the increasing CN⁻ concentration from $5 \times 10^{-7}$ M to $2 \times 10^{-6}$ M.

**Figure S4** Reproducibility of the colorimetric response of the SPFPDA vesicles in the presence of CN⁻ with the same concentration of $5 \times 10^{-5}$ M.

**Figure S5** (a) UV-visible absorption spectra and (b) the colorimetric response of the pure PDA vesicles in the presence of different anions with the same concentration of $1 \times 10^{-3}$ M in buffered aqueous solution (HEPES 10 mM, pH=7.2) at room temperature. The response time was 12 min.
Figure S6  FTIR spectra of the SPFPDA vesicles: (a) before and (b) after addition of $5 \times 10^{-5} \text{M} \text{CN}^-$.  

Figure S7  The linear changes in the fluorescence intensity of the SPFPDA vesicles with the increasing CN$^-$ concentration of from $5 \times 10^{-7} \text{M}$ to $2 \times 10^{-6} \text{M}$.  

Figure S8  UV-vis absorption spectra of (i) the SPFPDA vesicles upon addition of $5 \times 10^{-5} \text{M} \text{CN}^-$ in buffered aqueous solution (HEPES 10 mM, pH=7.2); (ii) the recovered sample after subsequent addition of HClO$_4$ aqueous solution (0.1 M), and (iii) the sample after subsequent addition of $5 \times 10^{-5} \text{M} \text{CN}^-$ again.