Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Photonic Hydrogels for Ultratrace Sensing of Divalent Beryllium in Seawater

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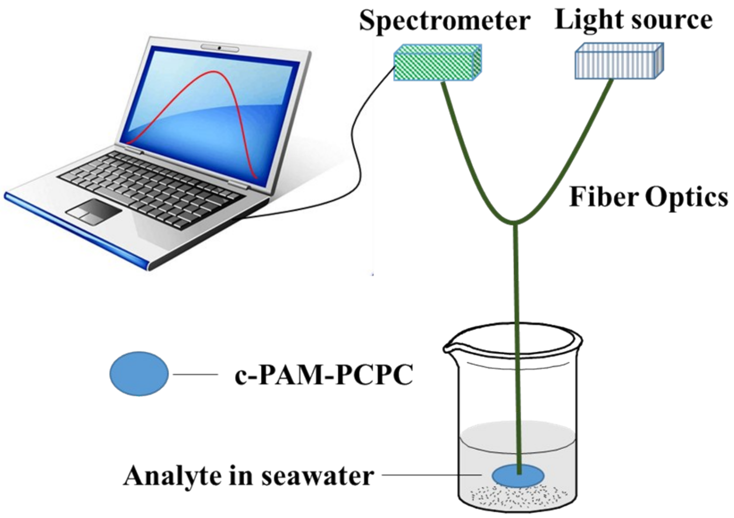

Figure S1. Schematic description of the designed detection system

Monodispersity and Surface Charge of PS particles

Table S1. The average size, polydispersity and zeta potential of the PS particles in 1 mM KCl solution measured by a Brookheaven 90 plus PALS Zeta potential measurement analyser.

Sample ID	Eff. Diam. (nm)	Polydispersity	Zeta potential (mV)
1	96.55	0.002	-45.87
2	98.07	0.015	-42.55
3	98.79	0.001	-44.62
Mean:	97.80	0.006	-44.35
Std Err:	0.66	0.004	0.97

Polymerization of benzo-9-crown-3 in c-PAM-PCPC

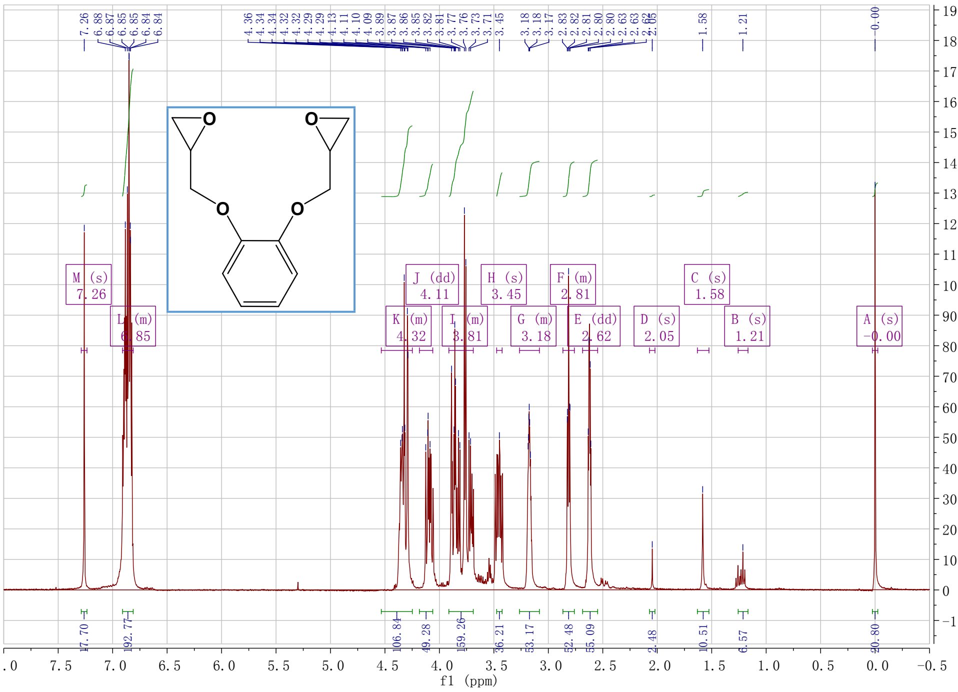

Figure S2. ^{1}H NMR of synthesized 1,2-bis-(2,3-epoxypropyl)-benzene.

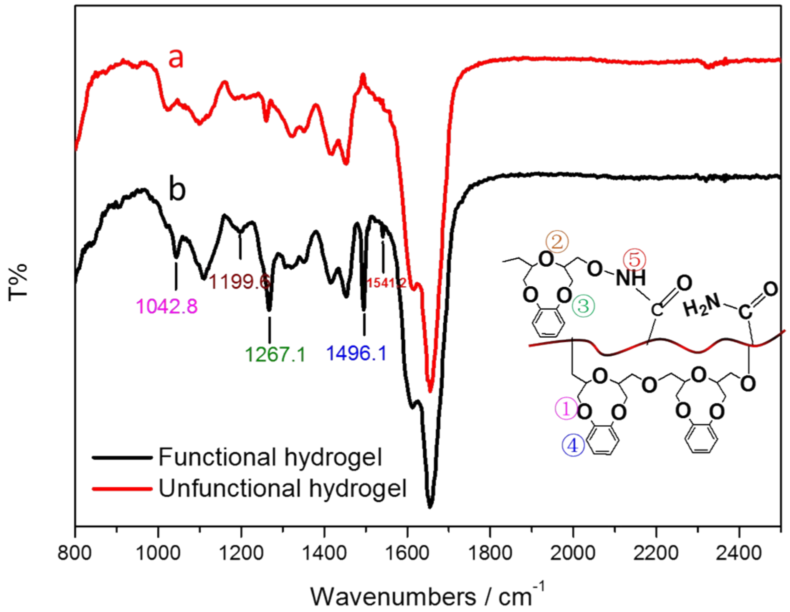

Figure S3 FTIR spectra of dried (a) pure polyacrylamide hydrogel and (b) functionalized polyacrylamide hydrogel with benzo-9-crown-3.

The ^{1}H-NMR spectrum 1,2-bis-(2,3-epoxypropyl)-benzene is shown in Figure S2. In the hydrogel formation, N, N'-methylenebisacrylamide was used as crosslinker, and the hydrogels were washed by deionized water before drying. As shown in Figure S3(b), we can clearly see that several peaks appeared in the spectrum compared with that of unfunctionalized hydrogel. Peaks at 1042 cm^{-1} represents the stretching vibration of –C-O in the ring of crown ether, and 1267 cm^{-1} could be ascribed to the stretching vibration absorption of =C-O-C which is joining on benzene ring, while the peak at 1199 cm^{-1} could be assigned to the -C-O of aliphatic chains. The new peak of 1496 cm-1 can originate from skeleton vibration of substituted benzene, while 1541 cm^{-1} can be assigned to either amides or carbamate esters and corresponds to the coupling of the C-N stretching vibration with the CHN deformation vibration (the so-called Amide ii vibration). All these new peaks can correspond to the bonds which are marked in the inset image of Figure S3.

Spectra with Absolute Intensity Corresponding to Figures in Main Text

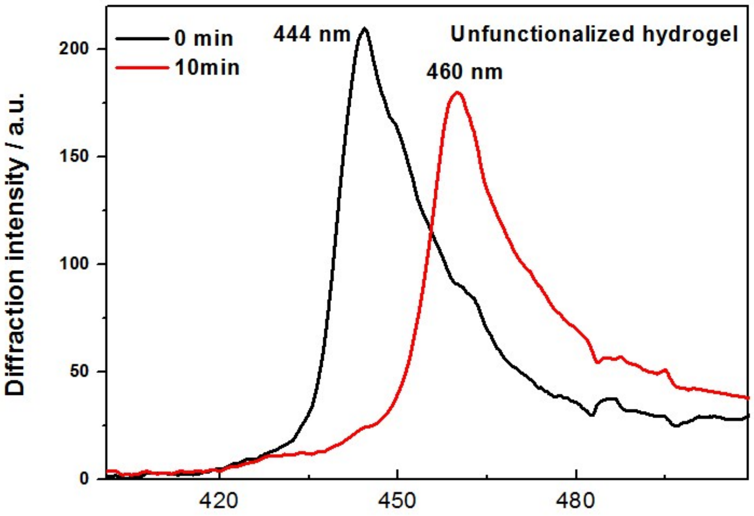

Figure S4 Spectra with absolute intensity corresponding to Fig.3b upper

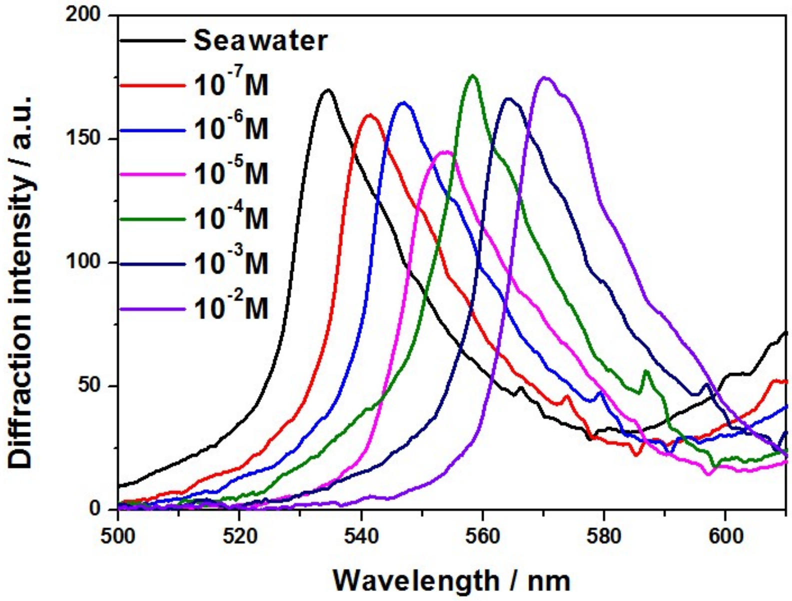

Figure S5 Spectra with absolute intensity corresponding to Fig.4a.

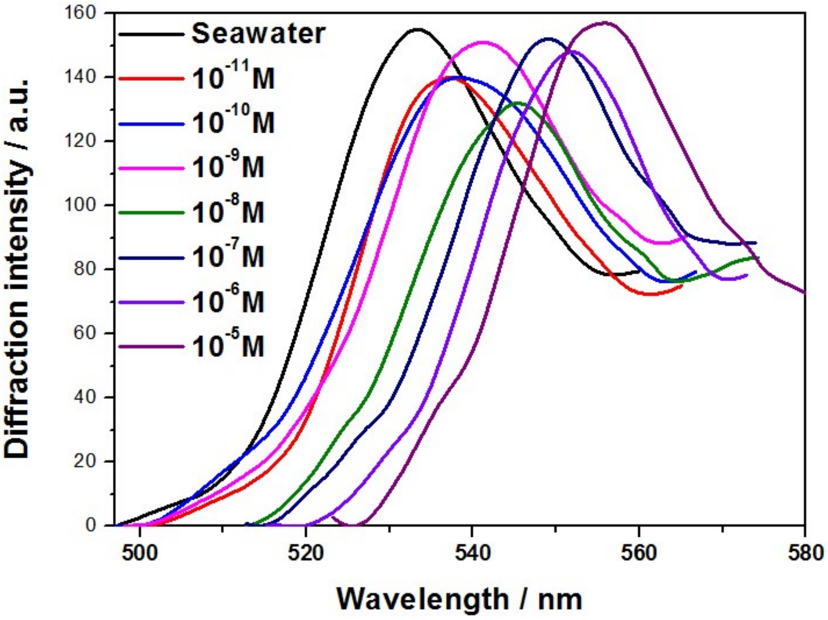

Figure S6 Spectra with absolute intensity corresponding to Fig.4c

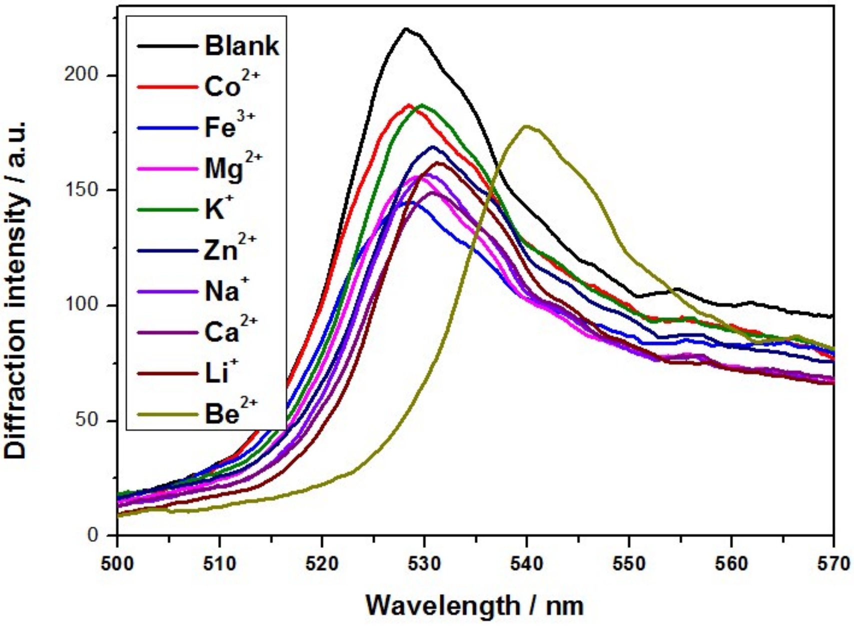

Figure S7 Spectra with absolute intensity corresponding to Fig.7a.

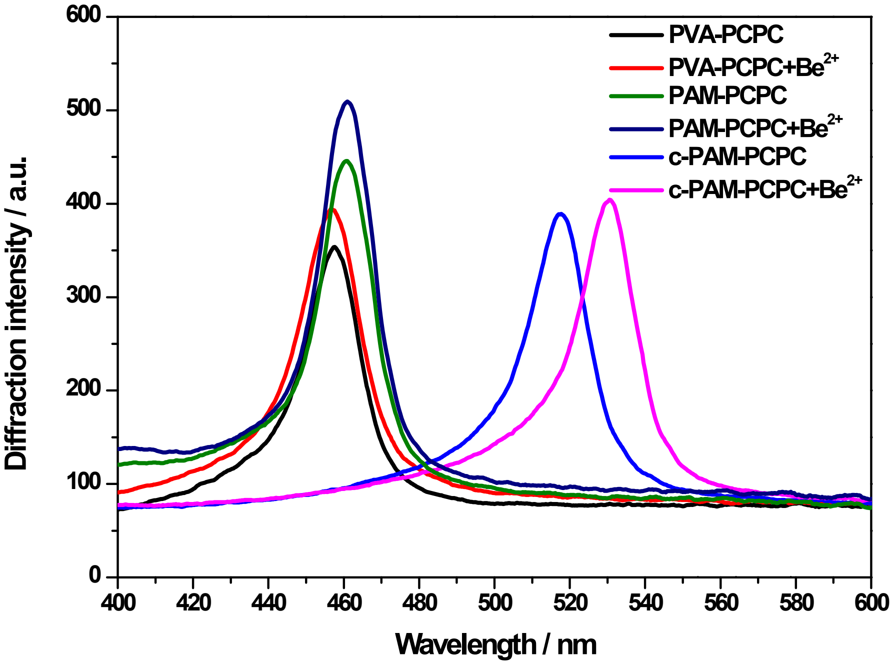

Figure S8 The effect of amide groups to Be^{2+}

References

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