

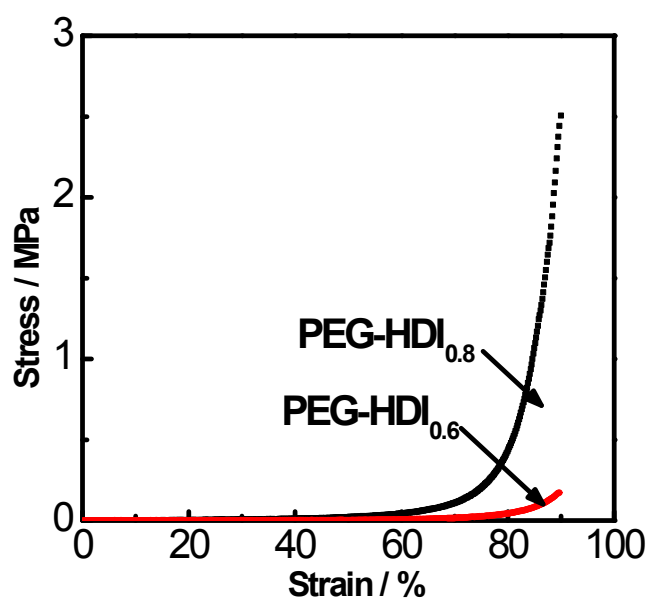
## Supporting information

### Facile Functionalization of Tetrahedron-like PEG Macromonomer-based Fluorescent Hydrogel with High Strength and Its Specific Metal Ions Detection

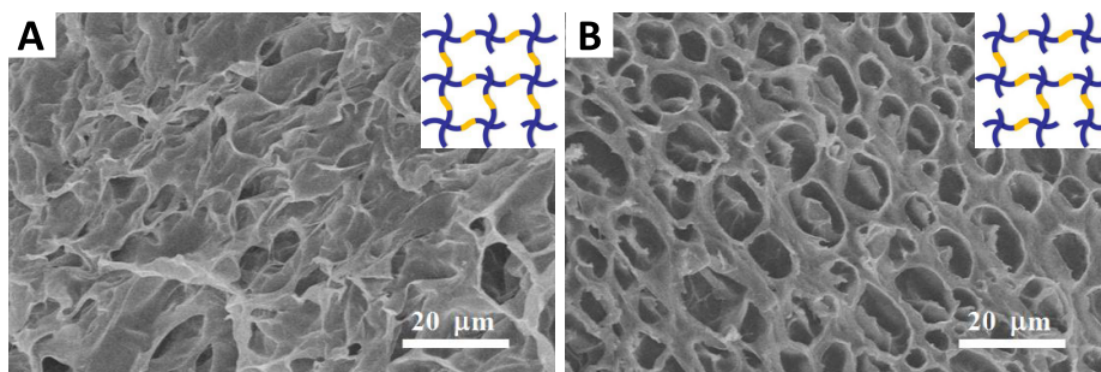
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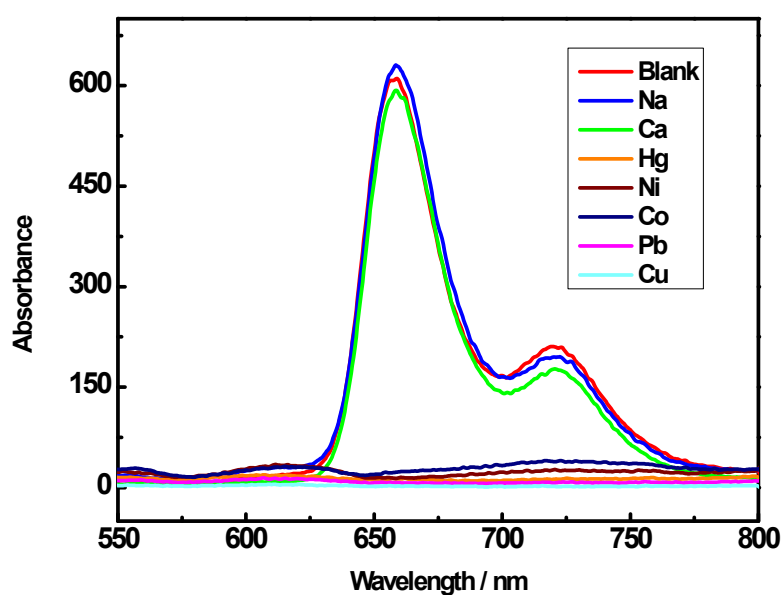
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**Figure S1.** The stress-strain curves for PEG-HDI<sub>0.6</sub> hydrogel and PEG-HDI<sub>0.8</sub> hydrogel.



**Figure S2.** SEM images of (A) PEG-HDI<sub>0.6</sub> gel and (B) PEG-HDI<sub>0.8</sub> gel. Insert: ideal molecular model of respective hydrogel on the top right of the SEM images.



**Figure S3.** Fluorescence spectra of PEG-HDI<sub>1.2</sub>-TPP hydrogels in different metal ions aqueous solution (0.25 M). The wavelength of exciting light is 420 nm.



**Figure S4.** Photographs of PEG-HDI<sub>1.2</sub>-TPP hydrogels in Tris-HClO<sub>4</sub> buffer solution (left) and in Hg<sup>2+</sup> solution (10 mM, right), pH values of these solution are all 7.0, controlled by the Tris-HClO<sub>4</sub> buffer solution.