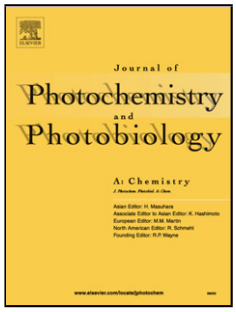

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A novel AIEE polymer sensor for detection of Hg^{2+} and Ag^{+} in aqueous solution

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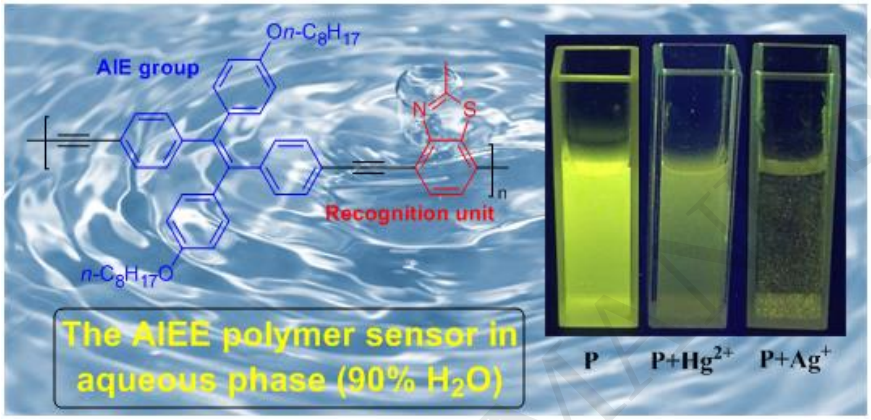
Graphical abstract



Highlights:

- A novel AIE-active chromophore **M-1** was designed and synthesized.
- The AIEE polymer sensor **P1** can exhibit "turn-off" response toward Hg^{2+} and Ag^{+}.
- The selectivity of **P1** can be observed by naked eyes under 365 nm UV lamp.

Abstract: A novel AIEE (aggregation-induced emission enhancement)-active conjugated polymer incorporating thiazole and tetraphenylethene (TPE) was designed and synthesized *via* Pd-catalyzed Sonogashira coupling reaction. The polymer shows typical AIEE phenomena, and emits green fluorescence in the mixed solvent of tetrahydrofuran (THF) and water, reaching a maximum fluorescence intensity when the fraction of water is 90%. In the aqueous phase (f_w = 90%), the polymer sensor exhibits "turn-off" fluorescence quenching responses towards Hg^{2+} and Ag^{+} over other cations, such as Li^{+}, K^{+}, Ca^{2+}, Mg^{2+}, Ba^{2+}, Zn^{2+}, Cd^{2+}, Co^{2+}, Ni^{2+}, Pb^{2+}, Cu^{2+}, Al^{3+} and Fe^{3+}. The obvious fluorescence change (bright yellow to weak emission) can be clearly observed by the naked eyes.

Keywords: AIEE, polymer, Hg^{2+}, Ag^{+}, aqueous phase