

Fabrication of fluorescent SiO₂@ zeolitic imidazolate framework-8 nanosensor for Cu²⁺ detection

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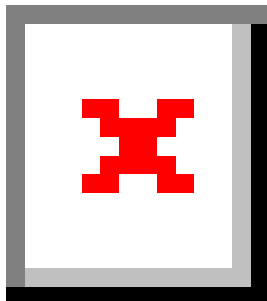


Fig. S1 SEM image of ZIF-8

ZIF-8 nanocrystals were prepared for comparison. Typically, DMF solution of $\text{Zn}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ (50 mM, 4 mL) and 2-methylimidazole (50 mM, 4 mL) were mixed and stirred in a 50 mL three-necked bottle for 2 h in an oil bath (150 °C). The ZIF-8 nanocrystals were obtained by centrifugation at 10000 rpm for 10 min and washed with ethanol for three times. Finally, the ZIF-8 nanocrystals were dried in vacuum at 60 °C.

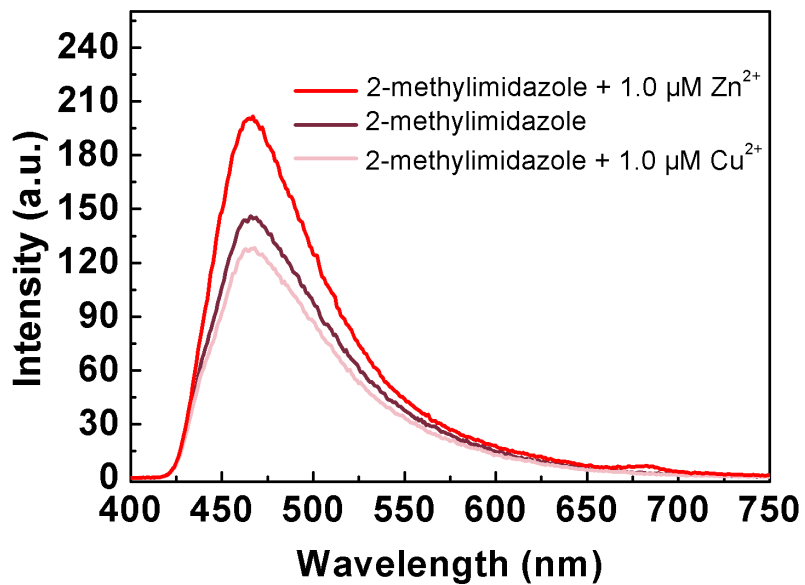


Fig. S2 Fluorescence emission spectra of 2-methylimidazole in the presence of 1.0 μM Zn²⁺ (red), 2-methylimidazole (brown) and 2-methylimidazole in the presence of 1.0 μM Cu²⁺ (pink).

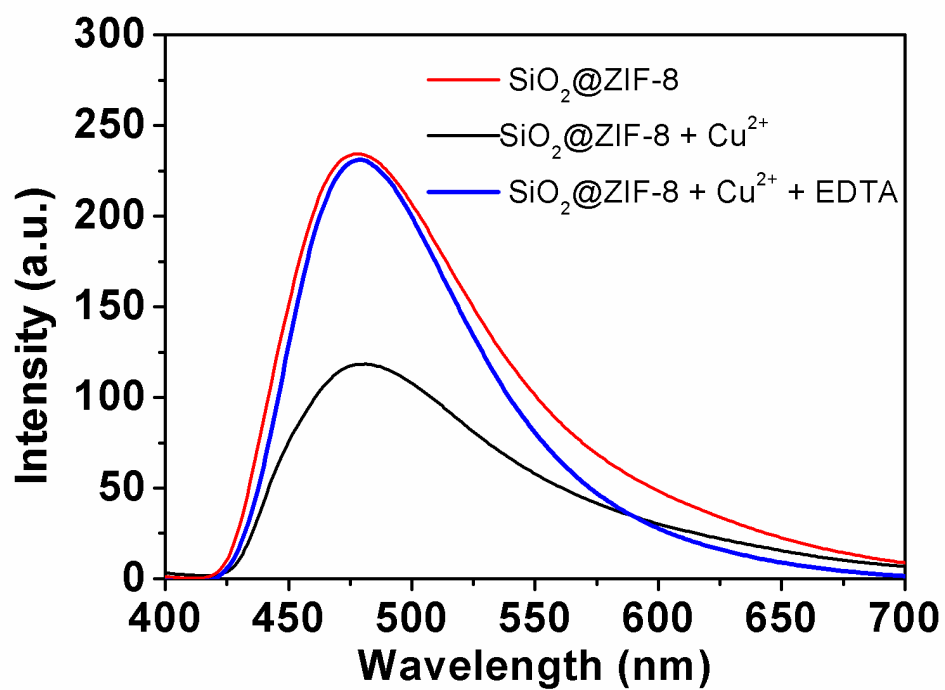


Fig. S3 Fluorescence emission spectra of ZIF-8 (red), ZIF-8 in the presence of Cu²⁺ (black) and ZIF-8 in the presence of Cu²⁺ and EDTA (blue).

Table S1. Detection of Cu²⁺ in Yao Lake water samples.

Sample	Spiked Cu²⁺ (nM)	Detected Cu²⁺ (nM)	Recovery (%)
Water sample 1	0	Not detected	-----
Water sample 2	50	51.36 ± 0.05	100.71
Water sample 3	100	103.54 ± 0.02	103.54
Water sample 4	300	307.65 ± 0.08	102.55