A Fluorescent Sensor For Zn^{2+} Based on Rhodamine Thiophene Framework

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The thiophene-modified rhodamine derivative was synthesized and characterized. The fluorescent sensor **XQS** for Zn^{2+} have been studied. **XQS** showed fluorescent specific selectivity for Zn^{2+} against other metal ions in HEPES buffer (10 mM, pH 7.4)/CH₃CN (40:60, V/V) solution. The distinct color change and the rapid emergence of fluorescence emission provided naked-eyes detection for Zn^{2+} . The test strip results showed that the sensor **XQS** could act as a convenient Zn^{2+} test kit. The recognition mechanism of **XQS** toward Zn^{2+} was studied by IR, the Job's plots and ESI-MS analysis. The detection limits of **XQS** towards Zn^{2+} was calculated as 6.89 μM . **XQS**- Zn^{2+} . In addition, cyclic voltammograms of **XQS** and **XQS**+ Zn^{2+} , fluorescence lifetime and fluorescence quantum yield were also determined.

Keywords: Rhodamine-6G; Fluorescent Sensors; Zn^{2+} ; Test Strip.

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