

Supporting information

Tuning the Aggregation/Disaggregation Behaviours of ZnSe quantum dots for High-Sensitivity Fluorescent Rutin Sensor

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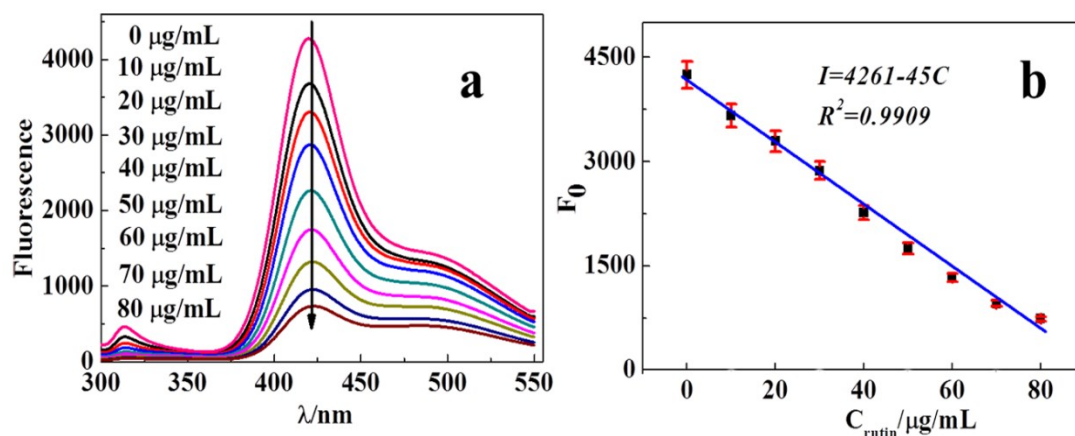


Figure S1 (a): FL spectra of TMA-ZnSe QDs in the presence of different concentrations of rutin. **(b)** Validation of the use of TMA-ZnSe QDs as probes for the detection rutin. TMA-ZnSe QDs: 7.5×10^{-5} mol/L. rutin: 10, 20, 30, 40, 50, 60, 70, 80 $\mu\text{g/mL}$.

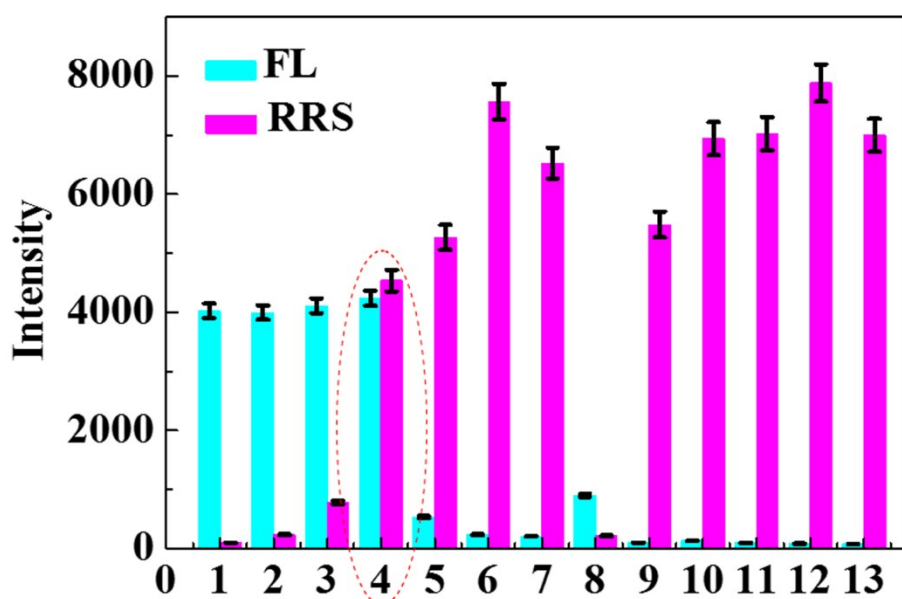


Figure S2 The effects of Effect of common metal ions for TMA-ZnSe QDs FL and RRS. 1: Na⁺, 2: K⁺, 3: Zn²⁺, 4: Al³⁺, 5: Mg²⁺, 6: Ca²⁺, 7: Cu²⁺, 8: Pb²⁺, 9: Hg²⁺, 10: Ag⁺, 11: Mn²⁺, 12: Co²⁺, 13: Cd²⁺. Concentration of TMA-ZnSe QDs: 7.5×10^{-5} mol/L. Concentration of metal ions: 12.5×10^{-5} mol/L.

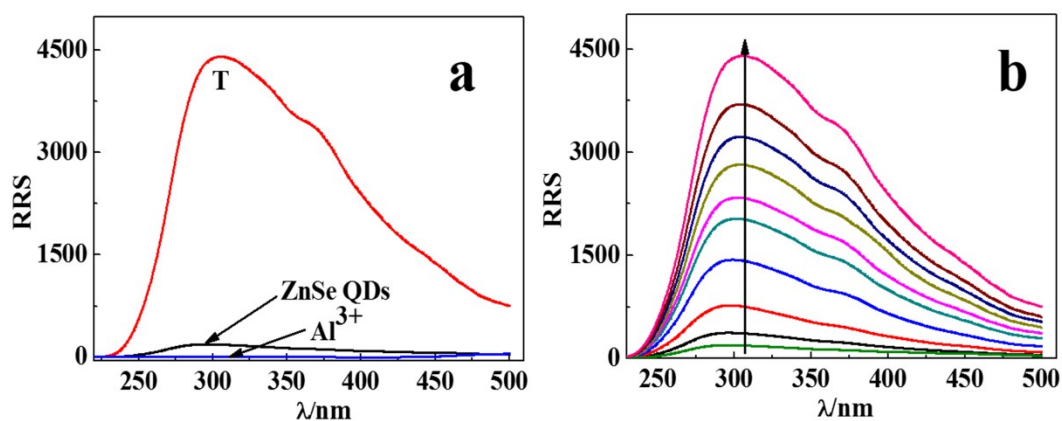


Figure S3 RRS spectra for Al³⁺ interaction with TMA-ZnSe QDs. (a): Corresponding RRS spectra. T: RRS spectra for Al³⁺ interaction with TMA-ZnSe QDs. TMA-ZnSe QDs: 7.5×10^{-5} mol/L. Al³⁺: 12.5×10^{-5} mol/L. (b): RRS optical intensity at aqueous TMA-ZnSe QDs in the presence of different concentration

of Al^{3+} . TMA-ZnSe QDs: 7.5×10^{-5} mol/L. Al^{3+} : 1.25, 2.5, 3.75, 5, 6.25, 7.5, 8.75, 10, 11.25, 12.5×10^{-5} mol/L, respectively.

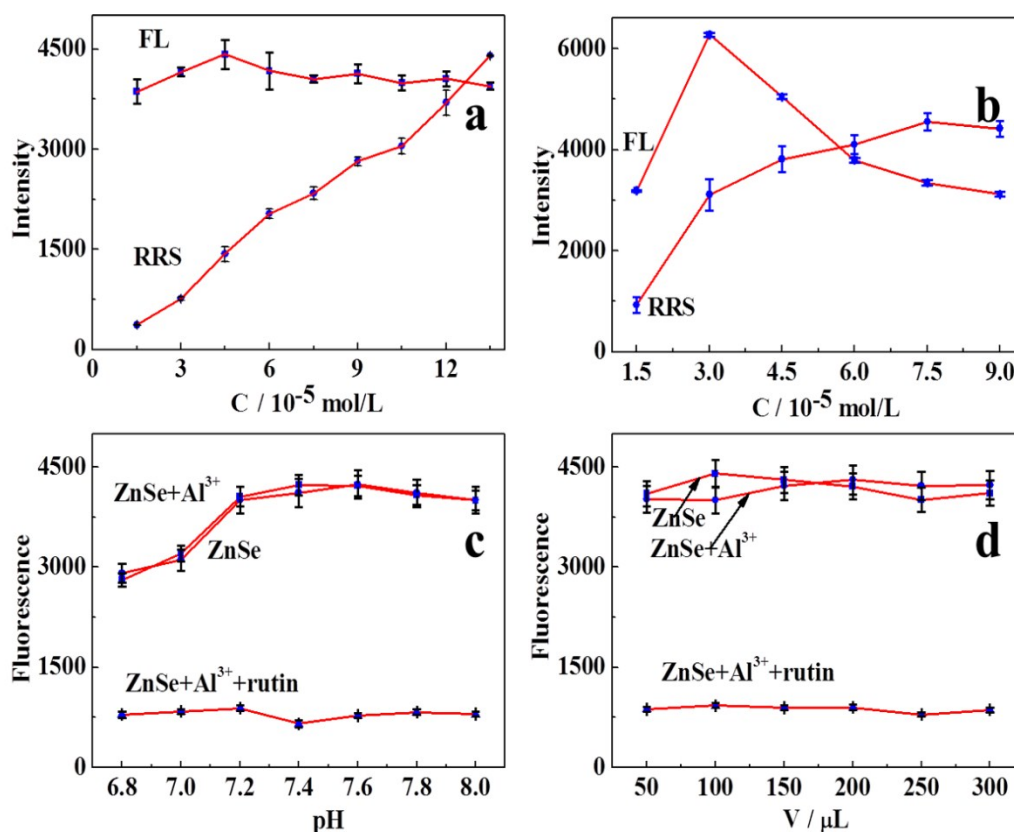


Figure S4 (a): The effect of the concentration of Al^{3+} on RRS and FL intensities. TMA-ZnSe QDs: 7.5×10^{-5} mol/L. Al^{3+} : 1.25, 2.5, 3.75, 5, 6.25, 7.5, 8.75, 10, 11.25, 12.5×10^{-5} mol/L, respectively. **(b):** The effect of the concentration of TMA-ZnSe QDs on RRS and FL intensities. Al^{3+} : 12.5×10^{-5} mol/L, TMA-ZnSe QDs: 1.5, 3.0, 4.5, 6.0, 7.5, 9.0×10^{-5} mol/L, respectively. **(c):** The effect of pH on FL intensities. TMA-ZnSe QDs: 7.5×10^{-5} mol/L, Al^{3+} : 12.5×10^{-5} mol/L, rutin: 8 $\mu\text{g}/\text{mL}$. **(d):** The effect of amount of Tris-HCl on FL intensities. TMA-ZnSe QDs: 7.5×10^{-5} mol/L, Al^{3+} : 12.5×10^{-5} mol/L, rutin: 8 $\mu\text{g}/\text{mL}$.