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## A novel ratiometric dual-emission fluorescence magnetic nanohybrid

## for HIgG Immunoassay

## **Support information**

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Figure S1. The fluorescence spectra of Fe<sub>3</sub>O<sub>4</sub>@C NPs and AuNPs- Fe<sub>3</sub>O<sub>4</sub>@C NPs system.

Excitation wavelength was 360nm.



Figure S2. EDS line scanning images of Fe<sub>3</sub>O<sub>4</sub>@C NPs



Figure S3. Effect of time on the normalized fluorescence intensity of the QDs in the Fe<sub>3</sub>O<sub>4</sub>@C@QDs nanocomposite in 10 mM PBS (pH=7.4).



Figure S4.Zeta potential of Fe<sub>3</sub>O<sub>4</sub> NPs, Fe<sub>3</sub>O<sub>4</sub>@C NPs, PDDA-Fe<sub>3</sub>O<sub>4</sub>@C NPs,Fe<sub>3</sub>O<sub>4</sub>@C@QDsNPs,PDDA-Fe<sub>3</sub>O<sub>4</sub>@C@QDsNPs,Anti-IgG-Fe<sub>3</sub>O<sub>4</sub>@C@QDs NPs (a-f) in water.