Electronic Supplementary Material (ESI) for RSC Advances.

Electronic Supplementary Material

A naked-eye pH-modulated ratiometric photoluminescence sensor based on dual-emission quantum dot@silica nanoparticles for Zn^{2+} and IO_3^-

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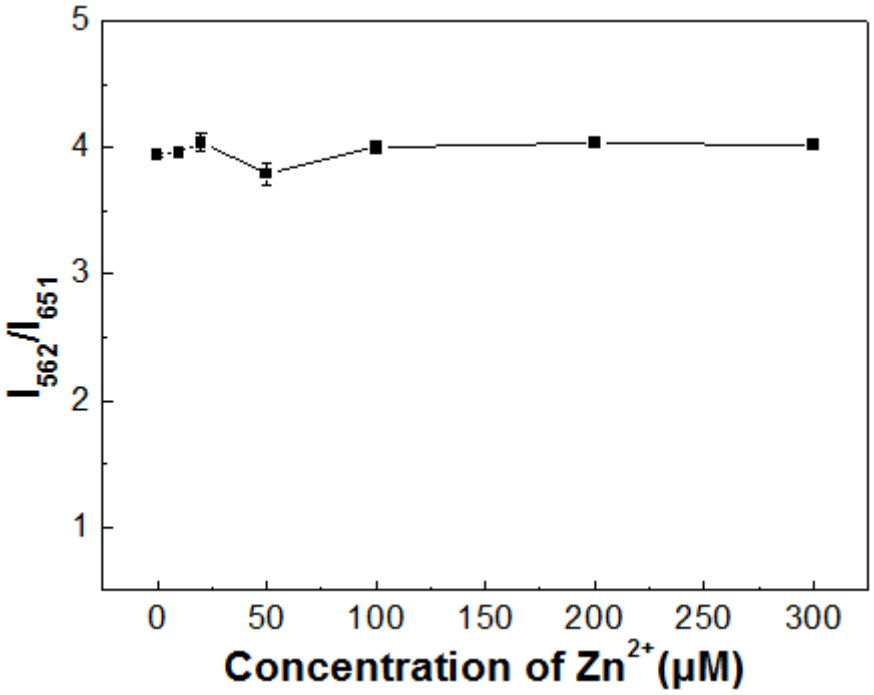

Fig. S1 Effect of Zn^{2+} concentration on the PL intensity ratios I_{562}/I_{651} of QSR.

Table S1 Comparison of different methods for the detection of Zn^{2+} and IO_3^-

Analytes	Method	Linear range (μM)	LOD (μM)	Ref.
Zn^{2+}	Ratiometric PL nanoprobe	1-20	0.5	[23]
	PL nanosensor based on $CuInS_2$	5-1000	4.5	[35]
	Carboxymethyl chitosan-QDs	5-150	4.5	[36]
	CdSe/ZnS core/shell QDs	5-500	2.4	[20]
	QDs-based "off–on"PL probe	0.9-16	0.7	[37]
	QDs-based Ratiometric PL nanoprobe	5-100	1.15	This work
IO_3^-	Electrochemical	20-2000	15	[38]
	Glassy carbon electrode with iron(III)-porphyrin film	10-4000	2.5	[39]
	Electrochemical copolymerization	50-500	0.8	[40]
	Amperometry	2.86-142.86	2.86	[41]
	QDs-based Ratiometric PL nanoprobe	5-150	1.76	This work

Table S2 The interference of coexisting substances on the detection of Zn^{2+} (20 μM)

Ion /Added as	Tolerable concentration (μM)	ΔI/I (%)
Na^+ /NaCl	10000	0.5
K^+ /KCl	10000	1.2
Cl^- /NaCl	10000	0.7
NO_3^- /$NaNO_3$	10000	0.1
Mg^{2+} /$Mg(NO_3)_2$	4000	3.4
SO_4^{2-} /Na_2SO_4	4000	2.8
Mn^{2+} /$MnCl_2$	4000	4.3
Ni^{2+} /$Ni(NO_3)_2$	1000	-3.6
Ba^{2+} /$BaCl_2$	1000	-2.4
Fe^{3+} /$FeCl_3$	200	1.7
Cd^{2+} /$CdCl_2$	200	-5.3
Cu^{2+} /$CuCl_2$	200	2.2

$\Delta I=I_0-I$, where I_0 and I are the fluorescence intensity of ratiometric PL probe /phen/Zn^{2+} system in absence and presence of coexisting ions.

Table S3 The interference of coexisting substances on the detection of IO_3^- (20 μM)

Ion /Added as	Tolerable concentration (μM)	ΔI/I (%)
Na^+ /NaCl	10000	0.7
K^+ /KCl	10000	0.3
Cl^- /NaCl	10000	1.1
Mg^{2+} /$Mg(NO_3)_2$	4000	2.5
NH_4^+ /$(NH_4)_2SO_4$	4000	0.2
NO_3^- /$NaNO_3$	4000	0.6
SO_4^{2-} /Na_2SO_4	4000	1.9
CO_3^{2-} / Na_2CO_3	2000	2.7
HCO_3^- / $NaHCO_3$	2000	-3.4
CH_3COO^- / CH_3COONa	2000	2.3
F^- /NaF	2000	-3.6
I^- /KI	2000	3.3
SO_3^{2-}/$NaSO_3$	100	2.9
NO_2^-/$NaNO_2$	100	-3.1
O^{2-}/H_2O_2	100	2.7

$\Delta I=I_0-I$, where I_0 and I are the fluorescence intensity of ratiometric PL probe /phen/IO_3^- system in absence and presence of coexisting ions.