Glutathione modified carbon-dots: from aggregationinduced emission enhancement property to "turn-on" sensing of temperature/Fe³⁺ ions in cells

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Fig. S1 PL spectra of fluorescent CDs in aqueous solution obtained by excitation wavelengths from 340 to 500 nm.



Fig. S2 The size distribution of CDs and the average size was 2.5 ± 0.5 nm.



Fig. S3 XPS survey spectrum of fluorescent CDs.



Fig. S4 PL emission spectra of fluorescent CDs and GSH-CDs in aqueous solution.



Fig. S5 a, TEM image of GSH-CDs and b, size distribution with average size of 2.8 ± 0.3 nm; c, a large view of TEM image.

Table S1 The QYs of GSH-CDs in ethanol/water mixtures with different volumetric

fe (%)	0	20	40	60	80	100
QY (%)	4.7	4.8	5.2	6.5	5.7	6.6

fractions of ethanol (fe, vol %)



Fig. S6 TEM image of the GSH-CDs in the ethanol/water mixtures with fe =50%.



Fig. S7 PL emission spectra (excitation= 420 nm) of the GSH-CDs that are freshly prepared (black lines), or after storage of 1 month (red lines) at room temperature.



Fig. S8 TEM images of GSH-CDs under 50 (a) and 80 °C (c); size distribution of GSH-CDs under 50 (b, the average size was 5.0 ± 0.5 nm) and 80 °C (d, the average size was 6.0 ± 0.5 nm).



Fig. S9 Dynamic light scattering (DLS) of GSH-CDs (a), GSH-CDs at 50 $^{\circ}$ C (b) and GSH-CDs under Fe³⁺ (c, 10⁻⁵ M).



Fig. S10 PL spectra (excitation= 420 nm) for different temperatures in various pH: a, pH=3.7; b, pH=5.5; c, pH=9.5.



Fig. S11 UV–Vis absorption spectra of GSH-CDs in aqueous solution upon addition of Fe³⁺; the concentrations of the Fe³⁺ are 0, 10^{-5} , 10^{-4} , 10^{-3} M.



Fig. 12 TEM image of GSH-CDs under Fe^{3+} (10⁻⁵ M).



Fig. S13 a, the PL spectra of as-prepared GSH-CDs upon the addition of Fe^{3+} ions in different concentrations (0–0.5 μ M) and b, Plot of fluorescence intensity of GSH-CDs at 500 nm versus Fe^{3+} concentrations.



Fig. S14 PL spectra of as-prepared GSH–CDs in the presence of 10^{-5} M metal ions.



Fig. S15 PL spectra of as-prepared GSH–CDs in the presence of Al^{3+} (10⁻⁵ M).



Fig. S16 a, PL spectra of as-prepared GSH–CDs under various pH values; AIEE spectra (λ_{ex} =420 nm) of as-prepared GSH-CDs upon the addition of Fe³⁺ ions in different concentrations under pH=4 (b) and 9 (c).



Fig. S17 Viability of MC3T3-E1 cells in cell medium for 8 h after incubation with different concentrations of CDs as determined by an MTT assay.