Electronic Supplementary Material (ESI) for RSC Advances.


# A fluorescent biosensor of lysozyme-stabilized copper nanoclusters for the selective detection of glucose

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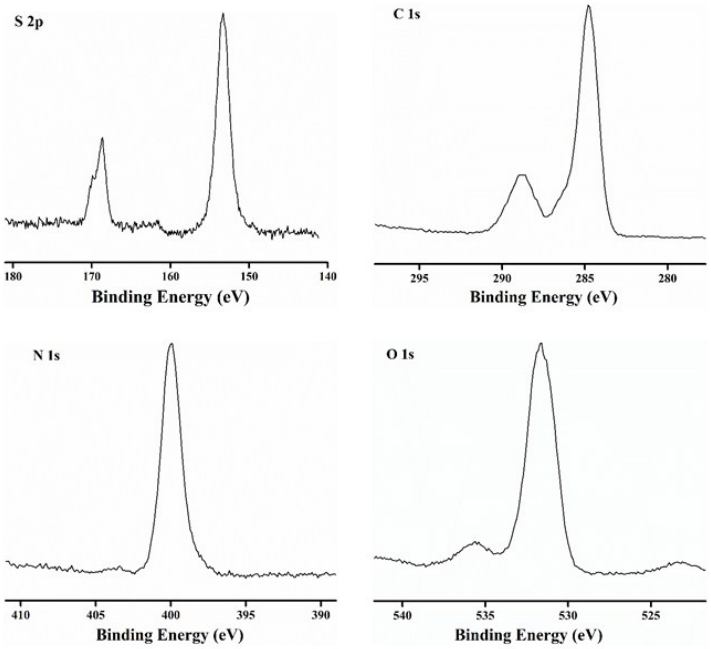


**Figure S1** Typical XPS spectra of (a) S 2p, (b) C 1s, (c) N 1s and (d) O 1s involved in the resultant Lys–CuNCs.

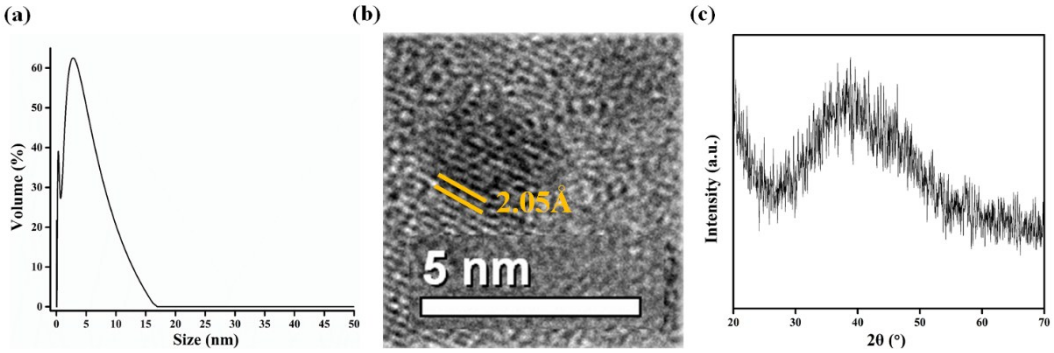


**Figure S2** (a) DLS measurement, (b) HRTEM micrograph and (c) XRD spectra of the synthesized fluorescence Lys–CuNCs.

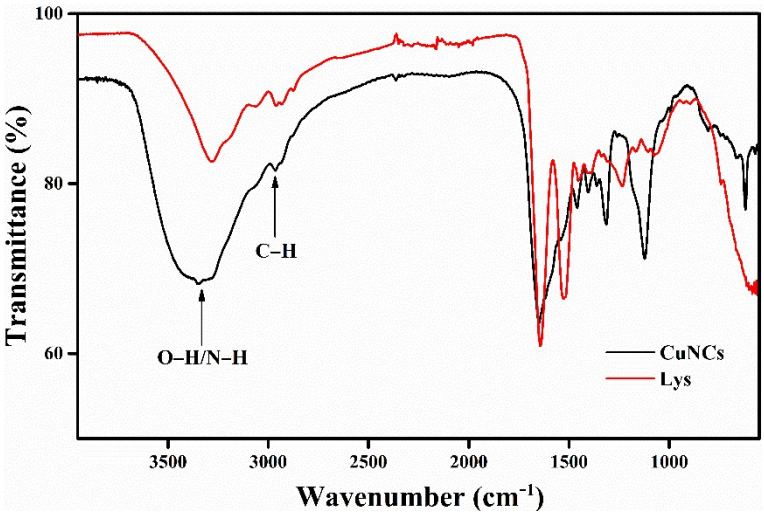


**Figure S3** FT-IR spectra of the lysozyme and Lys–CuNCs.

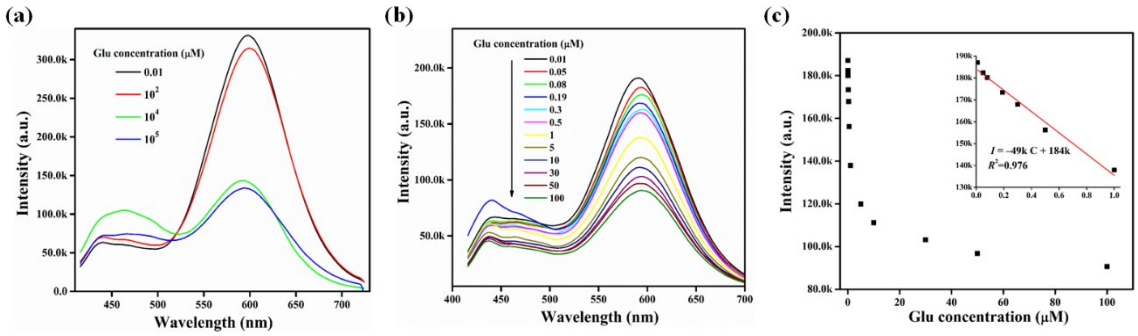


**Figure S4** Fluorescence spectra of Lys–CuNCs in the presence of different glucose concentrations at pH 5 (a) and 9 (b); (c) Fluorescence intensity at $\lambda_{max}$ = 600 nm for Lys–CuNCs against the glucose concentrations. Inset: plots of fluorescence intensity vs concentration over two ranges of 0.01–1.0 μM.

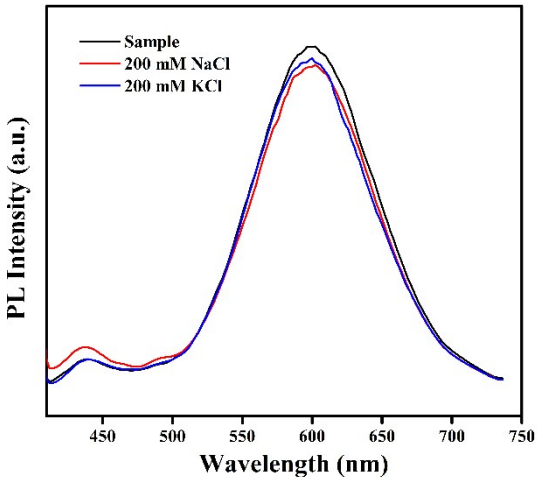


**Figure S5** Fluorescence spectra of Lys–CuNCs in the absence and presence of 200 mM KCl or NaCl solution.

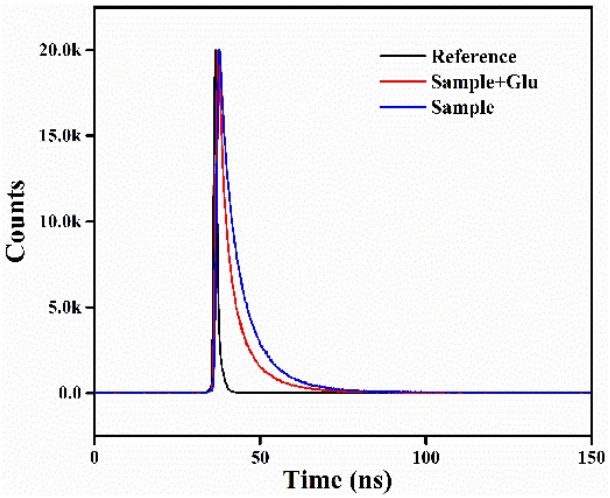


**Figure S6** PL decay profile ($\lambda_{em}$ = 380 nm) of the Lys–CuNCs in aqueous solution at the excitation of 495 nm. Fitted curves were overlaied on the experimental data.

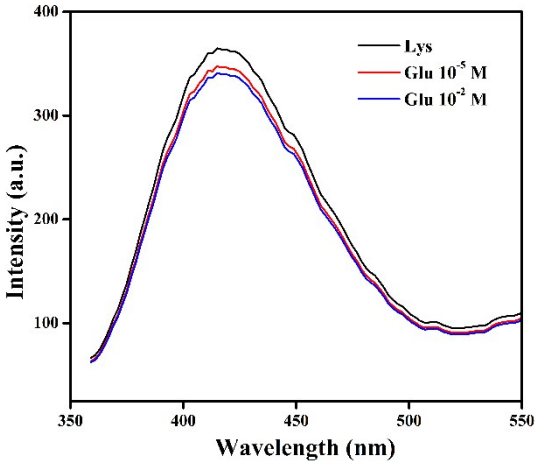


**Figure S7** The fluorescence spectra of the pristine lysozyme (without copper) in the presence of glucose at different concentration.

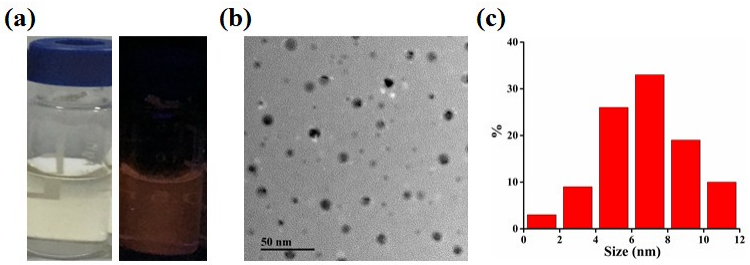


**Figure S8** (a) Photographs of the Lys–CuNCs adding with 1 mM glucose under the irradiation of visible (left) and UV (right) light. (b) Transmission electron microscopy (TEM) micrograph and (c) size distribution) of the synthesized fluorescence Lys–CuNCs/glucose.

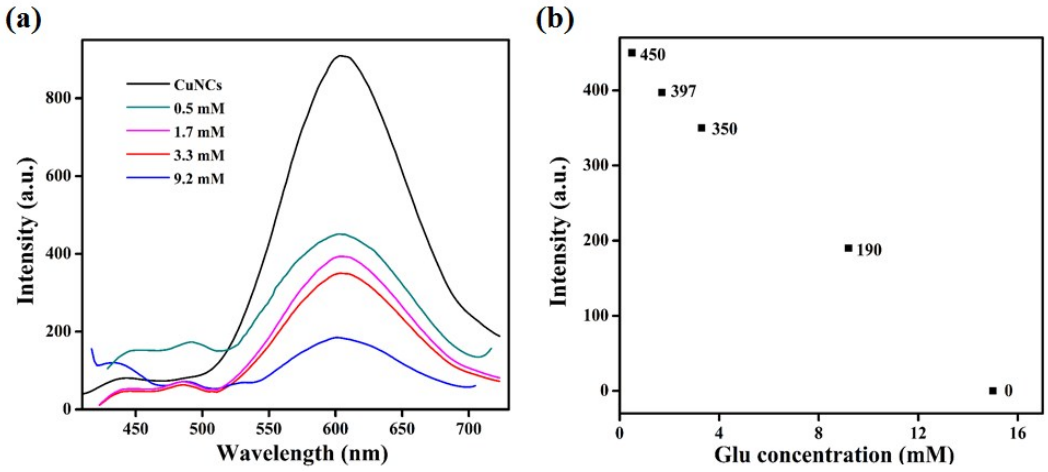


**Figure S9** (a) Fluorescence spectra of serum@Lys–CuNCs in the presence of different glucose concentrations. The arrows indicate the signal changes as increases in analyte concentrations (0, 0.5, 1.7, 3.3, and 9.2 mM). (b) Fluorescence intensity at $\lambda_{max}$ = 600 nm for serum@Lys–CuNCs against the glucose concentrations (The data obtained from 15 mM was approximately zero).