

Supplementary material

Visualized ratiometric fluorescence sensing system for copper ions based on gold nanoclusters / perovskite quantum dot@SiO₂ nanocomposites

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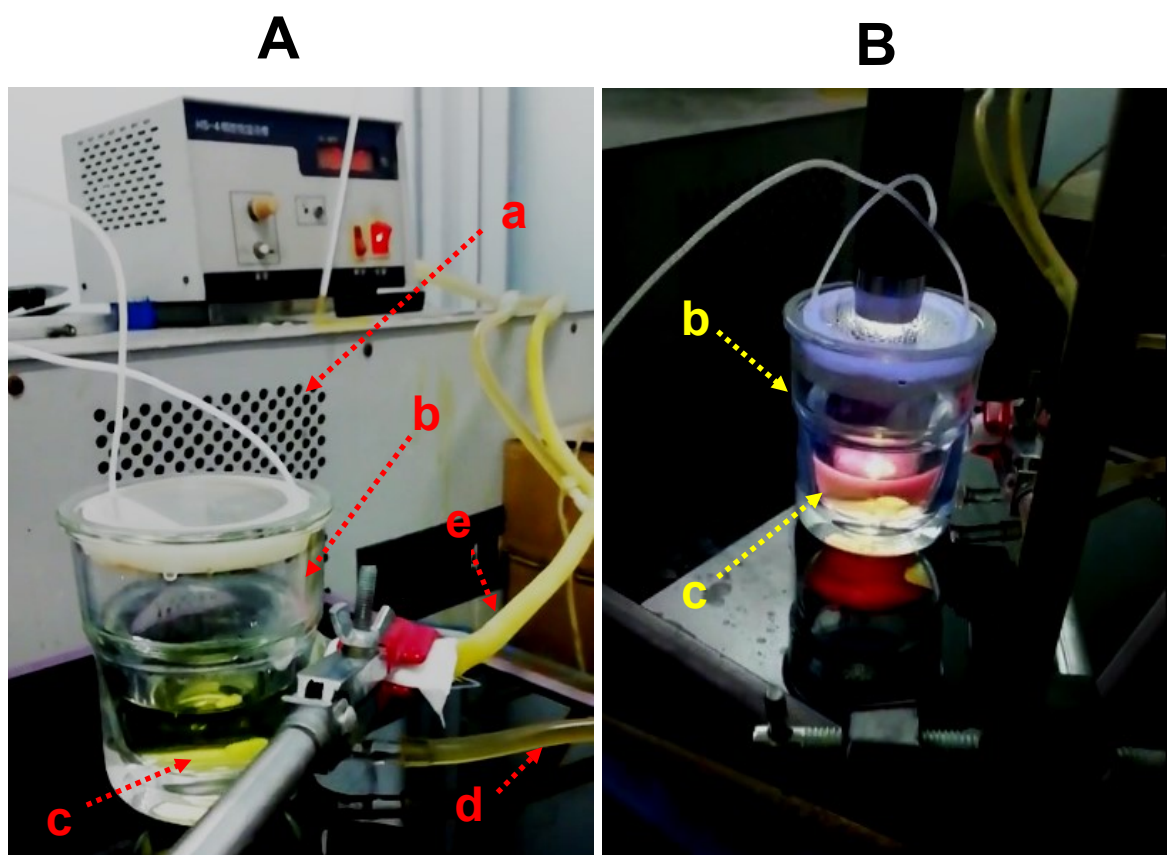


Figure S1. Photos of the apparatus for preparing AuNCs obtained under: (A) white light; (B) 365-nm UV light. (a) Thermostatic bath; (b) jacket Reaction beaker ; (c) reaction solution; (d) 37 C° water inlet pipe; (e) 37 C° water outlet pipe.

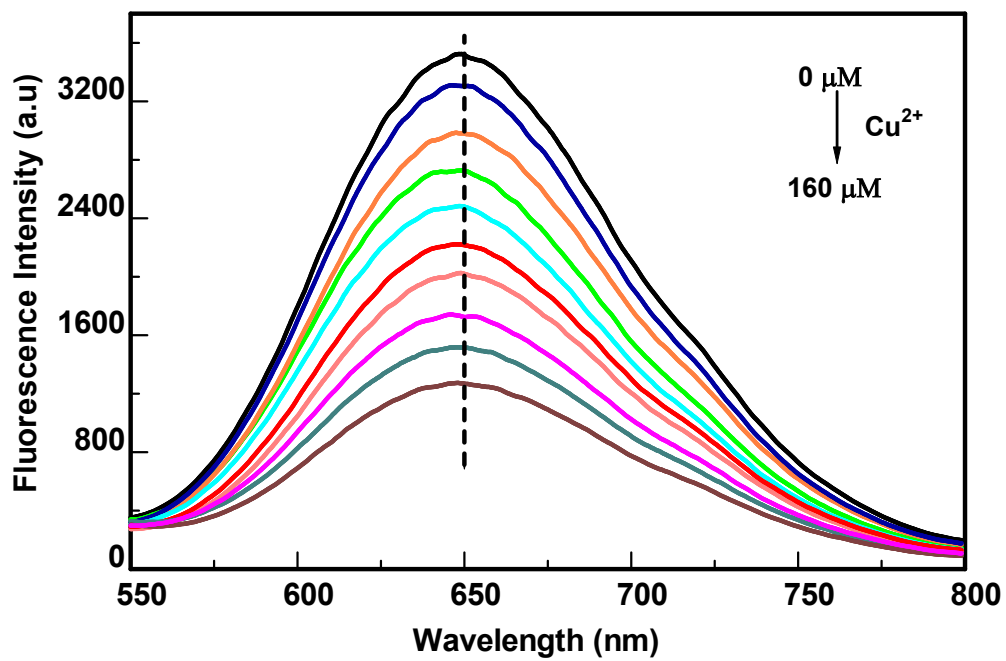


Figure S2. Fluorescence spectra of the fluorescence intensity changes of *AuNCs* in different concentrations of Cu^{2+} .

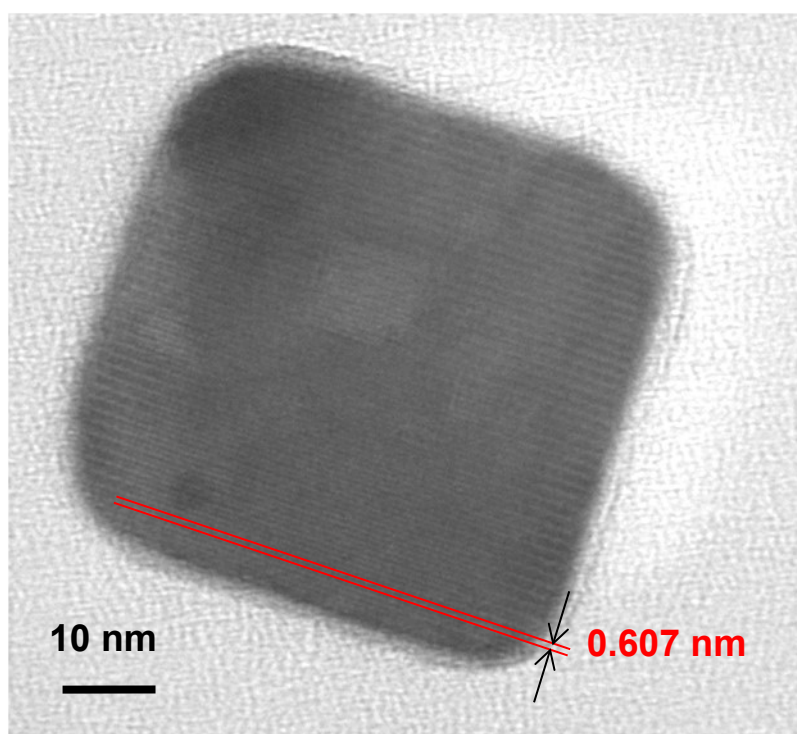


Figure S3. High resolution TEM image of *PVP-PQDs*.

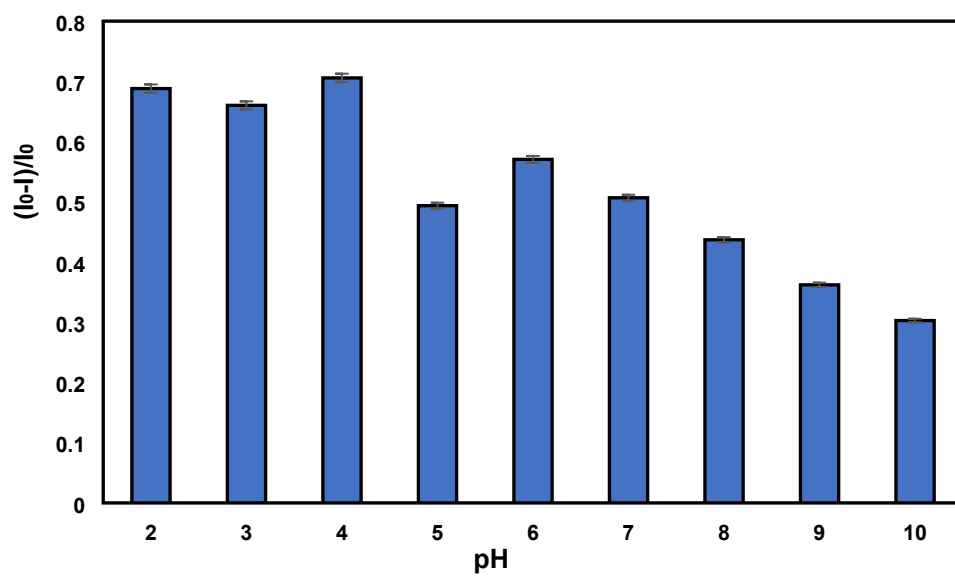


Figure S4. The fluorescence quenching degree of *BSA - AuNCs/PQD@SiO₂* by Cu^{2+} at different pH.

Table S1. Recovery test for Cu^{2+} detection by $Au\ NCs/PQD@SiO_2$ -based sensor

Water Sample (ND*)	Spiked concentration (μM)	Found in this method (μM)	Average Recovery (% , n=5)	RSD (% , n=5)
	17	18.52	108.94	4.47
Min River	50	50.06	101.21	2.18
	150	149.59	99.73	3.11

ND*: Negative detection