Electronic Supplementary Material (ESI) for Dalton Transactions

Bioinspired, direct synthesis of aqueous CdSe quantum dots for high-sensitive copper (II) ion detection

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Fig. S1. TGA curves for (a) native BSA molecular and (b) dBSA coated CdSe QDs

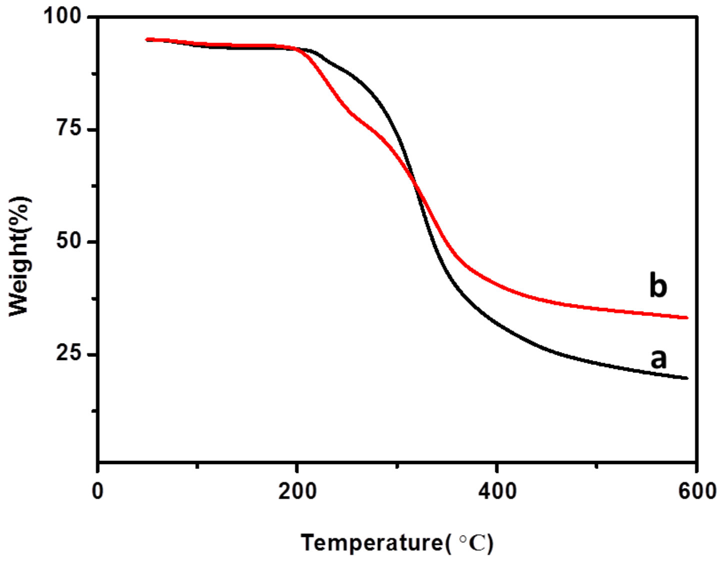

Fig. S2. Normalized PL intensity of dBSA coated CdSe QDs for evolution under ultraviolet irradiation measured at 525 nm

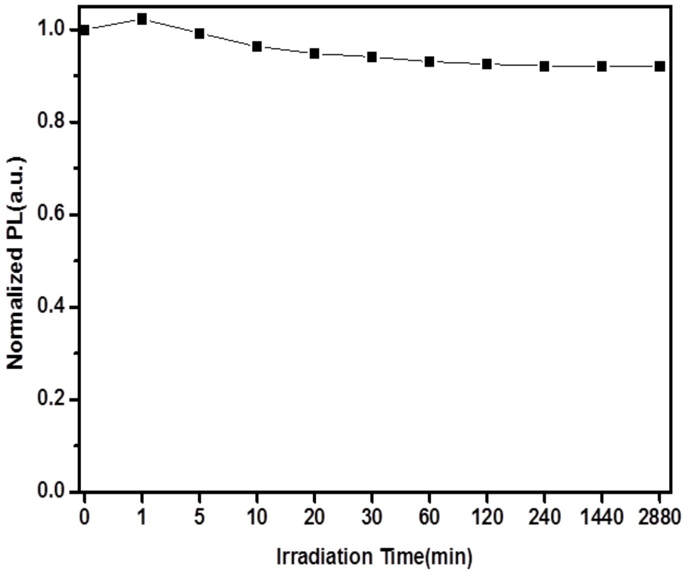

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Fig. S3. TEM images of CdSe QDs flower shape aggregates in the presence of Cu^{2+}

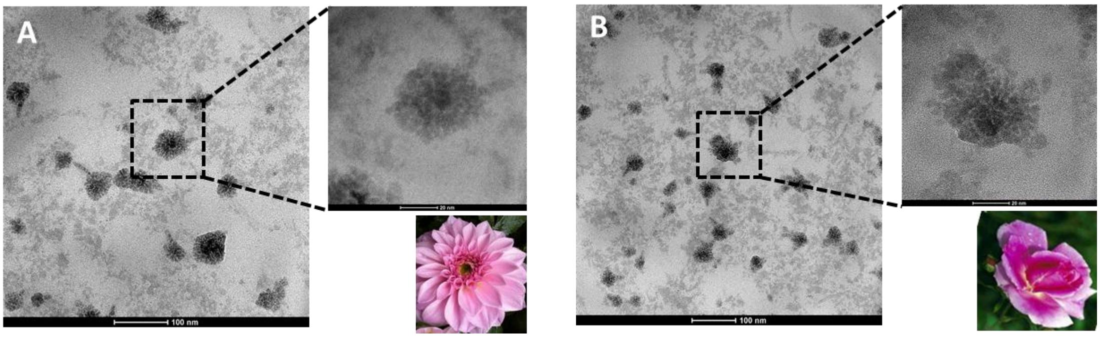

Fig. S4. XRD for native BSA (a), dBSA coated CdSe QDs (b) and CdSe QDs in the presence of Cu^{2+} (c). In b, three diffraction peaks (2*θ*) at 25.45 °, 42.08 °, 49.82 ° respectively correspond to the (111), (220), (311) crystal planes of CdSe QDs.

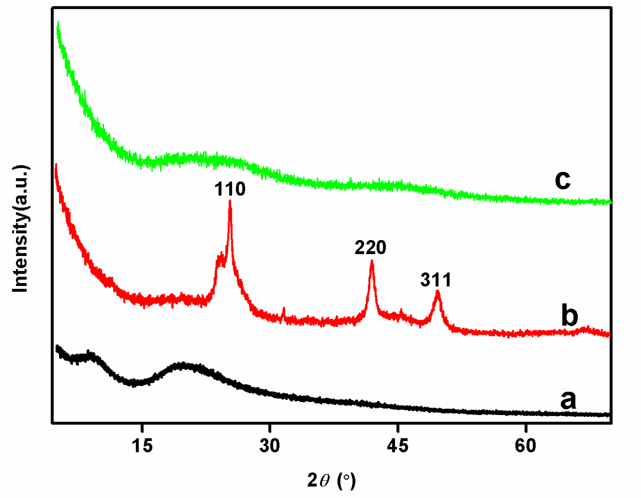

Fig. S5. UV-vis spectra for dBSA coated CdSe QDs in the absence and presence of Cu^{2+} (25, 250, 1000, 2000, 4000 nM). The UV-vis absorption of Cu^{2+} above 4000 nM are not presented here because the curves of them have no obvious absorption peak which is similar to the curve of QDs-Cu^{2+} (4000 nM).

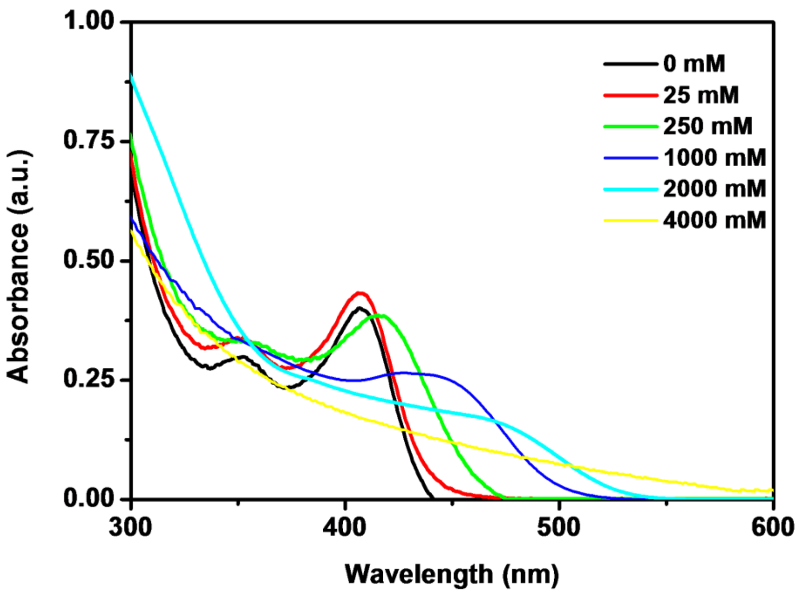

Fig. S6. CD spectrum of dBSA coated CdSe QDs in the presence of Cu^{2+} (10 mM).

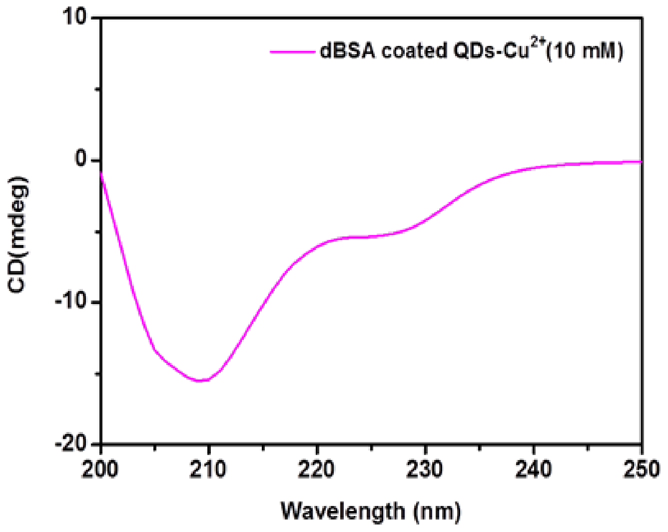

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Table S1. Comparison of probes for copper (II) detection based on CdSe QDs

QDs Probes	Capping ligands	Detection concentration range	Detection limit	Reference
CdTe/CdSe	MPA	$0.05\sim5.0 \times 10^{-5}$ M	2.0×10^{-8} M	[1]
CdSe	-SO3	0~60 μgL^{-1}	2.4 μgL^{-1}	[2]
	-COO	0~60 μgL^{-1}	9.7μgL^{-1}	
CdSe/Ag	16-MHA	5~100 µM	5 nM	[3]
CdSe/ZnS	BSA	0.1~1.6µM	10 nM	[4]
CdSe/CdS	DDTC	0~100 μgL^{-1}	0.29 μgL^{-1}	[5]
CdSe/CdS	L-cysteine	$10^{-8}\sim2.0\times10^{-7}$ M	3 nM	[6]
CdSe/ZnS	silica	0~10 µM	0.9 µM	[7]
CdSeTe	L-cysteine	0.02~2.0 µM	7 nM	[8]
CdSe	dBSA	$10^{-8}\sim7.5\times10^{-6}$ M	5 nM	Currently used

Reference

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