Electronic Supplementary Material (ESI) for Dalton Transactions. This journal is © The Royal Society of Chemistry 2023

## **Supporting Information**

Fig. S1 The spectrum of the LED lamp.

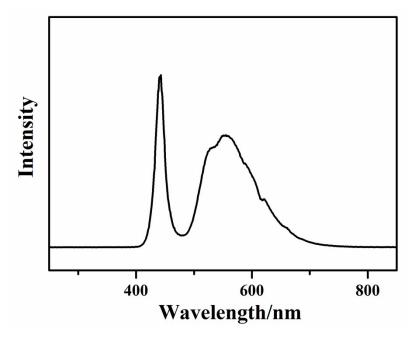


Fig. S2(a) GC spectra of the reaction over 4.0 wt% CQDs/CdS in LA/MeCN (1:1) under white LED irradiation.

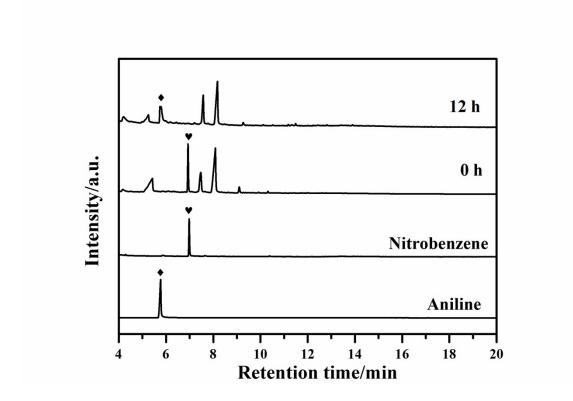


Fig. S2(b) GC spectra of the reaction over 4.0 wt% CQDs/CdS in IPA/MeCN (1:1) under white LED irradiation.

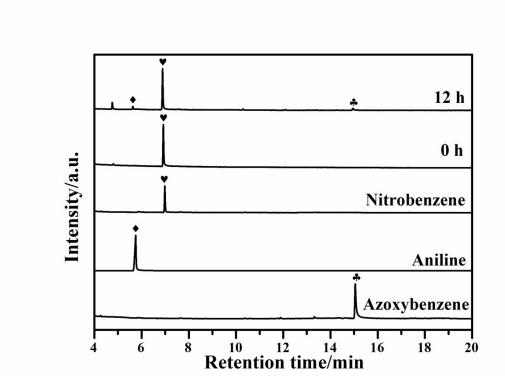


Fig. S2(c) GC spectra of the reaction over 4.0 wt% CQDs/CdS in IPA/MeCN (1:1) with 10 equiv. of NaOH under white LED irradiation.

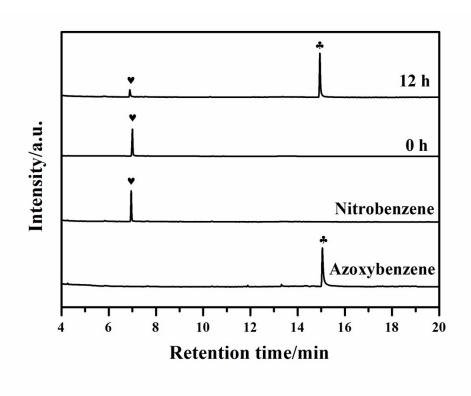


Fig. S2(d) GC spectra of the reaction over 4.0 wt% CQDs and CdS in  $IPA/H_2O$  (1:1) with 30 equiv. of NaOH under white LED irradiation.

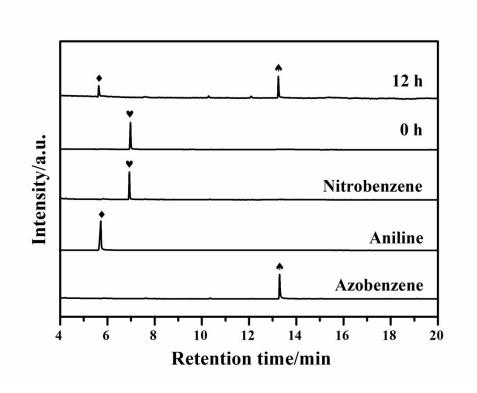
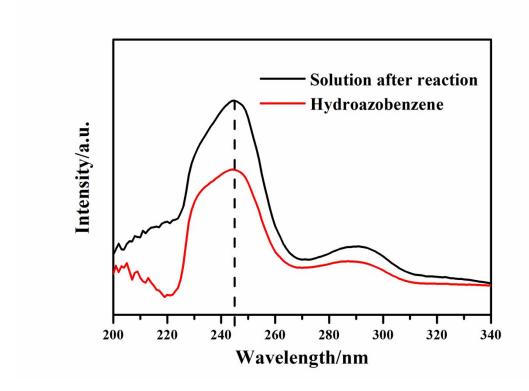


Fig. S3 The UV-vis spectra for hydrazobenzene.



**Fig. S4** TEM images of CQDs (a) TEM image, (b) the distribution of nanoparticle sizes, (c) UV-Vis spectra.

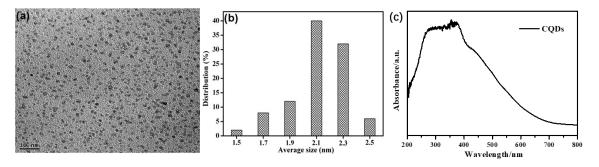


Fig. S5 Illustration of the formation of CQDs/CdS nanocomposites.

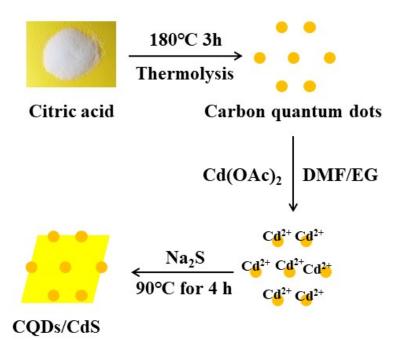
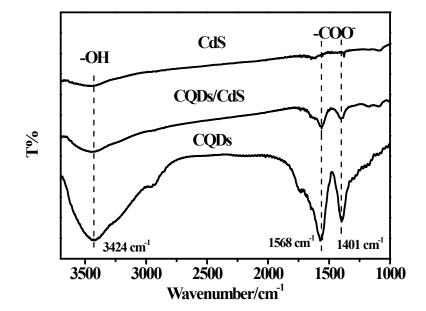


Fig. S6 FT-IR of 2.0 wt% CQDs/CdS nanocomposites.



**Fig. 7** Nitrogen adsorption-desorption isotherms of CdS and 2.0 wt% CQDs/CdS nanocomposites.

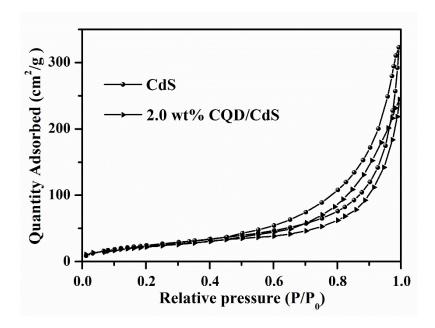


Fig. S8 Mott–Schottky plots for 2.0 wt% CQDs/CdS.

