

## Supplementary data

### The Encapsulation of CdS into Carbon Nanotube for Stable and Efficient Photocatalysis

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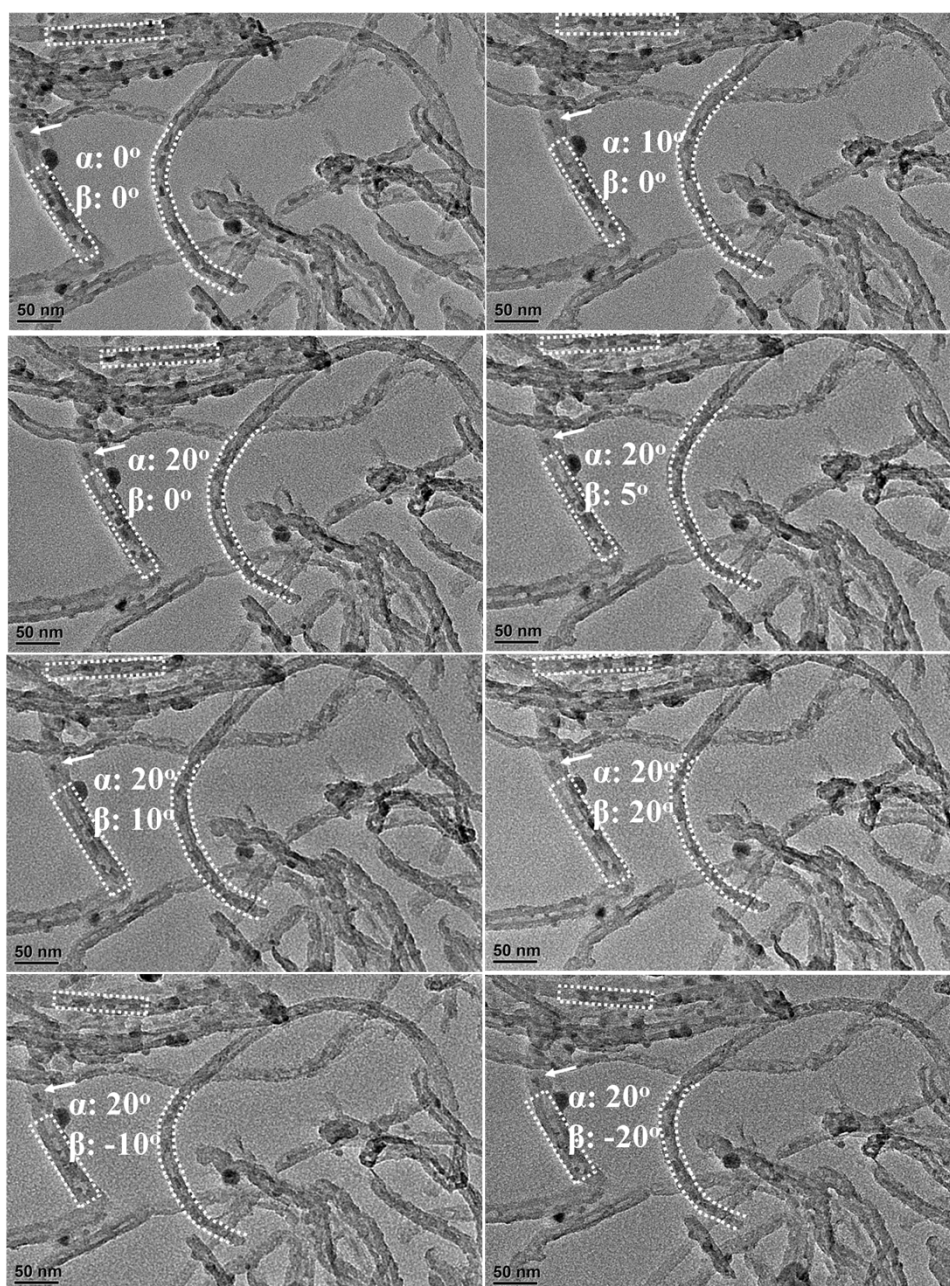


Fig. S1 TEM images of CdS filled CNTs (CdS-in-CNTs) under different rotation angle.

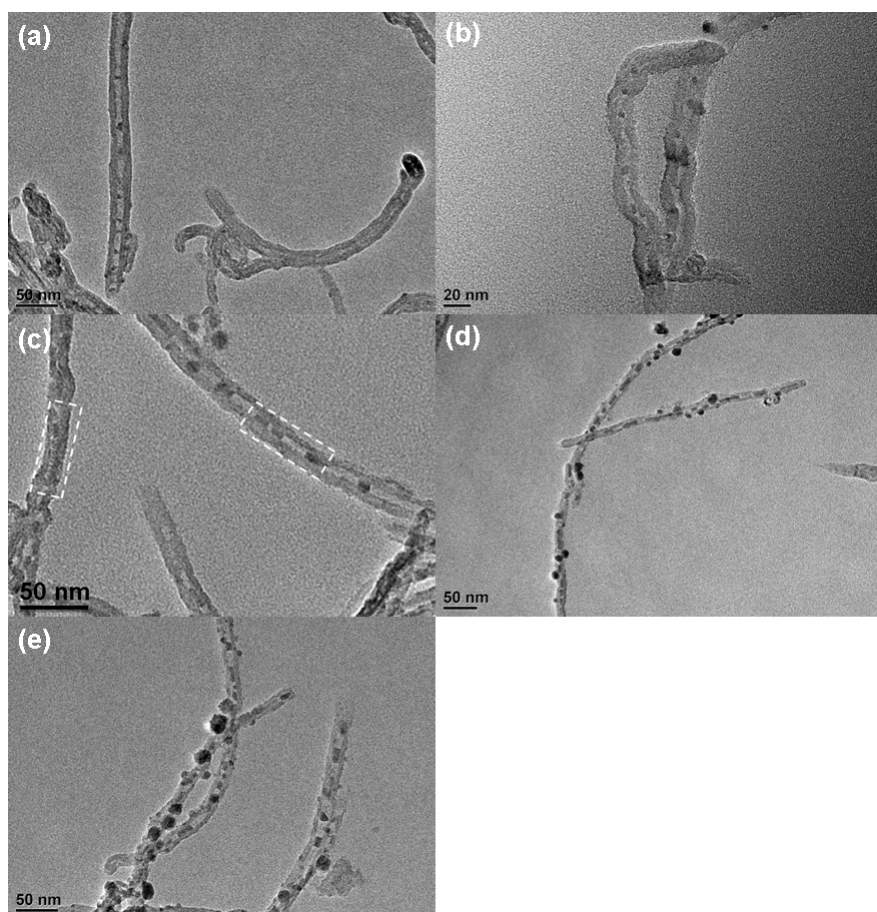


Fig. S2 TEM images of CdS-in-CNTs prepared by adding different amount of  $\text{Cd}(\text{Ac})_2$ , 1 mmol (a), 2 mmol(b), 5 mmol (c), 10 mmol (d) and 20 mmol (e)

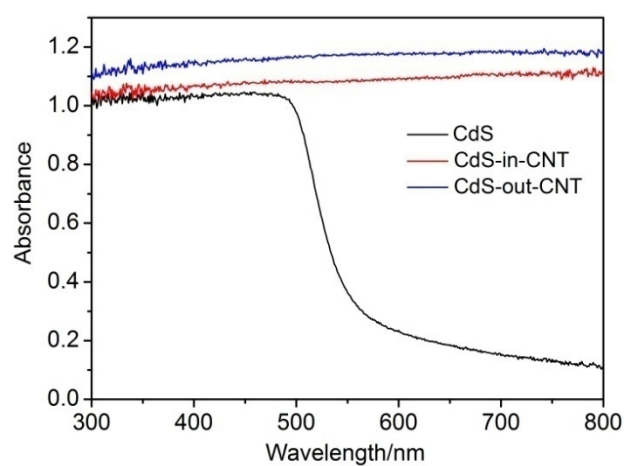


Fig. S3 UV-Vis DRS spectra of CdS, CdS-in-CNTs and CdS-out-CNTs



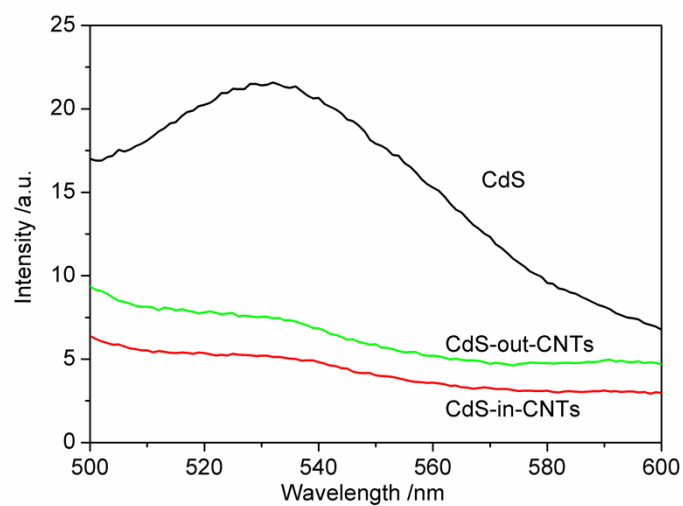


Fig.S4 PL spectra of CdS, CdS-in-CNTs and CdS-out-CNTs composite

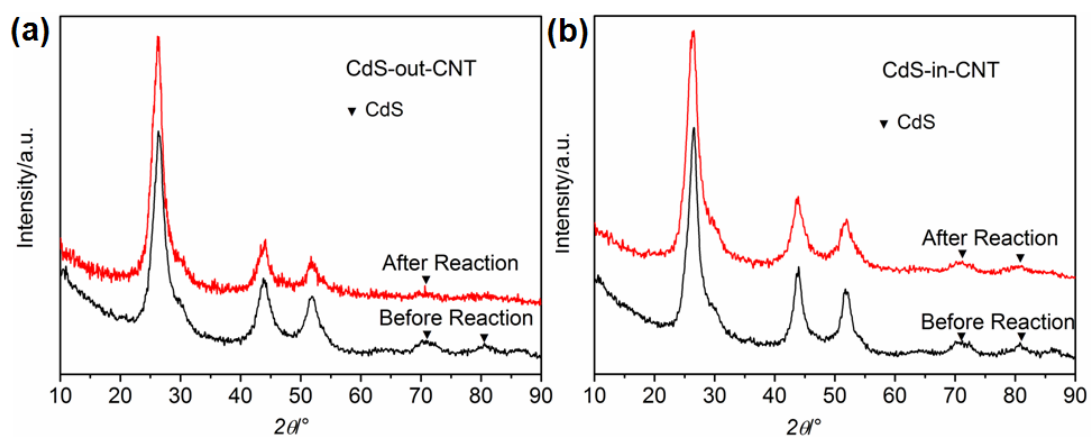


Fig. S5 XRD patterns of CdS-out-CNTs (a) and CdS-in-CNTs (b) after four reaction cycles

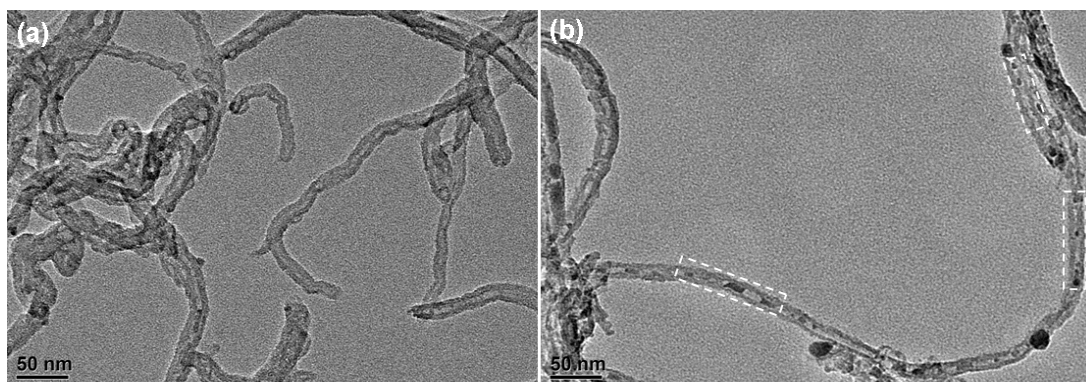


Fig. S6 TEM image of CdS-out-CNTs (a) and CdS-in-CNTs (b) after four reaction cycles

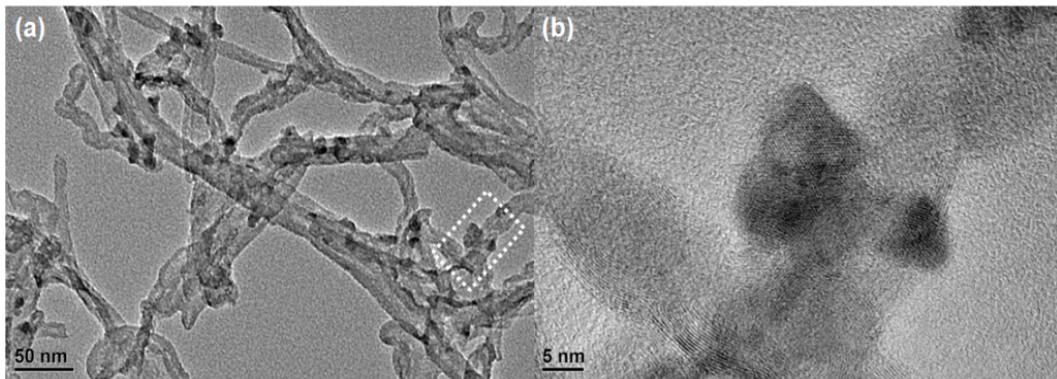


Fig. S7 TEM and HRTEM images of CdS-out-CNTs (a) large scale TEM image, (b) enlarged CdS particle

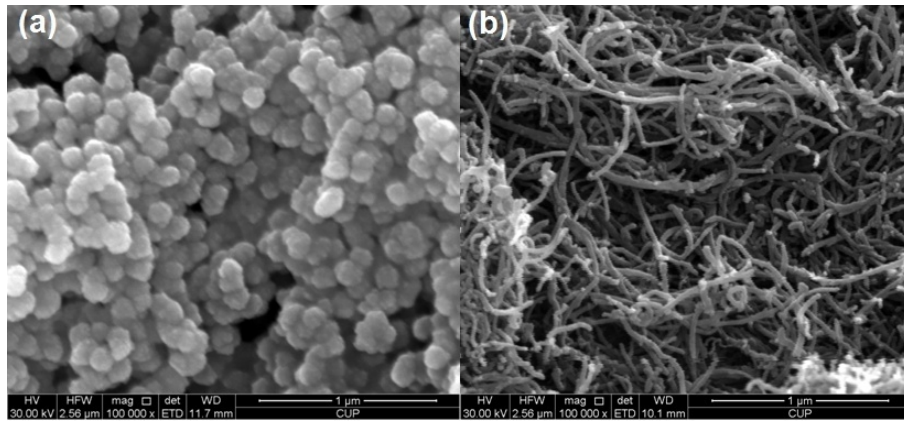


Fig. S8 SEM images of pure CdS (a) and CdS-in-CNTs (b)

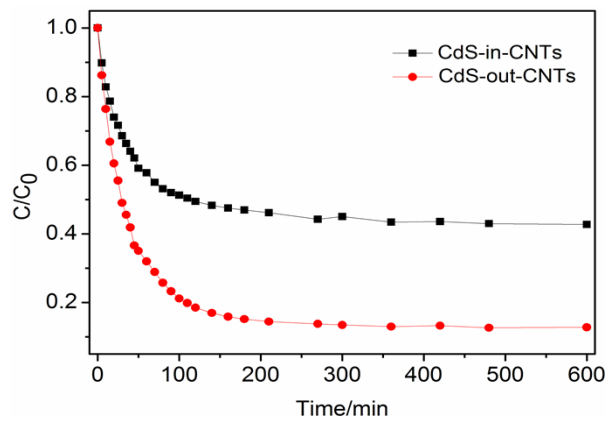


Fig. S9 Changes of MB concentration in CdS-in-CNTs and CdS-out-CNTs photocatalytic system in dark.