Supplementary Material

Novel metal doped carbon quantum dots/CdS composites for efficient

photocatalytic hydrogen evolution

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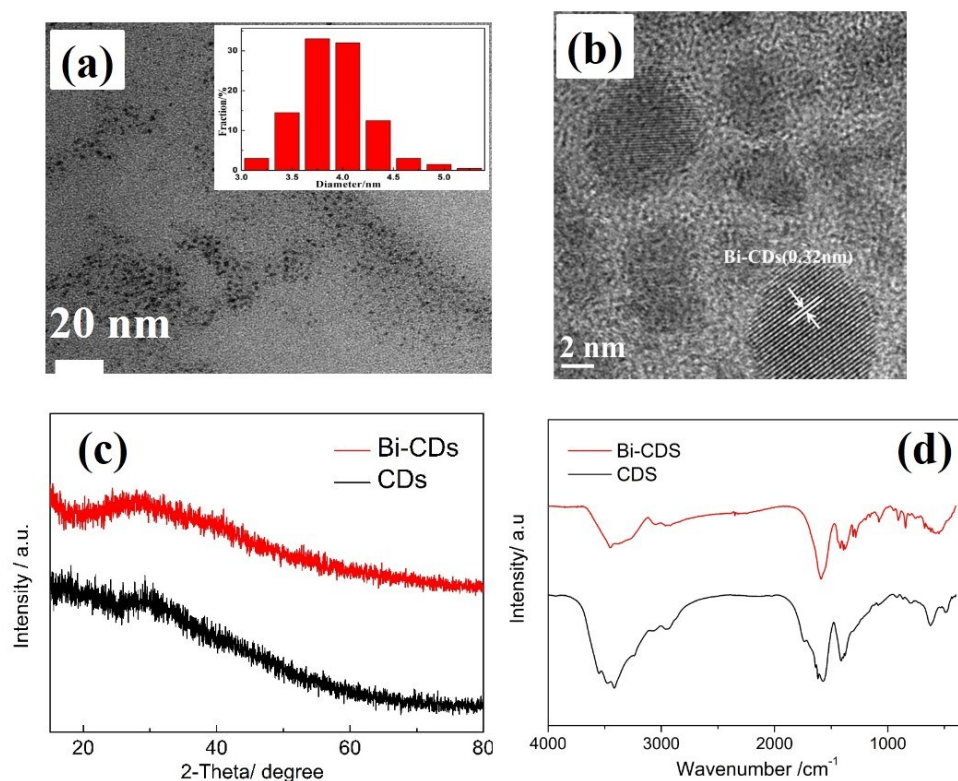
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Fig. S1 (a) typical TEM images of Bi-CDs, inset shows the diameter distribution of Bi-CDs, (b) HRTEM images of Bi-CDs, (c) XRD pattern of CDs and Bi-CDs, (d) FT-IR spectra of CDs and Bi-CDs
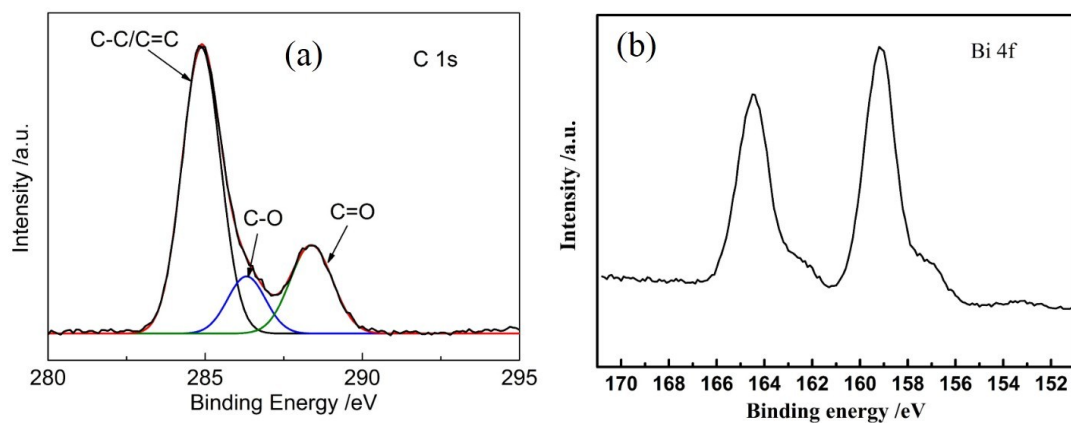
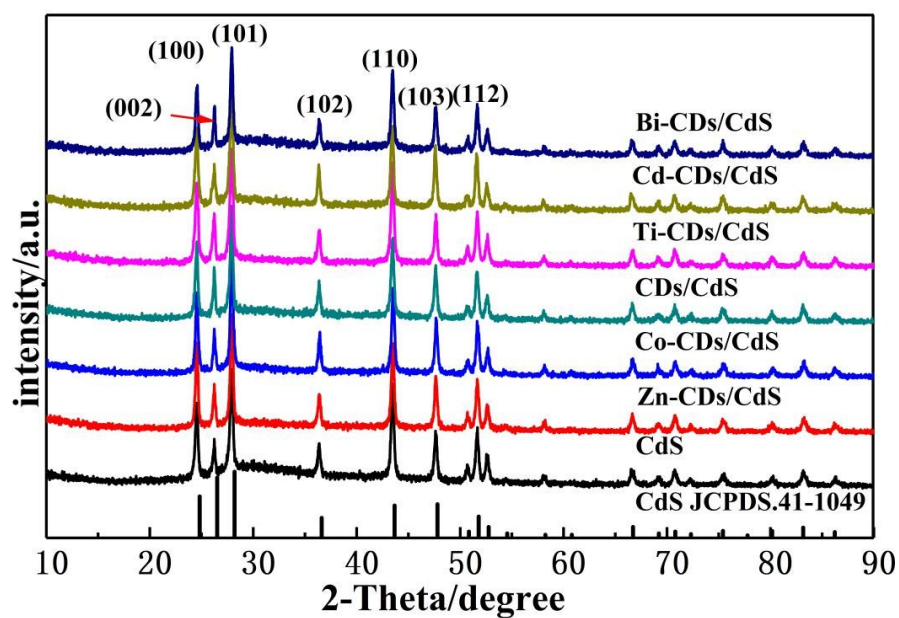Fig. S2 Magnified XPS spectra of Bi-CDs: (a) C 1s, (b) Bi 4f

Fig. S3 XRD patterns of CdS, CDs/CdS and metal doped CDs/CdS composites
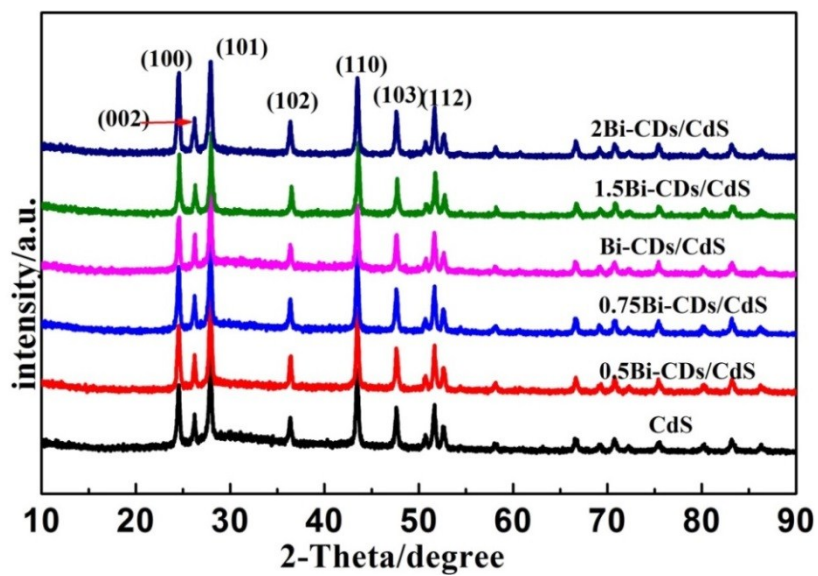
Fig. S4 XRD patterns of Bi-CDs/CdS with different Bi doping amount
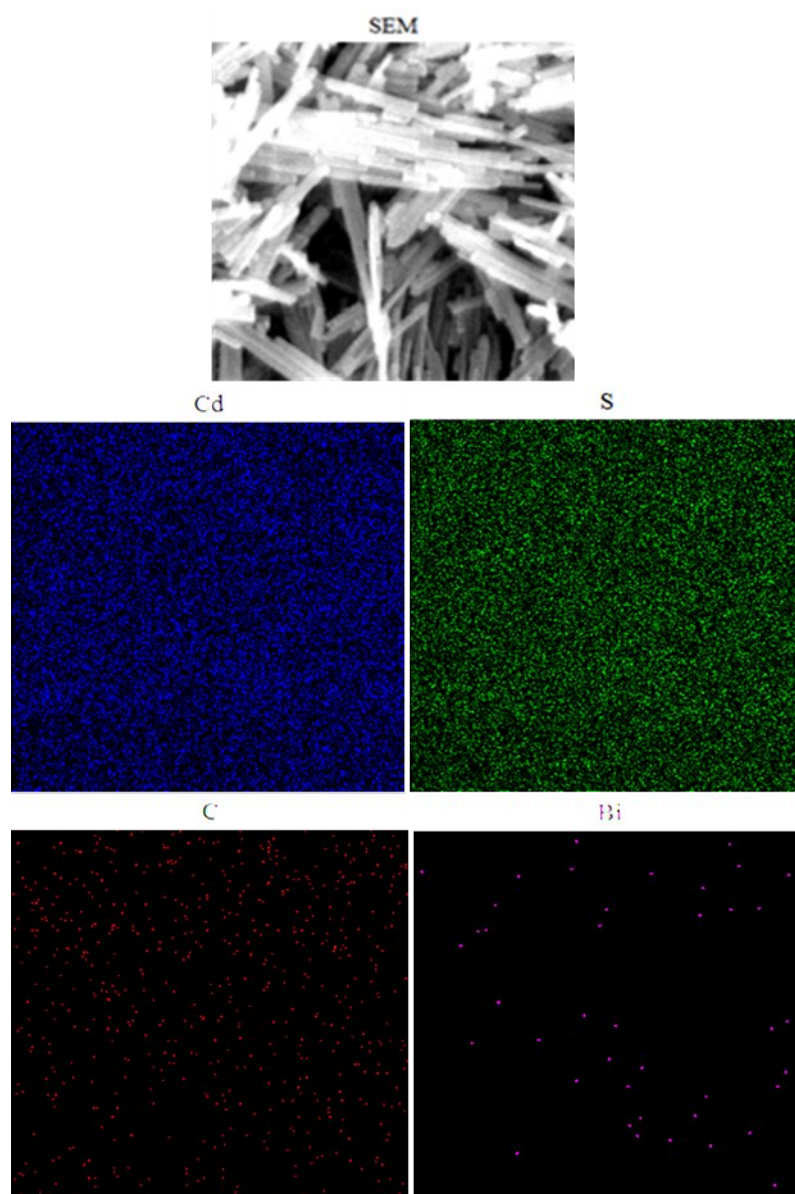
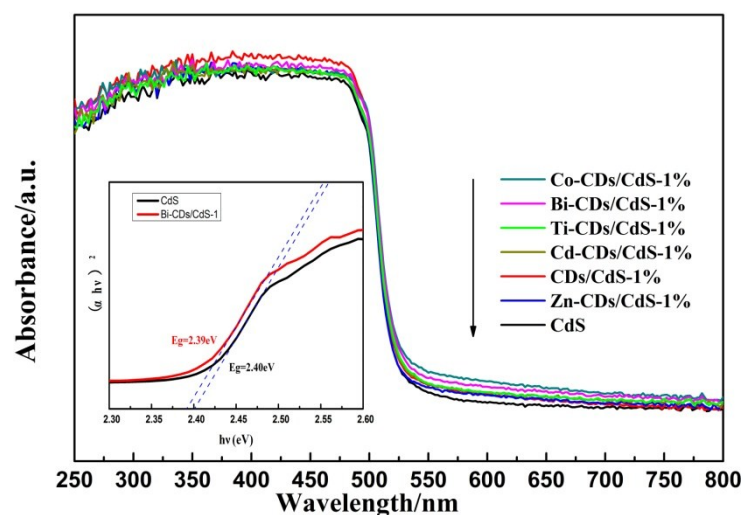Fig. S5 SEM images and elemental mapping images of Bi-CDs/CdS

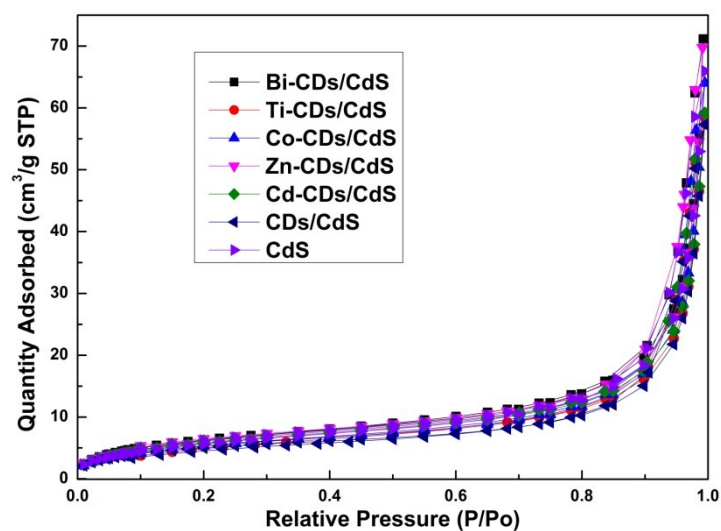Fig. S6 UV-Vis DRS spectra of CdS, CDs/CdS and different metals doped CDs/CdS.

Fig.S7 N_2 adsorption-desorption isotherms of CdS, CDs/CdS and metals doped CDs/CdS composites.
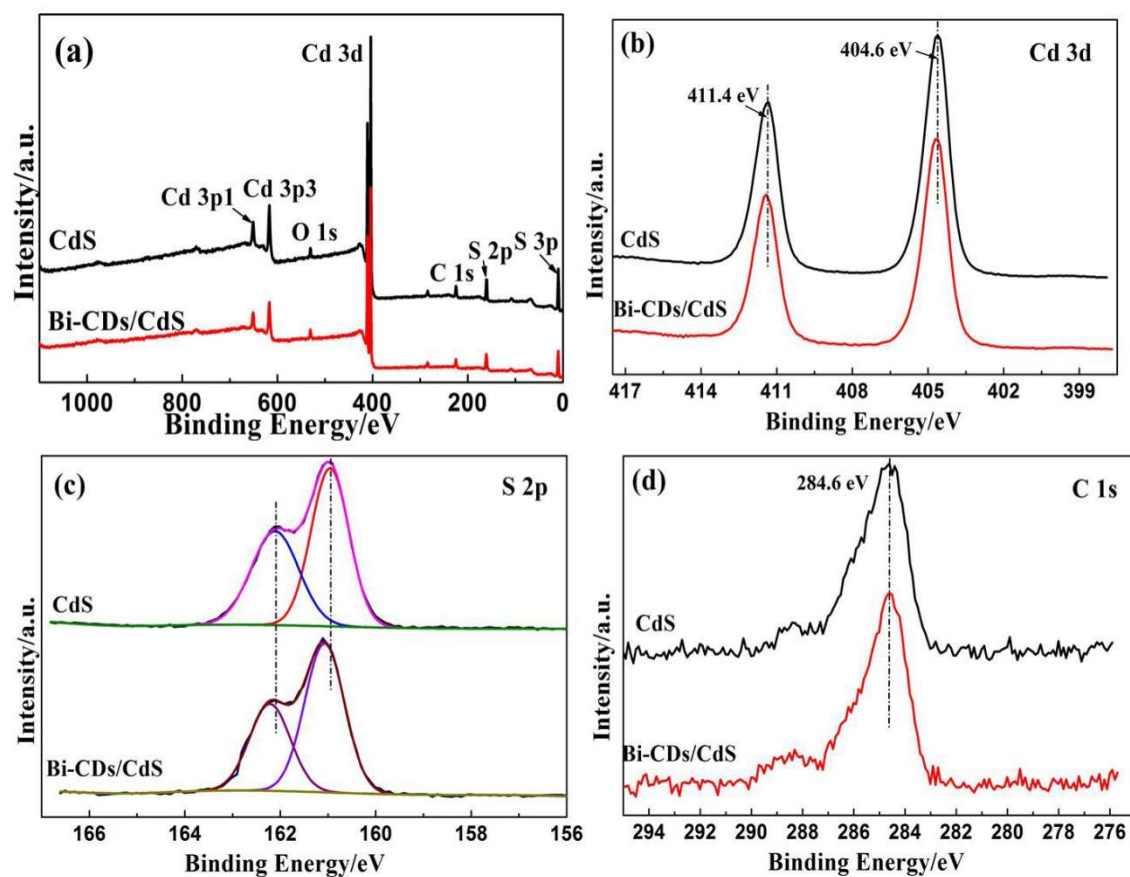
Fig. S8 XPS survey spectra of CdS and Bi-CDs/CdS: (a) survey spectra of CdS and Bi-CDs/CdS, magnified spectrum of (b) Cd 3d peaks, (c) S 2p peaks and (d) C 1s peaks.
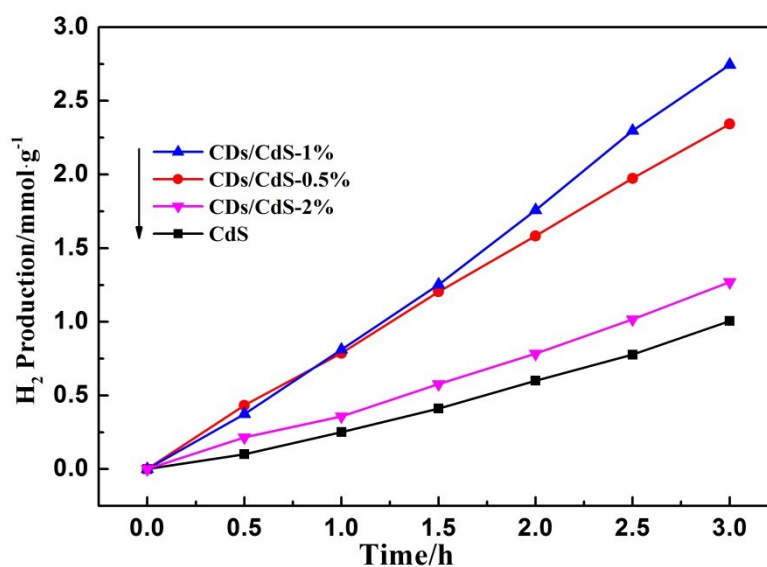

Fig. S9 H_2 evolution profiles of pure CdS and various CDs/CdS composites under visible light irradiation ($\lambda \geq 420$ nm)
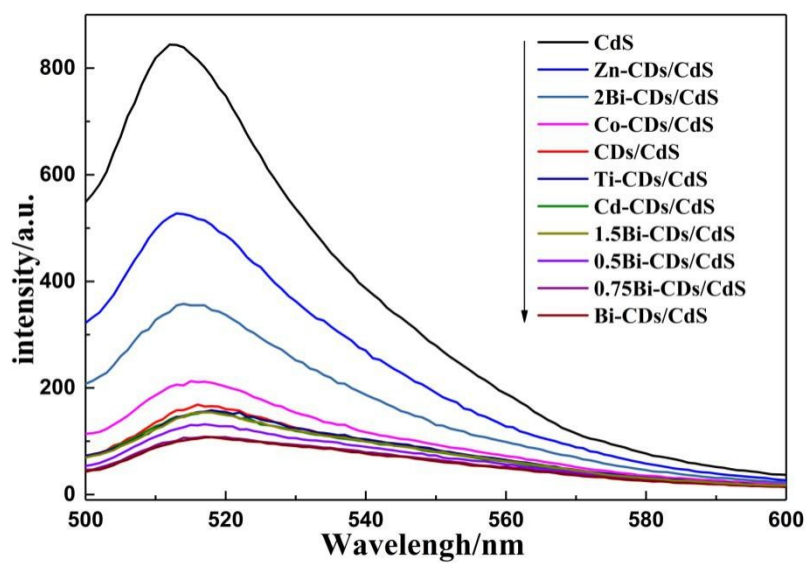
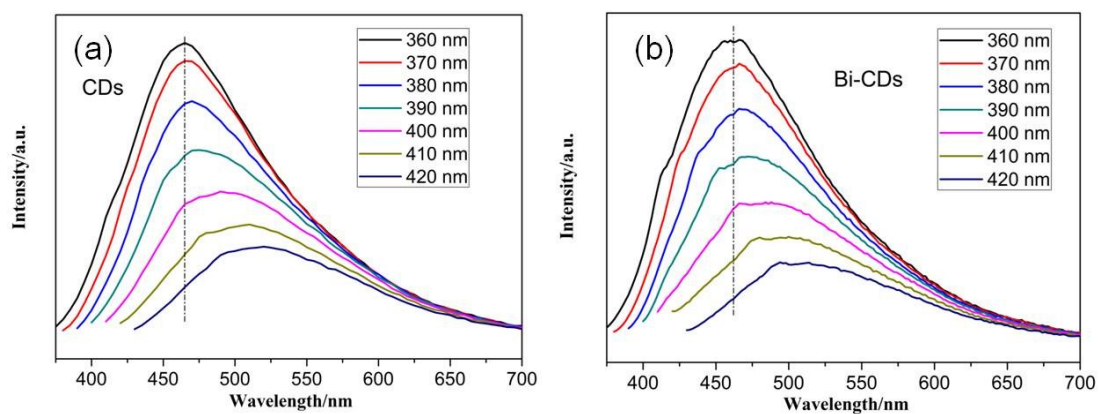Fig. S10 PL spectra of pure CdS, CDs/CdS and metal doped CDs/CdS composites

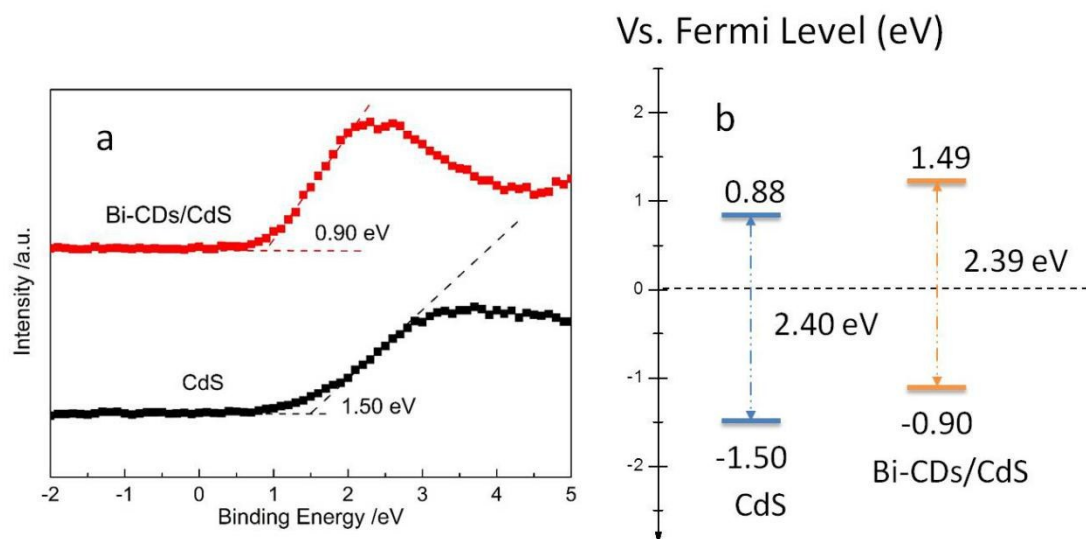Fig. S11 PL emission spectra of CDs and Bi-CDs: (a) CDs and (b) Bi-CDs

Fig. S12 XPS valence band spectra and band structure diagram for CdS and Bi-CDs/CdS

Table S1 The specific surface area of CdS, CDs/CdS and metals doped CDs/CdS composites.

Sample	CdS	CDs/CdS	Bi-CDs/CdS	Cd-CDs/CdS	Ti-CDs/CdS	Co-CDs/CdS	Zn-CDs/CdS
Specific surface area (m^2/g)	21	18	23	21	19	19	21