

Electronic Supplementary Information

Single-Step Solvothermal Synthesis of Highly Uniform $\text{Cd}_x\text{Zn}_{1-x}\text{S}$ Nanospheres for Improved Visible Light Photocatalytic Hydrogen Generation

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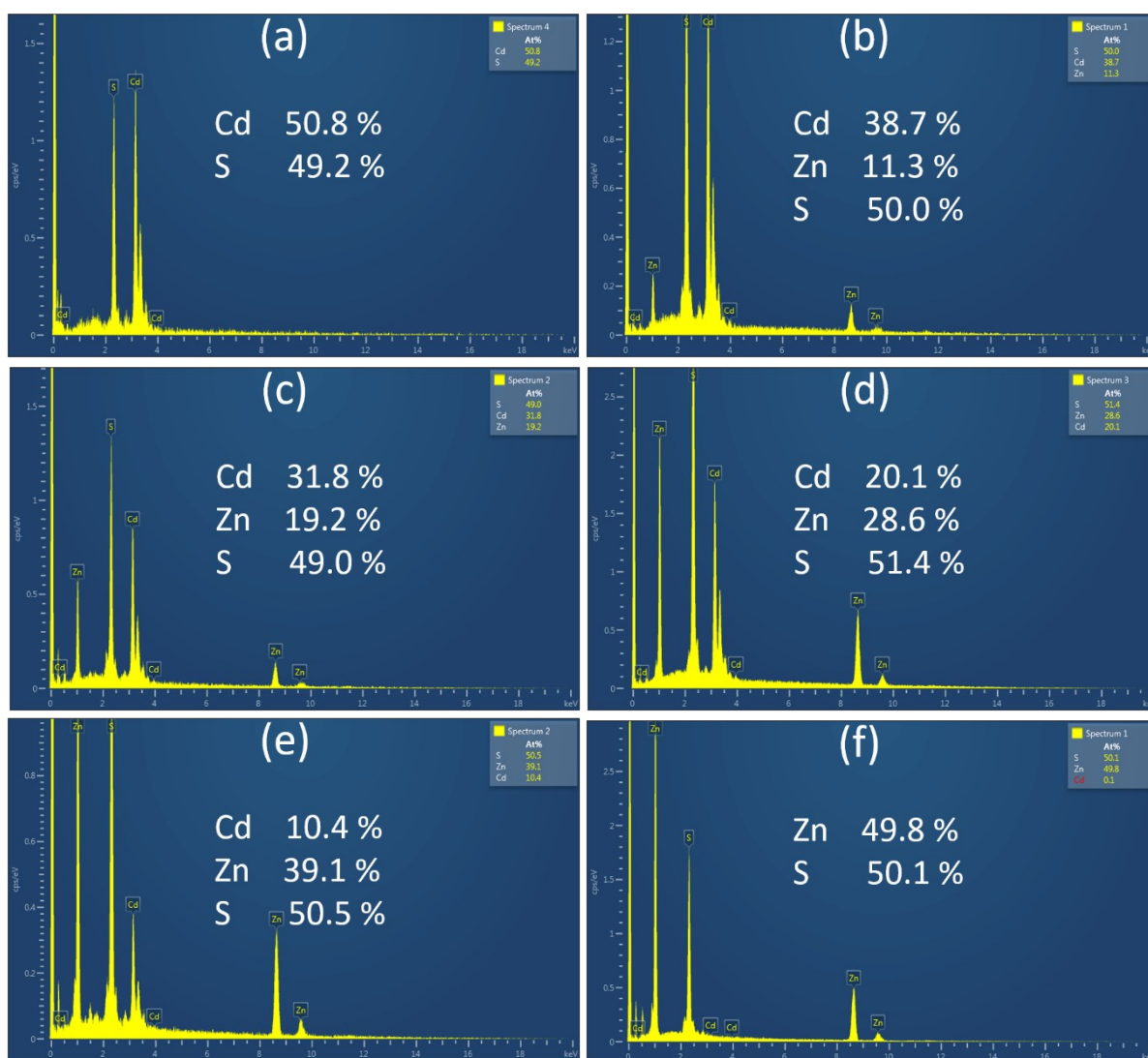


Fig. S1 EDX spectra along with Cd, Zn and S at% of (a) CdS (b) $\text{Cd}_{0.8}\text{Zn}_{0.2}\text{S}$ (c) $\text{Cd}_{0.6}\text{Zn}_{0.4}\text{S}$ (d) $\text{Cd}_{0.4}\text{Zn}_{0.6}\text{S}$ (e) $\text{Cd}_{0.2}\text{Zn}_{0.8}\text{S}$ (f) ZnS . The X-axis and Y-axis title of the EDX spectra are energy (keV) and counts (cps), respectively.

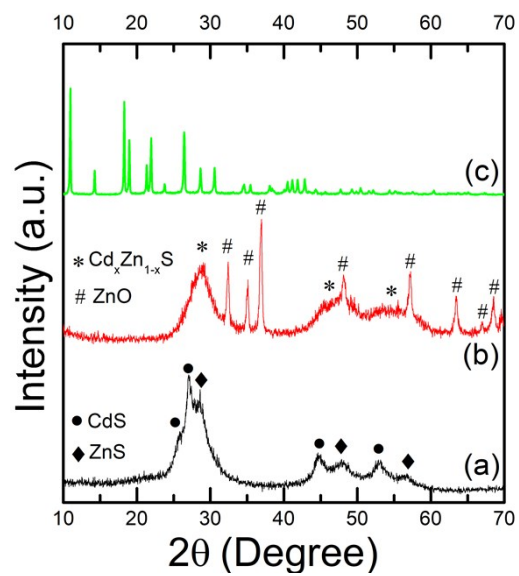


Fig. S2 XRD patterns of sample prepared with (a) water (b) ethanol (c) ethylenediamine.

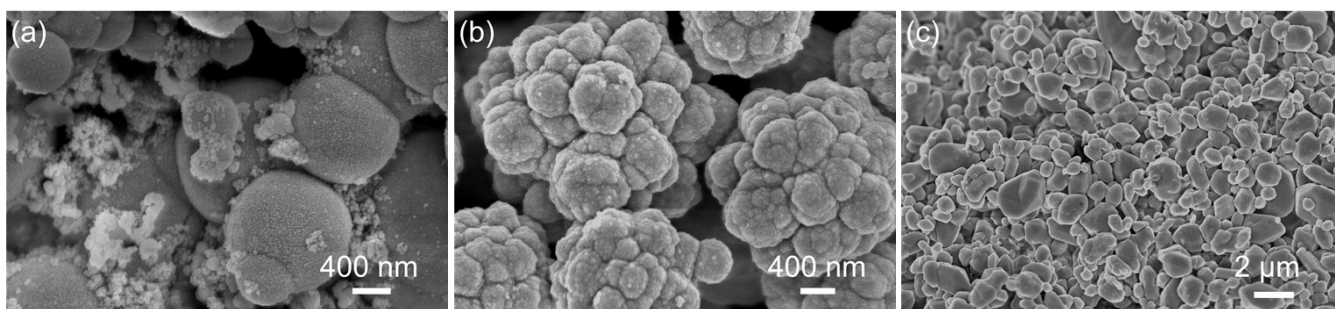


Fig. S3 FESEM images of the sample prepared with (a) water, (b) ethanol, and (c) ethylenediamine.

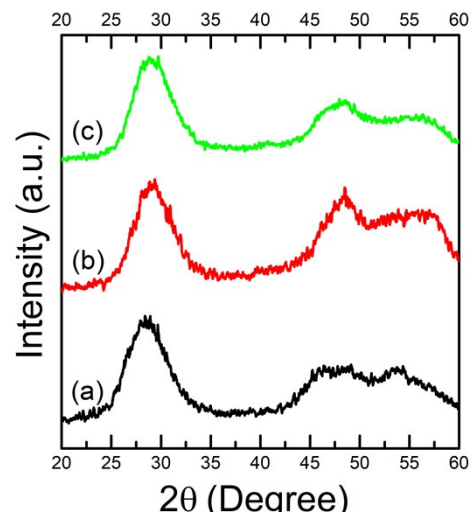


Fig. S4 XRD patterns of Cd_{0.2}Zn_{0.8}S sample prepared with a reaction duration of (a) 2 h, (b) 4 h, and (c) 12 h.

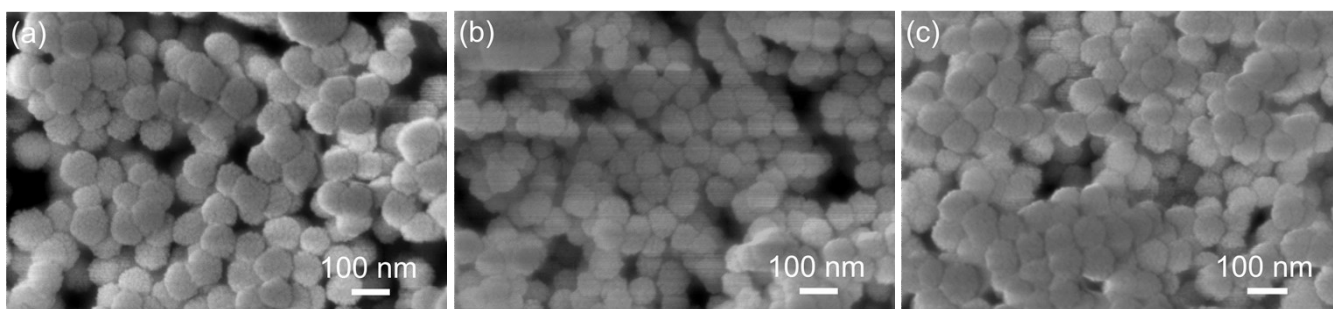


Fig. S5 FESEM images of Cd_{0.2}Zn_{0.8}S samples prepared with a reaction duration of (a) 2 h, (b) 4 h, and (c) 12 h.

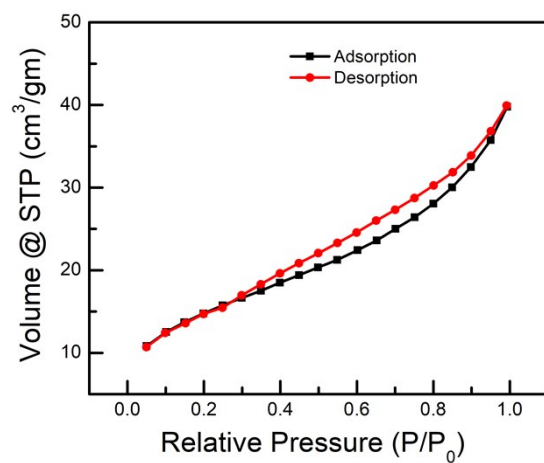


Fig. S6 Nitrogen adsorption–desorption isotherm of $\text{Cd}_{0.6}\text{Zn}_{0.4}\text{S}$.

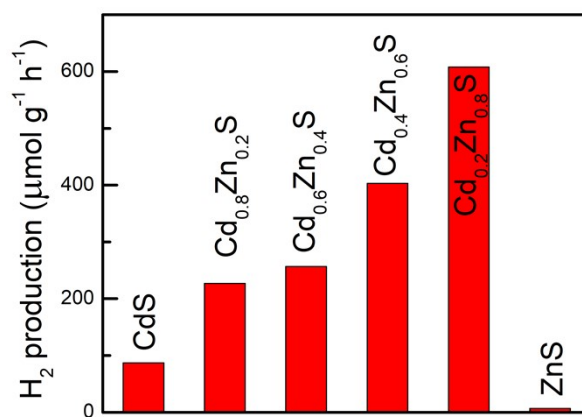


Fig. S7 Photocatalytic H_2 generation rate of synthesized samples.

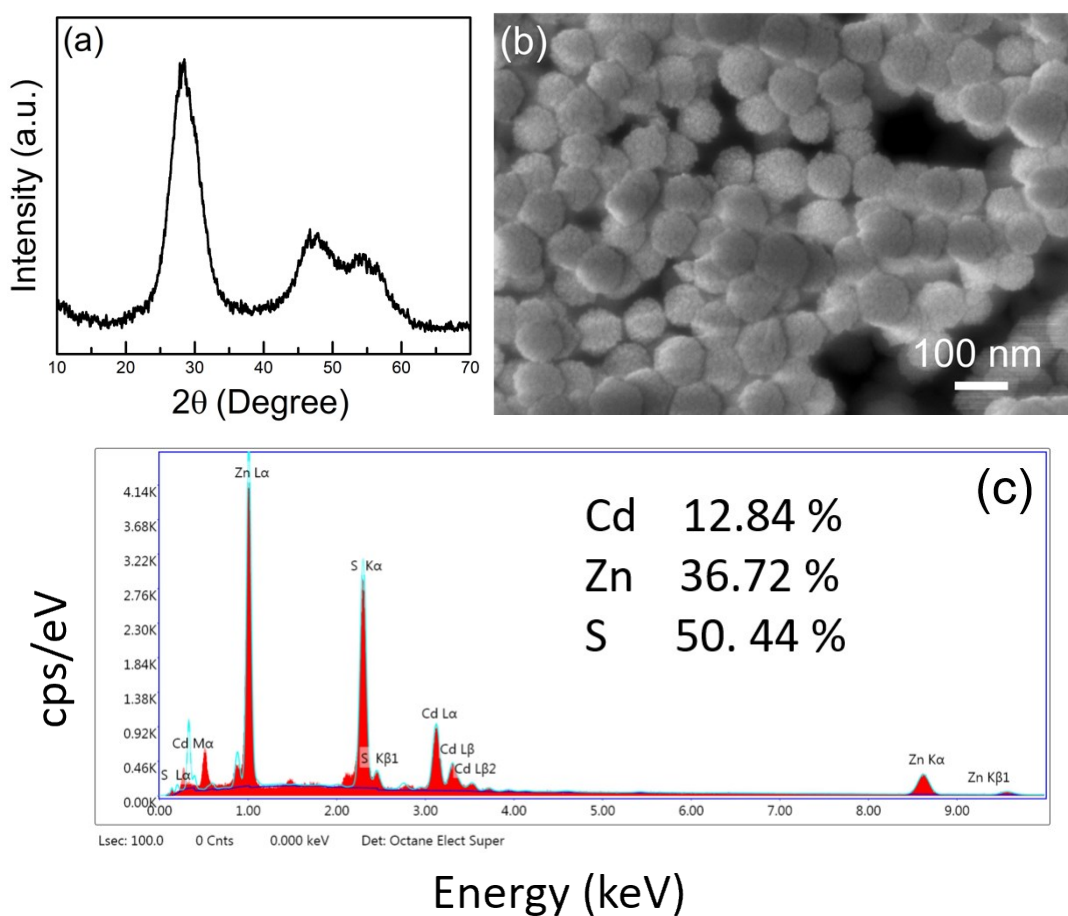


Fig. S8 (a) XRD pattern, (b) FESEM image, and (c) EDX spectrum of $\text{Cd}_{0.2}\text{Zn}_{0.8}\text{S}$ after 4th cycle of photocatalytic hydrogen generation.

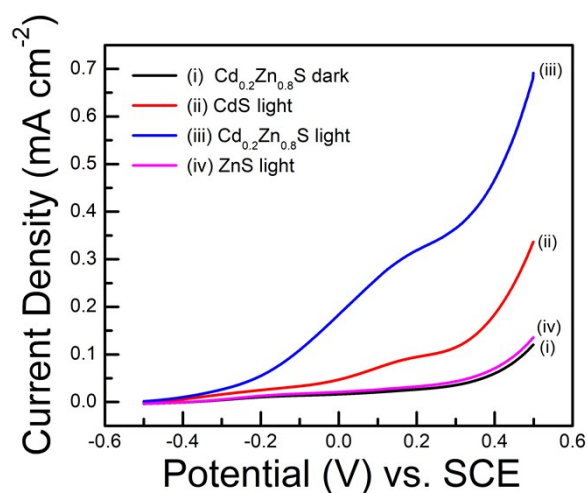


Fig. S9 LSV plots of CdS, ZnS, and $\text{Cd}_{0.2}\text{Zn}_{0.8}\text{S}$ under illumination and LSV plot of $\text{Cd}_{0.2}\text{Zn}_{0.8}\text{S}$ under dark at a scan rate of 10 mV s^{-1} .

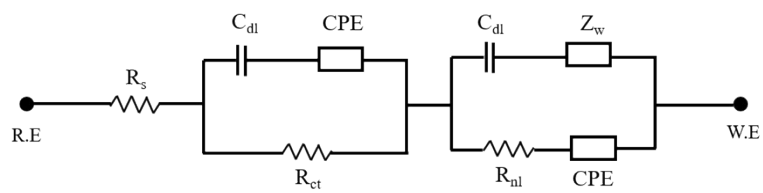


Fig. S10 Equivalent circuit diagram of the Nyquist plot.