Supporting information

Cocatalyst-Free CdS nanorods/ZnS nanoparticles Composite for High-Performance Visible-Light-Driven Hydrogen Production from Water

Daochuan Jiang, Zijun Sun, Hongxing Jia, Dapeng Lu, Pingwu Du*

Key Laboratory of Materials for Energy Conversion, Chinese Academy of Sciences, Department of Materials Science and Engineering, iChEM (Collaborative Innovation Center of Chemistry for Energy Materials), University of Science and Technology of China, Hefei, Anhui Province, 230026, P. R. China

*To whom correspondence should be addressed

E-mail: dupingwu@ustc.edu.cn

Tel/Fax: 86-551-63606207
Figure 1. TEM image of CdS/ZnS-0.5 NRs photocatalyst.

Figure S2. HRTEM image of CdS/ZnS-0.5 photocatalyst.
**Figure S3.** SEM image of CdS/ZnS-0.5 sample after photocatalysis.

**Figure S4.** Powder XRD spectrum of CdS/ZnS-0.5 sample after photocatalysis.
Figure S5. (a) Photocatalytic H₂ evolution over CdS/ZnS-0.5 (black line) and 1 wt% Pt/CdS/ZnS-0.5 (red line) at room temperature under visible light (λ > 420 nm). (b) The time courses of H₂ production and apparent quantum yield (AQY) over 1.0 wt% Pt modified CdS/ZnS-0.5 NRs photocatalyst under monochromatic 420 nm light irradiation. The system contains 1.0 mg photocatalyst, 0.75 M Na₂S and 1.05 M Na₂SO₃ in 20 mL aqueous solution. The bars represent the apparent quantum yields.

Figure S6. Time-resolved photoluminescence (TRPL) decay spectra of pure CdS (red) and CdS/ZnS-0.5 (blue) excited at a wavelength of 405 nm.