Supplementary information

Construction of Novel Step-scheme CdS/Pt/Bi_2MoO_6 Photocatalyst for Efficient Photocatalytic Fuel Denitrification

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Supporting Figures and Table

1、Details of characterization

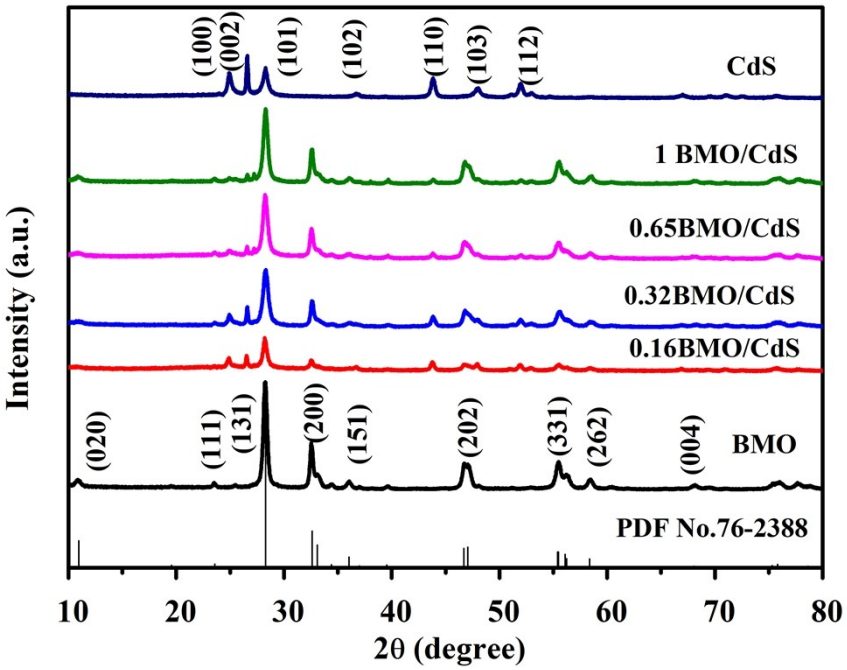

Fig. S1. XRD patterns of a series of Bi_2MoO_6/CdS.

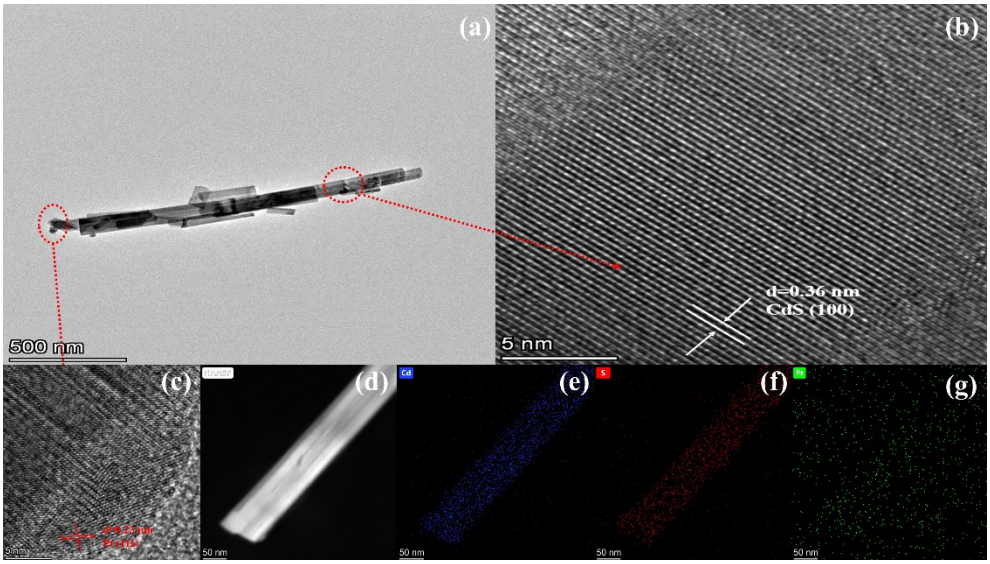

Fig. S2. Typical TEM images of (a) Pt/CdS, (b,c) HRTEM images of Pt/CdS and (d-g) element mapping images of Pt/CdS.

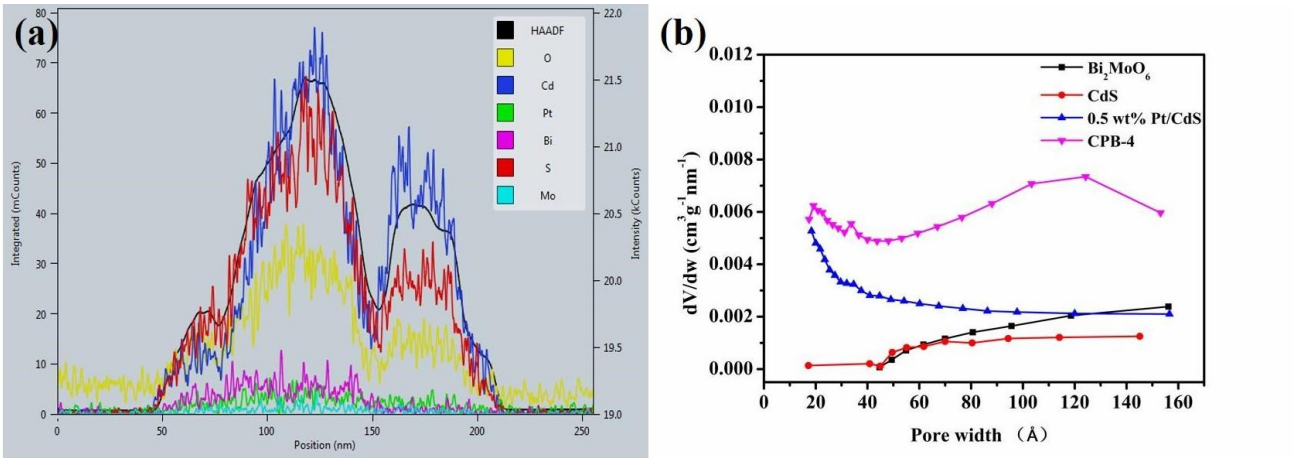

Fig. S3. (a) EDS of CPB-4 photocatalysts and (b) pore size distribution curves of photocatalysts

As prepared CdS/Pt/Bi_2MoO_6 composites (x wt% Bi_2MoO_6 vs. CdS/Pt) with mass ratios of 10%, 5%, 2.5% and 1% are labeled as CPB-1S, CPB-2S, CPB-3S and CPB-4S, respectively.

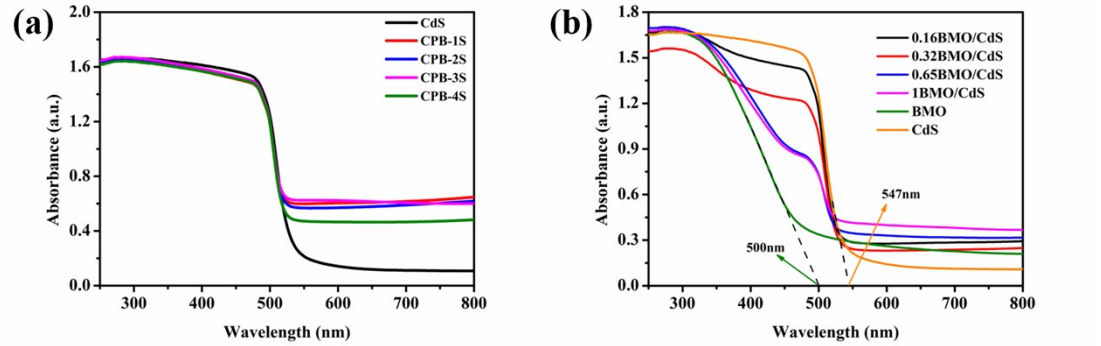

Fig. S4. (a) UV-vis diffuse reflectance spectra of CdS, and CPBS (trace amounts of Bi_2MoO_6) with different compositions and (b) UV-vis diffuse reflectance spectra of Bi_2MoO_6/CdS.

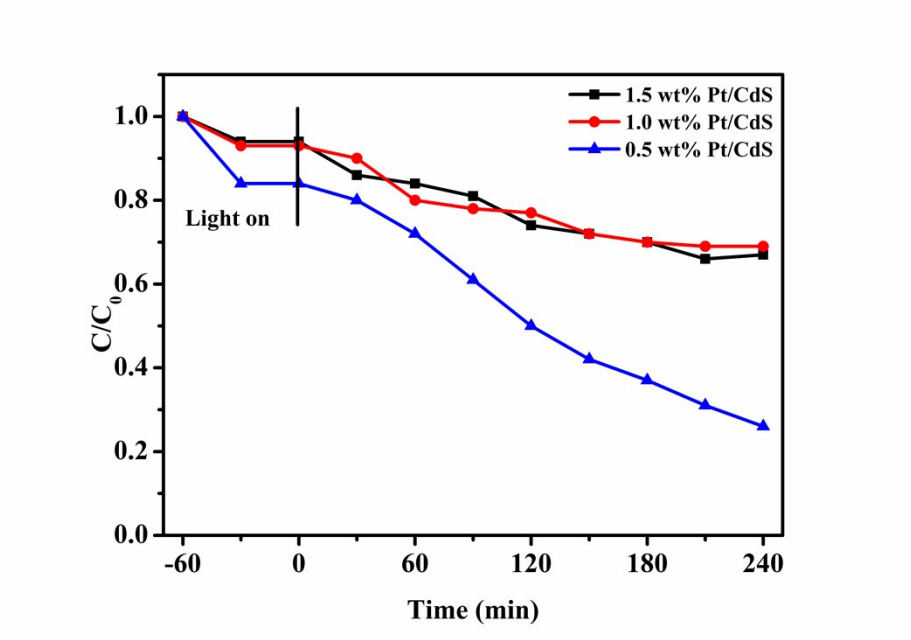

Fig. S5. Photocatalytic denitrogenation of pyridine under visible-light irradiation of other ratios of Pt loaded CdS NRs

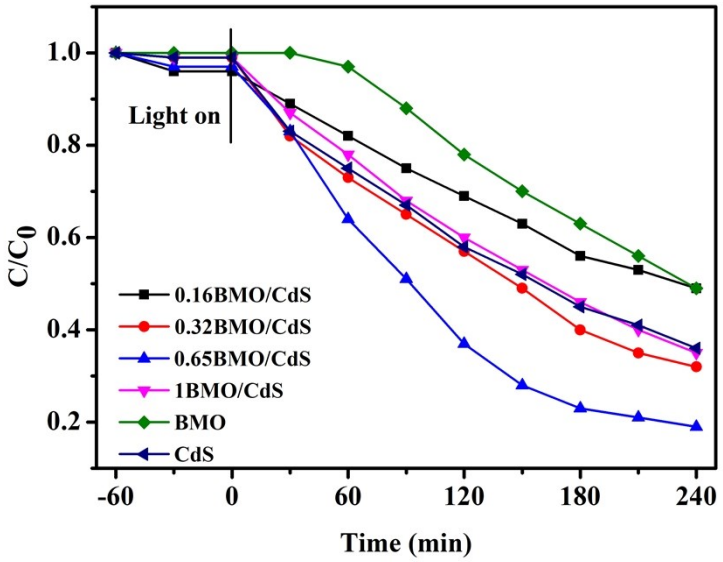

Fig. S6. Photocatalytic denitrogenation of pyridine under visible-light irradiation.

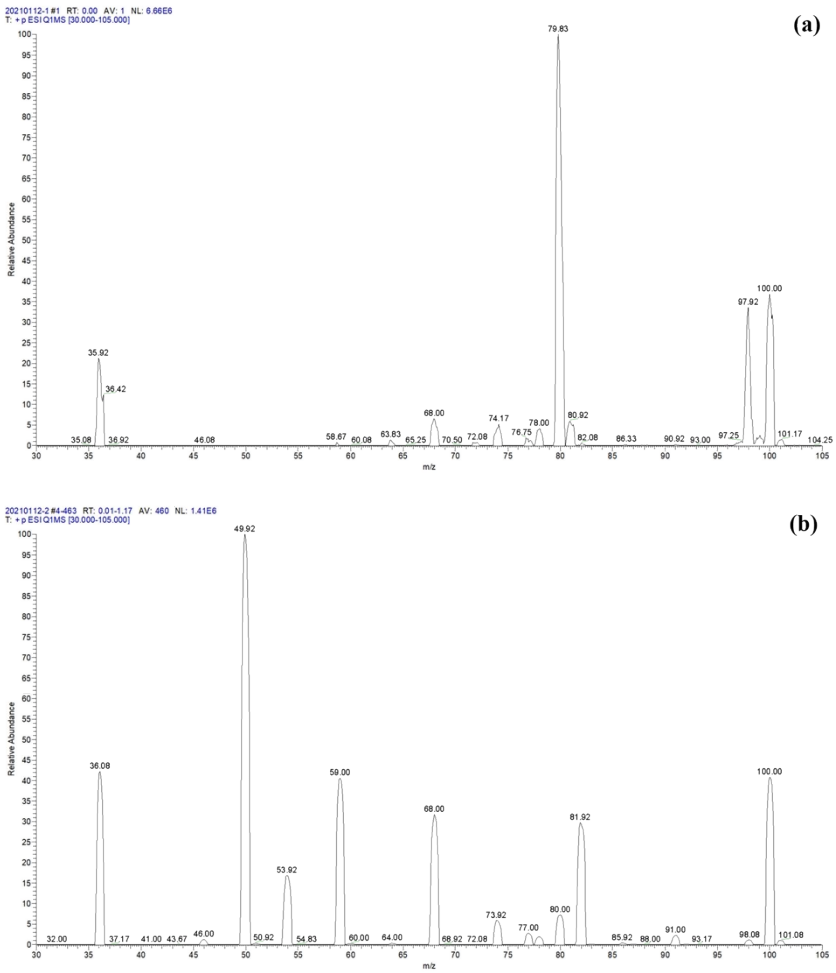

Fig. S7. High-performance liquid chromatography profiles of pyridine after different irradiation times: (a) 0h, and (b) 4h

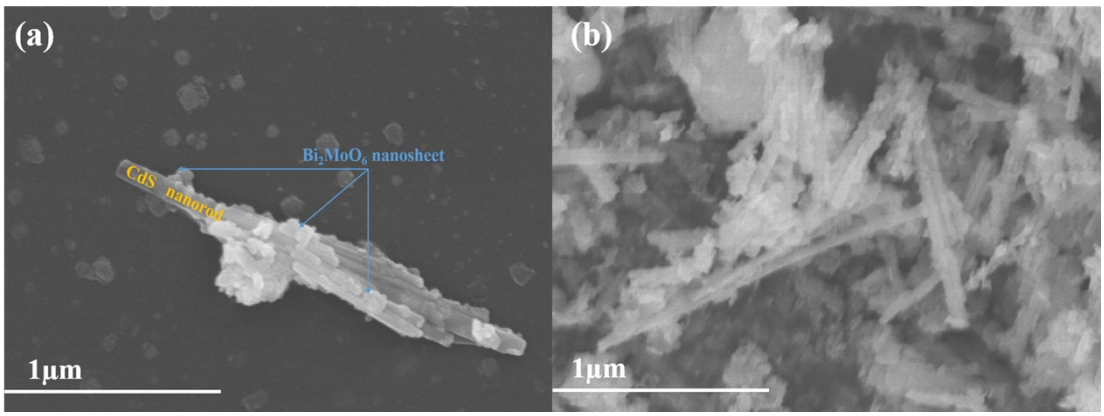

Fig. S8. SEM images of (a) Initial CPB-4 and (b) CPB-4 after three cycles

2、The details of the fuel denitration cycle

After the first experiment, the photocatalyst was collected into a centrifuge tube, separated by centrifugation (8000 rpm,6 min), washed several times with deionised water and ethanol, and then were dried in a vacuum drying oven at 80°C for 6 h. Afterward, the produced yellow-green solids were collected. Then it was the same as the first pyridine removal experiment and the concentration was detected after 4 hours of visible light irradiation (>420 nm).

Fig. S9. (a) Initial CPB-4, (b) photographs of samples of CPB-4 after three cycles.