Supporting Information

Highly dispersed MoS$_x$ nanodot-modified TiO$_2$ photocatalyst: Vitamin C-mediated synthesis and improved H$_2$ evolution activity

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**SI-1 The AQE calculation**

The apparent quantum efficiency (AQE) of the prepared photocatalyst is calculated via the following equation:

\[
AQE(\%) = \frac{\text{number of reacted electrons}}{\text{number of incident photons}} \times 100\%
\]

\[
= \frac{\text{number of evolved H}_2 \text{ molecules} \times 2}{\text{number of incident photons}} \times 100\%
\]

The average power of the UV light (four 3-W 365 nm) was 22.4 mW/cm\(^2\). Hence, the AQE of the TiO\(_2@C/MoS_2\)(0.7 wt%) photocatalyst can be calculated to be 3.94%.
Fig. S1. The influence of VC amount on the photocatalytic H₂-evolution activities of TiO₂@C/MoS_x (1.0%) photocatalyst: (a) 0 mg, (b) 5 mg, (c) 9 mg, (d) 15 mg, (e) 20 mg, (f) 50 mg.
Fig. S2. FESEM images of different photocatalysts: (a) TiO$_2$, (b) TiO$_2$@C, (c) TiO$_2$@C/MoS$_x$(0.7%), (d) TiO$_2$/MoS$_x$(0.7%).
Fig. S3. (A) Raman spectra, (B) The enlarged Raman spectra of different samples: (a) TiO$_2$, (b) TiO$_2$/MoS$_x$(0.7%), (c) TiO$_2$@C/MoS$_x$(0.7%), (d) TiO$_2$@C.
Fig. S4. Photocatalytic H₂-evolution activities of typical TiO₂ and MoSₓ-modified photocatalysts.