

Supporting Information

Confinement effect of monolayer MoS₂ quantum dots on conjugated polyimide and promotion for solar-driven photocatalytic hydrogen generation

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Table S1 The amounts of the reactants for synthesis of the samples

Samples*	Reactants (mg)		
	PI	(NH ₄) ₆ Mo ₇ O ₂₄ ·4H ₂ O	CS(NH ₂) ₂
0.1MQDs/PI	999	1.10	2.38
0.3MQDs/PI	997	3.30	7.13
0.5MQDs/PI	995	5.50	11.89
1.0MQDs/PI	990	11.0	23.78
3.0MQDs/PI	970	33.0	71.33
MoS ₂	—	1104	2376

*All samples were synthesized by a facile immersion-hydrothermal method. The amounts of the reactants were calculated according to the synthesis of 1 g sample.

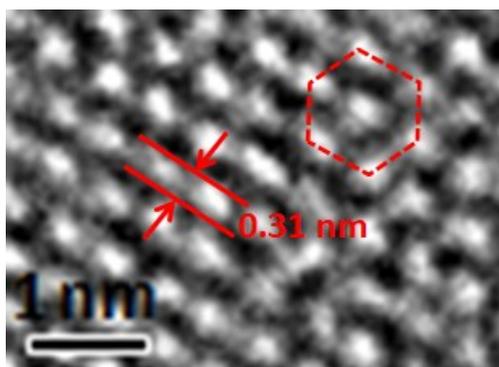


Figure S1. HR-TEM images of 1.0MQDs/PI composite powder samples.

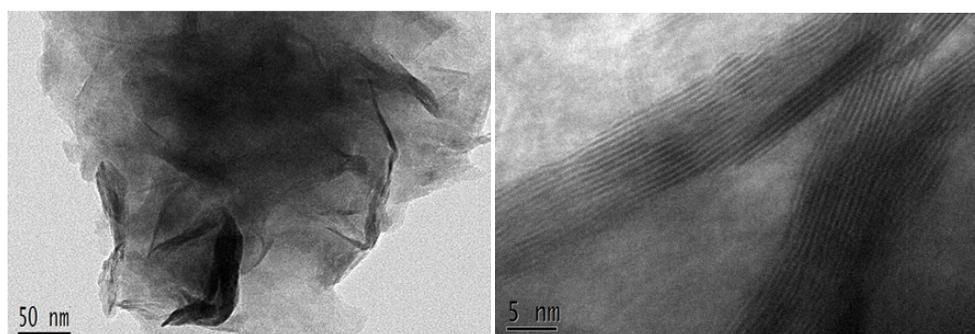


Figure S2. HR-TEM images of layered bulk MoS₂ powder samples.

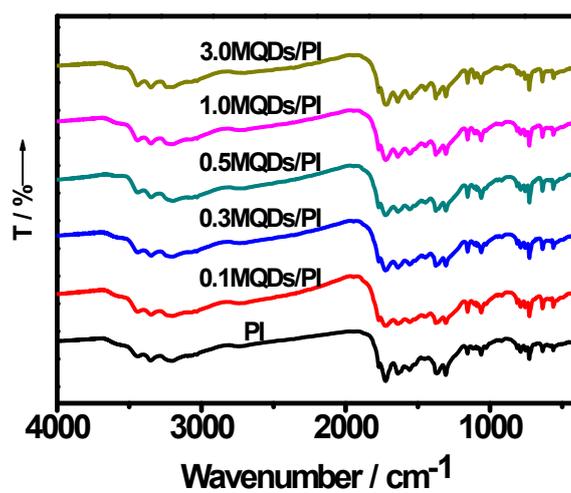


Figure S3. FTIR spectrum of PI and MQDs/PI composite powder samples.

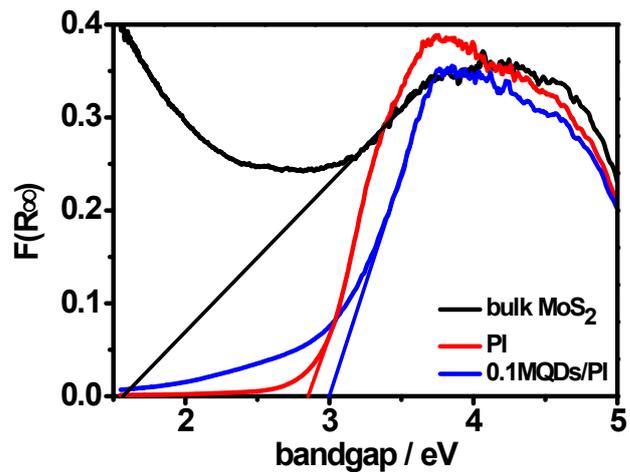


Figure S4. Comparison of bandgaps of bulk MoS₂, PI and 0.1MQDs/PI estimated from UV-vis spectra.

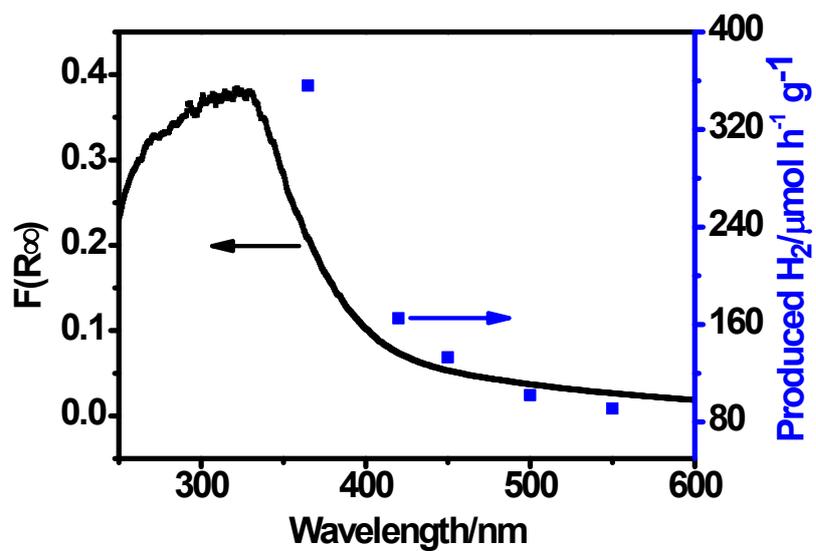


Figure S5. Wavelength dependence of H₂ evolution rate over 1.0MQDs/PI composite powder sample.

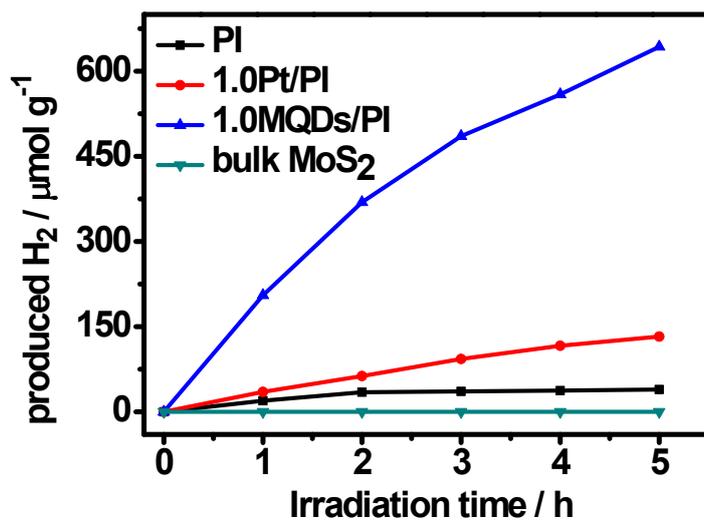


Figure S6. Comparison of photocatalytic activities of pristine PI, 1.0Pt/PI, 1.0 MQDs and bulk MoS₂ powder samples under visible light irradiation ($\lambda > 420$ nm, 10 vol. % methanol aq.).

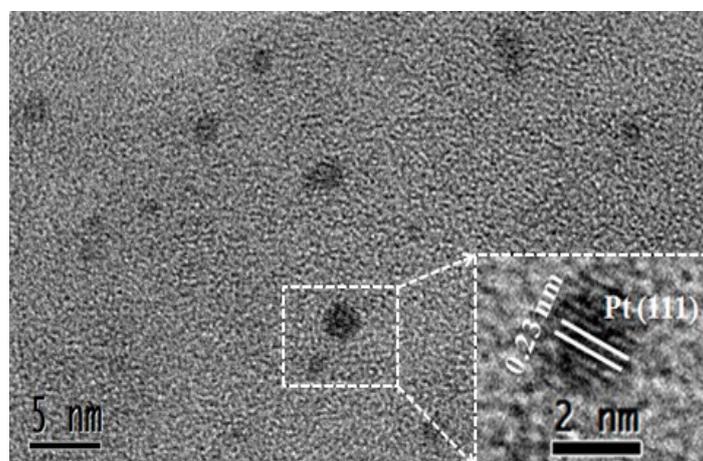


Figure S7. TEM image of 1.0Pt/PI powder sample. Some Pt particles are marked in white circles. The inset is a high resolution TEM image.

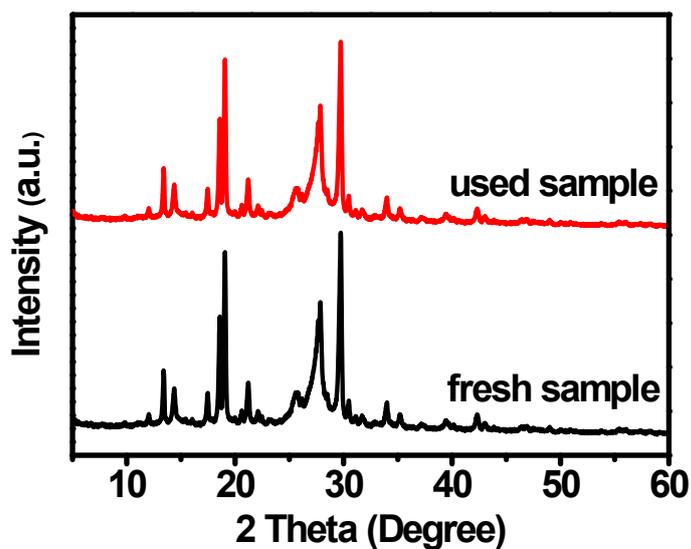


Figure S8. XRD patterns of 1.0 MQDs/PI composite powder sample before and after photocatalytic H₂ evolution.

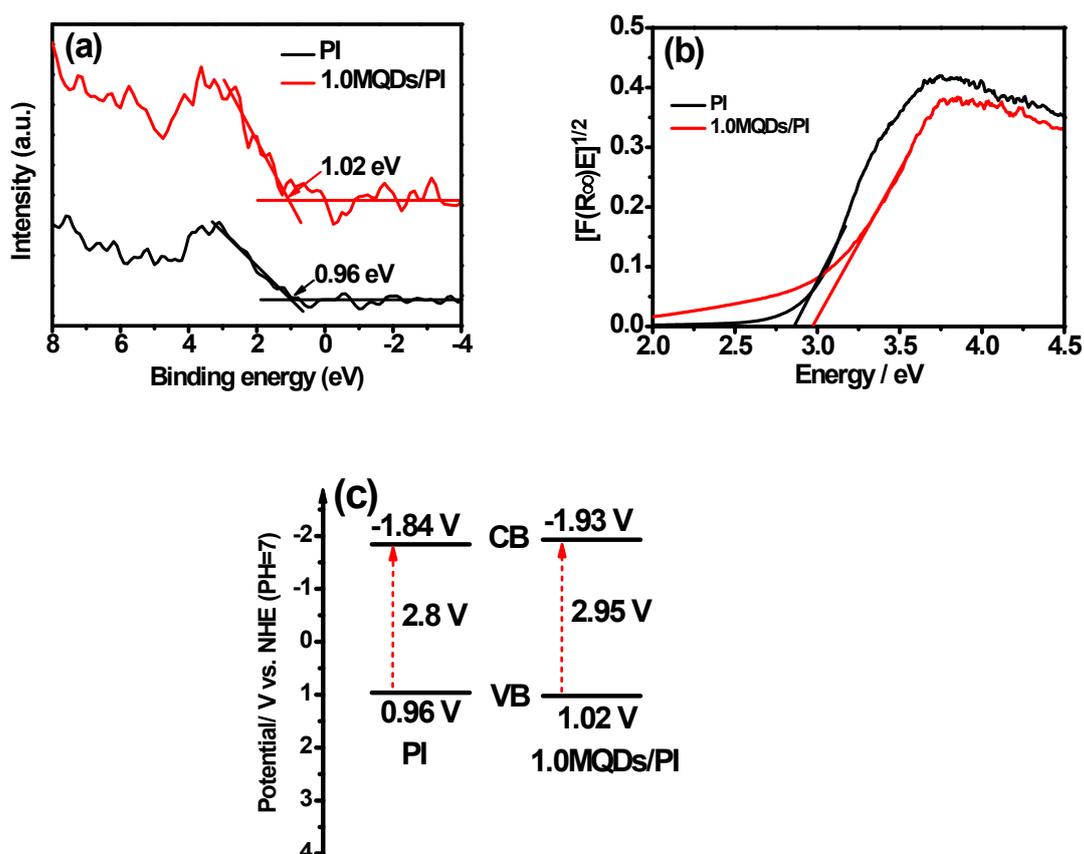


Figure S9.(a)VBXPS spectra, (b) bandgaps and (c) band edge positions of PI and 1.0MQDs/PI powder samples.