Supplementary data for

MoS_2/ZIF-8 Hybrid Materials for Environmental Catalysis: Solar-Driven Antibiotic-Degradation Engineering

Wen-qian Chen [a,c,#], Linyue Li [a,b,#], Lin Li [a], Wen-hui Qiu [d,e], Liang Tang [a,b,*], Ling Xu [a], Kejun Xu [a], Ming-hong Wu [a,b,*]

[a] *School of Environmental and Chemical Engineering, Shanghai University, Shanghai 200444, China*
[b] *Key Laboratory of Organic Compound Pollution Control Engineering, Ministry of Education, Shanghai 200444, China*
[c] *Shanghai Institute of Applied Radiation, Shanghai University, Shanghai 201800, China*
[d] *Guangdong Provincial Key Laboratory of Soil and Groundwater Pollution Control, School of Environmental Science and Engineering, Southern University of Science and Technology, Shenzhen 518055, China*
[e] *State Environmental Protection Key Laboratory of Integrated Surface Water-Groundwater Pollution Control, School of Environmental Science and Engineering, Southern University of Science and Technology, Shenzhen 518055, China*

[*] Corresponding author.
E-mail address: tang1liang@shu.edu.cn (L. Tang), mhwu@shu.edu.cn (M. H. Wu)
[#] These authors contributed equally to this work.

Degradation intermediate analytical methods:

The degradation intermediates were detected by a high performance LC–MS/MS (6460 Triple Quad LC–MS/MS, Agilent). The method of analyzing the degradation products of CIP is as follows. A C18 reversed-phase column (2.7 μm, 3.0 × 100 mm) was used, at the flow rate of 0.4 mL min^{-1} and the column temperature at 303 K. The injection volume was 10 μL. The mobile phase was a mixture of water containing 0.1% formic acid (v/v) (A) and acetonitrile (B): the initial 93% A and 7% B mobile phase are reduced to 50% A and 50% B in 25 minutes and then further restored to the initial concentration for 30 minutes. Mass spectrometry full scan analysis was performed in the range of 100-1000 m/z. The electrospray interface was used for LC/MS measurements in positive ionization mode (ESI(+)).The rest of the operating conditions were as follows: gas temperature: 350 °C, gas flow: 9 L min^{-1}, nebulizer pressure: 38 psi, capillary voltage: +4000 V, nozzle voltage: +1500 V, cell accelerator voltage: 3 V.

The method for analyzing tetracycline intermediates is as follows: The mobile phase was a mixture of water containing 0.1% formic acid (v/v) (A) and acetonitrile (B): the initial 95% A and 5% B mobile phase are reduced to 50% A and 50% B in 10 minutes and then further restored to the initial concentration for 5 minutes. The other parameters are the same as above.

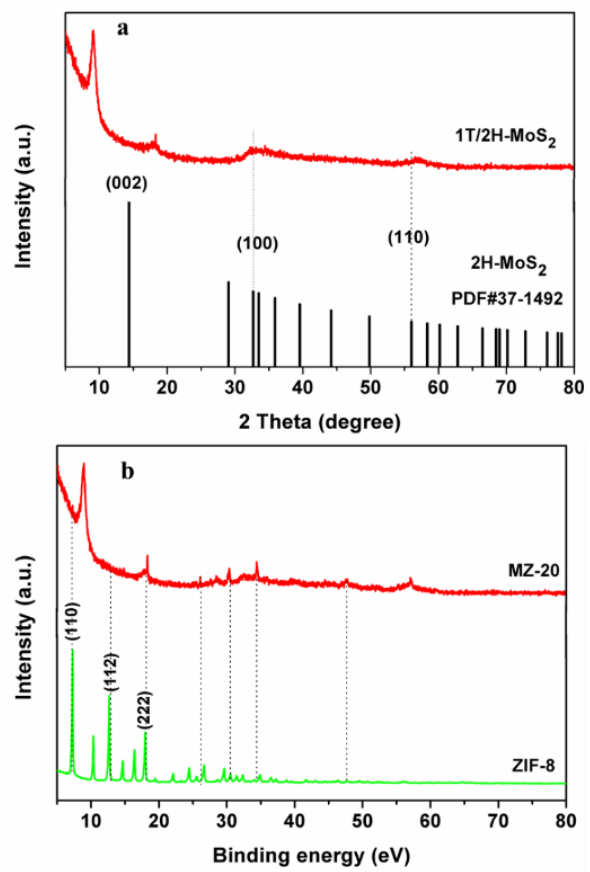

Fig. S1. XRD patterns of MZ-20 and ZIF-8

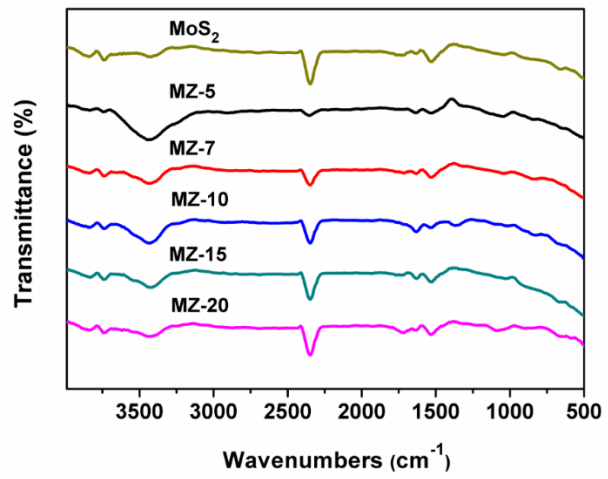

Fig. S2. FT-IR image of MoS_2 and MZ nanocomposites.

Table S1

BET specific surface area and pore volume of the prepared samples.

Samples	BET($m^2 \cdot g^{-1}$)[a]	Pore Volume ($cc \cdot g^{-1}$)[b]
MZ-5	17.789	0.058
MZ-7	33.308	0.164
MZ-10	25.150	0.077
MZ-15	11.482	0.300
MZ-20	27.354	0.096
MoS_2	13.306	0.075
ZIF-8	993.25	0.051

[a] BET specific surface

[b] Total pore volume measured at $P/P_0 = 0.99$

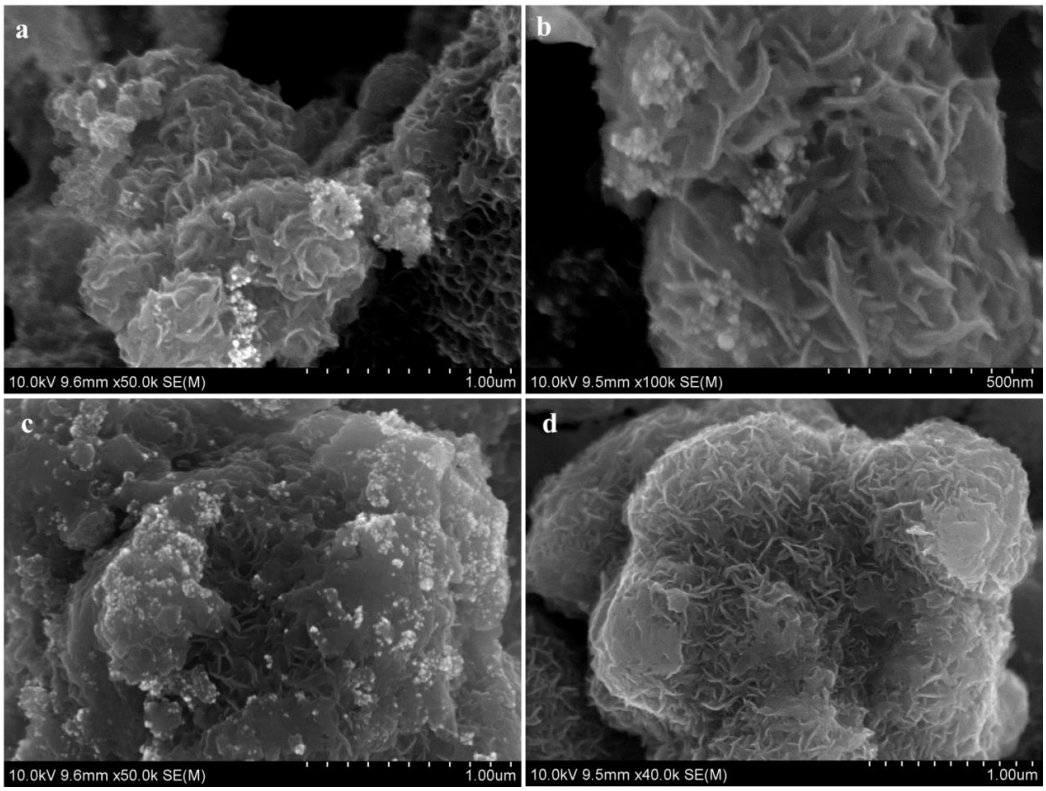

Fig. S3. SEM images of MZ-7 (a and b), MZ-20 (c) and pure MoS_2 (d)

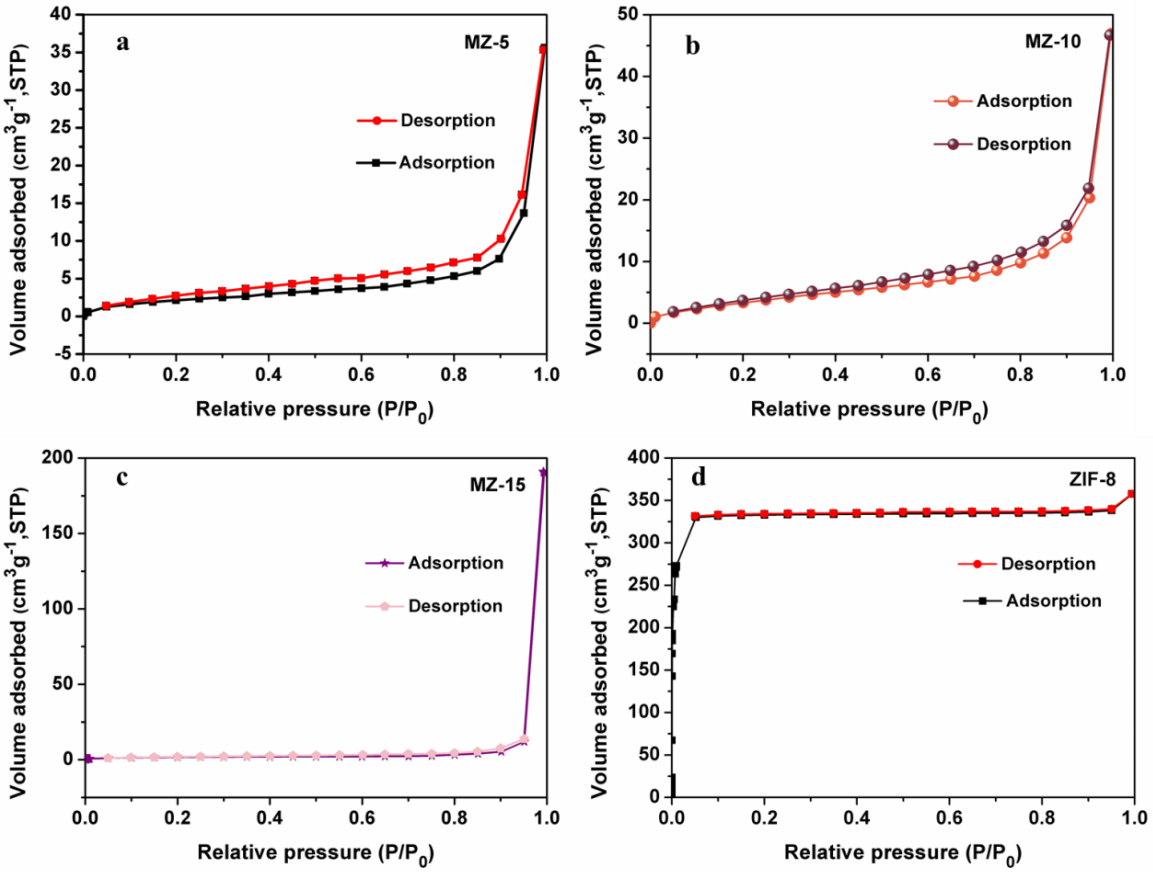

Fig. S4. N2 adsorption-desorption isotherms of as-synthesized samples

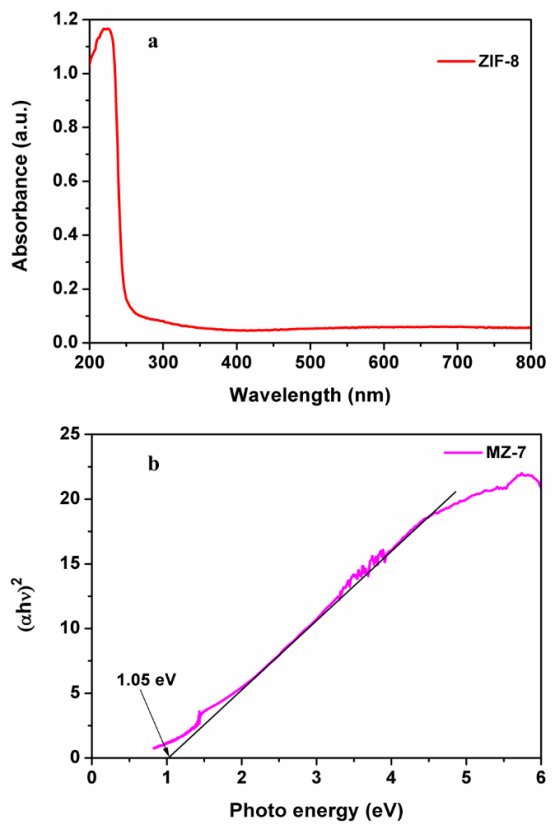

Fig. S5. (a) UV–vis DRS spectra of ZIF-8; (b) The plot of $(\alpha h\nu)^2$ vs. photo energy ($h\nu$) of MZ-7

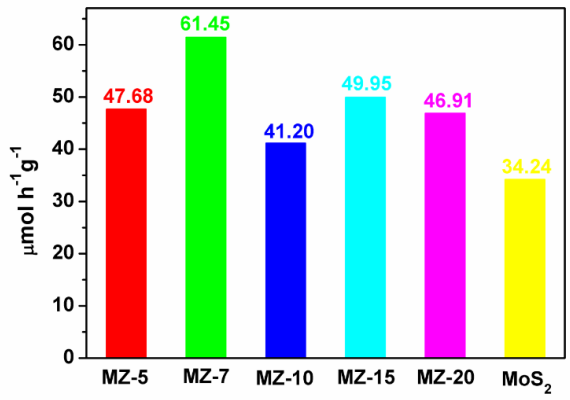

Fig. S6. Hydrogen evolution in the presence of different samples

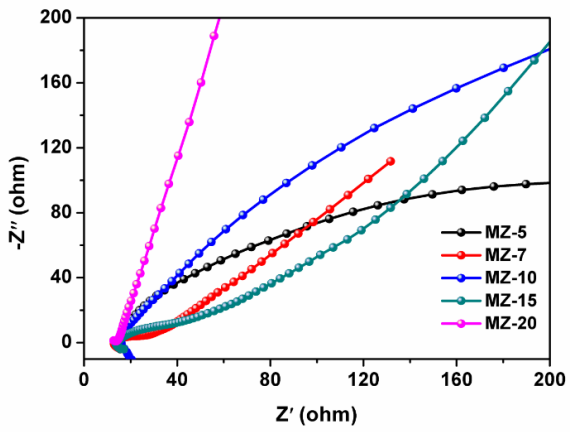

Fig. S7. Nyquist impedance plots of MZ nanomaterials