Supporting Information

Controllable synthesis of 3D ZnS@MoO_3 heterojunction *via* hydrothermal method toward efficient NO purification under visible light

Ziyang Guo[a], Wangchen Huo[a], Tong Cao[a], Fangzheng Fan[b], Guangxu Ge[a], Xiaoying Liu[c], Ke Chen[a], Hong-Chang Yao[d], Fan Dong[e], Yuxin Zhang[a]*

[a] State Key Laboratory of Mechanical Transmissions, College of Materials Science and Engineering, Chongqing University, Chongqing 400044, P.R. China

[b] State Key Laboratory for Geomechanics & Deep Underground Engineering, China University of Mining & Technology, Beijing 100083, P.R. China

[c] Engineering Research Center for Waste Oil Recovery Technology and Equipment, Ministry of Education, College of Environment and Resources, Chongqing Technology and Business University, Chongqing 400067, P.R. China

[d] College of Chemistry and Molecular Engineering, Zhengzhou University, Zhengzhou 450001, P.R. China

[e] Research Center for Environmental Science & Technology, Institute of Fundamental and Frontier Sciences, University of Electronic Science and Technology of China, Chengdu 611731, China

*E-mail: zhangyuxin@cqu.edu.cn (Prof. Dr. Y.X. Zhang)

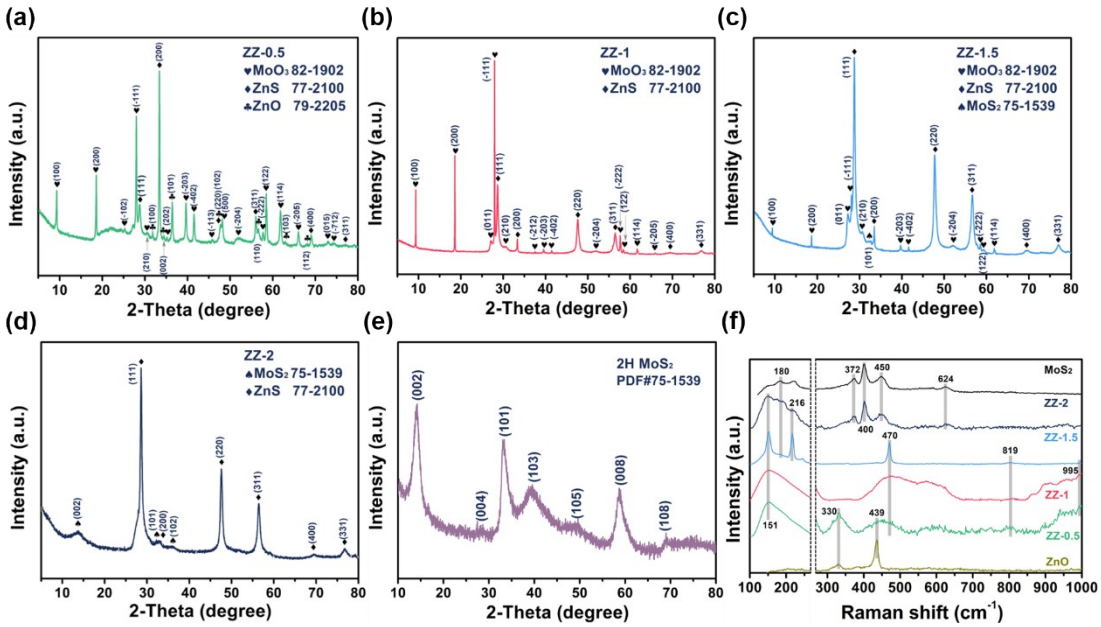

Fig. S1. XRD patterns and Raman spectra of as-prepared samples

The Raman spectra for as-prepared samples excited at room temperature by 633 nm were recorded, and the results are shown in Fig. S1 (The intensity of these two pictures of the Raman spectrum is inconsistent). The Raman peaks are observed at 151, 216 cm^{-1} are assigned to ZnS[1, 2], and the peaks at 330, 439 cm^{-1} are indexed to ZnO[1, 2]. Furthermore, the peaks are positioned at 470, 819, 995 cm^{-1} in ZZ-0.5, ZZ-1 and ZZ-1.5, which match well with the Raman spectrum reported for MoO_3[3-5]. And the peak at 180 cm^{-1} are observed in ZZ-1.5, ZZ-2 and MoS_2. Additionally, others peaks at 372, 400, 450, 624 cm^{-1} are the Raman modes of MoS_2[5]. It is worthy to note that the peaks of ZnO are not observed in ZZ-1 and the weak peak of MoS_2 appeared in ZZ-1.5, which are agreement well with the results of XRD.

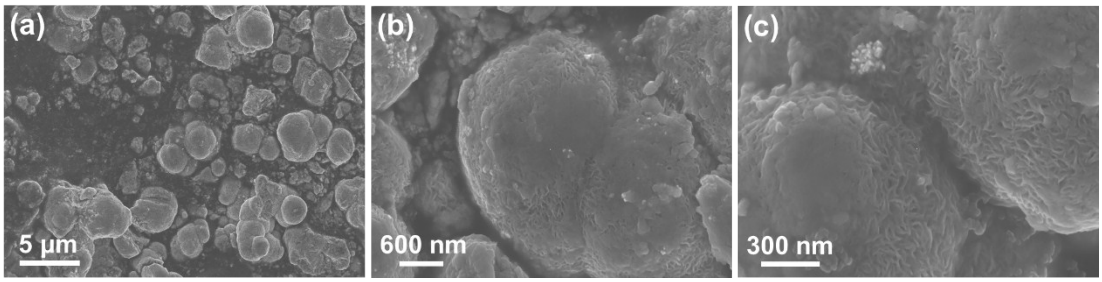

Fig. S2. SEM images of MoS_2 (a-c)

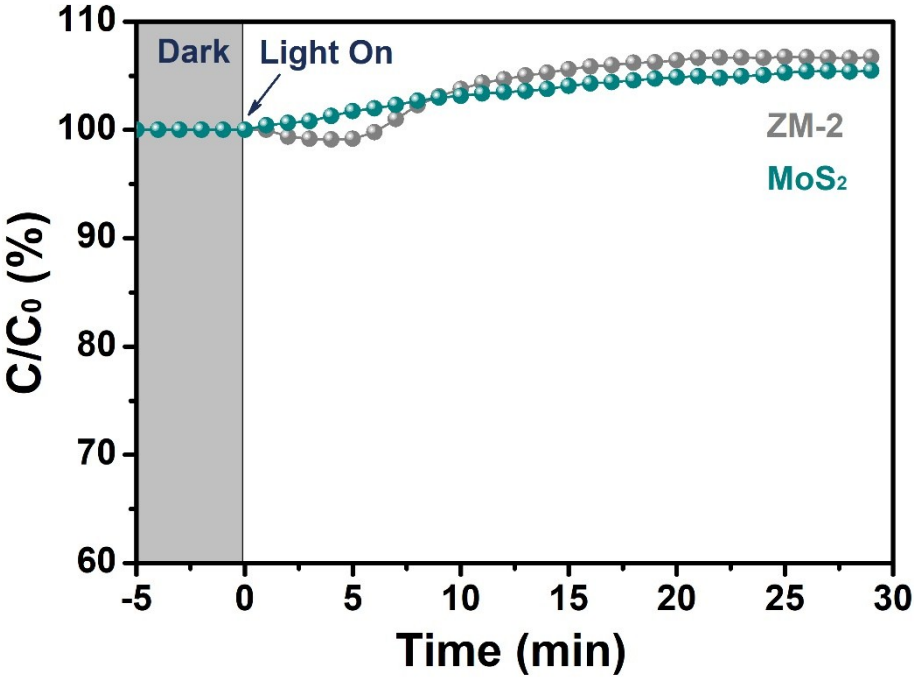

Fig. S3. Photocatalytic activities of the samples for NO purification in dark.

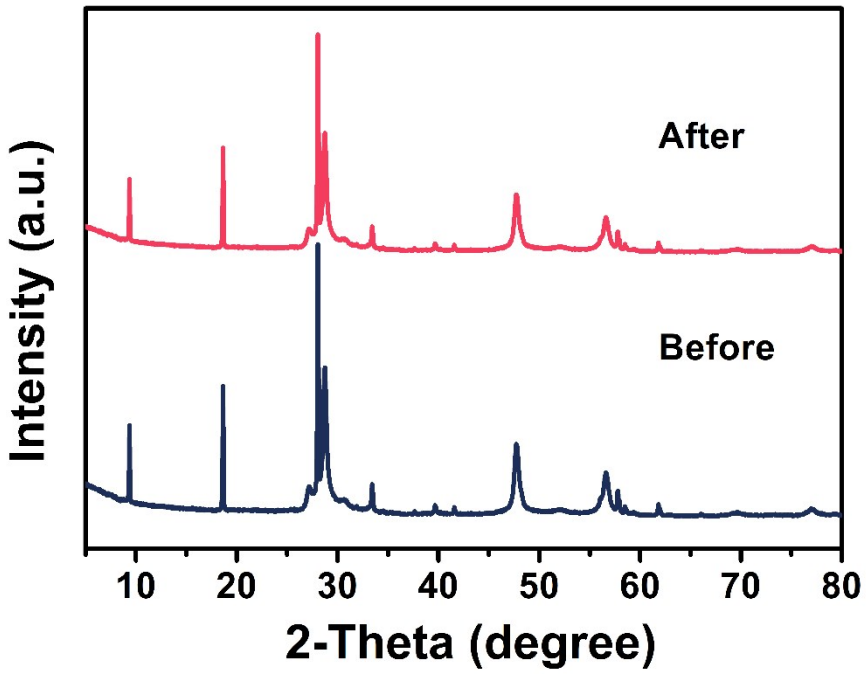

Fig. S4. XRD patterns of ZM-1 before and after cycle tests.

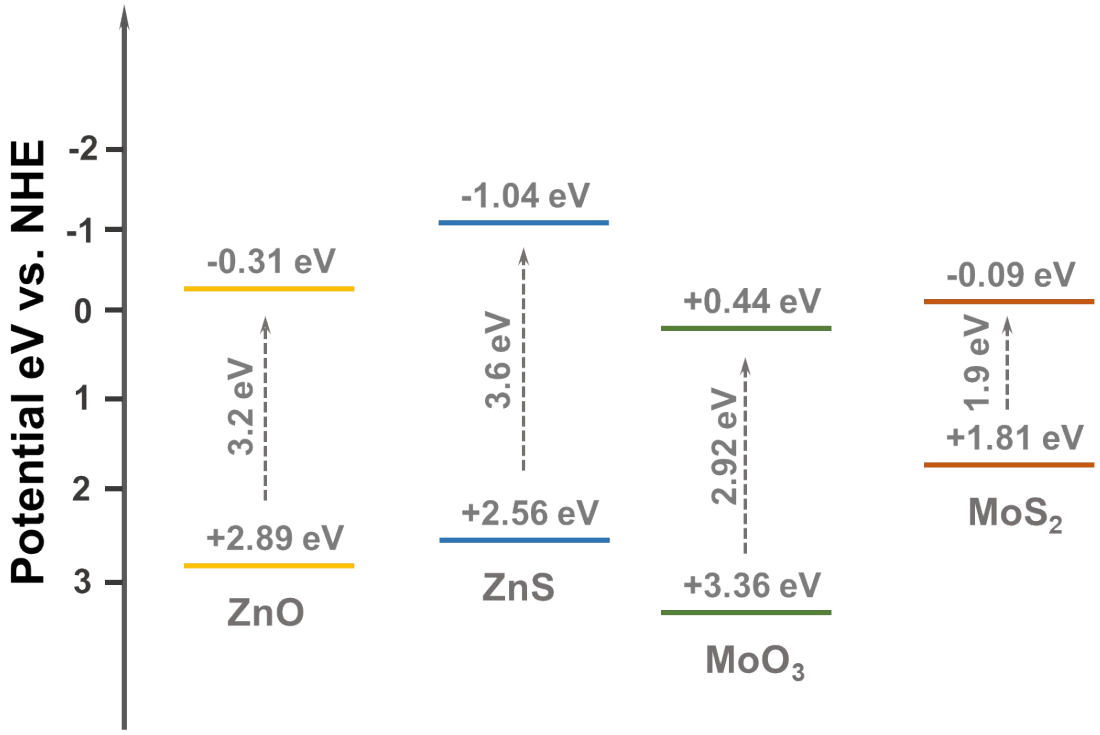

Fig. S5. The position of VB and CB of ZnO[6], ZnS[7], MoO_3[8], MoS_2[9]

Table S1 Assignments of the FT-IR bands observed during adsorption and photocatalytic NO oxidation processes over ZM-1.

Wavenumber (cm^{-1})	Band assignment	References
940, 945,	NO_2	46
1034, 1410	NO	45
976, 1084, 1178, 1173	NO_2^-	46, 50
990, 1210, 1121, 1443, 1501	NO_3^-	45, 47-49
1007	$N_2O_2^{2-}$	51
1297	N_2O_3	52

Reference:

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