

## Supporting Information

# Surface Charge Transfer Doping of MoS<sub>2</sub> Monolayer by Molecules with Aggregation-Induced Emission Effect

Ruihao Sun, Shiyu Sun, Xiu Liang, Hongyu Gong, Xingshuang Zhang, Yong Li, Meng Gao, Dongwei Li and Guanchen Xu \*

Key Laboratory for High Strength Lightweight Metallic Materials of Shandong Province (HM), Advanced Materials Institute, Qilu University of Technology (Shandong Academy of Sciences), Jinan 250014, China; srh1645@163.com (R.S.); sysun0313@163.com (S.S.); xliang@sdas.org (X.L.); hygong@sdas.org (H.G.); xszhang@qlu.edu.cn (X.Z.); yongli@sdas.org (Y.L.); mgao@sdas.org (M.G.); dwli@sdas.org (D.L.)

\* Correspondence: gcxu@sdas.org

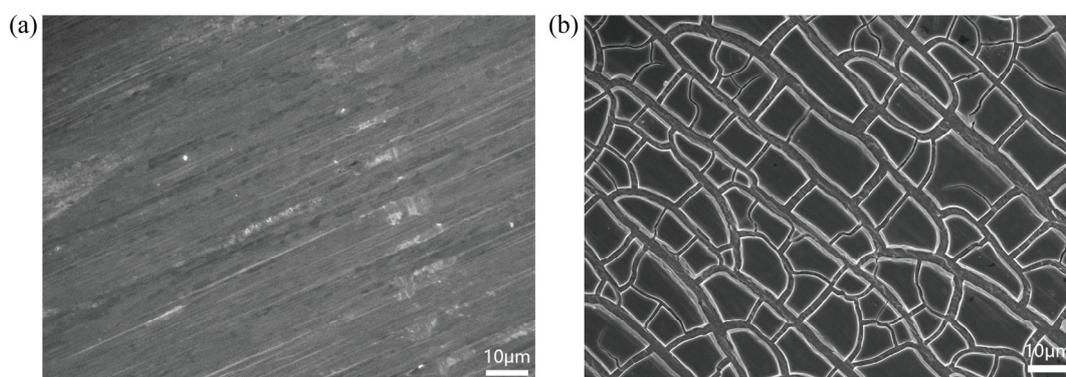
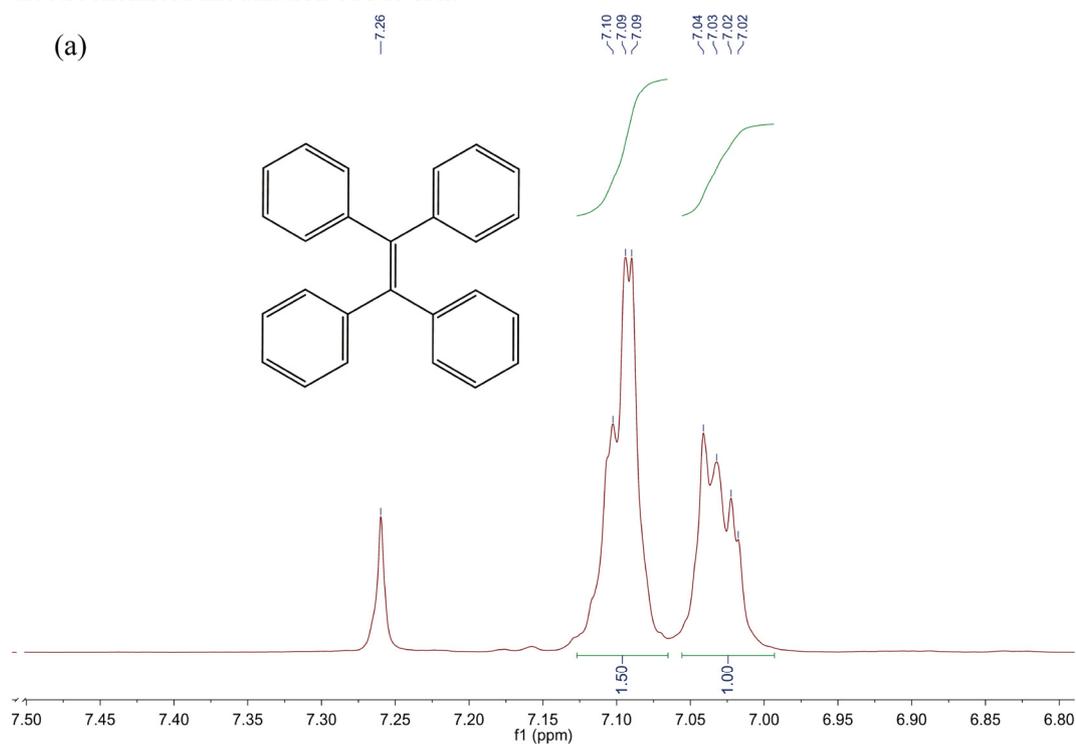


Figure S1 SEM images of (a) Pure Mo foil (b) The growth precursor of MoO<sub>x</sub> was prepared by electrochemical anodization of Mo foil.



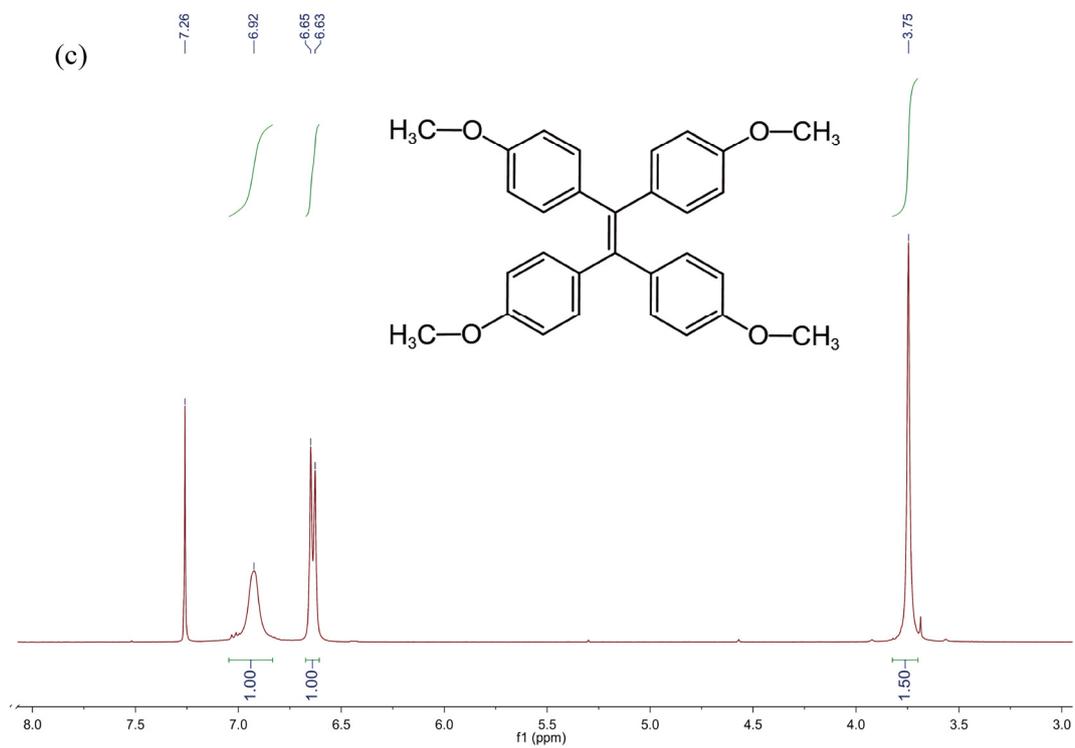
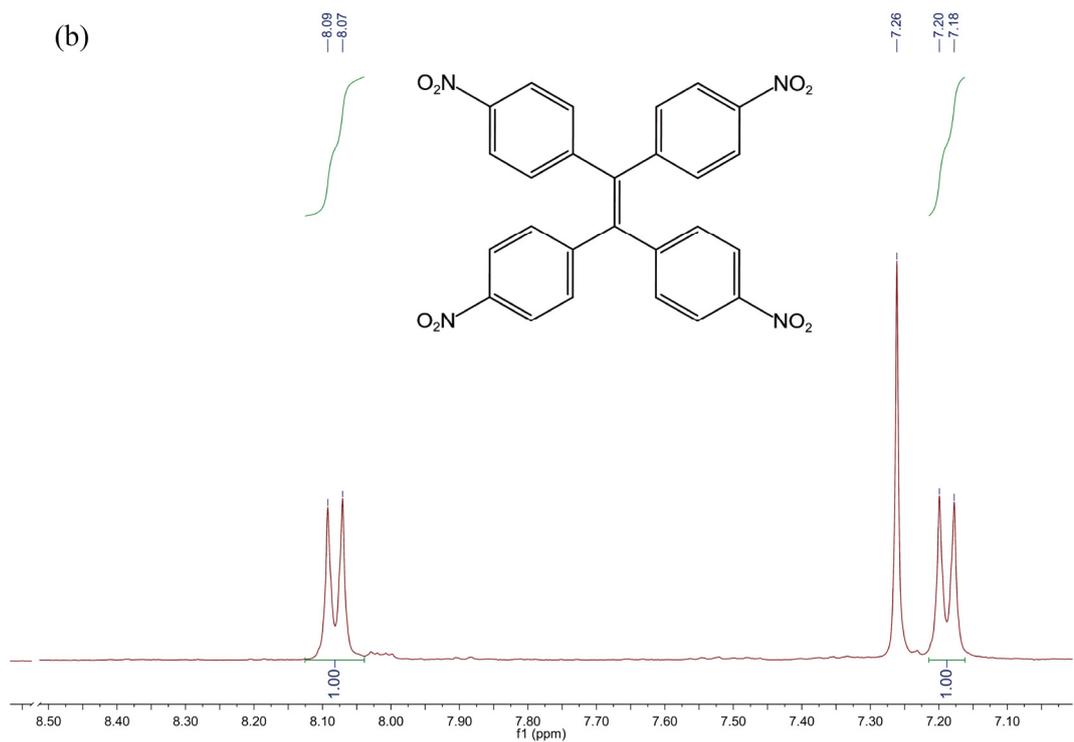


Figure S2.  $^1\text{H}$  NMR spectrum of (a) TPE, (b) TPE-4NO<sub>2</sub>, (c) TPE-4OCH<sub>3</sub> in CDCl<sub>3</sub>.

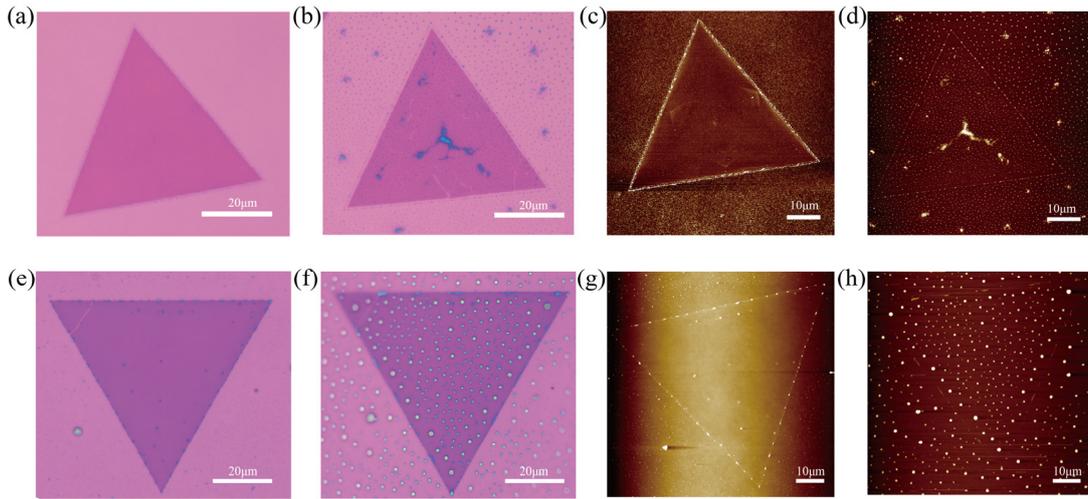


Figure S3. (a–d). Images of OM and AFM before and after TPE-4NO<sub>2</sub> doping. (e–h). Images of OM and AFM before and after TPE-4OCH<sub>3</sub> doping.

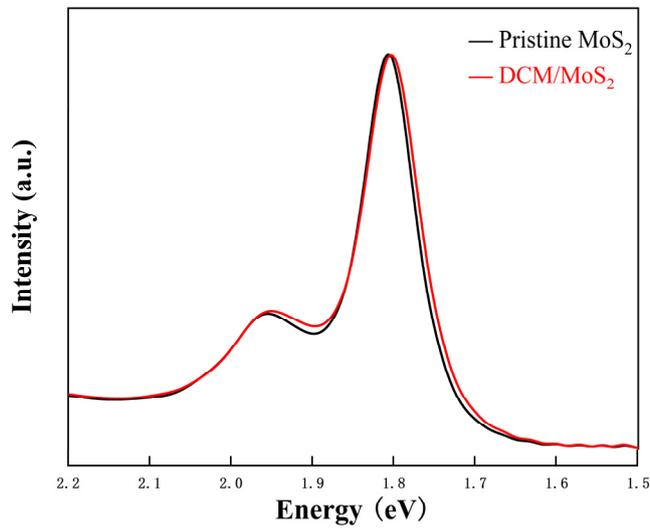


Figure S4. PL spectra of monolayer MoS<sub>2</sub> before and after soak in DCM for 12 hours.

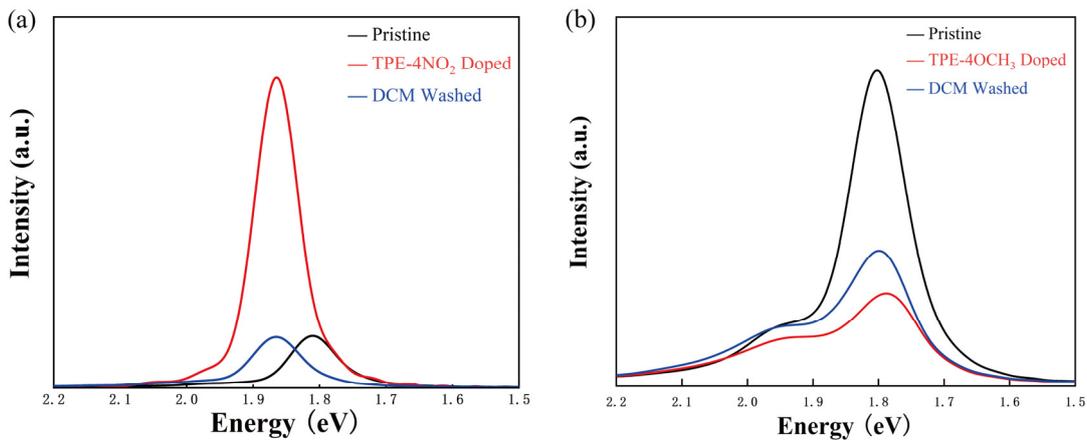


Figure S5. PL spectra of TPE-4NO<sub>2</sub> (a) and TPE-4OCH<sub>3</sub> (b) doped of immersion in dichloromethane (DCM) 12 hours.

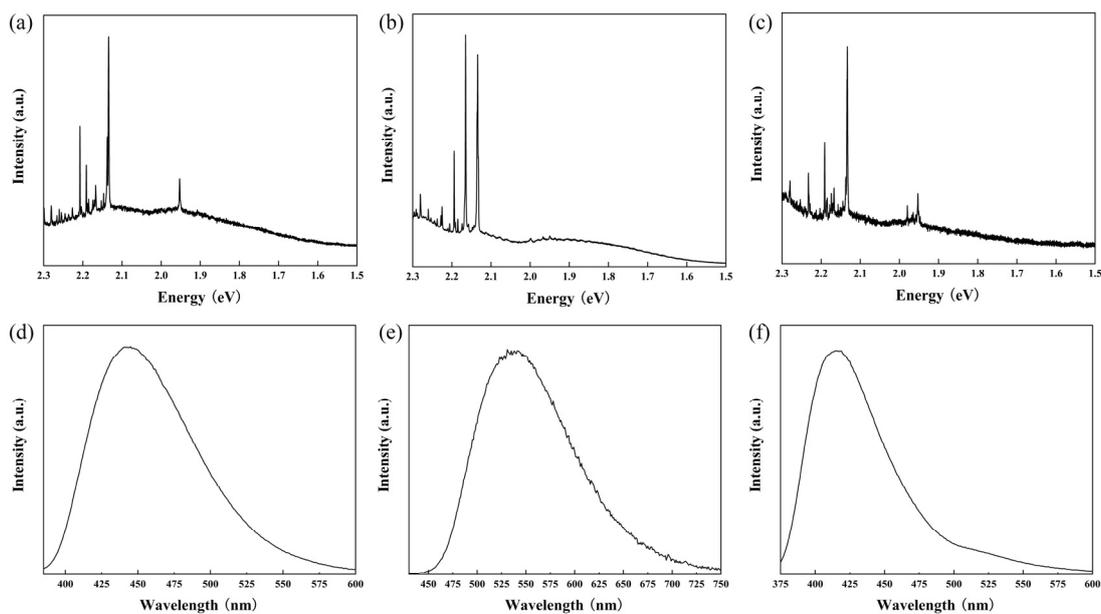


Figure S6. (a–c) PL spectra of TPE, TPE-4NO<sub>2</sub> and TPE-4OCH<sub>3</sub> molecular. (d–f) Fluorescence spectra TPE, TPE-4NO<sub>2</sub> and TPE-4OCH<sub>3</sub> molecular, excitation wavelength is at 365nm.

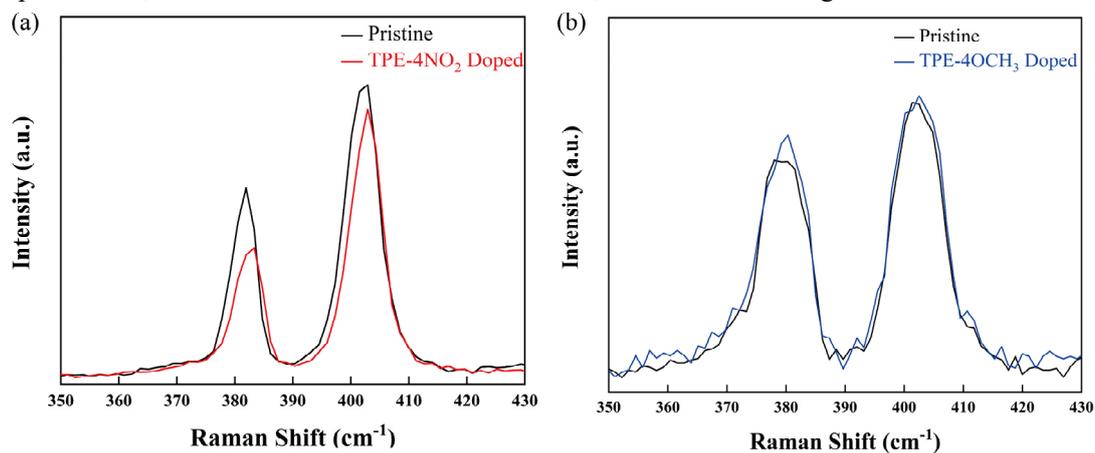


Figure S7. Raman spectra of TPE-4NO<sub>2</sub> (a) and TPE-4OCH<sub>3</sub> (b) doped.

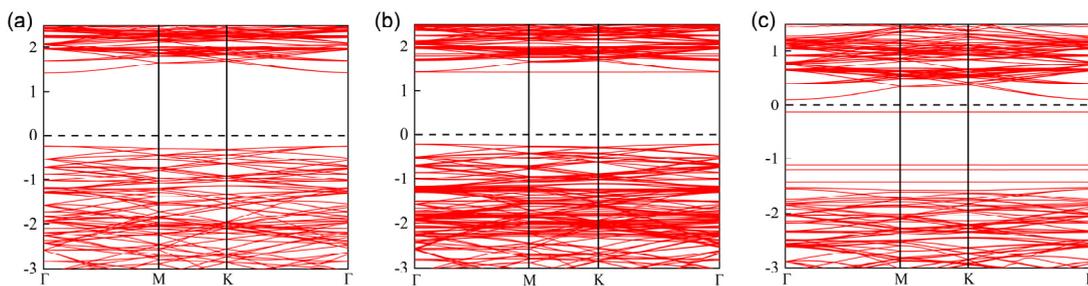


Figure S8. The electronic band structure of (a) the monolayer MoS<sub>2</sub>, (b) MoS<sub>2</sub>/TPE-4NO<sub>2</sub>, (c) MoS<sub>2</sub>/TPE-4OCH<sub>3</sub>.