# Enhanced photo-Fenton removal of oxytetracycline hydrochloride via BP/$Bi_2MoO_6$ Z-scheme heterojunction photocatalyst

**Jian Feng[1], Xiaohui Li[1], Xia Ran, Li Wang, Bo Xiao, Rong Li* and Guangwei Feng***

*School of Basic Medical Sciences/School of Medical Humanities, Guizhou Medical University, Guiyang 550025, China*

* Correspondence: lirong1@gmc.edu.cn (R.L.); fengguangwei@gmc.edu.cn (G.F.)

[1] These authors contributed equally to this work.

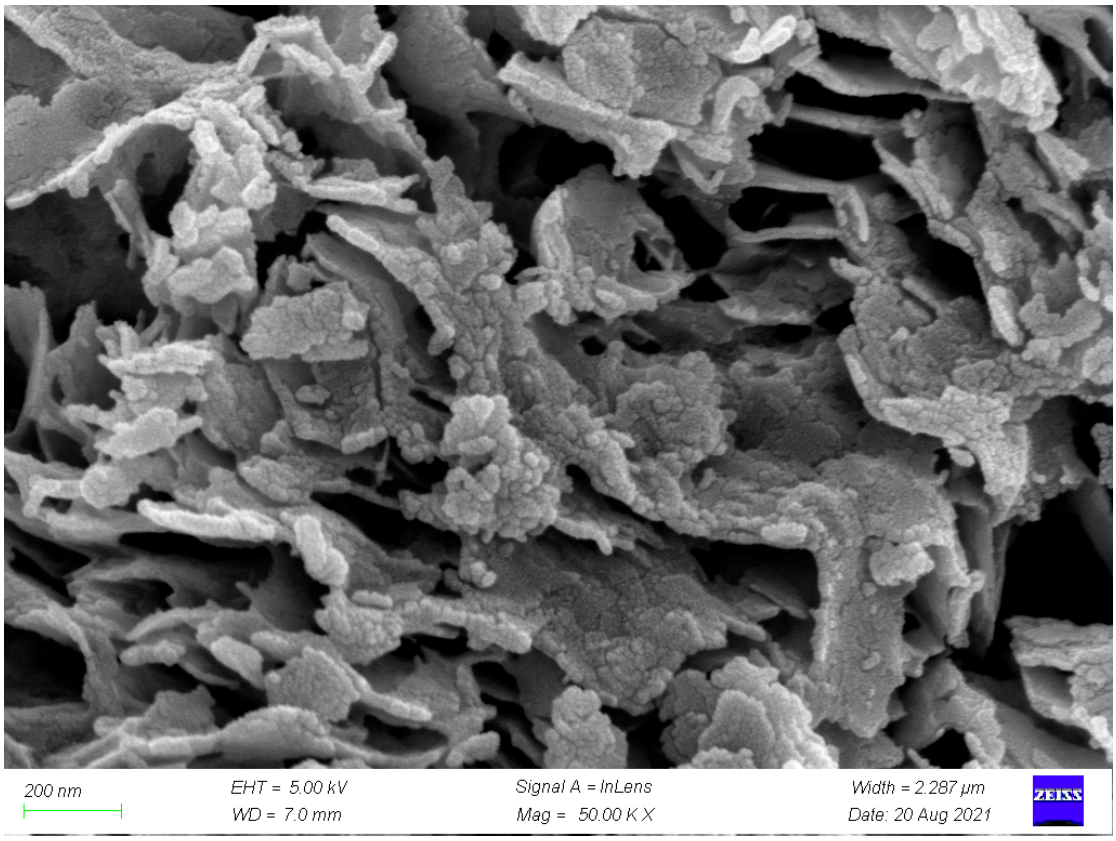



**Fig. S1** SEM image of PBMO-75 heterojunction

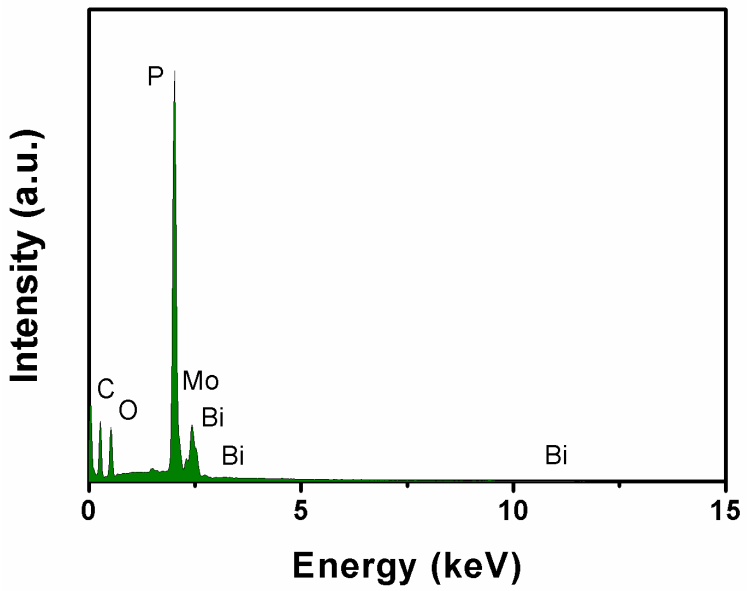



**Fig. S2** EDS spectrum of PBMO-75 heterojunction

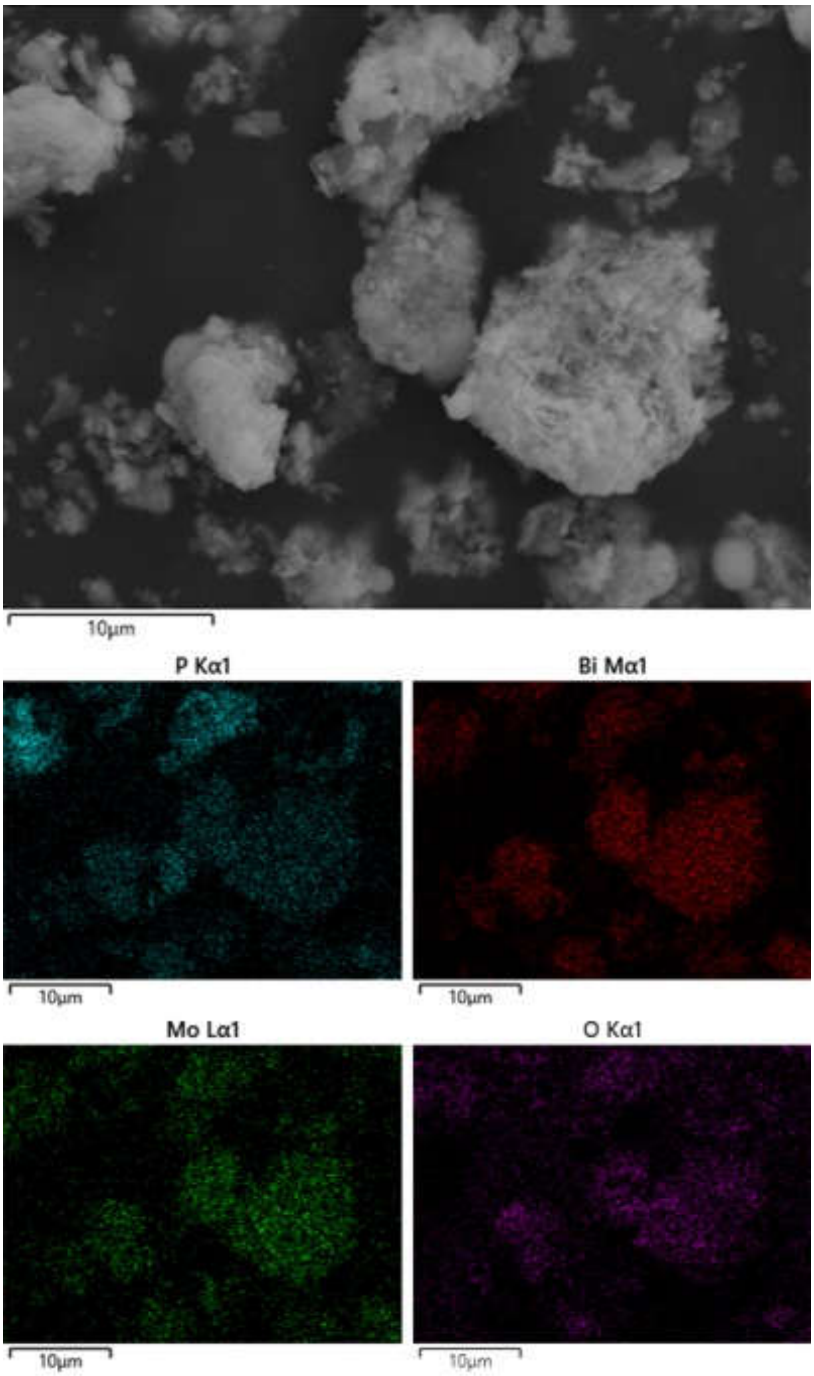



**Fig. S3** SEM image and element mapping images of P, Bi, Mo and O of PBMO-75 heterojunction (scale bar=10 μm)

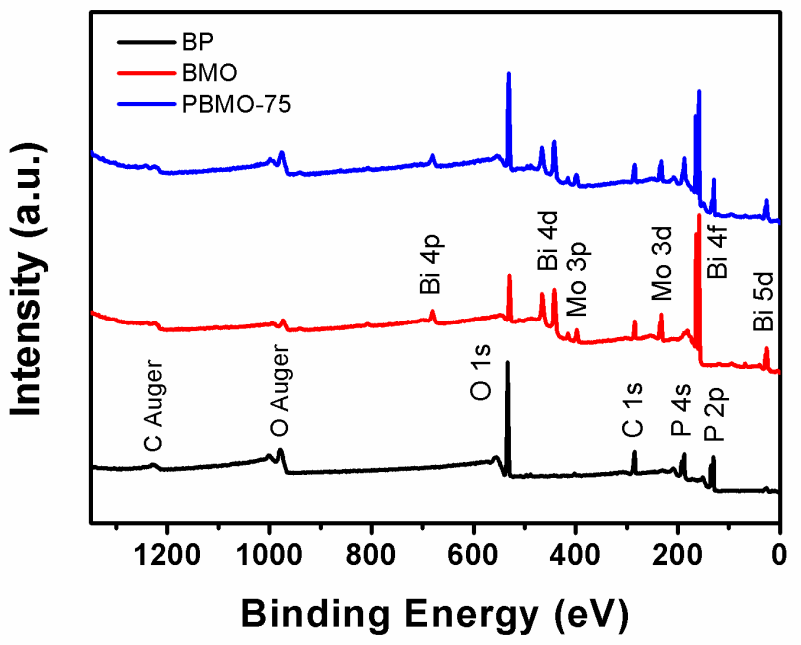



**Fig. S4** XPS survey spectra of BP, BMO, and PBMO-75 heterojunction

**Table S1**. Comparison of photo-Fenton degradation efficiency of OTC on PBMO-75 with various catalysts

| Catalysts | Reaction Conditions | Degradation % | Reference |
|---|---|---|---|
| $BP/Bi_2MoO_6$ | 20 mg/L, 40 min, 40 W white LED | 92.9 | this work |
| $MnFe_2O_4/g\text{-}C_3N_4$ | 30 mg/L, 10 min, 300 W Xe lamp | 80.5 | [64] |
| re-Mn-$CeO_2$ | 30 μM, 10 min, 500 W Xe lamp | 88.1 | [65] |
| $Fe_3O_4$-Cs | 48 mg/L, 120 min, Unknown | over 90 | [66] |
| $\gamma\text{-}Fe_2O_3/g\text{-}C_3N_4$ | 20 mg/L, 60 min, 300 W Xe lamp | 85.7 | [67] |
| Mixed-valent Fe-MOF | 20 mg/L, 30 min, 300 W LED | 92.6 | [68] |

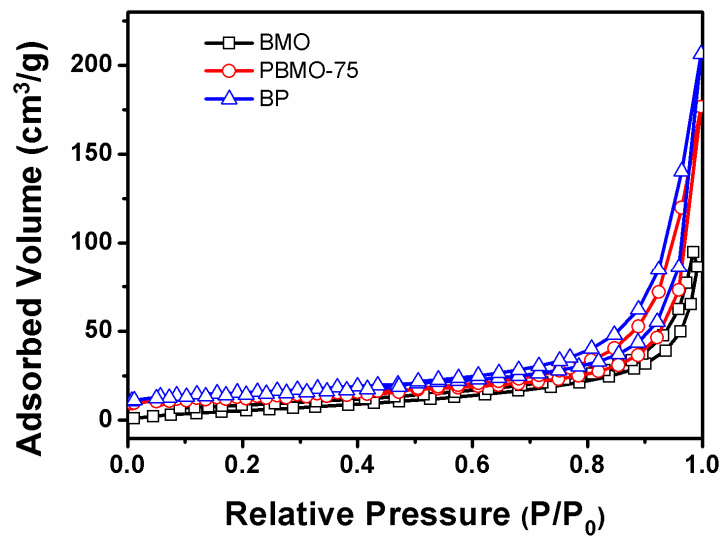



**Fig. S5** $N_2$ adsorption desorption isotherms of BP, BMO, and PBMO-75

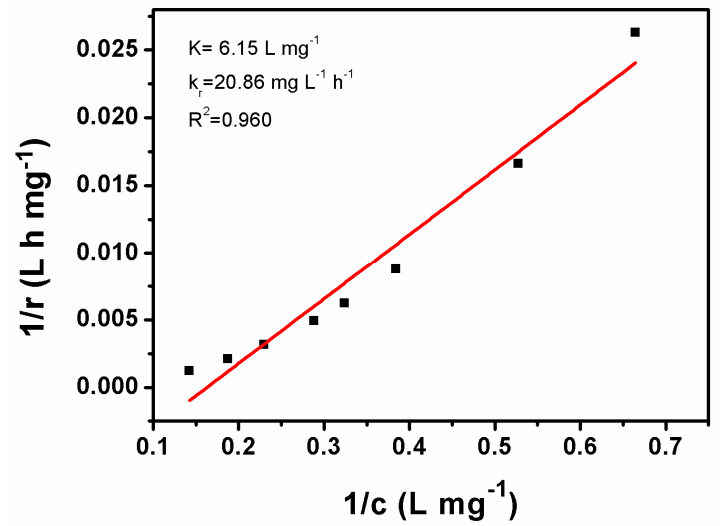



**Fig. S6** The degradation kinetics of OTC over PBMO-75 fitted by Langmuir–Hinshelwood model

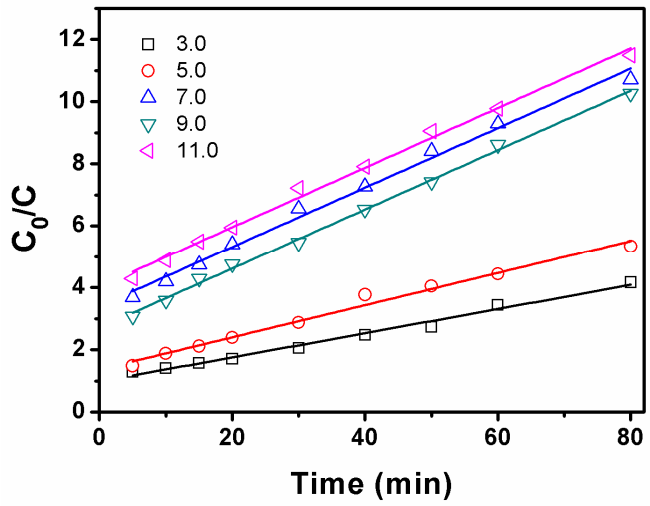



**Fig. S7** Degradation rate constants of OTC on PBMO-75 heterojunction at different pH

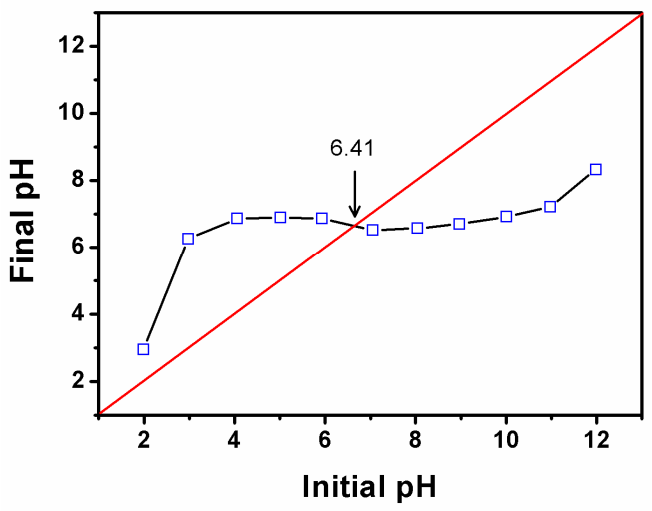



**Fig. S8** The point of zero charge (pHpzc) of PBMO-75: Bisector method

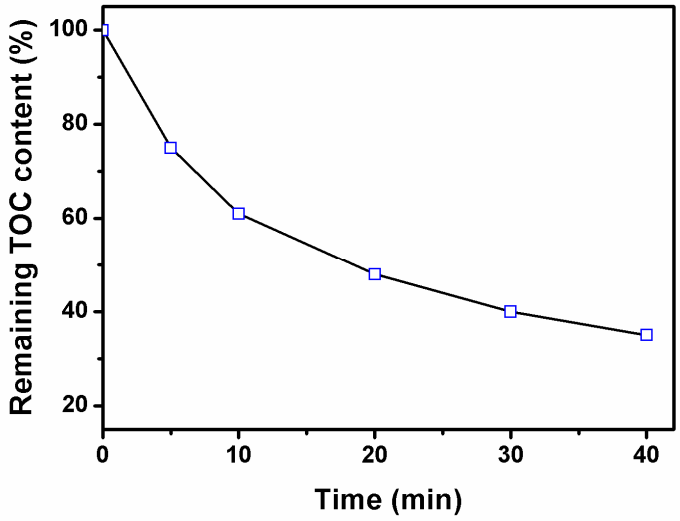



**Fig. S9** TOC analyses of OTC photo-Fenton degradation over the PBMO-75 heterojunction

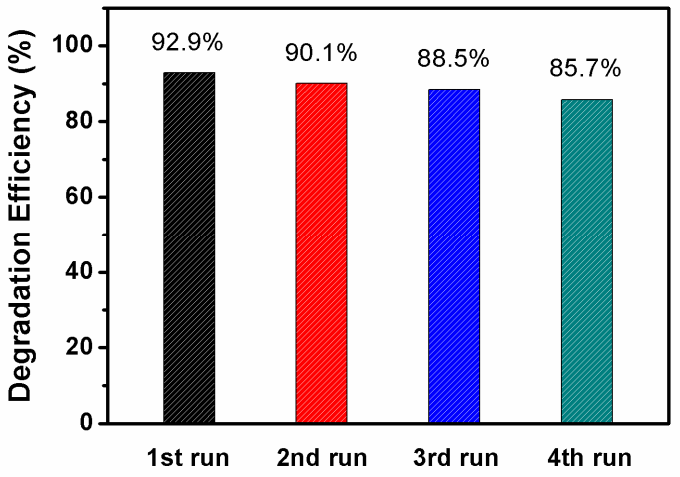



**Fig. S10** Performance of PBMO-75 heterojunction in photo-Fenton degradation over four cycles

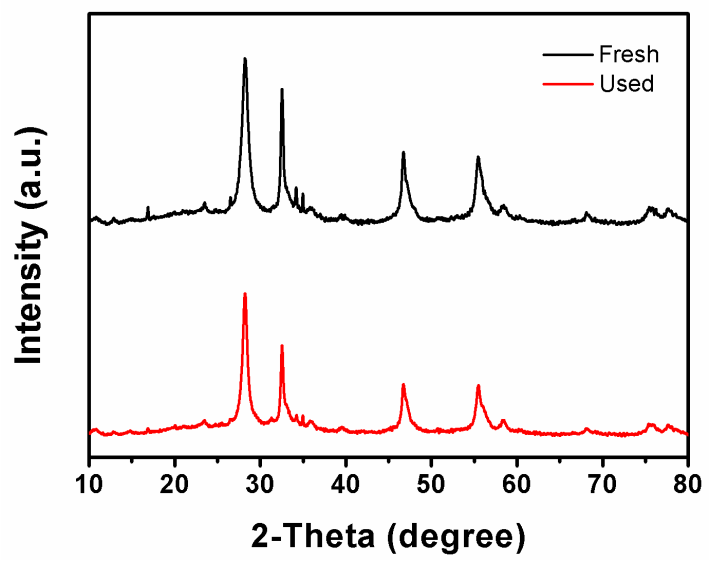



**Fig. S11** XRD patterns of fresh and used PBMO-75

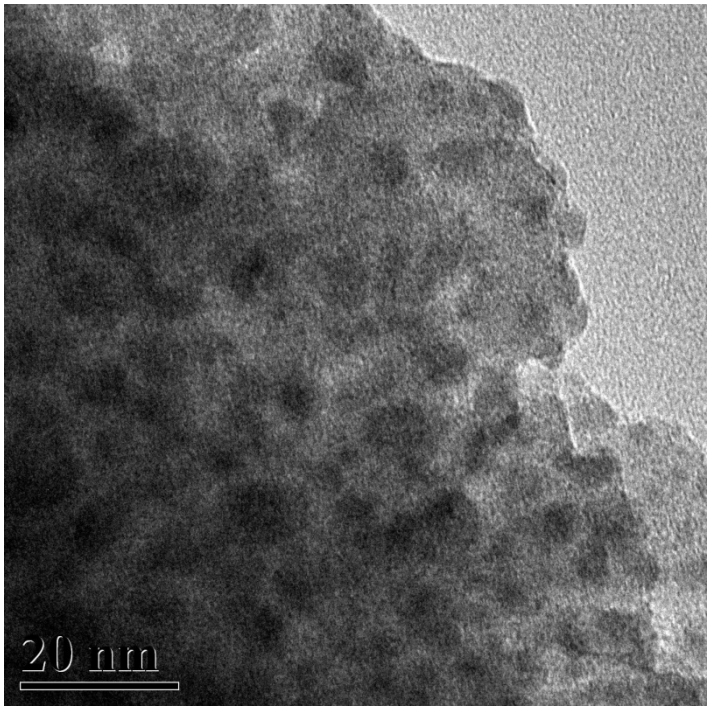



**Fig. S12** TEM image of used PBMO-75

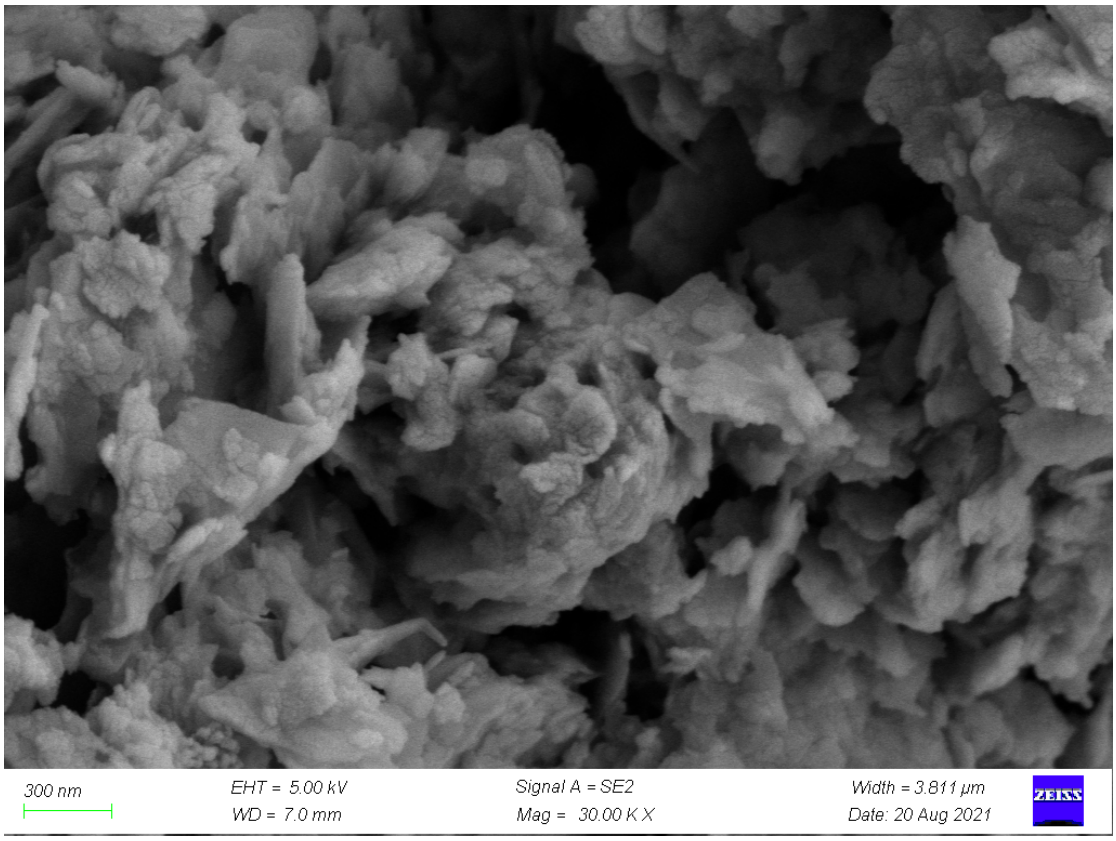



**Fig. S13** SEM image of used PBMO-75

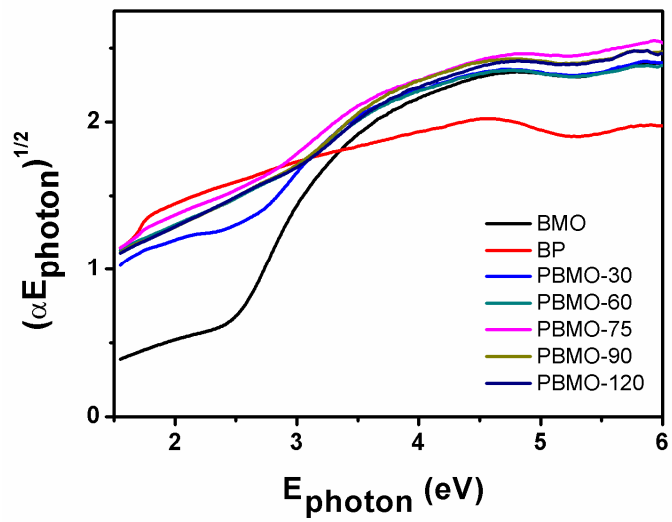



**Fig. S14** $(\alpha E_{photon})^{1/2}$ versus $E_{photon}$ curves of the BMO, BP and PBMO heterojunctions