Electronic Supplementary Material (ESI) for Catalysis Science & Technology.

Supporting Information

Positive effect of Fe^{3+} ions on Bi_2WO_6, Bi_2MoO_6 and $BiVO_4$ photocatalysis for phenol oxidation under visible light

Xubo Huang, Jianjun Zhao, Xianqiang Xiong, Shengwei Liu, and YiMing Xu *

State Key Laboratory of Silicon Materials and Department of Chemistry, Zhejiang University, Hangzhou 310027, P.R. China

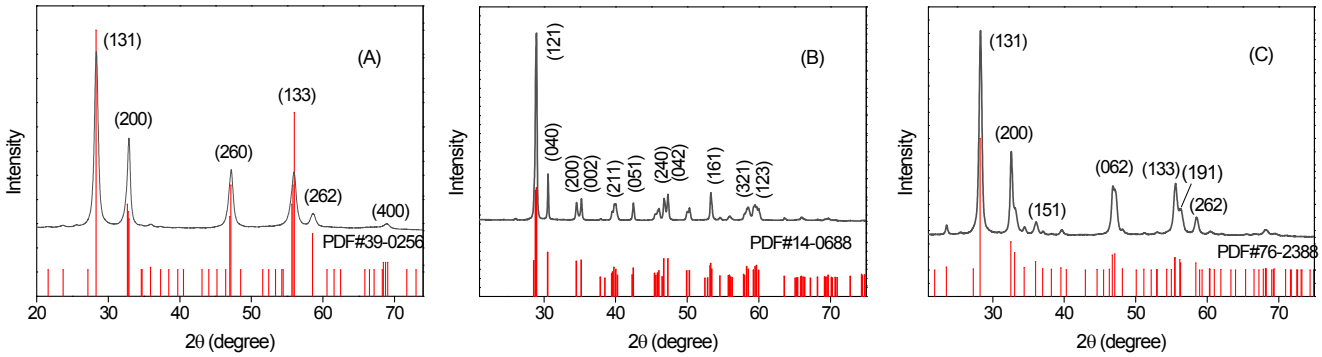

Fig. S1 XRD patterns (black lines) and standard patterns (red bars) of (A) BiW, (B) BiMo, and (C) BiV.

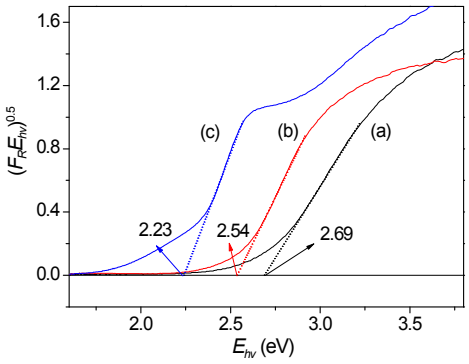

Fig. S2 Tauc plots for (a) BiW, (b) BiMo, and (c) BiV, where F_R is Kubelka-Munk absorbance, and E_{hv} is light energy.

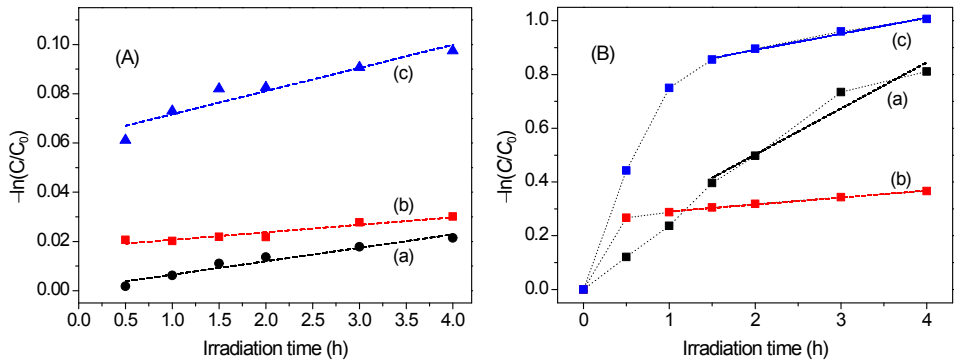

Fig. S3 Plot of $\ln(C/C_0)$ *vs*. *t* for phenol degradation on (a) BiW, (b) BiMo, and (c) BiV, (A) without, and (B) with Fe^{3+}.

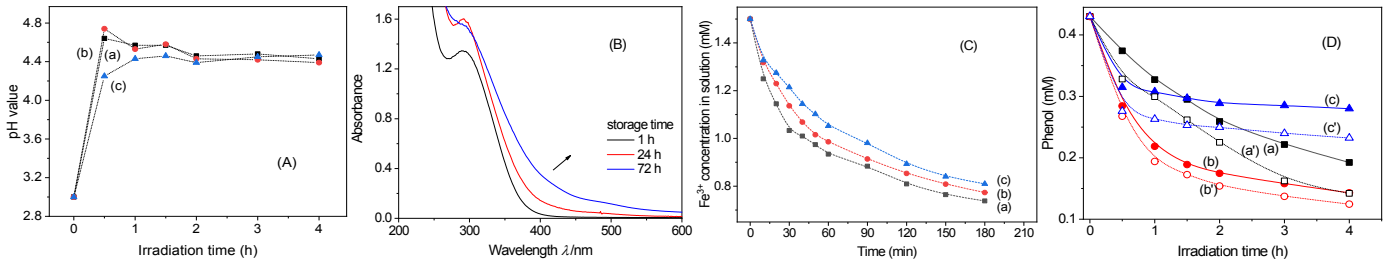

Fig. S4 (A) pH change of the suspensions with irradiation time, during phenol degradation in presence of 1.5 mM Fe^{3+}. (B) Absorption spectra of 0.6 mM Fe^{3+} solution, where $[Fe(H_20)_6]^{3+}$ is assigned at 246 nm and $[Fe(H_2O)_5(OH)]^{2+}$ at 296 nm. (B) Time profiles of Fe^{3+} adsorption on solid in dark. (C) Time profiles of phenol degradation, obtained from the equilibrated suspensions of 0.5 h (solid symbols and lines) and 20 h (open symbols and dotted lines). All experiments were performed in aqueous solution at initial pH 3.0, with (a, a') BiW, (b, b') BiMo, and (c, c') BiV.

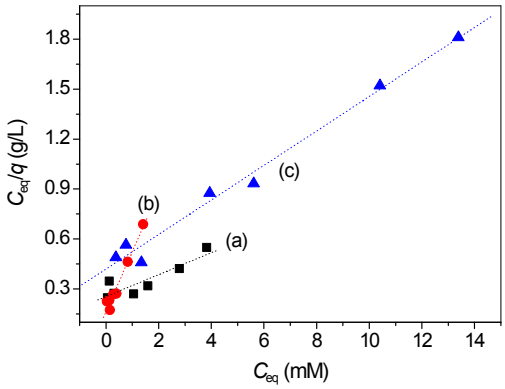

Fig. S5 Plots of C_{eq}/q vs. C_{eq} for Fe^{3+} adsorption on (a) BiW, (b) BiMo, and (c) BiV (see details in Fig. 4A).

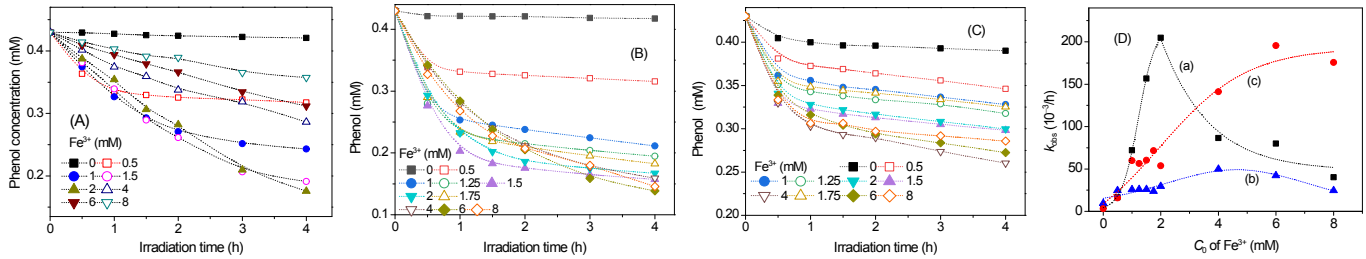

Fig. S6 Time profiles for phenol degradation on (A) BiW, (B) BiMo, and (C) BiV, in presence of Fe^{3+} at different concentration (C_0). (D) Rate constants of phenol degradation (k_{obs}) obtained from slow process of (a) BiW, (b) BiMo, and (c) BiV .

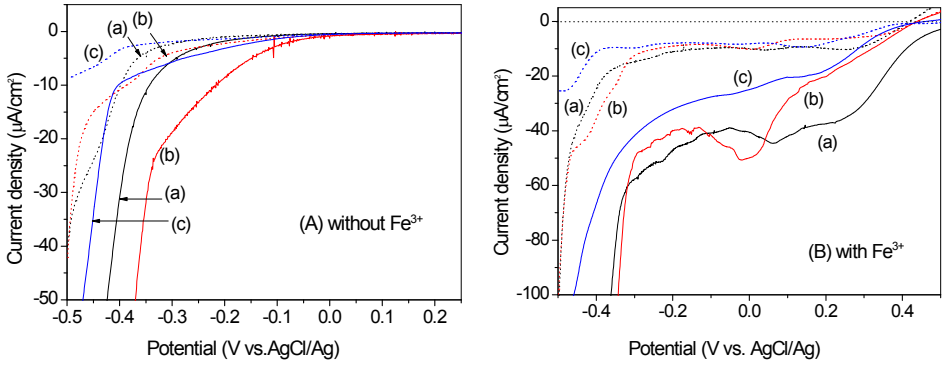

Fig. S7 Current-voltage curves of (a) BiW, (b) BiMo, and (c) BiV in 0.5 M $NaClO_4$ at pH 3.0, under N_2 (dotted lines) or air (solid lines), (A) without Fe^{3+}, and (B) with 1.5 mM Fe^{3+}.