Supplementary material

Tuning micromorphology and exposed facets of MnO_x promotes methyl ethyl ketone low-temperature abatement: Boosting oxygen activation and electron transmission

Yanfei Jian[1], Changwei Chen[1], Mudi Ma[1], Chao Liu[2], Yanke Yu[1], Jie Cheng[3], Chi He[1,*], Zhengping Hao[3]

[1]*Department of Environmental Science and Engineering, State Key Laboratory of Multiphase Flow in Power Engineering, School of Energy and Power Engineering, Xi'an Jiaotong University, Xi'an 710049, Shaanxi, P.R. China*

[2]*Department of Environmental Engineering and Earth Sciences, Clemson University, Anderson, South Carolina 29625, United States*

[3]*National Engineering Laboratory for VOCs Pollution Control Material & Technology, University of Chinese Academy of Sciences, Beijing 101408, P.R. China*

[*]To whom correspondence should be addressed:

Tel./Fax: +86 29 8266 3857; E-mail: chi_he@xjtu.edu.cn (C. He)

Contents

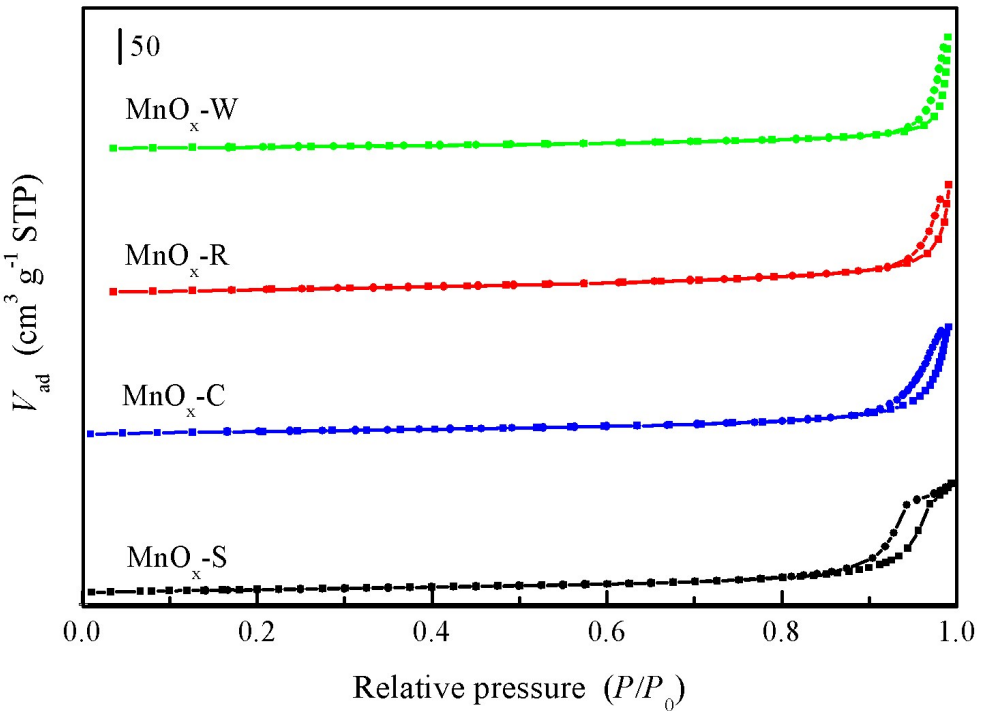

Figure S1 N_2 adsorption/desorption isotherms of various catalysts.

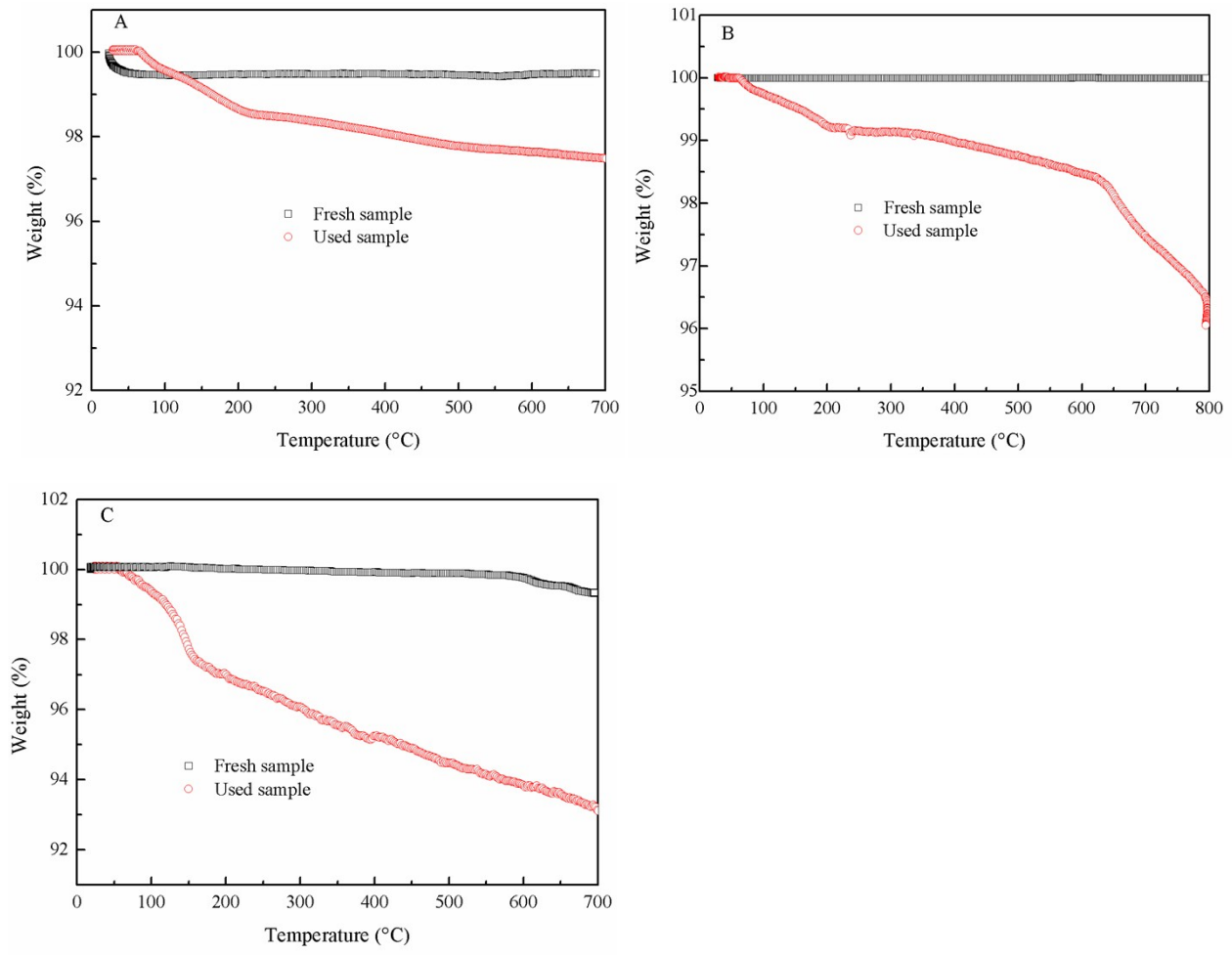

Figure S2 TGA profiles of the fresh and used MnO_x-S (A), MnO_x-C (B), and MnO_x-R (C) samples.

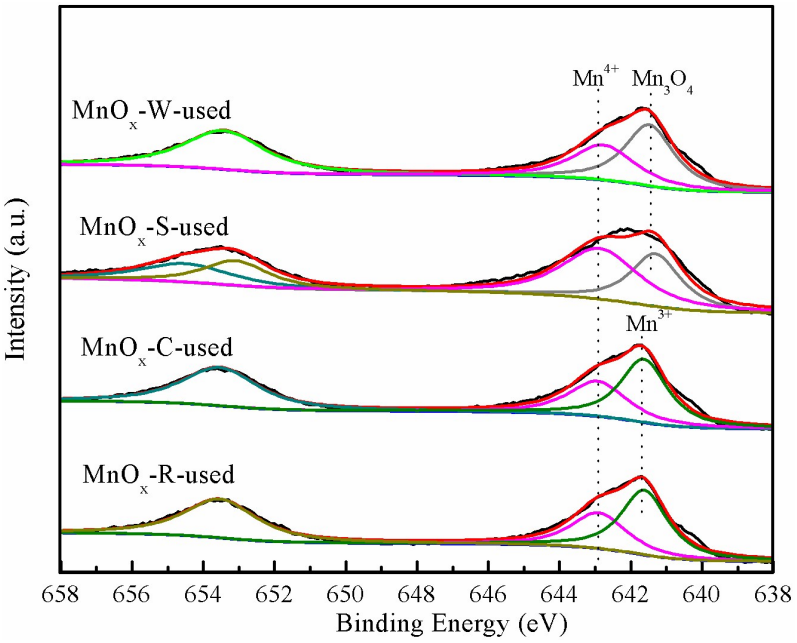

Figure S3 Mn 2p XPS spectra of the used catalysts.

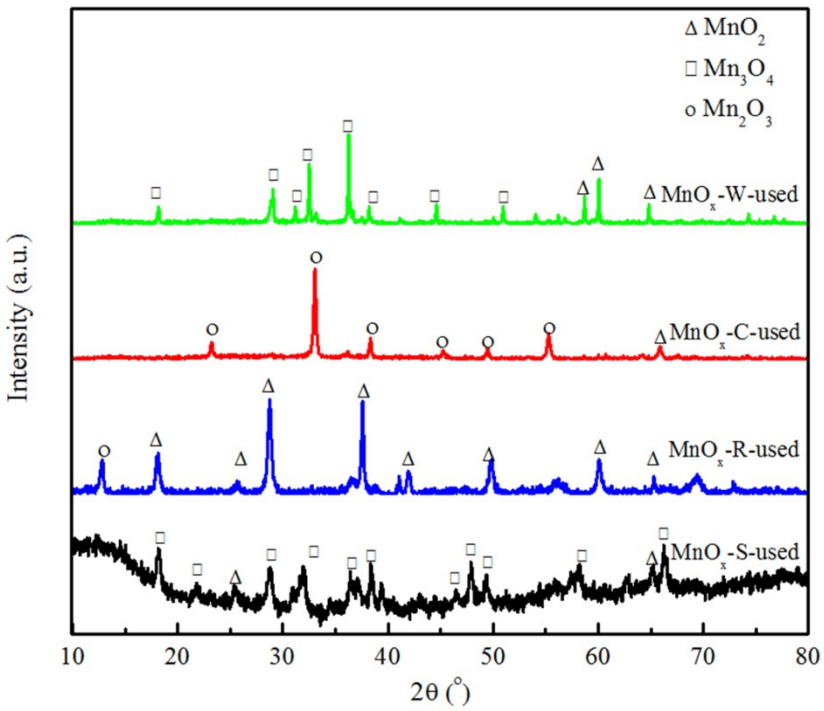

Figure S4 XRD patterns of the used samples.

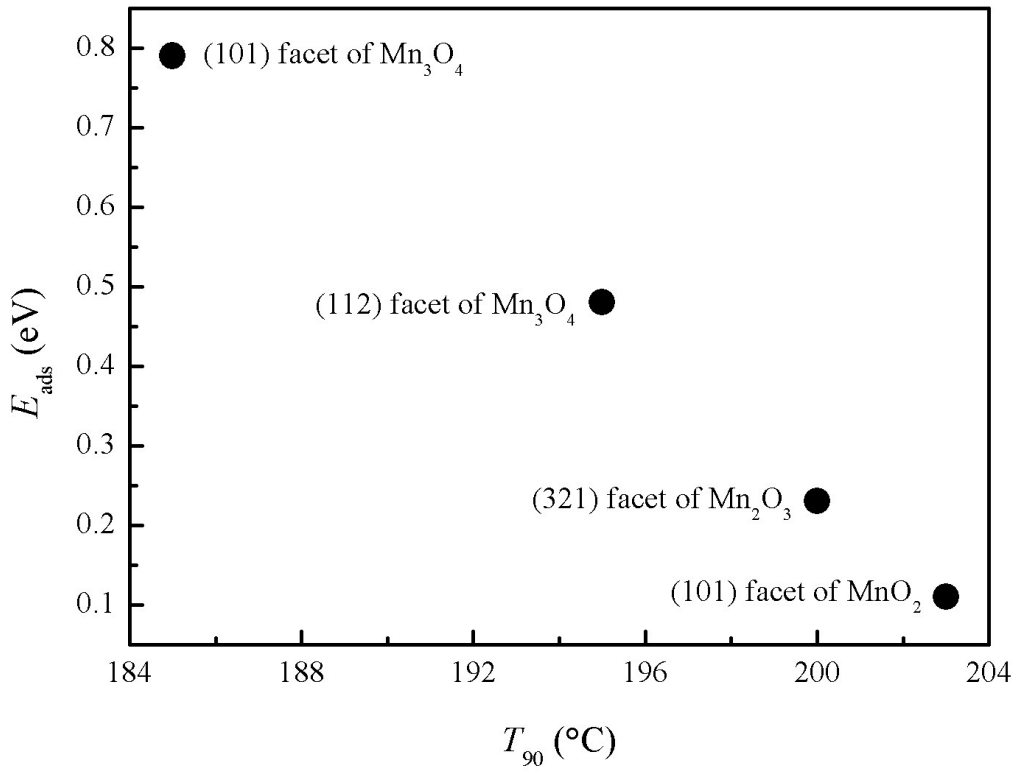

Figure S5 Relationship between the calculated adsorption energy (E_{ads}) and T_{90} temperature for MEK oxidation.

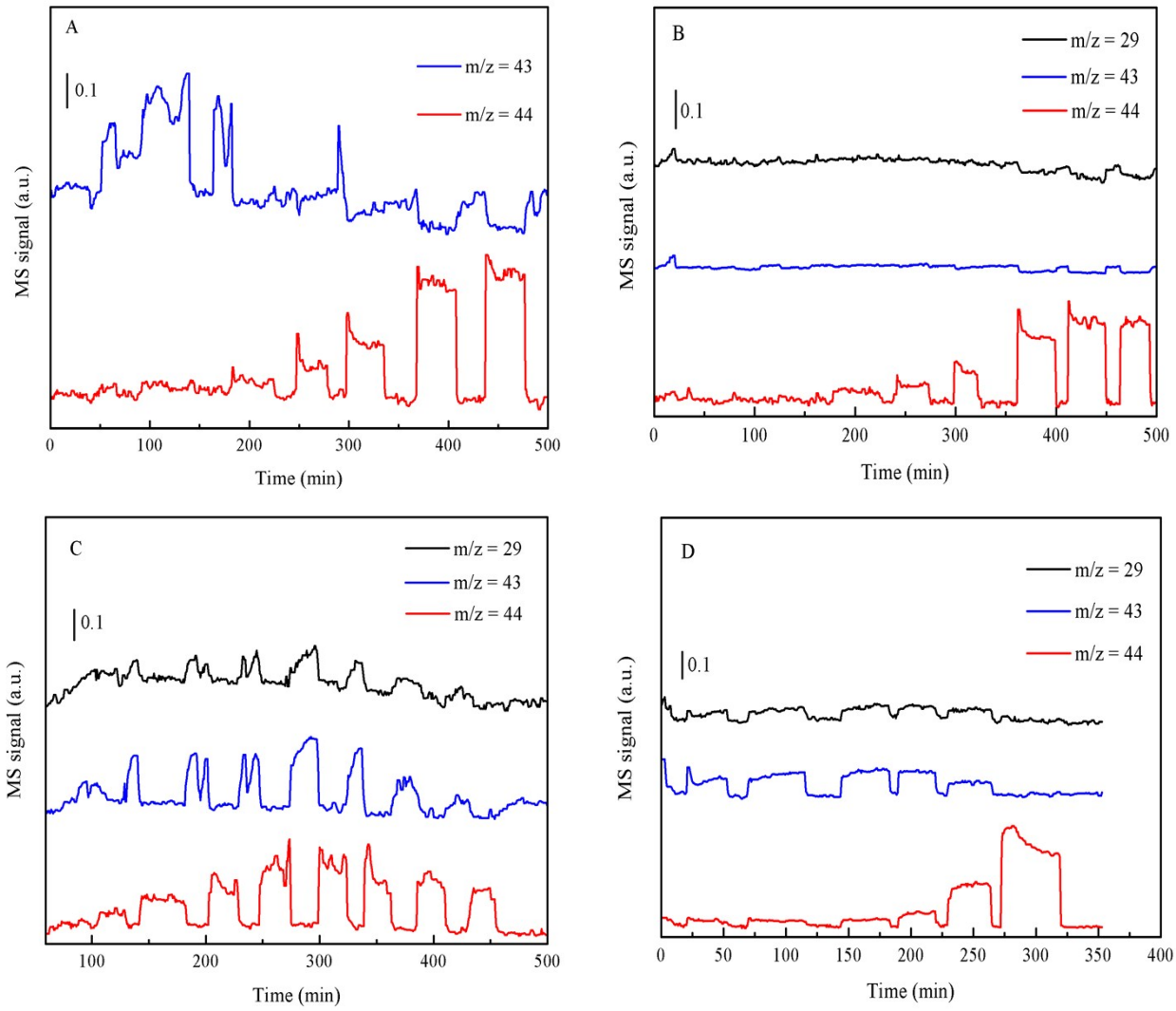

Figure S6 Temperature-programmed surface reaction (TPSR) of MEK oxidation over different catalysts.

Table S1 XPS results of the used catalysts.

Sample	Binding Energy (eV)			Molar ratio	
	Mn_3O_4	Mn^{3+}	Mn^{4+}	Mn^{4+}/Mn^{3+}	Mn^{4+}/Mn_3O_4
MnO_x-W-used	641.4	/	642.8	/	0.72
MnO_x-S-used	641.4	/	642.8	/	1.49
MnO_x-C-used	/	641.6	642.7	0.68	/
MnO_x-R-used	/	641.5	642.8	0.65	/