SUPPORTING INFORMATION

Performance optimization of MnO_2/ carbon nanotubes substrate for efficient catalytic oxidation of low-concentration NO at room temperature

Tao Zhang,[a] Dongdong Wang,[d] Zhenyuan Gao, [a] Kunfeng Zhao,[a] Yousong Gu,[c] Yue Zhang[c] and Dannong He[a,b]

[a]National Engineering Research Center for Nanotechnology, Shanghai, China

[b]School of Material Science and Engineering, Shanghai Jiao Tong University, Shanghai, China

[c]State Key Laboratory for Advanced Metals and Materials, School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing, China

[d] Whaley Technology Co., Ltd, Shanghai, China

Figure S1 presents the XRD patterns of pure MnO_2 powder, pure CNTs, Reduced-MOCNT, MnO_2/ TiO_2, MnO_2/ ZrO_2, and MnO_2/ CeO_2. The pure MnO_2 are testified as the monoclinic birnessite MnO_2 in the XRD analysis (JCPDS no. 80-1098). The XRD pattern of the CNT shows three different peaks at 25.8°, 43.1° and 54.1°, which can be indexed as the (002), (100) and (004) reflections of graphite, respectively[1]. The diffraction peaks of Reduced-MOCNT correspond well to Mn_3O_4 (JCPDS no. 18-0803). The XRD patterns of MnO_2/ CeO_2, MnO_2/ ZrO_2, and MnO_2/ TiO_2 catalysts are shown in Figure S1 (b). The XRD patterns presented here did not show intense or sharp peaks for manganese oxides. The diffraction patterns of these mixed oxides showed broad reflections due to CeO_2 of a cubic fluorite structure (JCPDS no. 43-1002), ZrO_2 of a monoclinic baddeleyite structure (JCPDS no. 37-1484) and TiO_2 of a tetragonal anatase structure (JCPDS no. 21-1272).

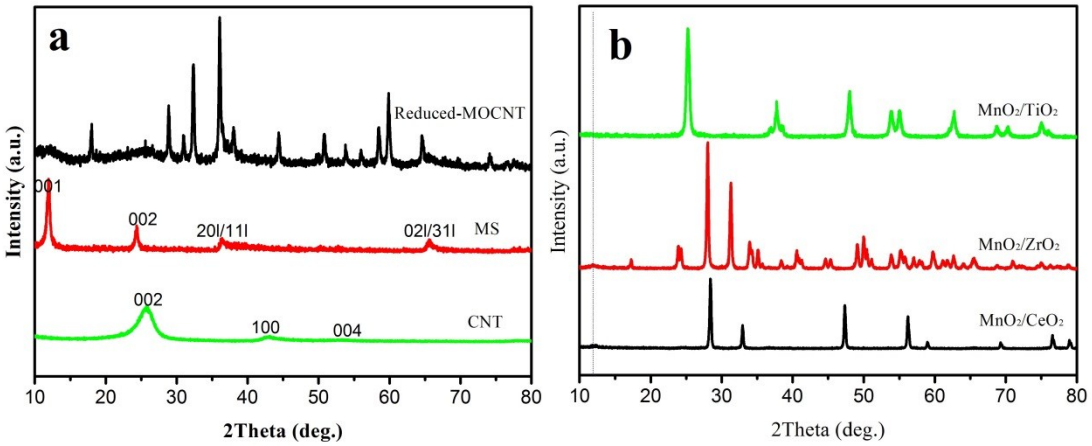

Figure S1. XRD patterns of (a) Reduced-MOCNT, pristine MnO_2, CNT, (b) MnO_2/ TiO_2, MnO_2/ ZrO_2, and MnO_2/ CeO_2

REFERENCES

1. Z. Sun, Z. Liu, B. Han, Y. Wang, J. Du, Z. Xie and G. Han, *Adv. Mater.*, 2005, **17**, 928–932.