Supplementary Material for

The effect of different metal oxides on catalytic activity of the Co_3O_4 catalyst for toluene combustion: Importance of structure-property and surface active species

Xuejun Zhang [a], Min Zhao [a], Zhongxian Song [b, *], Heng Zhao [a], Wei Liu [a], Jinggang Zhao [a], Zi'ang Ma [a], Yun Xing [a]

[a] College of Environmental and Safety Engineering, Shenyang University of Chemical Technology, Shenyang 110142, People's Republic of China

[b] Faculty of Environmental and Municipal Engineering, Henan Key Laboratory of Water Pollution Control and Rehabilitation Technology, Henan University of Urban Construction, Pingdingshan, 467036, People's Republic of China

Corresponding Authors:

[*]Z. X. Song: email, songzhongxian@126.com, Tel., (+86)-375-2089031

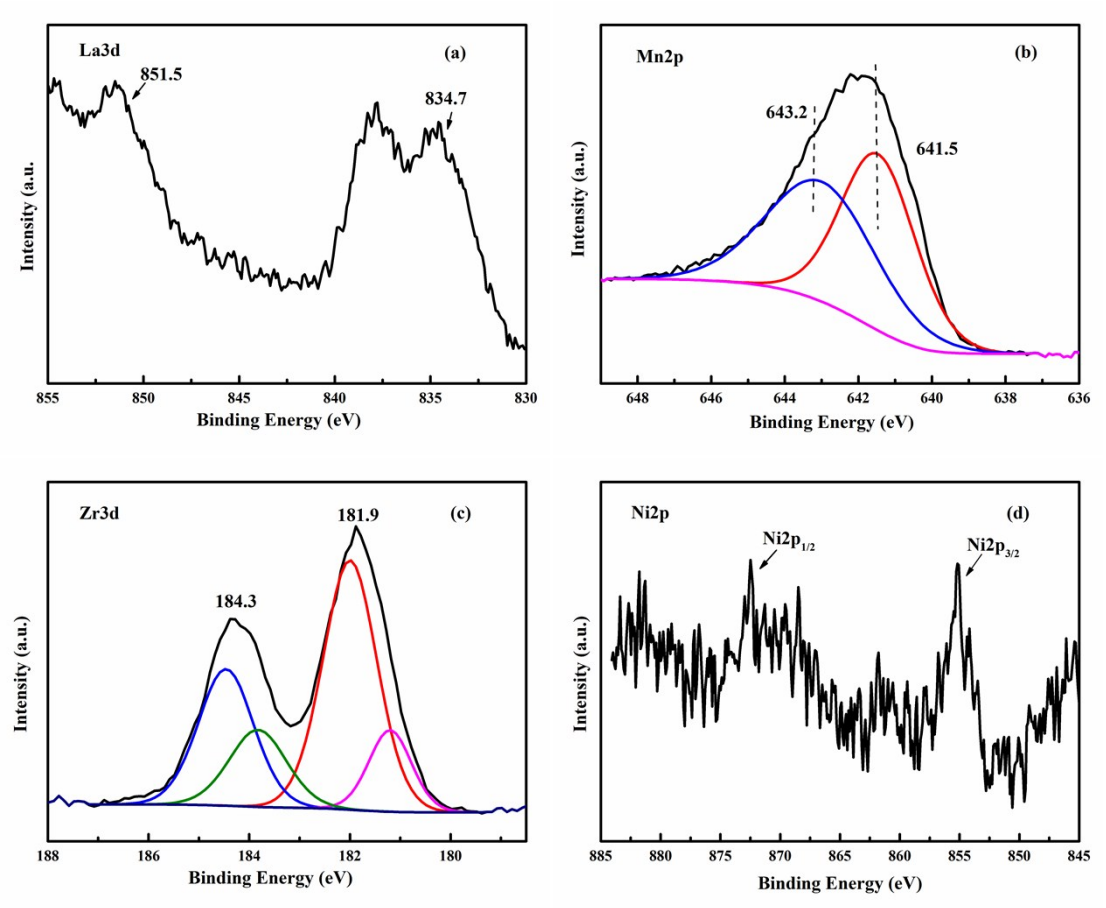

Figure S1. The XPS spectra of La3d, Mn2p, Zr3d and Ni2p

The La3d peak (Fig. S1a) were deconvoluted into two components, the peak of at 834.7 eV was attributable to $La3d_{5/2}$, while the $La3d_{3/2}$ was observed at about 851.5 eV. The binding energies and the multiplet splitting were consistent with the reported values for the La^{3+} emissions [111].

The Mn $2p_{3/2}$ XPS spectra of the Co-Mn sample were shown in Fig. S1b. The peak could be decomposed into two components at BE = 641.5 and 643.2 eV, which were attributable to the surface Mn^{3+} and Mn^{4+} species, respectively [222].

As shown in Fig. S1c, it displayed two peaks centered at the binding energies of 181.9 eV and 184.3 eV for Zr $3d_{5/2}$ and Zr $3d_{3/2}$, respectively [333].

The peaks of $Ni2p_{3/2}$ and $Ni2p_{1/2}$ core levels were centered at 855.2 and 871.3 eV, respectively, as shown in Fig. S1d, coinciding with the reported values of Ni2p $_{3/2}$ binding energy on metallic Ni [444].

Reference

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