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

Supporting Information

Mechanistic insight into the influence of O_2 on N_2O formation in selective catalytic reduction of NO with NH_3 over Pd/CeO_2 catalyst

Liping Sheng[1+], Songda Li[1+], Zhaoxia Ma[1,4*], Fei Wang[1], Hu He[1], Yi Gao[2,3], Beien Zhu[2,3*], Yong Wang[1], Hangsheng Yang[1*]

1. State Key Laboratory of Silicon Materials and Center of Electron Microscopy, School of Materials Science and Engineering, Zhejiang University, Hangzhou 310027, China.

2. Division of Interfacial Water and Key Laboratory of Interfacial Physics and Technology, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, Shanghai, 201800 China.

3. Shanghai Advanced Research Institute, Chinese Academy of Sciences, Shanghai, 201210 China.

4. College of Chemistry & Environment Protection Engineering, Southwest Minzu University, Chengdu 610041, China.

+. First authors

*. Corresponding authors, email: 06zxma@zju.edu.cn (ZM), zhubeien@sinap.ac.cn (BZ), and hsyang@zju.edu.cn (HY)

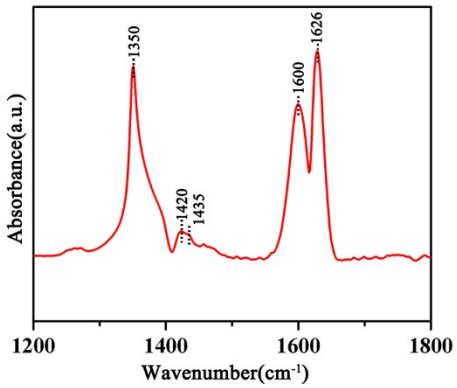

Fig. S1. In situ FTIR spectrum after Pd/CeO_2 catalyst exposed to 800 ppm NO and 5 vol% O_2, Ar balanced at 100 °C. The bands at 1350, 1420 and 1435 cm^{-1} are attributed to monodentate nitrites [34]. The bands at 1600 and 1626 cm^{-1} are attributed to adsorbed NO_2 [35, 36]. The results indicated that NO_2 could be formed and adsorbed on the catalyst surface at as low as 100 °C during NO oxidation.

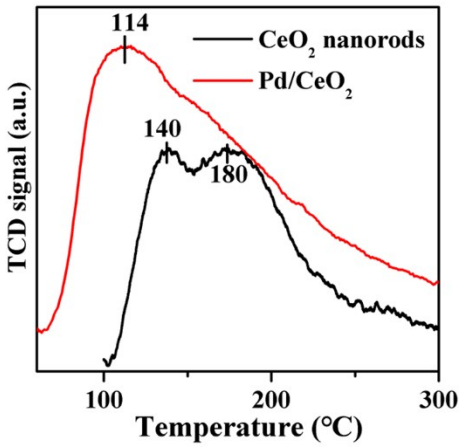

Fig. S2. **NH_3-TPD of Pd/CeO_2 catalyst and CeO_2 nanorods**. The NH_3 desorption peaks of the two samples were detected below 300 °C, which is ascribed to weakly adsorbed ammonia.

Reference

34 L. Ma, C. Seo, M. Nahata, X. Chen, J. Li, J. Schwank, Appl. Catal. B-Environ., 2018, **232**, 246–259.
35 G.S. Qi, R.T. Yang, J. Phys. Chem. B., 2004, **108**, 15738–15747.
36 K.I. Hadjiivanov, Catal. Rev.-Sci. Eng. 2000, **42**, 71–144.