**Surface Regulations of CeO2 for Heterogeneous Catalysis**

Yongquan Qu\*

*Center for Applied Chemical Research, Frontier Institute of Science and Technology, Xi’an Jiaotong University, Xi’an, 710049, P. R. China*

[*\*yongquan@mail.xjtu.edu.cn*](mailto:*yongquan@mail.xjtu.edu.cn)

Ceria (CeO2) as a support, additive, and active component for heterogeneous catalysis has been demonstrated with the great catalytic performance, which includes excellent thermal structural stability, catalytic efficiency, and chemoselectivity.1,2 In general, the reversible Ce3+/Ce4+ redox pair and the surface acid-base properties contribute to the superior intrinsic catalytic capability of CeO2, and hence yield the enhanced catalytic phenomenon in many reactions. Particularly, nanostructured CeO2 is characterized by a large number of surface-bound defects, which are primarily oxygen vacancies, as the surface active catalytic sites. Many efforts have therefore been made to control the surface defects and properties of CeO2 by various synthetic strategies and post-treatments. In this talk, I will give a brief overview of our efforts on the surface regulations of CeO2 by wet chemical redox etching3 and synthetic pressure4 as well as their catalytic applications.5-7 The strong electronic metal-support interactions between the metal and CeO2 with the abandant surface defects of oxygen vacancy enable high catalytic activity and chemoselectivity for hydrogenation of nitroarenes8 and quinolines9 and C-C coupling reaction.10

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**Biography**

Yongquan Qu received his B.S. from Nanjing University at 2001, M.S. from Dalian Institute of Chemical Physics at 2004 and Ph.D. from the University of California, Davis under the supervision of Prof. Ting Guo at 2009. He moved to the University of California, Los Angeles for the postdoctoral training with Prof. Xiangfeng Duan in Department of Chemistry and Biochemistry. He became a faulty member of Center for Applied Chemical Research, Frontier Institute of Science and Technology, Xi’an Jiaotong University, China at 2012. His current research interests include heterogeneous catalysis in areas of organic synthesis, clean energy production and environmental remediation.

