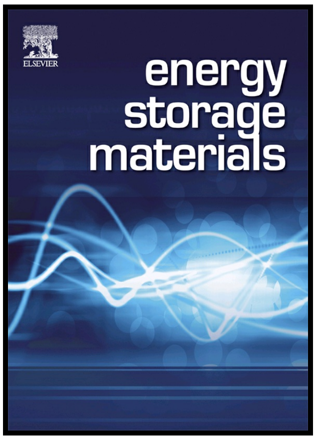

www.elsevier.com/locate/ensm

Correlating Electrocatalytic Oxygen Reduction Activity with d-Band Centers of Metallic Nanoparticles

Yao Zhou, Zhenzhen Zhou, Ruxiang Shen, Ruguang Ma, Qian Liu, Guozhong Cao, Jiacheng Wang

PII: S2405-8297(17)30470-1
DOI: https://doi.org/10.1016/j.ensm.2018.01.011
Reference: ENSM295

To appear in: *Energy Storage Materials*

Received date: 19 September 2017
Revised date: 23 January 2018
Accepted date: 23 January 2018

Cite this article as: Yao Zhou, Zhenzhen Zhou, Ruxiang Shen, Ruguang Ma, Qian Liu, Guozhong Cao and Jiacheng Wang, Correlating Electrocatalytic Oxygen Reduction Activity with d-Band Centers of Metallic Nanoparticles, *Energy Storage Materials,* https://doi.org/10.1016/j.ensm.2018.01.011

Correlating Electrocatalytic Oxygen Reduction Activity with d-Band Centers of Metallic Nanoparticles

Yao Zhou,[1] *Zhenzhen Zhou,*[1] *Ruxiang Shen,*[1] *Ruguang Ma,*[1] *Qian Liu,*[1,2,*] *Guozhong Cao,*[3,*] *and Jiacheng Wang*[1,2,*]

[1] The State Key Laboratory of High Performance Ceramics and Superfine Microstructure, Shanghai Institute of Ceramics, Chinese Academy of Sciences, 1295 Dingxi Road, Shanghai, 200050, P. R. China

[2] Shanghai Institute of Materials Genome, Shanghai, P. R. China

[3] Department of Materials Science and Engineering, University of Washington, Seattle, WA 98195, USA

*Author for correspondence. E-mail: jiacheng.wang@mail.sic.ac.cn, Tel: 86-21-52412417; qianliu@sunm.shcnc.ac.cn, Tel: 86-21-52412413; gzcao@u.washington.edu, Tel: 1-206-616-9084

Abstract

The establishment of correlating the electronic structures with the activity of non-noble-metal electrocatalysts toward the oxygen reduction reaction (ORR) plays a pivotal role in designing high-performance cathodic electrocatalysts. Here, a procedure of metallic Fe-family nanoparticles (NPs), such as nitrides ($Co_{5.47}N$, Fe_4N and Ni_3N) and zero-valence metals (Co