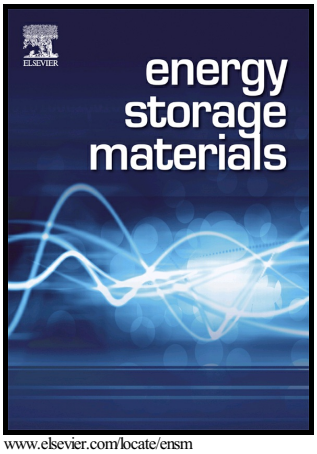

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PII: S2405-8297(17)30153-8
DOI: http://dx.doi.org/10.1016/j.ensm.2017.07.002
Reference: ENSM177

To appear in: *Energy Storage Materials*

Received date: 24 April 2017
Revised date: 3 July 2017
Accepted date: 7 July 2017

Cite this article as: Changtai Zhao, Chang Yu, Huawei Huang, Xiaotong Han Zhibin Liu and Jieshan Qiu, Co ion-intercalation amorphous and ultrathi microstructure for high-rate oxygen evolution, *Energy Storage Materials* http://dx.doi.org/10.1016/j.ensm.2017.07.002

Co ion-intercalation amorphous and ultrathin microstructure for high-rate oxygen evolution

Changtai Zhao, Chang Yu,* Huawei Huang, Xiaotong Han, Zhibin Liu, Jieshan Qiu*

State Key Lab of Fine Chemicals, School of Chemical Engineering, Liaoning Key Lab for Energy Materials and Chemical Engineering, Dalian University of Technology, Dalian 116024, PR China

**Corresponding author: E-mail: chang.yu@dlut.edu.cn（C. Yu）, jqiu@dlut.edu.cn (J. Qiu)*

Abstract: Large-scale electrochemical water splitting for hydrogen generation requires cost-effective and efficient catalysts to boost the sluggish kinetics associated with the oxygen evolution reaction (OER). The transition metal oxides hold promise as catalysts for the replacement of noble-metal catalysts with high activity for OER. One of the challenges is how to finely design and tune the micro-structure of the kind of catalysts with enhanced electrochemical activities. Herein, we report on the tuned synthesis of ultrathin nanosheets made of amorphous cobalt manganese oxide (as-CoMnO) with an average thickness of *ca.* 0.69 nm, of which the potential in the OER reaction has been demonstrated. The results indicate that it is the Co ion-intercalation effects that help to tailor the structure of the amorphous ultrathin as-CoMnO nanosheets at the atomic- and nano-scale, resulting in enhanced activity for OER due to the active sites that are highly exposed and easily accessible. Benefiting from these combined characteristics, the as-CoMnO nanosheets catalysts