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Electrocatalytic reduction of CO₂ and nitrate on immobilized metal porphyrins

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List of publications

This thesis is based on the following publications:

Chapter 2

Shen J.; Kortlever R.; Kas R.; Birdja Y. Y.; Diaz-Morales O.; Kwon Y.; Ledezma-Yanez I.; Schouten K. J. P.; Mul G.; Koper M.T. M.

Electrocatalytic reduction of carbon dioxide to carbon monoxide and methane at an immobilized cobalt protoporphyrin

Nature Commun. **2015**, **6**, 8177.

Chapter 3

Shen J.; Kolb M.J.; Göttle A. J.; Koper M.T.M..

DFT Study on the Mechanism of the Electrochemical Reduction of CO₂ Catalyzed by Cobalt Porphyrin

J. Phys. Chem.C. Submitted

Chapter 4

Shen J.; Birdja Y.Y.; Koper M.T.M..

Electrocatalytic Nitrate Reduction by a Cobalt Protoporphyrin Immobilized on a Pyrolytic Graphite Electrode

Langmuir, **2015**, 31 (30), pp 8495–8501

Other Publications:

Kortlever R.; Shen J.; Schouten K. J. P.; Calle-Vallejo F.; Koper M. T. M.,

Catalysts and Reaction Pathways for the Electrochemical Reduction of Carbon Dioxide.

J. Phys. Chem. Lett. **2015**, **6**, 4073-4082.

Curriculum Vitae

Jing was born in Yueyang, a city in North Hunan Province in China in 1984. After high school, she studied chemistry at Zunyi Normal College, and received her bachelor degree in 2007. On July 2008, she started her master degree in University of Science and Technology of China with professor Quanxin Li. The research topic during her master was the synthesis and application of metal oxides. In November 2011, Jing started her PhD at Leiden University (the Netherlands) under the supervision of Prof. Marc T.M. Koper with the project title of “carbon dioxide reduction on electrodes modified with molecular catalysts” sponsored by the Chinese Scholarship Council (CSC), to investigate the activity of molecular catalysts immobilized on (carbon) electrode to convert carbon dioxide to small organic molecules such as carbon monoxide, formic acid, methanol and methane, as well as the mechanistic insights into the carbon dioxide reduction. The results of this work are presented in this thesis. Parts of this work have been presented at several international conferences.

