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Biomimetic copper catalysts for the electrochemical oxygen reduction reaction

Smits, N.W.G.

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Curriculum Vitae

Nicole Smits was born in Koningslust, The Netherlands on November 30, 1990. During her time at high school, she visited Athens, Greece and Essen, Germany as part of exchange programs. She also hosted a fellow student from Birmingham, UK as part of a similar exchange program. After obtaining her VWO high school diploma at Bouwens van der Boijecollege, Panningen in 2009, she started studying chemistry at VU University Amsterdam. During her studies, she mainly focused on inorganic and theoretical chemistry.



After obtaining the Master of Science degree in 2015, Nicole started as a PhD candidate at the *Metals in Catalysis, Biomimetics and Inorganic Materials* (MCBIM) and *Catalysis and Surface Chemistry* (CASC) research groups at Leiden University. She conducted the research presented in this thesis under the supervision of Dr. Dennis Hetterscheid. During her PhD, she collaborated with Dr. Jan Philipp Hofmann from TU Eindhoven on XPS and XAS analyses of heterogenized catalysts. She supervised three BSc and three MSc students during their graduation internships, and several practical chemistry courses for first-year students. As a member of the PhD platform of the *Holland Research School of Molecular Chemistry* (HRSMC), she advised the board about the subjects, quality, and organization of the HRSMC courses, schools, and social activities. Parts of the results reported in this thesis were presented by Nicole at several (inter)national conferences. These include the *Gordon Research Symposium* (GRS) in Galveston, Texas, USA in 2019 (talk and poster), the *Gordon Research Conference* (GRC) in Galveston, Texas, USA in 2019 (poster), *Labtechnology* in Utrecht, The Netherlands in 2019 (invited talk), the *Netherlands' Catalysis and Chemistry Conference* (NCCC) in Noordwijkerhout, The Netherlands in 2019 (talk) and 2018 (poster), and the *International Symposium on Homogeneous Catalysis* (ISHC) in Amsterdam, The Netherlands in 2018 (poster). During the graduate program, she successfully completed the following courses: *Catalysis an Integrated Approach* organized by the *Netherlands Institute for Catalysis Research* (NIOK), *Physical Methods in Inorganic Chemistry* organized by the HRSMC, and several graduate school courses of Leiden University, including *effective communication*, *communication in science*, *scientific integrity*, *negotiation*, *time management*, and *project management*.

In August 2020, Nicole started working as a design engineer in the process and cleanliness control group of ASML in Veldhoven.

List of Publications

Lando P. Wolters, Nicole W. G. Smits, Célia Fonseca Guerra, Covalency in resonance-assisted halogen bonds demonstrated with cooperativity in *N*-halo-guanine quartets. *Phys. Chem. Chem. Phys.* **2015**, *17*, 1585-1592.

Marcus V. J. Rocha, Nicole W. G. Smits, Lando P. Wolters, Abel de Cózar, Célia Fonseca Guerra, Teodorico C. Ramalho, F. Matthias Bickelhaupt, Asymmetric identity S_N2 transition states: nucleophilic substitution at α -substituted carbon and silicon centers. *Int. J. Mass. Spectrom.* **2017**, *413*, 85-91.

Nicole W. G. Smits, Daan den Boer, Longfei Wu, Jan P. Hofmann, Dennis G. H. Hetterscheid, Elucidation of the structure of a thiol functionalized Cu-tmpa complex anchored to gold via a self-assembled monolayer. *Inorg. Chem.* **2019**, *58*, 13007-13019.

Nicole W. G. Smits, Bas van Dijk, Iris de Bruin, Samantha L. T. Groeneveld, Maxime A. Siegler, Dennis G. H. Hetterscheid, The influence of ligand denticity and flexibility on the molecular copper mediated oxygen reduction reaction. *Manuscript submitted*.

Nicole W. G. Smits, Dana Rademaker, Andrey Konovalov, Maxime A. Siegler, Dennis G. H. Hetterscheid, The influence of the spatial distribution of copper centers on the selectivity of the oxygen reduction reaction. *Manuscript in preparation*.

Nicole W. G. Smits, Andrey Konovalov, Dennis G. H. Hetterscheid, The influence of the flexibility of a molecular trinuclear copper complex on the oxygen reduction reaction behavior. *Manuscript in preparation*.

Nicole W. G. Smits, Michiel Langerman, Dennis G. H. Hetterscheid, Review on the molecular copper catalyzed oxygen reduction reaction, *Manuscript in preparation*.

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