Electrocatalysis at Single Nanoparticles

Kleijn, S.E.F.

List of publications

This thesis is based on the following publications:

Chapter 2

S.E.F. Kleijn, S.C.S. Lai, M.T.M. Koper and P.R. Unwin

Electrochemistry of nanoparticles

Angewandte Chemie, *Accepted*

Chapter 3

S.E.F. Kleijn, A.I. Yanson and M.T.M. Koper

Electrochemical characterization of nano-sized gold electrodes fabricated by nanolithography

Journal of Electroanalytical Chemistry, 2012, **666**, 19 - 24

Chapter 4

S.E.F. Kleijn, B. Serrano-Bou, A.I. Yanson and M.T.M. Koper

Influence of Hydrazine-Induced Aggregation on the Electrochemical Detection of Platinum Nanoparticles

Langmuir, 2013, **29**, 2054-2064

Chapter 5

S.E.F. Kleijn, S.C.S. Lai, T.S. Miller, A.I. Yanson, M.T.M. Koper and P.R. Unwin

Landing and Catalytic Characterization of Individual Nanoparticles on Electrode Surfaces

Journal of the American Chemical Society, 2012, **134**, 18558-18561

Other publications:

Y. Kwon, S. E. F. Kleijn, K. J. P. Schouten and M. T. M. Koper
Cellobiose hydrolysis and decomposition by electrochemical generation of acid and hydroxyl radicals
ChemSusChem, 2012, **5**, 1935 - 1943

V. Aquilanti. K.C. Mundim, M. Elango, S. Kleijn and T. Kasai
Temperature dependence of chemical and biophysical rate processes: Phenomenological approach to deviations from Arrhenius law
Chemical Physics Letters, 2010, **498**, 209 - 213

S.C.S. Lai, S.E.F. Kleijn, F.T.Z. Öztürk, V.C. van Rees Vellinga, J. Koning, P. Rodriguez and M.T.M. Koper
Effects of electrolyte pH and composition on the ethanol electro-oxidation reaction
Catalysis Today, 2010, **154**, 92 - 104

M. Nishiyama, S. Kleijn, V. Aquilanti and T. Kasai
Temperature dependence of respiration rates of leaves, ^{18}O-experiments and super-Arrhenius kinetics
Chemical Physics Letters, 2009, **482**, 325 - 329

M. Nishiyama, S. Kleijn, V. Aquilanti and T. Kasai
Mass spectrometric study of the kinetics of O_2 consumption and CO_2 production by breathing leaves
Chemical Physics Letters, 2009, **470**, 332 - 336

S.C.S. Lai, S.E.F. Kleyn, V. Rosca and M.T.M. Koper
Mechanism of the Dissociation and Electrooxidation of Ethanol and Acetaldehyde on Platinum As Studied by SERS
Journal of Physical Chemistry C, 2008, **112**, 19080-19087

F Gou, M.A Gleeson, J Villette, S.E.F Kleyn and A.W Kleyn
The surface of 1-euro coins studied by X-ray photoelectron spectroscopy
Applied Surface Science, 2004, **225**, 47 - 53

Curriculum Vitae

Steven Everard Filippus Kleijn was born in Amsterdam, march 8th 1985, before attending the “Barlaeus gymnasium” there and subsequently studying Japanese language at the Kyoto Japanese Language School.

In 2004 he joined the Bachelor of Science program named Molecular Science and Technology between Leiden and Delft Technical University, as part of which he researched the application of commercial pigments as potential photocatalysts for the water-splitting reaction, in the research group of prof. Dr. Roel van de Krol. He also was part of a delegation of chemical engineering students visiting China for three weeks during the summer of 2007. He obtained a Master of Science degree at Leiden University in the Physical and Theoretical Chemistry course, with a thesis entitled “*carbon-carbon bond breaking in ethanol – A spectroscopic and voltammetric study on electrochemical ethanol oxidation*”, under the supervision of Dr. Stanley C.S. Lai and prof. Dr. Marc T.M. Koper. During this period he spent three months at Osaka University in the research group of prof. Dr. Toshio Kasai, to study the respiration rates of Camellia leaves using mass spectrometry. This work has lead to several publications in collaboration with prof. Dr. Vicenzo Aquilanti at Perugia University, in Italy.

The research described in this thesis was carried out principally at Leiden University in the research group of prof. Koper, with significant contributions made at the University of Warwick, in the UK, under the supervision of Dr. Stanley Lai and prof. Dr. Patrick R. Unwin.

In the fall of 2013, Steven has taken up a position at SMART Photonics in Eindhoven, where he will work as a research associate on the fabrication of indium phosphide-based integrated photonics.