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Author: Limburg, Bart

Title: Photocatalytic redox reactions at the surface of liposomes

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List of Publications

“Unidirectional photoelectron transfer across a lipid bilayer mediated by a membrane-soluble electron relay”

B. Limburg, E. Bouwman, S. Bonnet, *Chem. Commun.*, **2015**, *In press*.

“Enhanced Photoinduced Electron Transfer at the Surface of Charged Lipid Bilayers”

B. Limburg, G. Laisne, E. Bouwman, S. Bonnet, *Chem. Eur. J.* **2014**, 20, 8965–8972.

“Spontaneous Formation in the Dark, and Visible Light-Induced Cleavage, of a Ru-S Bond in Water: A Thermodynamic and Kinetic Study”

A. Bahreman, B. Limburg, M. A. Siegler, E. Bouwman, S. Bonnet, *Inorg. Chem.* **2013**, 52, 9456–9469.

“Ruthenium Polypyridyl Complexes Hopping at Anionic Lipid Bilayers through a Supramolecular Bond Sensitive to Visible Light”

A. Bahreman, B. Limburg, M. A. Siegler, R. Koning, A. J. Koster, S. Bonnet, *Chem. Eur. J.* **2012**, 18, 10271–10280.

“Molecular water oxidation catalysts based on transition metals and their decomposition pathways”

B. Limburg, E. Bouwman, S. Bonnet, *Coord. Chem. Rev.* **2012**, 256, 1451–1467.

“Ruthenium-Decorated Lipid Vesicles: Light-Induced Release of [Ru(terpy)(bpy)(OH₂)]²⁺ and Thermal Back Coordination”

S. Bonnet, B. Limburg, J. D. Meeldijk, R. J. M. Klein Gebbink, J. A. Killian, *J. Am. Chem. Soc.* **2011**, 133, 252–261.

In preparation:

“The effect of positively charged liposomes on the kinetics and mechanism of the photoreduction of methyl viologen”

B. Limburg, E. Bouwman, S. Bonnet. *In preparation*.

“The kinetics and mechanism of the photoreduction of DTNB²⁻ by TEOA in homogeneous solution and at the surface of liposomes”

B. Limburg, M. Hilbers, A. M. Brouwer, E. Bouwman, S. Bonnet. *In preparation*.

“What is the bottleneck in photocatalytic water oxidation? The catalyst is fast and stable enough”

B. Limburg, E. Bouwman, S. Bonnet. *In preparation*.

“Stabilization of a ruthenium photosensitizer for photocatalytic water oxidation by anchoring in a liposome bilayer”

B. Limburg, J. Wermink, S. van Nielen, R. Kortlever, M. T. M. Koper, E. Bouwman, S. Bonnet. *In preparation*.

Curriculum Vitae

The author of this thesis, Bart Limburg, was born in Rotterdam, The Netherlands on October 25th in 1986. In 2005, he graduated from the Gymnasium at the Rotterdam's Montessori Lyceum. Later that year he started his BSc studies in Chemistry at Leiden University, from which he graduated in 2009, with the thesis entitled "MOF catalyzed reductive carbonylation of nitroaromatics" under supervision of Dr. T. J. Mooibroek, Prof. Dr. E. Drent and Prof. Dr. E. Bouwman. He then continued in the MSc program Chemistry at Leiden University, with the specialization Design and Synthesis. In 2011 he graduated *cum laude* with the MSc thesis entitled "Ruthenium polypyridyl complexes towards light-driven molecular machines" under supervision of Dr. S. Bonnet and Prof. Dr. E. Bouwman. His thesis was nominated for the KNCV Golden Master Award in 2010.

On the 1st of June 2011, he started his PhD studies in photocatalysis at Leiden University under supervision of Dr. S. Bonnet and Prof. dr. E. Bouwman. During his PhD studies, he collaborated with Prof. Dr. A.M. Brouwer (University of Amsterdam), Dr. E. Iengo (Università degli Studi di Trieste) and Prof. Dr. M. T. M. Koper (Leiden University). He supervised nine undergraduate students, and supervised the organic chemistry practical course for first-year students several times. Furthermore, he took several post-graduate courses including the NIOK course "Catalysis: an Integrated Approach", the HRSMC course "Photochemistry, fundamentals and applications" and the Leiden University courses "Communication in Science", "Time management", "Effective communication" and "On being a scientist".

The results reported in this thesis were presented at several (inter)national conferences as listed below:

- 1st International Solar Fuels Conference, Uppsala, Sweden. April 2015 (poster)
- Netherlands' Catalysis and Chemistry Conference, Noordwijkerhout, The Netherlands, 2013 (poster) and 2015 (oral)
- NRSC-C Workshop, Utrecht, The Netherlands, 2013 and 2015 (oral)
- 20th anniversary symposium of the Holland Research School of Molecular Chemistry, Amsterdam, The Netherlands, 2014 (oral)
- COST Perspect-H₂O Workgroup 3 meeting, Lund, Sweden. 2014 (oral)
- NWO study group meeting, Lunteren, The Netherlands, 2013 (oral)