



南京大学高济宇有机化学前沿讲座

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题目: **Photocatalysis at the surface of liposomes**

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地点: 仙林化学楼H201蒋雯若报告厅

时间: 2018年4月23号 (星期一) 上午10:00

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Scientific Career:

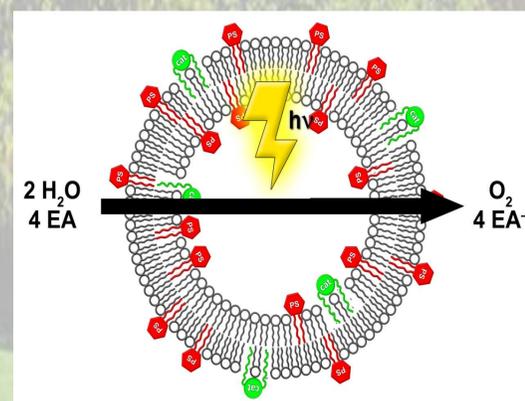
- 2005 Prof. Sylvestre Bonnet obtained a PhD on light-activated molecular machines with Nobel Laureate Jean-Pierre Sauvage at the University of Strasbourg, France.
- 2008 obtained a Veni grant from The Netherlands Organization for Scientific Research (NWO).
- 2009-2014 completed a Tenure Track position at Leiden University.
- 2012-2013 obtained several grants including a NWO-Vidi grant and an ERC Starting Grant.
- 2015 obtained a Tenure as Associated Professor in 2015.

Lecture abstract:

The past decades have led to a great increase in the availability of water oxidation catalysts with high TOFs and TONs. Under photocatalytic water oxidation conditions, these novel catalysts are fast and stable enough to not be the limiting factor in the photocatalytic cycle anymore. Instead, the photosensitizer degrades during the photoreaction, thus limiting the overall efficiency and TON of the system. Supramolecular systems such as liposomes influence greatly the stability and rates of (photo)catalytic processes. In this work, both a water oxidation catalyst and a photosensitizer were anchored to the surface of a lipid bilayer by means of a long alkyl tail. The stability of the photosensitizer is increased by anchoring, which leads to higher TONs for the photocatalytic oxidation of water, compared to homogeneous conditions. Furthermore, the efficiency of the system was shown to depend very much on the local concentration of photosensitizer and catalyst, indicating that fast hole transfer from the photosensitizer to the catalyst is essential for the stability of the system.

Selected publications:

1. B. Limburg, E. Bouwman, S. Bonnet, *Coord. Chem. Rev.* 2012, 256, 1451
2. B. Limburg, E. Bouwman, S. Bonnet, *Chem. Eur. J.* 2014, 20, 8965
3. B. Limburg, E. Bouwman, S. Bonnet, *ACS Catal.* 2016, 6, 5273
4. B. Limburg, E. Bouwman, S. Bonnet, *ACS Catal.* 2016, 6, 5968



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