

Curriculum Vitae - Prof. Dr. Nicolas Plumeré



Research interests

Electron relays to bridge redox proteins and electrodes – Applications in point-of-use biosensing, H₂/O₂ biofuel cells, biohybrid systems for electrosynthesis – Bioconjugation methods for protein immobilization – Redox matrices to protect redox enzymes – Quantitative investigations of reaction/diffusion/protection processes within redox matrices – Surface modification and patterning for bioelectrochemistry.

My motivations to join the BES Council

The activities of BES, in organizing conferences, in publishing specialized journals and in promoting early stage researchers has stimulated and inspired many scientists, including myself, in developing their own research directions as well as building strong cooperative networks. My motivation to join the BES council is to continue this philosophy of fostering the cohesion of our community. In particular, I will support activities that encourage the youngest bioelectrochemists to develop their careers and I will propose new topics for BES symposia to open our field to wider audiences. I have gained significant experience as a council member having already served three years for BES and on the board of ECHEMS. With your support, it would be my honor to help further strengthen our society in the future.

Current Position

2020 - W3 Professor in Electrobiotechnology, TU Munich, Germany.

Previous Positions

2017 – 2020 Associate Professor in Analytical Chemistry, Ruhr-Universität Bochum, Germany.
2010 – 2017 Group leader at the Center for Electrochemical Sciences, Ruhr-Universität Bochum, Germany.
2008 – 2009 Postdoctoral Fellowship with Prof. Dr. Wilbur H. Campbell, NECi (research lab in the private sector), Lake Linden, MI, USA.

Education

2009 PhD in inorganic chemistry (12.02.2009, *summa cum laude*), University of Tübingen, Germany. Mentor Prof. Dr. Bernd Speiser.
2004 Honours Degree in Chemistry (*First Class Honours*, W.J.C Watt Medal). University of Strasbourg, France and University of West Scotland, Glasgow, UK.

Supervision of graduate students and postdoctoral fellows

12 Postdoc stays (6 completed), 15 PhD students (8 completed) and 25 Master students (20 completed)

Scientific honors

2020 Proof of Concept Grant of the European Research Council (ERC).
2019 [Luigi Galvani Award](#) from the Bioelectrochemical Society.
2017 Proof of Concept Grant of the European Research Council (ERC).
2016 Starting Grant of the European Research Council (ERC)

Organization of scientific meetings

>10 workshops and symposia in bioelectrochemistry organized in Bochum, Marseille, Cambridge...

Recent and upcoming events:

2022 Organizer of the 1st Workshop “Biophotoelectrochemistry” (with E. Reisner and J. Zhang): Solar Energy Conversion and Fundamental Investigations in Cambridge, 2022, UK.
2022 Session organizer of ‘Bioelectrochemistry & bio-energetics’ (with J. Butt and E. Lojou) . 27th international symposium of the Bioelectrochemistry Society, 2022, Antwerp, Belgium.
2021 Organizer of the Chemical Science Symposium (RSC) 2021 (with E. Reisner and J. Zhang): Biohybrid Approaches to Sustainable Energy Conversion. 13 – 15 September 2021, UK.

Membership of scientific societies

Member of the Bioelectrochemical Society, of the International Society for Electrochemistry and of the Royal Society of Chemistry.

2019– **Member of the Advisory Board** of *Chemical Science*, the flagship journal of the RSC.

2018– **Council member** of the Bioelectrochemical Society.

2015– **Board member** of ECHEMS, the international organization established in 2004 aimed at promoting the use and development of electrochemistry.

2015 – Board member of DBS, Deutsches Biosensor Symposium, established in 1999.

Selected publications

L. Castañeda-Losada, D. Adam, N. Paczia, D. Buesen, F. Steffler, V. Sieber, T. Erb, M. Richter*, **N. Plumeré***
Bioelectrocatalytic cofactor regeneration coupled to CO₂ fixation in a redox-active hydrogel for stereoselective C-C bond formation.

Angew. Chem. Int. Ed., **2021**, *60*, 21056–21061. (**Outside Front cover, Hot Paper**)

V. Fourmond, **N. Plumeré**, C. Léger*,

Reversible catalysis

Nature Reviews Chemistry, **2021**, *5*, 348–360 (**Outside Front Cover**)

S. Hardt, S. Stapf, D. T. Filmon, J. Birrell, O. Rüdiger, V. Fourmond, C. Léger*, **N. Plumeré***

Reversible H₂ Oxidation and Evolution by Hydrogenase Embedded in a Redox Polymer Film

Nature Catalysis, **2021**, *4*, 251–258

H. Li, U. Münchberg, A. Alsheikh Oughli, D. Buesen, W. Lubitz, E. Freier, **N. Plumeré***.

Suppressing H₂O₂ Generation to Achieve O₂-Insensitivity of a [NiFe] hydrogenase in Redox Active Films

Nature Communications, **2020**, *11* (1), 1-7

D. Buesen, H. Li, **N. Plumeré***.

The Electron as a Probe to Measure the Thickness Distributions of Electroactive Films

Chemical Science, **2020**, *11*, 937 – 946 (**Outside Front Cover**)

H. Li, D. Buesen, S. Démentin, C. Léger*, V. Fourmond* and **N. Plumeré***

Complete Protection of O₂-Sensitive Catalysts in Thin Films

J. Am. Chem. Soc. **2019**, *141*, 16734-16742 (**Research Highlight in Nature Reviews Chemistry**)

H. Li, D. Buesen, R Williams, J. Henig, S. Stapf, K. Mukherjee, E. Freier, W. Lubitz, M. Winkler, T. Happe and **N. Plumeré***.

Preventing the coffee-ring effect and aggregate sedimentation by in situ gelation of monodisperse materials.

Chemical Science, **2018**, *9*, 7596-7605 (**Pick of the Week, Hot Article, Outside Front Cover, video abstract**)

M. M. Nowaczyk, **N. Plumeré***.

Short Circuit at the Chlorophyll.

Nature Chemical Biology **2016**, *12*, 990-991 (News and Views).

A. Alsheikh Oughli, F. Conzuelo, M. Winkler, T. Happe, W. Lubitz, W. Schuhmann, O. Rüdiger*, **N. Plumeré***.
Protection from oxidative damage of the O₂ sensitive [FeFe]-hydrogenase from *Chlamydomonas reinhardtii* using a redox hydrogel.

Angew. Chem. Int. Ed., **2015**, *54*, 12329 –12333.

N. Plumeré, O. Rüdiger, A. Oughli, R. Williams, J. Vivekananthan, S. Pöller, W. Schuhmann*, W. Lubitz*.

A redox hydrogel protects hydrogenase from high potential deactivation and oxygen damage.

Nature Chemistry, **2014**, *6*, 822–827.

T. Kothe, S. Pöller, F. Zhao, P. Fortgang, M. Rögner, W. Schuhmann*, **N. Plumeré***.

Engineered electron transfer chain in Photosystem 1 based photocathodes outperforms electron transfer rates in natural photosynthesis.

Chem. Eur. J., **2014**, *20*, 11029 – 11034 (**VIP and highest Altmetric score of the journal**).