SHORT CURRICULUM VITAE August 2015

Prof. Dr. Albert Manfred (Fred) Brouwer

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Education and profession

2014 - now	group leader *Nanophotochemistry* Advanced Research Center Nanolithography, Amsterdam
2012 – now	professor *Spectroscopy and Photonic Materials* Faculty of Science, University of Amsterdam
2006 – 2011	professor *Molecular Spectroscopy* (John van Geuns chair)
1993 – 2006	associate professor, Dept. of Chemistry, University of Amsterdam
1987 – 1993	assistant professor, Dept. of Chemistry, University of Amsterdam
1987	Ph.D. degree Leiden University

Current Research Topics

- *Development and application of luminescent probe molecules*

Fluorescent probes offer the possibility to "look" inside matter, and to determine local properties with molecular-scale temporal and spatial resolution. Fluorescence microscopy, including single molecule spectroscopy, is our main tool. Applications are investigated in materials science (polymers, mechanics).

- *Rotaxane motor molecules*

In this hot field that links chemistry with physics and biology we contribute with molecular design and synthesis of molecular machinery, and especially focus on the molecular-level working mechanisms using time-resolved spectroscopy and other physical/chemical techniques.

- *Application of optical spectroscopy and photochemistry to catalysis*

Our aim is to deepen the insight into the reaction mechanisms of organocatalysis by means of single molecule spectroscopy and other fluorescence techniques.

- *Solar Fuels*

The key problem in converting the energy of the sunlight into useful fuels is the splitting of water into oxygen and hydrogen. We study the mechanism of catalytic water oxidation and proton reduction by means of time-resolved spectroscopy.

- *Nanophotochemistry*

Knowledge-based development of improved photoresist materials requires fundamental investigations of the chemical mechanisms of pattern formation by short-wavelength UV radiation in thin films. At ARCNL we perform such studies on recently proposed inorganic materials, covering all the stages from synthesis to patterning with extreme ultraviolet light, and from product analysis to monitoring reactions by using spectroscopy on time scales from femtoseconds to minutes.

Awards and lectureships

- Short Term Visiting Scholar, Lanzhou University, China, 2013.
- Short-Term visiting Scholar, Chemistry Research Promotion Center, National Science Council, Taiwan, 2012.
- Morino Lectureship 2012 (Morino Foundation, Tokyo, Japan)
- Invited Professor, Ecole Normale Supérieure Cachan, France, 2008-2009
- 2008 Descartes Prize of the European Commission (SynNanoMotor consortium)
- visiting research scientist, Venture Business Laboratory, Osaka, Japan (2003)

Other recent and current activities

- member of the Review Group of the project "Application of Cooperative-Excitation into Innovative Molecular Systems with High-Order Photofunctions", MEXT, Japan, 2014-2018.
- member of the Permanent Steering Committee of the Biannual Conference on Methods and Applications of Fluorescence: Spectroscopy, Imaging & Probes (MAF:SIP)
- member of IUPAC Sub-commission on Photochemistry
- co-organizer of EPA/HRSMC Summer Schools on Photochemistry 1998, 2003, 2008, 2012
- member of international organizing committee IUPAC Symposium on Photochemistry, Gothenburg, 2008 and Bordeaux, 2014.
- co-chair IUPAC project *Reference methods, standards and applications of photoluminescence*
- chair IUPAC project *Measurement of Photoluminescence Quantum Yields*
- member of the board of the Study Group Structure and Reactivity (Chemical Sciences, Netherlands Science Foundation)
- member of board of Works Council of Faculty of Science, University of Amsterdam (April 2013 - July 2015)
- organizer of LEELIS workshop (Low-Energy Electrons: Lithography, Imaging and Soft matter), November 2014

PhD supervision

Co-supervisor of 12 Ph.D. theses until 2006. Formal supervisor (since 2007) of 10 Ph.D. theses (defended until May 2015).

Current teaching

joint B.Sc. and M.Sc. programs of University of Amsterdam and Free University Amsterdam

- Chemistry B.Sc. first year:
  Analytical Chemistry and Spectroscopy
- Chemistry B.Sc. first year:
  Projects Chemistry and Light
- Chemistry B.Sc. second year:
  Molecular spectroscopy
- Chemistry M.Sc.
  NMR Spectroscopy

- Chemistry M.Sc.
  Catalysis for Sustainable Energy (lecture How to capture and use sunlight for energy ?)

Amsterdam University College (joint Liberal Arts and Science program of University of Amsterdam and Free University Amsterdam)

- *Organic Chemistry (lecture + lab activities)*

Holland Research School of Molecular Chemistry

- *Photochemistry, Photophysics and Photobiology (lectures on fluorescence and on photochemical reactions)*