CURRICULUM VITAE
THOMAS GENSCH

Jülich, October, 2007

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PERSONAL INFORMATION:

Date of Birth	: July 19, 1966
Place of Birth	: Berlin, Germany
Citizenship	: Germany
Marital Status	: married
Children	: two

EDUCATION:

1987-1992	Humboldt University Berlin, Department of Physics Prof. B. Röder Diploma November 1992
1981-1985	special highschool for mathematics and physics "Heinrich Hertz" Berlin

POSTGRADUATE EDUCATION:

1993-1996	Max-Planck-Institute for Radiation Chemistry, Muelheim/Ruhr /Heinrich Heine University Düsseldorf Prof. S. Braslavsky/Prof. K. Schaffner/ Prof. G. Büldt Ph.D. December 1996

HONORS AND AWARDS:

2000	Award of the Aventis Institute de France Foundation

1998	Casimir-Ziegler Award of the Royal Dutch Academy of Science and the Nordrhein-Westfälische Academy of Science
1997	Personal Research Grant from the EU in the framework of the TMR-program „Marie Curie“
1996	Ph.D. with predicate „summa cum laude“
1985	Baccalaureate with predicate „summa cum laude“

RESEARCH EXPERIENCE:

2000-present	Research staff at the Institute of Biological Information Processing 1 (Research Centre Jülich). Project(s): 1. Investigation of ion channel conformational changes and interactions in vitro and in living cells by single molecule fluorescence microscopy and spectroscopy. 2. Conformational changes and protein interactions of calcium binding proteins studied by single molecule fluorescence spectroscopy. 3. Two-photon fluorescence microscopy and fluorescence lifetime imaging for the investigation of intracellular ion concentrations.
1999-2000	Postdoctoral work at the Department of Chemistry, University of Amsterdam (E.C. Slater Institute, Prof. K. Hellingwerf) Project: Structural changes of biological photoreceptors Work experience: ns flash photolysis, fs transient absorption spectroscopy (pump-probe), time-resolved circular dichroism and time-resolved small angle x-ray scattering
1997-1999	Postdoctoral work at the Department of Chemistry, Catholic University Leuven/Belgium (Molecular Dynamics and Spectroscopy, Prof. F.C. De Schryver) Project: Space and time-resolved microspectroscopy Work experience: Single molecule spectroscopy, confocal fluorescence microscopy, optical trapping, ps-time-resolved fluorescence spectroscopy
1996-1997	Postdoctoral work at the Max-Planck-Institute for Radiation Chemistry (Prof. S. Braslavsky/Prof. K. Schaffner) Project: Spectroscopic investigations of biological photoreceptors

Work experience: Time-resolved photoacoustic spectroscopy, ns flash photolysis

1992-1993 Biophysics (Prof. B. Röder), Department of Physics, Humboldt University Berlin
Project: Photodynamic therapy
Work experience: Time-resolved luminescence spectroscopy in the visible and near infrared spectral region

1987 Institute of High Energy Physics (now part of Deutsche Elektronen Synchrotron) in Berlin-Zeuthen
Project: data evaluation
Work experience: programming in Fortran and C, Unix

1985 Institute of High Energy Physics in Berlin-Zeuthen
Project: software development
Work experience: programming in Fortran and C

PUBLICATIONS:

Ph.D. thesis (1996):
„Time-resolved laser-induced optoacoustic spectroscopy on dyes, biological photoreceptors and photosynthetic reaction centers in solution.“

Diploma work (1992):
„Investigations of the photosensitized singlet molecular oxygen generation in aqueous detergent solutions.“

SCIENTIFIC SOCIETIES:

German Physics Society
European Photochemistry Association

Dr. Thomas Gensch

Scientific References:

Participation wit oral or poster contributions in about 25 international scientific conferences and Symposia.

Invited lectures:

"Triplet states of porphyrins studied by Photoacoustic spectroscopy"
Depeartment of Chemistrry, (New) University of Lissabon, 26.6.1997

"Microscopy, microspectroscopy and optical manipulation of photoresponsive multilayered giant vesicles formed by poly(propylene imine) dendrimers functionalized with azobenzene units."
18th IUPAC Symposium on Photochemistry in Dresden 24.7. 2000
"Single molecule spectroscopy for biological applications."
Annual Meeting of the Flamish-Wallonic Association for Photochemistry, Louvain la Neuve, Belgium, 21.1.2002

"Two-Photon (TPM) and Fluorescence Lifetime Imaging Microscopy (FLIM) in Biological Applications: Chloride Imaging - a Case Study."
Department of Chemistry, Catholic University Leuven, Belgium, 22.1.2002

"Investigation of protein-protein interaction and ion concentration based on fluorescence microscopy and spectroscopy."
Biomedical Research Institute, University Limburg, Diepenbeek, Belgium, 17.11.2003

List of publications:

1. D.U. Naether, J.R. Gilchrist, **T. Gensch**, and B. Roeder
Temporal and spectral separation of singlet oxygen luminescence from near infrared emitting photosensitizers
Photochemistry & Photobiology, 57:1056-1059 (1993)

2. I. Yruela, M.S. Churio, **T. Gensch**, S.E. Braslavsky, and A.R. Holzwarth
Optoacoustic and singlet oxygen near-IR emission study of the isolated D1-D2-cyt b-559 reaction center complex of photosystem II. Protein movement associated with charge seperation
Journal of Physical Chemistry 98:12789-12795 (1994)

3. M.E. van Brederode, **T. Gensch**, W.D. Hoff, K.J. Hellingwerf, and S.E. Braslavsky
Photoinduced volume change and energy storage associated with the early transformations of the photoactive yellow protein from *Ectothiorhodospira halophila*

Biophysical Journal 68:1101-1109 (1995)

4. **T. Gensch**, M.S. Churio, S.E. Braslavsky, and K. Schaffner
Primary quantum yield and volume change of phytochrome-A phototransformation determined by laser-induced optoacoustic spectroscopy (LIOAS).
Photochemistry & Photobiology 63:719-725 (1996)

5. **T. Gensch**, and S.E. Braslavsky
Volume changes related to triplet formation of a water-soluble porphyrin. A light-induced optoacoustic spectroscopy (LIOAS) study.
Journal of Physical Chemistry B, 101:101-108 (1997)

6. **T. Gensch**, K.J. Hellingwerf, S.E. Braslavsky, and K. Schaffner.
Photoequilibrium in the primary steps of the photoreceptors phytrochrome A and photoactive yellow protein.
Journal of Physical Chemistry A 102:5398-5405 (1998)

7. P. Schmidt, **T. Gensch**, A. Remberg, W. Gärtner, S.E. Braslavsky, K. Schaffner The complexity of the P_r to P_{fr} phototransformation kinetics is an intrinsic property of native phytochrome
Photochemistry & Photobiology 68:754-761 (1998)

8. **T. Gensch**, J. Hofkens, J. van Stam, H. Faes, S. Creutz, K. Tsuda, R. Jerome, H. Masuhara, F.C. De Schryver
Transmission and confocal fluorescence microscopy and time-resolved fluorescence spectroscopy combined with a laser trap. Investigation of optically trapped block copolymer micelles
Journal of Physical Chemistry B 102:8440-8451 (1998)

9. **T. Gensch**, J. Strassburger, W. Gärtner, and S.E. Braslavsky
Volume and enthalpy changes upon photoexcitation of bovine rhodopsin derived from optoacoustic studies by using an equilibrium between bathorhodopsin and blue-shifted intermediate.
Israelian Journal of Chemistry 38:231-236 (1998)

10. C. Catry, K. Jeuris, C. Jackers, J. Hofkens, L. Bastin, **T. Gensch**, K. Grim, F.C. De Schryver, and M. van Damme
Confocal and scanning probe microscopy of surface modifications of thin polymer films induced by infrared diode laser irradiation.
Langmuir 15:1364-1372 (1999)

11 **T. Gensch**, C. Viappiani, and S.E. Braslavsky
Photoacoustic spectroscopy in solution, Applications.
Feature article in Encyclopedia of Spectroscopy and Spectrometry
Academic Press Ltd. London UK (1999)

12 J. Hofkens, L. Latterini, G. De Belder, **T. Gensch**, M. Maus, T. Vosch, Y. Karni, G. Schweitzer, F.C. De Schryver, A Hermann, K. Muellen
Photophysical study of a multi-chromophoric dendrimer by time-resolved fluorescence and femtosecond transient absorption spectroscopy.
Chemical Physics Letters 304:1-9 (1999)

13. F.C. De Schryver, J. Hofkens, **T. Gensch**, S. De Feyter, P. Vanoppen, K. Tsuda, A. Gesquière, P. Foubert, K. Jeuris, W. Verheijen, L. Latterini, G. Schweitzer, T. Vosch, P.C.M. Grim, R. Shukla, and W. Dehaen.
De Boek-Université Publ.
Bibliothèque Scientifique Francqui Monograph, Chapter 4, "Space resolved photochemistry from ensembles to single molecules"
Chapter 19 in „Conjugated oligomers, polymers, and dendrimers: From polyacetylen to DNA." 561-589 (1999) ISBN2-8041-3218-8

14. Y. Karni, S. Jordens, G. De Belder, G. Schweitzer, J. Hofkens, **T. Gensch**, M. Maus, F.C. De Schryver. Intramolecular evolution from a locally excited state to an excimer-like state in a multichromophoric dendrimer evidenced by a femtosecond fluorescence upconversion study.
Chemical Physics Letters 310:73-78 (1999)

15. **T. Gensch**, J. Hofkens, A. Hermann, K. Tsuda, W. Verheijen, T. Vosch, T. Christ, T. Basché, K. Müllen, and F.C. De Schryver
Fluorescence detection from single dendrimers with multiple chromophores. *Angewandte Chemie International Edition English* 38:3752-3756 (1999)

16. **T. Gensch**, C. Viappiani, and S.E. Braslavsky.
Structural volume changes upon photoexcitation of porphyrins. Role of the nitrogen-water interactions.
Journal of the American Chemical Society 121:10573-10582 (1999)

17. K. Tsuda, G. Dol, **T. Gensch**, J. Hofkens, L. Latterini, J.W. Weener, E.W. Meijer, and F.C. De Schryver
Fluorescence from Azobenzene Functionalized Poly(propylene imine) Dendrimers in Self-Assembled Supramolecular Structures.
Journal of the American Chemical Society 122:3445-3452 (2000)

18. A. Molski, **T. Gensch**, J. Hofkens, N. Boens, and F.C. De Schryver
Theory of time-resolved photon detection in single-molecule continuous-excitation fluorescence spectroscopy.
Chemical Physics Letters 318:325-332 (2000)

19. P. Foubert, P. Vanoppen, M. Martin, **T. Gensch**, J. Hofkens, A. Helser, A. Seeger, R.M. Taylor, A.E. Rowan, R.J.M. Nolte, and F.C. De Schryver
Mechanical and optical manipulation of porphyrin rings at the submicrometre scale.
Nanotechnology 11:16-23 (2000)

20. J. Hofkens, M. Maus, **T. Gensch**, T. Vosch, M. Cotlet, F. Köhn, A. Herrmann, K. Müllen, F.C. De Schryver
Probing photophysical processes in individual multichromophoric dendrimers by single molecule spectroscopy.
Journal of the American Chemical Society 122:9278-9288 (2000)

21. A. Haker, J. Hendriks, **T. Gensch**, K. Hellingwerf and W. Crielaard
Isolation, reconstitution and functional characterisation of the *Rhodobactersphaeroides* Photoactive Yellow Protein
FEBS Lett. 486:52-56 (2000)

22. J. Heberle and **T. Gensch**
When FT-IR spectroscopy meets X-ray crystallography
Nature Structural Biology 8:195-197 (2001)

23. **T. Gensch**, K. Tsuda, G.C. Dol, L. Latterini, J.W. Weener, A.P.H.J. Schenning, J. Hofkens, E.W. Meijer, and F.C. De Schryver
Microscopy, Microspectroscopy and Optical Manipulation of Photoresponsive Multilayered Giant Vesicles formed by Poly (propylene imine) Dendrimers Functionalised with Azobenzene Units
Pure and Applied Chemistry 73:435-440 (2001)

24. M. Maus, M. Cotlet, **T. Gensch**, J. Hofkens, F. C. De Schryver, A. Schaffer, and C. A. M. Seidel
Comparison of the Maximum Likelihood Estimation and Nonlinear Least-Suares Fluorescence Lifetime Analysis of Single Molecules. An experimental Approach.
Analytical Chemistry 73:2078-2086 (2001)

25. M Cotlet, J. Hofkens, M. Maus, **T. Gensch**, J. Michiels, G. Dirix, M. Van Guyse, J. Vanderleyden, A. J. W. G. Visser, and F. C. De Schryver
Excited State Dynamics in the Enhanced Green Fluorescent Protein Mutant Probed by Picosecond Time-Resolved Single Photon Counting Spectroscopy
Journal of Physical Chemistry B 105:4999-5006 (2001)

26. J. Hofkens, W. Schroeyers, D. Loos, M. Cotlet, F. Köhn, T. Vosch, M. Maus, A. Herrmann, K. Müllen, **T. Gensch**, and F. C. De Schryver
Triplet States as Non-radiative Traps in Multichromophoric Entities : Single Molecule Spectroscopy of an Artificial and Natural Antenna System
Spectrochimica Acta A 57:2093-2107 (2001)

27. **T. Gensch**, J. Hofkens, F. Köhn, T. Vosch, A. Herrmann, K. Müllen, F. C. De Schryver
Polarisation sensitive single molecule fluorescence detection with linear polarised excitation light and modulated polarisation direction applied to multichromophoric entities. Simulations and experimental results
Single Molecules 2:35-44 (2001)

28. G.C. Dol, K. Tsuda, J.W. Weener, M.J. Bartels, T. Asavei, **T. Gensch**, J. Hofkens, L. Latterini, A.P.H.J. Schennig, E.W. Meijer, and F.C. De Schryver
Merging of Hard Spheres by Photo-Triggered Micromanipulation
Angewandte Chemie International Edition English 40:1710-1714 (2001)

29. K. J. Hellingwerf, J. Hendriks. M. van der Horst, A. Haker, W. Crielaard and **T. Gensch**
The family of Photoactive Yellow Proteins, the Xanthopsins: From structure and mechanism of photoactivation to biological function.
Book chapter in „Photoreceptors“, Comprehensive Series in Photosciences, D.-P. Häder and G. Jori (Eds.), Elsevier Amsterdam in press (2002)

30. J. J. van Thor, **T. Gensch**, K. J. Hellingwerf, and L. Johnson.
Phototransformation of the wild-type *A. Victoria* Green Fluorescent Protein with UV- and Visible light leads to decarboxylation of Glutamate-222
Nature Structural Biology 9:37-41 (2002)

31. J. Hendriks, **T. Gensch**, L. Hviid, M. A. van der Horst, K. J. Hellingwerf, and J. J. van Thor
Transient exposure of hydrophobic surface in the photoactive yellow protein monitored with Nile Red
Biophysical Journal 82:1632-1643 (2002)

32. K. J. Hellingwerf, J. Hendriks, and **T. Gensch**.
On the configurational and conformational changes in photoactive yellow protein that lead to signal generation in Ectothiorhodospira halophila
Journal of Biological Physics 28:395-412 (2002)

33. H. Kaneko, I. Putzier, S. Frings, and **T. Gensch**.
Determination of intracellular chloride concentration in dorsal root ganglion neurons by fluorescence lifetime imaging
Current Topics in Membranes 53:163-185 (2002)

34. J.J. van Thor, **T. Gensch**, K.J. Hellingwerf, and L. N. Johnson.
Phototransformation of the wild-type *A. Victoria* Green Fluorescent Protein with UV- and Visible light leads to decarboxylation of Glutamate 222
Luminescence accepted (2002)

35. **T. Gensch**, C.C. Gradinaru, I.H.M. van Stokkum, J. Hendriks, K.J. Hellingwerf, and R. van Grondelle
The primary photoreaction of photoactive yellow protein (PYP). Anisotropy changes and excitation wavelength dependence
Cemical Physics Letters 356:347-354 (2002)

36. E. Chen, **T. Gensch**, A.B. Gross, J. Hendriks, K.J. Hellingwerf, and D.S. Kliger
Dynamics of protein and chromophore structural changes in the photocycle
of photoactive yellow protein monitored by time-resolved optical rotatory
dispersion
Biochemistry 42:2062-2071 (2003)

37. A. Haker, J. Hendriks, I. H. M. van Stokkum, J. Heberle, K. J. Hellingwerf, W. Crielaard, and **T. Gensch**
The Two Photocycles of Photoactive Yellow Protein from *Rhodobacter sphaeroides.*
Journal of Biological Chemistry 278:8442-8451 (2003)

38. K. J. Hellingwerf, J. Hendriks, and **T. Gensch**
The yellow lab: Will it bring us where we want to go?
Journal of Physical Chemistry A 107:1082-1094 (2003)

39. **T. Gensch,** and C. Viappiani
Time-resolved photothermal methods: accessing time-resolved thermodynamics of photoinduced processes in chemistry and biology.
Photochemical and Photobiological Sciences 2:699-721 (2003)

40. **T. Gensch**, J. Hendriks, and K. J. Hellingwerf
Tryptophan fluorescence monitors structural changes accompanying signaling state formation on the photocycle of photoactive yellow protein.
Photochemical and Photobiologicasl Sciences 3:531-536 (2004)

41. A. Margineanu, J. Hofkens, M. Cotlet, S. Habuchi, A. Stefan, J. Qu, C. Kohl, K. Muellen, J. Vercammen, Y. Engelborghs, **T. Gensch**, and F. C. De Schryver
Photophysics of a watersoluble rylene dye: Comparison with other fluorescent molecules for biological applications.
Journal of Physical Chemistry B:10812242-122551 (2004)

42. H. Kaneko, I. Putzier, S. Frings, U. B. Kaupp, and **T. Gensch**
Chloride accumulation in mammalian olfactory sensory neurons.
Journal of Neuroscience 24:7931-7938 (2004)

43. A. Losi, T. **Gensch**, M. A. van der Horst, K. J. Hellingwerf, and S. E. Braslavsky

Hydrogen-bond network probed by time-resolved optoacoustic spectroscopy: photoactive yellow protein and the effect of E46Q and E46A mutations.
Physical Chemistry Chemical Physics 7:2229-2236 (2005)

44. S. Habuchi, M. Cotlet, **T. Gensch**, T. Bednarz, S. Haber-Pohlmeier, J. Rozenski, G. Dirix, J. Michiels, J. Vanderleyden, J. Heberle, F. C. De Schryver, and J. Hofkens
Evidence for the isomerization and decarboxylation in the photoconversion of the red fluorescent protein DsRed
Journal of the American Chemical Society 127:8977-8984 (2005)

45. **T. Gensch**, M. Boehmer, and P. F. Aramendia
Single molecule blinking and photobleaching separated by wide-field fluorescence microscopy
Journal of Physical Chemistry A 109:6652-6658 (2005)

46. I. H. M. van Stokkum, B. Gobets, **T. Gensch**, F. van Mourik, K. J. Hellingwerf, R. van Grondelle, and J. T. M. Kennis.
(Sub)-picosecond spectral evolution of fluorescence in photoactive proteins studied with a synchroscan streak camera system.
Photochemistry and Photobiology 82:380-388 (2006)

47. E. Polverini, G. Cugini, F. Annoni, S. Abbruzzetti, C. Viappiani, and **T. Gensch**.
Molten globule formation in apomyoglobin monitored by the fluorescent probe nile red.
Biochemistry 45: 5111-5121 (2006)

48. **T. Gensch**, J. Heberle, and C. Viappiani.
Proton transfer in Biological Systems.
Photochemical and Photobiological Sciences 5:529-530 (2006)

49. **T. Gensch**, and C. Viappiani.
Introducing the time-resolved methods series in biophysics.
Photochemical and Photobiological Sciences 5:1101-1102 (2006)

50. **T. Gensch**, K. E. Komolov, I. I. Senin, P. P. Phillipov, and K.-W. Koch.
Ca^{2+}-dependent conformational changes in the neuronal Ca^{2+}-sensor recoverin probed by the fluorescent dye Alexa647.
Proteins – Structure, Function and Bioinformatics 66:492-499 (2007)

51. A. Cukkemane, B. Grueter, K. Novak, **T. Gensch**, W. Boenigk, T. Gerharz, U. B. Kaupp, and R. Seifert.
Subunits act independently in a cyclic nucleotide activated K^+ channel.
EMBO Reports 8:749-755 (2007)

52. D. Gilbert, C. Franjic-Wuertz, K. Funk, **T. Gensch**, S. Frings, and F. Moehrlen.
Differential maturation of chloride homeostasis in primary afferent

neurons of the somatosensory system.
International Journal of Developmental Neuroscience 25:479-489
(2007)