

Dr. Johannes Gierschner



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EDUCATION & PROFESSION

- 2008 Senior Researcher (*Ramón y Cajal* Fellow) at IMDEA Nanoscience, Madrid, Spain
- 2004 - 2007 Research fellow at the Laboratory for Chemistry for Novel Materials, University of Mons, Belgium, with David Beljonne & Jérôme Cornil
- 2003 - 2004 Research fellow at the Institute of Physical and Theoretical Chemistry (IPTC), University of Tübingen, Germany
- 2000 - 2003 Researcher, lecturer and administration manager of the IPTC
- 2000 PhD, University of Tübingen, Germany, with D. Oelkrug

VISITING RESEARCHER POSITIONS

- since 2009 regular visiting researcher at Seoul National University, with Soo Young Park
- 2008 - 2010 ICMol, University of Valencia, Spain
- 2005 with Jean-Luc Brédas, Georgia Institute of Technology, Atlanta, USA
- since 2005 regular visiting researcher at the IPTC, Univ. Tübingen, Germany

SCIENTIFIC STAYS

- 2008 with Soo Young Park, Seoul National University, South Korea
- 2007 with Carlos Silva, Department of Physics, University of Montreal, Canada
- 2006 with Franceso Minardi & Riccardo Tubino, Milano Bicocca, Italy
- 2006 with Larry Lüer & Guglielmo Lanzani, Politecnico di Milano, Milano, Italy
- 2005 with Frank Spano, Temple University, Philadelphia (PA), USA
- 2004 LSF, Rutherford-Appleton Laboratories, Chilton, Didcot, UK
- 1999 Institute for Fluorescence Spectroscopy, J. Lakowicz, Baltimore, USA
- 1998 with Michele Muccini & Carlos Taliani, C.N.R. Bologna, Italy

Publications & Lectures

- more than 60 publications in peer-reviewed journals (> 1500 cites, h-index: 21)
- > 30 talks at international conferences, symposia & workshops (9 invited); > 30 poster presentations; > 40 invited seminars at institute departments and 20 lectures at research meetings.

MANAGEMENT

- 2011 - 2014 Coordination of a MICINN project CONMOL [CTQ2011-27317]
- 2006 - 2010 Coordination of a European Marie Curie Research Training Network RTN NANOMATCH [MRTN-CT-2006-035884]: 15 groups
- 2002 - 2006 Coordination of a European Marie Curie Research Training Network RTN NANOCHANNEL [HPRN-CT-2002-00323]: 8 groups
- 2000 - 2003 Head of the institute administration at the Institute of Physical and Theoretical Chemistry, University of Tübingen, Germany

PROJECTS

Current collaborations inter alia with D. Beljonne & J. Cornil (Mons, B), L. De Cola (Münster, D), A. Meixner (Tübingen, D), H.-J. Egelhaaf (Nürnberg, D), J. Hulliger (Bern, CH), S. Y. Park (Seoul, SK), E. Ortí (Valencia, E), G. Farinola (Bari, I), M. Heeney & I. McCulloch (London, UK), M. Watson (Lexington, KY), R. Martinez Alvarez & N. Martín (Madrid, E).

SERVICE TO THE COMMUNITY

- 2010 Guest Editor for 'Materials' (Special Issue on 'Organic Electronic Materials')
- since 2010 Board member of the CPC conference series
- since 2002 Board member of the European School 'Nanostructured Supramolecular Materials'
- since 2002 Organization of 2 Internat. Conference & Symposia, 4 Summer Schools, 11 Research Meetings
- since 2002 Peer reviewer for ACS, Wiley VCH, AIP, Springer, Elsevier, & RSC journals
- 2000 - 2003 Academic advisor in physical chemistry at the IPTC, University of Tübingen
- Organization of student excursion, undergraduate student & school visits
- Training courses for high-school teachers in physical chemistry
- Contributions to Industrial Training Courses in Spectroscopy

TEACHING

- since 1995 Lecturer, director and assistant supervisor / advisor of experimental courses in all field of physical chemistry, but particularly in optical spectroscopy.
- since 1995 Supervision of postdocs, PhD students, and undergraduates
- 1987 - 1995 Tutoring of high school & university students in mathematics, chemistry, physics

PUBLICATIONS

- 1) π -Conjugation
B. Milián-Medina, J. Gierschner, WIREs Comput. Mol. Sci., accepted
- 2) π -Conjugated Cyanostilbene Derivatives: A Unique Self-Assembly Motif for Molecular Nanostructures with Enhanced Emission and Transport
B.-K. An, J. Gierschner, S. Y. Park, Acc. Chem. Res., in press.
- 3) UV/Vis Spectra of Natural Polyphenols: a Time-dependent Density Functional Theory Study
E. H. Anouar, J. Gierschner, J.-L. Duroux, P. Trouillas, Food. Chem. 131 (2012) 79-89.
- 4) Tuning Interchain and Intrachain Interactions in Polyfluorene Copolymers
Y.-S. Huang, J. Gierschner, J. P. Schmidtke, R. H. Friend, D. Beljonne, Phys. Rev. B. 84 (2011) 205311
- 5) Excited State Switching by Per-Fluorination of para-Oligophenylenes
B. Milián-Medina, S. Varghese, R. Ragni, H. Boerner, E. Ortí, G. M. Farinola, J. Gierschner, J. Chem. Phys. 135 (2011) 124509.
- 6) Polarized Fluorescence from Single Stopcock Molecules at Channel Entrances of an All-Organic Host-Guest Compound
A. M. Chizhik, R. Berger, A. I. Chizhik, A. Lyubimtsev, L. Viani, J. Cornil, S. Bär, M. Hanack, J. Hulliger, A. J. Meixner, H.-J. Egelhaaf, J. Gierschner, Chem. Mater. 23 (2011) 1088-1090.
- 7) Oligothiophenes versus oligothiophenes: Impact of ring fusion on the optical properties
J. Aragón, P. M. Viruela, J. Gierschner, E. Ortí, B. Milián Medina, Phys. Chem. Chem. Phys. 13 (2011) 1457-1465.
- 8) Electronic properties and supramolecular organization of terminal bis-alkylethynyl-substituted benzodithiophenes
M. A. M. Leenen, F. Cucinotta, L. Viani, A. Mavrinskiy, W. Pisula, J. Gierschner, J. Cornil, A. Prodi-Schwab, H. Thiem, K. Müllen, L. De Cola, J. Phys. Chem. B. 114 (2010) 14614-14620.
- 9) Multi-Stimuli Two-Color Luminescence Switching via Different Slip-Stacking of Highly Fluorescent Molecular Sheets
S.-J. Yoon, J. W. Chung, J. Gierschner, K. S. Kim, M.-G. Choi, D. Kim, S. Y. Park, J. Am. Chem. Soc. 132 (2010) 13675-13683.
- 10) Alignment and Relaxation Dynamics of Dye Molecules in Host-Guest Inclusion Compounds as Probed by Dielectric Spectroscopy
J. Tsuwi, R. Berger, G. Labat, G. Couderc, N.-R. Behrnd, P. Ottiger, F. Cucinotta, K. Schürmann, M. Bertoni, L. Viani, J. Gierschner, J. Cornil, A. Prodi-Schwab, L. De Cola, M. Wübbenhorst, J. Hulliger, J. Phys. Chem. A 114 (2010) 6956-6963.
- 11) Theoretical Characterization of Charge Transport in One-dimensional Collinear Arrays of Organic Conjugated Molecules
L. Viani, Y. Olivier, S. Athanasopoulos, D. A. de Silva Filho, J. Hulliger, J.-L. Brédas, J. Gierschner, J. Cornil, ChemPhysChem 11 (2010) 1062-1068.
- 12) Weak Forces at Work in Dye-Loaded Zeolite Materials: Spectroscopic Investigation on Cation-Sulfur Interactions
G. Macchi, C. Botta, G. Calzaferri, M. Catti, J. Cornil, J. Gierschner, F. Meinardi, R. Tubino, Phys. Chem. Chem. Phys. 12 (2010) 2599-2605.
- 13) Conjugated Polymers with Large Effective Stokes Shift: Benzobisdioxole-based Poly(phenylene-ethynylene)s
T. Dutta, K. B. Woody, S. R. Parkin, M. D. Watson, J. Gierschner, J. Am. Chem. Soc. 131 (2009) 17321-17327.
- 14) A Deep Red-Emitting Perylene-3,4,9,10-tetracarboxylic diimide-Iridium-Complex Dyad: Following the Photophysical Deactivation Pathways
R. D. Costa, F. J. Céspedes-Guirao, H. J. Bolink, F. Fernández-Lázaro, A. Sastre-Santos, E. Ortí, J. Gierschner, J. Phys. Chem C 113 (2009) 19292-19297.
- 15) A White-Light-Emitting Molecule: Frustrated Energy Transfer Between Constituent Emitting Centers
S. Park, J. E. Kwon, S. H. Kim, J. Seo, K. W. Chung, S.-Y. Park, D.-J. Jang, B. Milián Medina, J. Gierschner, S. Y. Park, J. Am. Chem. Soc. 131 (2009) 14043-14049.

- 16) *On the origin of small band gaps in alternating thiophene – thienopyrazine oligomers*
B. P. Karsten, L. Viani, J. Gierschner, J. Cornil, R. A. J. Janssen, *J. Phys. Chem. A* 113 (2009) 10343–10350.
- 17) *Spatial Control of Energy Transfer in Supramolecular Host-Guest Architectures*
L. Viani, L. Poulsen Tolbod, M. Jazdyk, G. Patrinoiu, F. Cordella, A. Mura, G. Bongiovanni, C. Botta, D. Beljonne, J. Cornil, M. Hanack, H.-J. Egelhaaf, J. Gierschner, *J. Phys. Chem. B* 113 (2009) 10566–10570.
- 18) *Efficient Deep-Red Light-Emitting Electrochemical Cells based on a Perylene-diimide-Iridium-Complex Dyad*
R. D. Costa, F. J. Céspedes-Guirao, E. Ortí, H. J. Bolink, J. Gierschner, F. Fernández-Lázaro, A. Sastre-Santos, *Chem. Comm.* (2009) 3886-3888.
- 19) *Electronic Structure of Small Bandgap Polymers Based on Cyclopentadithiophenes and Acceptor Units*
B. P. Karsten, J. C. Bijleveld, L. Viani, J. Cornil, J. Gierschner, R. A. J. Janssen, *J. Mater. Chem.* 19 (2009), 5343-5350.
- 20) *Dynamics of Guest Molecules in PHTP Inclusion Compounds as Probed by Solid-State NMR and Fluorescence Spectroscopy*
G. Srinivasan, J. A. Villanueva-Garibay, K. Müller, D. Oelkrug, B. Milián Medina, D. Beljonne, J. Cornil, M. Wykes, L. Viani, J. Gierschner, R. Martinez Alvarez, M. Jazdyk, M. Hanack, H.-J. Egelhaaf, *Phys. Chem. Chem. Phys.* 11 (2009) 4996-5009.
- 21) *Exciton versus Electronic Couplings in Molecular Assemblies: The Importance of Non-Nearest Neighbour Interactions*
J. Gierschner, Y.-S. Huang, B. Van Averbeke, J. Cornil, R. H. Friend, D. Beljonne, *J. Chem. Phys.* 130 (2009) 044105.
- 22) *Spectroscopic Signatures for Planar Equilibrium Geometries in Methyl-Substituted Oligothiophenes*
G. Macchi, B. Milián Medina, M. Zambianchi, R. Tubino, J. Cornil, G. Barbarella, J. Gierschner, F. Meinardi, *Phys. Chem. Chem. Phys.* 11 (2009) 984-990.
- 23) *Conformational Disorder and Ultrafast Exciton Relaxation in PPV-family Conjugated Polymers*
T. E. Dykstra, E. Hennebicq, D. Beljonne, J. Gierschner, G. Claudio, E. R. Bittner, J. Knoester, G. D. Scholes, *J. Phys. Chem. B* 113 (2009) in press.
- 24) *EDOT-type Materials: Planar but not Rigid*
B. Milián Medina, D. Wasserberg, S. C. J. Meskers, E. Mena-Osteritz, P. Bäuerle, J. Gierschner, *J. Phys. Chem. A* 112 (2008) 13282–13286.
- 25) *An Oligomer Study on Small Bandgap Polymers*
B. P. Karsten, L. Viani, J. Gierschner, J. Cornil, R. A. J. Janssen, *J. Phys. Chem. A* 112 (2008) 10764–10773.
- 26) *Molecular Packing Effects on the Optical Spectra and Triplet Dynamics in Oligofluorene Films*
J. Cabanillas-Gonzalez, C. Sciascia, G. Lanzani, S. Toffanin, R. Capelli, M. C. Ramon, M. Muccini, J. Gierschner, T.-Y. Hwu, K.-T. Wong, *J. Phys. Chem. B* 112 (2008) 11605-11609.
- 27) *Highly fluorinated Benzobisbenzothiophenes*
Y. Wang, S. R. Parkin, J. Gierschner, M. D. Watson, *Org. Lett.* 10 (2008) 3307-3310.
- 28) *Independent Tuning of Electronic Levels in Pentacene by Site-Specific Substitution*
B. Milián Medina, J. E. Anthony, J. Gierschner, *ChemPhysChem.* 9 (2008) 1519-1523.
- 29) *Oligophenylenevinylenes in Spatially Confined Nanochannels: Monitoring Intermolecular Interactions by UV/Vis and Raman Spectroscopy*
M. Alosyna, B. Milián Medina, L. Poulsen, J. Moreau, D. Beljonne, J. Cornil, G. Di Silvestro, M. Cerminara, F. Meinardi, R. Tubino, H. Detert, S. Schrader, H.-J. Egelhaaf, C. Botta, J. Gierschner, *Adv. Funct. Mater.* 18 (2008) 915-921.
- 30) *A New Functionalization Strategy for Pentacene*
J. E. Anthony, J. Gierschner, C. A. Landis, S. R. Parkin, J. B. Sherman, R. C. Bakus II, *Chem. Comm.* (2007) 4746-4748.
- 31) *Optical spectroscopy of a polyfluorene copolymer at high pressure: intra- and inter-molecular interactions*
J. P. Schmidtke, J.-S. Kim, J. Gierschner, C. Silva, R. H. Friend, *Phys. Rev. Lett.* 99 (2007) 167401.
- 32) *Electronic Structure and Charge Transport Properties of Polythiophene Chains Containing Thienothiophene Units: A Joint Experimental and Theoretical Study*

- B. Milián Medina, A. Van Vooren, P. Brocorens, J. Gierschner, M. Shkunov, M. Heeney, I. McCulloch, R. Lazzaroni, J. Cornil, *Chem. Mater.* 19 (2007) 4949-4956.
- 33) *Three-Dimensional Energy Transport in Highly Luminescent Host-Guest Crystals: A Quantitative Experimental and Theoretical Study*
L. Poulsen, M. Jazdyk, J.-E. Communal, J. C. Sancho-García, A. Mura, G. Bongiovanni, D. Beljonne, J. Cornil, M. Hanack, H.-J. Egelhaaf, J. Gierschner, *J. Am. Chem. Soc.* 129 (2007) 8585-8593.
- 34) *Migration-Assisted Nonlinear Quenching in Random Media*
D. Khoptyar, J. Gierschner, H.-J. Egelhaaf, *J. Opt. Soc. Am. B* 24 (2007) 1527-1534.
- 35) *Liquid Crystalline Octaalkoxycarbonyl Phthalocyanines: Design, Synthesis, Electronic Structure, Self-aggregation and Mesomorphism*
S. Sergeev, E. Pouzet, O. Debever, J. Levin, J. Gierschner, J. Cornil, R. Gómez Aspe, Y. H. Geerts, *J. Mater. Chem* 17 (2007) 1777-1784.
- 36) *Hole-Vibronic Coupling in Oligothiophenes: Impact of Backbone Torsional Flexibility on Relaxation Energies*
D. A. da Silva Filho, V. Coropceanu, D. Fichou, N. E. Gruhn, T. Bill, J. Gierschner, J. Cornil, J.-L. Brédas, *Phil. Trans. R. Soc. A* 365 (2007) 1435-1452.
- 37) *Effect of Fluorination on the Electronic Levels and Optical Excitations of π -Conjugated Oligomers*
B. Milián Medina, D. Beljonne, H.-J. Egelhaaf, J. Gierschner, *J. Chem. Phys.* 126 (2007) 111101.
- 38) *Optical Bandgaps of π -Conjugated Organic Materials at the Polymer Limit: Experiment and Theory*
J. Gierschner, J. Cornil, H.-J. Egelhaaf, *Adv. Mater.* 19 (2007) 173-191.
- 39) *Tuning of Molecular and Solid State Properties by Fluorination: A Theoretical Study*
J. Gierschner, B. Milián Medina, H.-J. Egelhaaf, D. Beljonne, J.-L. Brédas, *Polym. Mater. Sci. Eng.* 96 (2007) 753-754.
- 40) *Highly Fluorescent Crystalline and Liquid Crystalline Columnar Phases of Pyrene-Based Structures*
A. Hayer, V. de Halleux, A. Köhler, A. El-Garouhy, E.W. Meijer, J. Barberá, J. Tant, J. Levin, M. Lehmann, J. Gierschner, J. Cornil, Y. H. Geerts, *J. Phys. Chem. B* (2006), 7653-7659.
- 41) *Solid State Optical Properties of Polyconjugated Molecules: π -Stack contra Herringbone*
J. Gierschner, M. Ehni, H.-J. Egelhaaf, B. Milián Medina, D. Beljonne, H. Benmansour, G. C. Bazan, *J. Chem. Phys.* 123 (2005) 144914.
- 42) *Comment on 'Structure-Property Relationships for Electron-Vibrational Coupling in Conjugated Organic Oligomeric Systems'*
J. Gierschner, *J. Phys. Chem. B* 109 (2005) 22081.
- 43) *Nanometric scale investigation of the nonlinear efficiency of perhydrotriphenylene inclusion compounds*
K. Komorowska, S. Brasselet, G. Dutier, I. Ledoux, J. Zyss, L. Poulsen, M. Jazdyk, H.-J. Egelhaaf, J. Gierschner, M. Hanack, *Chem. Phys.* 318 (2005) 12-20.
- 44) *Design of π -Conjugated Organic Materials for One-Dimensional Energy Transport in Nanochannels*
J. C. Sancho Garcia, J. L. Brédas, D. Beljonne, J. Cornil, R. Martinez Alvarez, M. Hanack, L. Poulsen, J. Gierschner, H.-G. Mack, H.-J. Egelhaaf, D. Oelkrug, *J. Phys. Chem. B.* 109 (2005) 4872-4880.
- 45) *Breakdown of the Mirror Image Symmetry in the Optical Absorption/Emission Spectra of Oligo(paraphenylenes)*
G. Heimel, M. Daghofer, J. Gierschner, E. J. W. List, A. C. Grimsdale, K. Müllen, D. Beljonne, J. L. Brédas, E. Zojer, *J. Chem. Phys.* 122 (2005) 054501.
- 46) *Theoretical Characterization and Design of End-substituted Distyrylbenzenes as Excitation Shuttles in One-dimensional Channels*
J. C. Sancho Garcia, L. Poulsen, J. Gierschner, R. Martinez Alvarez, E. Hennebicq, M. Hanack, H.-J. Egelhaaf, D. Oelkrug, D. Beljonne, J. L. Brédas, J. Cornil, *Adv. Mater.* 16 (2004) 1193-1197.
- 47) *Optical Properties of Oligophenylenevinylenes*
J. Gierschner, D. Oelkrug, in H. Nalwa (Ed.): *Encyclopedia of Nanoscience and Nanotechnology*, Vol. 8, American Scientific Publishers (2004) 219-238.
- 48) *Modeling of the Optical Properties of Cofacial Chromophore Pairs: Stilbenophane*
J. Gierschner, H.-G. Mack, D. Oelkrug, I. Waldner, H. Rau, *J. Phys. Chem. A.* 108 (2004) 257-263.
- 49) *Time-resolved Fluorescence Spectroscopy on Single Oligophenylenevinylene Nanoparticles*
J. Gierschner, H.-J. Egelhaaf, D. Oelkrug, S. Botchway, A. W. Parker, *Tech. Rep. - Counc. Cent. Lab. Res. Counc.* 2003-2004, 131-133.

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- 50) *Luminescence of Molecules Confined in Nanochannels*
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- 51) *Optical Spectra of Oligothiophenes: Vibronic States, Torsional Motions, and Solvent Shifts*
J. Gierschner, H.-G. Mack, H.-J. Egelhaaf, S. Schweizer, B. Doser, D. Oelkrug, Synth. Met. 138 (2003) 311-315.
- 52) *Fluorescence and Absorption Spectra of Oligophenylenevinylenes: Vibronic Coupling, Band Shapes and Solvatochromism*
J. Gierschner, H.-G. Mack, L. Lürer, D. Oelkrug, J. Chem. Phys. 116 (2002) 8596-8609.
- 53) *Polarizability Effects and Energy Transfer in Quinquethiophene Doped Bithiophene and OPV films*
H.-J. Egelhaaf, J. Gierschner, D. Oelkrug, Synth. Met. 127 (2002) 221-227.
- 54) *Highly Luminescent Oligo(phenylenevinylene) Films: The stereochemical Approach*
K.-H. Schweikhart, M. Hohloch, E. Steinhuber, M. Hanack, L. Lürer, J. Gierschner, H.-J. Egelhaaf, D. Oelkrug, Synth. Met. 121 (2001) 1641-1642.
- 55) *Evolution of Optical Absorption from Small Oligomers to Ideally Conjugated PPV and MEH-PPV Oligomers*
D. Oelkrug, J. Gierschner, H.-J. Egelhaaf, L. Lürer, A. Tompert, K. Müllen, U. Stalmach, H. Meier, Synth. Met. 121 (2001) 1693-1694.
- 56) *One Dimensional Coupling of Oligophenylenevinylenes in Perhydrotriphenylene Matrices*
J. Gierschner, L. Lürer, D. Oelkrug, E. Musluoglu, B. Behnisch, M. Hanack, Synth. Met. 121 (2001) 1695-1696.
- 57) *Preparation and Optical Properties of Oligophenylenevinylene/Perhydrotriphenylene Inclusion Compounds*
J. Gierschner, L. Lürer, D. Oelkrug, E. Musluoglu, B. Behnisch, M. Hanack, Adv. Mater. 12 (2000) 757-761.
- 58) *Zum Einfluß intermolekularer Wechselwirkungen auf die Photophysik in Filmen und Nanopartikeln p-konjugierter organischer Moleküle - Optische Spektroskopie an Oligophenylvinylenen*
J. Gierschner, Verlag Köhler, Tübingen 2000 (ISBN 3-932694-76-7).
- 59) *Photoinduced Absorption in Thin Oligo(phenylenevinylene) Films*
D. Oelkrug, H.-J. Egelhaaf, B. Lehr, J. Gierschner, L. Lürer, P. Matousek, M. Towrie, Tech. Rep. - Counc. Cent. Lab. Res. Counc. (1999) 1-9.
- 60) *Optical Constants of Highly Oriented Oligothiophene Films and Nanoparticles*
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- 61) *Electronic Deactivation and Energy Transfer in Doped Oligophenylenevinylene Nanoparticles*
J. Gierschner, H.-J. Egelhaaf, D. Oelkrug, K. Müllen, J. Fluorescence 8 (1998) 37-44.
- 62) *Tuning of Fluorescence Yields in Films and Nanoparticles of Oligophenylenevinylenes*
D. Oelkrug, A. Tompert, J. Gierschner, H.-J. Egelhaaf, M. Hanack, M. Hohloch, E. Steinhuber, J. Phys. Chem. B 102 (1998) 1902-1907.
- 63) *Absorption, Fluorescence and Light Scattering of Oligothiophene and Oligophenylenevinylene Nanoaggregates*
J. Gierschner, H.-J. Egelhaaf, D. Oelkrug, Synth. Met. 84 (1997) 529-530.
- 64) *Characterization of Oriented Oligo- (phenylenevinylene) Films and Nano-Aggregates by UV/Vis-Absorption and Fluorescence Spectroscopy*
H.-J. Egelhaaf, J. Gierschner, D. Oelkrug, Synth. Met. 83 (1996) 221-226.
- 65) *Electronic Deactivation in Single Chains, Nano-Aggregates and Ultrathin Films of Conjugated Oligomers*
D. Oelkrug, H.-J. Egelhaaf, J. Gierschner, A. Tompert, Synth. Met. 76 (1996) 249-253.