



LUDWIG-
MAXIMILIANS-
UNIVERSITÄT
MÜNCHEN

Fakultät für Chemie
und Pharmazie



Research Report

12

2012 – 2013



Research Report

Faculty for Chemistry and Pharmacy
2012 - 2013
Volume 12

Ludwig-Maximilians-Universität
München

Publisher:
Faculty of Chemistry and Pharmacy
Ludwig-Maximilians-Universität München
München, 2014

Group leaders are responsible for the contents.

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Print:
REPRODUKT digital GmbH
Freisinger Landstraße 21
80939 München
Part of RCOM gruppe
www.rcom-gruppe.de

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Dear Reader:

The last two years have seen a lot of exciting research and a rich academic life at our faculty. The success of our faculty members has been rewarded with publications in leading scientific journals, prestigious awards and high-level grants. This report documents the activities of the faculty in its mission to advance the sciences.

We are particularly proud of our achievements in the second round of the German Excellence Initiative. The excellence cluster *Center for Integrated Protein Sciences Munich* (CIPSM) was renewed and, with the graduate school *Quantitative Biosciences Munich* (QBM), we brought a second excellence program to the faculty. Members made seminal contributions to the successful renewal of the excellence cluster *Nanosystems Initiative Munich* (NIM) as well as to other initiatives. The renewal or establishment of collaborative research clusters, research units, graduate research training programs as well as numerous individual grants from the German Research Council and several prestigious ERC grants further demonstrated the innovative research in our laboratories.

Universitas magistrorum et scholarium – the success of our research is not possible without the excellent work of our students and postdocs. Our graduate programs have focused on advanced cross-disciplinary training with an eye to the future of educating a competitive next generation of scientists. With the important help of government grants, we improved undergraduate teaching and implemented innovative elements. The first undergraduate research conference brought together undergraduates with faculty, allowing for a more direct exposure of undergraduates to ongoing research projects. Research days organized by the excellence programs and highly visible seminar series fostered intellectual exchange with leading scientists from all over the world.

We also needed to cope with substantial and unexpected difficulties. The discovery of construction errors in the fume hoods led to the temporary shutdown of research and teaching laboratories. Despite severe hindrances, our members maintained not only their teaching programs but also their competitive research activities.

I would especially like to thank my predecessor Dean Prof. Mayr, the LMU Governing Board, the Bavarian Ministry of Science and Education, and all persons involved for their tremendous efforts in overcoming that difficult situation!

The next two years will bring important responsibilities and opportunities to shape the future of the faculty's research and teaching. The foundation stone for the new research building Biosys M was laid and we are excited to soon be bringing scientists together to explore the new area of molecular systems biology. Bachelor and Master programs are currently being revised and improved. Most importantly, due to faculty retirements and transfers, an unusually large number of new professorships as well as new professorships from the excellence programs will allow us to further develop existing foci and implement new research directions.

My thanks to all faculty members, including technical and administrative staff and our supporters, for their contributions toward creating a fantastic research and teaching environment. I am honored to be a part of it and look forward very much to working together with you to shape our faculty in the years to come.



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Dean of Faculty of Chemistry and Pharmacy

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Pharmaceutical Technology and Biopharmaceutics: Haus B
Pharmacology: Haus C

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Inorganic Chemistry

Univ.-Prof. Dr. rer. nat. Dr. h.c. Wolfgang Beck, em.

Born 1932 in München, study of chemistry at Technische Hochschule München (now TUM), 1960 PhD degree with Prof. Walter Hieber, 1963 Habilitation and Privatdozent at TH München, since 1968 o. Professor and Vorstand of Institut für Anorganische Chemie LMU München, 1973-1974 Dean of Fakultät für Chemie und Pharmazie, 1977 Guest Professor at University of Wisconsin, Madison, 1992-1994 Member of Senat and Versammlung at LMU, 1981-1992 Referee of Deutsche Forschungsgemeinschaft, since 2000 Emeritus, 2011 Dr.h.c. TU München.

Research Topics

Organometallic and Coordination Chemistry. History of Chemistry at LMU

Memberships

GDCh, American Chemical Society, The Royal Society of Chemistry.

Publications – Scientific Papers

St.Schiesser, P. Mayer, Th. Carell, W. Beck. Molecular and Crystal Structure of Potassium-L-alaninato-dichloridoplatinate(II), $K[Pt(L\text{-alaO})Cl_2]$. *Z. Naturforsch.* **2012**, 67b, 849 - 852.

M. Graf, K. Karaghiosoff, P. Mayer, W. Beck. Synthesis and Characterization of New Bis-Cyclometalated Rhodium and Iridium Complexes Containing the Glycinamidato Ligand. *Z. Anorg. Allg. Chem.* **2013**, 639, 1117 - 1121.

W. P..Fehlhammer, W. Beck. Azide Chemistry - An Inorganic Perspective, Part I Metal Azides: Overview, General Trends and Recent Developments. *Z. Anorg. Allg. Chem.* **2013**, 639, 1053 - 1082.

W. Beck, G. Fischer, M. Göbel, J. Evers, Th. M. Klapötke. A Review on Nitrosyl Metal Halides and Mass Spectroscopic Support for the Dimeric Structure of $[Ni(NO)I]_2$ and $[Pd(NO)Cl]_2$. A Tribute to Walter Hieber (1895 – 1976) and Fritz Seel (1915 – 1987). *Z. Anorg. Allg. Chem.* **2013**, 639, 1132 – 1139.

W. Beck. A Glance on Pentacarbonylrhenate(-I) $[Re(CO)_5]^-$ and on the (umgepolte) Penatcarbonylrhenium(+I) Cation $[Re(CO)_5]^+$ (as $Re(CO)_5FBF_3$) and their Reactions. *Z. Anorg. Allg. Chem.* **2013**, 639, 2117 – 2124.

Inorganic Chemistry

Dr. Thomas Bräuniger

Born 1968 in Dresden/Germany, 1988-1993 study of chemistry at Humboldt and Technical University Berlin, 1993-1994 M. Sc. student at the University of Oklahoma, Norman (USA), 1995-2000 Ph. D. student at The Weizmann Institute, Rehovot (Israel), 2001-2002 postdoctoral fellow at the University of Durham (UK), 2003-2008 postdoctoral fellow and project leader at the University of Halle-Wittenberg, 2009-2013 Head of NMR group at the Max-Planck-Institute for Solid-State Research, Stuttgart, since June 2013 Head of Solid-State NMR at the Inorganic Chemistry Department (AK Schnick) at LMU Munich.

Research Topics

Application of solid-state NMR for structure elucidation and characterization of dynamics. Development of solid-state NMR methods to improve sensitivity and resolution in solid-state NMR of quadrupolar nuclei with half-integer spin, which also includes studies about the efficiency of heteronuclear spin decoupling for solid samples.

Memberships

Member of the National Magnetic Resonance Society (NMRS) of India
Member of the Editorial Board of *The Open Magnetic Resonance Journal*

Publications – Scientific Papers

2013

Bräuniger T, Jansen M. Solid-state NMR Spectroscopy of Quadrupolar Nuclei in Inorganic Chemistry. *Z. Anorg. Allg. Chem.* 2013; 639:857-879.

2012

Issac I, Heinzmann R, Becker SM, Bräuniger T, Zhao-Karger Z, Adelhelm C, Chakravadhanula VSK, Kübel C, Ulrich AS, Indris S. Synthesis of nanocrystalline solid solutions $\text{Al}_y\text{Sn}_{1-y}\text{O}_{2-y/2}$ ($y=0.57, 0.4$) investigated by XRD, $^{27}\text{Al}/^{119}\text{Sn}$ MAS NMR, and Mössbauer spectroscopy. *RSC Adv.* 2012; 2:10700-10707.

Bräuniger T, Pilz T, Vinod Chandran C, Jansen M. Full differentiation and assignment of boron species in the electrolytes $\text{Li}_2\text{B}_6\text{O}_9\text{F}_2$ and $\text{Li}_2\text{B}_3\text{O}_4\text{F}_3$ by solid-state ^{11}B -NMR spectroscopy. *J. Solid State Chem.* 2012; 194:245-249.

Bräuniger T. Enhancing the central-transition NMR signal of quadrupolar nuclei by spin population transfer using SW-FAM pulse trains with a tangent-shaped sweep profile. *Solid State Nucl. Magn. Reson.* 2012; 45-46:16-22.

Other Activities

Grant reviewer for Deutsche Forschungsgemeinschaft (DFG), Reviewer for Scientific Journals: *Solid State Nuclear Magnetic Resonance*, *Magnetic Resonance in Chemistry*, *Journal of Solid State Chemistry*, *Zeitung für Allgemeine und Angewandte Chemie*, *Chemistry – a European Journal*, *Inorganic Chemistry*, *Journal of Physical Chemistry*, *Solid State Ionics*, *Physical Review Letters*, *Zeitschrift für Physikalische Chemie*.

Inorganic Chemistry

Apl. Prof. Dr. rer. nat. Hans-Christian Böttcher

Born 1957 in Zwickau, 1978-1983 study of chemistry at Martin Luther University Halle-Wittenberg, 1985 PhD degree in the group of B. Walther (metal cluster chemistry), scientific assistant at the University of Halle, 1991-1992 Postdoctoral fellow in the group of Prof. G. Süss-Fink at the University of Neuchâtel/Switzerland (homogenous catalysis), 1992-1993 research in homogenous catalysis for BASF-AG/Ludwigshafen (at University of Neuchâtel), 1995 research stay in the group of Prof. R. Schmutzler (Technical University of Braunschweig), 1996 Habilitation at the Halle University (coordinatively unsaturated metal cluster compounds), Privatdozent (C2) in Halle, 1999 representative professor (C4) at the University of Karlsruhe (TH), since 2004 scientific assistant at the Department of Chemistry at LMU Munich (group of Prof. P. Klüfers), since 2005 Privatdozent in Munich, since 2011 apl. Prof. at the Department of Chemistry in Munich.

Research Topics

Fixation and activation of small molecules in the coordination sphere of di- and multi-nuclear metal carbonyl complexes. Protonation of metal-metal bonds in dinuclear metal complexes. Synthesis of coordination compounds containing nitrosyl ligands. Hyponitrito complexes as model compounds of active sites in processes of enzymatic nitric oxide reductases (NOR). Studies of dynamic effects in complexes with sterically demanding phosphane ligands using NMR spectroscopy (rhodium, iridium).

Memberships

Member of the Gesellschaft Deutscher Chemiker.

Publications – Scientific Papers

Activation of C–Cl bonds: Synthesis and Characterization of $[\text{Ru}_2(\mu\text{-Cl})(\mu\text{-P}^t\text{Bu}_2)(\mu\text{-Ph}_2\text{PN}(\text{H})\text{PPh}_2)(\text{CO})_4]$. T. Mayer, H.-C. Böttcher, *Z. Naturforsch.* **2013**, 68b, 743–746.

Protonation of metal-metal bonds in coordinatively unsaturated diruthenium cores. T. Mayer, H.-C. Böttcher, *Polyhedron* **2013**, 50, 507–511.

Eine effektive Synthese von $\text{cis-}[\text{IrCl}_2(\text{CO})_2]^-$ unter Verwendung von Ameisensäure als Carbonylierungsagens. H.-C. Böttcher, P. Mayer, *Z. Anorg. Allg. Chem.* **2013**, 639, 234–236.

Synthesis and structural characterization of bis-cyclometalated complexes [M(ppy)₂(S₂COCH₃)] (M = Rh, Ir; ppy = 2-(*p*-tolyl)pyridinato). M. Graf, H.-C. Böttcher, K. Sünkel, *Inorg. Chim. Acta* **2013**, *715*, 363–366.

Luminescent diiridium(III) complex with a bridging biuretato ligand in unprecedented *N,N':O,O'* coordination. M. Graf, K. Sünkel, R. Czerwieńiec, H.-C. Böttcher, *J. Organomet. Chem.* **2013**, *745–746*, 341–346.

Synthesis and Molecular Structure of [Fe₂(μ-PrBu₂)₂(NO)₄]. H.-C. Böttcher, P. Mayer, T. Mayer, *Z. Anorg. Allg. Chem.* **2013**, *639*, 2609–2611.

Reductive NO dimerization to *trans*-hyponitrite in diruthenium complexes: intramolecular attack of hyponitrite on a CO ligand. T. Mayer, P. Mayer, H.-C. Böttcher, *J. Organomet. Chem.* **2012**, *700*, 41–47.

Combining two coordinatively unsaturated diruthenium cores by the tetradentate ligand (Ph₂P)₂NCH₂C₆H₄CH₂N(PPh₂)₂. T. Mayer, H.-C. Böttcher, *J. Organomet. Chem.* **2012**, *715*, 64–68.

Structural characterization of *N,N*-Bis(diphenylphosphanyl)propylamine. T. Mayer, H.-C. Böttcher, *Z. Naturforsch.* **2012**, *67b*, 504–506.

Synthese und Kristallstruktur des Komplexsalzes [Au(^tBu₂PH)₂][HCl₂]. H.-C. Böttcher, P. Mayer, H. Schmidbauer, *Z. Naturforsch.* **2012**, *67b*, 543–548.

Reduktive Dimerisierung von NO an Dirutheniumkomplexen und Bildung eines tridentaten 2,2-Bis(diphenylphosphanyl)-ethanolato-Liganden. T. Mayer H.-C. Böttcher, *Z. Anorg. Allg. Chem.* **2012**, *638*, 1755–1760.

Crystal and Molecular Structures of the *trans*-Hyponitrite Compounds Ph₃E(μ-ONNO)EPh₃ (E = Ge, Pb). T. Mayer H.-C. Böttcher, *Z. Anorg. Allg. Chem.* **2012**, *638*, 1071–1074.

Other Activities

Reviewer for: Dalton Transactions; Organometallics; Journal of Organometallic Chemistry; Zeitschrift für Anorganische und Allgemeine Chemie; Phosphorus, Sulfur, Silicon and Related Elements.

Inorganic Chemistry

Prof. Dr. rer. nat. Sonja Herres-Pawlis

Born 1979 in Schwelm/NRW, 1998-1992 study of chemistry at University of Paderborn and Ecole de Chimie de Montpellier (France), 2005 PhD degree in the group of Prof. Dr. Gerald Henkel, University of Paderborn, 2006 Postdoctoral fellow in the group of Prof. Dr. T. Daniel P. Stack at Stanford University, California, USA, 2007-2008 Postdoctoral fellow in the group of Prof. Dr. Gerald Henkel, University of Paderborn, 2009-2011 Habilitand in the group of Prof. Dr. Klaus Jurkschat, TU Dortmund, since 2011 W2 tenure track professor LMU Munich.

Research Topics

Bioinorganic coordination chemistry: development of functional Tyrosinase models and electron transfer systems (aided by synthetic, spectroscopic and theoretical methods), polymerization catalysis: catalysts for ring-opening polymerization of cyclic lactones, atom transfer radical polymerization, workflows in bioinorganic quantum chemistry

Honors, Awards, Memberships

Member of the „Junges Kolleg“ of the Northrhine-Westphalian Academy of Science and Arts

Member of the German Chemical Society

Member of the American Chemical Society

Extramural Research Funding

State Major Instrumentation Programme “UV-Resonance-Raman Setup”

European Research Council Support Action “Building a European Research Community through Interoperable Workflows and Data (ER-flow)”

Research Unit 1405 (German Research Council) “Dynamics of Electron Transfer Processes within Transition Metal Sites in Biological and Bioinorganic Systems”

Collaborative Research Center 749 (German Research Council) “Dynamics and Intermediates of Molecular Transformations”

Normal Grant of German Research Council “Experimental and theoretical investigations on ring-opening polymerisation of renewable cyclic esters mediated by N donor zinc complexes”

Federal Ministry of Education and Research “Molecular Simulation Grid”

Mercator Funding “New catalysts for sustainable polymerisation”

Publications – Scientific Papers

2013

I. dos Santos Vieira, E. L. Whitelaw, M. D. Jones, S. Herres-Pawlis, Synergistic Empirical and Theoretical Study on the Stereoselective Mechanism for the Aluminium Salalen Complex mediated Polymerisation of rac-Lactide, *Chem. Eur. J.* 2013, 19, 4712 - 4716.

P. K. Eckert, I. dos Santos Vieira, V. H. Gessner, J. Börner, C. Strohmann, S. Herres-Pawlis, Simple is best: diamine zinc complexes as unexpected catalysts in lactide polymerization, *Polyhedron*, 2013, 49, 151 - 157.

I. dos Santos Vieira, C. Dietz, F. Mohr, R. Beckert, S. Herres-Pawlis, Oxalic Amidines – Protonation Studies and Activity in Lactide Polymerisation, *Eur. J. Inorg. Chem.* 2013, 99 - 108.

M. Rohrmüller, S. Herres-Pawlis, M. Witte, W. G. Schmidt, Bis μ -oxo and μ - μ^2 : μ^2 -peroxo dicopper complexes studied within (time-dependent) density functional and many-body perturbation theory, *J. Comput. Chem.* 2013, 34, 1035 - 1045.

M. Wagner, V. Deáky, C. Dietz, J. Martincová, B. Mahieu, R. Jambor, S. Herres-Pawlis, K. Jurkschat, Insights into the Intramolecular Donor Stabilisation of Organostannylene Palladium and Platinum Complexes: Syntheses, Structures and DFT Calculations, *Chem. Eur. J.* 2013, 19, 6695 - 6708.

A. Hoffmann, C. Citek, S. Binder, A. Goos, M. Rübhausen, O. Troeppner, I. Ivanović-Burmazović, E. C. Wasinger, T. D. P. Stack, S. Herres-Pawlis, Catalytic Phenol Hydroxylation with Dioxygen: Extension of the Tyrosinase Mechanism Beyond the Protein Matrix, *Angew. Chem.* 2013, 125, 5508 - 5512 ; *Angew. Chem. Int. Ed.* 2013, 52, 5398 - 5401. (with Cover)

A. Hoffmann, S. Herres-Pawlis, Dissection of Different Donor Abilities Within Bis(pyrazolyl)pyridinylmethane Transition Metal Complexes, *Z. Anorg. Allg. Chem.* 2013, 639, 1426 - 1432.

A. Jesser, I. dos Santos Vieira, S. Herres-Pawlis, Novel Tin(IV) Complexes with the Hybrid Guanidine Ligand DMEGqu, *Z. Naturforsch.* 2013, 68b, 653 - 665.

P. von Grebe, K. Suntharalingam, R. Vilar, P. J. Sanz Miguel, S. Herres-Pawlis, B. Lipfert, A Conformationally Flexible Dinuclear PtII Complex with Differential Behavior of its Two States toward Quadruplex DNA, *Chem. Eur. J.* 2013, 19, 11429 – 11438.

L. Iovkova-Berends, M. Seiger, T. Westfeld, A. Hoffmann, S. Herres-Pawlis, K. Jurkschat, Extending the Family of N-Heterocyclic Heavy Carbene Analogues: Synthesis and Crystal and Molecular Structures of $\text{MeN}[\text{CH}_2\text{C}(\text{O})\text{N}(\text{R})]_2\text{Sn}$ ($\text{R} = \text{Me}_2\text{NCH}_2\text{CH}_2, \text{PhCH}_2, \text{Me}_3\text{CCH}_2$), *Eur. J. Inorg. Chem.* 2013, 34, 5836 - 5842.

S. Herres-Pawlis, A. Hoffmann, R. Grunzke, Lars Packschies, Orbital analysis of Oxo and Peroxo Dicopper Complexes via Quantum Chemical Workflows in MoSGrid, CEUR Workshop Proceedings 2013, 993, Paper 3.

S. Herres-Pawlis, A. Hoffmann, S. Gesing, J. Krüger, A. Balasko, P. Kacsuk, R. Grunzke, G. Birkenheuer, L. Packschies, User-Friendly Workflows in Quantum Chemistry, CEUR Workshop Proceedings 2013, 993, Paper 14.

2012

I. dos Santos Vieira, S. Herres-Pawlis, Lactide Polymerisation with Complexes of Neutral N Donors – New Strategies for Robust Catalysts, Eur. J. Inorg. Chem. 2012, 765 - 774.

M. Bouska, L. Dostal, Z. Padelkova, A. Lycka, S. Herres-Pawlis, K. Jurkschat, R. Jambor, Intramolekular koordinierte Organozinn-telluride: stabil oder labil?, Angew. Chem. 2012, 124, 3535 – 3540; Angew. Chem. Int. Ed. 2012, 51, 3478 - 3482.

A. Hoffmann, U. Flörke, S. Herres-Pawlis, Syntheses and characterisation of tris(3-(pyridin-2-yl)-1H-pyrazol-1-yl)methane and its bis(μ -hydroxo) dicobalt(II) complex, ARKIVOC 2012, 3, 333 - 355.

I. dos Santos Vieira, S. Herres-Pawlis, Novel Guanidine-Quinoline Hybrid Ligands and the Application of their Zinc Complexes in Lactide Polymerisation, Z. Naturforsch. 2012, 67b, 320 - 330.

S. Herres-Pawlis, G. Birkenheuer, A. Brinkmann, S. Gesing, R. Grunzke, R. Jäkel, O. Kohlbacher, J. Krüger, I. dos Santos Vieira, Workflow-enhanced conformational analysis of guanidine zinc complexes via a science gateway, Studies in Health Technology and Informatics 2012, 175, 142 - 151.

O. Bienemann, A-K Froin, I. dos Santos Vieira, R. Wortmann, A. Hoffmann, S. Herres-Pawlis, Structural Aspects of Copper-Mediated Atom Transfer Radical Polymerisation with a Novel Tetradentate Bisguanidine Ligand, Z. Anorg. Allg. Chem. 2012, 638, 1683 - 1690.

J. Martincová, L. Dostál, A. Růžička, S. Herres-Pawlis, R. Jambor, Stabilization of an Intramolecularly Coordinated Stannylidenium Cation, Z. Anorg. Allg. Chem. 2012, 638, 1672 - 1675.

L. Iovkova-Berends, T. Berends, T. Zöllner, G. Bradtmöller, S. Herres-Pawlis, K. Jurkschat, Novel Tin(II) and Tin(IV) Complexes with Scorpion-shaped Ligands: Intramolecular N \rightarrow Sn versus Intermolecular O \rightarrow Sn Coordination, Eur. J. Inorg. Chem. 2012, 3191 - 3199.

B. Nelson, S. Herres-Pawlis, W. Hiller, H. Preut, C. Strohmann, M. Hiersemann, Palladium(II)-Catalyzed Cycloisomerization of Substituted 1,5-Hexadienes: A Combined Experimental and Computational Study on an Open and an Interrupted Hydropalladation/Carbopalladation/ β -Hydride Elimination (HCHe) Catalytic Cycle, *J. Org. Chem.* 2012, 77, 4980 - 4995.

A. Hoffmann, U. Flörke, S. Herres-Pawlis, Tris-phenyl substituted tris(pyrazolyl)methane: Victim of a novel rearrangement in a cobalt(II) complex, *Inorg. Chem. Commun.* 2012, 22, 154 - 157.

S. Baba Haj, M. Schürmann, L. Iovkova-Berends, S. Herres-Pawlis, K. Jurkchat, $[\text{Me}_2(\text{i-PrO})\text{SiCH}_2]_2\text{SnBr}_2$: Evidence for Intramolecular Si–O Bond Activation, *Organometallics* 2012, 31, 4716 - 4721.

S. Kisslinger, H. Kelm, S. Zheng, A. Beitat, C. Würtele, R. Wortmann, S. Bonnet, S. Herres-Pawlis, H.-J. Krüger, S. Schindler, Synthesis and Characterization of Iron(II) Thiocyanate Complexes with Derivatives of the Tris(pyridine-2-ylmethyl)amine (tmpa) Ligand, *Z. Anorg. Allg. Chem.* 2012, 638, 2069 - 2077.

S. Gesing, S. Herres-Pawlis, G. Birkenheuer, A. Brinkmann, R. Grunzke, P. Kacsuk, O. Kohlbacher, M. Kozlovsky, J. Krüger, R. Müller-Pfefferkorn, P. Schäfer, T. Steinke, A Science Gateway Getting Ready for Serving the International Molecular Simulation Community, *Proceedings of Science 2012 (EGICF12-EMITC2)* 050.

S. Gesing, R. Grunzke, J. Krüger, G. Birkenheuer, M. Wewior, P. Schäfer, B. Schuller, J. Schuster, S. Herres-Pawlis, S. Breuers, Á. Balaskó, M. Kozlovsky, A. Szikszay Fabri, L. Packschies, P. Kacsuk, D. Blunk, T. Steinke, A. Brinkmann, G. Fels, R. Müller-Pfefferkorn, R. Jäkel, O. Kohlbacher, A Single Sign-On Infrastructure for Science Gateways on a Use Case for Structural Bioinformatics, *J. Grid Computing* 2012, 10, 769 - 790.

Other Activities

Co-Organizer: Coordination Chemistry Conference 2012 in Dortmund

Organizer: First Munich Bioinorganic Symposium 2013

Reviewer for *Angewandte Chemie*, *Journal of the American Society of Chemistry*, *Chemical Communications*, *Chemistry - a European Journal*, *Inorganic Chemistry*, *European Journal of Inorganic Chemistry*, *European Journal of Organic Chemistry*, *Chemical Physics Letters*, *Dalton Transactions*, *Organometallics*, *Catalysis Communications*, *Journal of Molecular Catalysis A*, *Polyhedron*, *Journal of Organometallic Chemistry*, *Journal of Coordination Chemistry*, *Journal of Heterocyclic Chemistry*, *Inorganica Chimica Acta*, *Zeitschrift für Anorganische und Allgemeine Chemie*, *Journal of Luminescence*, *Journal of Grid Computing*, *Journal of Molecular Modelling*, *Sensors & Actuators: B. Chemical*.

Inorganic Chemistry

Dr. rer. nat. Constantin Hoch

Born 1971 in Rodalben/Rheinland-Pfalz, 1993 – 1999 studies of chemistry at the University of Freiburg im Breisgau, 2003 PhD degree in the group of Prof. Dr.-Ing. Caroline Röhr at the University of Freiburg im Breisgau, 2004 – 2006 Postdoctoral fellow at the Max-Planck-Institut für Festkörperforschung in Stuttgart in the group of Prof. Dr. Dr. h.c. mult. Arndt Simon, 2006 – 2011 research assistant and leader of the single crystallography service of Prof. Dr. Simons group at the Max-Planck-Institut für Festkörperforschung in Stuttgart. 2011 – 2012 research assistant at the University in Stuttgart in the group of Prof. Dr. Thomas Schleid. Since 01.04.2012 scientific coworker and Habilitand at the chair of inorganic solid state chemistry in the department Chemie und Biochemie at the LMU München, supervised by Prof. Dr. Wolfgang Schnick.

Research Topics

Intermetallic chemistry, polar metal-metal bonding, bad metal behaviour, amalgams of less noble metals, subvalent alkali metal compounds, suboxometallates, potential thermoelectric properties of polar intermetallic phases, electrocrystallisation of intermetallic compounds at low temperatures from aprotic polar solutions. Solvates of thermodynamically less stable metal halides and their decomposition to the binary halides. Novel cathode materials for lithium ion batteries with high cycle life, in-situ tomography with neutrons and X-rays on lithium batteries. X-ray single crystal structure analyses, crystal growth, thermoanalysis, band structure calculations, electrochemical characterisation of cathode materials.

Honors, Awards, Memberships

Stipendiate of the „Leni-Schöninger-Stiftung zur Förderung akademischen Nachwuchses“ (2011 – 2012), Member of the Deutsche Kristallographische Gesellschaft DGK, Member of the Gesellschaft Deutscher Chemiker GDCh, Member of the American Chemical Society ACS. Heinrich-Düker-Preis für besonders gelungene Vermittlung von Wissenschaft und Technik (Kepler-Seminar der Heidehof-Stiftung Stuttgart, 2012).

Extramural Research Funding

Leni-Schöninger-Stiftung zur Förderung akademischen Nachwuchses

Publications – Scientific Papers

2013

M. Bykow, J. Zhang, A. Schönleber, A. Wölfel, S. I. Ali, S. van Smaalen, R. Glaum, H.-J. Koo, M.-H. Whangbo, P. G. Reuvekamp, J. M. Law, C. Hoch, R. K. Kremer, "Spin-Peierls distortion in TiPO_4 ", *Phys. Rev. B* **88**, 184420 (2013).

F. Wieder, Ch. Kallfaß, I. Manke, A. Hilger, C. Tötzke, C. Hoch, H. Schier, K. Graf, J. Banhart, "Electrolyte distribution and discharge time - a combined study of X-ray tomography and electrical measurements of a commercially available Li-ion capacitor", *ECS Transactions* **53**, 211 (2013).

F. Tambornino, C. Hoch, "The new potassium amalgam KHg_6 ", *Z. Kristallogr. Suppl.* **32** (2013).

F. Tambornino, C. Hoch, "The Hg-richest europium amalgam, $\text{Eu}_{10}\text{Hg}_{55}$ ", *Z. Kristallogr. Suppl.* **32** (2013).

Ch. Kallfaß, C. Hoch, A. Hilger, I. Manke, "Short-circuit and overcharge behaviour of some lithium ion batteries", *Transactions on Systems, Signals and Devices* (Issues on Power Electrical Systems, accepted).

2012

C. Hoch, "Vom Mineral lernen", *Nachr. Chem.* **60**, 1181 (2012).

M. J. Eom, S. W. Na, C. Hoch, R. K. Kremer, J. S. Kim, "Evolution of transport properties of $\text{BaFe}_{2-x}\text{Ru}_x\text{As}_2$ in a wide range of isovalent Ru substitution", *Phys. Rev.* **B85**, 024536/1.

C. Hoch, A. Simon, " $\text{Na}_{11}\text{Hg}_{52}$ - Komplexität in einem polaren Metall", *Angew. Chem.* **124**, 3316 (2012); *Angew. Chem. Int. Ed.* **51**, 3262 (2012).

C. Zheng, J. Köhler, Hj. Mattausch, C. Hoch, A. Simon, "A five-membered Ru_5 ring in a hexagonal La_{14} cage: the $\text{La}_{14}\text{Cl}_{20}\text{Ru}_5$ structure", *J. Am. Chem. Soc.* **134**, 5026 (2012).

C. Hoch, H. Schier, Ch. Kallfaß, Ch. Tötzke, A. Hilger, I. Manke, "Electrode deterioration processes in lithium ion capacitors monitored by in-situ X-ray radiography on the micrometer scale", *Micro & Nano Lett.* **7**, 262 (2012).

Inorganic Chemistry

Univ.-Prof. Dr. Dirk Johrendt

Born 1963 in Oberhausen/NRW, 1984-1990 study of chemistry at Universität zu Köln, 1993 PhD in the group of Prof. A. Mewis, Inorganic Chemistry at Universität zu Köln, 1995-1996 Postdoctoral fellow in the group of Jean Rouxel at IMS CNRS Nantes (France); 1997-2002 Assistant professor (C1) at Universität Düsseldorf, Habilitation in inorganic chemistry 2001, since 2002 C3-professor for inorganic solid state chemistry LMU München.

Research Topics

Our research at the interface of solid state chemistry, physics and materials science, is focused on crystal chemistry - physical property relations in inorganic compounds. One special interest concerns materials with highly correlated electrons, among them magnetic compounds, Mott insulators, and iron based high- T_c superconductors. The discovery of new materials with so far unknown crystal structures, as well as compositional tuning of the properties of existing materials through solid solution are our main tasks. We extensively research iron arsenide superconductors focusing on basic and application-oriented aspects.

Honors, Awards, Memberships

2012 Bernd T. Matthias Prize
M²S International Advisory Committee
EUCAR Conference International Advisory Committee
Scientific Advisory Board of the Heinz-Maier-Leibniz Center (MLZ),
Neutron Facility FRM II, Garching
Deutsche Physikalische Gesellschaft
Gesellschaft Deutscher Chemiker
Münchener Chemische Gesellschaft

Extramural Research Funding

DFG: *High-Temperature Superconductivity in Iron Pnictides*
EU: *FP7-NMP-2011-Eu-Japan: SUPER-IRON-Exploring the Potential of Iron-based Superconductors*
BaCaTeC: *Explorative synthesis of new magnetic and possibly superconducting phosphorus compounds*

Publications

Weak magnetism and the Mott-state of vanadium in superconducting $\text{Sr}_2\text{VO}_3\text{FeAs}$.

F. Hummel, Y. Su, A. Senyshyn, D. Johrendt. *Phys. Rev. B* **2013**, 88, 140505.

Why T_c of $(\text{CaFeAs})_{10}\text{Pt}_{3.58}\text{As}_8$ is twice as high as $(\text{CaFe}_{0.95}\text{Pt}_{0.05}\text{As})_{10}\text{Pt}_3\text{As}_8$

S. Thirupathaiah, T. Stürzer, V. B. Zabolotnyy, B. Büchner, S. V. Borisenko,

Phys. Rev. B. **2013**, 88, 140505.

Superconductivity and Crystal Structure of the Palladium-Iron-Arsenides

$\text{Ca}_{10}(\text{Fe}_{1-x}\text{Pd}_x\text{As})_{10}\text{Pd}_3\text{As}_8$. C. Hieke, J. Lippmann, T. Stürzer, G. M. Friederichs, F. Nitsche, F. Winter, R. Pöttgen and D. Johrendt, *Philos. Mag.* **2013**, 93, 3680.

$\text{Ce}_4\text{Ag}_3\text{Ge}_4\text{O}_{0.5}$ - chains of oxygen-centered $[\text{OCe}_2\text{Ce}_{22}]$ tetrahedra embedded in a $[\text{CeAg}_3\text{Ge}_4]$ intermetallic matrix. G. Heymann, J. F. Riecken, D. Johrendt, S. Rayaprol, R. Pöttgen, H. Huppertz, *Dalton Trans.* **2013**, 42, 5207.

Phosphide Oxides $\text{RE}_2\text{AuP}_2\text{O}$ ($\text{RE} = \text{La}, \text{Ce}, \text{Pr}, \text{Nd}$): Synthesis, Structure, Chemical Bonding, Magnetism, and ^{31}P and ^{139}La Solid State NMR. T. Bartsch, T. Wiegand, J. J. Ren, H. Eckert, D. Johrendt, O. Niehaus, M. Eul, R. Pöttgen, *Inorg. Chem.* **2013**, 52, 2094.

Structural and magnetic phase transitions in triclinic $\text{Ca}_{10}(\text{FeAs})_{10}(\text{Pt}_3\text{As}_8)$. T. Stürzer, G. M. Friederichs, H. Luetkens, A. Amato, H. H. Klauss, D. Johrendt, *J. Phys.: Condens. Matter* **2013**, 25, 122203.

The specific heat of the electron-doped La-1038 compound $(\text{Ca}_{0.85}\text{La}_{0.15})_{10}(\text{FeAs})_{10}(\text{Pt}_3\text{As}_8)$. J. S. Kim, T. Stürzer, D. Johrendt, G. R. Stewart, *J. Phys.: Condens. Matter* **2013**, 25, 135701.

Ferromagnetism and the Formation of Interlayer As_2 Dimers in $\text{Ca}(\text{Fe}_{1-x}\text{Ni}_x)_2\text{As}_2$.

R. Pobel, R. Frankovsky, D. Johrendt, *Z. Naturforsch. B* **2013**, 68, 581.

Evidence for superconductivity with broken time-reversal symmetry in locally noncentrosymmetric SrPtAs , P. K. Biswas, H. Luetkens, T. Neupert, T. Stürzer, C. Baines, G. Pascua, A. P. Schnyder, M. H. Fischer, J. Goryo, M. R. Lees, H. Maeter, F. Bruckner, H. H. Klauss, M. Nicklas, P. J. Baker, A. D. Hillier, M. Sigrist, A. Amato, D. Johrendt, *Phys. Rev. B* **2013**, 87, 180503.

Short-range magnetic order and effective suppression of superconductivity by manganese doping in $\text{LaFe}_{1-x}\text{Mn}_x\text{AsO}_{1-y}\text{F}_y$. R. Frankovsky, H. Luetkens, F. Tambornino, A. Marchuk, G. Pascua, A. Amato, H. H. Klauss, D. Johrendt, *Phys. Rev. B* **2013**, 87, 174515.

Rare earth-zinc-germanides $\text{RE}_4\text{Zn}_5\text{Ge}_6$ ($\text{RE} = \text{Y}, \text{Dy}, \text{Ho}, \text{Er}$) and $\text{RE}_5\text{Zn}_{4-x}\text{Ge}_6$ ($\text{RE} = \text{Er}, \text{Tm}, \text{Lu}$), B. Reker, D. Johrendt, R. Pöttgen, *Intermetallics* **2013**, 38, 36.

Synthesis of $LaO_{1-x}F_xFeAs$ ($x=0-0.15$) via solid state metathesis reaction, R. Frankovsky, A. Marchuk, R. Pobel, D. Johrendt, *Solid State Commun.* **2012**, 152, 632.

The interplay of electron doping and chemical pressure in $Ba(Fe_{1-y}Co_y)_2(As_{1-x}P_x)_2$. V. Zinth, D. Johrendt, *Europhys. Lett.* **2012**, 98, 57010.

$Ca_3Sm_3Si_9N_{17}$ and $Ca_3Yb_3Si_9N_{17}$ Nitridosilicates with Interpenetrating Nets that Consist of Star-Shaped $N_4(SiN_3)_4$ Units and Si_5N_{16} Supertetrahedra. H. Huppertz, O. Oeckler, A. Lieb, R. Glaum, D. Johrendt, M. Tegel, R. Kaindl, W. Schnick, *Chem. Eur. J.* **2012**, 18, 10857.

Metastable 11 K Superconductor $Na_{1-y}Fe_{2-x}As_2$. G. M. Friederichs, I. Schellenberg, R. Pöttgen, V. Duppel, L. Kienle, J. S. auf der Günne, D. Johrendt, *Inorg. Chem.* **2012**, 51, 8161.

Role of different negatively charged layers in $Ca_{10}(FeAs)_{10}(Pt_4As_8)$ and superconductivity at 30 K in electron-doped $(Ca_{0.8}La_{0.2})_{10}(FeAs)_{10}Pt_3As_8$. T. Stürzer, G. Derondeau, D. Johrendt, *Phys. Rev. B* **2012**, 86, 060516(R).

Inorganic Chemistry

Apl. Prof. Dr. rer. nat. Konstantin Karaghiosoff

Born 1956 in Sofia (Bulgaria), 1975-1981 study of chemistry at Ludwig-Maximilian University in Munich, 1986 PhD degree in the group of Prof. Dr. Alfred Schmidpeter, LMU Munich (Heterophospholes), 1997 habilitation at LMU Munich in inorganic chemistry (Diversity of a simple motif: $(RP)_nSe_m$ rings), 1999-2001 representation of a C3 professorship in inorganic chemistry at LMU, 2000 teaching authorization for inorganic chemistry and appointment as Privatdozent at LMU, 2006 appointment as apl. Professor for inorganic chemistry at LMU.

Research Topics

Phosphorus sulfur, phosphorus selenium and phosphorus tellurium heterocycles, quasi-binary and binary phosphorus chalcogen cations, selenophosphinates and selenophosphonates, thio-, seleno- and tellurophosphates, heterophospholes, functionalized and electron rich phosphines, fluorescent phosphine complexes, NMR spectroscopy of main group elements and metals, analysis of the NMR spectra of high order spin systems and isotopomeric systems, multinuclear NMR spectroscopy of colloids, inorganic frameworks with phosphonates and phosphinates, phosphonate based porous materials.

Honors, Awards, Memberships

Member of the German Chemical Society (GDCh)
Member of the Munich Chemical Society (MChG)
Member of the Section "Magnetic Resonance" of the German Chemical Society
Member of the German Association of Universities

Publications – Scientific Papers

A Convenient Aluminatation of Functionalized Aromatics by Using the Frustrated Lewis Pair Et_3Al and $TMPMgCl-LiCl$.

A. Unsinn, S. H. Wunderlich, A. Jana, K. Karaghiosoff, P. Knochel, *Chem. Eur. J.* **2013**, *19*, 14687-14696.

Ion-Pairing of Phosphonium Salts in Solution: $C-H\cdots Halogen$ and $C-H\cdots\pi$ Hydrogen Bonds.

J. Ammer, Ch. Nolte, K. Karaghiosoff, S. Thallmair, P. Mayer, R. de Vivie-Riedle, H. Mayr, *Chem. Eur. J.* **2013**, *19*, 14612-14630.

Full Functionalization of the 7-Azaindole Scaffold by Selective Metalation and Sulfoxide/Magnesium Exchange.

N. M. Barl, E. Sansiaume-Dagousset, K. Karaghiosoff, P. Knochel, *Angew. Chem. Int. Ed.*, **2013**, 52, 10093-10096.

Proton NMR Investigations of Intermediate Spin Iron(III) Complexes with Macrocyclic N_4^{2-} Chelate Ligands.

B. Weber, A. F. Walker, K. Karaghiosoff, *Z. Anorg. Allg. Chem.* **2013**, 639, 1498-1503.

Regioselective Metalations of Pyrimidines and Pyrazines by Using Frustrated Lewis Pairs of $BF_3 \cdot OEt_2$ and Hindered Magnesium- and Zinc-Amide Bases.

K. Groll, S. M. Manolikakes, X. M. du Jourdin, M. Jaric, A. Bredihhin, K. Karaghiosoff, Th. Carell, P. Knochel, *Angew. Chem. Int. Ed.* **2013**, 52, 6776-6780.

Synthesis and Characterization of New Bis-Cyclometalated Rhodium and Iridium Complexes Containing the Glycinamidato Ligand.

M. Graf, K. Karaghiosoff, P. Mayer, W. Beck, *Z. Anorg. Allg. Chem.* **2013**, 639, 1117-1121.

The Aza-Morita-Baylis-Hillman Reaction: A Mechanistic and Kinetic Study.

Ch. Lindner, Y. Liu, K. Karaghiosoff, B. Maryasin, H. Zipse, *Chem. Eur. J.* **2013**, 19, 6429-6434.

Metalated *N*-Heterocyclic Reagents Prepared by the Frustrated Lewis Pair $TMPMgCl \cdot BF_3$ and Their Addition to Aromatic Aldehydes and Activated Ketones.

S. M. Manolikakes, M. Jaric, K. Karaghiosoff, P. Knochel, *Chem. Commun.* **2013**, 49, 2124-2126.

Preparation of Stereodefined Secondary Alkylolithium Compounds.

S. Seel, G. Dagousset, T. Thaler, A. Frischmuth, K. Karaghiosoff, H. Zipse, P. Knochel, *Chem. Eur. J.* **2013**, 19, 4614-4622.

New Anellated 4*H*-1,4,2-Diazaphospholes.

W. Betzl, Ch. Hettstedt, K. Karaghiosoff, *New J. Chem.* **2013**, 37, 481-487.

Selective C-H Activations Using Frustrated Lewis Pairs. Applications in Organic Synthesis.

P. Knochel, K. Karaghiosoff, S. Manolikakes, *Top. Curr. Chem.* **2013**, 334, 171-90.

Highly Sensitive and Selective Fluoride Detection in Water Through Fluorophore Release From a Metal-Organic Framework.

F. M. Hinterholzinger, B. Ruhle, S. Wuttke, K. Karaghiosoff, T. Bein, *Sci. Rep.* **2013**, 3, 2562.

Phosphorus-31 NMR.

K. Karaghiosoff in: *Encyclopedia of Nuclear Magnetic Resonance*, R. K. Harris, R. E. Wasylishen Eds., Wiley, Chichester, **2012**, Vol. 6, 3379-3385.

2-Nitro and 4-Nitro-*N*-nitroso-*N*-ethylaniline: NMR Spectroscopy, Crystal Structures and Quantum Chemical Calculations.

C. Evangelisti, Th. M. Klapötke, K. Karaghiosoff, M. Bohn, *Proceedings of the 43th International Annual Conference of ICT (Energetic Materials)*, **2012**, 63/1-63/10.

Lewis Acid-Triggered Selective Zincation of Chromones, Quinolones, and Thiochromones: Application to the Preparation of Natural Flavones and Isoflavones.

L. Klier, T. Bresser, T. A. Nigst, K. Karaghiosoff, P. Knochel, *J. Am. Chem. Soc.* **2012**, *134*, 13584-13587.

Synthesis and Characterization of (-)-Menthyl Containing *N*-Alkyl Cycloimmonium Salts.

Ch. Hettstedt, W. Betzl, K. Karaghiosoff, *Z. Anorg. Allg. Chem.* **2012**, *638*, 377-382.

Other Activities

2006-2013 vice chairman of the Munich Chemical Society, manager of the NMR facilities, vice chairman of the IT commission of the Faculty of Chemistry and Pharmacy, since 2005 European Editor of *Phosphorus, Sulfur, Silicon and the Related Elements*.

Inorganic Chemistry

Prof. Dr. rer. nat. Thomas M. Klapötke

Thomas M. Klapötke is received his Ph.D. in 1986 (TU Berlin), post-doc in Fredericton, New Brunswick, habilitation in 1990 (TU Berlin). From 1995 until 1997 Klapötke was Ramsay Professor of Chemistry at the University of Glasgow in Scotland. Since 1997 he has held the Chair of Inorganic Chemistry at LMU Munich. In 2009 Klapötke was appointed a Visiting Professor at CECD, University of Maryland. Klapötke is a Fellow of the RSC (C.Sci., C.Chem. F.R.S.C.), a member of the ACS and the Fluorine Division of the ACS, a member of the GDCh, and a Life Member of both the IPS and the National Defense Industrial Association. Most of Klapötke's scientific collaborations are between LMU and ARL in Aberdeen, MD and ARDEC in Picatinny, NJ. Klapötke also collaborates with ERDC in Champaign, IL. And Prof Ang, How-Ghee (NTU, Singapore). He is the executive editor of *Zeitschrift für Anorganische und Allgemeine Chemie*, the Subject Editor in the area of explosives synthesis of the Central European Journal of Energetic Materials and an editorial board member of *Propellants, Explosives and Pyrotechnics*, the *Journal of Energetic Materials*, and the *International Journal of Energetic Materials and Chemical Propulsion*. Klapötke has published over 600 papers, 28 book chapters and eight books..

Research Topics

Energetic material, secondary (high) explosives, primary explosives, propellants, propellant charges, rocket propellants, gun propellants, agent defeat weapons, laser initiation, night vision, decoy flares, visible flares, colored smokes, oxidizers, computational chemistry (semiempirical, ab initio, DFT), non-metal chemistry, fluorine chemistry.

Honors, Awards, Memberships

Executive editor of *Z. Anorg. Allg. Chem.* (ZAAC)
Subject editor *Central Europ. J. Energ. Mat.* (CEJEM)
Member of the Editorial Board *J. Energetic Materials* (JEM)
Member of the Editorial Board *Propellants Explosives Pyrotechnics* (PEP)
Member of the Editorial Board *J. Fluorine Chem.* (JFC)
Member of the Editorial Board *Bulletin of the Korean Chemical Society*
Member of the following professional societies: RSC (CSci, F.R.S.C., CChem), GDCh, ACS, ACS Fluorine Division, NDIA (life member)

Extramural Research Funding

U.S. Army Research Laboratory (ARL), grant no. W911NF-09-2-0018,
Armament Research, Development and Engineering Center (ARDEC), grant nos. W911NF-12-1-0467 and W911NF-12-1-0468,

Office of Naval Research (ONR) grant nos. ONR.N00014-10-1-0535 and ONR.N00014-12-1-0538
 Bundesministerium für Bildung und Forschung (BMBF), grant no. 13N12583.

Publications – Scientific Papers

2013

Synthesis and Characterization of the New Heterocycle 5-(4-Amino-1,2,4-triazol-3-yl)-1H-tetrazole and Some Ionic Nitrogen-Rich Derivatives, N. Fischer, K. Hüll, T. M. Klapötke, J. Stierstorfer, *J. Heterocyclic Chem.* 2013, in press.

The 1,3-Diamino-1,2,3-Triazolium Cation: A Highly Energetic Moiety, T. M. Klapötke, D. G. Piercey, J. Stierstorfer, *Eur. J. Inorg. Chem.*, 2013, 1509 – 1517.

Synthesis of Glycidyl-5-(carboxyethyl-1H-tetrazol)polymer and 1,2-Bis-(5-carboxyethyl-1H-tetrazolyl)ethane as Polymeric Precursor, F. Betzler, T. M. Klapötke, S. Sproll, *Eur. J. Org. Chem.*, 2013, 509 - 514.

Energetic Salts of 5,5'-Bis(tetrazole-2-oxide) in a Comparison to 5,5'-Bis(tetrazole-1-oxide) Derivatives, N. Fischer, L. Gao, T. M. Klapötke, J. Stierstorfer, *Polyhedron*, 2013, 51, 201 - 210.

Synthesis, Characterization, and Derivatives of Cyanotetrazole Oxides, F. Boneberg, A. Kirchner, T. M. Klapötke, D. Piercey, M. J. Poller, J. Stierstorfer, *Chemistry an Asian J.* 2013, 148 - 159.

A Selection of Alkali and Alkaline Earth Metal Salts of 5,5'-Bis(1-hydroxytetrazole) in Pyrotechnic Compositions, N. Fischer, T. M. Klapötke, S. Marchner, M. Rusan, S. Scheutzwow, J. Stierstorfer, *Prop. Expl. Pyrotech.*, 2013, 38, 448 - 459.

Nitrogen-Rich Salts of 1H,1'-H-5,5'-Bitetrazole-1,1'-diol: Energetic Materials with High Thermal Stability, N. Fischer, T. M. Klapötke, M. Reymann, J. Stierstorfer, *Eur. J. Inorg. Chem.*, 2013, 2167 - 2180

Transition metal complexes of 3-amino-1-nitroguanidine as laser ignitable primary explosives – structures and properties, J. Stierstorfer, T. M. Klapötke, N. Fischer, M. Joas, T. Stürzer, *Inorg. Chem.* 2013, in press.

Binary Flash Compositions - A Theoretical and Practical Study, T. M. Klapötke, F. X. Steemann, M. Sucasca, *Prop. Expl. Pyrotech.*, 2013, 38, 29 – 34.

Structures of energetic acetylene derivatives $\text{HC}\equiv\text{CCH}_2\text{ONO}_2$, $(\text{NO}_2)_3\text{CCCH}_2\text{C}\equiv\text{CCH}_2\text{C}(\text{NO}_2)_3$ and trinitroethane, $(\text{NO}_2)_3\text{CCH}_3$, T. M. Klapötke, B. Krumm, R. Moll, A. Penger, S. M. Sproll, R. J. F. Berger, S. A. Hayes, N. W. Mitzel, *Z. Naturforsch.* 2013, 68b, 719 - 731.

A Review on Nitrosyl Metal Halides and Mass Spectroscopic Support for the Dimeric Structure of $[\text{Ni}(\text{NO})\text{I}]_2$ and $[\text{Pd}(\text{NO})\text{Cl}]_2$. A Tribute to Walter Hieber (1895-1976) and Fritz Seel (1915-1987), W. Beck, G. Fischer, M. Göbel, J. Evers, T. M. Klapötke, *Z. Anorg. Allg. Chem.* 2013, 639, 1332 - 1339.

Polynitroethyl- and Fluorodinitroethyl Substituted Boron Esters, T. M. Klapötke, B. Krumm, R. Moll, *Chem. – Europ. J.* 2013, 19, 12113 – 12123.

Preparation of High Purity Sodium 5-Nitrotetrazolate (NaNT): An Essential Precursor to the Environmentally Acceptable Primary Explosive, DBX-1, T. M. Klapötke, D. G. Piercey, N. Mehta, K. D. Oyler, M. Jorgensen, S. Lenahan, J. S. Salan, J. W. Fronabarger, M. D. Williams, *Z. Anorg. Allg. Chem.* 2013, 639 (5), 681 – 688.

Silver Salts and Derivatives of 5-Azido-1H-1,2,4-triazole-3-carbonitrile, D. Izsák, T. M. Klapötke, S. Reuter, T. Rösener, *Z. Anorg. Allg. Chem.* 2013, 639, 899 - 905.

5-(1,2,4-Triazol-3-yl)tetrazoles with various functionalities, A. Dippold, T. M. Klapötke, *Chemistry – An Asian Journal*, in press, DOI: 10.1002/asia.201300063.

Chemistry and Structures of Hexakis(halogenomethyl)-, Hexakis(azidomethyl)- and Hexakis(nitratomethyl)disiloxanes, B. Krumm, L. Ascherl, C. Evangelisti, T. M. Klapötke, B. Krumm, J. Nafe, A. Nieder, S. Rest, C. Schütz, M. Suceca, M. Trunk, *Chemistry – Europ. J.* 2013, 19, 9198 - 9210.

Synthesis and Structure of 2,2,2-Nitrilotriacetyl Chloride with Nearly Planar Nitrogen, T. M. Klapötke, B. Krumm, R. Moll, *Z. Naturforsch. B.* 2013, 68b, 735 - 738.

Energetic Materials Based on the 5-Azido-3-nitro-1,2,4-triazolate Anion, D. Izsák, T. M. Klapötke, R. Scharf, J. Stierstorfer, *Z. Anorg. Allg. Chem.* 2013, 639, 1746 - 1755.

Highly Energetic Salts of 3,6-Bishydrazino-1,2,4,5-tetrazine, T. M. Klapötke, A. Preimesser, S. Schedlbauer, J. Stierstorfer, *Central Europ. J. Energ. Mat.* 2013, 10(2), 151 - 170.

Advanced Open-chain Nitramines as Energetic Materials: Heterocyclic-substituted 1,3-Dichloro-2-nitrazapropane, T. M. Klapötke, A. Penger, C. Pflüger, J. Stierstorfer, M. Suceca, *Eur. J. Inorg. Chem.* 2013, 4667 - 4678.

Multiply nitrated high energy dense oxidizers derived from the simple amino acid glycine, A. Baumann, A. Erbacher, C. Evangelisti, T. Klapötke, B. Krumm, S. Rest, M. Reynders, V. Sproll, *Chemistry – Europ. J.* 2013, 19, 15627 - 15638.

The Chemistry of 5-(Tetrazol-1-yl)-2H-tetrazole: An Extensive Study of Structural and Energetic Properties, N. Fischer, D. Izsák, T. M. Klapötke, J. Stierstorfer, *Chemistry – Europ. J.*, in press.

Novel Insensitive Energetic Nitrogen-rich Polymers Based on Tetrazoles, F. M. Betzler, R. Boller, A. Grossmann, T. M. Klapötke, *Z. Naturforsch B* 2013, 68B, 714 - 718.

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(*Z*)-2-[Methoxy(phenyl)methylidene]-3,4,5-trimethyl-2,3-dihydro-1,3-thiazole. B. Maji, H. Mayr, P. Mayer, *Acta. Crystallogr. Sect. E: Struct. Rep. Online* **2012**, *E68*, o2644.

The crystal structure of the Dess-Martin-periodinane. A. Schröckeneder, D. Stichnoth, P. Mayer, D. Trauner, *Beilstein J. Org. Chem.* **2012**, *8*, 1523–1527.

Molecular and crystal structure of potassium-L-alaninato-dichloridoplatinate(II), K[Pt(L-alaO)Cl₂]. S. Schiesser, P. Mayer, T. Carell, W. Beck, *Z. Naturforsch. B.* **2012**, *67*, 849–852.

5-[(*E*)-Methoxy(phenyl)methylidene]-1,3,4-triphenyl-4,5-dihydro-1*H*-1,2,4-triazole. B. Maji, G. Berionni, H. Mayr, P. Mayer, *Acta. Crystallogr. Sect. E: Struct. Rep. Online* **2012**, *E68*, o3307.

Inorganic Chemistry

Prof. Dr. rer. nat. Andreas Kornath

Born 1965 in Hohenstein/Danzig, 1985 – 1990 study of chemistry at Univ. Dortmund, 1993 PhD degree in the group of Prof. Dr. Rolf Minkwitz at Univ. Dortmund, 1994 Postdoctoral fellow in the group of Prof. Dr. Joseph Thrasher at University of Alabama, Tuscaloosa, 1999 Research visitor in the group of Prof. Dr. Karlto at USC, Los Angeles, 2000 habilitation at the Univ. Dortmund, 2000-2005 lecturer at the Univ. Dortmund, 2005 substitute professor at Univ. Rostock, 2005-2006 substitute professor at LMU, since 2007 W2-professor at LMU.

Research Topics

Synthesis and characterization of protonated species in superacidic media. Development of fluorinating and fluoromethylating agents. Synthesis of siliconhydrides as precursor for silicon layers. Matrix isolation spectroscopy of highly reactive molecules and metal clusters

Honors, Awards, Memberships

Member of the Gesellschaft Deutscher Chemiker

Extramural Research Funding

Collaborative Research Project BMBF 13N11347 “Soluble polysilanes as polymerprecursor for semiconductive silicon layers”

Collaborative Research with ABCR Dr. Braunagel GmbH “Fluoromethylating agents”

Collaborative Research with ABCR Dr. Braunagel GmbH “Gas filling methods”

Publications – Scientific Papers

Hopfinger M, Lux K, Kornath A, The protonation of dimethylsuloxide: Spectroscopic examinations of $[(CX_3)_2SOX]^+MF_6^-$ ($X=H,D$; $M=As, Sb$) and the x-ray structure of $[(CH_3)_2SOH^+]_4Ge_3F_{16}^-$, *ChemPlusChem*, **77**, 476 (2012).

Axhausen J, Rühl G, Kornath A, The protonation of dithiocarbamic acid in superacids HF/MF₅: Synthesis and Characterization of $H_2NC(SH)_2^+MF_6^-$ ($M=As,Sb$), *Z. Naturforsch.* **67b**, 1235 (2012).

Axhausen J, Ritter C, Lux K, Kornath A, The protonation of acetamide and thioacetamide in superacidic solutions: crystal structures of $[H_3CC(OH)NH_2]^+AsF_6^-$ and $[H_3CC(SH)NH_2]^+AsF_6^-$, *Z. Anorg. Allg. Chem.* **639**, 65 (2013).

Other Activities

Board member of the Münchener Chemische Gesellschaft.

Inorganic Chemistry

Univ.-Prof. Dr. rer. nat. Bettina Valeska Lotsch

Born 1977 in Frankenthal/Pfalz, 1997-2002 study of chemistry at LMU Munich and University of Oxford, 2006 PhD degree in the group of Prof. Dr. Wolfgang Schnick, LMU Munich, 2007-2008 Postdoctoral fellow in the group of Prof. Dr. Geoffrey Ozin, University of Toronto, Canada, since 2009 W2 tenure track professor LMU Munich, since 2011 director track and independent research group leader at the Max Planck Institute for Solid State Research, Stuttgart.

Research Topics

Rational design of functional materials at the intersection between solid-state and nanochemistry: Functional frameworks, 2D nanosheet materials and artificial heterostructures, photonic nanostructures for optical sensing, new concepts for energy conversion and storage with a special focus on artificial photosynthesis and high performance solid electrolytes for battery applications.

Honors, Awards, Memberships

Member of the Gesellschaft Deutscher Chemiker (GDCh)
 Member of the Deutsche Gesellschaft für Kristallographie (DGK)
 Member of the International Max Planck Research School „Condensed Matter Science“
 Member of the Advisory Board *Journal of Materials Chemistry A*
 Member of the Editorial Board *Annual Review of Materials Research*
 Member of the cluster of excellence *Nanosystems Initiative Munich* (NIM)

Extramural Research Funding

Max Planck-EPFL Center for Molecular Nanoscience and Technology,
 Grant “Photoelectrochemical Water splitting by GsAs Nanowire Arrays on Si”
 Max Planck-EPFL Center for Molecular Naoscience and Technology,
 Grant “Novel materials for Li-ion batteries: A combined experimental and theoretical approach, and the challenge of mixed-valence transition-metal oxides”
 Excellence Cluster *Nanosystems Initiative Munich, NIM* (DFG and the Federal Ministry of Education and Research)
 NIM seed funding „Exfoliated layered Perovskites as 2D building blocks for hybrid superlattices“
 DFG, project LO 1801/2-1, Priority Program 1362 “Metal-Organic Frameworks”
 DFG, project LO 1801/1-1 “Kohlenstoffnitrid-Netzwerke: Synthesestrategien, komplementäre Strukturaufklärung und Materialeigenschaften”
 Fonds der Chemischen Industrie (FCI), young researcher grant
 Fonds der Chemischen Industrie, PhD scholarship Linus Stegbauer

Alexander von Humboldt Postdoc Fellowship, Dr. Cheng Li
Elite Network Bavaria, IDK-NBT fellowship, Ida Pavlichenko

Publications – Scientific Papers

2013

C. Ziegler, S. Werner, M. Bugnet, K. Viridi, M. Wörsching, V. Duppel, G. A. Botton, C. Scheu, B. V. Lotsch, Artificial solids by Design: Assembly and Electron Microscopy Study of Nanosheet Derived Heterostructures, *Chem. Mater.* 2013, 25, 4892-4900.

A. Kuhn, V. Duppel and B. V. Lotsch, Tetragonal $\text{Li}_{10}\text{GeP}_2\text{S}_{12}$ and Li_7GePS_8 – exploring the Li ion dynamics in LGPS Li Electrolytes, *Energy Environ. Sci.* 2013, 6, 3548-3552.

A. Ranft, S. Betzler, F. Haase, B. V. Lotsch, Additive-mediated size control of MOF nanoparticles, *CrystEngComm* 2013, 15, 9296–9300.

M. Rose, D. Weber, B. V. Lotsch, R. K. Kremer, R. Goddard, R. Palkovits, *Micro. Meso-* Biogenic metal-organic frameworks: 2,5-furandicarboxylic acid as versatile building block, *Micro. Meso. Mater.* 2013, 181, 217–221.

S. Werner, V. W.-h. Lau, S. Hug, V. Duppel, H. Clausen-Schaumann, B. V. Lotsch, Cationically charged MnIIAlIII LDH nanosheets by chemical exfoliation and their use as building blocks in graphene oxide-based materials, *Langmuir* 2013, 29, 9199–9207.

A. Kuhn, R. Eger, J. Nuss and B. V. Lotsch, Synthesis and Crystal Structures of the Alkali Aluminium Thiohypodiphosphate $\text{M}^I\text{Al}_1\text{P}_2\text{S}_6$ ($\text{M}^I = \text{Li}, \text{Na}$), *Z. Anorg. Allg. Chem.* 2013, 639, 1087–1089.

A. Kuhn, J. Köhler, B. V. Lotsch, Single-Crystal X-ray Structure Analysis of the Superionic Conductor $\text{Li}_{10}\text{GeP}_2\text{S}_{12}$, *Phys. Chem. Chem. Phys.* 2013, 15, 11620-11622.

S. C. Junggeburth, L. Diehl, S. Werner, V. Duppel, W. Sigle, B. V. Lotsch, Ultrathin 2D Coordination Polymer Nanosheets by Surfactant-Mediated Synthesis, *J. Am. Chem. Soc.* 2013, 135, 6157-6164

V. Hrkac, L. Kienle, S. Kaps, A. Lotnyk, Y. K. Mishra, U. Schurmann, V. Duppel, B. V. Lotsch, R. Adelung, Superposition Twinning Supported by Texture - the Showcase of ZnO Nanospikes, *J. Appl. Cryst.* 2013, 46, 396-403.

K. Schwinghammer, B. Tuffy, M. B. Mesch, E. Wirnhier, C. Martineau, F. Taulelle, W. Schnick, J. Senker, B. V. Lotsch, Triazine-based Carbon Nitrides for Visible-Light Driven Hydrogen Evolution, *Angew. Chem. Int. Ed.* 2013, 52, 2435-2439.

G. von Freymann, V. Kitaev, B. V. Lotsch, G. A. Ozin, Bottom-up Assembly of Photonic Crystals, *Chem. Soc. Rev.* 2013, 42, 2528- 2554.

K. S. Viridi, Y. Kauffmann, C. Ziegler, P. Ganter, W. D. Kaplan, B. V. Lotsch, P. Blaha, C. Scheu, Electronic structure of $\text{KCa}_2\text{Nb}_3\text{O}_{10}$ as envisaged by density functional theory and valence electron energy loss spectroscopy, *Phys. Rev. B* 2013, 87, 115108.

A. T. Exner, I. Pavlichenko, B. V. Lotsch, G. Scarpa, P. Lugli, Low-Cost Thermo-Optic Imaging Sensors: A Detection Principle Based on Tunable 1D Photonic Crystals, *ACS Appl. Mater. Interfaces* 2013, 5, 1575–1582.

I. Pavlichenko, A. T. Exner, P. Lugli, G. Scarpa, B. V. Lotsch, Tunable Thermoresponsive $\text{TiO}_2/\text{SiO}_2$ Bragg Stacks Based on Sol-Gel Fabrication Methods, *J. Intell. Mater. Struct.* 2013, 24, 2203–2213.

2012

I. Pavlichenko, A. T. Exner, G. Logvenov, G. Scarpa, P. Lugli, B. V. Lotsch, Nanomorphology tuning of the thermal response of $\text{TiO}_2/\text{SiO}_2$ Bragg stacks, *Can. J. Chem.* 2012, 90, 1069-1077 (Special Issue in honour of Professor Geoffrey A. Ozin).

M. Bareiß, D. Kälblein, C. Jirauschek, A. Exner, I. Pavlichenko, B. Lotsch, U. Zschieschang, H. Klauk, G. Scarpa, B. Fabel, W. Porod, P. Lugli, Ultra-thin titanium oxide, *Appl. Phys. Lett.* 2012, 101, 083113.

S. Hug, M. E. Tauchert, S. Li, U. E. Pachmayr, B. V. Lotsch, A functional triazine framework based on *N*-heterocyclic building blocks, *J. Mater. Chem.* 2012, 22, 13956-13964.

C. Li, B. V. Lotsch, Stimuli-responsive 2D polyelectrolyte photonic crystals for optically encoded pH sensing, *Chem. Commun.* 2012, 48, 6169-6171.

B. V. Lotsch, I. Pavlichenko, Colour from structure, from nature to the lab bench: “Smart” photonic crystals for optical sensing, *The Irish Times (Atomium Culture)* 2012. *El Pais, Sociedad (Atomium Culture)*, 2012.

F. M. Hinterholzinger, A. Ranft, J. M. Feckl, B. Rühle, T. Bein, B. V. Lotsch, One-dimensional metal-organic framework photonic crystals used as platforms for vapor sorption, *J. Mater. Chem.* 2012, 22, 10356-10362.

E. Flügel, A. Ranft, F. Haase, B. V. Lotsch, Synthetic routes toward MOF nanomorphologies, *J. Mater. Chem.* 2012, 22, 10119-10133.

S. C. Junggeburth, K. Schwinghammer, K. S. Viridi, C. Scheu, B. V. Lotsch, Towards mesostructured zinc imidazolate frameworks, *Chem. Eur. J.* 2012, 18, 2143-2152.

I. Pavlichenko, A. T. Exner, M. Guehl, P. Lugli, G. Scarpa, B. V. Lotsch, Humidity-enhanced thermally tunable $\text{TiO}_2/\text{SiO}_2$ Bragg stacks, *J. Phys. Chem. C* 2012, 116, 298-305.

Other Activities

Co- or Session-Organizer: International NIM Winterschool, Kirchberg, Austria, March 3 – 9, 2013; Sigma-Aldrich Workshop on Materials Chemistry, MPI-FKF Stuttgart, Germany, September 25, 2012; Grant reviewer for Deutsche Forschungsgemeinschaft, Alexander von Humboldt-foundation, Reaxys PhD Prize, Studienstiftung des Deutschen Volkes; Reviewer for Advanced Materials, Angewandte Chemie, Chemical Communications, Chemistry – A European Journal, Chemistry of Materials, ACS Applied Materials & Interfaces, CrystEngComm, Inorganic Chemistry, Journal of Materials Chemistry, Journal of the American Chemical Society, Microporous & Mesoporous Materials, Nanoscale, Nano Letters, Nature Communications, Scientific Reports, Sensors, Small, Solid State Sciences, The Journal of Physical Chemistry, The Journal of Physical Chemistry Letters, Zeitschrift für Anorganische und Allgemeine Chemie.

Inorganic Chemistry

Univ.-Prof. Dr. rer. nat. Wolfgang Schnick

Born 1957 in Hannover; 1983 Diploma in chemistry, University of Hannover; 1986 Dr. rer. nat., inorganic chemistry, University of Hannover; 1992 habilitation in inorganic chemistry, University of Bonn; 1986 - 87 scientific assistant (C1), University of Hannover; 1987 - 88 guest scientist, Max-Planck Institute for Solid-State Research MPI-FKF, Stuttgart; 1988 - 93 scientific assistant (C1), University of Bonn; 1992 offer C4-professor (chair) for inorganic and general chemistry, Humboldt University Berlin, declined; 1993 - 98 C4-professor (chair) for inorganic chemistry, University of Bayreuth; 1998 - 2006 C4-professor (chair) for inorganic solid-state chemistry, University of Munich (LMU); 2005 offer scientific member of the Max-Planck Society and director at the Max-Planck Institute for Metals Research MPI-MF, Stuttgart, declined; 2005 offer W3-professor (chair) for fundamentals of ceramic materials, University of Stuttgart, declined; since 2006 W3-professor (chair) for inorganic solid-state chemistry, University of Munich (LMU).

Research Topics

Inorganic solid-state and materials chemistry; discovery, development and application of novel functional materials based on nitrides and oxonitrides of group 13 – 15 elements in combination with alkali, alkaline earth, rare earth metals or hydrogen. Nitridosilicates, nitridophosphates, nitridoaluminates, nitridogallates, nitridic zeolites, C₃N₄-precursor compounds. A major application breakthrough has been achieved by the discovery and development of highly efficient Eu²⁺-doped nitride luminescent materials that are now being industrially used for phosphor converted (pc)-LEDs.

Honors, Awards, Memberships

Elected fellow of the *Berlin-Brandenburg Academy of Sciences and Humanities* (since 2002)

Elected corresponding fellow *Bavarian Academy of Sciences* (since 2006)

Elected fellow of the *German Academy of Sciences Leopoldina* (since 2009)

Nomination *Deutscher Zukunftspreis 2013 des Bundespräsidenten für Technik und Innovation*

Extramural Research Funding

Deutsche Forschungsgemeinschaft DFG (German Research Foundation);

Fonds der Chemischen Industrie FCI (German Chemical Industry Fund);

Publications – Scientific Papers

2013

Intermediates in Ammonothermal GaN Crystal Growth under Ammonoacidic Conditions; S. Zhang, F. Hintze, W. Schnick, R. Niewa; *Eur. J. Inorg. Chem.* 2013, 5387

Two Synthetic Approaches to $\text{Ag}_{3.4}\text{In}_{3.7}\text{Sb}_{76.4}\text{Te}_{16.5}$ Bulk Samples and their Transport Properties; T. Schröder, T. Rosenthal, C. Gold, E.-W. Scheidt, W. Schnick, O. Oeckler; *Z. Anorg. Allg. Chem.* 2013, 639, 2868

High-Pressure Synthesis and Characterization of $\text{Li}_2\text{Ca}_3[\text{N}_2]_3$ – An Uncommon Metallic Diazenide with $[\text{N}_2]^{2-}$ Ions; S.B. Schneider, M. Seibald, V.L. Deringer, R.P. Stoffel, R. Frankovsky, G.M. Friederichs, H. Laqua, V. Duppel, G. Jeschke, R. Dronskowski, W. Schnick; *J. Am. Chem. Soc.* 2013, 135, 16668

Electronic and Ionic Conductivity in Alkaline Earth Diazenides $\text{M}_{\text{AE}}\text{N}_2$ ($\text{M}_{\text{AE}} = \text{Ca}, \text{Sr}, \text{Ba}$) and in Li_2N_2 ; S.B. Schneider, M. Mangstl, G.M. Friederichs, R. Frankovsky, J. Schmedt auf der Günne, W. Schnick; *Chem. Mater.* 2013, 25, 4149

Aperiodic CrSc Multilayer Mirrors for Attosecond Water Window Pulses; A. Guggenmos, R. Rauhut, M. Hofstetter, S. Hertrich, B. Nickel, J. Schmidt, E.M. Gullikson, M. Seibald, W. Schnick, U. Kleineberg; *OpEx* 2013, 21, 21728

Magnesium Double Nitride Mg_3GaN_3 as New Host Lattice for Eu^{2+} Doping: Synthesis, Structural Studies, Luminescence, and Band-Gap Determination; F. Hintze, N.W. Johnson, M. Seibald, D. Muir, A. Moewes, W. Schnick; *Chem. Mater.* 2013, 25, 4044

Asymmetric Fluorodinitromethyl Derivatives of 2,2,2-trinitroethyl N-(2,2,2-trinitroethyl)carbamate; T.M. Klapötke, B. Krumm, R. Moll, S.F. Rest, W. Schnick, M. Seibald; *J. Fluor. Chem.* 2013, 156, 253

Metal-Organic Framework Luminescence in the Yellow Gap by Codoping of the Homoleptic Imidazolate $[\text{BaIm}_2]$ with Divalent Europium; J.-C. Rybak, M. Hailmann, P.R. Matthes, A. Zurawski, J. Nitsch, A. Steffen, J. Heck, C. Feldmann, S. Götzendörfer, J. Meinhardt, G. Sextl, H. Kohlmann, S.J. Sedlmaier, W. Schnick, K. Müller-Buschbaum; *J. Am. Chem. Soc.* 2013, 135, 6896

Band Gap Tuning in Poly(triazine imide), a Nonmetallic Photocatalyst; E. McDermott, E. Wirnhier, W. Schnick, K. Singh Viridi, C. Scheu, Y. Kauffmann, W.D. Kaplan, E. Kurmaev, A. Moewes; *J. Phys. Chem. C.* 2013, 117, 8806

Ammonothermal Synthesis and Crystal Structure of $\text{BaAl}_2(\text{NH}_2)_8 \cdot 2\text{NH}_3$; P. Pust, S. Schmiechen, F. Hintze, W. Schnick; *Z. Anorg. Allg. Chem.* 2013, 639, 1185

New Polymorph of the Highly Efficient LED-Phosphor $\text{SrSi}_2\text{O}_2\text{N}_2:\text{Eu}^{2+}$ – Polytypism of a Layered Oxonitridosilicate; M. Seibald, T. Rosenthal, O. Oeckler, C. Maak, A. Tücks, P.J. Schmidt, D. Wiechert, W. Schnick; *Chem. Mater.* 2013, 25, 1852

Triazine-based Carbon Nitrides for Visible-Light-Driven Hydrogen Evolution; K. Schwinghammer, B. Tuffy, M.B. Mesch, E. Wirnhier, C. Martineau, F. Taulelle, W. Schnick, J. Senker, B.V. Lotsch; *Angew. Chem.* 2013, 125, 2495; *Angew. Chem. Int. Ed.* 2013, 52, 2435

$\text{Ca}[\text{LiAlN}_2]$: A Quaternary Nitridoaluminate; P. Pust, S. Pagano, W. Schnick; *Eur. J. Inorg. Chem.* 2013, 1157

Formation and Characterization of Melam, Melam Hydrate and a Melam-Melem Adduct; E. Wirnhier, M.B. Mesch, J. Senker, W. Schnick; *Chem. Eur. J.* 2013, 19, 2041

New Heptazine Based Materials with a Divalent Cation – $\text{Sr}[\text{HC}_6\text{N}_7\text{O}_3] \cdot 4\text{H}_2\text{O}$ and $\text{Sr}[\text{HC}_6\text{N}_7(\text{NCN})_3] \cdot 7\text{H}_2\text{O}$; N.E. Braml, W. Schnick; *Z. Anorg. Allg. Chem.* 2013, 639, 275

2012

$\text{Ca}_2\text{Ga}_3\text{MgN}_5$ – A Highly Condensed Nitridogallate; F. Hintze, W. Schnick; *Z. Anorg. Allg. Chem.* 2012, 638, 2243

Materials Properties of Ultra-Incompressible Re_2P ; S.B. Schneider, D. Baumann, A. Salamat, Z. Konopkova, W. Morgenroth, H.-P. Liermann, M. Schwarz, L. Bayarjargal, A. Friedrich, B. Winkler, W. Schnick; *Chem. Mater.* 2012, 24, 3240

Unexpected Luminescence Properties of $\text{Sr}_{0.25}\text{Ba}_{0.75}\text{Si}_2\text{O}_2\text{N}_2:\text{Eu}^{2+}$ - A Narrow Blue Emitting Oxonitridosilicate with Cation Ordering; M. Seibald, T. Rosenthal, O. Oeckler, F. Fahrnbauer, A. Tücks, P.J. Schmidt, W. Schnick; *Chem. Eur. J.* 2012, 18, 13446

Template-free Inorganic Synthesis of Silica-based Nanotubes and their Self-Assembly to Mesocrystals; S.J. Sedlmaier, T. Dennenwaldt, C. Scheu, W. Schnick; *J. Mater. Chem.* 2012, 22, 15511

$\text{BaSi}_4\text{O}_6\text{N}_2$ – A Hexacelsian-Type Layered Oxonitridosilicate; C. Braun, H. Ehrenberg, W. Schnick; *Eur. J. Inorg. Chem.* 2012, 3923

$\text{Ca}_3\text{Sm}_3[\text{Si}_9\text{N}_{17}]$ and $\text{Ca}_3\text{Yb}_3[\text{Si}_9\text{N}_{17}]$ - Nitridosilicates with Interpenetrating Nets Consisting of Star-Shaped $[\text{N}^{4-}(\text{SiN}_3)_4]$ -Units and $[\text{Si}_5\text{N}_{16}]$ -Supertetrahedra; H. Huppertz, O. Oeckler, A. Lieb, R. Glaum, D. Johrendt, M. Tegel, R. Kaindl, W. Schnick; *Chem. Eur. J.* 2012, 18, 10857

$\text{Li}_{14}\text{Ln}_5[\text{Si}_{11}\text{N}_{19}\text{O}_5]\text{O}_2\text{F}_2$ with $\text{Ln} = \text{Ce}, \text{Nd}$ – Representatives of a Family of Potential Lithium Ion Conductors; S. Lupart, G. Gregori, J. Maier, W. Schnick; *J. Am. Chem. Soc.* 2012, 134, 10132

Ammonothermal Synthesis of Alkali N,N'-bis(aminocarbonyl)-phosphorodiamidates $M[\text{PO}_2(\text{NHCONH}_2)_2]$ ($M = \text{Na}, \text{K}, \text{Rb}$); E. Wirnhier, R.D. Boller, W. Schnick; *Eur. J. Inorg. Chem.* 2012, 3296

Reversible High-Pressure Phase Transition in LaN ; S.B. Schneider, D. Baumann, A. Salamat, W. Schnick; *J. Appl. Phys.* 2012, 111, 093503

$\text{LiCa}_3\text{Si}_2\text{N}_5$ – A Lithium Nitridosilicate with a $[\text{Si}_2\text{N}_5]^{7-}$ Double-Chain; S. Lupart, W. Schnick; *Z. Anorg. Allg. Chem.* 2012, 638, 2015

$\text{Ca}[\text{PO}_2(\text{NH})_3(\text{CO})_2]$ – The First Biuretooxophosphate with a Divalent Cation; E. Wirnhier, W. Schnick; *Z. Anorg. Allg. Chem.* 2012, 638, 920

An Unprecedented AB_2 Tetrahedra Network Structure Type in a High-Pressure Phase of Phosphorus Oxonitride PON ; D. Baumann, S.J. Sedlmaier, W. Schnick; *Angew. Chem.* 2012, 124, 4785; *Angew. Chem. Int. Ed.* 2012, 51, 4707

Rare-Earth Melonates $\text{LnC}_6\text{N}_7(\text{NCN})_3 \cdot x\text{H}_2\text{O}$ ($\text{Ln} = \text{La}, \text{Ce}, \text{Pr}, \text{Nd}, \text{Sm}, \text{Eu}, \text{Tb}$; $x = 8-12$): Synthesis, Crystal Structures, Thermal Behavior, and Photoluminescence Properties of Heptazine Salts with Trivalent Cations; S.J. Makowski, A. Schwarze, P.J. Schmidt, W. Schnick; *Eur. J. Inorg. Chem.* 2012, 1832

A Systematic Approach to Alkali Biuretooxophosphates; E. Wirnhier, W. Schnick; *Eur. J. Inorg. Chem.* 2012, 1840

Crystal Structure of Barium Oxonitridophosphate, $\text{Ba}_3\text{P}_6\text{O}_6\text{N}_8$; S.J. Sedlmaier, D. Weber, W. Schnick; *Z. Kristallogr. – NCS* 2012, 227, 1

Supramolecular Hydrogen-Bonded Structures Between Melamine and N Heterocycles; S.J. Makowski, M. Lacher, C. Lermer, W. Schnick; *J. Mol. Struct.* 2012, 1013, 19

High-Pressure Synthesis and Structural Investigation of $\text{H}_3\text{P}_8\text{O}_8\text{N}_9$: A New Phosphorus(V) Oxonitride Imide with an Interrupted Framework Structure; S.J. Sedlmaier, V.R. Celinski, J. Schmedt auf der Günne, W. Schnick; *Chem. Eur. J.* 2012, 18, 4358

Luminescence Tuning of MOFs via Ligand to Metal and Metal to Metal Energy Transfer by Co-Doping of $[\text{Gd}_2\text{Cl}_6(\text{bipy})_3] \cdot 2\text{bipy}$ with Europium and Terbium; P.R. Matthes, C.J. Höller, M. Mai, J. Heck, S.J. Sedlmaier, S. Schmiechen, C. Feldmann, W. Schnick, K. Müller-Buschbaum; *J. Mater. Chem.* 2012, 22, 10179

Formation of a Hydrogen-Bonded Heptazine Framework by Self-Assembly of Melem into a Hexagonal Channel Structure; S.J. Makowski, P. Köstler, W. Schnick; *Chem. Eur. J.* 2012, 18, 3248

$\text{Ba}_3\text{Ga}_3\text{N}_5$ – A Novel Host Lattice for Eu^{2+} -Doped Luminescent Materials with Unexpected Nitridogallate Substructure; F. Hintze, F. Hummel, P.J. Schmidt, D. Wiechert, W. Schnick; *Chem. Mater.* 2012, 24, 402

High-Pressure Synthesis and Characterization of the Alkali Diazenide Li_2N_2 ; S.B. Schneider, R. Frankovsky, W. Schnick; *Angew. Chem.* 2012, 124, 1909; *Angew. Chem. Int. Ed.* 2012, 51, 1873

Synthesis of Alkaline Earth Diazenides $\text{M}_{\text{AE}}\text{N}_2$ ($\text{M}_{\text{AE}} = \text{Ca}, \text{Sr}, \text{Ba}$) by Controlled Thermal Decomposition of Azides under High Pressure; S.B. Schneider, R. Frankovsky, W. Schnick; *Inorg. Chem.* 2012, 51, 2366

$\text{Ba}_6\text{P}_{12}\text{N}_{17}\text{O}_9\text{Br}_3$ – A Column-Type Phosphate Structure Solved from Single-Nanocrystal Data Obtained by Automated Electron Diffraction Tomography; E. Mugnaioli, S.J. Sedlmaier, O. Oeckler, U. Kolb, W. Schnick; *Eur. J. Inorg. Chem.* 2012, 121

$\text{Li}_2\text{Sr}_4\text{Al}_2\text{Ta}_2\text{N}_8\text{O}$ - A Nitridoalumotantalate with BCT-Zeolite Type Structure; P. Pust, W. Schnick; *Z. Anorg. Allg. Chem.* 2012, 638, 352

Investigation of the Hydrolysis Stability of Triazine Tricarboxylate in the Presence of Transition Metal(II) Ions and Synthesis and Crystal Structure of the Alkaline Earth Triazine Tricarboxylates $\text{M}_3[\text{C}_3\text{N}_3(\text{CO}_2)_3]_2 \cdot 12\text{H}_2\text{O}$ ($\text{M} = \text{Sr}, \text{Ba}$); S.J. Makowski, E. Calta, M. Hörmannsdorfer, W. Schnick; *Z. Anorg. Allg. Chem.* 2012, 638, 345

Formation of Cocrystals between Alkali Triazine Tricarboxylates and Cyanuric Acid – Reactivity Considerations and Structural Characterization of the Adduct Phases $\text{M}_3[\text{C}_3\text{N}_3(\text{CO}_2)_3][\text{C}_3\text{N}_3\text{O}_3\text{H}_3] \cdot \text{H}_2\text{O}$ ($\text{M} = \text{K}, \text{Rb}$); S.J. Makowski, E. Calta, M. Lacher, W. Schnick; *Z. Anorg. Allg. Chem.* 2012, 638, 88

$\text{LiLa}_5\text{Si}_4\text{N}_{10}\text{O}$ and $\text{LiPr}_5\text{Si}_4\text{N}_{10}\text{O}$ – Chain-Type Oxonitridosilicates; S. Lupart, W. Schnick; *Z. Anorg. Allg. Chem.* 2012, 638, 94

Formation of Melamium Adducts by Pyrolysis of Thiourea or Melamine/ NH_4Cl Mixtures; N.E. Braml, A. Sattler, W. Schnick; *Chem. Eur. J.* 2012, 18, 1811

Patents

New Phosphors, such as New Narrow-Band Red Emitting Phosphors, for Solid State Lighting; P.J. Schmidt, F. Hintze, P.A.H. Pust, V. Weiler, C. Hecht, S.F. Schmiechen, W. Schnick, D.U. Wiechert; *PCT Int. Appl.* 2013, WO 2013175336, A1; Koninklijke Philips Electronics NV, Philips Intellectual Property & Standards GmbH, Germany

Mn-Activated Hexafluorosilicates for LED Applications; V. Weiler, P.J. Schmidt, W. Schnick, M.A. Seibald; *PCT Int. Appl.* 2013, WO 2013088313, A1; Koninklijke Philips Electronics NV, Philips Intellectual Property & Standards GmbH, Germany

Orange to Red Emitting Silicon-Oxynitride Luminescent Materials; P.J. Schmidt, C.S. Hecht, W. Schnick; *PCT Int. Appl.* 2012, WO 2012077042, A1; Koninklijke Philips Electronics NV, Philips Intellectual Property & Standards GmbH, Germany

Other Activities

Co-management board Department of Chemistry, University of Munich LMU (2000 – 2002, since 2007), Chairman (2000 – 2001, 2010 – 2012); member scientific council / board of trustees Fonds der Chemischen Industrie FCI (since 2005); board member GDCh section solid-state chemistry and materials research (2006 – 2013); member of the advisory council of the Dr. Klaus Römer Foundation, Munich (since 2011), Chairman (2011 – 2012); nomination committee for the Wilhelm-Klemm Award and the Alfred-Stock Memorial Award of the GDCh (2007 – 2014); nomination committee for the Horst-Dietrich-Hardt Award, University of Saarland (since 2008); member of the editorial advisory boards of the scientific journals Chemistry of Materials, Journal of Solid State Chemistry, Solid State Sciences, Zeitschrift für Anorganische und Allgemeine Chemie, Zeitschrift für Naturforschung B (Chemical Sciences).

Inorganic Chemistry

Apl. Prof. Dr. rer. nat. Dr.rer.nat.habil. Karlheinz Sünkel

Born 1955 in Munich, study of chemistry at LMU Munich (1974-1979), PhD degree with Prof. Dr. W. Beck (1982), Jan.-Dez. 1983 University of Southern California at Los Angeles, with Prof. R. Bau, habilitation under mentoring by Prof. Dr. W. Beck (1990), Akad. Oberrat since Nov. 1994, Privatdozent since Jan. 1991, apl. Prof. since Feb. 1998

Research Topics

Synthesis and reactivity of ring-functionalized cyclopentadienyl complexes, organometallic coordination polymers, organometallic reaction mechanisms, synthesis and photo-physical properties of cyclometallated Ir- and Pt-complexes.

Extramural Research Funding

Fraunhofer-Gesellschaft für Angewandte Polymerforschung

Publications

First cyclometalated iridium(III) complex containing methyl 2-amino-2-deoxy- β -D-glucopyranoside as N,O-chelate. M. Graf, K. Sünkel, *Inorg. Chim. Acta* **387** (2012), 81.

2-Pyridylmetallocenes: Part 2. Cyclomercuration of 2-Pyridyl-cyrhetrene. Molecular structures of 2-pyridyl-cyrhetrene and 1-Chloromercurio-2-(2-pyridyl)-cyrhetrene. Karlheinz Sünkel, Stefan Weigand, *Inorg. Chem. Commun.* **21** (2012), 24

Coordination Chemistry of Perhalogenated Cyclopentadienes and Alkynes, XXIX. The Reaction of Ni(0) and Pt(0) Phosphane Complexes with Trichlorethene, Hexachloro- and Hexabromocyclopentadiene. K. Sünkel, St. Bernhartzeder, U. Birk, *Z. Naturforsch.* **67 B** (2012), 557

Coordination chemistry of perhalogenated cyclopentadienes and alkynes. Part 30. New high-yield Syntheses of monochloroferrocene and 1,2,3,4,5- pentachloroferrocene. Molecular structures of 1,2- dichloroferrocene and 1,2,3- trichloroferrocene. St. Bernhartzeder and K. Sünkel, *J. Organomet. Chem.* **716** (2012), 146

2-Pyridylmetallocenes: Part III. Cyclomercuration of 2-Pyridyl-ferrocene and 1-(2-pyridyl)-2-methyl-ferrocene. Molecular structures of [1-(2-C₅H₄N)-2-(CH₃)C₅H₃]Fe(C₅H₅), [1-(ClHg)-2-(2-C₅H₄N)C₅H₃]Fe(C₅H₅) and [1-(ClHg)-2-(2-C₅H₄N)-3-(CH₃)C₅H₂]Fe(C₅H₅). K. Sünkel, S. Weigand, *Polyhedron* **44** (2012), 133

2-Pyridylmetallocenes, part IV. Cycloplatination of 2-pyridyl-ferrocene, –ruthenocene and –cymantrene. Molecular structures of σ -Pt $\{(C_5H_5)M[C_5H_2R(2-C_5H_4N)]\}Cl$ (DMSO) (R= H, M= Fe, Ru; R= Me, M= Fe) and σ -Pt $\{(C_5H_5)Fe[C_5H_3(2-C_5H_4N)]\}(acac)$. K. Sünkel, R. Branzan, S. Weigand, *Inorg. Chim. Acta* **399** (2013), 193

Komplexchemie perhalogenierter Cyclopentadiene und Alkine, Teil 31. Darstellung von 2,3-Dichlor- und 2,3,4-Trichlor-1-(2-pyridyl)ferrocen $[CpFe\{C_5H_{2-n}Cl_{2+n}(2-C_5H_4N)\}]$ ($n = 0, 1$). Molekülstrukturen von $[CpFe\{C_5HCl_3(2-C_5H_4N)\}]$ und $\{C_5HCl_2(PPh_3)(2-C_5H_4N)\}$, einem unerwarteten Nebenprodukt. K. Sünkel, S. Weigand, *Z. Naturforsch.* **67B** (2012), 887.

Synthesis and structural characterization of bis-cyclometalated complexes. $[M(pty)_2(S_2COCH_3)]$ (M = Rh, Ir; pty = 2-(p-tolyl)pyridinato). M. Graf, H.-C. Böttcher, K. Sünkel. *Inorg. Chim. Acta* **394**, (2013), 363

Synthesis and Molecular Structure of the New Green Emitting Complex $[Ir_2(\mu_2\text{-oxamidato-}N,N',O,O')(2\text{-}(p\text{-tolyl)pyridinato})_4]$, M. Graf, R. Czerwieniec, K. Sünkel *Z. Anorg. Allg. Chem.* **639** (2013), 1090

Coordination Chemistry of Polynitriles, I. Syntheses and Crystal Structures of $[Ag(PCC)(DMF)]$, $[Ni(DMF)_6](PCC)_2$ and $[Co(DMF)_6](PCC)_2$ (PCC= $[C_5(CN)_5]^-$, DMF= *N,N*-dimethylformamide), K. Sünkel, D. Reimann, *Z. Naturforsch.* **68B** (2013), 546

2-Pyridylmetallocenes, Part V. Synthesis of Hydroxymethyl-, Formyl- and Carboxypyridylferrocene and Study of their Cycloplatination Reactions. Molecular Structures of $[\{C_5H_3R(2-C_5H_4N)\text{-}1,2\}Fe Cp]$ (R= CHO, COOH) and σ -Pt $[(C_5H_5)Fe\{C_5H_2(2-C_5H_4N)(CH_2OH)\}]Cl$ (DMSO). K. Sünkel, H. Budde, S. Weigand, *Z. Anorg. Allg. Chem.* **639** (2013), 1242.

Luminescent diiridium(III) complex with a bridging biuretato ligand in unprecedented *N,N':O,O'* coordination. M. Graf, K. Sünkel, R. Czerwieniec, H.-C. Böttcher, *J. Organomet. Chem.* **745-746** (2013), 341

Biochemistry

Prof. Dr. rer. nat. Roland Beckmann

Born 1965 in Luzern / Switzerland, Roland Beckmann studied Biochemistry at the Freie Universität Berlin from 1986-1992 where he also received his PhD in 1995. He then joined Prof. Dr. Günter Blobel's Lab at Rockefeller University, New York, as a Postdoctoral fellow from 1995-2000. From 2001 until 2006 he worked as a Group Leader of an independent Junior group of the VolkswagenStiftung at the Charité, Humboldt University, Berlin. Since 2006 he holds his current position as a W3-full professor at the LMU Munich.

Research Topics

Structural Biochemistry of translation and co-translational events: Cryo-electron microscopy in combination with single particle analysis. Mechanism of protein targeting and translocation, structural basis of eukaryotic translation termination and recycling, mechanisms of translation mediated mRNA surveillance, ribosome biogenesis.

Honors, Awards, Memberships

Member of the German National Academy of Sciences (Leopoldina)
 Member of the European Molecular Biology Organization (EMBO)
 Referee for scientific journals, including Science, Nature and Cell
 Member of the DFG study section 'Biophysics and Biochemistry'

Extramural Research Funding

European Research Council Advanced Grant "CRYOTRANSLATION"
 Excellence Cluster *Center for Integrated Protein Sciences Munich* (DFG and the Graduate School *Quantitative Biology Munich* (DFG and the Federal Ministry of Education and Research)
 Federal Ministry of Education and Research)
 Collaborative Research Center 594 (German Research Council) "Molecular machines in protein folding and translocation"
 Collaborative Research Center 646 (German Research Council) "Regulatory Networks in Genome Expression and Maintenance"
 Research Group FOR 967 (German Research Council) "Ribosomal tunnel exit ligands"
 Research Group FOR 1805 (German Research Council) "Translational dynamics and accuracy"
 Student Research Training Group 1721 (German Research Council) "Integrated analysis of protein complexes and hybrid methods in genome biology"
 Fellowships from EMBO and Boehringer Ingelheim Fonds to postdocs and students

Publications – Scientific Papers

2013

Tosi, A., Haas, C., Herzog, F., Gilmozzi, A., Berninghausen, O., Ungewickell, C., Gerhold CB., Lakomek K., Aebersold R., Beckmann R. and Hopfner KP. (2013)
Structure and subunit topology of the INO80 chromatin remodeler and its nucleosome complex.
Cell 154, 1207-1219.

Anger, A.M., Armache, J.P., Berninghausen, O., Habeck M., Subklewe, M., Wilson, D.N., and Beckmann, R. (2013)
Structures of the human and *Drosophila* 80S ribosome
Nature 497, 80-85

Leidig, C., Bange, G., Kopp, J., Amlacher, S., Aravind, A., Wickles, S., Witte, G., Hurt, E., Beckmann, R., and Sinning I. (2013)
Structural characterization of a eukaryotic chaperone, the ribosome-associated complex (RAC)
Nat Struct Mol Biol 20, 23-28

Norouzi, R., Wickles, S., Leidig, C., Becker, T., Schmid, V.J., Beckmann, R. Tresch, A. (2013)
Automatic post-picking using MAPPOS improves particle image detection from cryo-EM micrographs.
J Struct Biol. 182(2): 59-66

Armache, J.P., Anger, A.M., Márquez, V., Franckenberg, S., Fröhlich, T., Villa, E., Berninghausen, O., Thomm, M., Arnold, G.J., Beckmann, R. and Wilson, D.N. (2013)
Promiscuous behaviour of archaeal ribosomal proteins: implications for eukaryotic ribosome evolution
Nucleic Acids Research 41, 1284-1293

2012

Bradatsch, B., Leidig, C., Granneman, S., Gnadig, M., Tollervey, D., Bottcher, B., Beckmann, R. and Hurt, E. (2012)
Structure of the pre-60S ribosomal subunit with nuclear export factor Arx1 bound at the exit tunnel.
Nat Struct Mol Biol 19, 1234-1241

Franckenberg, S., Becker, T. and Beckmann, R. (2012)
Structural view on recycling of archaeal and eukaryotic ribosomes after canonical termination and ribosome rescue
Current opinion in structural biology 22, 786-796

Dönhöfer, A., Franckenberg, S., Wickles, S., Berninghausen, O., Beckmann, R. and Wilson, D.N. (2012). Structural basis for TetM-mediated tetracycline resistance
Proc Natl Acad Sci U S A 109, 16900-16905.

Gumbart, J., Schreiner, E., Wilson, D.N., Beckmann, R. and Schulten, K. (2012)
Mechanisms of SecM-mediated stalling in the ribosome
Biophysical Journal 103, 331-341.

Grela, P., Gajda, M.J., Armache, J.P., Beckmann, R., Krokowski, D., Svergun, D.I., Granowski, N. and Tchorzewski, M. (2012)
Solution structure of the natively assembled yeast ribosomal stalk determined by small-angle X-ray scattering
The Biochemical Journal 444, 205-209.

Becker, T., Franckenberg, S., Wickles, S., Shoemaker, C.J., Anger, A.M., Armache, J.P., Sieber, H., Ungewickell, C., Berninghausen, O., Daberkow, I., Karcher, A., Thomm, M., Hopfner, K.P., Green, R. and Beckmann, R. (2012)
Structural basis of highly conserved ribosome recycling in eukaryotes and archaea
Nature 482, 501-506.

Jarasch, A., Dziuk, P., Becker, T., Armache, J.P., Hauser, A., Wilson, D.N. and Beckmann, R. (2012)
The DARC site: a database of aligned ribosomal complexes
Nucleic Acids Research, 40, 495-500.

Biochemistry – Max-Planck-Institute of Biochemistry

Prof. Dr. rer. nat. Elena Conti

Born 1967 in Varese (Italy); 1986-1991 Chemistry Degree at University of Pavia (Italy); 1996 PhD degree by the Faculty of Physical Sciences at Imperial College of Science, Technology and Medicine, London (UK) in the group of Dr Peter Brick; 1997-1999 Postdoctoral fellow at The Rockefeller University, New York (USA) in the group of Dr. John Kuriyan; 1999-2007 Group Leader at the European Molecular Biology Laboratory, EMBL, Heidelberg (Germany); 2007 Max Planck Director and Scientific Member at the Max Planck Institute of Biochemistry, heading the Structural Cell Biology Department; 2007, Honorary Professor at LMU Munich.

Research Topics

RNA metabolism: Molecular mechanisms of RNA quality control, RNA transport and RNA degradation. Unwinding RNA helicases, RNA binding proteins, nucleases. Structural biology, X-ray crystallography, biochemistry, biophysics.

Honors, Awards, Memberships

Louis-Jeantet Prize for Medicine
 Theodor Bücher medal (FEBS)
 Hans Krebs medal (FEBS)
 ERC Advanced Grant
 Member of the European Molecular Biology Organization (EMBO)
 Member of International Max Planck Research School, Martinsried
 Editor *RNA Journal*
 Member of the Editorial Board *Current Opinion Structural Biology*

Extramural Research Funding

European Research Council Advanced Grant “DEAD2THEEND”
 Marie Curie Initial Training Network RNPnet
 Excellence Cluster *Center for Integrated Protein Sciences Munich* (DFG and the Federal Ministry of Education and Research)
 Graduate School *Quantitative Biology Munich* (DFG and the Federal Ministry of Education and Research)
 Collaborative Research Center 646 (German Research Council) “Regulatory Networks in Genome Expression and Maintenance”
 Collaborative Research Center 1035 (German Research Council) “Control of protein function by conformational switching”
 Collaborative Research Group FOR1680 (German Research Council) “Unravelling the prokaryotic immune system”

Student Research Training Group 1721 (German Research Council) “Integrated analysis of protein complexes and hybrid methods in genome biology”

Fellowships from EMBO and Boehringer Ingelheim Fonds to postdocs and students

Publications – Scientific Papers

2013

Buchwald G., Schüssler S., Basquin C., Le Hir H. and Conti E. (2013). Crystal structure of the human eIF4AIII-CWC22 complex shows how a DEAD-box protein is inhibited by a MIF4G domain. *Proc Natl Acad USA* 110, E4611-E4618.

Bhaskar V., Roudko V., Basquin J., Sharma K., Urlaub H., Seraphin B. and Conti E. (2013). Structure and RNA-binding properties of the Not1–Not2–Not5 module of the yeast Ccr4–Not complex. *Nat. Struct. Mol. Biol.* 20, 1281-1288.

Sharif H. and Conti E. (2013). Architecture of the Lsm1-7-Pat1 Complex: a conserved assembly in eukaryotic mRNA turnover. *Cell Rep.* 5, 283-291.

Makino D.L., Halbach F. and Conti E. (2013). The exosome and proteasome: common principles of degradation control. *Nat. Rev. Mol. Cell. Biol.* 14, 650-660. (review)

Halbach F., Reichelt P., Rode M. and Conti E. (2013). The yeast Ski complex: crystal structure and substrate channeling to the exosome. *Cell* 154, 814-826.

Makino D.L. and Conti E. (2013) Structure determination of an 11-subunit exosome in complex with RNA by Molecular Replacement. *Acta Cryst.* D69, 2226-2235.

Sharif H., Ozgur S., Sharma K., Basquin C., Urlaub H. and Conti E. (2013). Structural analysis of the yeast Dhh1-Pat1 complex reveals how Dhh1 engages Pat1, Edc3 and RNA in mutually exclusive interactions. *Nucl. Ac. Res.* 41, 8377-8390.

Von Moeller H., Lerner R., Ricciardi A., Basquin C., Marzluff W.F. and Conti E. (2013). Structural and biochemical studies of SLIP1-SLBP identifies DBP5 and eIF3g as SLIP1-binding proteins. *Nucl. Ac. Res.* 41, 7960-7971.

Makino D.L., Baumgärtner M. and Conti E. (2013). Crystal structure of an RNA-bound 11-subunit eukaryotic exosome complex. *Nature* 495, 70-75.

2012

Basquin J., Roudko V.V., Rode M., Basquin C., Seraphin B. and Conti E. (2012). Architecture of the nuclease module of the Ccr4-Not complex: the Not1-Caf1-Ccr4 interaction. *Mol Cell* 48, 1-12.

Melero R., Buchwald G., Castano R., Raabe M., Gil D., Lazaro M., Urlaub, H., Conti E. and Llorca O. (2012). The cryo-EM structure of the UPF-EJC complex shows UPF1 is poised toward the RNA 3' end. *Nat Struct. Mol Biol.* 19, 498-505.

Jeyaprakash A.A., Santamaria A., Jayachandran U., Chan Y.W., Benda C., Nigg E. and Conti E. (2012). Structural and functional organization of the Ska complex, a key component of the kinetochore-microtubule interface. *Mol Cell* 46, 1-13.

Murachelli A.G., Ebert J., Basquin C., Le Hir H. and Conti E. (2012). The structure of the ASAP core complex reveals the existence of a Pinin-containing PSAP complex. *Nat. Struct. Mol. Biol.* 19, 378-386.

Halbach F., Rode M. and Conti E. (2012). The crystal structure of *S. cerevisiae* Ski2, a DExH helicase associated with the cytoplasmic functions of the exosome. *RNA* 18, 124-134.

Other Activities

EMBO Fellowship Committee, Review committee, EMBL, Grenoble (FR), Armenise-Harvard Foundation, Scholarship Advisory Committee, Managing Director, Max Planck Institute of Biochemistry (Munich).

Meeting co-organizer: 107th Boehringer-Ingelheim Titisee conference on 'RNA transport' (Germany), Murnau Conference 'Structural Biology of Macromolecular Transport' (Germany) EMBO meeting, Nice (France)

Keynote speaker/session chair: RNA meeting, Davos (Switzerland), Gordon conference, 'Nucleic Acids', New England (USA), EMBO Symposium: 'Eukaryotic RNA turnover', Strasbourg (France), EMBO Symposium 'The complex life of mRNA', Keystone meeting, 'RNA protein interactions', Santa Fe (USA)

Reviewer for Science, Nature, Nature Structural and Molecular Biology, Cell, Molecular Cell, EMBO J., RNA J, Nucleic Acids Research, Structure.

Biochemistry

Univ.-Prof. Dr. rer. nat. Patrick Cramer

Born 1969 in Stuttgart, 1989-1995 Student of chemistry at the Universities of Stuttgart, Heidelberg, Bristol and Cambridge, 1995-1998 Pre-doctoral fellow in the group of Dr. Christoph Müller, European Molecular Biology Laboratory Grenoble, France, 1998 Dr. rer. nat. from University of Heidelberg, 1999-2001 Postdoctoral fellow in the group of Prof. Dr. Roger Kornberg at Stanford University, USA, 2001-2004 tenure-track Professor at LMU Munich, 2004-2014 Professor at LMU Munich, 2004-2013 Director, Gene Center, LMU Munich, 2010-2013 Director, Department of Biochemistry.

Research Topics

Integrated structural biology of multicomponent complexes involved in gene transcription and molecular systems biology of genomic regulation in eukaryotic cells.

Honors, Awards, Memberships

Cross of Merit of the Federal Republic of Germany (Bundesverdienstkreuz)
 Paula und Richard von Hertwig Prize
 Vallee Foundation Visiting Professorship
 Member of Council, European Molecular Biology Laboratory EMBL
 Tutor (Vertrauensdozent), Elite Academy of Bavaria (Eliteakademie Bayern)

Extramural Research Funding

Deutsche Forschungsgemeinschaft, Sonderforschungsbereich SFB 1064 Teilprojekt A09: Struktur der Nukleosom-transkribierenden RNA-Polymerase II
 Deutsche Forschungsgemeinschaft, Sonderforschungsbereich SFB 960 Teilprojekt A02: Struktur und Funktion von RNA Polymerase I-Komplexen
 Deutsche Forschungsgemeinschaft, Sonderforschungsbereich SFB 646/3 Teilprojekt A01 „Genome expression and maintenance“
 Deutsche Forschungsgemeinschaft, Gottfried-Wilhelm-Leibniz-Preis, CR 117/4-1
 Deutsche Forschungsgemeinschaft, CIPS^M, Cooperationsprojekt Area C, „Protein Structure and Networks“
 Deutsche Forschungsgemeinschaft, Graduiertenkolleg 1721, A3
 Europäische Union, ERC Grant, „TRANSIT“ – Grant Agreement Number: 267800
 DKTK, Global mRNA transcript variation in leukaemia cells
 Roche, Industriekooperation
 Alexander von Humboldt Stiftung, Feodor-Lynen-Rückkehrstipendium
 Alexander von Humboldt Stiftung, Postdoc Fellowship
 Schweizerischer Nationalfonds zur Förderung der Wissenschaftlichen Forschung, Postdoc Fellowship

The International Human Frontier Science program Organization, Postdoc Fellowship
Graduate School of Quantitative Biosciences Munich, Phd Fellowship

Publications – Scientific Papers

Schulz D, Schwalb B, Kiesel A, Baejen C, Torkler P, Gagneur J, Soeding J, Cramer P.
Transcriptome Surveillance by Selective Termination of Noncoding RNA Synthesis.
Cell 2013, Nov 07 [Epub ahead of print].

Heo DH, Yoo I, Kong J, Lidschreiber M, Mayer A, Choi BY, Hahn Y, Cramer P, Buratowski S, Kim M. The RNA Polymerase II C-terminal Domain-Interacting Domain of Yeast Nrd1 Contributes to the Choice of Termination Pathway and Couples to RNA Processing by the Nuclear Exosome. *J. Biol. Chem.* 2013, Nov 06.

Engel C, Sainsbury S, Cheung AC, Kostrewa D, Cramer P.
RNA polymerase I structure and transcription regulation.
Nature 2013, Oct 23. doi: 10.1038/nature12712. [Epub ahead of print].

Sun M, Schwalb B, Pirkl N, Maier KC, Schenk A, Failmezger H, Tresch A, Cramer P.
Global analysis of eukaryotic mRNA degradation reveals xrn1-dependent buffering of transcript levels. *Mol Cell.* 2013, 52, 52-62.

Schwinghammer K, Cheung AC, Morozov YI, Agaronyan K, Temiakov D, Cramer P.
Structure of human mitochondrial RNA polymerase elongation complex.
Nat Struct Mol Biol. 2013 Oct 6. doi: 10.1038/nsmb.2683 [Epub ahead of print].

Kinkelin K, Wozniak GG, Rothbart SB, Lidschreiber M, Strahl BD, Cramer P.
Structures of RNA polymerase II complexes with Bye1, a chromatin-binding PHF3/DIDO homologue. *Proc Natl Acad Sci U S A.* 2013, 110, 15277-15282.

Larivière L, Plaschka C, Seizl M, Petrotchenko EV, Wenzek L, Borchers CH, Cramer P.
Model of the Mediator middle module based on protein cross-linking.
Nucleic Acids Res. 2013 Aug 11. [Epub ahead of print]

Lidschreiber M, Leike K, Cramer P.
Cap completion and C-terminal repeat domain kinase recruitment underlie the initiation-elongation transition of RNA polymerase II. *Mol Cell Biol.* 2013, 33, 3805-3816.

Fouqueau T, Zeller ME, Cheung AC, Cramer P, Thomm M.
The RNA polymerase trigger loop functions in all three phases of the transcription cycle. *Nucleic Acids Res.* 2013, 41, 7048-7059.

Michel M, Cramer P.
Transitions for regulating early transcription. *Cell.* 2013, 153, 943-944.

Esslinger SM, Schwalb B, Helfer S, Michalik KM, Witte H, Maier KC, Martin D, Michalke B, Tresch A, Cramer P, Förstemann K.

Drosophila miR-277 controls branched-chain amino acid catabolism and affects lifespan. *RNA Biol.* 2013, 10, 1042-1056.

Bernecky C, Cramer P.
Struggling to let go: a non-coding RNA directs its own extension and destruction. *EMBO J.* 2013, 32, 771-772.

Sainsbury S, Niesser J, Cramer P.
Structure and function of the initially transcribing RNA polymerase II-TFIIB complex. *Nature* 2013, 493, 437-440.

Miller C, Matic I, Maier K, Schwalb B, Roether S, Straesser K, Tresch A, Mann M, Cramer P.
Mediator phosphorylation prevents stress response transcription during non-stress conditions. *J. Biol. Chem.* 2012, 287, 44017-44026.

Wu CC, Herzog F, Jennebach S, Lin YC, Pai CY, Aebersold R, Cramer P, Chen HT.
RNA polymerase III subunit architecture and implications for open promoter complex formation. *Proc Natl Acad Sci USA.* 2012, 109, 19232-19237.

Larivière L, Plaschka C, Seizl M, Wenzek L, Kurth F, Cramer P.
Structure of the Mediator head module. *Nature.* 2012, 492, 448-451.

Martinez-Rucobo FW, Cramer P. Structural basis of transcription elongation. *Biochim. Biophys. Acta* 2012 Sep 13. doi:pii: S1874-9399(12)00162-9.

Dümcke S, Seizl M, Etzold S, Pirkl N, Martin DE, Cramer P, Tresch A.
One hand clapping: detection of condition-specific transcription factor interactions from genome-wide gene activity data. *Nucleic Acids Res.* 2012, 40, 8883-8892.

Mayer A, Heidemann M, Lidschreiber M, Schreieck A, Sun M, Hintermair C, Kremmer E, Eick D, Cramer P.
CTD tyrosine phosphorylation impairs termination factor recruitment to RNA polymerase II. *Science.* 2012, 336, 1723-1725.

Niederberger T, Etzold S, Lidschreiber M, Maier KC, Martin DE, Fröhlich H, Cramer P, Tresch A. MC EMINEM Maps the Interaction Landscape of the Mediator. *PLoS Comput Biol.* 2012, 8, e1002568.

Cheung AC, Cramer P. A Movie of RNA Polymerase II Transcription. *Cell.* 2012, 149, 1431-1437.

Sun M, Schwalb B, Schulz D, Pirkl N, Etzold S, Larivière L, Maier KC, Seizl M, Tresch A, Cramer P. Comparative dynamic transcriptome analysis (cDTA) reveals mutual feedback between mRNA synthesis and degradation. *Genome Res.* 2012, 22, 1350-1359.

Treutlein B, Muschielok A, Andrecka J, Jawhari A, Buchen C, Kostrewa D, Hög F, Cramer P, Michaelis J. Dynamic architecture of a minimal RNA polymerase II open promoter complex. *Mol Cell*. 2012, 46, 136-146.

Walmacq C, Cheung AC, Kireeva ML, Lubkowska L, Ye C, Gotte D, Strathern JN, Carell T, Cramer P, Kashlev M.
Mechanism of translesion transcription by RNA polymerase II and its role in cellular resistance to DNA damage. *Mol Cell*. 2012, 46, 18-29.

Jennebach S, Herzog F, Aebersold R, Cramer P.
Crosslinking-MS analysis reveals RNA polymerase I domain architecture and basis of rRNA cleavage. *Nucleic Acids Res*. 2012, 40, 5591-5601.

Vannini A, Cramer P.#
Conservation between the RNA Polymerase I, II, and III transcription initiation machineries. *Molecular Cell*. 2012, 45, 439-446.

Larivière L, Seizl M, Cramer P.
A structural perspective on Mediator function. *Curr Opin Cell Biol*. 2012, 24, 305-313.

Mayer A, Schreieck A, Lidschreiber M, Leike K, Martin DE, Cramer P.
The Spt5 C-terminal region recruits yeast 3' RNA cleavage factor I.
Mol Cell Biol. 2012, 32, 1321-1331.

Schwalb B, Schulz D, Sun M, Zacher B, Dümcke S, Martin DE, Cramer P, Tresch A.
Measurement of genome-wide RNA synthesis and decay rates with Dynamic Transcriptome Analysis (DTA). *Bioinformatics* 2012, 28, 884-885.

Wild T, Cramer P.
Biogenesis of multisubunit RNA polymerases.
Trends Biochem Sci. 2012, 37, 99-105.

Biochemistry – Max-Planck-Institute of Biochemistry

Prof. Dr. med. Reinhard Fässler

Born 1956 in Dornbirn/Austria, 1975-1981 study of Medicine at Univ. Innsbruck, 1981 MD degree, 1981-1988 clinical work in different hospitals/Zimbabwe and Austria, 1988-1992 Postdoctoral fellow at Whitehead Institute, Cambridge, USA, 1992 Group leader, Austrian Academy of Sciences, Salzburg, Austria, 1993-1998 Group leader at the Max Planck Institute of Biochemistry, Martinsried, Germany, since 2001 Member of the Max Planck Society and Director of the Department of Molecular Medicine, Martinsried, Germany.

Research Topics

Adhesion signaling; Mechanosignalling; Cell migration; Mouse Genetics; Developmental Biology.

Honors, Awards, Memberships

ERC Advanced Grant
Member of the European Molecular Biology Organization (EMBO)
Member of the German National Academy of Sciences, Leopoldina
Corresponding Member of the Austrian Academy of Sciences

Extramural Research Funding

European Research Council Advanced Grant, DFG, BMBF, Max Planck Society

Publications – Scientific Papers

2013

Rechenmacher F., Neubauer S., Polleux J., Mas-Moruno C., De Simone M., Cavalcanti-Adam E.A., Spatz J.P., Fässler R., and Kessler H. (2013). Functionalizing $\alpha\beta3$ - or $\alpha5\beta1$ -selective integrin antagonists for surface coating: a method to discriminate integrin subtypes *in vitro*. *Angew. Chem. Int.* 52: 1572-1575

Zanivan S., Meves A., Behrendt K., Schoof E.M., Neilson L.J., Cox J., Tang H.R., Kalna G., van Ree J.H., van Deursen J.M., Trempus C.S., Machesky L.M., Linding R., Wickström S.A., Fässler R., and Mann M. (2013). *In vivo* SILAC-based proteomics reveals phosphoproteome changes during mouse skin carcinogenesis. *Cell Rep.*, 3: 552-566.

Schiller H.B., Hermann M.R., Polleux J., Vignaud T., Zanivan S., Friedel C.C., Sun Z., Raducanu A., Gottschalk K., Thery M., Mann M., and Fässler R. (2013). β 1- and α -class integrins cooperate to regulate myosin-II during rigidity sensing of fibronectin-based microenvironments. *Nature Cell Biol.*, 15: 625-635.

Radovanac K., Morgner J., Schultz J.-N., Blumbach K., Patterson C., Geiger T., Mann M., Krieg T., Eckes B., Fässler R., and Wickström S.A. (2013). Stabilization of Integrin-linked kinase by the Hsp90-CHIP axis impacts cellular force generation, migration and the fibrotic response. *EMBO J.*, 32: 1409-1424.

Meves. A., Stremmel C., Böttcher R.T., and Fässler R. (2013). β 1 integrins with individually disrupted cytoplasmic NPxY motifs are embryonic lethal but partially active in the epidermis. *J. Invest. Dermatol.*, 133: 2722-2731.

Moik D.V., Böttcher A., Makhina T., Grashoff C., Bulus N., Zent R., and Fässler R. (2013). Mutations in the Paxillin binding site of Integrin-linked-kinase (ILK) destabilize the pseudokinase domain and causes embryonic lethality in mice. *J. Biol. Chem.*, 288: 18863-18871.

Rechenmacher F., Neubauer S., Mas-Moruno C., Dorfner P.M., Polleux J., Guasch J., Conings B., Boyen H.G., Bochen A. Sobahi T.R., Burkart J.P., Fässler R., and Kessler H. (2013). A molecular toolkit for the functionalization of titanium-based biomaterials that selectively control integrin-mediated cell adhesion. *Chemistry*, 19: 9218-9223.

Young T.R., Bourke M., Zhou X., Oohashi T., Sawatari A., Fässler R., and Leamey C.A. (2013). Ten-m2 is required for the generation of binocular visual circuits. *J. Neurosci.*, 33: 12490-509.

Moretti F.A., Moser M., Lyck R., Abadier M., Ruppert R., Engelhardt B., and Fässler R. (2013). Kindlin-3 regulates integrin activation and adhesion reinforcement of effector T cells. *Proc. Nat. Acad. Sci. USA*, 110: 17005-17010.

Cohen S.J., Gurevich I., Feigelson S.W., Petrovich E., Moser M., Shakhar G., Fässler R., and Alon R. (2013). The integrin co-activator Kindlin-3 is not required for lymphocyte diapedesis. *Blood*, 122: 2609-1267.

Ziegler T., Horstkotte J., Schwab C., Pfetsch V., Weinmann K., Dietzel S., Rohwedder I., Hinkel R., Gross L., Lee S., Hu J., Soehnlein O., Franz W.M., Sperandio M., Pohl U., Thomas M., Weber C., Augustin H.G., Fässler R., Deutsch U., Kupatt C. (2013). Angiopoetin-2 mediates microvascular and hemodynamic alterations in sepsis. *J. Clin. Invest.*, 123: 3436–3445.

Konstandin M.H., Toko H., Gastelum G.M., Quijada P., De La Torre A., Quintana M., Collins B., Din S., Avitabile D., Völkers M., Gude N., Fässler R., and Sussman M.A. (2013). Fibronectin is essential for reparative cardiac progenitor cell response after myocardial infarction. *Circ Res.*, 113: 115-125.

2012

Azimifar S.B., Böttcher R.T., Zanivan S., Grashoff C., Krüger M., Legate K.R., Mann M., and Fässler R. (2012). Induction of membrane circular dorsal ruffles requires cosignalling of integrin-ILK-complex and EGF receptor. *J. Cell Sci.*, 125: 435-448.

Rohwedder I., Montanez E., Beckmann K., Bengtsson E., Duner P., Nilsson J., Soehnlein O., and Fässler R. (2012). Plasma fibronectin deficiency impedes atherosclerosis progression and fibrous cap formation. *EMBO Mol. Med.*, 4: 564-576.

Böttcher R.T., Stremmel C., Meves A., Meyer H., Widmaier M., Tseng H.-Y., and Fässler R. (2012). Sorting nexin 17 prevents lysosomal degradation of $\beta 1$ integrins by binding to the $\beta 1$ integrin tail. *Nature Cell Biol.*, 14: 584-592.

Lefort C.T., Rossaint J., Moser M., Petrich B.G., Zarbock A., Monkley S.J., Critchley D.R., Ginsberg M.H., Fässler R., and Ley K. (2012). Distinct roles for talin-1 and kindlin-3 in LFA-1 extension and affinity regulation. *Blood*, 119: 4275-4282.

Turlo K.A., Noel O.D., Vora R., Larussa M., Fässler R., Hall-Glenn F., and Iruela-Arispe M.L. (2012). An essential requirement for $\beta 1$ integrin in the assembly of extracellular matrix proteins within the vascular wall. *Dev. Biol.*, 365: 23-35.

Jennissen K., Siegel F., Liebig-Gonglach M., Hermann M.R., Kipschull S., van Dooren S., Kunz W.S., Fässler R., and Pfeifer A. (2012). A VASP-Rac-soluble guanylyl cyclase pathway controls cGMP production in adipocytes. *Science Signalling*, 5: ra62.

Tan C.L., Andrews M.R., Kwok J.C., Heintz T.G., Gumy L.F., Fässler R., and Fawcett J.W. (2012). Kindlin-1 enhances axon growth on inhibitory chondroitin sulfate proteoglycans and promotes sensory axon regeneration. *J Neurosci.*, 32: 7325-7335.

Montanez E., Karaköse E., Tischner D., Villunger A., and Fässler R. (2012). PINCH-1 promotes Bcl2-dependent survival signalling and inhibits JNK-mediated apoptosis in the primitive endoderm. *J. Cell Sci.*, 125: 5233-5240.

Miyajima D., Hayata T., Suzuki T., Hemmi H., Nakamoto T., Notomi T., Amagasa T., Böttcher R.T., Costell M., Fässler R., Ezura Y., and Noda M. (2012). Profilin1 regulates sternum development and endochondral bone formation. *J. Biol. Chem.*, 287: 33545-33553.

Mathew S., Lu Z., Palamuttam R.J., Mernaugh G., Hadziselimovic A., Chen J., Bulus N., Gewin L.S., Voehler M., Meves A., Ballestrem C., Fässler R., Pozzi A., Sanders C.R., Zent R. (2012). $\beta 1$ integrin NPxY motifs regulate kidney collecting duct development and maintenance by induced-fit interactions with cytosolic proteins. *Mol. Cell Biol.*, 32: 4080-4091.

Legate K.L., Montag D., Böttcher R., Takahashi S., and Fässler R. (2012). Comparative phenotypic analysis of the two major splice isoforms of phosphatidylinositol kinase type I γ *in vivo*. *J. Cell Sci.*, 125: 5636-5646.

Other Activities

Grant reviewer for Deutsche Forschungsgemeinschaft, European Research Council, Cancer Research UK, EMBO, Wellcome Trust, NSF (USA), FWF Austrian Science Fund; German-Israeli Research Foundation, Boehringer Ingelheim Fonds.

Reviewer for Science, Nature, Nature Cell Biology, Cell, Developmental Cell, EMBO J, EMBO Reports, Current Biology, J. Cell Biology, J. Cell Science, J. Clinical Investigation, Oncogene.

Biochemistry

Prof. Dr. ès sciences Klaus Förstemann

1992-1998 study of Biochemistry at the University of Tübingen and the University of Washington, Seattle (USA), 2002 PhD degree in the group of Prof. Dr. Joachim Lingner at the Swiss Institute for Experimental Cancer Research in Lausanne (Switzerland), 2003-2006 Postdoctoral fellow in the group of Prof. Dr. Phillip Zamore at the University of Massachusetts Medical School in Worcester (USA), 2006-2011 tenure-track professor LMU Munich, since 2011 W2-professor LMU Munich.

Research Topics

Small RNA mediated gene regulation and genome protection, RNA biology, RNA-protein complexes, Drosophila genetics

Honors, Awards, Memberships

HFSP Career Development Award
Award for excellence in teaching

Extramural Research Funding

Collaborative research center SFB646
Collaborative research group “Pathogenic roles of miRNAs in herpesvirus infections” within NGFN-plus, BMBF
Fellowship from DGCH to PhD student

Publications – Scientific Papers

2013

Esslinger SM, Schwalb B, Helfer S, Michalik KM, Witte H, Maier KC, Martin D, Michalke B, Tresch A, Cramer P, Förstemann K. Drosophila miR-277 controls branched-chain amino acid catabolism and affects lifespan. *RNA Biol.* 2013 Jun;10(6):1042-56. doi: 10.4161/rna.24810. Epub 2013 Apr 30.

Schertel C, Rutishauser T, Förstemann K, Basler K. Functional characterization of Drosophila microRNAs by a novel in vivo library. *Genetics.* 2012 Dec;192(4):1543-52. doi: 10.1534/genetics.112.145383. Epub 2012 Oct 10.

2012

Michalik KM, Böttcher R, Förstemann K. A small RNA response at DNA ends in *Drosophila*. *Nucleic Acids Res.* 2012 Oct;40(19):9596-603. doi: 10.1093/nar/gks711. Epub 2012 Jul 30.

Aumiller V, Graebisch A, Kremmer E, Niessing D, Förstemann K. *Drosophila* Pur- α binds to trinucleotide-repeat containing cellular RNAs and translocates to the early oocyte. *RNA Biol.* 2012 May;9(5):633-43. doi: 10.4161/rna.19760. Epub 2012 May 1.

Dittmer A, Förstemann K. Murine cytomegalovirus infection of cultured mouse cells induces expression of miR-7a. *J Gen Virol.* 2012 Jul;93(Pt 7):1537-47. doi: 10.1099/vir.0.041822-0. Epub 2012 Mar 21.

Helfer S, Schott J, Stoecklin G, Förstemann K. AU-rich element-mediated mRNA decay can occur independently of the miRNA machinery in mouse embryonic fibroblasts and *Drosophila* S2-cells. *PLoS One.* 2012;7(1):e28907. doi: 10.1371/journal.pone.0028907. Epub 2012 Jan 13.

Other Activities

Grant reviewer for Deutsche Forschungsgemeinschaft, Boehringer Ingelheim Fonds. Reviewer for *Nucleic Acids Research*, *Journal of Biological Chemistry*, *Biological Chemistry*, *Genetics*.

Biochemistry

Dr. Julien Gagneur

Born 1977 in Avignon/France, 1997-2000 study of Engineering at École Centrale Paris (Applied mathematics) and École Normale Supérieure de Cachan, 2004 PhD degree in applied mathematics at the École Centrale Paris, 2004-2005 computational scientist at Cellzome AG, Heidelberg, 2005-2012 Staff scientist at the European Molecular Biology Laboratory, Heidelberg, 2012 Group leader at the Gene Center, LMU.

Research Topics

Computational Biology; Quantitative genetics; Genomics; Transcriptional regulation; Deep sequencing; Statistical modeling; Machine Learning.

Publications – Scientific Papers

2013

Wilkening S., Lin G., Fritsch E.S., Tekkedil M.M., Anders S., Kuehn R., Nguyen M., Aiyar R.S., Proctor M., Sakhanenko N.A., Galas D.J., Gagneur J., Deutschbauer A., Steinmetz L.M. "An Evaluation of High-Throughput Approaches to QTL Mapping in *Saccharomyces cerevisiae*.", *Genetics*, 2013. (early online)

Schulz D., Schwalb B., Kiesel A., Baejen B., Torkler P., Gagneur J., Soeding J. and Cramer P. Transcriptome Surveillance by Selective Termination of Noncoding RNA Synthesis. *Cell* (155) 5:1075-1087.

Gagneur J.*, Stegle O.*, Zhu C., Jakob P., Tekkedil M. M., Aiyar R., Schuon AK., Pe'er D. and Steinmetz L.M. Genotype-Environment Interactions Reveal Causal Pathways That Mediate Genetic Effects on Phenotype, *PLoS Genet* 9(9): e1003803.

Landry J.J.M.*, Pyl P.T.*, Rausch T., Zichner T., Tekkedil M. M., Stütz A.M., Jauch A., Aiyar R.S., Pau G., Delhomme N., Gagneur J., Korbel J.O., Huber W. and Steinmetz L.M. The Genomic and Transcriptomic Landscape of a HeLa Cell Line, *G3* 2013 3 (3)

Wilkening S., Tekkedil M. M.[†], Lin G., Fritsch E.S., Wei W., Gagneur J., Lazinski D.W., Camilli A. and Steinmetz L.M. Genotyping 1000 yeast strains by next-generation sequencing, *BMC Genomics* 2013 (14) 90.

2012

Bietenhader, M.*, Martos, A.*, Tetaud, E.*, Aiyar, R.S.*, Sellem, C.H., Kucharczyk, R., Clauder-Munster, S., Giraud, M.F., Godard, F., Salin, B., Sagot, I., Gagneur, J., Dequard-Chablat, M., Contamine, M., Denmat, S.H., Sainsard-Chanet, A., Steinmetz, L.M., & di Rago, J.P. Experimental relocation of the mitochondrial ATP9 gene to the nucleus reveals forces underlying mitochondrial genome evolution. *PLoS genetics* 2012 8 (8).

Izquierdo-Carrasco F., Gagneur J., Stamatakis A.: "Trading Memory for Running Time in Phylogenetic Likelihood Computations", 2012 Bioinformatics conference, Vilamoura, Portugal, 2012

Other Activities

Co- or Session-Organizer: Statistical and dynamical models in biology and medicine, Stuttgart 2012, Dresden 2013; Reviewer for Molecular Systems Biology, *PLoS Genetics*, *Nucleic Acids Research*, *Bioinformatics*, *BMC Bioinformatics*.

Biochemistry

Prof. Dr. rer. nat. Ulrike Gaul

Born 1960 in Möckmühl/Baden-Württemberg, 1978-1985 study of biochemistry and physics at the University of Tübingen, 1988 PhD degree (biology) in the group of Prof. Dr. Herbert Jäckle, Max-Planck-Institute for Developmental Biology (Tübingen), 1988 Postdoctoral fellow in the lab of Prof. Dr. Garrett Odell, University of Washington, Seattle, 1989-1993 Postdoctoral fellow in the group of Prof. Dr. Gerald Rubin, University of California, Berkeley, 1993-2000 Assistant Professor, Head of Lab at the Rockefeller University, New York, 2000-2009 Associate Professor, Head of Lab at the Rockefeller University, New York, since 2009 Alexander von Humboldt-Professor and Center for Integrated Protein Sciences Munich (CIPSM)-Professor, at the LMU Munich.

Research Topics

Systems biology of gene regulation in developmental processes: transcription networks in embryonic patterning, mechanisms of post-transcriptional control through microRNAs; molecular and cellular mechanisms of glia cell function in the nervous system: the role of glia in homeostasis and neurodegeneration, development of the blood-brain barrier.

Honors, Awards, Memberships

Alexander von Humboldt Professor
 Member of the European Molecular Biology Organization (EMBO)
 Member of the Excellence cluster “Center for Integrated Protein Science Munich”
 Member of International Max Planck Research School, Martinsried
 Member of the Center for Advanced Studies (CAS), Munich
 Member of Center for Nano Science Munich (CeNS)
 Member of the Strategy Committee, LMU Munich

Extramural Research Funding

Alexander von Humboldt Foundation, Alexander von Humboldt Professorship
 BMBF e:Bio “Systems Biology of Gene Expression – Dissecting the Core Promoter” (SysCore)
 Excellence Cluster *Center for Integrated Protein Sciences Munich* (DFG and the Federal Ministry of Education and Research)
 Graduate School of *Quantitative Biosciences Munich* (DFG and the Federal Ministry of Education and Research)
 Collaborative Research Center 646 (German Research Council) “Regulatory Networks in Genome Expression and Maintenance”

Collaborative Research Center 1064 (German Research Council) “Chromatin Dynamics”

Large equipment Grant (German Research Council)

Publications – Scientific Papers

Bosse JB, Bauerfeind R, Popilka L, Marcinowski L, Taeglich M, Jung C, Striebinger H, von Einem J, Gaul U, Walther P, Koszinowski UH, Ruzsics Z. A beta-herpesvirus with fluorescent capsids to study transport in living cells. PLoS One. 2012;7(7):e40585. doi: 10.1371/journal.pone.0040585. Epub 2012 Jul 11.

Other Activities

Speaker of the Graduate School of *Quantitative Biosciences Munich*; Member of the Scientific Advisory Board, Care for Rare Foundation, Member of the Scientific Advisory Board, Leica Scientific Forum, Grant reviewer for National Institutes of Health, National Science Foundation, Max-Planck-Society, Boehringer Ingelheim Foundation, DFG, European Research Council. Reviewer for Cell, Nature, Neuron, Genes & Development, Developmental Biology, Proceedings of the National Academy of Sciences, PLoS Biology, Development, EMBO Journal, Mechanisms of Development, Developmental Biology, Oncogene, The Journal of Neuroscience, Neuron Glia Biology.

Biochemistry

Prof. Dr. rer. Nat. Mario Halic

Born 1976 in Cakovec, Croatia; 1994-1999 Molecular Biology student at University of Zagreb, Croatia; 1999 Diplom (M.S), University of Zagreb, Zagreb, Croatia; 2001-2005 PhD at Humboldt University in Berlin; 2005 Dr. rer. Nat (Ph.D), Humboldt University of Berlin, Berlin, Germany; 2005-2007 Postdoctoral work at Humboldt University in Berlin and Gene Center in Munich in the lab of Roland Beckmann; 2007-2011 Postdoctoral work at Harvard Medical School, Boston, USA, in the lab of Danesh Moazed; 2011- Tenure-Track Professor of Biochemistry, LMU Munich.

Research

Genome maintenance, systems biology, structural biology

Publications

Gerace E, Halic M, Moazed D

The Methyltransferase Activity of Clr4Suv39h triggers RNAi Independently of Histone H3K9 Methylation.

Mol Cell. 2010 Aug 13;39(3):360-72.

Halic M and Moazed D

Dicer-Independent priRNAs and Argonaute Trigger RNAi and Heterochromatin Formation

Cell. 2010 Feb 19;140(4):504-516

Biochemistry – Max-Planck-Institute of Biochemistry

Univ.-Prof. Dr. med. F. Ulrich Hartl

Born 1957 in Essen, 1976-1982 study of medicine at Univ. Heidelberg, 1985, Dr. med degree in the group of Prof. Dr. Hans Schimassek, Institute of Biochemistry, Univ. Heidelberg, 1985-1986 Postdoctoral fellow and 1986-1990 group leader at Institute of Physiological Chemistry, Univ. of Munich in the group of Prof. Dr. Walter Neupert, interrupted in 1989 by a one year stay in the laboratory of William Wickner, Univ. California Los Angeles, 1990, Dr. med. habil. at Institute of Physiological Chemistry, Univ. of Munich, 1991-1992, Associate Member and 1993-1997, Member with tenure, Program in Cellular Biochemistry and Biophysics, Sloan-Kettering Institute, New York, Associate Professor/Full Professor of Cell Biology and Genetics, Cornell University, Graduate School of Medical Sciences, New York, 1994-1997, Associate Investigator, Howard Hughes Medical Institute, since 1997, Director at Max Planck Institute of Biochemistry, Martinsried, and Honorary Professor, Faculty of Medicine and Chemistry and Pharmacy, Univ. Munich.

Research Topics

Cellular Biochemistry: Mechanisms of chaperone-assisted protein folding and assembly, and protein quality control. Mechanisms of protein misfolding and aggregation in (neuro)degenerative diseases.

Honors, Awards, Memberships

Shaw Prize in Life Science and Medicine, Herbert Tabor Award of ASBMB, Biochemical Analytic Prize, Editorial board member of: The Journal of Cell Biology, The EMBO Journal, The Annual Review of Biochemistry, Molecular Cell, Proceedings of the National Academy of Sciences

Extramural Research Funding

European Research Council Synergy Grant *ToPAG*

Excellence Cluster *Center for Integrated Protein Sciences Munich* and *Munich Cluster for Systems Neurology (SyNergy)* (DFG and the Federal Ministry of Education and Research)

Human Frontier Science Program

Collaborative Research Center 967 (German Research Council) “Functions and Mechanisms of ribosomal tunnel exit ligands”

Collaborative Research Center 596 (German Research Council) “Molecular Mechanisms of neurodegeneration”

Fellowships from EMBO and Boehringer Ingelheim Fonds to postdocs and students

Publications – Scientific Papers

2013

Leitman, J., Hartl, F.U., and Lederkremer, G.Z. (2013). Soluble forms of polyQ-expanded huntingtin rather than large aggregates cause endoplasmic reticulum stress. *Nature Communications*, doi:10.1038/ncomms3753

Park, S.-H., Kukushkin, Y., Chen, T., Gupta, R., Konagai, A., Hipp, M.S., Hayer Hartl, M., and Hartl, F.U. (2013). PolyQ Proteins Interfere with Nuclear Degradation of Cytosolic Proteins by Sequestering the Sis1p Chaperone. *Cell* 154, 134-145.

Li, Z., Hartl, F.U.,* and Bracher, A.* (2013). Structure and function of Hip, an attenuator of the Hsp70 chaperone cycle. *Nature Struct Mol Biol.* 20, 929-935.

Kim, Y.E., Hipp, M., Bracher, A., Hayer-Hartl, M., and Hartl, F.U. (2013). Molecular chaperone functions in protein folding and proteostasis. *Annual Rev Biochem* 82, 323-355.

2012

Rüßmann, F., Stemp, M.J., Mönkemeyer, L., Etchells, S.A., Bracher, and Hartl F.U. (2012). Folding of large multidomain proteins by partial encapsulation in the chaperonin TRiC/CCT. *Proc Natl Acad Sci U S A* 109, 21208-21215.

Herzog, F., Kahraman, A., Böhringer, D., Mak, R., Bracher, A., Walzthoeni, T., Leitner, A., Beck, M., Hartl, F.U., Ban, N., Malmstöm, L., and Aebersold, R. (2012). Structural probing of a protein phosphatase 2A network by chemical cross-linking and mass spectrometry. *Science* 337, 1348-1352.

Tsai, Y.C., Mueller-Cajar, O., Saschenbrecker, S, Hartl, F.U.*, and Hayer-Hartl, M.* (2012). Chaperonin co-factors, Cpn10 and Cpn20, of green algae and plants function as hetero-oligomeric ring complexes. *J Biol Chem* 287, 20471-20481.

Leitner, A., Joachimiak, L.A., Bracher, A., Mönkemeyer, L., Walzthoeni, T., Chen, B., Pechmann, S., Holmes, S., Cong, Y., Ma, B., Ludtke, S., Chiu, W., Hartl, F.U., Aebersold, R., and Frydman, J. (2012). The molecular architecture of the eukaryotic chaperonin TRiC/CCT. *Structure* 20, 814-825.

Calloni, G., Chen, T., Schermann, S.M., Chang, H.-C., Genevoux, P., Agostini, F., Taglia, G.G., Hayer-Hartl, M., and Hartl, F.U. (2012). DnaK functions as a central hub in the E. coli chaperone network. *Cell Reports* 1, 251-264.

Lamond, A.I., Uhlen, M, Horning, S., Makarov, A., Robinson, C.V., Serrano, L., Hartl, F.U., Baumeister, W., Werenskiold, A.K., Andersen, J.S., Vorm, O., Linal, M., Aebersold, R., and Mann, M. (2012). Advancing cell biology through proteomics in space and time (PROSPECTS). *Mol Cell Proteomics*, Mar;11(3):O112.017731. Epub 2012 Feb 6.

Sharma, K., Vabulas, M., Macek, B., Pinkert, S., Cox, J., Mann, M., and Hartl, F.U. (2012). Quantitative proteomics reveals that Hsp90 inhibition preferentially targets kinases and the DNA damage response. *Mol Cell Proteomics*, Mar;11(3):M111.014654. Epub 2011 Dec 13.

Other Activities

Speaker of the International Max Planck Research School (IMPRS) for Molecular and Cellular Life Sciences, Chairman of Scientific Advisory Board, Proteomics Therapeutics, Cambridge, USA, Member Board of Directors, Feldberg Foundation, Member Scientific Advisory Board, Ernst Jung-Foundation, Member Selection Committee for the Shaw Prize in Life Science and Medicine.

Biochemistry

Univ.-Prof. Dr. rer. nat. Karl-Peter Hopfner

Born 1968 in Kipfenberg/Bayern, 1988-1994 study of biology at Univ. Regensburg and Washington University, St. Louis (USA), 1997 PhD degree in the group of Prof. Dr. Robert Huber, Max-Planck-Institute of Biochemistry and TU Munich, 1997-1998 Postdoctoral fellow at MPI for Biochemistry/Roche Pharma, 1999-2001 Postdoctoral fellow in the group of Prof. Dr. John Tainer at The Scripps Research Institute, La Jolla, USA, 2001-2004 tenure track professor LMU Munich, 2005-2006 C3-professor LMU Munich, since 2007 W3-full professor LMU Munich, 2009 Director of the Department of Chemistry and Biochemistry, 2010 Cofounder of SpectraMab GmbH, since October 2013 Dean of Faculty.

Research Topics

Structural Genome and Cancer Biology: Mechanisms of DNA-repair, the DNA damage response and remodeling ATPases in genome and cancer biology. Sensing and signaling of damaged and pathogenic nucleic acids. Structural hybrid-methods to analyze large multisubunit macromolecular complexes. Crystallography of proteins. Therapeutic immune complexes.

Honors, Awards, Memberships

ERC Advanced Grant
 Member of the European Molecular Biology Organization (EMBO)
 Member of the German Society for DNA Repair
 Member of International Max Planck Research School, Martinsried
 Member of the Editorial Board *Biophysical Chemistry*
 Member of the Editorial Board *Open Biology*

Extramural Research Funding

European Research Council Advanced Grant "ATMMACHINE"
 National Institutes of Health U19AI083025 "Immune Recognition of Viruses"
 Excellence Cluster *Center for Integrated Protein Sciences Munich* (DFG and the Federal Ministry of Education and Research)
 Graduate School *Quantitative Biosciences Munich* (DFG and the Federal Ministry of Education and Research)
 Collaborative Research Center 646 (German Research Council) "Regulatory Networks in Genome Expression and Maintenance"
 Collaborative Research Center 684 (German Research Council) "Normal and Malignant Hematopoiesis"
 Collaborative Research Center 1054 (German Research Council) "T-cell plasticity"

Collaborative Research Center 1064 (German Research Council) “Chromatin”
 Student Research Training Group 1721 (German Research Council) “Integrated analysis of protein complexes and hybrid methods in genome biology”
 Student Research Training Group 1202 (German Research Council) “Oligonucleotides in Cell Biology and Therapy”
 BioSysNet Senior Associated PI (Bavarian Ministry of Education and Science)
 M4 Award “Personalized Leukemia Therapy by Antibody Derivatives (Triplebodies)” (Bavarian Ministry for Economy)
 Roche Diagnostics (Structural Analysis of Antibody-Antigen Complexes)
 Fellowships from EMBO and Boehringer Ingelheim Fonds to postdocs and students

Publications – Scientific Papers

2013

Braciak TA, Wildenhain S, Roskopf CC, Schubert IA, Fey GH, Jacob U, Hopfner KP, Oduncu FS. NK cells from an AML patient have recovered in remission and reached comparable cytolytic activity to that of a healthy monozygotic twin mediated by the single-chain triplebody SPM-2. *J Transl Med.* 2013 Nov 16;11(1):289. [Epub ahead of print] PubMed PMID: 24237598; PubMed Central PMCID: PMC3842817.

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Other Activities

Co-founder and speaker of Graduate Research Training Program 1721 “Integrated analysis of protein complexes and hybrid methods in genome biology”, Co- or Session-Organizer: GBM Conference 2013; Chair of selection panel 2012 and 2013: ATIP-Avenir (French junior/excellence funding program); Grant reviewer for Deutsche Forschungsgemeinschaft, European Research Council; ATIP-Avenir, Cancer Research UK, EMBO, Wellcome Trust, NSF (USA); FWF Austrian Science Fund; German-Israeli Research Foundation, Boehringer Ingelheim Fonds. Reviewer for *Science*, *Nature*, *Nature Cell Biology*, *Nature Structural and Molecular Biology*, *Cell*, *Molecular Cell*, *EMBO J*, *EMBO Reports*, *Current Biology*, *Journal of Molecular Biology*, *J. Clinical Investigation*, *Oncogene*, *J. Biol. Chem.*, *Nucleic Acids Research*, *Structure*.

Biochemistry – Max-Planck Institute of Biochemistry

Prof. Dr. rer. nat. Dr. Dr. h.c. Matthias Mann

Born in 1959 in Thuine, Lower Saxony. Degree in physics and mathematics at the Georg August University, Göttingen in 1988: Ph.D. in Chemical Engineering, Yale University, USA. 1989-92: Postdoctoral fellow and later Senior Scientist at the Institute of Molecular Biology at the University of South Denmark 1992 – 1998. Department leader of the Protein and Peptide Group, European Molecular Biology Laboratory (EMBL), Heidelberg 1998-2007. Professor of Bioinformatics, Institute of Molecular Biology and Biochemistry, University of Southern Denmark, Director of the Centre of Experimental Bioinformatics. Since 2005 Director at the Max Planck Institute of Biochemistry, Martinsried, Germany, und Honorary Professor at the Faculty of Chemistry and Pharmacy at the LMU, Munich. Since 2009 Chairman of the Proteomics Department of the Novo Nordisk Foundation Center for Protein Research, University of Copenhagen, Denmark.

Research Topics

Mass spectrometry based proteomics. Bioinformatics and systems biology. Epigenetics. Insulin and growth factor signal transduction. Ubiquitination. Phosphorylation of entire systems. Large scale protein interaction studies. Clinical proteomics.

Honours, Awards, Memberships

- 2012 Leibniz Prize of the German Research Society
- 2012 Ernst Schering Prize
- 2012 Louis-Jeantet Foundation Prize for Medicine
- 2012 Körber European Science Award
- 2013 Winner of m4 Award – Ministry of Economic Affairs supports Personalized Medicine

Member of Scientific Advisory Board of the Human Protein Atlas project, Stockholm, Sweden

Elected member European Molecular Biology Organization (EMBO)

Elected member Royal Danish Academy of Arts and Sciences

Elected member of Leopoldina German National Academy of Sciences

Member of Editorial Board *Journal of Proteome Research*

Member of Editorial Board *Molecular and Cellular Proteomics*

Member of Editorial Board *Cell*

Member of Editorial Board *Carcinogenesis*

Extramural Research Funding

BMBF. DiGtoP. From Disease Genes to Protein Pathways. Collaborative project
 BMBF. The Virtual Liver. 315748. Collaborative project.
 Cluster of Excellence CIPSM – subcontract. CiPSM, Administrated from LMU
 Collaboration Project Sanofi-Aventis. Investigation of signaling in β -cells by quantitative phosphoproteomics
 DFG. International Graduate College. „Regulation and Evolution of Cellular Systems“ (RECESS) Joint project LMU und TU. GRK 1563/1—AOBJ:562831. Collaborative project.
 EU 7th Framework Project Grant. EURO-Motor. G/A 259867. Collaborative project
 EU 7th Framework Project Grant. Prime XS. G/A 262067 Collaborative project
 EU 7th Framework Project Grant. PROSPECTS. Proteomics Specification in Space and Time. HEALTH-F4-2008-201648. Collaborative project
 EU ERC grant. ToPAG. Toxic Protein Aggregation in Neurodegeneration. ERC-2012-SyG 318987
 EU. REA. IEF. Marie Curie. Intra-European Fellowship „Marie Curie“. Individual Stipend Dr. Maria S. Robles / Clockproteomics
 FEBS. PostDoc Fellowship. Individual stipend for Dr. Atul Deshmukh
 Michael J Fox Foundation for Parkinsons Research. LRRK2 Biology LEAPS Award. Combining mass spectrometry with genetic and pharmacological approaches to discover and validate LRRK2 substrates
 NWO – Netherlands. PostDoc Fellowship. Individual Stipend for Dr. Paul Boersema
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Radovanac K, Morgner J, Schulz JN, Blumbach K, Patterson C, Geiger T, Mann M, Krieg T, Eckes B, Fässler R, Wickström SA. Stabilization of integrin-linked kinase by the Hsp90-CHIP axis impacts cellular force generation, migration and the fibrotic response. *EMBO J.* 2013 May 15;32(10):1409-24.

Robles MS, Mann M. Proteomic approaches in circadian biology. *Handb Exp Pharmacol.* 2013;217:389-407.

Scheibe M, Arnoult N, Kappei D, Buchholz F, Decottignies A, Butter F, Mann M. Quantitative interaction screen of telomeric repeat-containing RNA reveals novel TERRA regulators. *Genome Res.* 2013 Aug 6. [Epub ahead of print]

Schiller HB, Hermann MR, Polleux J, Vignaud T, Zanivan S, Friedel CC, Sun Z, Raducanu A, Gottschalk KE, Théry M, Mann M, Fässler R. β 1- and α v-class integrins cooperate to regulate myosin II during rigidity sensing of fibronectin-based microenvironments. *Nat Cell Biol.* 2013 Jun;15(6):625-36.

Sparmann A, Xie Y, Verhoeven E, Vermeulen M, Lancini C, Gargiulo G, Hulsman D, Mann M, Knoblich JA, van Lohuizen M. The chromodomain helicase Chd4 is required for Polycomb-mediated inhibition of astroglial differentiation. *EMBO J.* 2013 May 29;32(11):1598-612.

Stoehr G, Schaab C, Graumann J, Mann M. A SILAC-based approach identifies substrates of caspase-dependent cleavage upon TRAIL-induced apoptosis. *Mol Cell Proteomics.* 2013 Jan 13. [Epub ahead of print]

Tinti M, Kiemer L, Costa S, Miller ML, Sacco F, Olsen JV, Carducci M, Paoluzi S, Langone F, Workman CT, Blom N, Machida K, Thompson CM, Schutkowski M, Brunak S, Mann M, Mayer BJ, Castagnoli L, Cesareni G. The SH2 Domain Interaction Landscape. *Cell Rep.* 2013 Apr 25;3(4):1293-305.

Tyanova S, Cox J, Olsen J, Mann M, Frishman D. Phosphorylation variation during the cell cycle scales with structural propensities of proteins. *PLoS Comput Biol.* 2013 Jan;9(1):e1002842.

Vitrawong T, Meissner F, Butter F, Mann M. A DNA-Centric Protein Interaction Map of Ultraconserved Elements Reveals Contribution of Transcription Factor Binding Hubs to Conservation. *Cell Rep.* 2013 Oct 31;5(2):531-45.

Zanivan S, Meves A, Behrendt K, Schoof EM, Neilson LJ, Cox J, Tang HR, Kalna G, van Ree JH, van Deursen JM, Trempus CS, Machesky LM, Linding R, Wickström SA, Fässler R, Mann M. In Vivo SILAC-Based Proteomics Reveals Phosphoproteome Changes during Mouse Skin Carcinogenesis. *Cell Rep.* 2013 Feb 21;3(2):552-66.

Zanivan S, Maione F, Hein MY, Hernández-Fernaud JR, Ostasiewicz P, Giraud E, Mann M. SILAC-based proteomics of human primary endothelial cell morphogenesis unveils tumor angiogenic markers. *Mol Cell Proteomics.* 2013 Aug 26. [Epub ahead of print]

Biochemistry

Dr. Fabiana Perocchi

Born 1977 in Rome/Italy, 1996-2003 study of biology at Univ. Tor-Vergata/Rome; 2007 PhD degree in the group of Dr. Lars M. Steinmetz, European Molecular Biology Laboratory (EMBL) and Heidelberg University; 2008-2011 Postdoctoral fellow at Harvard Medical School, Boston, USA; 2011-2012 Postdoctoral fellow in the group of Prof. Dr. Luis Serrano at the CRG/EMBL, Barcelona, Spain; 2012-present BioSysNet Junior Group leader at the Gene Center of LMU Munich; 2013-present Emmy Noether Group Leader at the Helmholtz Center Munich.

Research Topics

Functional Genomics of Mitochondria: calcium-dependent signaling, tissue remodeling of mitochondrial proteome and phosphoproteomes under physiological and pathological stimuli, structural analysis of mitochondrial macromolecular complexes, drugs screening, computational prediction of protein functions by comparative genomics and integrative biology.

Honors, Awards, Memberships

Emmy Noether Research Group
Principal Investigator of the German Center For Lung Research (DZL)
Associate Investigator of the Munich Cluster for Systems Neurology

Extramural Research Funding

Deutsch-Israelische Projektkooperation Grant (DIP)
Excellence Cluster for Systems Neurology (SyNergy)
DFG-Emmy Noether Program
BioSysNet Junior Group Leader (Bavarian Ministry of Education and Science)

Publications – Scientific Papers

1. Csordas G, Golenar T, Seifert EL, Kamer KJ, Sancak Y, Perocchi F, Moffat C, Weaver D, de la Fuente Perez S, Bogorad R, Koteliensky V, Adijanto J, Mootha VK, and Hajnoczky J (2013). MICU1 Controls Both the Threshold and Cooperative Activation of the Mitochondrial Ca²⁺ Uniporter. *Cell Metab* 17(6):976-87.
2. Dolga AM, Netter MF, Perocchi F, Doti N, Meissner L, Tobaben S, Grohm J, Zischka H, Plesnila N, Decher N, Culmsee C (2013). Mitochondrial small conductance SK2 channels prevent glutamate-induced oxytosis and mitochondrial dysfunction. *J Biol Chem*.

3. Baughman JM*, Perocchi F*, Girgis HS, Plovanich M, Belcher-Timme CA, Sancak Y, Bao XR, Strittmatter L, Goldberger O, Bogorad RL, Kotliansky V, Mootha VK (2011). Integrative genomics identifies MCU as an essential component of the mitochondrial calcium uniporter. *Nature*. 476(7360):341-5.
4. Perocchi F, Gohil VM, Girgis HS, Bao XR, McCombs JE, Palmer AE, Mootha VK (2010). MICU1 encodes a mitochondrial EF hand protein required for Ca²⁺ uptake. *Nature*. 467(7313):291-6.
5. Gohil VM*, Sheth SA*, Nilsson R, Wojtovich AP, Lee JH, Perocchi F, Chen W, Clish CB, Ayata C, Brookes PS, Mootha VK (2010). Nutrient-sensitized screening for drugs that shift energy metabolism from mitochondrial respiration to glycolysis. *Nature Biotechnology*. 28(3):249-55.
6. Gagneur J, Sinha H, Perocchi F, Bourgon R, Huber W, Steinmetz LM (2009). Genome-wide allele- and strand-specific expression profiling. *Molecular Systems Biology*. 5:274.
7. Xu Z*, Wei W*, Gagneur J, Perocchi F, Clauder-Münster S, Camblong J, Guffanti E, Stutz F, Huber W, Steinmetz LM (2009). Bidirectional promoters generate pervasive transcription in yeast. *Nature*. 457(7232):1033-7.
8. Perocchi F*, Mancera E*, Steinmetz LM (2008). Systematic screens for human disease genes, from yeast to human and back. *Molecular Biosystems*. 4(1):18-29.
9. Perocchi F*, Xu Z*, Clauder-Münster S, Steinmetz LM (2007). Antisense artifacts in transcriptome microarray experiments are resolved by actinomycin D. *Nucleic Acids Research*. 35(19):e128.
10. Perocchi F, Jensen LJ, Gagneur J, Ahting U, von Mering C, Bork P, Prokisch H, Steinmetz LM (2006). Assessing systems properties of yeast mitochondria through an interaction map of the organelle. *PLoS Genetics*. 2(10):e170.

Biochemistry - Helmholtz Zentrum München/Neuherberg

Priv.-Doz. Dr. rer. nat. Anton Schäffner

Born 1959 in Steinhöring/Bayern, 1978-1984 study of chemistry at LMU München, 1988 dissertation with Guido Hartmann (Autocatalysed affinity labeling of DNA-dependent RNA polymerases), 1988-1990 Postdoctoral fellow with Jen Sheen, Massachusetts General Hospital, Harvard University, Boston, USA (Regulation of gene expression in maize), 1990-1997 Research group leader, Institute of Biochemistry/Genecenter, LMU München, 1996 Habilitation, 1997 Appointment as Privatdozent, since 1997 Research group leader at the Institute of Biochemical Plant Pathology, Helmholtz Zentrum München.

Research Topics

Plant membrane proteins: aquaporins in development and environmental interactions, systems biology, modeling; selective cation uptake, caesium. Plant defense: regulation of defense pathways, signaling, small-molecule glycosyltransferases, metabolomics. Plant cytoskeleton and coordinated cell expansion.

Honors, Awards, Memberships

Member of the German Chemical Society (GDCh)
 Member of the American Society of Plant Biologists
 Member of the Society of Experimental Biology
 Member of the German Botanical Society (DBG)
 Member of the *Gesellschaft für Biochemie und Molekularbiologie*
 Advisory Board of *Journal of Experimental Botany*

Extramural Research Funding

Fellowships from Humboldt Foundation to postdoc
 Fellowships from China Scholarship Council to graduate students

Publications – Scientific Papers

2013

Dräxl S, Müller J, Li WB, Michalke B, Scherb H, Hense BA, Tschiersch J, Kanter U, Schäffner AR (2013) Caesium accumulation in yeast and plants is selectively repressed by loss of the SNARE Sec22p/SEC22. *Nature Comm.* **4**, 2092.

Ispiryan R, Grigoriev I, zu Castell W, Schäffner AR (2013) A segmentation procedure using colour features applied to images of *Arabidopsis thaliana*. *Functional Plant Biology* 40, 1065-1075.

Prado K, Boursiac Y, Tournaire-Roux C, Monneuse J-M, Postaire O, Da Ines O, Schäffner AR, Hem S, Santoni V, Maurel C (2013) Regulation of Arabidopsis leaf hydraulics involves light-dependent phosphorylation of aquaporins in veins. *Plant Cell* 25, 1029-1039.

2012

Péret B, Li G, Zhao J, Band LR, Voß U, Postaire O, Luu D, Da Ines O, Casimiro I, Lucas M, Wells DM, Lazzerini L, Nacry P, King JR, Jensen OE, Schäffner AR, Maurel C, Bennett MJ (2012) Auxin regulates aquaporin function to facilitate lateral root emergence. *Nature Cell Biol.* 14, 991-998.

Yin R, Messner B, Faus-Kessler T, Hoffmann T, Schwab W, Hajirezaei M-R, von Saint Paul V, Heller W, Schäffner AR (2012) Feedback inhibition of the general phenylpropanoid and flavonol biosynthetic pathways upon a compromised flavonol-3-O-glycosylation. *J. Exp. Bot.* 63, 2465-2478.

Other Activities

Grant reviewer for Deutsche Forschungsgemeinschaft, German-Israeli Research Foundation. Reviewer for *Trends in Plant Science*, *Plant Physiology*, *Journal of Experimental Botany*, *FEBS Letters*, *PLOS One*, *Molecular Plant Microbe Interactions*, *Planta*, *Biochimica et Biophysica Acta*, *Plant Science*, *Molecular Genetics and Genomics*, *Science Reports*, *Gene*, *Plant Signal and Behavior*, *Plant Growth Regulators*, *Journal of Visualized Experiments*.

Biochemistry

Dr. rer. nat. Johannes Söding

Born 1966 in Hamburg, 1986-1991 studies of physics at LMU München, University of Sussex, and Universität Heidelberg, 1996 PhD degree with Prof. Dr. Rudolf Grimm (Max-Planck-Institut for Nuclear Physics) on laser cooling of neutral atoms, 1996-1998 postdoc with Prof. Dr. Cohen-Tannoudji and Prof. Dr. Jean Dalibard (École Normale Supérieure, Paris), 1999-2002 Management Consultant at the Boston Consulting Group (Frankfurt), 2002-2007 staff scientist at Department for Protein Evolution at the Max-Planck Institute for Developmental Biology in Tübingen, 2007-2013 independent Junior group leader at the Genzentrum of the LMU.

Research Topics

Computational biology, bioinformatics, statistical modeling, machine learning; transcription, transcriptional regulation, core promoters, sequence analysis, motif discovery, thermodynamic models, protein sequence searching, protein structure prediction, protein function prediction, protein evolution.

Honors, Awards, Memberships

Offer for a W3 full professorship by the Faculty of Biology of the, University of Mainz and the Institute for Molecular Biology (IMB) in Mainz (2013)

Call for a W3 full professorship at the medical faculty of the University zu Lübeck (2013)

Offer for a tenure track W2 assistant professorship at the Department of Biochemistry at the LMU Munich

3 out of 10 best servers in 10th community-wide "Critical Assessment of techniques for protein Structure Prediction" (CASP10);

http://predictioncenter.org/casp10/groups_analysis.cgi?type=server

Extramural Research Funding

Graduate School *Quantitative Biology Munich* (DFG and the Federal Ministry of Education and Research)

Collaborative Research Center 646 (German Research Council) "Regulatory Networks in Genome Expression and Maintenance"

Student Research Training Group 1721 (German Research Council) "Integrated analysis of protein complexes and hybrid methods in genome biology"

BioSysNet Junior Associated PI (Bavarian Ministry of Education and Science)

BMBF ebio grant CoreSys (German Ministry of Education and Research)

BMBF emed grant eAtheroSysMed (German Ministry of Education and Research)

Fellowship from Telekom Stiftung to PhD student

Publications – Scientific Papers

2013

Meinel D., Burkert-Kautzsch C., Kieser A., O’Duibhir E., Siebert M., Mayer A., Cramer P., Söding J., Holstege F.C., Sträßer K. Recruitment of TREX to the Transcription Machinery by its Direct Binding to the Phospho-CTD of RNA Polymerase II. *PLoS Genet.* (2013).

Schulz D.[#], Schwalb B.[#], Kiesel A., Baejen C., Torkler P., Gagneur J., Söding J.* and Cramer P.* (2013) Transcriptome surveillance by selective termination of non-coding RNA synthesis. *Cell*, in press. ([#]Equal contributions. *Corresponding authors.)

Hauser M.[#], Mayer C.E.[#], and Söding J. kClust: fast and sensitive clustering of large protein sequence databases *BMC Bioinformatics* 14:248 (2013). ([#]Equal contribution)

2012

Hartmann, H., Guthöhrlein, E. W., Siebert, M., Luehr, S., and Söding, J. P-value based regulatory motif discovery using positional weight matrices. Genome Res., 23:181-194 (2012).

Angermüller C., Biegert A., and Söding J. Discriminative modeling of context-specific amino acid substitution probabilities. *Bioinformatics* 28: 3240-3247 (2012).

Luehr S., Hartmann H., and Söding J. The XXmotif web server for eXhaustive, weight matriX-based motif discovery in nucleotide sequences *Nucleic Acids Res.* 40: W104-W109 (2012).

Close P., East P., Dirac-Svejstrup A. B., Hartmann H., Heron M., Maslen S., Chariot A., Söding J., Skehel M., and Svejstrup J. Q. DBIRD integrates alternative mRNA splicing with RNA polymerase II transcript elongation. *Nature* 484:386–389 (2012).

Biochemistry

Dr. rer. nat. Katja Sträßer

Born 1971 in Dinslaken/NRW, 1992-1998 study of biotechnology at the TU Braunschweig, the University of Geneva, Switzerland, and the Salk Institute for Biological Studies, La Jolla (USA), 2001 Ph.D. degree in the group of Prof. Dr. Ed Hurt, University of Heidelberg, 2001-2002 Postdoctoral fellow in the group of Prof. Dr. Ed Hurt, University of Heidelberg, since 2003 Independent Group Leader at the Gene Center.

Research Topics

Gene Expression; Transcription Elongation; mRNP Formation; Nuclear mRNA Export; Translation; Ribosomes; Protein-Protein, Protein-DNA and Protein-RNA Interactions; Genetic Interactions, Model Organism *S. cerevisiae*.

Honors, Awards, Memberships

ERC Starting Grant

Member of International Max Planck Research School, Martinsried

Extramural Research Funding

European Research Council Starting Grant “REGEXTRA”

Excellence Cluster *Center for Integrated Protein Sciences Munich* (DFG and the Federal Ministry of Education and Research)

Collaborative Research Center 646 (German Research Council) “Regulatory Networks in Genome Expression and Maintenance”

Publications – Scientific Papers

2013

Meinel, D.M., Burkert-Kautzsch, C., Kieser, A., O’Duibhir, E., Siebert, M., Mayer, A., Cramer, P., Söding, J., Holstege, F.C., and Sträßer, K. (2013) Recruitment of TREX to the Transcription Machinery by its Direct Binding to the Phospho-CTD of RNA Polymerase II, *PLOS Genetics*, e1003914

Burger, K., Mühl, B., Rohrmoser M., Coordes, B., Heidemann, M., Kellner, M., Gruber-Eber, A., Heissmeyer, V., Sträßer, K., Eick, D. (2013) Cyclin-dependent kinase 9 links RNA Polymerase II transcription to processing of ribosomal RNA, *JBC*, 288: 21173-21183

Chanarat, S. and Sträßer, K. (2013) Splicing and beyond: The many faces of the Prp19 complex, *BBA-MCR*, 1833: 2126-2134 (review)

2012

Miller, C., Matic, I., Maier, K., Schwalb, B., Röther, S., Sträßer, K., Tresch, A., Mann, M., and Cramer P. (2012) Mediator phosphorylation prevents stress response transcription during non-stress conditions, *JBC*, 287: 44017-44026

Schiller, C., Lammens, K., Guerini, I., Coordes, B., Schlauderer, F., Möckel, C., Schele, A., Sträßer, K., Jackson, S.P., Hopfner, K.-P. (2012) Structure of Mre11-Nbs1 complex yields insights into ataxia-telangiectasia-like disease mutations and DNA damage signaling, *Nat Struct Mol Biol*, 19: 693-700

Chanarat, S., Burkert-Kautzsch, C., Meinel, D.M., and Sträßer, K. (2012) Prp19C and TREX: Interacting to promote transcription elongation and mRNA export, *Transcription*, 3: 8-12 (review)

Schenk, L., Meinel D.M., Sträßer, K., and Gerber A.P. (2012) La-motif dependent mRNA binding of La-related proteins mediates copper detoxification in yeast, *RNA*, 18: 449-461

Other Activities

Grant reviewer for the Deutsche Forschungsgemeinschaft, EMBO, BBSRC. Reviewer for *Genes and Development*, *Nucleic Acids Research*, *RNA*, *J. Biol. Chem.*, *Biology of the Cell*, *PlosOne*. Board member of the gender equality program of the excellence cluster CIPSM.

Biochemistry

Max Planck Institute of Psychiatry, Proteomics and Biomarkers

Apl. Prof. Dr. rer. nat. Christoph W. Turck

1974-1981 Diploma Chemistry RWTH Aachen, 1983 PhD Macromolecular Chemistry with Prof. Dr. Dr. mult. h.c. Helmut Zahn (Peptide Synthesis with Catechol-halfester-Derivatives at Elevated Temperatures), 1983-1986 Postdoc with Dr. David R. Webb, Roche Institute of Molecular Biology, Nutley, NJ, USA (Characterization of immunomodulatory T cell proteins), 1986-1988, Instructor, 1988-1994, Assistant Professor, 1994-2000, Associate Professor, 2000-2002, Professor, University of California, San Francisco, Howard Hughes Medical Institute, Department of Medicine, Cardiovascular Research Institute, San Francisco, CA, USA (Growth factor receptor signal transduction, Director of Protein Structure Laboratory), since 2002 Research Group Leader, Proteomics and Biomarkers, Max Planck Institute of Psychiatry, Munich, since 2003 Adj. Professor, Chemistry and Pharmacy, LMU Munich, since 2005, Faculty, International Max Planck Research School for Molecular and Cellular Life Sciences, Munich, since 2009, Munich Center for Neurosciences, LMU Munich, since 2009, Faculty, Graduate School of Systemic Neurosciences, LMU Munich.

Research Topics

Biomarker identification and validation, mouse models of disease, proteomics technologies, protein turnover, metabolomics.

Memberships

American Society for Mass Spectrometry
Association of Biomolecular Research Facilities
American College of Neuropsychopharmacology
US HUPO
German Chemical Society
German Proteome Society

Extramural Research Funding

BMBF, Molecular Diagnostics
BMBF, National Genome Research Network Plus, MooDS
ERA-NET NEURON Mental Disorders

Publications – Scientific Papers

2013

Fernandes BS, Berk M, Turck CW, Steiner J, Goncalves CA. (2013) Decreased peripheral brain-derived neurotrophic factor levels are a biomarker of disease activity in major psychiatric disorders: a comparative meta-analysis. *Mol Psychiatry*.

Martins-de-Souza D, Carvalho PC, Schmitt A, Junqueira M, Nogueira FC, Turck CW, Domont GB. (2013) Deciphering the Human Brain Proteome: Characterization of the Anterior Temporal Lobe and Corpus Callosum As Part of the Chromosome 15-centric Human Proteome Project. *J Proteome Res* 13:147-157.

Webhofer C, Gormanns P, Reckow S, Lebar M, Maccarrone G, Ludwig T, Ptz B, Asara JM, Holsboer F, Sillaber I, Zieglgänsberger W, Turck CW. (2013) Proteomic and metabolomic profiling reveals time-dependent changes in hippocampal metabolism upon paroxetine treatment and biomarker candidates. *J Psychiatr Res* 47:289-298.

Maccarrone G, Rewerts C, Lebar M, Turck CW, Martins-de-Souza D. (2013) Proteome profiling of peripheral mononuclear cells from human blood. *Proteomics* 13:893-897.
Webhofer C, Zhang Y, Brusis J, Reckow S, Landgraf R, Maccarrone G, Turck CW, Filiou MD. (2012) (15)N metabolic labeling: Evidence for a stable isotope effect on plasma protein levels and peptide chromatographic retention times. *J Proteomics* 88:27-33.

Schmitt A, Turck CW, Pilz PK, Malchow B, von Wilmsdorff M, Falkai P, Martins-de-Souza D. (2013) Proteomic similarities between heterozygous reeler mice and schizophrenia. *Biol Psychiatry* 74:e5-e10

Bonfiglio JJ, Inda C, Senin S, Maccarrone G, Refojo D, Giacomini D, Turck CW, Holsboer F, Arzt E, Silberstein S. (2013) B-Raf and CRHR1 Internalization Mediate Biphasic ERK1/2 Activation by CRH in Hippocampal HT22 Cells. *Mol Endocrinol* 27:491-510.

Guest PC, Martins-de-Souza D, Schwarz E, Rahmoune H, Alsaif M, Tomasik J, Turck CW, Bahn S. (2013) Proteomic profiling in schizophrenia: enabling stratification for more effective treatment. *Genome Med* 5:25.

Barth A, Bilkei-Gorzo A, Drews E, Otte DM, Diaz-Lacava A, Varadarajulu J, Turck CW, Wienker TF, Zimmer A. (2013) Analysis of quantitative trait loci in mice suggests a role of *Enoph1* in stress reactivity. *J Neurochem*.

Iwata K, Café-Mendes CC, Schmitt A, Steiner J, Manabe T, Matsuzaki H, Falkai P, Turck CW, Martins-de-Souza D. (2013) The human oligodendrocyte proteome. *Proteomics* 13:3548-3558

2012

Filiou MD, Turck CW. (2012) Psychiatric disorder biomarker discovery using quantitative proteomics. *Methods Mol Biol* 829:531-539.

Knapman A, Kaltwasser SF, Martins-de-Souza D, Holsboer F, Landgraf R, Turck CW, Czisch M, Touma C. (2012) Increased stress reactivity is associated with reduced hippocampal activity and neuronal integrity along with changes in energy metabolism. *Eur J Neurosci* 35:412-422.

Filiou MD, Martins-de-Souza D, Guest PC, Bahn S, Turck CW. (2012) To label or not to label: Applications of quantitative proteomics in neuroscience research. *Proteomics* 12:736-747.

Ditzen C, Tang N, Jastorff AM, Teplytska L, Yassouridis A, Maccarrone G, Uhr M, Bronisch T, Miller CA, Holsboer F, Turck CW. (2012) Cerebrospinal fluid biomarkers for major depression confirm relevance of associated pathophysiology. *Neuropsychopharmacology* 37:1013-1025.

Martins-de-Souza D, Turck CW. (2012) Proteomic biomarkers for psychiatric disorders: a progress update. *Biomark Med* 6:189-192.

Gormanns P, Reckow S, Poczatek JC, Turck CW, Lechene C. (2012) Segmentation of multi-isotope imaging mass spectrometry data for semi-automatic detection of regions of interest. *PLoS One* 7:e30576.

Filiou MD, Webhofer C, Gormanns P, Zhang Y, Reckow S, Bisle B, Teplytska L, Frank E, Kessler MS, Maccarrone G, Landgraf R, Turck CW. (2012) The (15) N isotope effect as a means for correlating phenotypic alterations and affected pathways in a trait anxiety mouse model. *Proteomics* 12:2421-2427.

Filiou MD, Teplytska L, Otte DM, Zimmer A, Turck CW. (2012) Myelination and oxidative stress alterations in the cerebellum of the G72/G30 transgenic schizophrenia mouse model. *J Psychiatr Res* 46:1359-1365.

Filiou MD, Varadarajulu J, Teplytska L, Reckow S, Maccarrone G, Turck CW. (2012) The (15) N isotope effect in *Escherichia coli*: A neutron can make the difference. *Proteomics* 12:3121-3128.

Maccarrone G, Ditzen C, Yassouridis A, Rewerts C, Uhr M, Uhlen M, Holsboer F, Turck CW. (2013) Psychiatric patient stratification using biosignatures based on cerebrospinal fluid protein expression clusters. *J Psychiatr Res* 47:1572-1580.

Filiou MD, Martins-de-Souza D, Guest PC, Bahn S, Turck CW. (2012) To label or not to label: Applications of quantitative proteomics in neuroscience research. *Proteomics* 12:736-747.

Other Activities

fNIH Biomarkers Consortium, Neuroscience Steering Committee
 EU Innovative Medicines Initiative, NEWMEDS, Scientific Advisory Board
 Molecular Psychiatry Association, Board of Directors
 Chair, ABRF Metabolomics Research Group
 Biomarkers in Medicine, Editorial Board
 Associate Editor, BMC Neuroscience
 Molecular and Cellular Proteomics, Editorial Board.

Biochemistry

Dr. rer. nat. Daniel N. Wilson

Born 1971 in London, UK, 1989-1991 Biochemistry Degree, University of Victoria, Wellington, New Zealand. 1992 Honours thesis (first class) in the group of Prof. Andrew Dowsett, Victoria University of Wellington, New Zealand. 1993-1999 PhD in the group of Prof. Dr. Warren P. Tate, Department of Biochemistry, University of Otago, Dunedin, New Zealand. 2000-2001 Regional Manager, Biogene Ltd, UK. 2001-2002 Alexander von Humboldt Fellow in the group of Prof Knud Nierhaus (AG Ribosomen) at the Max-Planck-Institute for Molecular Genetics, Berlin. 2003-2006 Postdoctoral research assistant in the ribosome crystallography group (Dr Paola Fucini/Prof Ada Yonath) at the Max-Planck-Institute for Molecular Genetics, Berlin. Since 2007 Independent group leader, Gene Center and Department of Biochemistry, University of Munich, Germany.

Research Topics

Ribosome-targeting antibiotics and resistance mechanisms: Structural and biochemical characterization of small molecule interaction with the ribosome. Cryo-electron microscopic analysis of drug-dependent and polypeptide-mediated ribosome stalling. Elucidation of function of non-canonical translation factors that interact and regulate translation. Identification of new targets within the cell for the development of novel antivirulence antimicrobial agents.

Honors, Awards, Memberships

Alexander von Humboldt fellow
EMBO Young Investigator
Associate member of the Faculty of 1000 (F1000)
Associate member, center for integrated protein science, Munich (CiPSM)
Member of the RNA Society

Extramural Research Funding

National Institute of Health (NIH Subaward 201REY320)
Excellence Cluster *Center for Integrated Protein Sciences Munich* (DFG and the Federal Ministry of Education and Research)
Forschergruppe (FOR1805, DFG WI3285-2)
EMBO Young investigator award
Fellowships from AXA Stiftung to postdoc

Publications – Scientific Papers

2013

Wilson, DN. Ribosome-targeting antibiotics and bacterial resistance mechanisms. *Nature Rev. Microbiol.* 2013 Dec 16;12(1):35-48. doi: 10.1038/nrmicro3155. [PMID: 24336183]

Wilson DN and Beckmann R. Structures of nascent polypeptide chain dependent-stalled ribosome complexes. In: *Regulatory Nascent Polypeptides*, eds. K. Ito (Springer, Heidelberg), in press

Starosta AL and Wilson DN (2013) Ribosome stalling at polyproline stretches is alleviated by elongation factor P. In: *Regulatory Nascent Polypeptides*, eds. K. Ito (Springer, Heidelberg), in press

Wilson DN (2013) Peptidyltransferase inhibitors of the bacterial ribosome. In: *Antibiotics – Targets, Mechanisms and Resistance*, eds. C. Gualerzi, L. Brandi, A. Fabbretti, L. Pon (Wiley-VCH, Weinheim, Germany).

Peil L, Starosta AL, Lassak J, Atkinson GC, Virumäe K, Spitzer M, Tenson T, Jung K, Remme J, Wilson, DN. Distinct XPPX sequence motifs induce ribosome stalling, which is rescued by the translation elongation factor EF-P *Proc. Natl. Acad. Sci. USA*, 2013, 110(38):15265-70. [PMID: 24003132]

Krokidis MG, Márquez V, Wilson DN, Kalpaxis DL, Dinos GP. Insights into the mode of action of novel fluoroketolides, potent inhibitors of bacterial protein synthesis. *Antimicrob Agents Chemother.* 2013 Nov 4. [Epub ahead of print] [PMID: 24189263].

Anger AM, Armache JP, Berninghausen O, Habeck M, Subklewe M, Wilson DN and Beckmann R. Structures of the human and Drosophila 80S ribosome. *Nature*, 2013 May 2, 497(7447): 80-85. [PMID: 23636399].

Gross S, Nguyen F, Bierschenk M, Sohmen D, Menzel T, Antes I, Wilson DN, and Bach T. Amythiamicin D and related thiopeptides as inhibitors of the bacterial elongation factor EF-Tu: Modification of the amino acid at carbon atom C2 of ring C dramatically influences activity. *ChemMedChem*, 2013 Dec;8(12):1954-62. [PMID: 24106106]

Jenner L, Starosta AL, Terry DS, Mikolajka A, Filonava L, Yusupov M, Blanchard SC, Wilson DN and Yusupova G. Structural basis for potent inhibitory activity of the antibiotic tigecycline during protein synthesis. *Proc. Natl. Acad. Sci. USA*, 2013 Mar 5;110(10):3812-6. [PMID: 23431179]

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Woolstenhulme CJ, Parajuli S, Healey DW, Valverde DP, Petersen EN, Starosta AL, Guydosh NR, Johnson WE, Wilson DN and Buskirk AR. Nascent peptides that block protein synthesis in bacteria. *Proc. Natl. Acad. Sci. USA*, 2013 Mar 5;110(10):E878-87. [PMID: 23431150].

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2012

Dönhöfer A, Franckenberg S, Wickles S, Berninghausen O, Beckmann R and Wilson DN. Structural basis for TetM-mediated tetracycline resistance. *Proc. Natl. Acad. Sci. USA*, 109(42):16900-5. [PMID: 23027944].

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Grossman TH, Starosta AL, Fyfe C, O'Brien W, Rothstein DM, Mikolajka A, Wilson DN, Sutcliffe JA. Target- and resistance-based mechanistic studies with TP-434, a novel fluorocycline antibiotic. *Antimicrob Agents Chemother.* 2012 May;56(5):2559-64. [PMID: 22354310].

Jarasch A, Dziuk P, Becker T, Armache JP, Hauser A, Wilson DN, Beckmann R. The DARC site: a database of aligned ribosomal complexes. *Nucleic Acids Res.* 2012 Jan, 40(Database issue):D495-500. [PMID: 22009674].

Other Activities

Grant reviewer for Deutsche Forschungsgemeinschaft (DFG, Deutschland), National Science Foundation (NSF, USA), Netherlands Organization for Scientific Research (NWO, Niederlande), Marsden Fund (Neuseeland), European Molecular Biology Organizations (EMBO, Europe), Research Corporation for Science Advancement (USA), French evaluation agency for research and higher education (AERES),

The French Muscular Dystrophy Association (AFM), French National Research Agency (ANR), Estonian Research Council and the Medical Research Scotland (MRS). Reviewer for Nature, Science, Cell, Molecular Cell, Nature Structural and Molecular Biology, Proceedings of the National Academy of Sciences USA, Antimicrobial Agents and Chemotherapy, Nucleic Acids Research, Biochemie, Journal Biological Chemistry, Journal of Molecular Biology, Nature Communications, Cell Reports, Trends in Biological Sciences, ChemBioChem, PLoS ONE, Biochemistry, Molecular Microbiology, BBA – Gene Regulatory Mechanisms, FEBS Letters, Journal of Bacteriology, Biological Chemistry, RNA Biology, Genes and Development, ACS Chemical Biology, and EMBO J.

Organic Chemistry

Prof. Dr. rer. nat. Thomas Carell

Born 1966 in Herford/NRW, 1985-1990 study of chemistry at Univ. Münster and Heidelberg. In 1993 he obtained his doctorate with Prof. H. A. Staab at the Max-Planck-Institute of Medical Research. After postdoctoral training with Prof. J. Rebek at MIT (Cambridge, USA) in 1993-1995, he moved to the ETH Zürich (Switzerland) into the group of Prof. F. Diederich to start independent research. He obtained his habilitation in 1999. In 2000 he accepted a full professor position for Organic Chemistry at the Philipps-Universität in Marburg (Germany). And in 2004 he finally moved as a full professor for Organic Chemistry to the Ludwig-Maximilians-Universität (LMU) in Munich (Germany).

Research Topics

Chemistry of nucleic acids and amino acids, investigation of biosynthetic pathways, chemical manipulation of cellular functions (synthetic biology), investigation of DNA processes and epigenetic reprogramming, structural biology of DNA repair proteins, chemistry of natural products and synthesis of anticancer compounds.

Honors, Awards, Memberships

Speaker of the Excellence Cluster CiPS^M

Honorary Lecture at the Institute of Organic Chemistry at the Academy of Science of the Czech Republic

Member of the Kuratorium Volkswagenstiftung

Member of the Kuratorium *Angewandte Chemie*

Extramural Research Funding

Excellence Cluster *Center for Integrated Protein Sciences Munich* (DFG and the Federal Ministry of Education and Research)

Collaborative Research Center 646 (German Research Council) “Regulatory Networks in Genome Expression and Maintenance”

Collaborative Research Center 749 (German Research Council) “Dynamics and Intermediates of Molecular Transformations”

Collaborative Research Center 1032 (German Research Council) “Nanoagents for the spatiotemporal control of molecular and cellular reactions”

Grant from the Volkswagenstiftung “Metal controlled catalytic DNA and DNA-protein nanomachines.

Publications – Scientific Papers

2013

Kneuttinger AC, Kashiwazaki G, Prill S, Heil K, Müller M, Carell T. Formation and Direct Repair of UV-induced Dimeric DNA Pyrimidine Lesions. *Photochem Photobiol.* 2013, doi: 10.1111/php.12197.

Thoma I, Carell T. Total Synthesis of the Hypermodified tRNA Nucleoside Epoxyqueuosine. *Eur. J. Org. Chem.* 2013, 21, 4483-85.

Vrábel M, Kölle P, Brunner KM, Gattner MJ, López-Carillo V, de Vivie-Riedle R, Carell T. Norbornenes in Inverse Electron-Demand Diels-Alder Reactions. *Chemistry.* 2013, 19, 13309-12.

Schneider S, Gattner MJ, Vrábel M, Flügel V, López-Carillo V, Prill S, Carell T. Structural Insights into Incorporation of Norbornene Amino Acids for Click Modification of Proteins. *Chembiochem.* 2013, doi: 10.1002/cbic.201300435.

Schiesser S, Pfaffeneder T, Sadeghian K, Hackner B, Steigenberger B, Schroeder AS, Steinbacher J, Kashiwazaki G, Höfner G, Wanner KT, Ochsenfeld C, Carell T. Deamination, Oxidation and C-C bond Cleavage Reactivity of 5-Hydroxymethylcytosine, 5-Formylcytosine and 5-Carboxycytosine. *J Am Chem Soc.* 2013, 135, 14593-9.

Shehata M, Durner J, Eldenez A, Van Landuyt K, Styllou P, Rothmund L, Hickel R, Scherthan H, Geurtsen W, Kaina B, Carell T, Reichl FX. Cytotoxicity and induction of DNA double-strand breaks by components leached from dental composites in primary human gingival fibroblasts. *Dent Mater.* 2013, 29, 971-9,

Groll K, Manolikakes SM, du Jourdin XM, Jaric M, Bredihhin A, Karaghiosoff K, Carell T, Knochel P. Regioselective Metalations of Pyrimidines and Pyrazines by Using Frustrated Lewis Pairs of BF₃-OEt₂ and Hindered Magnesium- and Zinc-Amide Bases. *Angew Chem Int Ed Engl.* 2013, 52, 6776-80,

Gehrke TH, Lischke U, Gasteiger KL, Schneider S, Arnold S, Müller HC, Stephenson DS, Zipse H, Carell T. Unexpected non-Hoogsteen-based mutagenicity mechanism of FaPy-DNA lesions. *Nat Chem Biol.* 2013, 9, 455-61.

Spruijt CG, Gnerlich F, Smits AH, Pfaffeneder T, Jansen PWTC, Bauer C, Münzel M, Wagner M, Müller M, Khan F, Eberl HC, Mensinga A, Brinkman AB, Lephikov K, Müller U, Walter J, Boelens R, van Ingen H, Leonhardt H, Carell T, Vermeulen M. Dynamic readers for 5-(hydroxy)methylcytosine and its oxidized derivatives. *Cell.* 2013, 152, 1146-59.

Hienzsch A, Deiml C, Reiter V, Carell T. Total Synthesis of the Hypermodified RNA Bases Wybutosine and Hydroxywybutosine and Their Quantification Together with Other Modified RNA Bases in Plant Materials. *Chemistry.* 2013, 19, 4244-8.

Steigenberger B, Schiesser S, Hackner B, Brandmayr C, Laube SK, Steinbacher J, Pfaffeneder T, Carell T. Synthesis of 5-Hydroxymethyl-, 5-Formyl-, and 5-Carboxycytidine-triphosphates and Their Incorporation into Oligonucleotides by Polymerase Chain Reaction. *Org. Lett.* 2013, 15, 366-369.

Ehrlich M, Carell T. Total Syntheses and Biological Evaluation of 3-*O*-Methylfunicone and Its Derivatives Prepared by TMPZnCl-LiCl-Mediated Halogenation and Carbonylative Stille Cross-Coupling. *Eur. J. Org. Chem.* 2013, 1, 77-83.

Kneuttinger AC, Heil K, Kashiwazaki G, Carell T. The Radical SAM Enzyme Spore Photoproduct Lyase Employs a Tyrosyl Radical for DNA Repair. *Chem Commun (Camb)*. 2013, 49, 722-724.

Gattner MJ, Vrabel M, Carell T. Synthesis of ϵ -*N*-propionyl-, ϵ -*N*-butyryl-, and ϵ -*N*-crotonyl-lysine containing histone H3 using the pyrrolysine system. *Chem Commun (Camb)*. 2013, 49, 379-381.

2012

Brandmayr C, Wagner M, Bruckl T, Globisch D, Pearson D, Kneuttinger AC, Reiter V, Hienzsch A, Koch S, Thoma I, Thumbs P, Michalakis S, Muller M, Biel M, Carell T. Isotope-Based Analysis of Modified tRNA Nucleosides Correlates Modification Density with Translational Efficiency. *Angew Chem Int Ed Engl.* 2012, 51, 11162-5.

Kraus TF, Globisch D, Wagner M, Eigenbrod S, Widmann D, Munzel M, Muller M, Pfaffeneder T, Hackner B, Feiden W, Schuller U, Carell T, Kretzschmar HA. Low values of 5-hydroxymethylcytosine (5hmC), the "sixth base" are associated with anaplasia in human brain tumors. *Int J Cancer.* 2012, 131, 1577-90.

Willibald J, Harder J, Sparrer K, Conzelmann K-K, Carell T. Click Modified Anandamide siRNA Enables Delivery and Gene Silencing in Neuronal and Immune Cells. *J Am Chem Soc.* 2012, 134, 12330-3.

Timper J, Gutmiedl K, Wirges C, Broda J, Noyong M, Mayer J, Carell T, Simon U. Surface "Click" Reaction of DNA followed by Directed Metalization for the Construction of Contactable Conducting Nanostructures. *Angew Chem Int Ed Engl.* 2012, 51, 7586-8.

Carell T, Brandmayr C, Hienzsch A, Muller M, Pearson D, Reiter V, Thoma I, Thumbs P, Wagner M. Structure and Function of Noncanonical Nucleobases. *Angew Chemie Int Ed Engl.* 2012, 51, 7110-7131.

Benjdia A, Heil K, Barends TR, Carell T, Schlichting I. Structural insights into recognition and repair of UV-DNA damage by Spore Photoproduct Lyase, a radical SAM enzyme. *Nucleic Acids Res.* 2012, 40, 9308-18.

Reiter V, Matschkal DMS, Wagner M, Globisch D, Kneuttinger AC, Müller M, Carell T. The CDK5 repressor CDK5RAP1 is a methylthiotransferase acting on nuclear and mitochondrial RNA. *Nucleic Acids Res.* 2012, 40, 6235-6240.

Schiesser S, Mayer P, Carell T, Beck W. Molecular and Crystal Structure of Potassium-l-alaninato-dichloridoplatinate(II), $K[Pt(l-alaO)Cl_2]$. *Z. Naturforsch.* 2012, 67b, 849-852.

Schiesser S, Hackner B, Pfaffeneder T, Müller M, Hagemeyer C, Truss M, Carell T. Mechanism and Stem-Cell Activity of 5-Carboxycytosine Decarboxylation Determined by Isotope Tracing. *Angew Chemie Int Ed Engl.* 2012, 51, 6516-6520.

Fingerhut BP, Oesterling S, Haiser K, Heil K, Glas A, Schreier JW, Zinth W, Carell T, de Vivie-Riedle R. ONIOM approach for non-adiabatic on-the-fly molecular dynamics demonstrated for the backbone controlled dewar valence isomerization. *J Chem Phys.* 2012, 136, 204307.

Kaya E, Vrabel M, Deiml C, Prill C, Fluxa VS, Carell T. A Genetically encoded Norbornene Amino Acid for the Mild and Selective Modification of Proteins in a Copper-free Click Reaction. *Angew Chem Int Ed Engl.* 2012, 51, 4466-9.

Walmacq C, Cheung AC, Kireeva ML, Lubkowska L, Ye C, Gotte D, Strathern JN, Carell T, Cramer P, Kashlev M. Mechanism of Translesion Transcription by RNA Polymerase II and its Role in Cellular Resistance to DNA Damage. *Mol Cell.* 2012, 46, 18-29.

Stathis D, Lischke U, Koch SC, Deiml CA, Carell T. Discovery and Mutagenicity of a Guanidinoformimine Lesion as a new Intermediate of the Oxidative Deoxyguanosine Degradation Pathway. *J Am Chem Soc.* 2012, 134, 4925-30.

Haiser K, Fingerhut BP, Heil K, Glas A, Herzog TT, Pilles BM, Schreier WJ, Zinth W, de Vivie-Riedle R, Carell T. Mechanism of UV-Induced Formation of Dewar Lesions in DNA. *Angew Chem Int Ed Engl.* 2012, 51, 408-11.

Diamant N, Hendel A, Vered I, Carell T, Reissner T, de Wind N, Geacinov N, Livneh Z. DNA damage bypass operates in the S and G2 phases of the cell cycle and exhibits differential mutagenicity. *Nucleic Acids Res.* 2012, 40, 170-80.

Organic Chemistry

Dr. sc. ETH Zurich Henry Dube

Born 1978 in Halle/Saale, 1998-2000 study of chemistry at Philipps-University Marburg, 2000-2004 study of chemistry at LMU Munich, 2008 PhD degree in the group of Prof. Dr. François Diederich, ETH Zurich, Switzerland (Synthetic Models for Heme Proteins), 2008-2011 postdoctoral fellow with Prof. Dr. Julius Rebek, Jr., The Scripps Research Institute, La Jolla, USA, since 2011 independent group leader (Liebig scholar of the VCI) at LMU Munich, Department of Chemistry.

Research Topics

Synthesis and evaluation of physical-organic properties of photoswitches, responsive and functional supramolecular systems, photomodulation of protein binding, molecular replication.

Awards, Memberships

Gesellschaft Deutscher Chemiker (GDCh)
Thieme Chemistry Journal Award 2012

Extramural Research Funding

Liebig Stipendium des Fonds der Chemischen Industrie
Excellence Cluster *Center for Integrated Protein Sciences Munich* (DFG and the Federal Ministry of Education and Research)
Collaborative Research Center 749 (German Research Council) "Dynamics and Intermediates of Molecular Transformations"

Publications – Scientific Papers

Relaxation and modulation interference effects in two-pulse electron spin echo envelope modulation (ESEEM). B. Kasumaj, H. Dube, N. Zölch, F. Diederich, G. Jeschke, *J. Magn. Reson.* **2012**, *223*, 187-197.

Selective Guest Exchange in Encapsulation Complexes Using Different Light Inputs. H. Dube, J. Rebek, Jr., *Angew. Chem.* **2012**, *124*, 3261-3264, *Angew. Chem. Int. Ed.* **2012**, *51*, 3207-3210.

Organic Chemistry

Prof. Dr. rer. nat. Manfred Heuschmann

Born 1949 in Kitzingen; study of chemistry in Würzburg; diploma 1974; PhD degree 1980 in Würzburg with Prof. Dr. Helmut Quast (three membered rings of phosphorus); Postdoctoral fellow in the group of Prof. Dr. Albert I. Meyers (Colorado State University, Fort Collins, USA). Habilitation 1987 LMU München (multi-step Diels Alder reactions); Priv. Doz. 1988; substitute for a chair in Kiel 1993/94; apl. Prof. 1995. 2001 – 2013 dean of studies for chemistry at LMU.

Research Topics

Synthetic methods:

Syntheses of spiro heterocycles via inverse Diels-Alder reactions
New syntheses of heterocycles by thermolysis of spiro compounds
Anion accelerated stereoselective Amino-Cope rearrangements
Stereoselective base catalyzed eliminations

Reaction mechanisms:

Investigation of multi-step reactions
- verification and isolation of intermediates
- separation of steric and electronic effects
Thermolysis of spiro hetero-decadienes
Cope rearrangements
Diels Alder reactions
Huisgen reactions

Other Activities

Reviewer for *Journal of Organic Chemistry*, *Heteroatom Chemistry*, *Synthesis*.

Organic Chemistry

Prof. Dr. rer. nat. Anja Hoffmann-Röder

Born 1972 in Bonn, 1991-1994 laboratory assistant (vocational education, Degussa AG, Bonn) 1994-1999 study of chemistry at Univ. Bonn, 2003 PhD degree in the group of Prof. Dr. Norbert Krause, TU Dortmund, 2003-2005 Postdoctoral fellow in the group of Prof. Dr. François Diederich, ETH Zurich, Switzerland, 2005-2006 Liebig-Fellow (VCI) at Johannes-Gutenberg Univ. Mainz, 2006-2011 Emmy Noether-Fellow (DFG) at Johannes-Gutenberg Univ. Mainz, 2009-2011 W1-professor Johannes-Gutenberg Univ. Mainz, since 2011 tenure track W2-professor LMU Munich.

Research Topics

Carbohydrate and glycopeptide chemistry: Synthesis of carbohydrate antigens and capsular polysaccharides, use of fluorosugars and carbohydrate mimics for carbohydrate-based vaccines and biologically relevant glycoconjugates. Chemically modified glycopeptides and peptide mimics for pharmaceutical applications; perfluorinated glycolipopeptides and glycoconjugates. Azobenzene-derived photoswitches for β -hairpin peptides. Fluorinations and fluoroorganic chemistry.

Memberships

Member of the German Chemical Society (GdCh)
Member of the Alumni der Studienstiftung e.V.

Extramural Research Funding

Excellence Cluster *Center for Integrated Protein Sciences Munich* (DFG and the Federal Ministry of Education and Research)

Publications – Scientific Papers

Thomas Oberbillig, Holger Löwe, Anja Hoffmann-Röder, *Synthesis of Fluorinated Glycosyl Amino Acid Building Blocks for MUC1 Cancer Vaccine Candidates by Microreactor-Assisted Glycosylation*; *J. Flow Chem.* **2012**, 2, 83–86. doi: 10.1556/JFC-D-12-00011.

Thomas Oberbillig, Christian Mersch, Sarah Wagner, Anja Hoffmann-Röder, *Antibody recognition of fluorinated MUC1 glycopeptide antigens*; *Chem. Commun.* **2012**, 48, 1487–1489; doi:10.1039/C1CC15139H

Other Activities

Faculty Mentor, LMUexcellent Mentoring Program. Grant reviewer for Deutsche Forschungsgemeinschaft, Alexander von Humboldt-Stiftung, Studienstiftung des Deutschen Volkes, German-Israeli Research Foundation, APART (Austrian Programme for Advanced Research and Technology). Reviewer for *Angewandte Chemie*, *Chemical Communications*, *European Journal of Organic Chemistry*, *Synthesis*, *Synlett*, *Chemistry – A European Journal*, *Journal of Carbohydrate Chemistry*, *Journal of Fluorine Chemistry*, *Organic Letters*, *Chemical Science*.

Organic Chemistry

Univ.-Prof. Dr. rer.nat. Dr. h.c. mult Rolf Huisgen, em.

Born 1920 in Gerolstein/Eifel; 1939-1940 study of chemistry at the Universities in Bonn and München, 1940 Diploma, LMU München; 1943 PhD degree in the group of R. Wieland, LMU München; 1947 Habilitation in Chemistry, LMU München; 1949-1952 Extraordinarius at the University of Tübingen; 1952-1988 Full Professor and Director of the Institute of Organic Chemistry, LMU München; 1961-1962 Dean of the Faculty of Mathematical and Natural Sciences, LMU München; since 1988 Emeritus.

Memberships

In scientific societies: American Chemical Society, Gesellschaft Deutscher Naturforscher und Ärzte, DECHEMA.

Honorary memberships: Gesellschaft Deutscher Chemiker, Société Chimique de France, Real Sociedad Espanola de Fisica y Quimica, Royal Society of Chemistry, Pharmaceutical Society of Japan, Polish Chemical Society.

In scientific Academies: Bayerische Akademie der Wissenschaften, American Academy of Arts and Sciences, German National Academy of Sciences Leopoldina, Real Academia de Ciencias Exactas, Heidelberger Akademie der Wissenschaften, National Academy of Sciences (Washington), Accademia Nazionale dei Lincei (Roma), Accademia di Scienze e Lettere (Milano), Polish Academy of Sciences.

Publications – Scientific Papers

G. Urrutia-Oesmaison, R. Huisgen, H. Noeth. 1,2-Bis(trifluoromethyl)ethene-1,2-dicarbonitrile: (2+2) Cycloadditions with Vinyl Ethers. *Helvetica Chimica Acta* (2012), 95, 1-16. DOI:10.1002/hlca.201100449

G. Urrutia-Oesmaison, R. Huisgen, H. Noeth. 1,2-Bis(trifluoromethyl)ethene-1,2-dicarbonitrile and Vinyl Ethers: Cyclic Ketene Imines on the Pathway to 1:2 Cycloadducts. *Helvetica Chimica Acta* (2012), 95, 673-682. DOI:10.1002/hlca.201200047

G. Urrutia-Oesmaison, R. Huisgen, H. Noeth. 1,2-Bis(trifluoromethyl)ethene-1,2-dicarbonitrile: Enol Ethers and Ketene Acetals as Cycloaddition Partners. *Helvetica Chimica Acta* (2012), 95, 1049-1063. DOI:10.1002/hlca.201200217

Organic Chemistry

Univ.-Prof. Dr. Paul Knochel

Born 1955, Strasbourg (France), studied chemistry at the Ecole Nationale Supérieure de Chimie (Strasbourg, France), 1982 PhD with Prof. Seebach (ETH Zurich, Switzerland), 1983 Habilitation with Prof. Normant at the Université Pierre et Marie Curie (Paris, France), 1986-1987 postdoctoral fellow at Princeton University (New Jersey, USA), 1987-1991 Assistant Professor at the University of Michigan (Ann Arbor, USA), 1991 Full Professor at the University of Michigan (Ann Arbor, USA), 1992-1999 C4-Professor for Organic Chemistry at the Philipps-University Marburg, since 1999 C4-Professor at the Department of Chemistry, LMU University of Munich, 2005-2007 Dean of the Faculty of Chemistry and Pharmacy.

Research projects

Preparation of novel functionalized zinc, magnesium, aluminum, zirconium, lanthanum, iron, manganese, copper and indium organometallic reagents. New nickel, palladium, iron, chromium and cobalt-catalyzed cross-coupling reactions. New fluorination of aromatics and heterocycles. Preparation of new ligands for asymmetric catalysis. Development of new sterically hindered TMP bases. New metal activation methods, Lewis acid-controlled reactivity of metal-organic compounds.

Honors, Awards, Memberships

2012 Nagoya Gold Medal

2013 Chevalier dans l'ordre national du Mérite

Member of „Gesellschaft Deutscher Chemiker e.V.“

Member of „American Chemical Society“

Member of „Académie des Sciences“, Paris, Frankreich

Member of „Bayerische Akademie der Wissenschaften“

Member of „Deutsche Akademie der Naturforscher Leopoldina“

Extramural Research Funding

Funded by Alexander von Humboldt-Stiftung

Funded by Rockwood Lithium GmbH

Funded by BASF

Funded by Novartis Pharma AG: Synthesis and functionalization of 6- and 7-azaindoles

Funded by Novartis Pharma AG: New Fe-catalyzed cross-couplings with heterocyclic halides

Funded by Sanofi Chimie: Regioselective γ -methylation of α , β -unsaturated ketones.

Publications

Brodmann, T.; Koos, P.; Metzger, A.; Knochel, P.*; Ley, S. V.* “Continuous Preparation of Arylmagnesium Reagents in Flow with Inline IR Monitoring” *Org. Proc. Res. & Dev.* **2012**, *16*, 1102-1113.

Kunz, T.; Knochel, P.* “Synthesis of Functionalized Benzo[*b*]thiophenes by the Intramolecular Copper-Catalyzed Carbomagnesiation of Alkynyl(aryl)thioethers” *Angew. Chem. Int. Ed.* **2012**, *51*, 1958-1961.

Shi, L.; Chu, Y.; Knochel, P.*; Mayr, H. “Leaving Group Dependence of the Rates of Halogen-Magnesium Exchange Reactions” *Org. Lett.* **2012**, *14*, 2602-2605.

Duez, S.; Steib, A. K.; Knochel, P.* “Benzylic Arylation of 2-Methyl-5-membered Heterocycles Using TMP-Bases” *Org. Lett.* **2012**, *14*, 1951-1953.

Lemaire, S.; Houpis, I. N.; Xiao, T.; Li, J.; Digard, E.; Gozlan, C.; Liu, R.; Gavryushin, A.; Diène, C.; Wang, Y.; Farina, V.; Knochel, P.* “Stereoselective C-Glycosylation Reactions with Arylzinc Reagents” *Org. Lett.* **2012**, *14*, 1480-1483.

Unsinn, A.; Knochel, P.* “Regioselective zincation of indazoles using TMP_2Zn and cross-coupling with aryl and heteroaryl iodides” *Chem. Comm.* **2012**, *48*, 2680-2682.

Berionni, G.; Maji, B.; Knochel, P.*; Mayr, H. “Nucleophilicity parameters for designing transition metal-free C-C bond forming reactions of organoboron compounds” *Chem. Science* **2012**, *3*, 878-882.

Frischmuth, A.; Unsinn, A.; Groll, K.; Stadtmüller, H.; Knochel, P.* „Preparations and reactions of SF_5 substituted Aryl and Heteroaryl Derivatives *via* Mg and Zn Organometallics“ *Chem. Eur. J.* **2012**, *18*, 10234-10238.

Malysheva, Y. B.; Combes, S.; Allegro, D.; Peyrot, V.; Knochel, P.; Gavryushin, A. E.; Fedorov, A. Y. “Synthesis and biological evaluation of novel anticancer bivalent colchicine-tubulizine hybrids” *Bioorg. Med. Chem.* **2012**, *20*, 4271-4278.

Dienstmaier, J. F.; Medina, D. D.; Dogru, M.; Knochel, P.; Bein, T.; Heckl, W. M.; Lackinger, M. „Isorecticular Two-Dimensional Covalent Organic Frameworks Synthesized by On-Surface Condensation of Diboronic Acids“ *ACS Nano*, **2012**, *6*, 7234-7242.

Malysheva, Y. B.; Combes, S.; Fedorov, A. Y.; Knochel, P.; Gavryushin, A. E. “New Method of Synthesis and Biological Evaluation of Some Combretastatin A-4 Analogues” *Synlett* **2012**, *23*, 1205-1208.

Klier, L.; Bresser, T.; Nigst, T. A.; Karaghiosoff, K.; Knochel, P.* “Lewis Acid-Triggered Selective Zincation of Chromones, Quinolones, and Thiochromones: Application to the Preparation of Natural Flavones and Isoflavones” *J. Am. Chem. Soc.* **2012**, *134*, 13584-13587.

Mycka, R. J.; Duez, S.; Bernhardt, S.; Heppekausen, J.; Knochel, P.; Fleming, F. F. "Cyclohexylcarbonitriles: Diastereoselective Arylations with $\text{TMPZnCl}\cdot\text{LiCl}$ " *J. Org. Chem.* **2012**, *77*, 7671-7676.

Stathakis, C. I.; Bernhardt, S.; Quint, V.; Knochel, P.* „Improved Air-Stable Solid Aromatic and Heterocyclic Zinc Reagents by Highly Selective Metalations for Negishi Cross-Couplings" *Angew. Chem. Int. Ed.* **2012**, *51*, 9428-9432.

Blümke, T. D.; Klatt, T.; Koszinowski, K.; Knochel, P.* "InCl₃-Catalyzed Synthesis of 1,2-Dimetallc Compounds by Direct Insertion of Aluminum or Zinc Powder" *Angew. Chem. Int. Ed.* **2012**, *51*, 9926-9930.

Kuzmina, O. M.; Steib, A. K.; Flubacher, D.; Knochel, P.* "Iron-Catalyzed Cross-Coupling of *N*-Heterocyclic Chlorides and Bromides with Arylmagnesium Reagents" *Org. Lett.* **2012**, *14*, 4818-4821.

Monzón, G.; Tirota, I.; Yuji, N.; Knochel, P. "The *ortho* and *meta* Magnesiumation of Functionalized Anilines and Amino-Substituted Pyridines and Pyrazines at Room Temperature" *Angew. Chem Int. Ed.*, **2012**, *51*, 10624–10627.

Knochel, P. "Water in Organic Synthesis" Workbench Edition (Science of Synthesis); Shu Kobayashi, Ed. *Synthesis* **2012**, *44*, 2474.

Groll, K.; Blümke, T. D.; Unsinn, A.; Haas, D.; Knochel, P. "Direct Pd-Catalyzed Cross-Coupling of Functionalized Organoaluminum Reagents" *Angew. Chem. Int. Ed.* **2012**, *51*, 11157-11161.

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Langhals, H.; Knochel, P.; Walter, A.; Zimdars, S. "Benzothiadiazoloperylene and Benzoxadiazoloperylene: Amorphous Functional Materials" *Synthesis* **2012**, *44*, 3465-3477.

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Dogru, M.; Sonnauer, A.; Zimdars, S.; Döblinger, M.; Knochel, P.; Bein, T.* „Facile synthesis of a mesoporous benzothiadiazole-COF based on a transesterification process“ *CrystEngComm* **2013**, *15*, 1500-1502.

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Unsinn, A.; Rohbogner, C. J.; Knochel, P.* “Directed Magnesiumation of Polyhaloaromatics using the Tetramethylpiperidylmagnesium Reagents $\text{TMP}_2\text{Mg}\cdot 2\text{LiCl}$ and $\text{TMPMgCl}\cdot\text{LiCl}$ ” *Adv. Syn. & Cat.* **2013**, 355, 1553-1560.

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Frischmuth, A.; Knochel, P.* „Preparation of Functionalized Indoles and Azaindoles by the Intramolecular Copper-Mediated Carbomagnesiumation of Ynamides” *Angew. Chem. Int. Ed.* **2013**, 52, 10084-10088.

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Steib, A. K.; Kuzmina, O. M.; Fernandez, S.; Flubacher, D.; Knochel, P.* „Efficient Chromium(II)-Catalyzed Cross-Coupling Reactions between Csp^2 Centers” *J. Am. Chem. Soc.* **2013**, 135, 15346-15349.

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Haas, D.; Mosrin, M.; Knochel, P.* „Regioselective Functionalization of the Oxazole Scaffold Using TMP-Bases of Mg and Zn” *Org. Lett.* **2013**, *15*, 6162-6165.

Knochel, P.; Bluemke, T.; Groll, K. Chen, Y-H. “Preparation organoalanes for organic synthesis” in “Topics in Organometallic Chemistry” Springer-Verlag **2013**, *41*, 173-186.

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Sämman, C.; Coya, E.; Knochel, P.* „Full Functionalization of the Imidazole Scaffold by Selective Metalation and Sulfoxide/Magnesium Exchange“ *Angew. Chem. Int. Ed.* **2013**, in press.

Crestey, F.; Zimdars, S.; Knochel, P.* „Regioselective functionalization of purine derivatives at positions 8 and 6 using hindered TMPamide bases of Zn and Mg“ *Synthesis* **2013**, *45*, 3029-3037.

Other Activities

Synthesis Editor

Synfacts Editor

Editor „Comprehensive Organic Synthesis II“, Elsevier

Organic Chemistry

Prof. Dr. rer. nat. Heinz Langhals

Born 1948 in Altena/Westf, 1967-1971 study of chemistry at the University of Münster/Westf., diploma (master) 1972 in Münster, 1974 PhD degree at the University of Freiburg i.Br. (group of Prof. C. Rüchardt), 1975 postdoctoral fellow at Ecole Normale Supérieure in Paris (group of Prof. Marc Julia, organic chemistry), 1976 postdoctoral fellow (Liebig scholarship) at the University Zürich (group of Prof. Hanns Fischer, physical chemistry), Habilitation 1981 at the University of Freiburg i.Br., since 1984 C3-professor LMU Munich, September 2002, June 2004 and September 2007 research at the Bingmayong Museum in Lintong/China, July 2007; guest professor at the ENS de Cachan/Paris (France), March 2010 guest at the University of Warsaw (Poland), July 2013 guest professor at the University of Linz (LIOS, Austria).

Research Topics

Organic chemistry; dye chemistry: preparation and investigation of highly stable fluorescent dyes, molecular electronics, organic solar systems, nanotechnology; reaction mechanisms: rearrangements; solvent effects: polar properties of solvent mixtures; analytics: water determination, fluorescent marker, fluorescent immunoassays; polymer chemistry: polymeric natural products. recycling of polymers, conservation of archaeological objects d'art.

Honors, Awards, Memberships

July 2013: Guest professor at the Johannes-Kepler-University in Linz, Austria (LIOS).
Memberships: Gesellschaft Deutscher Chemiker,
Liebig-Vereinigung für Organische Chemie,
American Chemical Society (ACS),
Deutscher Hochschulverband.

Extramural Research Funding

BMBF, PG, Bayerische Forschungsstiftung, Scutum Capital.

Publications – Scientific Papers

1. S. Wuttke, C. Dietl, F. M. Hinterholzinger, H. Hintz, H. Langhals, T. Bein, 'Turn-on fluorescence triggered by selective internal dye replacement in MOFs', *Chem. Comm.* **2013**, DOI: 10.1039/C3CC46591H.

2. L. Flamigni, A. Zanelli, H. Langhals, B. Böck, 'Photoinduced processes in a dyad made of a linear and an angular perylene bisimide', *Photochem. Photobiol. Sci.* **2013**, *12*, 2137-2145.
3. H. Langhals, S. Christian, A. Hofer, 'The substitution of aromatics by amines at room temperature with negative energy of activation: Amino *peri*-arylenes as metal-free components for dye-sensitized solar cells', *J. Org. Chem.* **2013**, *78*, 9883-9891.
4. H. Langhals, T. Schmid, M. Herman, M. Zwiener, A. Hofer, 'Binary fluorescence labeling for the recovery of polymeric materials for recycling', *Int. J. Environm. Engin. Sci. Technol. Res.* **2013**, *7*, 124-132.
5. H. Langhals, P. Braun, C. Dietl, P. Mayer, 'How many molecular layers of polar solvent molecules control chemistry? The concept of compensating dipoles', *Chem. Eur. J.* **2013**, *19*, 13511-13521.
6. H. Langhals, A. Hofer, 'Chromophores arranged as 'magnetic meta atoms': Building blocks for molecular metamaterials', *J. Org. Chem.* **2013**, *78*, 5889-5897.
7. I. Pugliesi, H. Langhals, H. Kauffmann, E. Riedle, 'New perspectives on ultrafast Foerster Resonant Energy Transfer' *EPJ Web of Conferences* **2013**, *41*, 05015; *Chem. Abstr.* **2013**: 518675.
8. H. Langhals, 'NIR absorption of perylene dyes and fluorescence with large Stokes' shift by simple deprotonation' *Z. Naturforsch.* **2013**, *68b*, 683-686.
9. H. Langhals, 'Chromophores for picoscale optical computers' in K. Sattler (ed.), *Fundamentals of picoscience*, p. 705-727, Taylor & Francis Inc. CRC Press Inc., Boca Roca/US 2013; ISBN 13: 9781466505094, ISBN 10: 1466505095.
10. H. Langhals, 'Molekulare Spiegel und Abstandsmesser. FRET in neuem Gewand', *labor&more* **2012**, *8.12*, 26-35.
11. H. Langhals, P. Knochel, A. Walter, S. Zimdars, 'Benzothiadiazoloperylene and benzooxidiazoloperylene: Amorphous functional materials', *Synthesis* **2012**, *44*, 3465-3477.
12. H. Langhals, A. Hofer, 'Controlling UV/Vis absorption and Stokes' shifts in highly fluorescent chromophores by molecular dynamics in targeted construction of dyads', *J. Org. Chem.* **2012**, *77*, 9585-9592.
13. H. Langhals, C. Dietl, A. Zimpel, P. Mayer, 'Noncovalent control of absorption and fluorescence spectra', *J. Org. Chem.* **2012**, *77*, 5965-5970.
14. C. Haritoglou, M. Kernt, P. Laubichler, H. Langhals, K. Eibl, A. Varja, S. Thaler, A. Kampik, 'Synthesis, staining properties, and biocompatibility of a new cyanine dye for ILM peeling', *Graefe's Archive for Clinical and Experimental Ophthalmology* **2012**, *250*, 829-838.

15. P. Nalbach, I. Pugliesi, H. Langhals, M. Thorwart, 'Noise-induced Förster resonant energy transfer between orthogonal dipoles', *Physical Review. Lett.* **2012**, *108*, 218302-1 - 218302-5.
16. H. Langhals, B. Böck, T. Schmid, A. Marchuk, 'Angular benzoperylenetetra-carboxylic bisimides', *Chem. Eur. J.* **2012**, *18*, 13188-13194.
17. B. Ventura, H. Langhals, B. Böck, L. Flamigni, 'Phosphorescent perylene imides', *Chem. Commun.* **2012**, *48*, 4226-4228.
18. L. Flamigni, A. Zanelli, H. Langhals, B. Böck, 'Photophysical and redox properties of perylene bis- and tris- dicarboximide fluorophores with triplet state formation: Transient absorption and singlet oxygen sensitization', *J. Phys. Chem. A* **2012**, *116*, 1503-1509.
19. L. Flamigni, A. I. Ciuciu, H. Langhals, B. Böck, D. T. Gryko, 'Improving the photoinduced charge separation parameters in corrole/peryene carboximide dyads by tuning the redox and spectroscopic properties of the components', *Chem. an Asian J.* **2012**, *7*, 582-592.

Patents

1. H. Langhals, M. Zwiener, 'Aryl-Aryl-Kopplungen, Decarboxylierungen und Decarboxylierungen von aromatischen Anhydriden und Carbonsäuren durch das Cu(0)/Cu(I)-Paar', *Ger. Offen.* DE 102013017428.7 (October 10, **2013**).
2. H. Langhals, M. Eberspächer, 'Azulen in wässriger Phase durch Einbau in Nanomicellen und die Verwendung in der Kosmetik', *Ger. Offen.* DE 102013014249.0 (August 27, **2013**).
3. H. Langhals, M. Eberspächer, 'Naphthalintetracarbonsäurebisimide in wässriger Phase durch Einbau in Nanomicellen und die Verwendung in der Kosmetik', *Ger. Offen.* DE 102013014353.5 (August 27, **2013**).
4. H. Langhals, A. Hofer, 'Als „Metaatome“ arrangierte Chromophore: Bausteine für molekulare Metamaterialien', *Ger. Offen.* DE 102013003680.1 (Febr. 28, **2013**).
5. H. Langhals, A. Hofer, 'Terrylen- und Quaterrylenfarbstoffe mit zu den Carbonylgruppen benachbarten Amino-Gruppen und ihre Verwendung in Grätzel-Solarzellen', *Ger. Offen.* DE 102012023247.0 (November 27, **2012**).
6. H. Langhals, M. Eberspächer, 'Synthese von Azulen und Azulenderivaten und deren Verwendung', *Ger. Offen.* DE 102012019843.4 (October 9, **2012**).

7. H. Langhals, A. Hofer, 'Fluoreszenzstandard für die wässrige Phase', *Ger. Offen.* DE 102012019495.1 (October 2, **2012**).
8. H. Langhals, D. Zgela, T. Schmid, M. Herman, M. Zwiener, 'Markierung von Polymermaterialien mit Nano-Fluoreszenzpartikeln für deren eindeutige automatische Sortierung', *Ger. Offen.* DE 102012014982.4 (July 26, **2012**).
9. H. Langhals, T. Schmid, M. Herman, M. Zwiener, A. Hofer, 'Marking of polymer materials with fluorescence dyes for their clear automatic sorting', *Ger. Offen.* DE 102012012772.3 (June 22, **2012**); *Chem. Abstr.* **2013**, 160, 63983.
10. H. Langhals, A. Hofer, 'Using imidazoloterrylene bisimides for contactless temperature measurement in hard accessible areas', *Ger. Offen.* DE 102012008287.8 (April 16, **2012**); *Chem. Abstr.* **2013**, 159, 610183.
11. H. Langhals, A. Hofer, 'Fluorescence dyes with absorption increased height and increased Stokes shift by controlled molecular dynamics in bichromophoric system', *Ger. Offen.* DE 102012005897.7 (March 14, **2012**); *Chem. Abstr.* **2013**, 159, 502376.
12. H. Langhals, C. Dietl, 'Modulation of the absorption and fluorescent spectra of perylene dyes by non-covalent interactions perylene dyes with *N-tert*-alkyl residues', *Ger. Offen.* DE 102012004891.2 (March 9, **2012**); *Chem. Abstr.* **2013**, 159, 456834.
13. H. Langhals, A. Hofer, 'A single-step synthesis of perylene-3,4-dicarboxylic acid anhydride', *Ger. Offen.* DE 102012002678.1 (February 9, **2012**); *Chem. Abstr.* **2013**, 159, 334315.
14. H. Langhals, P. Braun, 'Determination of the strength of solvate coverings by bichromophoric dyes with *anti*-collinear dipoles', *Ger. Offen.* DE 102012002535.1 (February 7, **2012**); *Chem. Abstr.* **2013**, 158, 276301.

Other Activities

Member of the organizing committee of the COC conferences (Convention of Colorants) in Mumbai, India.

Organic Chemistry

Dr. rer. nat. Thomas Magauer

Born in Linz, Austria in 1983. Grew up in Steyr and moved to Vienna in 2002 to study chemistry at the University of Vienna. Joined the laboratories of Prof. Johann Mulzer in 2007 and developed enantioselective syntheses of the complex polyketide kendomycin and the sesquiterpenoid echinopines A and B. Graduating in 2009. Moved to Harvard University, USA, to begin postdoctoral studies with Prof. Andrew G. Myers. Worked on carbohydrates, chiral silicon protecting groups and developed a synthesis of natural and diverse unnatural antiproliferative trioxacarcins. Started of independent research in 2012 as a Liebig-junior research group leader at the LMU Munich. Currently supported by an Emmy Noether Fellowship of the German Research Foundation.

Research Topics

Our goal is to discover, design and develop highly selective and efficient reactions for synthetic chemists. Mechanistic studies to better understand reactivity and selectivity will be performed when appropriate. These strategies will be applied in the synthesis of biologically relevant complex natural products and simplified analogs thereof. These projects should provide new lead compounds for the treatment of human diseases, shed light on biosynthetic processes, and help to identify new molecular targets.

Honors, Awards, Memberships

Emmy Noether Fellowship
Thieme Chemistry Journal Award
Liebig-Fellowship

Extramural Research Funding

Emmy Noether Fellowship (DFG, German Research Foundation)
Liebig-Fellowship (Fonds der Chemischen Industrie, FCI)

Publications – Scientific Papers

The Chemistry of Isoindole Natural Products, K. Speck, T. Magauer, *Beilstein J. Org. Chem.* **2013**, *9*, 2048–2078.

Component-Based Syntheses of Trioxacarcin A, DC-45-A1, and Structural Analogs, T. Magauer, D. Smaltz, A. G. Myers, *Nature Chemistry* **2013**, *5*, 886–893

Other Activities

Reviewer for Synthesis, Synlett, Beilstein Journal of Chemistry

Organic Chemistry

Prof. Dr. rer. nat. Herbert Mayr

Born 1947 in Weilheim/Oberbayern; 1966-1974 study of chemistry at LMU München, 1974 PhD degree in the group of Rolf Huisgen, LMU München; 1975-1976 Postdoctoral research associate with G. A. Olah, Case Western Reserve University, Cleveland, Ohio, USA; 1976-1984 research associate with P. v. R. Schleyer, Friedrich-Alexander-Universität Erlangen-Nürnberg; 1980 Habilitation in Organic Chemistry, Friedrich-Alexander-Universität Erlangen-Nürnberg; 1984-1991 C4-Professor for Chemistry, Universität zu Lübeck; 1991-1996 C4-Professor for Organic Chemistry, Technische Universität Darmstadt; since 1996 C4-Professor for Organic Chemistry, LMU München; 1997-1998 Chairman of the Institut fuer Organische Chemie, LMU München; 1998-2000 Dean of the Faculty of Chemistry and Pharmacy, LMU München; 2000-2004 Head of the Organic Chemistry Division of the German Chemical Society (Liebig-Vereinigung für Organische Chemie, Fachgruppe der GDCh); 2004-2012 Chairman of the Review Board "Molecular Chemistry" of the German Research Foundation (Deutsche Forschungsgemeinschaft); 2007-2008 Director of the Department of Chemistry and Biochemistry, LMU München; 2011-2013 Dean of the Faculty of Chemistry and Pharmacy, LMU München.

Research Topics

Quantification of Organic Reactivity, Theoretical Concepts of Organic Chemistry, Organic and Macromolecular Synthesis, Organocatalysis.

Honors, Awards, Memberships

George A. Olah Lecture 2013,
Peking University – Eli Lilly Lectureship 2013;
Member of the Bavarian Academy of Sciences and of the German National Academy of Sciences Leopoldina;
Member of the Editorial Board of the Journal of Physical Organic Chemistry and of the DECHEMA-Arbeitsausschuss "Kinetik und Reaktionsmechanismen"

Extramural Research Funding

DFG (German Research Council) Ma 673/22-1 "Electrofugality Scales"
DFG (German Research Council) SFB 749 "Marcus Intrinsic Barriers"
Fellowships from Alexander von Humboldt Foundation (AvH) and China Scholarship Council (CSC) for postdoctoral fellows and doctoral students.

Publications – Scientific Papers

2013

D. S. Allgäuer, H. Mayr. Nucleophilicity Parameters of Pyridinium Ylides and Their Use in Mechanistic Analyses. *J. Am. Chem. Soc.* 135 (2013) 15216-15224.

X. Guo, H. Mayr. Manifestation of Polar Reaction Pathways of 2,3-Dichloro-5,6-dicyano-*p*-benzoquinone. *J. Am. Chem. Soc.* 135 (2013) 12377-12387.

R. Appel, S. Chelli, T. Tokuyasu, K. Troshin, H. Mayr. Electrophilicities of Benzaldehyde-Derived Iminium Ions: Quantification of the Electrophilic Activation of Aldehydes by Iminium Formation. *J. Am. Chem. Soc.* 135 (2013) 6579-6587.

G. Berionni, V. Morozova, M. Heininger, P. Mayer, P. Knochel, H. Mayr. Electrophilic Aromatic Substitutions of Aryltrifluoroborates with Retention of the BF_3^- Group: Quantification of the Activating and Directing Effects of the Trifluoroborate Group. *J. Am. Chem. Soc.* 135 (2013) 6317-6324.

K. Troshin, H. Mayr. Ion Pair Dynamics: Solvolyses of Chiral 1,3-Diaryllallyl Carboxylates as a Case Study. *J. Am. Chem. Soc.* 135 (2013) 252-265.

D. Allgäuer, H. Mayr. One-Pot Two-step Synthesis of 1-Ethoxycarbonyl-indolizines via Pyridinium Ylides. *Eur. J. Org. Chem.* (2013) 6379-6388.

B. Maji, M. Baidya, J. Ammer, S. Kobayashi, P. Mayer, A. R. Ofial, H. Mayr. Nucleophilic Reactivities and Lewis Basicities of 2-Imidazolines and Related N-Heterocyclic Compounds. *Eur. J. Org. Chem.* (2013) 3369-3377.

F. Corral Bautista, H. Mayr. Quantification of the Nucleophilic Reactivities of Ethyl Arylacetate Anions. *Eur. J. Org. Chem.* (2013) 4255-4261.

T. A. Nigst, H. Mayr. Comparison of the Electrophilic Reactivities of *N*-Acyropyridinium Ions and Other Acylating Agents. *Eur. J. Org. Chem.* (2013) 2155-2163.

J. Ammer, C. Nolte, K. Karaghiosoff, S. Thallmair, P. Mayer, R. de Vivie-Riedle, H. Mayr. Ion-Pairing of Phosphonium Salts in Solution: C–H \cdots Halogen and C–H $\cdots\pi$ Hydrogen Bonds. *Chem. Eur. J.* 19 (2013) 14612-14630.

M. Horn, L. H. Schappele, G. Lang-Wittkowski, H. Mayr, A. R. Ofial. Towards a Comprehensive Hydride Donor Ability Scale. *Chem. Eur. J.* 19 (2013) 249-263.

B. Maji, K. Troshin, H. Mayr. Ambident Reactivities of Formaldehyde *N,N*-Dialkylhydrazones. *Angew. Chem.* 125 (2013) 12116-12120; *Angew. Chem. Int. Ed.* 52 (2013) 11900-11904.

B. Maji, H. Mayr. Structures and Ambident Reactivities of Azolium Enolates. *Angew. Chem.* 125 (2013) 11370-11374; *Angew. Chem. Int. Ed.* 52 (2013) 11163-11167.

M. C. Holland, S. Paul, W. B. Schweizer, K. Bergander, C. Mück-Lichtenfeld, S. Lakhdar, H. Mayr, R. Gilmour. Non-Covalent Interactions in Organocatalysis: Modulating Conformational Diversity and Reactivity in the MacMillan Catalyst. *Angew. Chem.* 125 (2013) 8125-8129; *Angew. Chem. Int. Ed.* 52 (2013) 7967-7971.

J. Ammer, H. Mayr. Photogeneration of Carbocations: Applications in Physical Organic Chemistry and the Design of Suitable Precursors. *J. Phys. Org. Chem.* 26 (2013) 956-969.

J. Ammer, H. Mayr. Solvent Nucleophilicities of Hexafluoroisopropanol/Water Mixtures. *J. Phys. Org. Chem.* 26 (2013), 59-63.

B. Maji, H. Mayr. Nucleophilic Reactivities of Schiff Bases. *Z. Naturforsch. B* (2013), 693-699.

C. F. Sailer, B. P. Fingerhut, S. Thallmair, C. Nolte, J. Ammer, H. Mayr, R. de Vivie-Riedle, I. Pugliesi, E. Riedle. A Comprehensive Microscopic Picture of the Benzhydryl Radical and Cation Photo-Generation and Interconversion through Electron Transfer. *ChemPhysChem* 14 (2013) 1423-1437.

K. Troshin, H. Mayr. Electrofugalities of 1,3-Diarylallyl Cations. *J. Org. Chem.* 78 (2013) 2649-2660.

2012

T. A. Nigst, A. Antipova, H. Mayr. Nucleophilic Reactivities of Hydrazines and Amines: The Futile Search for the α -Effect in Hydrazine Reactivities. *J. Org. Chem.* 77 (2012), 8142-8155.

J. Ammer, C. Nolte, H. Mayr. Free Energy Relationships for Reactions of Substituted Benzhydrylium Ions: From Enthalpy- over Entropy- to Diffusion-Control. *J. Am. Chem. Soc.* 134 (2012), 13902-13911.

T. A. Nigst, J. Ammer, H. Mayr. Photogeneration of Benzhydryl Cations by Near-UV Laser Flash Photolysis of Pyridinium Salts. *J. Phys. Chem. A* 116 (2012), 8494-8499.

H. A. Laub, D. Gladow, H.-U. Reissig, H. Mayr. The Influence of Perfluorinated Substituents on the Nucleophilic Reactivities of Silyl Enol Ethers. *Org. Lett.* 14 (2012), 3990-3993.

H. Mayr, S. Lakhdar, B. Maji u. A. R. Ofial. A Quantitative Approach to Nucleophilic Organocatalysis. *Beilstein J. Org. Chem.* 8 (2012), 1458-1478.

B. Maji, H. Mayr. Structures and Reactivities of O-Methylated Breslow Intermediates. *Angew. Chem.* 124 (2012), 10554-10558; *Angew. Chem. Int. Ed.* 51 (2012), 10408-10412.

M. Horn, H. Mayr. A Comprehensive View on Stabilities and Reactivities of Triarylmethyl Cations (Tritylium Ions). *J. Phys. Org. Chem.* 25 (2012), 979-988.

- J. Ammer, C. F. Sailer, E. Riedle, H. Mayr. Photolytic Generation of Benzhydryl Cations and Radicals from Quaternary Phosphonium Salts: How Highly Reactive Carbocations Survive Their First Nanoseconds. *J. Am. Chem. Soc.* **134** (2012), 11481-11494.
- L. Shi, Y. Chu, P. Knochel, H. Mayr. Leaving Group Dependence of the Rates of Halogen-Magnesium Exchange Reactions. *Org. Lett.* **14** (2012), 2602-2605.
- B. Maji, M. Horn, H. Mayr. Nucleophile Reaktivitäten von Desoxy-Breslow-Intermediaten: Wie beeinflusst Aromatizität die katalytische Aktivität N-heterocyclischer Carbene? *Angew. Chem.* **124** (2012), 6335-6339; *Angew. Chem. Int. Ed.* **51** (2012), 6231-6235.
- B. Maji, D. S. Stephenson, H. Mayr. Guanidines: Highly Nucleophilic Organocatalysts. *ChemCatChem* **4** (2012), 993-999.
- R. C. Samanta, B. Maji, S. De Sarkar, K. Bergander, R. Fröhlich, C. Mück-Lichtenfeld, H. Mayr, A. Studer. Nucleophilic Addition of Enols and Enamines to α,β -Unsaturated Acyl Azoliums: Mechanistic Studies. *Angew. Chem.* **124** (2012), 5325-5329; *Angew. Chem. Int. Ed.* **51** (2012), 5234-5238.
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- S. Lakhdar, B. Maji, H. Mayr. Imidazolidinone-Derived Enamines: Nucleophiles with Low Reactivity. *Angew. Chem.* **124** (2012), 5837-5840; *Angew. Chem. Int. Ed.* **51** (2012), 5739-5742.
- H. Asahara, H. Mayr. Electrophilicities of Bissulfonyl Ethylenes. *Chem. Asian J.* **7** (2012), 1401-1407.
- C. Nolte, J. Ammer, H. Mayr. Nucleofugality and Nucleophilicity of Fluoride in Protic Solvents. *J. Org. Chem.* **77** (2012), 3325-3335.
- K. Troshin, P. Mayer, H. Mayr. How does Palladium Coordination Affect the Electrophilicities of Allyl Cations? Development of a Robust Kinetic Method for Following Reactions of $[(\eta^3\text{-Diarylallyl})\text{Pd}(\text{Ph}_3\text{P})_2]^+$ with Nucleophiles. *Organometallics* **31** (2012), 2416-2424.
- B. Maji, S. Lakhdar, H. Mayr. Nucleophilicity Parameters of Enamides and their Implications for Organocatalytic Transformations. *Chem. Eur. J.* **18** (2012), 5732-5740.
- C. Joannesse, C. P. Johnston, L. C. Morrill, P. A. Woods, M. Kieffer, T. A. Nigst, H. Mayr, T. Lebl, D. Philp, R. A. Bragg, A. D. Smith. Isothiourea-Mediated Asymmetric O- to C-Carboxyl Transfer of Oxazolyl Carbonates: Structure-Selectivity Profiles and Mechanistic Studies. *Chem. Eur. J.* **18** (2012), 2398-2408.

M. Horn, H. Mayr, E. Lacote, E. Merling, J. Deaner, S. Wells, T. McFadden, D. P. Curran. N-Heterocyclic Carbene Boranes are Good Hydride Donors. *Org. Lett.* 14 (2012), 82-85.

G. Berionni, B. Maji, P. Knochel, H. Mayr. Nucleophilicity Parameters for Designing Transition Metal-free C–C Bond Forming Reactions of Organoboron Compounds. *Chem. Sci.* 3 (2012), 878-882.

T. A. Nigst, J. Ammer, H. Mayr. Ambident Reactivities of Methylhydrazines. *Angew. Chem.* 2012, 124, 1381-1385; *Angew. Chem. Int. Ed.* 51 (2012), 1353-1356.

M. Breugst, F. Corral Bautista, H. Mayr. Nucleophilic Reactivities of the Anions of Nucleobases and Their Subunits. *Chem. Eur. J.* 18 (2012), 127-137.

Crystal Structures

B. Maji, G. Berionni, H. Mayr, P. Mayer. 5-[(*E*)-Methoxy(phenyl)methylidene]-1,3,4-triphenyl-4,5-dihydro-1*H*-1,2,4-triazole. *Acta Crystallogr., Sect. E: Struct. Rep. Online* 68 (2012), o3307.

K. Troshin, P. Mayer, H. Mayr. (*R,E*)-3-(4-Chlorophenyl)-1-phenylallyl 4-nitrobenzoate. *Acta Crystallogr., Sect. E: Struct. Rep. Online* 68 (2012), o2549.

G. Berionni, P. Mayer, H. Mayr. Potassium [1-(*tert*-butoxycarbonyl)-1*H*-indol-3-yl]trifluoroborate hemihydrate. *Acta Crystallogr., Sect. E: Struct. Rep. Online* 68 (2012), m551.

H. Asahara, P. Mayer, H. Mayr. 2-(4-Methoxybenzylidene)-2*H*-1,3-benzodithiole 1,1,3,3-tetraoxide. *Acta Crystallogr., Sect. E: Struct. Rep. Online* 68 (2012), o567.

H. Asahara, P. Mayer, H. Mayr. 1-[2,2-(Bis(phenylsulfonyl)ethylene)-4-methoxybenzene]. *Acta Crystallogr., Sect. E: Struct. Rep. Online* 68 (2012), o470.

Patents

H. M. König, K. Mühlbach, T. Wettling, U. Eichenauer, H. Mayr. Method for production of high-reactivity isobutene homopolymers and copolymers. From PCT Int. Appl. (2013), WO 2013021058 A1 20130214.

H. M. König, K. Mühlbach, T. Wettling, U. Eichenauer, H. Mayr. Process for preparing high-reactivity isobutene homo- or copolymers. From U.S. Pat. Appl. Publ. (2013), US 20130041121 A1 20130214.

Organic Chemistry

Priv.-Doz. Dr.-Ing. Armin R. Ofial

Born 1967 in Bensheim, 1986-1991 study of chemistry at Technical Univ. Darmstadt, 1996 doctoral degree (Dr.-Ing.) in the group of Prof. Dr. Herbert Mayr Technical Univ. Darmstadt, since 1997 LMU München, Nov./Dec. 2005 JSPS Post-doctoral fellowship for Foreign Researchers (short-term) for research with Prof. Dr. Shun-ichi Fukuzumi (Graduate School of Engineering, University of Osaka, Japan), since 2008 independent research on oxidative C–H-functionalization, 2013 habilitation and appointment as Privatdozent at LMU München.

Research Topics

Transition metal catalyzed direct functionalization of C-H bonds. Iron catalyzed functionalization at C(sp³)–H of tertiary amines. Oxidative cross coupling reactions. Kinetics of nucleophile electrophile combinations.

Honors, Awards, Memberships

Thieme Chemistry Journals Award 2012

Member of Gesellschaft Deutscher Chemiker (Liebig-Vereinigung, AG Chemie in der Medizinerbildung)

Member of Münchner Chemische Gesellschaft

Publications – Scientific Papers

A. Wagner, W. Han, P. Mayer, A. R. Ofial,* Iron-Catalyzed Generation of α -Amino Nitriles from Tertiary Amines, *Advanced Synthesis & Catalysis* **2013**, 355, 3058-3070 (doi: 10.1002/adsc.201300441).

B. Maji, M. Baidya, J. Ammer, S. Kobayashi, P. Mayer, A. R. Ofial, H. Mayr, Nucleophilic Reactivities of 2-Imidazolines and Related N-Heterocyclic Compounds, *European Journal of Organic Chemistry* **2013**, 3369–3377 (doi: 10.1002/ejoc.201300213).

M. Horn, L. H. Schappele, G. Lang-Wittkowski, H. Mayr, A. R. Ofial,* Towards a Comprehensive Hydride Donor Ability Scale, *Chemistry–A European Journal* **2013**, 19, 249–263 (doi: 10.1002/chem.201202839).

H. Mayr, S. Lakhdar, B. Maji, A. R. Ofial, A quantitative approach to nucleophilic organocatalysis, *Beilstein Journal of Organic Chemistry* **2012**, 8, 1458–1478 (doi: 10.3762/bjoc.8.166).

Other Activities

Reviewer for *Angewandte Chemie*, *J. Am. Chem. Soc.*, *J. Org. Chem.*, *ACS Catalysis*, *Chemical Science*, *Green Chemistry*, *J. Phys. Org. Chem.*, *Adv. Synth. Catal.*, *J. Mol. Catal. A*, *Chin. J. Chem.*, *Synthesis*, *Croat. Chem. Acta*, *Targets in Heterocycl. Systems*.

Organic Chemistry

Prof. Dr. rer. nat. Dr. h.c. Wolfgang Steglich, em.

Born 1933 in Kamenz/Sa, 1951-1958 study of chemistry at TU Berlin, 1960 PhD degree at TU München (Friedrich Weygand), 1962-1963 post doctoral fellow at Imperial College London (D. H. R. Barton), 1965 habilitation, TU München, 1971–1975 full professor TU Berlin, 1975–1990 University of Bonn, 1991–2001 LMU München, Emeritus professor since October 2001.

Honors, Awards, Memberships

Member of the Editorial Board *Plant Diversity and Resources*

Member of the Editorial Board *Z. Naturforsch B*

Publications – Scientific Papers

2012

von Nussbaum F, Rùth M, Spitteller P, Hübscher-Weissert T, Löbermann F, Polborn K, Steglich W. Coloured artefacts formed by oxidation of benzene-1,2,4-triol and β -dopa during the extraction of *Cortinarius violaceus* (Agaricales) with alcohols. *Eur. J. Org. Chem.* **2012**, 380–90.

2013

Schaffer S, Tandon R, Zipse H, Siess W, Schmidt A, Jamasbi J, Karshovska E, Steglich W, Lorenz R. Stereospecific platelet inhibition by the natural LXR agonist 22(*R*)-OH-cholesterol and its fluorescence labeling with preserved bioactivity and chiral handling in macrophages. *Biochem Pharmacol* **2013**, 86, 279–85.

Gruber G, Kerschensteiner L, Marumoto R, Steglich W. New pulvinic acid and phenyl-alaninol derivatives from the mushrooms *Retiboletus griseus* and *R. nigerrimus*. *Z. Naturforsch.* **2013**, 68b, 675–82.

Carstens J, Heinrich MR, Steglich W. Studies on the synthesis and biosynthesis of the fungal alkaloid necatorone. *Tetrahedron Lett.* **2013**, 54, 5445–47.

Organic Chemistry

Prof. Dr. rer. nat. Dirk Trauner

Born 1967 in Linz (Austria), 1986-1988 study of biology at Univ. Vienna (Austria), 1988-1991 study of biochemistry, Univ. Vienna (Austria), 1992-1995 study of chemistry at Freie Univ. Berlin, 1997 PhD degree (Formal Total Synthesis of (-)-Morphine) in the group of Prof. Dr. Johann Mulzer, Univ. Vienna (Austria), 1997-1998 Military Service Österreichisches Bundesheer (Austria), 1998-2000 Postdoctoral fellow in the group of Prof. Dr. Samuel J. Danishefsky, Sloan-Kettering Institute for Cancer Research, New York (USA), 2000-2006 Assistant Professor, Univ. of California, Berkeley, 2006-2010 Associate Professor, Univ. of California, Berkeley, since 2008 W3-full professor for Chemical Biology and Genetics, LMU Munich.

Research Topics

Our research interests range from organic synthesis and natural product chemistry to chemical neurobiology, photopharmacology and chemical optogenetics.

Honors, Awards, Memberships

ERC Advanced Grant

Corresponding Member, Austrian Academy of Science

Member, Max Planck Graduate School for Life Sciences (IMPRS-LS)

Member, Graduate School Life Science Munich (LSM)

Member, Center for Integrated Protein Science Munich (CIPSM)

Member, Munich Center for Neurosciences (MCN)

Member, Center for NanoScience (CeNS)

Member, German Chemical Society (GDCh)

Fellow of the Royal Society of Chemistry

Member, American Chemical Society

Member, Austrian Chemical Society (GOeCh)

Extramural Research Funding

European Research Council Advanced Grant “CARV” (Chemical Approaches to Restoring Vision)

Excellence Cluster *Center for Integrated Protein Sciences Munich* (DFG and the Federal Ministry of Education and Research)

Collaborative Research Center 870 (German Research Council) “Assembly and Function of Neuronal Circuits in Sensory Processing”

Research Unit 1406 (German Research Council) “Exploiting the Potential of Natural Compounds: Myxobacteria as Source for Therapeutic Leads and Chemical Tools in Cancer Research”

Collaborative Research Center 749 (German Research Council) "Dynamics and Intermediates of Molecular Transformations"

Collaborative Research Center 1032 (German Research Council) "Nanoagents for Spatiotemporal Control of Molecular and Cellular Reactions"

Research Unit 1279 (German Research Council) "Protein-Based Photoswitches as Optogenetic Tools"

Fellowships from VCI, Alexander von Humboldt Foundation, NSERC and German National Merit Foundation to postdocs and students

Publications – Scientific Papers

2013

"A Photoswitchable Neurotransmitter Analogue Bound to its Receptor" Reiter, A.; Skerra, A., Trauner, D.*; Schiefner, A.* *Biochemistry* **2013**, *52*, 8972-8974.

"Bilirubin in a New Light" Broichhagen, J.; Trauner, D. *Angew. Chem. Int. Ed.* **2013**, *53*, 13868-13070.

"Challenges and Opportunities in Optochemical Genetics" Isacoff, E.; Kramer, R.; Trauner, D. in *Optogenetics*, Hegemann, P., Sigrist, S. eds., De Gruyter **2013**, pp. 35-46.

"A Red-Shifted, Fast-Relaxing Azobenzene Photoswitch for Visible Light Control of an Iontropic Glutamate Receptor" Kienzler, M. A.; Reiner, A.; Trautman, E.; Yoo, S.; Trauner, D.*; Isacoff, E. Y.* *J. Am. Chem. Soc.*, **2013**, *135*, 17683-17686.

"A Photoactive Porphyrin-Based Periodic Mesoporous Organosilica Thin Film" Li, Y.; Auras, F.; Loebermann, F.; Döblinger, M.; Schuster, J.; Peter, L. M.; Trauner, D.*; Bein, T.* *J. Am. Chem. Soc.*, **2013**, *135*, 18513-18519.

□ "Total Synthesis of Herbicidin C and Aureonuclemycin: Impasses and New Avenues" Hager, D.; Paulitz, C.; Tiebes, J.; Mayer, P.; Trauner, D. *J. Org. Chem.* **2013**, *78*, 10784–10801.

"Tetraphenylporphyrin Derivative Specifically Blocks Members of the Voltage-Gated Potassium Channel Subfamily K_v1" Hornig, S.; Ohmert, I.; Trauner, D.; Ader, C.; Balduš, M.; Pongs, O. *Channels* **2013**, *7*, 1-10.

"Toward the Total Synthesis of Divergolides C and D" Hager, A.; Kuttruff, C. A.; Hager, D.; Terwilliger, D. W.; Trauner, D. *Synlett* **2013**, *24*, 1915-1920.

"Intramolecular Vinyl Quinone Diels–Alder Reactions: Asymmetric Entry to the Cordiachrome Core and Synthesis of (–)-Isoglaziavianol" Löbermann, F.; Weisheit, L.; Trauner, D. *Org. Lett.* **2013**, *15*, 4324–4326.

"Biomimetic Synthesis of Santalin A, B and Santarubin A, B, the Major Colorants of Red Sandalwood" Strych, S.; Trauner, D. *Angew. Chem. Int. Ed.* **2013**, *52*, 9509-9512.

"Optical Control of TRPV1 Channels" Stein, M.; Breit, A.; Fehrentz, T.; Gudermann, T.; Trauner, D. *Angew. Chem. Int. Ed.* **2013**, *52*, 9845-9848

"Studies toward the Biomimetic Total Synthesis of (-)-PF-1018" Webster, R.; Gaspar, B.; Mayer, P.; Trauner, D. *Org. Lett.* **2013**, *15*, 1866-1869.

"Optical Control of Metabotropic Glutamate Receptors" Levitz, J.; Pantoja, C.; Gaub, B.; Janovjak, H.; Reiner, A.; Hoagland, A.; Schoppik, D.; Kane, B.; Stawski, P.; Schier, A. F.; Trauner, D.*; Isacoff, E. Y.* *Nat. Neurosci.* **2013**, *16*, 507-516.

"Optical Control of Calcium-Regulated Exocytosis" Izquierdo, M., Trauner, D., Llobet, A., Gorostiza, P. *Biochim. Biophys. Acta* **2013**, 1830, 2853–2860.

"Characterization of a Diffusible Signaling Factor from *Xylella Fastidiosa*" Beaulieu, E. D.; Ionescu, M.; Chaterjee, S.; Yokota, K.; Trauner, D.; Lindow, S. *mBio* **2013**, *4*, e00539-12.

"Optical Modulation of Neurotransmission Using Calcium Photocurrents Through the Ion Channel LiGluR" Izquierdo-Serra, M.; Trauner, D.; Lobet, A.; Gorostiza, P. *Frontiers. Mol. Neurosci.* **2013**, *6*, doi: 10.3389/fnmol.2013.00003.

"A ¹H-NMR Assay for Measuring the Photostationary states of Photoswitchable Ligands" Banghart, M., Trauner, D. *Methods Mol. Biol.* **2013**, *995*, 105-120.

"Mode of Cell Death Induction by Pharmacological Vacuolar H⁺-ATPase (V-ATPase) Inhibition" Von Schwarzenberg, K.; Wiedmann, R. M.; Zahler, S.; Trauner, D.; Vollmar, A. M. *J. Biol. Chem.* **2013**, *288*, 1385-1396.

2012

"The V-ATPase-inhibitor Archazolid Abrogates Tumor Metastasis via Inhibition of Endocytic Activation of the Rho-GTPase Rac1" Wiedmann, R. M.; von Schwarzenberg, K.; Palamidessi, A.; Schreiner, L.; Kubisch, R.; Liebl, J.; Schempp, C.; Trauner, D.; Vereb, G.; Zahler, S.; Wagner, E.; Muller, R.; Scita, G.; Vollmar, A. M. *Cancer Res.* **2012**, *72*, 5976-5987.

"Label-Free Microscale Thermophoresis Discriminates Sites and Affinity of Protein–Ligand Binding" Seidel, S. A.; Wienken, C. J.; Geissler, S.; Jerabek-Willemsen, M.; Duhr, S.; Reiter, A.; Trauner, D.; Braun, D.; Baaske, P. *Angew. Chem. Int. Ed.* **2012**, *51*, 10656-10659.

"The Crystal Structure of the Dess-Marin Periodinane" Schröckeneder, A., Stichnoth, D., Mayer, P.; Trauner, D. *Beilstein J. Org. Chem.*, **2012**, *8*, 1523-1527.

"Molecular Switches and Cages" Trauner, D. *Beilstein J. Org. Chem.* **2012**, *8*, 870-871.

"Azo-Propofols: Photochromic Potentiators of GABA_A Receptors" Stein, M.; Middendorp, S. J.; Carta, V.; Pejo, E.; Raines, D. E.; Forman, S. A.; Sigel, E.; Trauner, D. *Angew. Chem. Int. Ed.* **2012**, *42*, 10500-10504.

"Evolution of a Synthetic Strategy for the Variecolortides" Kuttruff, C.; Mayer, P.; Trauner, D. *Eur. J. Org. Chem.* **2012**, *27*, 5151-5161.

"Photochemical Restoration of Visual Responses in Blind Mice" Polosukhina, A.; Litt, J.; Tochitsky, I.; Nemargut, J.; Sychev, Y.; De Kouchkovsky, I.; Huang, T.; Borges, K.; Trauner, D.; Van Gelder, R. N.; Kramer R. H. *Neuron* **2012**, *75*, 271-282.

"Exploring the Pharmacology and Action Spectra of Photochromic Open Channel Blockers" Fehrentz, T.; Kuttruff, C.; Huber, F.M.E.; Kienzler, M.; Mayer, P.; Trauner, D. *ChemBioChem* **2012**, *13*, 1746-1749.

"A Unified Approach to *trans*-Hydrindane Sesterterpenoids" Hog, D. T., Mayer, P., Trauner, D. *J. Org. Chem.* **2012**, *77*, 5838-5843.

"Synthetic Approaches Toward Sesterterpenoids" Hog, D. T.; Webster, R.; Trauner, D. *Nat. Prod. Rep.* **2012**, *29*, 752-779.

"Stereoselective Total Syntheses of Herbicidin C and Aureonuclemycin Through Late Stage Glycosylation" Hager, D.; Mayer, P.; Trauner, D. *Angew. Chem. Int. Ed.* **2012**, *51*, 5625-6528.

"A Total Synthesis Prompts the Structure Revision of Haouamine B" Matveenko, M., Liang, G. Lauterwasser, E., Trauner, D. *J. Am. Chem. Soc.* **2012**, *134*, 9291-9295.

"A Photochromic Agonist of AMPA Receptors" Stawski, P.; Sumser, M.; Trauner, D. *Angew. Chem. Int. Ed.* **2012**, *51*, 5748-5751.

120. "Rapid Optical Control of Nociception With an Ion Channel Photoswitch" Mourot, A.; Fehrentz, T., Bautista, D., Trauner, D.*, Kramer, R.*, *Nature Methods*, **2012**, *9*, 396-402.

"An Approach to Aminonaphthoquinone Ansamycins Using a Modified Danishefsky Diene" Kuttruff, C. A., Geiger, S., Cakmak, M., Mayer, P., Trauner, D., *Org. Lett.* **2012**, *14*, 1070-1073.

"Total Synthesis of Exiguamines A and B Inspired by Catecholamine Chemistry" Sofiyev, V., Lumb, J.-P., Volgraf, M., Trauner, D., *Chem. Eur. J.*, **2012**, *18*, 4999-5005.

"Optical Control of Genetically Engineered Nicotinic Acetyl Choline Receptors" Tochitsky, I.; Banghart M.R.; Mourot, A.; Zhao, J.Z.; Gaub, B.; Kramer, R.; Trauner, D., *Nature Chemistry*, **2012**, *4*, 105-111.

Patents

Ehud Y Isacoff, Richard H Kramer, Dirk Trauner, Matthew R Banghart, Matthew Volgraf, Pablo Ignacio Gorostiza Langa, Katharine Borges: Photoreactive regulator of protein function and methods of use thereof. The Regents of the University of California November 13, 2012: US08309350.

Ehud Y Isacoff, Richard H Kramer, Dirk Trauner, Matthew Banghart, Matthew Volgraf, Pablo Ignacio Gorostiza Langa, Katharine Borges: Photoreactive regulator of protein function and methods of use thereof. The Regents of the University of California February 14, 2012: US08114843.

Dirk Trauner, Ehud Y Isacoff, Matthew Volgraf, Pablo Ignacio Gorostiza Langa: Photoreactive regulator of glutamate receptor function and methods of use thereof. The Regents of the University of California May 15, 2012: US08178496.

Ehud Y Isacoff, Richard H Kramer, Dirk Trauner, Matthew R Banghart, Matthew Volgraf, Pablo Ignacio Gorostiza Lange: Photoreactive regulator of protein function and methods of use thereof. June 7, 2007: US20070128662-A1.

Dirk Trauner, Ehud Y Isacoff, Richard H Kramer, Matthew R Banghart, Doris L Fortin, Alexandre Mourot: Photoreactive Synthetic Regulator of Protein Function and Methods of Use Thereof. August 25, 2011: US20110207213-A1.

Dirk Trauner, Ehud Y Isacoff, Matthew Volgraf, Pablo Ignacio Gorostiza Langa: Photoreactive regulator of protein function and methods of use thereof. July 16, 2009: US20090181454-A1.

Ehud Y Isacoff, Richard H Kramer, Dirk Trauner, Matthew R Banghart, Matthew Volgraf, Pablo Ignacio Gorostiza Langa, Katharine Borges: Photoreactive Regulator of Protein Function and Methods of Use Thereof. July 26, 2012: US20120190094-A1.

Other Activities

Fachforum Chemie, German Research Foundation (DFG)

Associate Editor, *Natural Product Reports*

Associate Editor, *Strategies and Tactics in Total Synthesis*

Review Panel, NCCR Chemical Biology, Swiss National Science Foundation (SNSF)

Advisory Board, Helmholtz Centre for Pharmaceutical Research, Saarbrücken (HIPS)

Minerva Weizmann Committee

Advisory Board, *ACS Chemical Neuroscience*

Associate Editor, *Beilstein Journal of Organic Chemistry* (until December 2012)

Member, Feodor Lynen-Fellowship Committee, Alexander von Humboldt Foundation (until December 2012).

Organic Chemistry

Prof. Dr. phil. Hendrik Zipse

Born 1962 in Heidelberg/Germany, 1982 - 1989 study of chemistry at Technical University Darmstadt, Germany, and University of Utah, Salt Lake City, USA; 1991 PhD degree in the group of Prof. Dr. Bernd Giese, Univ. Basel, Switzerland; 1992 - 1993, postdoctoral fellow with Prof. Dr. K. N. Houk, UCLA Los Angeles, USA; 1997 Habilitation at the Inst. Organic Chemistry, Technical University Berlin; since 1998 associate professor of chemistry at the Department of Chemistry, LMU München.

Research Topics

Development of new Lewis base catalysts for organocatalytic transformations such as esterifications, silylations, and C-C bond forming reactions; mechanistic studies of organocatalytic processes using combinations of spectroscopic and theoretical techniques; theoretical studies of radicals in enzymatic catalysis; development of new hydrogen donors for radical reactions.

Extramural Research Funding

Alexander von Humboldt Foundation, Institutional partnership program on "Computational Life Sciences on Open Shell Intermediates", together with Dept. Pharmacy, Univ. Zagreb, and Rudjer Boskovic Inst., Zagreb, Croatia.

German Research Council (DFG), Individual research grant on "Borane complexes as reagents in radical chemistry"

Collaborative Research Center 749 (German Research Council, DFG) "Dynamics and intermediates of molecular transformations"

Publications – Scientific Papers

2013

R. Tandon, T. Nigst, H. Zipse, "Inductive Effects through Alkyl Groups – How Long is Long Enough?", *Eur. J. Org. Chem.* **2013**, 5423 - 5430.

T. H. Gehrke, U. Lischke, K. L. Gasteiger, S. Schneider, S. Arnold, H. C. Müller, D. S. Stephenson, H. Zipse, T. Carell, "Unexpected non-Hoogsteen-based mutagenicity mechanism of FaPy-DNA lesions", *Nat. Chem. Biol.* **2013**, 9, 455 - 463.

J. Hioe, M. Mosch, D. M. Smith, H. Zipse, "Dissociation Energies of C(alpha)-H Bonds in Amino Acids - a Reexamination", *RSC Advances* **2013**, 3, 12403 - 12408.

S. Schaffer, R. Tandon, H. Zipse, W. Siess, A. Schmidt, J. Jamasbi, E. Karshovska, W. Steglich, R. Lorenz, "Stereospecific platelet inhibition by the natural LXR agonist 22(R)-OH-cholesterol and its fluorescence labelling with preserved bioactivity and chiral handling in macrophages", *Biochem. Pharm.* **2013**, *86*, 279 - 285.

D. Sakic, F. Achraimer, V. Vrcek, H. Zipse, "The chemical fate of paroxetine metabolites. Dehydration of radicals derived from 4-(4-fluorophenyl)-3-(hydroxymethyl)piperidine", *Org. Biomol. Chem.* **2013**, *11*, 4232 - 4239.

R. Tandon, T. Unzner, T. A. Nigst, N. De Rycke, P. Mayer, B. Wendt, O. R. P. David, H. Zipse, "Annelated Pyridines as Highly Nucleophilic and Lewis-Basic Catalysts for Acylation Reactions", *Chem. Eur. J.* **2013**, *19*, 6435 - 6442.

C. Lindner, Y. Liu, K. Karaghiosoff, B. Maryasin, H. Zipse, "The Aza-Morita–Baylis–Hillman Reaction: A Mechanistic and Kinetic Study", *Chem. Eur. J.* **2013**, *19*, 6429 - 6434.

S. Seel, G. Dagousset, T. Thaler, A. Frischmuth, K. Karaghiosoff, H. Zipse, P. Knochel, "Preparation of Stereodefined Secondary Alkylolithium Compounds", *Chem. Eur. J.* **2013**, *19*, 4614 - 4622.

2012

J. Hioe, H. Zipse, "Hydrogen Transfer in SAM-Mediated Enzymatic Radical Reactions", *Chem. Eur. J.* **2012**, *18*, 16463 - 16472.

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E. Larionov, M. Mahesh, A. C. Spivey, H. Zipse, "Theoretical Prediction of Selectivity in Kinetic Resolution of Secondary Alcohols Catalyzed by Chiral DMAP Derivatives", *J. Am. Chem. Soc.* **2012**, *134*, 9390 - 9399.

C. Lindner, R. Tandon, Y. Liu, B. Maryasin, H. Zipse, "The aza-Morita-Baylis-Hillman Reaction of Electronically and Sterically Deactivated Substrates", *Org. Biomol. Chem.* **2012**, *10*, 3210 - 3218.

E. Larionov, F. Achraimer, J. Humin, H. Zipse, "The Catalytic Potential of Substituted Pyridines in Acylation Reactions: Theoretical Prediction and Experimental Validation", *ChemCatChem* **2012**, *4*, 559 - 566.

K. Condic-Jurkic, A. Smith, H. Zipse, D. M. Smith, "The Protonation States of the Active-Site Histidines in (6-4) Photolyase", *J. Chem. Theory Comput.* **2012**, *8*, 1078 - 1091.

I. V. Vrcek, D. Sakic, V. Vrcek, H. Zipse, M. Birus, "Computational study of radicals derived from hydroxyurea and its methylated analogues", *Org. Biomol. Chem.* **2012**, *10*, 1196 - 1206.

J. Hioe, H. Zipse, "Radical Stability - Thermochemical Aspects", p. 449 - 476 in *Encyclopedia of Radical in Chemistry, Biology and Materials*, C. Chatgililoglu and A. Studer (eds)., John Wiley & Sons Ltd, Chichester, UK, **2012**.

Books

H. Zipse, "Grundlagen der Organischen Chemie", *Shaker Verlag*, **2013**, 2nd corrected ed., ISBN 978-3-8440-1885-1.

F. Achrainer, F. Barth, C. Draxler, C. Lindner, H. Zipse, "Versuche zur Experimentalvorlesung Organische Chemie", *Shaker Verlag*, **2013**, ISBN 978-3-8440-1777-9.

Other Activities

Co-organizer and speaker of the German side, bilateral Indo-German Conference on "Modeling Chemical and Biological (Re)Activity" (MCBR3), 26.02. - 01.03.2013, NIPER & IISER Mohali, Chandigarh, India; Organizer, Undergraduate research conference on molecular sciences (URCUP13), 29.09. - 30.09.2013, Wildbad Kreuth, Germany; program chair, 2012 - current, Munich Chemical Society (MChG); reviewer for the ASIIN accreditation agency.

Physical Chemistry

Prof. Dr. rer. nat. Thomas Bein

Born 1954 in Toenning/Schleswig-Holstein, studies of chemistry at the University of Hamburg, Diploma in 1981. 1984 PhD degree at the University of Hamburg and Catholic University Leuven (Belgium). 1984-1986 Visiting Scientist at the DuPont Central Research and Development Department, Experimental Station (Wilmington, Delaware, USA). 1986-1991 Assistant Professor of Chemistry at the University of New Mexico (Albuquerque, USA). 1991-1999 Associate and Full Professor at Purdue University (West Lafayette, Indiana, USA). Since 1999 Full Professor (C4) for Physical Chemistry at the LMU Munich. 2002-2003 and since 2012 Director of the Department of Chemistry at the LMU Munich.

Research Topics

Synthesis and characterization of functional nanostructures. Spectroscopy on functionalized surfaces, surface chemistry of thin films, surface growth of nanostructures. Acoustic and optical sensors for molecular detection. Synthesis of porous materials with structure directing agents. Physical characteristics of nanostructured host-guest systems. Multifunctional porous nanoparticles for drug delivery. Nanostructured hybrid systems for photovoltaics and solar water splitting.

Honors, Awards, Memberships

ERC Advanced Grant

President of the International Mesoporous Materials Association (IMMA)

Member of the American Chemical Society (ACS)

Member of the Society of German Chemists (GDCh)

Member of the Materials Research Society (MRS)

Member of the Editorial Board *Chemistry of Materials*

Member of the Editorial Board *Microporous Materials*

Member of the Editorial Board *Journal of Porous Materials*

Member of the Editorial Board *Chemical Communications*

Member of the Editorial Board *ACS Nano*

Extramural Research Funding

European Research Council Advanced Grant: "Electroactive Donor-Acceptor Covalent Organic Frameworks ECOF" (ERC)

Excellence Cluster: *Nanosystems Initiative Munich NIM* (DFG) Area 3

Collaborative Research Center 749: *Dynamics and Intermediates of Molecular Transformations* (DFG)

Collaborative Research Center 1032: *Nanoagents for Spatiotemporal Control of Molecular and Cellular Reactions* (DFG)

Priority Program SPP 1362: *Porous Metal-Organic Frameworks* (DFG)

Priority Program SPP 1613: *Regeneratively produced fuels by light driven water splitting: Investigation of involved elementary processes and perspectives of technological implementation* (DFG)

Joint Research Project: *Solar Technologies Go Hybrid* (Bavarian Ministry for Science, Research and Arts)

Project Network: *Environmentally Friendly Contributions of Nanotechnology towards Sustainable Energy Conversion* (Bavarian Ministry for Environment and Consumer Protection)

Publications – Scientific Papers

2013

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Dogru, M.; Handloser, M.; Auras, F.; Kunz, T.; Medina, D.; Hartschuh, A.; Knochel, P.; Bein, T., A Photoconductive Thienothiophene-Based Covalent Organic Framework Showing Charge Transfer Towards Included Fullerene. *Angewandte Chemie-International Edition* **2013**, *52* (10), 2920-2924.

Dogru, M.; Sonnauer, A.; Zimdars, S.; Doeblinger, M.; Knochel, P.; Bein, T., Facile synthesis of a mesoporous benzothiadiazole-COF based on a transesterification process. *CrystEngComm* **2013**, *15* (8), 1500-1502.

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Rivera, V. F.; Auras, F.; Motto, P.; Stassi, S.; Canavese, G.; Celasco, E.; Bein, T.; Onida, B.; Cauda, V., Length-Dependent Charge Generation from Vertical Arrays of High-Aspect-Ratio ZnO Nanowires. *Chemistry - A European Journal* **2013**, *19* (43), 14665-14674.

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Dienstmaier, J. F.; Medina, D. D.; Dogru, M.; Knochel, P.; Bein, T.; Heckl, W. M.; Lackinger, M., Isoreticular Two-Dimensional Covalent Organic Frameworks Synthesized by On-Surface Condensation of Diboronic Acids. *ACS Nano* **2012**, *6* (8), 7234-7242.

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Publications by other group members

Enhanced Luminescence Properties of InAs-InAsP Core-Shell Nanowires. J. Treu, M. Bormann, H. Schmeiduch, M. Döblinger, S. Morkötter, S. Matich, P. Wiecha, K. Saller, B. Mayer, M. Bichler, M.-C. Amann, J. J. Finley, G. Abstreiter, and G. Koblmüller, *Nano Lett.* **13** (2013) 6070-6077.

High Mobility One- and Two-Dimensional Electron Systems in Nanowire-Based Quantum Heterostructures. S. Fun, M. Royo, I. Zardo, D. Rudolph, S. Morkötter, B. Mayer, J. Becker, A. Bechtol, S. Matich, M. Döblinger, M. Bichler, G. Koblmüller, J. J. Finley, A. Bertoni, G. Goldoni, and G. Abstreiter, *Nano Lett.* **13** (2013) 6189-6196.

Evidence of amorphous interdiffusion layer in heavy ion irradiated U-8wt%Mo/Al interfaces. H.Y. Chiang, T. Zweifel, H. Palancher, A. Bonnin, L. Beck, P. Weiser, M. Döblinger, C. Sabathier, R. Jungwirth, W. Petry, *J. Nucl. Mat.* **440** (2013) 117-123.

Laterally self-ordered silicon-germanium islands with optimized confinement properties. T. Zabel, N. Sircar, N. Hauke, J. Zweck, M. Döblinger, M. Kaniber, J.J. Finley, G. Abstreiter, Y. Arakawa, D. Bougeard, *Appl. Phys. Lett.* **103** (2013) 063105.

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Role of microstructure on optical properties in high-uniformity In_{1-x}Ga_xAs nanowire arrays: Evidence of a wider wurtzite band gap. S. Morkötter, S. Funk, M. Liang, M. Döblinger, S. Hertenberger, J. Treu, D. Rudolph, A. Yadav, J. Becker, M. Bichler, G. Scarpa, P. Lugli, I. Zardo, J.J. Finley, G. Abstreiter, G. Koblmüller, *Phys. Rev. B* **87** (2013) 205303.

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Size-selected sub-nanometer cluster catalysts on semiconductor nanocrystal films for atomic scale insight into photocatalysis. M. Berr, F. Schweinberger, M. Döblinger, K. Sanwald, C. Wolff, J. Breimeier, A. Crampton, C. Ridge, M. Tschurl, U. Heiz, F. Jäckel, J. Feldmann, *Nano Lett.* 12 (2012) 5903-5906.

Diameter dependent optical emission properties of InAs nanowires grown on Si. G. Koblmüller, K. Vizbaras, S. Hertenerger, S. Bolte, D. Rudolph, J. Becker, M. Döblinger, M.-C. Amann, J. J. Finley, and G. Abstreiter, *Appl. Phys. Lett.* 101 (2012) 043116.

High compositional homogeneity in In-rich InGaAs nanowire arrays on nanoimprinted SiO₂/Si (111). S. Hertenerger, S. Funk, K. Vizbaras, A. Yadav, D. Rudolph, J. Becker, S. Bolte, M. Döblinger, M. Bichler, G. Scarpa, P. Lugli, I. Zardo, J. J. Finley, M.-C. Amann, G. Abstreiter, *Appl. Phys. Lett.* 101 (2012) 043116.

Successive Spray Deposition of P3HT/PCBM Organic Photoactive Layers: Material Composition and Device Characteristics. A. Abdellah, K. Singh Viridi, R. Meier, M. Döblinger, P. Müller-Buschbaum, C. Scheu, P. Lugli, and G. Scarpa, *Adv. Funct. Mater.* 22 (2012) 4078–4086.

The layered tellurides 39R-M_{0.067}Sb_{0.667}Te_{0.266} (M = Ge, Sn): element distribution and thermoelectric properties. M. N. Schneider, F. Fahrnbauer, T. Rosenthal, M. Döblinger, C. Stiewe and O. Oeckler, *Chem. Eur. J.* 18 (2012) 1209 – 1218.

Silica-Iron Oxide Magnetic Nanoparticles Modified for Gene Delivery: A Search for Optimum and Quantitative Criteria. O. Mykhaylyk, T. Sobisch, I. Almstätter, Y. Sanchez-Antequera, S. Brandt, M. Anton, M. Döblinger, D. Eberbeck, M. Settles, R. Braren, D. Lerche, C. Plank, *Pharm. Res.* 29 (2012) 1344-1365.

Dunn, H. K.; Peter, L. M.; Bingham, S. J.; Maluta, E.; Walker, A. B. *Journal of Physical Chemistry C* **2012**, *116*, 22063.

Gimenez, S.; Dunn, H. K.; Rodenas, P.; Fabregat-Santiago, F.; Miralles, S. G.; Barea, E. M.; Trevisan, R.; Guerrero, A.; Bisquert, J. *Journal of Electroanalytical Chemistry* **2012**, *668*, 119.

J. F. Dienstmaier, D. D. Medina, M. Dogru, P. Knochel, T. Bein, W. M. Heckl, M. Lackinger, Isoreticular two-dimensional covalent organic frameworks synthesized by on-surface condensation of diboronic acids, *ACS Nano* **2012**, *6*, 7234-7242.

Other Activities

Co-founder and Board Member of NanoScape AG, Area Coordinator of NIM Research Cluster (Nanosystems Initiative Munich), Board Member of the Center for NanoScience Munich (CeNS), Coordinator of the Master Program “Advanced Materials Science” (AMS).

Physical Chemistry

Prof. Dr. rer. nat. Christoph Bräuchle

Born 1947 in Metzingen/Württemberg, study of chemistry and physics at TU Berlin and at Univ. Tübingen, 1973 diploma in chemistry, 1978 PhD degree in Physical Chemistry at LMU Munich, 1979/80 Postdoctoral fellow at IBM Research San José (USA), 1982 habilitation, 1984 C2-professor at LMU Munich, 1986 call C3-professorship Physical Chemistry Univ. Mainz, 1986 call C4-professorship Physical Chemistry TU Berlin, 1988 call C4-professorship Physical Chemistry LMU Munich, 1994 call C4-professorship Physical Chemistry, Director NMI/Univ. Tübingen, 1992 guest professorship at Univ. of California, Los Angeles (USA), 1994 guest professorship at Univ. Paris (France), 1993-1997 Vice Dean and Dean of the Faculty for Chemistry and Pharmacy, 1998-2000 member of the senate, LMU Munich, 2000-2006 Head of the Center for Nanoscience (CeNS) at LMU Munich, 2004/2005 Chairman of the Department of Chemistry, LMU Munich, 2004-2012 Speaker and Vice Speaker of the International Elite Graduate School "Nano-Bio-Technology", 2006-2012 coordinator in the Excellence Clusters "Nanosystems Initiative Munich" (NIM) and "Center for Integrated Protein Science" (CIPSM), 2008-2012 Member of the DFG Review Board for Science (Physical Chemistry).

Research Topics

Fluorescence live cell imaging and single virus tracing: observation of the infection pathway of a single virus into a living cell and production (self-assembly and budding) of viruses in infected cells for HIV and Herpes

Dynamics of single molecules in nanoporous systems: mechanistical studies of translation, rotation, adsorption and spectral diffusion of single molecules in mesoporous silica structures and other nanoporous systems

Development of smart drug delivery systems/nanomedicine: drug delivery with mesoporous silica nanoparticles, polyplexes and lipoplexes/targeting, controlled release and depot effect, live cell imaging of uptake and trafficking in living cells

Nanoparticles and human health: live cell imaging of uptake and trafficking of nanoparticles (SiO₂, TiO₂, ZnO, CeO, Pt etc.) in endothelial cells in an artificial blood circulation model and toxicity measurements.

Honors, Awards, Memberships

Elected Member of the Bavarian Academy of Sciences

Elected Member of the Academia Europaea

Board of Trustees of "Deutsches Museum Munich"

Member of the Editorial Board *ChemPhysChem – A European Journal of Chemical Physics and Physical Chemistry*

Gesellschaft Deutscher Chemiker

Deutsche Physikalische Gesellschaft

Deutsche Bunsen-Gesellschaft
 American Chemical Society
 American Physical Society
 Materials Research Society
 Biophysical Society

Extramural Research Funding

Excellence Cluster "Nanosystems Initiative Munich" (DFG and the Federal Ministry of Education and Research)
 Excellence Cluster "Center for Integrated Protein Science Munich" (DFG and the Federal Ministry of Education and Research)
 Third-party funds "Visualization of EPO-Receptor Interaction in Living Cells - A Feasibility Study" (Roche)
 Third-party funds "Siloxane Single Molecule Force Spectroscopy" (Wacker-Chemie)
 Priority Program 1313 (German Research Council) "Biological Responses to Nanoscale Particles"
 Subsidies from Fonds der Chemischen Industrie

Publications – Scientific Papers

2013

Strobel C, Torrano AA, Herrmann R, Malissek M, Bräuchle C, Reller A, Treuel L, Hilger I. Effects of the physicochemical properties of titanium dioxide nanoparticles, commonly used as sun protection agents, on microvascular endothelial cells. *J. Nanopart. Res.* 2013 Dec 4, DOI 10.1007/s11051-013-2130-3

Lächelt U, Kos P, Mickler FM, Herrmann A, Salcher EE, Rödl W, Badgular N, Bräuchle C, Wagner E. Fine-tuning of proton sponges by precise diaminoethanes and histidines in pDNA polyplexes. *Nanomedicine* 2013 Jul 25, DOI: 10.1016/j.nano.2013.07.008

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Rühle B, Davies M, Bein T, Bräuchle C. Fluorescence Microscopy Studies of Porous Silica Materials. *Z. Naturforsch.* 2013 Jul 2;68b:423 – 44.

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Blechinger J, Bauer AT, Torrano AA, Gorzelanny C, Bräuchle C, Schneider SW. Uptake Kinetics and Nanotoxicity of Silica Nanoparticles are Cell Type Dependent. *Small* 2013 Dec 9 2012;9(23):3970-80.

This publication won the cover picture of the issue

Mackowiak S, Bräuchle C. Study of Single Molecule Dynamics in Mesoporous Systems, Glasses and Living Cells, in: *Nonequilibrium Statistical Physics of Small Systems: Fluctuation relations and beyond* (Editors: Klages R, Just W, Jarzynski C). Wiley-VCH Weinheim 2013, 393-414.

Torrano AA, Blechinger J, Osseforth C, Argyo C, Reller A, Bein T, Michaelis J, Bräuchle C. A fast analysis method to quantify nanoparticle uptake on a single cell level. *Nanomedicine* 2013 Nov 2012;8(11):1815–28.

2012

Albertazzi L, Mickler F, Pavan GM, Salomone F, Bardi G, Panniello M, Amir E, Kang T, Killops K, Bräuchle C, Amir R, Hawker C. Enhanced bioactivity of internally functionalized cationic dendrimers with PEG cores. *Biomacromolecules* 2012 Dec 10;13:4089–97.

Sax G, Feil F, Schulze S, Jung C, Bräuchle C, Winter G. Release pathways of interferon α 2a molecules from lipid twin screw extrudates revealed by single molecule fluorescence microscopy. *Journal of Controlled Release* 2012 Sep 10;162:295–302.

Davies M, Wochnik A, Feil F, Jung C, Bräuchle C, Scheu C, Michaelis J. Synchronous Emission from Nanometric Silver Particles through Plasmonic Coupling on Silver Nanowires. *ACS Nano* 2012 Jul 24;6(7):6049–57.

Mickler FM, Möckl L, Ruthardt N, Ogris M, Wagner E, Bräuchle C. Tuning nanoparticle uptake: Live-cell imaging reveals two distinct endocytosis mechanisms mediated by natural and artificial EGFR targeting ligand. *Nano Lett.* 2012 Jul 11;12(7):3417–23.

Lebold T, Michaelis J, Bein T, Bräuchle C. Single Molecule Spectroscopy, in: *Characterization of Solid Materials and Heterogeneous Catalysts: From Structure to Surface Reactivity*, Vol. 1/2012 (Editors: Che M, Védrine JC). Wiley-VCH Verlag 2012, 585-607.

Schloßbauer A, Sauer AM, Cauda V, Schmidt A, Engelke H, Rothbauer U, Zolghadr K, Leonhardt H, Bräuchle C, Bein T. Cascaded Photoinduced Drug Delivery to Cells from Multifunctional Core-Shell Mesoporous Silica, *Advanced Healthcare Materials* 2012 May;1(3):316–20.

Rühle B, Davies M, Lebold T, Bräuchle C, Bein T. Highly Oriented Mesoporous Silica Channels Synthesized in Microgrooves and Visualized with Single Molecule Diffusion. ACS Nano 2012 Mar 27;6(3):1948–60.

Feil F, Cauda V, Bein T, Bräuchle C. Direct Visualization of Dye and Oligonucleotide Diffusion in Silica Filaments with Collinear Mesopores. Nanoletters 2012 Mar 14;12(3):1354–61.

Feil F, Naumov S, Michaelis J, Valiullin R, Enke D, Kärger J, Bräuchle C. Single-particle and ensemble diffusivities - Test of ergodicity. Angewandte Chemie 2012 Jan 27;124(5):1178-81. Angewandte Chemie Internat. Edition 2012 Jan 27:51(5) 1152-55.
This publication won the cover picture of the issue.

Lebold T, Schloßbauer A, Schneider K, Schermelleh L, Leonhardt H, Bein T, Bräuchle C. Controlling the mobility of oligonucleotides in the nanochannels of mesoporous silica. Advanced Functional Materials 2012 Jan 11;22(1):106-12.
This publication won the cover picture of the issue.

Physical Chemistry

Prof. Dr. rer. nat. Hubert Ebert

Born 1955 in Ellwangen/Baden Württemberg, study of physics at Ludwig-Maximilians-University, Diploma 1982 at LMU Munich, PhD degree 1986 at LMU Munich (NMR Untersuchungen zur elektronischen Struktur metallischer Systeme – Theorie und Experiment), 1986-87 Postdoctoral fellow at University of Bristol, UK, 1987-93 Zentrale Forschung und Entwicklung, Siemens Erlangen, Habilitation 1990 LMU Munich (Hyperfeinwechselwirkung in komplexen Systemen und Einflüsse relativistischer Effekte auf die magnetischen und optischen Eigenschaften von magnetischen Festkörpern), since 1993 C3-professor LMU Munich.

Research Topics

Theoretical investigations on:
hyperfine interaction in para- and ferromagnetic transition metal systems
magneto-optical properties of transition metal compounds and layered systems
magnetic X-ray dichroism
phase stability of transition metal compounds
transport properties of transition metal alloys
properties of heterogeneous ferromagnet/semiconductor systems
electronic structure of surfaces
properties of free and deposited transition metal clusters
photoemission of correlated solids

Honors, Awards, Memberships

Guest professor at the University of Osaka (2012)
Guest professor at the University of Uppsala (2013)
Deutsche Physikalische Gesellschaft.

Extramural Research Funding

Verbundprojekt Röntgenabsorptionsspektroskopie: Röntgenabsorptionsspektroskopie mit variabler Polarisation bei 30 mK. DESY 05K10WMA
Verbundprojekt: 3D-Vielkanal Spindel: Entwicklung eines Vielkanal Vektor-Spinpolarimeters für den Messplatz Phoexs bei BESSY II, Teilprojekt 2. DESY 05K13WMA

Spin Polarisation in Heusler alloy based spintronics systems probed by SPINHAXPES. DFG EB 154/20-1

Theoretische und experimentelle Erkundung des Phasenraums der Systeme Cr-Sb und Cr-Sb-Te. DFG EB 154/21-1

Theoretische und experimentelle Erkundung des Phasenraums der Systeme Cr-Sb und Cr-Sb-Te. DFG EB 154/21-2

Wechselspiel zwischen phononischen Eigenschaften und winkelaufgelöster Photoemission. DFG EB 154/23-1

Dynamical Mean-Field Approach with Predictive Power for Strongly Correlated Materials. DFG EB 154/24-1

Dynamical Mean-Field Approach with Predictive Power for Strongly Correlated Materials. DFG EB 154/24-2

Spin Caloric Transport (SpinCaT); Spin-dependent thermo-galvanic effects. DFG EB 154/25-1

SPP: Magnetically doped topological insulators: Surface states, Dimensionality and Defectiv Effects. DFG EB 154/26-1

SFB 689 Teilprojekt B3: Vielteilchenbeschreibung ferromagnetischer Halbleiter, Korrelationseffekte in elektrischen und magnetischen Eigenschaften.

SFB 689 Teilprojekt C8: Spin-Hall Effekt und inverser Spin-Hall-Effekt in metallischen Heterostrukturen.

MSNANO: A multiple scattering computing platform for (Nano) materials. GA-2012-317554

Publications – Scientific Papers

M. Ärrälä, J. Nieminen, J. Braun, H. Ebert and M. Lindroos. Photon energy dependence of circular dichroism of the Au(111) surface state. *Phys. Rev. B* **88**, 195413 (2013).

J. Braun, H. Ebert and J. Minár. Spintronics, volume 1 - Fundamentals and Theory, chapter Correlation and Chemical Disorder in Heusler Compounds: A Spectroscopical Study, Springer, Netherlands (2013).

J. Braun, J. Minár, S. Mankovsky, V. N. Strocov, N. B. Brookes, L. Plucinski, C. M. Schneider, C. S. Fadley and H. Ebert. Exploring the XPS limit in soft and hard x-ray angle-resolved photoemission using a temperature-dependent one-step theory. *Phys. Rev. B* **88**, 205409 (2013).

D. V. Fedorov, C. Herschbach, A. Johansson, S. Ostanin, I. Mertig, M. Gradhand, K. Chadova, D. Ködderitzsch and H. Ebert. Analysis of the giant spin Hall effect in Cu(Bi) alloys. *Phys. Rev. B* **88**, 085116 (2013).

J. Fujii, B. R. Salles, M. Sperl, S. Ueda, M. Kobata, K. Kobayashi, Y. Yamashita, P. Torelli, M. Utz, C. S. Fadley, A. X. Gray, J. Braun, H. Ebert, I. Di Marco, O. Eriksson, P. Thunström, G. H. Fecher, H. Stryhanyuk, E. Ikenaga, J. Minár, C. H. Back, G. van der Laan and G. Panaccione. Identifying the Electronic Character and Role of the Mn States in the Valence Band of (Ga,Mn)As. *Phys. Rev. Lett.* **111**, 097201 (2013).

- A. X. Gray, J. Minár, L. Plucinski, M. Huijben, A. Bostwick, E. Rotenberg, S. Yang, J. Braun, A. Winkelmann, G. Conti, D. Eiteneer, A. Rattanachata, A. A. Greer, J. Ciston, C. Ophus, G. Rijnders, D. H. A. Blank, D. Doennig, R. Pentcheva, J. B. Kortright, C. M. Schneider, H. Ebert and C. S. Fadley. Momentum-resolved electronic structure at a buried interface from soft X-ray standing-wave angle-resolved photoemission. *Europhys. Lett.* **104**, 17004 (2013).
- C. Herschbach, D. V. Fedorov, I. Mertig, M. Gradhand, K. Chadova, H. Ebert and D. Ködderitzsch. Insight into the skew-scattering mechanism of the spin Hall effect: Potential scattering versus spin-orbit scattering. *Phys. Rev. B* **88**, 205102 (2013).
- D. Ködderitzsch, K. Chadova, J. Minár and H. Ebert. Impact of finite temperatures and correlations on the anomalous Hall conductivity from *ab initio* theory. *New Journal of Physics* **15**, 053009 (2013).
- G. Kuhn, S. Mankovsky, H. Ebert, M. Regus and W. Bensch. Electronic structure and magnetic properties of CrSb₂ and FeSb₂ investigated via *ab initio* calculations. *Phys. Rev. B* **87**, 085113 (2013).
- D. Ködderitzsch, S. Mankovsky and H. Ebert. *Ab Initio* Calculation of the Gilbert Damping Parameter via Linear Response Formalism. *IEEE Transactions on Magnetism* **49**, 1041 (2013).
- J. Minár, J. Braun and H. Ebert. Correlation effects in magnetic materials: An *ab initio* investigation on electronic structure and spectroscopy. *J. Electron. Spectrosc. Relat. Phenom.* **189**, 129 (2013).
- J. Minár, J. Braun and H. Ebert. Recent developments in the theory of HARPES. *J. Electron. Spectrosc. Relat. Phenom.* **190**, 159 (2013).
- S. Mankovsky, D. Ködderitzsch, G. Woltersdorf and H. Ebert. First-principles calculation of the Gilbert damping parameter via the linear response formalism with application to magnetic transition metals and alloys. *Phys. Rev. B* **87**, 014430 (2013).
- S. Mankovsky, S. Polesya, H. Ebert, W. Bensch, O. Mathon, S. Pascarelli and J. Minár. Pressure-induced bcc to hcp transition in Fe: Magnetism-driven structure transformation. *Phys. Rev. B* **88**, 184108 (2013).
- S. Polesya, G. Kuhn, D. Benea, S. Mankovsky and H. Ebert. Electronic Structure and Magnetic Properties of Chromium Chalcogenides and Pnictides with NiAs Structure. *Zeitschrift für anorganische und allgemeine Chemie* **639**, 2826 (2013).
- O. Sipr, S. Bornemann, H. Ebert, S. Mankovsky, J. Vacká r and J. Minár. Co monolayers and adatoms on Pd(100), Pd(111), and Pd(110): Anisotropy of magnetic properties. *Phys. Rev. B* **88**, 064411 (2013).

I. Sergueev, L. Dubrovinsky, M. Ekholm, O. Y. Vekilova, A. I. Chumakov, M. Zajkac, V. Potapkin, I. Kantor, S. Bornemann, H. Ebert, S. I. Simak, I. A. Abrikosov and R. Ruffer. Hyperfine Splitting and Room-Temperature Ferromagnetism of Ni at Megabar Pressure. *Phys. Rev. Lett.* **111**, 157601 (2013).

M. R. Scholz, J. Sánchez-Barriga, J. Braun, D. Marchenko, A. Varykhalov, M. Lindroos, Y. J. Wang, H. Lin, A. Bansil, J. Minár, H. Ebert, A. Volykhov, L. V. Yashina and O. Rader. Reversal of the Circular Dichroism in Angle-Resolved Photoemission from Bi₂Te₃. *Phys. Rev. Lett.* **110**, 216801 (2013).

S. N. P. Wissing, C. Eibl, A. Zumbülte, A. B. Schmidt, J. Braun, J. Minár, H. Ebert and M. Donath. Rashba-type spin splitting at Au(111) beyond the Fermi level: the other part of the story. *New Journal of Physics* **15**, 105001 (2013).

S. Wimmer, D. Ködderitzsch, K. Chadova and H. Ebert. First-principles linear response description of the spin Nernst effect. *Phys. Rev. B* **88**, 201108 (2013).

A. Bendounan, J. Braun, J. Minár, S. Bornemann, R. Fasel, O. Gröning, Y. Fagot-Revurat, B. Kierren, D. Malterre, F. Sirotti and H. Ebert. Monitoring the formation of interface-confined mixture by photoelectron spectroscopy. *Phys. Rev. B* **85**, 245403 (2012).

C. Bordel, J. Juraszek, D. W. Cooke, C. Baldasseroni, S. Mankovsky, J. Minár, H. Ebert, S. Moyerman, E. E. Fullerton and F. Hellman. Fe Spin Reorientation across the Metamagnetic Transition in Strained FeRh Thin Films. *Phys. Rev. Lett.* **109**, 117201 (2012).

S. Bornemann, J. Minár, J. Braun, D. Ködderitzsch and H. Ebert. Ab-initio description of the magnetic shape anisotropy due to the Breit interaction. *Solid State Commun.* **152**, 85 (2012).

D. Benea, J. Minár, L. Chioncel, S. Mankovsky and H. Ebert. Magnetic Compton profiles of Fe and Ni corrected by dynamical electron correlations. *Phys. Rev. B* **85**, 085109 (2012).

J. Braun, J. Minár, H. Ebert, A. Chainani, J. Miyawaki, Y. Takata, M. Taguchi, M. Oura and S. Shin. Correlation effects, circular dichroism, and Fermi surfaces of bulk nickel from soft x-ray angle-resolved photoemission. *Phys. Rev. B* **85**, 165105 (2012).

S. Bornemann, O. Ššipr, S. Mankovsky, S. Polesya, J. B. Staunton, W. Wurth, H. Ebert and J. Minár, Trends in the magnetic properties of Fe, Co, and Ni clusters and monolayers on Ir(111), Pt(111), and Au(111). *Phys. Rev. B* **86**, 104436 (2012).

Electronic and magnetic trends in martensitically transforming Fe-Pd alloys
M. Gruner, P. Entel, J. Minár, S. Polesya, S. Mankovsky and H. Ebert
J. Magn. Magn. Materials **324**, 3524 (2012).

A. X. Gray, J. Minár, S. Ueda, P. R. Stone, Y. Yamashita, J. Fujii, J. Braun, L. Plucinski, C. M. Schneider, G. Panaccione, H. Ebert, O. D. Dubon, K. Kobayashi and C. S. Fadley. Bulk electronic structure of the diluted magnetic semiconductor $\text{Ga}_{1-x}\text{Mn}_x\text{As}$ through hard x-ray angle resolved photoemission. *Nature Materials* **11**, 957 (2012).

G. Kuhn, S. Polesya, S. Mankovsky, J. Minár, H. Ebert, M. Regus and W. Bensch. Magnetic properties of CrSb compounds with zinc-blende and wurtzite structures. *J. Phys.: Cond. Mat.* **24**, 306005 (2012).

S. Ouazi, S. Vlaic, S. Rusponi, G. Moulas, P. Bulushek, K. Halleux, S. Bornemann, S. Mankovsky, J. Minár, J. B. Staunton, H. Ebert and H. Brune. Atomic-scale engineering of magnetic anisotropy of nanostructures through interfaces and interlines. *Nature Communications* **3**, 1313 (2012).

S. Polesya, G. Kuhn, S. Mankovsky, H. Ebert, M. Regus and W. Bensch. Structural and magnetic properties of CrSb compounds: NiAs structure. *J. Phys.: Cond. Mat.* **24**, 036004 (2012).

M. Regus, G. Kuhn, S. Mankovsky, H. Ebert and W. Bensch. *Investigations of the crystallization mechanism of CrSb and CrSb₂ multilayered films using in-situ X-ray diffraction and in-situ X-ray reflectometry.* Investigations of the crystallization mechanism of CrSb and CrSb₂ multilayered films. *Journal of Solid State Chemistry* **196**, 100 (2012)

J. Sánchez-Barriga, J. Braun, J. Minár, I. Di Marco, A. Varykhalov, O. Rader, V. Boni, V. Bellini, F. Manghi, H. Ebert, M. I. Katsnelson, A. I. Lichtenstein, O. Eriksson, W. Eberhardt, H. A. Dürr and J. Fink. Effects of spin-dependent quasiparticle renormalization in Fe, Co, and Ni photoemission spectra: An experimental and theoretical study. *Phys. Rev. B* **85**, 205109 (2012).

M. Sperl, P. Torelli, F. Eigenmann, M. Soda, S. Polesya, M. Utz, D. Bougeard, H. Ebert, G. Panaccione and C. H. Back. Reorientation transition of the magnetic proximity polarization in Fe/(Ga,Mn)As bilayers. *Phys. Rev. B* **85**, 184428 (2012).

J.-P. Wüstenberg, R. Fetzner, M. Aeschlimann, M. Cinchetti, J. Minár, J. Braun, H. Ebert, T. Ishikawa, T. Uemura and M. Yamamoto. Surface spin polarization of the nonstoichiometric Heusler alloy Co_2MnSi . *Phys. Rev. B* **85**, 064407 (2012).

Other Activities

Co-founder and speaker of the ESF COST action “Modern Tools for Spectroscopy and Advanced Materials: a European Modelling Platform”.

Physical Chemistry

Prof. Dr. Dina Fattakhova-Rohlfing

Born in Kazan, Russia, 1985–1990 study of chemistry in Kazan State University, Russia, 1994 Ph. D. degree (C.sc.) in the group of Dr. V. Jouikov und Prof. Yu. Kargin in A. Arbuzov Institute of Organic and Physical Chemistry, Russian Academy of Science, Kazan, 1994–1997 research scientist in Kazan State University and scientific editor of the Encyclopedic institute (Russian Academy of Science), 1997-1998 and 2000–2003 research scientist in J. Heyrovsky Institute of Physical Chemistry and Electrochemistry, Prague, 1998–2000 Assistant professor and Senior Research Scientist in Kazan State University, 2004–2004 research fellow at ENSCPB Bordeaux, France, 2004–2006 research scientist in the Institute of Physical Chemistry and Electrochemistry, Leibniz Universität Hannover, since 2006 research scientist and habilitand in the group of Prof. T. Bein, Department of Chemistry, LMU, since 2012 professor for the Advanced Materials Science (AMS) Program, LMU.

Research Topics

Nanostructured materials for photovoltaic applications and electrochemical energy conversion and storage. Nanoparticles of functional semiconducting materials: synthesis and assembly. Nanoparticles and nanostructured electrode layers for electrochemical, electrocatalytic and bioelectrochemical applications. Electrochemistry, organic electrochemistry, solid state electrochemistry. Charge transfer and transport in nanocomposite materials, mechanism of electrochemical reactions.

Honors, Awards, Memberships

Nanosystems Initiative Munich (NIM), associate member

Center for NanoScience (CeNS) LMU, associate member eligible to vote

Research network "*Solar Technologies Go Hybrid*" (*SolTech*), regular member

International Society of Electrochemistry (ISE)

The Electrochemical Society (ECS)

Materials Research Society (MRS)

Gesellschaft Deutscher Chemiker (GDCh)

CeNS Publication award 2012 for the paper: J. M. Feckl, K. Fominykh, M. Döblinger, D. Fattakhova-Rohlfing, T. Bein, *Angew. Chem. Int. Ed.* 2012, 51, 7459–7463

Extramural Research Funding

Research network "*Environmentally Friendly Contributions of Nanotechnology towards Sustainable Energy Conversion* " (Bavarian Ministry for Environment and Consumer Protection) (together with Prof. T. Bein)

Research network „*Solar Technologies goes Hybrid*“ (*SolTech*) (Bavarian Ministry for Science, Research and Arts), KeyLab LMU Center materials for renewable energies

DFG research grant „*Novel transparent mesoporous oxide films with optimized properties for optoelectronic applications*“

Project based personal exchange program Croatia (DAAD) „*Ultrasmall metal oxide semiconductor nanoparticles for energy storage: synthesis and advanced characterization*“; Project based personal exchange program Czech Republic (DAAD) “*Photocatalytic nanocomposite materials prepared by a “building nanokit”*”

Project based personal exchange program Greece (DAAD) “*3D-Nanostructured electrodes and advanced interface engineering*”

Siemens/DAAD scholarship for PhD position (project co-supervisor)

SPP 1613 funded by DFG

Publications – Scientific Papers

B. Mandlmeier, N. K. Minar, J. M. Feckl, D. Fattakhova-Rohlfing, T. Bein. Tuning the crystallinity parameters in macroporous titania films. *J. Mater. Chem. A* 2013, DOI: 10.1039/c3ta13165c

G. Y. Margulis, B. Lim,; B. E. Hardin, E. L. Unger, J. H. Yum,; J. M. Feckl, D. Fattakhova-Rohlfing, T. Bein, M. Gratzel, A. Sellinger, M. D. McGehee. Highly soluble energy relay dyes for dye-sensitized solar cells. *Phys. Chem. Chem. Phys.*, 2013, 15, 11306-11312.

V. Skoromets, H. Němec, C. Kadlec, D. Fattakhova-Rohlfing, P. Kužel. Electric-field-tunable defect mode in one-dimensional photonic crystal operating in the terahertz range. *Appl. Phys. Lett.* 2013, 102, 241106

H. Němec, V. Zajac, I. Rychetský, D. Fattakhova-Rohlfing, B. Mandlmeier, T. Bein, Z. Mics, P. Kužel. Charge transport in TiO₂ films with complex percolation pathways investigated by time-resolved terahertz spectroscopy. *IEEE Trans. Terahertz Sci. Tech.* 2013, 3 (3), 1-12

V. Müller, F. Haase, J. Rathousky, D. Fattakhova-Rohlfing. Surface functionalization of mesoporous antimony doped tin oxide by metalorganic reaction. *Mater. Chem. Phys.* 2012, 137, 207-212

J. M. Feckl, K. Fominykh, M. Döblinger, D. Fattakhova-Rohlfing, T. Bein. Nanoscale porous framework of lithium titanate for ultrafast lithium insertion. *Angew. Chem. Int. Ed.* 2012, 51, 7459–7463

Y. Liu, G. Stefanic, J. Rathousky, O. Hayden, T. Bein, D. Fattakhova-Rohlfing. Assembly of mesoporous indium tin oxide electrodes from nano-hydroxide building blocks. *Chem. Sci.* 2012, 3 (7), 2367–2374

J. M. Szeifert, D. Fattakhova-Rohlfing, J. Rathousky, T. Bein. Multilayered high surface area “Brick and Mortar” mesoporous titania films as efficient anodes in dye-sensitized solar cells. *Chem. Mater.* 2012, 24 (4), 659–663

Physical Chemistry

Prof. Dr. rer. nat. Achim Hartschuh

Born in 1969 in Stuttgart, 1991-1993 study of physics at Univ. Tübingen, 1993-1996 study of physics at Univ. Stuttgart, 2001 PhD degree in the group of Prof. Dr. Hans-Christoph Wolf, Univ. Stuttgart, 2001-2002 Postdoctoral fellow in the group of Prof. Dr. Lukas Novotny at the Univ. of Rochester, USA, 2002-2005 Juniorprofessor at Univ. Siegen, 2005-2006 Juniorprofessor at Univ. Tübingen, since 2006 W2-Professor LMU München.

Research Topics

Development and application of novel optical methods for the characterization of single nanobjects at high spatial and temporal resolution.

Extramural Research Funding

Marie-Curie-Initial Training Network POCAONTAS
ERC Starting Grant NEWNANOSPEC

Publications – Scientific Papers

Nicolai Hartmann, Dawid Piatkowski, Richard Ciesielski, Sebastian Mackowski and Achim Hartschuh, "Radiation Channels Close to a Plasmonic Nanowire Visualized by Back Focal Plane Imaging", *ACS Nano* 7, 10257 (2013)

Nina Mauser and Achim Hartschuh, "Tip-enhanced near-field optical microscopy", *Chem. Soc. Rev.* 43, 1248 (2014)

Angela Wochnik, Matthias Handloser, Dajana Durach, Achim Hartschuh and Christina Scheu, "Increasing crystallinity for improved electrical conductivity of TiO₂ blocking layers", *ACS Applied Materials & Interfaces* 5, 5696 (2013)

Nikolaus Naredi-Rainer, Jens Prescher, Achim Hartschuh and Don Lamb "Confocal Microscopy", in *Fluorescence Microscopy: From Principles to Biological Applications*, Wiley-VCH, Chapter 5, (2013)

Padmnabh Rai, Nicolai Hartmann, Johann Berthelot, Juan Arocas, Gérard Colas des Francs, Achim Hartschuh, Alexandre Bouhelier, "Electrically generated surface plasmons by electroluminescence of individual carbon nanotube field effect transistor", *Phys. Rev. Lett.* 111, 026804 (2013)

Mirjam Dogru, Matthias Handloser, Florian Auras, Thomas Kunz, Dana Medina, Achim Hartschuh, Paul Knochel, Thomas Bein, "A Photoconductive Thienothiophene-Based Covalent Organic Framework Showing Charge Transfer Towards Included Fullerene", *Angew. Chem. Int. Ed.* 52, 1-6 (2013)

Markus E. Regler, Hubert J. Krenner, Alexander A. Green, Mark C, Hersam, Achim Wixforth and Achim Hartschuh, "Controlling exciton decay dynamics in semiconducting single-walled carbon nanotubes by surface acoustic waves", *Chem. Phys.* 413, 39 (2013)

Padmnabh Rai, Nicolai Hartmann, Johann Berthelot, Gérard Colas-des-Francis, Achim Hartschuh, and Alexandre Bouhelier, "In-plane remote photoluminescence excitation of carbon nanotube by propagating surface plasmon", *Optics Letters* 37, 4711 (2012)

Achim Hartschuh "Scanning Near-Field Optical Microscopy", Springer references: Encyclopedia of nanotechnology (2012)

Carsten Georgi, Miriam Böhmler, Huihong Qian, Lukas Novotny, Achim Hartschuh "Tip-Enhanced Near-Field Optical Microscopy of Carbon Nanotubes", *Raman Imaging, Springer Series in Optical Sciences* 168, 301 (2012)

Matthias Handloser, Ricky Dunbar, Andreas Wisnet, Philipp Altpeter, Christina Scheu, Lukas Schmidt-Mende, and Achim Hartschuh, "Influence of metallic and dielectric nanowire arrays on the photoluminescence properties of P3HT thin films", *Nanotechnology* 23, 305402 (2012)

Nina Rauhut, Michael Engel, Mathias Steiner, Ralph Krupke, Phaedon Avouris, and Achim Hartschuh, "Antenna-Enhanced Photocurrent Microscopy on Single-Walled Carbon Nanotubes at 30 nm Resolution", *ACS Nano* 6, 6416 (2012)

Nicolai Hartmann, Giovanni Piredda, Johann Berthelot, Gérard Colas des Francis, Alexandre Bouhelier, and Achim Hartschuh, "Launching Propagating Surface Plasmon Polaritons by a Single Carbon Nanotube Dipolar Emitter", *Nano Lett.* 12, 177 (2012)

Miriam Böhmler, Achim Hartschuh, "Tip-enhanced near-field optical microscopy of single quasi-1D nanostructures", *Chem. Phys. Chem.* 13, 927 (2012)

Physical Chemistry

Dr. rer. nat. Diemo Ködderitzsch

Born 1973 in Spremberg, 1993-1999 study of physics at Martin-Luther-Universität Halle-Wittenberg (MLU), 1999 Diploma at MLU, 2003 PhD at MLU (Electronic structure of transition-metal oxides within self-interaction free density-functional theory: bulk, surfaces and impurities), 2004 Postdoctoral fellow at Daresbury Laboratory, Warrington, UK), since 2005- PostDoc/Habilitand in the group of Prof. Dr. H. Ebert, LMU München.

Research Topics

Theoretical investigations on:

Electronic and magnetic structure of solids (particularly alloys)

Developments of methodologies in density-functional theory (relativistic DFT, optimized effective potential, exact-exchange)

Non-local correlations in the theory of alloys

Strongly correlated systems (LDA+ U , dynamical mean field theory, application to transition metal oxides)

Theory of charge-, spin-, and heat transport, spin-caloric effects

Kubo linear response theory

Spin-, anomalous- Hall and Nernst effects.

Memberships

Deutsche Physikalische Gesellschaft.

Extramural Research Funding

Magnetokristalline Anisotropie und orbitaler Magnetismus von Übergangsmetallmonoxiden im Festkörper, an Oberflächen und Grenzflächen, DFG KO 3832/1-1.

Spin Caloric Transport (SpinCaT); Spin-dependent thermo-galvanic effects. DFG EB 154/25-1

Univ. Regensburg Teilprojekt B3, Vielteilchenbeschreibung ferromagnetischer Halbleiter, Korrelationseffekte in elektrischen und magnetischen Eigenschaften. DFG, SFB 689.

Univ. Regensburg Teilprojekt C8; Spin-Hall Effekt und inverser Spin-Hall-Effekt in metallischen Heterostrukturen. DFG, SFB 689.

Publications – Scientific Papers

D. V. Fedorov, C. Herschbach, A. Johansson, S. Ostanin, I. Mertig, M. Gradhand, K. Chadova, D. Ködderitzsch and H. Ebert. Analysis of the giant spin Hall effect in Cu(Bi) alloys. *Phys. Rev. B* **88**, 085116 (2013).

C. Herschbach, D. V. Fedorov, I. Mertig, M. Gradhand, K. Chadova, H. Ebert and D. Ködderitzsch. Insight into the skew-scattering mechanism of the spin Hall effect: Potential scattering versus spin-orbit scattering. *Phys. Rev. B* **88**, 205102 (2013).

D. Ködderitzsch, K. Chadova, J. Minár and H. Ebert. Impact of finite temperatures and correlations on the anomalous Hall conductivity from *ab initio* theory. *New Journal of Physics* **15**, 053009 (2013).

D. Ködderitzsch, S. Mankovsky and H. Ebert. *Ab Initio* Calculation of the Gilbert Damping Parameter via Linear Response Formalism. *IEEE Transactions on Magnetism* **49**, 1041 (2013).

S. T. B. Goennenwein, C. Heiliger, and D. Ködderitzsch, Non-magnetic control of spin, *Physik Journal*, **52**, Juni (2013).

M. Gradhand, D. Ködderitzsch, Y. Mokrosusov, and Y. Otani, Spin-orbit driven transverse transport phenomena, *Physik Journal*, **60**, März (2013).

S. Mankovsky, D. Ködderitzsch, G. Woltersdorf and H. Ebert. First-principles calculation of the Gilbert damping parameter via the linear response formalism with application to magnetic transition metals and alloys. *Phys. Rev. B* **87**, 014430 (2013).

S. Wimmer, D. Ködderitzsch, K. Chadova and H. Ebert. First-principles linear response description of the spin Nernst effect. *Phys. Rev. B* **88**, 201108 (2013).

S. Bornemann, J. Minár, J. Braun, D. Ködderitzsch and H. Ebert. Ab-initio description of the magnetic shape anisotropy due to the Breit interaction. *Solid State Commun.* **152**, 85 (2012).

Physical Chemistry

Prof. Don C. Lamb, PhD

Born in 1965 in Milwaukee, WI, USA, 1983-1987 Studied Mathematics and Physics at Illinois Wesleyan University, Bloomington, IL, USA, 1987-1993 Ph.D. in Physics, University of Illinois at Urbana-Champaign, 1993 – 1995 Research Instructor, Vanderbilt University Medical Center, Nashville, TN, USA, joint appointments as Research Fellow, Department of Dermatology, Massachusetts General Hospital, Boston, MA USA and 1994-1995 as Research Fellow, Department of Dermatology, Harvard Medical School, Boston, MA, USA, 1995-1997 Alexander von Humboldt Fellowship, TU München 1997-2008 Visiting Research Assistant Professor, Department of Physics, University of Illinois, Urbana, IL, 2000-2003 Visiting Scientist, Universität Ulm, 2003-2007 Group Leader, LMU Munich, 2007-present Professor, LMU Munich.

Research Topics

Ultra-sensitive fluorescence methods, Advanced Microscopy Methods, Live-Cell Imaging, Fluorescence Fluctuation Spectroscopies, Single Molecule Studies, Single Particle Tracking, Single Virus Tracing, Protein function and dynamics, Chaperon Assisted Protein Folding, Actin Nucleation, Ligand-Receptor Interactions, Dynamics and Interaction of Transcription Factors, DNA Nanodevices.

Honors, Awards, Memberships

Moderator for the area of Biological Physics for arXiv.org
 Member of the Editorial Board *Frontiers*
 Member of the American Biophysical Society
 Member of the American Physical Society
 Member of the American Association for the Advancement of Science
 Member of the Deutsche Gesellschaft für Biophysik

Extramural Research Funding

Excellence Cluster *Center for Integrated Protein Sciences Munich* (DFG and the Federal Ministry of Education and Research)
 Excellence Cluster *Nanoscience Initiative Munich* (DFG and the Federal Ministry of Education and Research)
 Collaborative Research Center 646 (German Research Council) “Regulatory Networks in Genome Expression and Maintenance”
 Collaborative Research Center 1032 (German Research Council) “Nanoagents for the spatiotemporal control of molecular and cellular reactions”
 Collaborative Research Center 1035 (German Research Council) “Control of protein function by conformational switching”

Priority Research Program 1646 (German Research Council) “Actin Dynamics”
Instrumentation Grant (German Research Council) “Confocal Spinning Disc
Microscope”

Publications – Scientific Papers

2013

Crevenna AH*, Naredi-Rainer N, Semmrich C, Dzubiella J, Schleicher M, Bausch A, Lamb DC*, Wedlich-Söldner R*. Electrostatic control of actin polymerization. *J Biol Chem* 2013 **288**: 12102-12113.

Hendrix J*, Lamb DC*. Pulsed Interleaved Excitation: Principles and Applications. In *Fluorescence Fluctuation Spectroscopy*, Tetin SY (ed), *Meth Enzymol* 2013 **518**:205-243.

Sikor, M, Mapa, K, Mokranjac, D*, and Lamb, DC*. Real-time observation of the conformational dynamics of mitochondrial Hsp70 by spFRET. *EMBO J* 2013 **32**:1639-1649.

Dupont A*, Stirnagel K, Lindemann D, Lamb DC*. Tracking Image Correlation (TrIC): Combining single particle tracking and image correlation. *Biophys J* 2013 **104**: 2373-2382

Dupont, A, Gorelashvili, M, Schüller, V, Wehnekamp, F, Arcizet, D, Katayama, Y, Lamb, DC*, and Heinrich, D*. Three dimensional single-particle tracking in live-cells: news from the third dimension. *New J Phys* 2013 **15**: 075008.

Hendrix J*, Schrimpf W, Höller M, Lamb DC*. Pulsed interleaved excitation fluctuation imaging. *Biophys J* 2013 **105**:848-861.

Naredi-Rainer N, Prescher J, Hartschuh A, Lamb DC (2013) Confocal Microscopy. In *Fluorescence Microscopy*, Kubitscheck U, Peters R (eds). 2013, VCH-Wiley.

Hendrix J, Lamb DC Implementation and application of pulsed interleaved excitation for dual-color FCS and RICS. In *Fluorescence Spectroscopy and Microscopy: Methods and Protocols*, Engelborghs Y, Vasser T (eds). 2013, Springer

2012

Crevenna, AH, Naredi-Rainer, N, Schulz, JCF, Wedlich-Söldner, R, Lamb, DC, and Dzubiella, J. Salt and side chain specific signatures in the folding of α -helical peptides. *Biophys J* 2012 **102**:907-915.

Foo, YH, Naredi-Rainer, N, Lamb, DC, Ahmed, S, and Wohland, T. Factors affecting the quantification of biomolecular interactions by fluorescence cross-correlation spectroscopy. *Biophys J* 2012 **102**:1174-1183.

Kudryavtsev, V, Sikor, M, Kalinin, S, Seidel, CAM, and Lamb, DC* Combining MFD and PIE for accurate single-pair Förster Resonance Energy Transfer measurements. *ChemPhysChem* 2012 **13**:1060-1078.

Baumgärtel, V., Müller, B.*, and Lamb, D.C.* Quantitative live-cell imaging of human immunodeficiency virus (HIV-1) assembly. *Viruses* 2012 **4**:777-799.

Reuel NF, Dupont A, Thouvenin O, Lamb DC*, Strano MS* Three-dimensional tracking of carbon nanotubes within living cells. *ACS nano* 2012 **6**: 5420-5428.

Stirnagel, K, Dupont, A, Schupp, D, Kudryavtsev, V, Reh, J, Lamb, DC, and Lindemann, D Differential pH-dependent cellular uptake pathways among foamy viruses elucidated using dual-colored fluorescent particles. *Retrovirology* 2012 **9**:71

Bein, T*, Lamb, DC*, and Michaelis, J*. A man for single molecules. *ChemPhysChem* 2012 **13**:883-884.

Baumgärtel V, Ivanchenko S, Müller B, Lamb DC. Investigating the lifecycle of HIV with fluorescent proteins. *In* Fluorescence Proteins II: Application of Fluorescent Protein Technology. Springer Series Fluorescence, Ed. Jung, G., 2012 Springer-Verlag, Berlin Heidelberg, p. 280.

Other Activities

Organizer of the biannual European Workshop on Advanced Fluorescence Imaging and Dynamics.

Reviewer for various federal funding agencies from Austria (ASF), Great Britain (Wellcome Trust, BBSRC), France (National Research Agency), Germany (DFG), Israel (ISF), Italy (MIUR), Switzerland (SSF), Europe (HFSP) and USA (CGP, NSF, NIH).

Reviewer for several journals including the Nature Publishing Group Journals, Science, PLoS, Biophysical Journal, Small, Journal of Physical Chemistry, ChemPhysChem, Angewandte Chemie, ACS Nano, Interface, Macromolecular Chemical Physics, Europhysics Letters, European Biophysical Journal.

Physical Chemistry

Privat-Dozent Dr. rer. nat. Ján Minár

Born 1975 in Spisska Nova Ves/Slovakia, study of physical chemistry at Slovak Technical University Bratislava, Diploma 1998 at TU Bratislava, PhD degree 2003 at LMU Munich (Spin orbit coupling influenced spectroscopies and resonant X-ray magneto-optical properties of transition metal systems), Postdoctoral fellow 2002-03 at Forschungszentrum Jülich, Habilitation 2012 LMU Munich (*Correlation effects in transition metals and their alloys studied using the fully self-consistent KKR-based LSDA + DMFT scheme*), since 2012 Privat-Dozent LMU Munich.

Research Topics

Electronic structure of solids and low-dimensional systems
Electron Spectroscopy with main focus to magnetic dichroism and Photoemission
Free and Deposited Magnetic Clusters
Electronic correlations and magnetism
Electronic structure of correlated electron materials by means of LSDA+DMFT
Development of band structure methods

Honors, Awards, Memberships

Guest scientist at the University of Nijmegen, Netherlands (2007)
Römer Prize, in the category habitation, LMU, München, Germany (2011)
Guest scientist at the Paul Scherrer Institute, Switzerland (2012)
Guest professor at the Université de Cergy-Pontoise, Paris France (2014)
Deutsche Physikalische Gesellschaft, Slowakische Chemische Gesellschaft

Extramural Research Funding

Magnetokristalline Anisotropie und orbitaler Magnetismus von Übergangsmetalloxiden im Festkörper sowie an Ober- und Grenzflächen. DFG MI1327/1
Verbundprojekt: 3D-Vielkanal Spindet: Entwicklung eines Vielkanal Vektor-Spinpolarimeters für den Messplatz Phoexs bei BESSY II, Teilprojekt 2. DESY 05K13WMA
Dynamical Mean-Field Approach with Predictive Power for Strongly Correlated Materials. DFG EB 154/24-1
Dynamical Mean-Field Approach with Predictive Power for Strongly Correlated Materials. DFG EB 154/24-2

Principle Investigator of SPP: Magnetically doped topological insulators: Surface states, Dimensionality and Defective Effects. DFG EB 154/26-1
Member of MSNANO: A multiple scattering computing platform for (Nano) materials. GA-2012-317554

Publications – Scientific Papers

J. Braun, H. Ebert and J. Minár. Spintronics, volume 1 - Fundamentals and Theory, chapter Correlation and Chemical Disorder in Heusler Compounds: A Spectroscopical Study, Springer, Netherlands (2013).

J. Braun, J. Minár, S. Mankovsky, V. N. Strocov, N. B. Brookes, L. Plucinski, C. M. Schneider, C. S. Fadley and H. Ebert. Exploring the XPS limit in soft and hard x-ray angle-resolved photoemission using a temperature-dependent one-step theory. *Phys. Rev. B* **88**, 205409 (2013).

J. Fujii, B. R. Salles, M. Sperl, S. Ueda, M. Kobata, K. Kobayashi, Y. Yamashita, P. Torelli, M. Utz, C. S. Fadley, A. X. Gray, J. Braun, H. Ebert, I. Di Marco, O. Eriksson, P. Thunström, G. H. Fecher, H. Stryhanyuk, E. Ikenaga, J. Minár, C. H. Back, G. van der Laan and G. Panaccione. Identifying the Electronic Character and Role of the Mn States in the Valence Band of (Ga,Mn)As. *Phys. Rev. Lett.* **111**, 097201 (2013).

A. X. Gray, J. Minár, L. Plucinski, M. Huijben, A. Bostwick, E. Rotenberg, S. Yang, J. Braun, A. Winkelmann, G. Conti, D. Eiteneer, A. Rattanachata, A. A. Greer, J. Ciston, C. Ophus, G. Rijnders, D. H. A. Blank, D. Doennig, R. Pentcheva, J. B. Kortright, C. M. Schneider, H. Ebert and C. S. Fadley. Momentum-resolved electronic structure at a buried interface from soft X-ray standing-wave angle-resolved photoemission. *Europhys. Lett.* **104**, 17004 (2013).

D. Ködderitzsch, K. Chadova, J. Minár and H. Ebert. Impact of finite temperatures and correlations on the anomalous Hall conductivity from *ab initio* theory. *New Journal of Physics* **15**, 053009 (2013).

J. Minár, J. Braun and H. Ebert. Correlation effects in magnetic materials: An *ab initio* investigation on electronic structure and spectroscopy. *J. Electron. Spectrosc. Relat. Phenom.* **189**, 129 (2013).

J. Minár, J. Braun and H. Ebert. Recent developments in the theory of HARPES. *J. Electron. Spectrosc. Relat. Phenom.* **190**, 159 (2013).

S. Mankovsky, S. Polesya, H. Ebert, W. Bensch, O. Mathon, S. Pascarelli and J. Minár. Pressure-induced bcc to hcp transition in Fe: Magnetism-driven structure transformation. *Phys. Rev. B* **88**, 184108 (2013).

O. Sipr, S. Bornemann, H. Ebert, S. Mankovsky, J. Vackár and J. Minár. Co monolayers and adatoms on Pd(100), Pd(111), and Pd(110): Anisotropy of magnetic properties. *Phys. Rev. B* **88**, 064411 (2013).

M. R. Scholz, J. Sánchez-Barriga, J. Braun, D. Marchenko, A. Varykhalov, M. Lindroos, Y. J. Wang, H. Lin, A. Bansil, J. Minár, H. Ebert, A. Volykhov, L. V. Yashina and O. Rader. Reversal of the Circular Dichroism in Angle-Resolved Photoemission from Bi₂Te₃. *Phys. Rev. Lett.* **110**, 216801 (2013).

S. N. P. Wissing, C. Eibl, A. Zumbülte, A. B. Schmidt, J. Braun, J. Minár, H. Ebert and M. Donath. Rashba-type spin splitting at Au(111) beyond the Fermi level: the other part of the story. *New Journal of Physics* **15**, 105001 (2013).

A. Bendounan, J. Braun, J. Minár, S. Bornemann, R. Fasel, O. Gröning, Y. Fagot-Revurat, B. Kierren, D. Malterre, F. Sirotti and H. Ebert. Monitoring the formation of interface-confined mixture by photoelectron spectroscopy. *Phys. Rev. B* **85**, 245403 (2012).

C. Bordel, J. Juraszek, D. W. Cooke, C. Baldasseroni, S. Mankovsky, J. Minár, H. Ebert, S. Moyerman, E. E. Fullerton and F. Hellman. Fe Spin Reorientation across the Metamagnetic Transition in Strained FeRh Thin Films. *Phys. Rev. Lett.* **109**, 117201 (2012).

S. Bornemann, J. Minár, J. Braun, D. Ködderitzsch and H. Ebert. Ab-initio description of the magnetic shape anisotropy due to the Breit interaction. *Solid State Commun.* **152**, 85 (2012).

D. Benea, J. Minár, L. Chioncel, S. Mankovsky and H. Ebert. Magnetic Compton profiles of Fe and Ni corrected by dynamical electron correlations. *Phys. Rev. B* **85**, 085109 (2012).

J. Braun, J. Minár, H. Ebert, A. Chainani, J. Miyawaki, Y. Takata, M. Taguchi, M. Oura and S. Shin. Correlation effects, circular dichroism, and Fermi surfaces of bulk nickel from soft x-ray angle-resolved photoemission. *Phys. Rev. B* **85**, 165105 (2012).

S. Bornemann, O. Šipr, S. Mankovsky, S. Polesya, J. B. Staunton, W. Wurth, H. Ebert and J. Minár, Trends in the magnetic properties of Fe, Co, and Ni clusters and monolayers on Ir(111), Pt(111), and Au(111). *Phys. Rev. B* **86**, 104436 (2012).

Electronic and magnetic trends in martensitically transforming Fe-Pd alloys

M. Gruner, P. Entel, J. Minár, S. Polesya, S. Mankovsky and H. Ebert
J. Magn. Magn. Materials **324**, 3524 (2012).

A. X. Gray, J. Minár, S. Ueda, P. R. Stone, Y. Yamashita, J. Fujii, J. Braun, L. Plucinski, C. M. Schneider, G. Panaccione, H. Ebert, O. D. Dubon, K. Kobayashi and C. S. Fadley. Bulk electronic structure of the diluted magnetic semiconductor Ga_{1-x}Mn_xAs through hard x-ray angle resolved photoemission. *Nature Materials* **11**, 957 (2012).

G. Kuhn, S. Polesya, S. Mankovsky, J. Minár, H. Ebert, M. Regus and W. Bensch. Magnetic properties of CrSb compounds with zinc-blende and wurtzite structures. *J. Phys.: Cond. Mat.* **24**, 306005 (2012).

S. Ouazi, S. Vlaic, S. Rusponi, G. Moulas, P. Bulushek, K. Halleux, S. Bornemann, S. Mankovsky, J. Minár, J. B. Staunton, H. Ebert and H. Brune. Atomic-scale engineering of magnetic anisotropy of nanostructures through interfaces and interlines. *Nature Communications* **3**, 1313 (2012).

J. Sánchez-Barriga, J. Braun, J. Minár, I. Di Marco, A. Varykhalov, O. Rader, V. Boni, V. Bellini, F. Manghi, H. Ebert, M. I. Katsnelson, A. I. Lichtenstein, O. Eriksson, W. Eberhardt, H. A. Dürr and J. Fink. Effects of spin-dependent quasiparticle renormalization in Fe, Co, and Ni photoemission spectra: An experimental and theoretical study. *Phys. Rev. B* **85**, 205109 (2012).

M. Sperl, P. Torelli, F. Eigenmann, M. Soda, S. Polesya, M. Utz, D. Bougeard, H. Ebert, G. Panaccione and C. H. Back. Reorientation transition of the magnetic proximity polarization in Fe/(Ga,Mn)As bilayers. *Phys. Rev. B* **85**, 184428 (2012).

J.-P. Wüstenberg, R. Fetzner, M. Aeschlimann, M. Cinchetti, J. Minár, J. Braun, H. Ebert, T. Ishikawa, T. Uemura and M. Yamamoto. Surface spin polarization of the nonstoichiometric Heusler alloy Co_2MnSi . *Phys. Rev. B* **85**, 064407 (2012).

Theoretical Chemistry

Prof. Dr. rer. nat. Christian Ochsenfeld

Born 1968 in Karlsruhe/Baden-Württemberg, 1986-1991 study of chemistry at Univ. Karlsruhe, 1994 PhD thesis in the group of Prof. Dr. Reinhart Ahlrichs, Univ. Karlsruhe, 1995-1998 Postdoctoral research at UC Berkeley, USA in the group of Prof. Dr. Martin Head-Gordon, 1998-2000 Liebig fellowship at Univ. Mainz, 2000-2002 Leader of an Emmy Noether research group at Univ. Mainz, two offers for professor positions at the Universities Essen and Tübingen, 2002-2010 professor of Theoretical Chemistry at Univ. Tübingen, five offers for professor/chair positions at the Universities of Vienna (Austria), Berlin (FUB), Munich (LMU), Uppsala (Löwdin chair, Sweden), and Konstanz, since 2010 W3 professor of Theoretical Chemistry at LMU Munich.

Research Topics

Quantum Chemistry (method developments and study of molecular systems).

Development and application of linear scaling methods: Ab initio methods for large molecules with 1000 and more atoms using Hartree-Fock (HF), Density-Functional Theory (DFT), and Moller-Plesset Perturbation Theory (MP2).

Currently largest MP2 calculation: DNA repair system with 2025 atoms and 20 371 basisfunctions.

Linear-scaling symmetry-adapted perturbation theory for the direct calculation of intermolecular interaction energies.

Computation of molecular response properties for large systems with 1000 atoms: e.g., NMR chemical shifts, dynamic polarizabilities, hyperpolarizabilities, ...

Distance-including integral estimates for transformed and untransformed two-electron integrals (QQR estimates).

Combination of linear-scaling methods with MM approaches (QM/MM).

Honors, Awards, Memberships

Mulliken Lecture 2012 at the University of Georgia, USA

Speaker of Arbeitsgemeinschaft Theoretische Chemie

Member of the Hochschulrat at LMU Munich

Member of Senate at LMU Munich

Member of ProcessNet taskforce "kinetics and reaction mechanism"

Member of German Chemical Society

Member of American Chemical Society

Member of German Bunsen-Society

Member of Munich Chemical Society

Extramural Research Funding

Collaborative Research Center SFB 749 (DFG) “Theoretical treatment of the dynamics of molecular transformations.”

Excellence Cluster *Center for Integrated Protein Sciences Munich* (DFG and the Federal Ministry of Education and Research) – EXC 114 (CIPSM).

Volkswagen Foundation, “Linear Scaling QM/MM approaches for the simulation of dynamic effects in complex biomolecular systems”.

Funding of Deutsche Forschungsgesellschaft, (DFG) “Development of linear-scaling methods for calculating energy gradients and NMR chemical shifts at the second-order Møller-Plesset perturbation level”.

Fellowships from Alexander von Humboldt Foundation, Danish Carlsberg research foundation, and DFG for various postdocs.

Publications – Scientific Papers

C.V. Sumowski, M. Hanni, S. Schweizer, and C. Ochsenfeld, Sensivity of ab-initio vs. empirical methods in computing structural effects on NMR chemical shifts for the example of peptides, *J.Chem.Theory Comput.* (2013), doi:10.1021/ct400713t.

S. A. Maurer, M. Beer, D. S. Lambrecht, and C. Ochsenfeld, Linear-Scaling Symmetry-Adapted Perturbation Theory with Scaled Dispersion, *J. Chem. Phys.* **139**, 184104 (2013).

S. Schiesser, T. Pfaffeneder, K. Sadeghian, B. Hackner, B. Steigenberger, A.S. Schröder, J. Steinbacher, G. Kashiwazaki, G. Höfner, K.T. Wanner, C. Ochsenfeld, and T. Carell, Deamination, Oxidation, and C-C Bond Cleavage Reactivity of 5-Hydroxymethylcytosine, 5-Formylcytosine, and 5-Carboxycytosine, *J. Am. Chem. Soc.* **135**, 14593 (2013).

S. Dutt, C. Wilch, T. Gersthagen, P. Talibersky, K. Bravo-Rodriguez, M. Hanni, E. Sanchez-Garcia, C. Ochsenfeld, F.-G. Klärner, and T. Schrader, Molecular Tweezers with Varying Anions - A Comparative Study, *J. Org. Chem.* **78**, 6721 (2013).

D. Flaig and C. Ochsenfeld, An extrapolation method for the efficient calculation of molecular response properties within Born-Oppenheimer molecular dynamics, *Phys. Chem. Chem. Phys.* **15**, 9392 (2013).

M. Maurer and C. Ochsenfeld, A linear- and sublinear-scaling method for calculating NMR-shieldings in atomic orbital-based second-order Møller-Plesset perturbation theory, *J. Chem. Phys.* **138**, 174104 (2013).

J. Kussmann and C. Ochsenfeld, Pre-Selective Screening for Matrix Elements in Linear-Scaling Exact Exchange Calculations, *J. Chem. Phys.* **138**, 134114 (2013).

S. A. Maurer, D. S. Lambrecht, J. Kussmann, and C. Ochsenfeld, Efficient distance-including integral screening in linear-scaling Møller-Plesset perturbation theory, *J. Chem. Phys.* **138**, 014101 (2013).

J. Kussmann, M. Beer, and C. Ochsenfeld, Linear-Scaling Self-Consistent Field Methods for Large Molecules, *WIREs Comput Mol Sci* **3**, 614 (2013):

D. Flaig, M. Beer, and C. Ochsenfeld, Convergence of Electronic Structure with the Size of the QM region: Example of QM/MM NMR Shieldings, *J. Chem. Theory Comput.* **8**, 2260 (2012).

S. A. Maurer, D. S. Lambrecht, D. Flaig, and C. Ochsenfeld, Distance-Dependent Schwarz Based Integral Estimates for Two-Electron Integrals - Reliable Tightness vs. Rigorous Upper Bounds, *J. Chem. Phys.* **136**, 144107 (2012).

Other Activities

Grant reviewer and/or panel member of the European Research Council, DFG, Norwegian Research Council, Vertrauensdozent of the Studienstiftung des Deutschen Volkes, Vertrauensdozent of the Max Weber Stiftung; Reviewer for *Angewandte Chemie*, *Biopolymers*, *Chemical Physics*, *Chemical Physics Letters*, *Chemical Reviews*, *Chemical Science*, *Chemistry - A European Journal*, *ChemPhysChem*, *Computation*, *Computational Molecular Science*, *International Journal of Quantum Chemistry*, *Journal of Chemical Physics*, *Journal of Chemical Theory & Computation*, *Journal of Collection of the Czechoslovak Chemical Communications*, *Journal of Computational Chemistry*, *Journal of Computational Physics*, *Journal of Magnetic Resonance*, *Journal of Physical Chemistry*, *Journal of Physical Chemistry Letters*, *Journal of Structural Biology*, *Journal of the American Chemical Society*, *Molecular Physics*, *Molecules*, *Phys. Chem. Chem. Phys.*, *Physica B: Physics of Condensed Matter*, *Proc. Natl. Acad. Sci.*, *Theoretical Chemistry Accounts*, *Zeitschrift für Physik D: Atoms, Molecules and Clusters*.

Physical Chemistry

Prof. Dr. rer. nat. Christina Scheu

Born 1965 in Limburg/Lahn, 1986-1993 study of physics at the Technische Hochschule Darmstadt, 1996 PhD degree in material science in the group of Prof. Dr. Manfred Rühle, Max-Planck-Institute (MPI) for Metals Research in Stuttgart and at the University of Stuttgart, 1996-1998 Postdoctoral Minerva fellow at the Technion, Israel Institute of Technology, Department of Materials Engineering, Haifa, Israel, 1999-2003 Researcher at the MPI for Metals Research, 2003-2005 Group leader at the Materialprüfungsanstalt of the University of Stuttgart, 2005-2008 Group leader at the Department Metallurgy & Materials Testing, Montanuniversität Leoben, Austria, since 2008 W2-full professor at the LMU Munich, since April 2009 Mentor of Faculty.

Research Topics

Structural and chemical analysis of materials with high spatial resolution & correlation to properties; exploring chemistry, bonding and atomic and electronic structure of interfaces & nanostructures; transmission electron microscopy (TEM): high resolution & in-situ TEM methods, electron energy loss spectroscopy, electron energy-loss near-edge structure.

Honors, Awards, Memberships

Member of the Deutsche Physikalische Gesellschaft (DPG)
Member of the Deutsche Gesellschaft für Elektronenmikroskopie (DGE)
Member of the Deutscher Hochschulverband (DHV)
Member of the Center for NanoScience (CeNS)
Advisory Member of the Scientific Board of CeNS

Extramural Research Funding

European Union coordination action project “MACAN”
Excellence Cluster “*Nanosystems Initiative Munich (NIM)*” (DFG)
Collaborative Research Project “*Identification and overcoming of loss mechanisms in nanostructured hybrid solar cells- pathways towards more efficient devices*“ (DFG)
Collaborative Research Project “*Investigation of the nano- and microstructure of the coccoliths of the algae *Emiliana huxleyi**“ (DFG)
Collaborative Research Project within the SPP 1613 “*Nanostructured Hierarchical Oxide Photoelectrodes for Photoelectro-chemical Water-Splitting*“ (DFG)
Collaborative Research Project “*Covalent vs non-covalent dendrimer coating of Adenovirus: Implications on ultrastructure and transgene expression*“ (CeNS)
Research Project “*Development and degradation analysis of new HTPEM fuel cell components*” (BMW/ZIM)

Publications – Scientific Papers

2013

Virdi KS, Kauffmann Y, Ziegler C, Ganter P, Lotsch BV, Kaplan WD, Blaha P, Scheu C, Electronic structure of $\text{KCa}_2\text{Nb}_3\text{O}_{10}$ as envisaged by density functional theory and valence electron energy loss spectroscopy, *Phys Rev B* 2013; 87:115108:

Wochnik AS, Handloser M, Durach D, Hartschuh A, Scheu C, Increasing crystallinity for improved electrical conductivity of TiO_2 blocking layers, *ACS Appl Mater Interfaces* 2013, 5 (12): 5696.

McDermott E, Wirnhier E, Schnick W, Virdi KS, Scheu C, Kauffmann Y, Kaplan WD, Kurmaev EZ, Moewes A, Band gap reduction in poly(triazine imide) – a non-metallic photocatalyst, *J Phys Chem C* 2013, 117: 8806.

Vetter A, Virdi KS, Espenlaub S, Rödl W, Wagner E, Holm PS, Scheu C, Kreppel F, Spitzweg C, Ogris M, Adenoviral vectors coated with PAMAM dendrimer conjugates allow CAR independent virus uptake and targeting to the EGF receptor, *Mol Pharm* 2013, 10 (2): 606.

Rawolle M, Sarkar K, Niedermeier MA, Schindler M, Lellig P, Gutmann JS, Moulin JF, Haese-Seiller M, Wochnik AS, Scheu C, Müller-Buschbaum P, Infiltration of polymer hole-conductor into mesoporous titania structures for solid-state dye-sensitized solar cells, *ACS Appl Mater Interfaces* 2013, 5(3): 719.

Venkatesan S, Madsen MH, Schmid H, Krogstrup P, Johnson E, Scheu C, Direct observation of interface and nanoscale compositional modulation in ternary III-As heterostructure nanowires, *Appl Phys Lett* 2013, 103: 063106.

Wochnik AS, Frank A, Heinzl C, Häusler J, Schneider J, Hoffmann R, Matich S, Scheu C, Insight into the core-shell structures of Cu-In-S microspheres *Solid State Sci* 2013, 26: 23.

Parui S, Klandermans PS, Venkatesan S, Scheu C, Banerjee T, Hot electron attenuation of direct and scattered carriers across an epitaxial Schottky interface, *J Phys Condens Matter* 2013, 25(44): 445005.

Perchthaler M, Ossiander T, Juhart V, Mitzel J, Heinzl C, Scheu C, Hacker V, Tungsten materials as durable catalyst supports for fuel cell electrodes, *J Power Sources* 2013, 243: 472.

Ziegler C, Werner S, Bugnet M, Woersching M, Duppel V, Botton GA, Scheu C, Lotsch BV, Artificial solids by design: assembly and electron microscopy study of nanosheet-derived heterostructures, *Chem Mater* 2013, 25(24), 4892.

2012

Wochnik AS, Heinzl C, Auras F, Bein T, Scheu C, Synthesis and Characterization of CuInS₂ Thin Film Structures, *J Mat Sci.* 2012, 47(4): 1669.

Junggeburth SC, Schwinghammer K, Viridi KS, Scheu C, Lotsch BV, Towards Mesostructured Zinc Imidazolate Frameworks, *Chem A Eur J.* 2012, 18(7): 2143.

Abdellah A, Viridi KS, Meier R, Döblinger M, Müller-Buschbaum P, Scheu C, Lugli P, Scarpa G, Successive Spray Deposition of P3HT/PCBM Organic Photoactive Layers: Material Composition and Device Characteristics, *Adv. Func. Mat.* 2012, 22(19): 4078.

Wisnet A, Thomann M, Weickert J, Schmidt-Mende L, Scheu C, Nanoscale investigation on large crystallites in TiO₂ nanotube arrays and implications for high-quality hybrid photodiodes, *J Mat Sci.* 2012, 47(17): 6459.

Davies M, Wochnik AS, Feil F, Jung C, Bräuchle C, Scheu C, Michaelis J, Synchronous emission from nanometric silver particles through plasmonic coupling on silver nano-wires, *ACS Nano* 2012, 6(7): 6049.

Sedlmaier SJ, Dennenwaldt T, Scheu C, Schnick W, Template-free inorganic synthesis of silica-based nanotubes and their self-assembly to mesocrystals, *J Mat Chem.* 2012, 22: 15511.

Handloser M, Dunbar RB, Wisnet A, Altpeter P, Scheu C, Schmidt-Mende L, Hartschuh A, Influence of metallic and dielectric nanowire arrays on the photoluminescence properties of P3HT thin films, *Nanotechnology* 2012, 23(30): 305402.

Scheu C, Kaplan WK, Introduction to Scanning electron microscopy, Book chapter in: *In-situ Electron Microscopy: Applications in Physics, Chemistry and Materials Science*, editors: G. Dehm, J. Howe, J. Zweck, WILEY-VCH ISBN 2012, 3- 37.

Madsen MH, Krogstrup P, Johnson E, Venkatesan S, Mühlbauer E, Scheu C, Sørensen CB, Nygård J, Experimental Determination of Adatom Diffusion Lengths for Growth of InAs Nanowires, *J Cryst Growth.* 2012, 364: 16.

Physical Chemistry

Prof. Dr. rer. nat. Regina de Vivie-Riedle

Regina de Vivie-Riedle was born 1958 in Wuppertal, Germany. She graduated in chemistry from the Friedrich-Wilhelm-Universität Bonn, Germany, in 1987. In 1997, she did her Habilitation in Theoretical Chemistry at the Freie Universität Berlin. She did two postdocs, one at the Max Planck Institute of Quantum Optics (MPQ) in Garching and one at the Joint Institute for Laboratory Astrophysics (JILA) in Boulder. From 1997 to 2002 she was a C3 professor at the MPQ. Since 2003, she has been the leader of the theoretical femtoscience group at the Ludwig-Maximilians-Universität München, since November 2013 Dean of Studies.

Research Topics

Femtochemistry: Ultrafast uni and bimolecular reactions in chemistry and biology studied by quantum dynamics (QD) and on-the-fly dynamics. Optimal Control Theory: Design of optimal light fields to control chemical reactions and molecular processes for molecular electronics and quantum information. Electron dynamics: Steering of electron motion to control chemical reactions. Method development: efficient propagation schemes for reactive quantum dynamics in large molecules, QD/MD algorithms for condensed phase simulations.

Honors, Awards, Memberships

Member of the German Physical Society
Member of the German Bunsen Society
Member of the Association of the Theoretical Chemistry
Member of the American Physical Society

Extramural Research Funding

Excellence Cluster *Munich Centre for Advanced Photonics* (DFG and the Federal Ministry of Education and Research)
Collaborative Research Center 749 (German Research Council) “Dynamics and intermediates of molecular transformations”

Publications – Scientific Papers

2013

E. Wells, C. E. Rallis, M. Zohrabi, R. Siemering, B. Jochim, P. R. Andrews, U. Ablikim, B. Gaire, S. De, K. D. Carnes, B. Bergues, R. de Vivie-Riedle, M. F. Kling, and I. Ben-Itzhak, Adaptive strong-field control of chemical dynamics guided by three-dimensional momentum imaging, *Nat. Commun.* 4, article number: 2895 (2013).

S. Thallmair, B. P. Fingerhut, and R. de Vivie-Riedle, Ground and excited state surfaces for the photochemical bond cleavage in phenylmethyl-phenylphosphonium ions, *J. Phys. Chem. A* 117 (2013), 10626-10633.

M. Vrabel, P. Kölle, K. M. Brunner, M. J. Gattner, V. López-Carrillo, R. de Vivie-Riedle, and T. Carell, Norbornenes in inverse electron-demand Diels-Alder reactions, *Chem. Eur. J.* 19 (2013), 13309-13312.

J. Ammer, C. Nolte, K. Karaghiosoff, S. Thallmair, P. Mayer, R. de Vivie-Riedle, and H. Mayr, Ion-pairing of phosphonium salts in solution: C-H \cdots halogen and C-H \cdots π hydrogen bonds, *Chem. Eur. J.* 19 (2013), 14612-14630.

M. Kling, P. von den Hoff, I. Znakovskaya, and R. de Vivie-Riedle, (Sub-) femtosecond control of molecular reactions via tailoring the electric field of light, *Phys. Chem. Chem. Phys.* 15 (2013), 9448-9467.

H. Braun, P. von den Hoff, T. Bayer, R. Siemering, R. de Vivie-Riedle, M. Wollenhaupt, and T. Baumert, Efficient attosecond control of electron dynamics in molecules, *Ultrafast Phenomena XVIII*, M. Chergui, S. Cundiff, A. Taylor, R. de Vivie-Riedle, K. Yamanouchi (Eds.), *EPJ Web of Conferences* 41 (2013), 02026.

M. Kowalewski, S. Kahra, G. Leschhorn, T. Schätz, and R. de Vivie-Riedle, Femtosecond pump-probe spectroscopy for single trapped molecular ions *Ultrafast Phenomena XVIII*, M. Chergui, S. Cundiff, A. Taylor, R. de Vivie-Riedle, K. Yamanouchi (Eds.), *EPJ Web of Conferences* 41 (2013), 02028.

C. Sailer, N. Krebs, B. Fingerhut, R. de Vivie-Riedle, and E. Riedle, Wavepacket splitting in the first 100 fs determines the products from the bond cleavage of diphenylmethylchloride, *Ultrafast Phenomena XVIII*, M. Chergui, S. Cundiff, A. Taylor, R. de Vivie-Riedle, K. Yamanouchi (Eds.), *EPJ Web of Conferences* 41 (2013), 05042.

S. Thallmair, M. Kowalewski, B. P. Fingerhut, C. F. Sailer, and R. de Vivie-Riedle, Molecular wave packet dynamics decelerated by solvent environment: A theoretical approach, *Ultrafast Phenomena XVIII*, M. Chergui, S. Cundiff, A. Taylor, R. de Vivie-Riedle, K. Yamanouchi (Eds.), *EPJ Web of Conferences* 41 (2013), 05043.

W. Zinth, B. P. Fingerhut, T. T. Herzog, G. R. Ryseck, K. Haiser, F. F. Graupner, K. Heil, P. Gilch, W. J. Schreier, T. Carell, and R. de Vivie-Riedle, Ultrafast spectroscopy of UV-induced DNA-lesions - on the search for strategies which keep DNA alive, *Ultrafast Phenomena XVIII*, M. Chergui, S. Cundiff, A. Taylor, R. de Vivie-Riedle, K. Yamouchi (Eds.), EPJ Web of Conferences 41 (2013), 07005.

T. Bayer, H. Braun, C. Sarpe, R. Siemering, P. von den Hoff, R. de Vivie-Riedle, T. Baumert, and M. Wollenhaupt, Charge oscillation controlled molecular excitation, *Phys. Rev. Lett.* 110 (2013), 123003.

C. F. Sailer, S. Thallmair, B. P. Fingerhut, C. Nolte, J. Ammer, H. Mayr, I. Pugliesi, R. de Vivie-Riedle, and E. Riedle, A comprehensive microscopic picture of the benzhydryl radical and cation photogeneration and interconversion through electron transfer, *Chem. Phys. Chem.* 14 (2013), 1423-1437.

2012

A. Nenov, W. J. Schreier, F. Koller, M. Braun, R. de Vivie-Riedle, W. Zinth, and I. Pugliesi, Molecular model of the ring-opening and ring-closure reaction of a fluorinated indolylfulgide, *J. Phys. Chem. A* 116 (2012), 10518-10528.

A. Nenov and R. de Vivie-Riedle, Conical intersection seams in polyenes derived from their chemical composition, *J. Chem. Phys.*, 137 (2012), 074101.

P. von den Hoff, S. Thallmair, M. Kowalewski, R. Siemering, and R. de Vivie-Riedle, Optimal control theory – closing the gap between theory and experiment, *Phys. Chem. Chem. Phys.* 14 (2012), 14460-14485.

B. P. Fingerhut, T. T. Herzog, G. Ryseck, K. Haiser, F. F. Graupner, K. Heil, P. Gilch, W. J. Schreier, T. Carell, R. de Vivie-Riedle, and W. Zinth, Dynamics of ultraviolet-induced DNA lesions: Dewar formation guided by pre-tension induced by the backbone, *New J. Phys.* 14 (2012), 065006.

B. P. Fingerhut, S. Oesterling, K. Haiser, K. Heil, A. Glas, W. J. Schreier, W. Zinth, T. Carell, and R. de Vivie-Riedle, ONIOM approach for non-adiabatic on-the-fly molecular dynamics demonstrated for the backbone controlled Dewar valence isomerization, *J. Chem. Phys.* 136 (2012), 204307.

B. P. Fingerhut, K. Heil, E. Kaya, S. Oesterling, R. de Vivie-Riedle, and T. Carell, Mechanism of UV-induced Dewar lesions repair catalysed by DNA (6-4) Photolyase, *Chem. Sci.* 3 (2012), 1794-1797.

B. P. Fingerhut, C. F. Sailer, J. Ammer, E. Riedle, and R. de Vivie-Riedle, Build-up and Decay of the Optical Absorption in the Ultrafast Photo-Generation and Reaction of Benzhydryl Cations in Solution, *J. Phys. Chem. A* 116 (2012), 11064-11074.

S. Kahra, G. Leschhorn, M. Kowalewski, A. Schiffrin, E. Bothschafter, W. Fuß, R. de Vivie-Riedle, R. Ernstorfer, F. Krausz, R. Kienberger, T. Schaetz, Controlled delivery of single molecules into ultra-short laser pulses: a molecular conveyor belt, *Nature Physics* 8 (2012), 238-242.

I. Znakovskaya, P. von den Hoff, G. Marcus, S. Zherebtsov, B. Bergues, X. Gu, Y. Deng, M.J.J. Vrakking, R. Kienberger, F. Krausz, R. de Vivie-Riedle and M.F. Kling, Sub-cycle controlled charge-directed reactivity with few-cycle mid-infrared pulses, *Phys. Rev. Lett.* 108 (2012), 063002.

Other Activities

Deputy speaker of the CRC 749. Program Chair of the International Conference on Ultrafast Phenomena in Lausanne, Swiss, Chair of the International Conference on Ultrafast Phenomena in Okinawa, Japan. Panel member of the National Centre of Competence in Research MUST (Molecular Ultrafast Science and Technology).

Physical Chemistry

Prof. Dr. rer. nat. Joost Wintterlin

Born 1959 in Frankfurt/Main. Studies of chemistry at the Ludwig-Maximilians-Universität, Munich. 1985 Diplom in Chemistry. 1989 PhD at the Fritz-Haber-Institut (Max Planck Society), Berlin. 1991/92 Postdoctoral fellowship at the IBM T. J. Watson Research Center, Yorktown Heights, NY. 1998 Habilitation at the Fritz-Haber-Institut (Max Planck Society) and at the Humboldt-Universität, Berlin. Since 2002 professor (C3) for Physical Chemistry at the Ludwig-Maximilians-Universität, Munich.

Research Topics

Surface reactions on the atomic scale. Development of STM techniques for elevated temperatures, for high pressures, and for video speed to resolve time-dependent processes. Kinetics and dynamics of surface processes from atomic events, such as adsorption of particles from the gas phase, dissociation of molecules, surface diffusion and reactions between adsorbed particles. STM of heterogeneous catalysis under close-to-industrial conditions, such as for the Ag-catalyzed synthesis of ethylene epoxide. Epitaxial graphene on metal surfaces. Synthesis of graphene by CVD on metal surfaces, nucleation and growth, structure, and electronic properties of epitaxial graphene.

Memberships

Deutsche Physikalische Gesellschaft (DPG), American Vacuum Society (AVS), Deutsche Bunsengesellschaft.

Extramural Research Funding

A metal route to graphene synthesis for electronic devices. DFG WI 1003/7-1.
A metal route to graphene synthesis for electronic devices. DFG WI 1003/7-2.

Publications – Scientific Papers

"Scalable synthesis of graphene on single crystal Ir(111) films", P. Zeller, S. Dänhardt, S. Gsell, M. Schreck, and J. Wintterlin, *Surf. Sci.* **606**, 1475 (2012).

"Detection and quantification of steady-state ethylene oxide formation over an Ag(111) single crystal", S. Böcklein, S. Günther, R. Reichelt, R. Wyrwich, M. Joas, C. Hettstedt, M. Ehrensperger, J. Sicklinger, J. Wintterlin, *J. Catal.* **299**, 129 (2013).

"High-temperature scanning tunneling microscopy study of the ordering transition of an amorphous carbon layer into graphene on ruthenium(0001)", S. Günther, S. Dänhardt, M. Ehrensperger, P. Zeller, S. Schmitt, and J. Wintterlin, *ACS Nano* **7**, 154 (2013).

"Scanning tunneling microscopy of a silver surface during catalytic formation of ethylene oxide" S. Böcklein, S. Günther, J. Wintterlin, *Angew. Chem.* **125**, 5623, 2013, *Angew. Chem. Int. Ed.* **52**, 5518 (2013).

"Locating catalytically active oxygen on Ag(111) - a spectromicroscopy study", S. Günther, S. Böcklein, J. Wintterlin, M. A. Niño, T. O. Menteş, A. Locatelli, *ChemCatChem.* **5**, 3342 (2013).

"Locating catalytically active oxygen on Ag(111) by spectromicroscopy", S. Günther, S. Böcklein, J. Wintterlin, M. A. Niño, T. O. Menteş, A. Locatelli, *Elettra Highlights* 2012/2013.

Other Activities

Editorial Board *Zeitschrift für Physikalische Chemie*.

Physical Chemistry

Dr. rer. nat. Stefan Wuttke

Born 1980 in Guben/Brandenburg, 2001-2005 study of chemistry at Humboldt-Universität zu Berlin and University of Glasgow (Scotland), 2009 PhD degree in the group of Prof. Dr. Erhard Kemnitz, Humboldt-Universität zu Berlin, 2009-2010 Postdoctoral fellow at Institute Lavoisier de Versailles (France), since 2011 junior researcher pursuing a habilitation in the group of Prof. T. Bein at the LMU-Munich.

Research Topics

Synthesis, characterization and application of functionalized porous materials. Presently, we are able to design the structure of the metal-organic frameworks (MOFs), their functionality, and the pore environment to produce crystalline materials with specific host-guest interaction for the application in the field of nanocarriers or sensing. One key aspect is to design hybrid nanomaterials based on MOFs, which could offer a new platform for biomedical applications. Research focus is on the design of MOF nanoparticles with inner pore functionalization for controlled interaction with biologically active molecules, as well as outer functionality for target cell uptake, triggered drug release, and with surface shielding against unwanted interactions inside the physiological environment.

Honors, Awards, Memberships

Feodor Lynen Return Fellowship, Alexander von Humboldt foundation, in the group of Prof. T. Bein (LMU Munich – Department of Chemistry)

Extramural Research Funding

Alexander von Humboldt foundation,
Center for NanoScience.

Publications – Scientific Papers

2013

A. C. McKinlay, J. F. Eubank, St. Wuttke, B. Xiao, P. S. Wheatley, P. Bazin, J.-C. Lavalley, M. Daturi, A. Vimont, G. De Weireld, P. Horcajada, C. Serre, R. E. Morris, Nitric Oxide Adsorption and Delivery in Flexible MIL-88(Fe) Metal-Organic Frameworks, *Chem. Mater.* 2013, 25, 1592-1599.

S. R. Miller, E. Alvarez, L. Fradcourt, T. Devic, St. Wuttke, P. S. Wheatley, N. Steunou, C. Bonhomme, C. Gervais, D. Laurencin, R. E. Morris, A. Vimont, M. Daturi, P. Horcajada and C. Serre, A rare example of a porous Ca-MOF for the controlled release of biologically active NO, *Chem. Commun.* 2013, 49, 7773-7775.

F. M. Hinterholzinger, B. Rühle, St. Wuttke, K. Karaghiosoff, A. Godt, T. Beina, Highly sensitive and selective fluoride detection in water through fluorophore release from a metal-organic framework, *Scientific Reports* 2013, 2, 2562-2568.

2012

C. Dobrinescu, E.E. Iorgulescu, C. Mihailciuc, D. Macovei, St. Wuttke, E. Kemnitz, V.I. Parvulescu, S.M. Coman, One-pot hydroacetylation of menadione (vitamin K3) to menadiol diacetate (vitamin K4) by heterogeneous catalysis, *Adv. Synth.&Catal.* 2012, 354, 1301-1306.

N. Candu, St. Wuttke, E. Kemnitz, S.M. Coman, V. I. Parvulescu, Replacing benzyl chloride with benzyl alcohol in heterogeneous catalytic benzylation of aromatic compounds, *Pure and Appl. Chem.* 2012, 84, 427-437.

A. Negoï, K. Teinz, E. Kemnitz, St. Wuttke, V. I. Parvulescu, S. M. Coman, Bifunctional nanoscopic catalysts for the one-pot synthesis of (\pm)-menthol from citral, *Top. Cat.* 2012, 55, 680-687.

St. Wuttke, P. Bazin, A. Vimont, C. Serre, J.-S. Chang, G. Férey, M. Daturi, Discovering the active sites in MIL-100(Fe) for C3 separation by using operando IR spectroscopy, *Chem. – A Eur. J.* 2012, 18, 11959-11967.

F. M. Hinterholzinger, St. Wuttke, P. Roy, T. Preuße, A. Schaate, P. Behrens, A. Godt, T. Bein, Highly oriented surface-growth and covalent dye labeling of mesoporous metal-organic frameworks, *Dalton Trans.* 2012, 41, 3899-3901.

M. D.-Hardi, T. Devic, P. Horcajada, H. Chevreau, G. Maurin, G. Férey, D. Popov, C. Riekkel, St. Wuttke, J.-C. Lavalley, A. Vimont, C. Serre, How interpenetration ensures rigidity and permanent porosity in a highly flexible hybrid solid, *Chem. Mater.* 2012, 24, 2486-2492.

Y. Guo, St. Wuttke, A. Vimont, M. Daturi, J.-C. Lavalley, K. Teinz, E. Kemnitz, Synthesis and characterization of sol-gel prepared zinc fluoride, *J. Mater* 2012, 22, 14587-14593.

St. Wuttke, A. Negoï, N. Gheorghe, V. Kuncser, E. Kemnitz, V. Parvulescu, S.M. Coman, Sn-Doped hydroxylated MgF₂ catalysts for the fast and selective saccharification of cellulose to glucose, *ChemSusChem* 2012, 5, 1708-1711.

Pharmaceutical Chemistry

Univ.-Prof. Dr. rer. nat. Franz Bracher

Born 1958 in Geisenfeld/Bayern, 1978-1982 study of pharmacy at the LMU Munich, 1983 approbation as pharmacist, 1986 PhD in Pharmaceutical Chemistry, LMU Munich in the group of Prof. Dr. E. Reimann. 1986-1987 Postdoc at the Département de Chimie Organique, Université de Genève (Switzerland) in the group of Prof. Dr. W. Oppolzer, 1987-1992 Hochschulassistent (Assistant Professor) at the Institute for Pharmaceutical Chemistry, Philipps-University of Marburg, 1991 Habilitation for Pharmaceutical Chemistry with a thesis dealing with natural product synthesis; 1992-1997 Associate Professor (C3) at the Institute for Pharmaceutical Chemistry at the Technical University of Braunschweig; 1996 offered a position as a Full Professor (C4) at the University of Bonn (disliked), since 1997 Full Professor for Pharmacy at the University of Munich, 2010-2012 Director of the Department of Pharmacy.

Research Topics

Development of new antiinfective agents (mainly inhibitors of ergosterol biosynthesis as antifungal compounds). Development of novel inhibitors of cholesterol biosynthesis. Development of new anticancer agents. Development of new kinase, sirtuin and bromodomain inhibitors. Development of new screening systems. Natural products chemistry.

Honors, Awards, Memberships

Scientific Societies: Deutsche Pharmazeutische Gesellschaft (DPhG), Gesellschaft Deutscher Chemiker (GDCh), Paul Ehrlich-Gesellschaft für Chemotherapie (PEG). Member of the Editorial Advisory Boards of "Letters in Organic Chemistry" and "Scientia Pharmaceutica".

Publications – Scientific Papers

2013

Krauß J, Müller C, Kießling J, Richter S, Staudacher V, Bracher F. Synthesis and biological evaluation of novel *N*-alkyl tetra- and decahydroisoquinolines: Novel antifungals that target ergosterol biosynthesis. Arch. Pharm. Pharm. Med. Chem. 2013, [Epub ahead of print]. doi: 10.1002/ardp.201300338.

Krojer M, Müller C, Bracher F. Steroidomimetic aminomethyl spiroacetals as novel inhibitors of the enzyme $\Delta 8,7$ -sterol isomerase in cholesterol biosynthesis. Arch. Pharm. Pharm. Med. Chem. 2013, [Epub ahead of print]. doi: 10.1002/ardp.201300296.

Krauß J, Gratzl C, Sturm V, Müller C, Staudacher V, Schmidt CQ, Bracher F. Synthesis and biological evaluation of novel alkyl imidazolyl carbinols and their esters: potent antimycotics. *Sci. Pharm.* 2013; 81: 641-50. doi: 10.3797/scipharm.1304-17.

Lancelot J, Caby S, Dubois-Abdeselem F, Vanderstraete M, Trolet J, Oliveira G, Bracher F, Jung M, Pierce MRJ. *Schistosoma mansoni* sirtuins: characterization and potential as chemotherapeutic targets. *PLOS Negl. Trop. Dis.* 2013; 7: e2428. doi: 10.1371/journal.pntd.0002428.

Puzik A, Bracher F. 7,9,12b-Triazabenz[a]aceanthrylen-8-one, the first representative of a novel pentacyclic ring system, and its biological activities. *Lett. Org. Chem.* 2013; 10: 568-72. doi: 10.2174/1570178611310080006

Walte A, Rübén K, Birner-Grünberger R, Preisinger C, Bamberg-Lemper S, Hilz N, Bracher F, Becker W. Mechanism of dual specificity kinase activity of DYRK1A. *FEBS Journal.* 2013; 280: 4495-511. doi: 10.1111/febs.12411.

Weirauch U, Beckmann N, Thomas M, Grünweller A, Huber K, Bracher F, Hartmann RK, Aigner A. Functional role and therapeutic potential of the Pim-1 kinase in colon carcinoma. *Neoplasia.* 2013; 15: 783-94. doi: 10.1593/neo.13172.

Krojer M, Keller M, Bracher F. Des-ring-A 7-azasteroids with antimicrobial and cytotoxic activity. *Sci. Pharm.* 2013; 81: 329-38. doi: 10.3797/scipharm.1303-03.

Müller C, Staudacher V, Krauß J, Giera M, Bracher F. A convenient cellular assay for the identification of the molecular target of ergosterol biosynthesis inhibitors and quantification of their effects on total ergosterol biosynthesis. *Steroids.* 2013; 78: 483-93. doi: 10.1016/j.steroids.2013.02.006.

Lange S, Keller M, Müller C, Oliaro-Bosso S, Balliano G, Bracher F. Aminopropylindenes derived from Grundmann's ketone as a novel chemotype of oxidosqualene cyclase inhibitors. *Eur. J. Med. Chem.* 2013; 63: 758-64. doi: 10.1016/j.ejmech.2013.03.002.

König AM, Müller C, Bracher F. Stereoselective synthesis of a new class of potent and selective inhibitors of human $\Delta 8,7$ -sterol isomerase. *Bioorg. Med. Chem.* 2013; 21: 1925-43. doi: 10.1016/j.bmc.2013.01.041.

Wolfgang A, Bracher F. A method for the conversion of phenols into aryl tert-butyl ethers utilizing neighboring group contribution. *Lett. Org. Chem.* 2013; 10: 2-7. doi: 10.2174/1570178611310010003.

Canfran-Duque A, Casado ME, Pastor O, Sanchez-Wandelmer J, de la Pena G, Lerma M, Marsical P, Bracher F, Lasuncion MA, Busto R. Atypical antipsychotics alter cholesterol and fatty acid metabolism in vitro. *J. Lipid Res.* 2013; 54: 310-24. doi: 10.1194/jlr.M026948.

2012

Horling A, Müller C, Barthel R, Bracher F, Imming P. A new class of selective and potent 7-dehydrocholesterol reductase inhibitors. *J. Med. Chem.* 2012; 55: 7614-22. doi: 10.1021/jm3006096.

Gehring A, Bracher F. A convenient conversion of substituted cyclohexenones into aryl methyl ketones. *Synthesis.* 2012; 44: 2441-47. doi: 10.1055/s-0032-1316560.

Plodek A, Raeder S, Bracher F. Regioselective homolytic substitution of benzo[c]-[2,7]naphthyridines. *Tetrahedron.* 2012; 68: 4693-700. doi: 10.1016/j.tet.2012.04.023.

Luber M, Musa A, Kadry HA, Bracher F. Isolation of the pyrrolizidine alkaloid intermediate-N-oxide from *Cerithe glabra* and ab initio calculation of its ¹³C NMR shifts. *Z. Naturforsch.* 2012; 67b: 411-16. doi: 10.5560/ZNB.2012-0030.

Brauner R, Johannes C, Plöbl F, Bracher F, Lorenz RL. Phytosterols reduce cholesterol absorption by inhibition of 27-hydroxycholesterol generation, liver X receptor alpha activation and expression of basolateral sterol exporter ATP binding cassette A1 in Ca-co-2 enterocytes. *J. Nutrition.* 2012; 142: 981-9. doi:10.3945/jn.111.157198.

Huber K, Brault L, Fedorov O, Gasser C, Filippakopoulos P, Bullock AN, Fabbro D, Trappe J, Schwaller J, Knapp S, Bracher F. 7,8-Dichloro-1-oxo- β -carbolines as a versatile scaffold for the development of potent and selective kinase inhibitors with unusual binding modes. *J. Med. Chem.* 2012; 55: 403-13. doi: 10.1021/jm201286z.

Raeder S, Bracher F. A novel approach to the pyridoacridine ring system – synthesis of the topoisomerase inhibitor 13-deazaascididemin. *Arch. Pharm. Pharm. Med. Chem.* 2012; 345: 822-26. doi: 10.1002/ardp.201200019.

Plesch E, Bracher F, Krauss J. Synthesis and antimicrobial evaluation of novel platen-simycin analogues. *Arch. Pharm. Pharm. Med. Chem.* 2012; 345: 657-62. doi: 10.1002/ardp.201100455.

Wetzel I, Krauss J, Bracher F. Enantiodivergent synthesis of (S)- and (R)-(Z)-9-dodecyl-4,5,8,9-tetrahydro-3H-oxonin-2-one as analogues of topsentolides. *Lett. Org. Chem.* 2012; 9: 169-74.

Mayer CD, Allmendinger L, Bracher F. Synthesis of novel steroid analogues containing nitrile and disulfide moieties via palladium-catalyzed cross-coupling reactions. *Tetrahedron.* 2012; 68: 1810-18. doi: 10.1016/j.tet.2011.11.076.

Filippakopoulos P, Picaud S, Fedorov O, Keller M, Wrobel M, Morgenstern O, Bracher F, Knapp S. Benzodiazepines and benzotriazepines as protein interaction inhibitors targeting bromodomains of the BET family. *Bioorg. Med. Chem.* 2012; 20: 1878-86. doi: 10.1016/j.bmc.2011.10.080.

Krauss J, Köbler D, Miller V, Bracher F. Synthesis by ring closing metathesis and cytotoxic evaluation of novel thienylmacrolactones. *Sci. Pharm.* 2012; 80: 29-36. doi: 10.3797/scipharm.1109-09.

Patents

Honarejad K, Daschner A, Herms J, Bracher F, Kuznicki J, Gehring A. Novel means and methods for treating of the central nervous system, metabolic and cardiac diseases and aging. WO 2013/139929 A1, 2013.

Other Activities

Editor of the "Kommentar zum Europäischen Arzneibuch" (Scientific commentation of the European Pharmacopoeia).

Member of the expert group for pharmaceutical chemistry of the "Deutsche Arzneibuchkommission" (German Ph. Eur. Commission).

Member of the Scientific Board of the "Deutscher Arzneimittel-Codex".

Co-organizer of Frontiers in Medicinal Chemistry (GDCh), LMU Munich, 2013.

Grant reviewer for Deutsche Forschungsgemeinschaft, Deutscher Akademischer Austauschdienst (DAAD), Fonds zur Förderung der wissenschaftlichen Forschung (FWF, Austria) and Alexander von Humboldt Stiftung. Reviewer for *Journal of Medicinal Chemistry*, *Bioorganic & Medicinal Chemistry*, *European Journal of Medicinal Chemistry*, *Synthesis*, *Tetrahedron*, *Biochemical Journal*, *Journal of Natural Products*, *Letters in Organic Chemistry*, and others.

Pharmaceutical Chemistry

Dr. rer. nat. Jürgen Krauß

Born 1968 in Celle, Germany, 1988-1989 military service, 1989-1994 study of pharmacy at TU Braunschweig, 1998 PhD degree in the group of Prof. Dr. F. Bracher, Pharmaceutical Chemistry TU Braunschweig, 1998-2012 postdoc LMU Munich, since 2012 Akademischer Rat LMU Munich.

Research Topics

Synthesis of natural products and their derivatives. Development of new antimycotic and antibacterial compounds. Screening for antibacterial, antimycotic and cytotoxic activity.

Memberships

Deutsche Pharmazeutische Gesellschaft

Publications – Scientific Papers

2013

Krauß J, Müller C, Kießling J, Richter S, Staudacher V, Bracher F. Synthesis and biological evaluation of novel *N*-alkyl tetra- and decahydroisoquinolines: Novel antifungals that target ergosterol biosynthesis. Arch. Pharm. Pharm. Med. Chem. 2013, [Epub ahead of print]. doi: 10.1002/ardp.201300338.

Krauß J, Gratzl C, Sturm V, Müller C, Staudacher V, Schmidt CQ, Bracher F. Synthesis and biological evaluation of novel alkyl imidazolyl carbinols and their esters: potent antimycotics. Sci. Pharm. 2013; 81: 641-50. doi: 10.3797/scipharm.1304-17.

Müller C, Staudacher V, Krauß J, Giera M, Bracher F. A convenient cellular assay for the identification of the molecular target of ergosterol biosynthesis inhibitors and quantification of their effects on total ergosterol biosynthesis. Steroids. 2013; 78: 483-93. doi: 10.1016/j.steroids.2013.02.006.

2012

Krauß J, V. Krauß, Pharmacotherapy of sexual dysfunction. Myths, fairy tales and drugs. PZ Prisma. 2012; 19: 65-74.

Plesch E, Bracher F, Krauß J. Synthesis and antimicrobial evaluation of novel platensimycin analogues. Arch. Pharm. Pharm. Med. Chem. 2012; 345: 657-62. doi: 10.1002/ardp.201100455.

Wetzel I, Krauß J, Bracher F. Enantiodivergent synthesis of (S)- and (R)-(Z)-9-dodecyl-4,5,8,9-tetrahydro-3H-oxonin-2-one as analogues of topsentolides. *Lett. Org. Chem.* 2012; 9: 169-74.

Krauß J, Köbler D, Miller V, Bracher F. Synthesis by ring closing metathesis and cytotoxic of evaluation novel thienylmacrolactones. *Sci. Pharm.* 2012; 80: 29-36. doi: 10.3797/scipharm.1109-09.

Books and book chapters

2013

Bracher F, Dombeck F, Ettmayr Ch, Krauß J, Grünefeld J. *Arbeitsbuch quantitative Analyse*, Govi-Verlag, 2. Auflage 2013.

Chapters in

Bracher F, Heisig P, Langguth P, Mutschler E, Rücker G, Scriba G, Stahl-Biskup E, Troschütz R, Seitz G, Schirmeister T. *Arzneibuch-Kommentar*, Wissenschaftliche Verlagsgesellschaft mbH Stuttgart.

2012

Chapters in

Bracher F, Heisig P, Langguth P, Mutschler E, Rücker G, Scriba G, Stahl-Biskup E, Troschütz R, Seitz G, Schirmeister T. *Arzneibuch-Kommentar*, Wissenschaftliche Verlagsgesellschaft mbH Stuttgart.

Pharmaceutical Chemistry

Prof. Dr. rer. nat. Klaus T. Wanner

Born 1954 in Schrobenhausen, Obb.; 1979 Diploma in chemistry at TU Munich; 1978-1981 studies of pharmacy at LMU München; 1983 PhD at LMU München in the group of Prof. Dr. F. Eiden; 1984 licensure as pharmacist; 1984/85 Postdoctoral fellow in the group of Prof. A. I. Meyers, Colorado State University, Fort Collins, Colorado, USA; 1988 habilitation at the Institute of Pharmacy and Food Chemistry at LMU München; 1990 Associate Professor for Pharmaceutical Chemistry FU Berlin; 1993-1994 Vice Dean of the Faculty of Pharmacy FU Berlin; since 1994 Full Professor for Pharmaceutical Chemistry at the LMU München; 1998-2000 Vice Dean and 2000-2001 Dean of the Faculty of Chemistry and Pharmacy; 1999-2000 Member of commission of budget, space and construction affairs; 2008-2010 Head of the Department of Pharmacy at LMU München.

Research Topics

Development of subtype selective inhibitors of GABA transporters mGAT1-mGAT4, development of MS Binding Assays and drug screening assays, development of fluorescence labelled probes and photoswitchable ligands for neurotransmitter transporters, computer aided drug design, new methods for the synthesis of highly functionalized nitrogen heterocycles, syntheses of amino acids.

Memberships

German Pharmaceutical Society (DPhG)
Society of German Chemists (GDCh)

Publications – scientific papers

2013

Kowalczyk P, Sałat K, Höfner GC, Guzior N, Filipek B, Wanner KT, Kulig K. 2-Substituted 4-hydroxybutanamides as potential inhibitors of gamma-aminobutyric acid transporters mGAT1–mGAT4: Synthesis and biological evaluation. *Bioorg Med Chem.* 2013 Sep 1; 21(17):5154-67. doi: 10.1016/j.bmc.2013.06.038.

Schiesser S, Pfaffeneder T, Sadeghian K, Hackner B, Steigenberger B, Schröder AS, Steinbacher J, Kashiwazaki G, Höfner G, Wanner KT, Ochsenfeld C, Carell T. Deamination, Oxidation and C-C bond Cleavage Reactivity of 5-Hydroxymethylcytosine, 5-Formylcytosine and 5-Carboxycytosine. *J Am Chem Soc.* 2013. in press.

Grimm S, Allmendinger L, Höfner G, Wanner KT. Enantiopurity Determination of the Enantiomers of the Triple Reuptake Inhibitor Indatraline. *Chirality*. 2013 Dec; 25(12):923-33. doi: 10.1002/chir.22235. Epub 2013 Oct 7.

Sitka I, Allmendinger L, Fülep G, Höfner G, Wanner KT. Synthesis of N-substituted acyclic β -amino acids and their investigation as GABA uptake inhibitors. *Eur J Med Chem*. 2013 Jul; 66:487-99. doi: 10.1016/j.ejmech.2013.04.063.

Petz S, Wanner KT. Synthesis of 3-Azabicyclo[3.2.0]heptane Derivatives as gamma-Aminobutyric Acid Analogues via Intermolecular [2+2] Photocycloaddition. *Eur J Org Chem*. 2013 Jul; 19:4017-25. doi: 10.1002/ejoc.20120172. Epub 2013 May 14.

Quandt G, Höfner G, Wanner KT. Synthesis and evaluation of N-substituted nipecotic acid derivatives with an unsymmetrical bis-aromatic residue attached to a vinyl ether spacer as potential GABA uptake inhibitors. *Bioorg Med Chem*. 2013 Jun 1; 21(11):3363-78. doi: 10.1016/j.bmc.2013.02.056.

Sindelar M, Lutz TA, Petrera M, Wanner KT. Focused Pseudostatic Hydrazone Libraries Screened by Mass Spectrometry Binding Assay – Optimizing Affinities towards γ -Aminobutyric Acid Transporter 1. *J Med Chem*. 2013; 56(3):1323-40. doi: 10.1021/jm301800j. Epub 2013 Jan 21.

Zhao X, Pabel J, Höfner G, Wanner KT. Synthesis and biological evaluation of 4-hydroxy-4-(4-methoxyphenyl)-substituted proline and pyrrolidin-2-ylacetic acid derivatives as GABA uptake inhibitors. *Bioorg Med Chem*. 2013 Jan 15; 21(2):470-84. doi: 10.1016/j.bmc.2012.11.015.

Polley M, Höfner G, Wanner KT. Development and validation of an LC-ESI-MS/MS quantification method for a potential γ -aminobutyric acid transporter 3 (GAT3) marker and its application in preliminary MS binding assays, *Biomed Chromatogr*. 2013 May; 27(5):641-54. Epub: Dec 6 2012 doi: 10.1002/bmc.2841.

2012

Salat K, Wieckowska A, Wieckowski K, Höfner G, Kaminski J, Wanner KT, Malawska B, Filipek B, Kulig K. Synthesis and pharmacological properties of new GABA uptake inhibitors, *Pharmacol Rep*. 2012 Apr 5; 64(4):817-33.

Zhou Y, Holmseth S, Guo C, Hassel B, Höfner G, Huitfeldt HS, Wanner KT, Danbolt NC. Deletion of the GABA transporter 2 (GAT2, SLC6A13) gene in mice leads to changes in liver and brain taurine contents, *J Biol Chem*. 2012 Oct; 287(42):35733-46. doi: 10.1074/jbc.M112.368175. Epub Aug 15 2012.

Sindelar M, Wanner KT, Library Screening by Means of MS Binding Assays - Exemplarily Demonstrated for a Pseudo-static Library Addressing GAT1, *ChemMedChem*. 2012 Sept; 7(9):1678-1690. doi: 10.1002/cmdc.201200201 Epub 2012 Jun 11.

Pabel J, Faust M, Prehn C, Wörlein B, Allmendinger L, Höfner G, Wanner KT, Development of a (S)-1-{2-[tris(4-methoxyphenyl)methoxy]ethyl}piperidine-3-carboxylic acid [(S)-SNAP-5114] carba analogue inhibitor for murine γ -aminobutyric acid transporter type 4. *ChemMedChem*. 2012 Jul; 7(7):1245-55. doi: 10.1002/cmdc.201200126 Epub 2012 Apr 27.

Kowalczyk P, Höfner G, Wanner KT, Kulig K. Synthesis And Pharmacological Evaluation Of New 4,4-Diphenylbut-3-Enyl Derivatives Of 4-Hydroxybutanamides As Gaba Uptake Inhibitor. *Acta Poloniae Pharmaceutica*. 2012; 69:157-60.

Other Activities

Chairman and organization of the conference of the “Society of German Chemists” (GDCh) and the “German Pharmaceutical Society” (DPhG), “Frontiers in Medicinal Chemistry” March 17-21, 2013;

Grant Reviewer for FWF Austrian Science Found, NOW Netherlands Organisation for Scientific Research, APART Austrian Program for Advanced Research and Technology, Alexander von Humboldt Foundation.

Reviewer for *Angew. Chem. Int. Ed.*, *Anal. Bioanal. Chem.*, *Bioorg. Med. Chem.*, *ChemBioChem.*, *Chem - Eur J.*, *ChemMedChem*, *Eur. J. Med. Chem.*, *Eur. J. Org. Chem.*, *J. Med. Chem.*, *J. Org. Chem.*, *Med. Chem.*, *Synthesis*, *Tetrahedron*.

Pharmaceutical Biology

Dr. rer. nat. Johanna Liebl

Born 1980 in Pfarrkirchen/Bayern, 2000-2005 study of pharmacy at LMU Munich, 2008 PhD degree, 2009-2010 Postdoctoral fellow and since 2011 group leader in the group of Prof. Dr. Angelika M. Vollmar, LMU Munich. Research stays at IFOM-IEO Campus, Milan, Italy, group of Prof. Dr. Pier Paolo Di Fiore and Prof. Dr. Giorgio Scita and at University of Uppsala, Sweden, Department of Immunology, Genetics and Pathology (IGP), Prof. Dr. Lena Claesson-Welsh.

Research Topics

Cancer Biology and treatment: Mechanisms of cancer development and progression, angiogenesis, cancer stem cells. Understanding the mechanism of small molecule compounds to treat cancer.

Honors, Awards, Memberships

invited talks at University of Vienna, Department of Pharmacognosy, Prof. Dr. V. Dirsch, at LMU Clinics (Symposium Prof. Dr. G. Paumgarnter) and at Eberhardt Karls University Tübingen (Symposium "Frontiers in Cancer Biology & Therapy - Molecules, Targets, Systems")

“Posterpreis” DPhG Jahrestagung 2012, Greifswald

DGVS Spring Fellowship, DGVS Spring Conference 2011

2007-2012 Member of LMUMentoring

Extramural Research Funding

Fellowship from Bavarian Research Foundation

DAAD travel grant

Publications – Scientific Papers

Liebl J, Moser M, Agalarov Y, Zhang S, Hager B, Bibb JA, Adams RH, Miura N, Petrova TV, Vollmar AM, Zahler S. Cdk5 controls lymphatic vessel development and function by phosphorylation of Foxc2. *submitted*.

Rath S, Liebl J, Fürst R, Vollmar AM, Zahler S. Regulation of endothelial signaling and migration by v-ATPase. *Angiogenesis*. 2013 Nov 20.

Braig S, Kressirer C, Liebl J, Bischoff F, Zahler S, Meijer L, Vollmar AM Indirubin derivative 6BIO suppresses metastasis. *Cancer Res.* 2013 Oct 1;73(19).

Ivanov KI, Agalarov Y, Valmu L, Samuilova O, Liebl J, Houhou N, Maby-El Hajjami H, Norrmén C, Jaquet M, Miura N, Zangger N, Ylä-Herttuala S, Delorenzi M, Petrova TV. Phosphorylation regulates FOXC2-mediated transcription in lymphatic endothelial cells. *Mol Cell Biol.* 2013 Oct;33(19).

Weitensteiner SB, Liebl J, Krystof V, Havlíček L, Gucký T, Strnad M, Fürst R, Vollmar AM, Zahler S. Trisubstituted pyrazolopyrimidines as novel angiogenesis inhibitors. *PLoS One.* 2013;8(1).

Wiedmann RM, von Schwarzenberg K, Palamidessi A, Schreiner L, Kubisch R, Liebl J, Schempp C, Trauner D, Vereb G, Zahler S, Wagner E, Muller R, Scita G, Vollmar AM. The V-ATPase-inhibitor Archazolid abrogates tumor metastasis via inhibition of endocytic activation of the Rho-GTPase Rac1. *Cancer Res.* 2012 Sep 17.

Rárová L, Zahler S, Liebl J, Kryštof V, Sedlák D, Bartůněk P, Kohout L, Strnad M. Brassinosteroids inhibit in vitro angiogenesis in human endothelial cells. *Steroids.* 2012 Sep 4.

Rath S, Liebl J, Fürst R, Ullrich A, Burkhart JL, Kazmaier U, Herrmann J, Müller R, Günther M, Schreiner L, Wagner E, Vollmar AM, Zahler S. Anti-angiogenic effects of the tubulysin precursor pretubulysin and of simplified pretubulysin derivatives. *Br J Pharmacol.* 2012 May 18.

Regel I, Eichenmuller M, Joppien S, Liebl J, Haberle B, Muller-Hocker J, Vollmar A, von Schweinitz D, Kappler R. IGFBP3 impedes aggressive growth of pediatric liver cancer and is epigenetically silenced in vascular invasive and metastatic tumors. *Mol Cancer.* 2012 Mar 8;11(1):9.

Reichel CA, Uhl B, Lerchenberger M, Pühr-Westerheide D, Rehberg M, Liebl J, Khandoga A, Schmalix W, Zahler S, Deindl E, Lorenzl S, Declerck PJ, Kanse S, Krombach F. Urokinase-type plasminogen activator promotes paracellular transmigration of neutrophils via Mac-1, but independently of urokinase-type plasminogen activator receptor. *Circulation.* 2011 Oct 25;124(17):1848-59.

Kryštof V, Rárová L, Liebl J, Zahler S, Jorda R, Voller J, Cankař P. The selective P-TEFb inhibitor CAN508 targets angiogenesis. *Eur J Med Chem.* 2011 Sep;46(9):4289-94.

Liebl J, Fürst R, Vollmar AM, Zahler S. Twice switched at birth: cell cycle-independent roles of the "neuron-specific" cyclin-dependent kinase 5 (Cdk5) in non-neuronal cells. *Cell Signal.* 2011 Nov;23(11):1698-707. Review.

Liebl J, Krystof V, Vereb G, Takács L, Strnad M, Pechan P, Havlicek L, Zatloukal M, Fürst R, Vollmar AM, Zahler S. Anti-angiogenic effects of purine inhibitors of cyclin dependent kinases. *Angiogenesis*. 2011 Sep;14(3):281-91.

Liebl J, Weitensteiner SB, Vereb G, Takács L, Fürst R, Vollmar AM, Zahler S. Cyclin-dependent kinase 5 regulates endothelial cell migration and angiogenesis. *J Biol Chem*. 2010 Nov 12;285(46):35932-43.

Zahler S, Liebl J, Fürst R, Vollmar AM. Anti-angiogenic potential of small molecular inhibitors of cyclin dependent kinases in vitro. *Angiogenesis*. 2010 Sep;13(3):239-49.

Koltermann A, Liebl J, Fürst R, Ammer H, Vollmar AM, Zahler S. Ginkgo biloba extract EGb 761 exerts anti-angiogenic effects via activation of tyrosine phosphatases. *J Cell Mol Med*. 2009 Aug;13(8B):2122-30.

Pharmaceutical Biotechnology/Pharmaceutical Biology

Univ. Prof. Dipl. Ing. Dr. rer. nat. techn. Manfred Ogris

Born 1970 in Klagenfurt/Austria, 1989-1996 study of Biotechnology at the University of Applied Life Sciences, Vienna, Austria, 1995-1996 Diploma and 1996-1999 PhD at the Vienna Biocenter, 1999 - 2000 Postdoctoral research fellow at the CRC Institute for Cancer Research in Birmingham/UK, 2000 – 2001 Marie Curie Fellow at the CRC Institute for Cancer Research in Birmingham/UK, 2001 – 2013 group leader Vectorology, Department of Pharmacy, LMU Munich (since 2004 tenured), 2009 Habilitation in Pharmaceutical Biology and Pharmaceutical Biotechnology, Since 2013 Professor for Pharmaceutical Sciences, Department of Pharmaceutical Chemistry, Centre of Pharmaceutical Sciences, University of Vienna.

Research Topics

Development of macromolecular carrier systems for cancer therapy and diagnostics (theranostics), multimodal molecular imaging, cancer immune therapy, viral and synthetic gene carriers for controlled transgene expression and as molecular sensors, RNA interference and micro RNA in cancer research.

Honors, Awards, Memberships

Member of the Center for NanoScience (CeNS)

Member of the Deutsche Gesellschaft für Genterapie (DGGT)

Member of the European Society for Gene and Cell Therapy (ESGCT)

Editorial board member of 'Recent Patents on Drug Delivery & Formulation'

Associate editor of 'Therapeutic Delivery'

Extramural Research Funding

DFG Collaborative research center SFB 824 "Imaging for the Selection, Monitoring and Individualisation of Cancer Therapy": Project 'Tumor specific molecularly targeted therapy using the sodium iodide symporter as reporter and therapy gene' (together with Prof Christine Spitzweg, Klinikum Großhadern)

Center for NanoScience research collaboration grant 'Polymer coated Adenovirus for cancer gene therapy – correlating ultrastructure with biological activity' (together with Prof Christina Scheu, Department of Chemistry, LMU)

Bayerische Forschungsstiftung: PostDoc research fellowship for Dr Joana Viola (PDOC 78-11): 'Development of a tailored non-viral gene delivery system directed to advanced melanoma.'

BMBF grant 01EU1202

Center for NanoScience research collaboration grant ‘Covalent vs non-covalent dendrimer coating of Adenovirus: Implications on ultrastructure and transgene expression’ (together with Prof Christina Scheu, Department of Chemistry, LMU) 2012-2017

Innovative Medicines Initiative (IMI) collaborative research project COMPACT (Collaboration on the Optimisation of Macromolecular Pharmaceutical Access to Cellular Targets).

Publications – Scientific Papers

2013

Grünwald GK, Vetter A, Klutz K, Willhauck MJ, Schwenk N, Senekowitsch-Schmidtke R, Schwaiger M, Zach C, Wagner E, Göke B, Holm PS, Ogris M, Spitzweg C. EGFR-Targeted Adenovirus Dendrimer Coating for Improved Systemic Delivery of the Theranostic NIS Gene. *Mol Ther Nucleic Acids*. 2013 Nov 5;2:e131. doi: 10.1038/mtna.2013.58.

Ogris M. Gene therapy in the clinics: shifting into the next gear. *Ther Deliv*. 2013 Nov;4(11):1359-63. doi: 10.4155/tde.13.109.

Grünwald GK, Vetter A, Klutz K, Willhauck MJ, Schwenk N, Senekowitsch-Schmidtke R, Schwaiger M, Zach C, Wagner E, Göke B, Holm PS, Ogris M, Spitzweg C. Systemic Image-Guided Liver Cancer Radiovirotherapy Using Dendrimer-Coated Adenovirus Encoding the Sodium Iodide Symporter as Theranostic Gene. *J Nucl Med*. 2013 Jul 10. [Epub ahead of print]

Kopp F, Schnoedt M, Haase R, Wagner E, Roidl A, Ogris M (2013) De-targeting by miR-143 decreases unwanted transgene expression in non-tumorigenic cells. *Gene Ther*. 2013 Jun 27. doi: 10.1038/gt.2013.37. [Epub ahead of print]

Schaffert D, Ogris M (2013) Nucleic Acid Carrier Systems Based on Linear Polyethyl- enimine for the Treatment of Metastatic Tumors. *Curr Med Chem*. 2013 May 27. [Epub ahead of print]

Haase R, Magnusson T, Su B, Kopp F, Wagner E, Lipps H, Baiker A, Ogris M (2013) Generation of a tumor- and tissue-specific episomal non-viral vector system. *BMC Bio- technol*. 2013 Jun 4;13(1):49. [Epub ahead of print]

Viola JR, Rafael DF, Wagner E, Besch R, Ogris M. (2013) Gene therapy for advanced melanoma: selective targeting and therapeutic nucleic acids. *J Drug Deliv*. 2013;2013:897348. doi: 10.1155/2013/897348.

Ogris M, Roidl A (2013) Targeted therapy of cancer stem cells: science or fiction. *Ther Deliv*. 2013 Feb;4(2):135-8. doi: 10.4155/tde.12.153.

Vetter A, Viridi KS, Espenlaub S, Rödl W, Wagner E, Holm PS, Scheu C, Kreppel F, Spitzweg C, Ogris, M (2013) Adenoviral vectors coated with PAMAM dendrimer conjugates allow CAR independent virus uptake and targeting to the EGF Receptor. *Mol Pharm.* 2013 Feb 4;10(2):606-18. doi: 10.1021/mp300366f.

Rödl, W., Schaffert, D., Wagner, E., Ogris, M (2013) Synthesis of polyethylenimine-based nanocarriers for systemic tumor targeting of nucleic acids. *Methods Mol Biol.* 2013;948:105-20.

2012

Terziyska N, Alves CC, Groiss V, Schneider K, Farkasova K, Ogris M, Wagner E, Ehrhardt H, Brentjens RJ, Zur Stadt U, Horstmann M, Quintanilla-Martinez L, Jeremias I (2012) In vivo imaging enables high resolution preclinical trials on patients' leukemia cells growing in mice. *PLoS ONE.* 2012;7(12):e52798. doi: 10.1371/journal.pone.0052798. Epub 2012 Dec 31.

Su, B., Cengizeroglu, A., Farkasova, K., Viola, J.R., Anton, M., Ellwart, J.W., Haase, R., Wagner, E., Ogris, M. (2012) Systemic TNF α Gene Therapy Synergizes With Liposomal Doxorubicine in the Treatment of Metastatic Cancer *Mol. Ther.* 2013 Feb;21(2):300-8.

Mickler, F.M., Möckl, L., Ruthardt, N., Ogris, M., Wagner E., Bräuchle, C. (2012) Tuning nanoparticle uptake: live-cell imaging reveals two distinct endocytosis mechanisms mediated by natural and artificial EGFR targeting ligand. *Nano Lett.* 2012 Jul;12(7):3417-23.

Abourbeh, G., Shir, A., Mishani, E., Ogris, M., Rödl, W., Wagner, E., Levitzki, A. (2012) PolyIC GE11 polyplex inhibits EGFR-overexpressing tumors *IUBMB Life.* 2012 Apr;64(4):324-30.

Buyens, K., De Smedt, S.C., Braeckmans, K., Demeester, J., Peeters, L., van Grunsven, L.A., de Mollerat du Jeu, X., Sawant. R., Torchilin, V., Farkasova, K., Ogris, M., Sanders, N.N. (2012) Liposome based systems for systemic siRNA delivery: stability in blood sets the requirements for optimal carrier design. *J Control Release.* 2012 Mar;158(3):362-70.

Ogris, M., Wagner, E. Synthesis of linear polyethylenimine and use in transfection (2012) *Cold Spring Harb Protoc.* 2012 Feb;2012(2):246-50.

Pharmaceutical Biology

Prof. Dr. rer. nat. Angelika M. Vollmar

Born 1957 in Memmingen, 1978-1982 study of pharmacy at LMU, Munich, 1984 PhD degree in Pharmaceutical Biology, LMU, 1984-1986 DFG-Postdoctoral fellow at Department of Biochemistry and Molecular Biology, University of California, Los Angeles (UCLA) USA, 1991 Habilitation at Institute of Pharmacology, Toxicology and Pharmacy, Veterinary School, LMU. 1991 Visiting scientist at Clinical Research Institute, Montreal, Canada, 1993 call for a Professorship “pharmaceutical biochemistry” University of Heidelberg, 1994-1998 C-3 Professorship Pharmacology Veterinary School, 1998 C4 Professor Pharmaceutical Biology, LMU, 2000-2002 and 2012 Director of the Department of Pharmacy.

Research Topics

Potential of natural products as chemical tools and therapeutic leads in tumor research. Novel strategies and targets for combating cancer resistance and metastasis.

Honors, Awards, Memberships

Member of the “Senat” and “Hauptausschuss” of the DFG
Member of the “Senatskommission für Klinische Forschung” of the DFG
Speaker of the Scientific Board of the “Robert-Bosch Krankenhaus”
and Institute of Clinical Pharmacology
Member of Life Science Munich (LSM) graduate school, Martinsried
Member of the Center for Advanced Studies (CAS LMU)
Member of the Executive Committee of the NIM Cluster
Speaker of the “Munich Center for System based Drug Research”
Speaker of the DFG Research Group 1406

Extramural Research Funding

DFG-Research group 1406 – two projects Vo 376/15-1; 14-1
Excellence Cluster *NIM* (DFG and the Federal Ministry of Education and Research)
DFG project: Crataegus and endothelial barrier function together with R. Fürst (Vo 376/16-1)
DFG project: CDK5 and Hepatocellular Carcinoma (Vo 376/17-1)
Bavarian research foundation grant (1064-13): Inhibitor of protein-protein interaction as novel anti-tumoral agents
Wilhelm Sander foundation: “Characterization of a new class of chemosensitizers-their mode of action and therapeutical use” (2010.087.1)
China Scholarship Council, PhD grant

Publications – Scientific Papers

2013

Rath S, Liebl J, Fürst R, Vollmar AM, Zahler S. Regulation of endothelial signaling and migration by v-ATPase. *Angiogenesis*. 2013 Nov 20. [Epub ahead of print]

Kubisch R, Fröhlich T, Arnold GJ, Schreiner L, von Schwarzenberg K, Roidl A, Vollmar AM, Wagner E. V-ATPase inhibition by archazolid leads to lysosomal dysfunction resulting in impaired cathepsin B activation in vivo. *Int J Cancer*. 2013 Oct 25. doi: 10.1002/ijc.28562. [Epub ahead of print]

Braig S, Kressirer CA, Liebl J, Bischoff F, Zahler S, Meijer L, Vollmar AM. Indirubin derivative 6BIO suppresses metastasis. *Cancer Res*. 2013 Oct 1;73(19):6004-12. doi: 10.1158/0008-5472.CAN-12-4358. Epub 2013 Aug 14.

Fürst R, Vollmar AM. A new perspective on old drugs: non-mitotic actions of tubulin-binding drugs play a major role in cancer treatment. *Pharmazie*. 2013 Jul;68(7):478-83. Review.

Weitensteiner SB, Liebl J, Krystof V, Havlíček L, Gucký T, Strnad M, Fürst R, Vollmar AM, Zahler S. Trisubstituted pyrazolopyrimidines as novel angiogenesis inhibitors. *PLoS One*. 2013;8(1):e54607. doi: 10.1371/journal.pone.0054607. Epub 2013 Jan 15.

von Schwarzenberg K, Wiedmann RM, Oak P, Schulz S, Zischka H, Wanner G, Efferth T, Trauner D, Vollmar AM. Mode of cell death induction by pharmacological vacuolar H⁺-ATPase (V-ATPase) inhibition. *J Biol Chem*. 2013 Jan 11;288(2):1385-96. doi: 10.1074/jbc.M112.412007. Epub 2012 Nov 20.

2012

Wiedmann RM, von Schwarzenberg K, Palamidessi A, Schreiner L, Kubisch R, Liebl J, Schempp C, Trauner D, Vereb G, Zahler S, Wagner E, Müller R, Scita G, Vollmar AM. The V-ATPase-inhibitor archazolid abrogates tumor metastasis via inhibition of endocytic activation of the Rho-GTPase Rac1. *Cancer Res*. 2012 Nov 15;72(22):5976-87. doi: 10.1158/0008-5472.CAN-12-1772. Epub 2012 Sep 17.

Willer EA, Malli R, Bondarenko AI, Zahler S, Vollmar AM, Graier WF, Fürst R. The vascular barrier-protecting hawthorn extract WS® 1442 raises endothelial calcium levels by inhibition of SERCA and activation of the IP₃ pathway. *J Mol Cell Cardiol*. 2012 Oct;53(4):567-77. doi: 10.1016/j.yjmcc.2012.07.002. Epub 2012 Jul 16.

Eirich J, Burkhart JL, Ullrich A, Rudolf GC, Vollmar A, Zahler S, Kazmaier U, Sieber SA. Pretubulysin derived probes as novel tools for monitoring the microtubule network via activity-based protein profiling and fluorescence microscopy. *Mol Biosyst*. 2012 Aug;8(8):2067-75. doi: 10.1039/c2mb25144b. Epub 2012 Jun 21.

Herrmann J, Elnakady YA, Wiedmann RM, Ullrich A, Rohde M, Kazmaier U, Vollmar AM, Müller R. Pretubulysin: from hypothetical biosynthetic intermediate to potential lead in tumor therapy. *PLoS One*. 2012;7(5):e37416. doi: 10.1371/journal.pone.0037416. Epub 2012 May 17.

Rath S, Liebl J, Fürst R, Ullrich A, Burkhart JL, Kazmaier U, Herrmann J, Müller R, Günther M, Schreiner L, Wagner E, Vollmar AM, Zahler S. Anti-angiogenic effects of the tubulysin precursor pretubulysin and of simplified pretubulysin derivatives. *Br J Pharmacol*. 2012 Nov;167(5):1048-61. doi: 10.1111/j.1476-5381.2012.02037.x.

I Regel I, Eichenmüller M, Joppien S, Liebl J, Häberle B, Müller-Höcker J, Vollmar A, von Schweinitz D, Kappler R. GFBP3 impedes aggressive growth of pediatric liver cancer and is epigenetically silenced in vascular invasive and metastatic tumors. *Mol Cancer*. 2012 Mar 8;11:9. doi: 10.1186/1476-4598-11-9.

Bubik MF, Willer EA, Bihari P, Jürgenliemk G, Ammer H, Krombach F, Zahler S, Vollmar AM, Fürst R. A novel approach to prevent endothelial hyperpermeability: the Crataegus extract WS® 1442 targets the cAMP/Rap1 pathway. *J Mol Cell Cardiol*. 2012 Jan;52(1):196-205. doi: 10.1016/j.yjmcc.2011.10.020. Epub 2011 Oct 31.

Other Activities

Speaker of the DFG-Research group 1406; Member of the “Senat” and “Hauptausschuss” of the DFG; Member of the “Senatskommission für Klinische Forschung” of the DFG; Consultant of the “Deutsche Bischofskonferenz” (Commission for Science and Culture); Speaker of the Scientific Board of the “Robert-Bosch Krankenhaus and Institute of Clinical Pharmacology”; Mentor of the Helmholtz-Academy, Mentor of the Cusanus Career Promoting Program, Board Member of the “Dr. Mildred Scheel Stiftung für Krebsforschung”; Member (PI) of the NIM (Nanosystems Initiative Munich) Excellence Cluster; Board Member of the “Goethe Graduate Academy (GRADE) Frankfurt”

Reviewer for various Cancer and Pharmacological/Pharmaceutical Journals i.e. *Cancer Research*, *Mol Oncol*, *JBC*, *Am J Pathol*, etc .

Pharmaceutical Biology

Prof. Dr. Ernst Wagner

Born 1960 in Dachau, study of Chemistry at TU Vienna, 1983 Diploma, 1985 Ph.D. in Organic Chemistry, TU Vienna, 1994 Habilitation in Biochemistry, University Vienna Medical Faculty, 1985-1987 Postdoctoral fellow at ETH Zurich, 1988-1995 Group leader, Institute of Molecular Pathology, Vienna, 1992-2001 Director Cancer Vaccines & Gene Therapy, Boehringer Ingelheim Austria, 1995-2001 Group leader, Vienna University Biocenter, since 2001 C4-full Professor, Pharmaceutical Biotechnology, LMU, 2006-2008 Director, Department of Pharmacy, LMU, 2007-2010 Area Coordinator "Programmed Drug Delivery", since 2010 Area Coordinator "Biomedical Nanotechnologies", Executive Board Member of "Nanosystems Initiative Munich (NIM)".

Research Topics

Biomedical Nanotechnology: Bioresponsive carriers and nanoparticle assemblies with therapeutic nucleic acids (plasmid DNA, microRNA), proteins or other bioderived drug substances. Study of bio-interactions of such 'molecular therapeutics', extra- and intracellular delivery processes. Primary focus: Cancer, meeting an urgent medical need for tumor targeted delivery and breaking chemoresistance.

Honors, Awards, Memberships

Senior Scholarship 2012-13, Visiting Professor, Fudan University, Shanghai, China
Board of Scientific Advisors of Controlled Release Society (CRS) since 2013
Member of the Austrian Chemical Society (GÖCh)
Member of the German Chemical Society (GDCh)
Member of the American Chemical Society (ACS)
Member of the American Society of Gene Therapy (ASGT)
Member of the European Society of Gene and Cell Therapy (ESGCT)
Member and Board Member of the German Society for Gene Therapy (DG-GT)
Member of the Center of Nanoscience (CeNS, Munich)

Extramural Research Funding

European Community IMI Research Project "COMPACT"
German Research Council, Excellence Cluster Nanosystems Initiative Munich (NIM), Research Area V
German Research Council, Research Unit (FOR) 1406 "Exploiting the Potential of Natural Compounds"
German Research Council, Collaborative Research Center (SFB) 1032 "Nanoagents"

German Research Council and Sino-German Center for Research Promotion, "Programmed dual targeted lipopolymeric delivery systems for cancer gene therapy"
Roche Kulmbach, "Establishment of RNA Delivery Systems"
Research fellowships to PhD student and postdoc from the Bavarian Research Foundation

Publications – Scientific Papers

2013

Bogomilova, A., Höhn, M., Günther, M., Herrmann, A., Troev, K., Wagner, E., Schreiner, L. (2013) A polyphosphoester conjugate of melphalan as antitumoral agent. *Eur J Pharm Sci* 50, 410–419.

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Hütz, K., Mejías-Luque, R., Farkasova, K., Ogris, M., Krebs, S., Anton, M., Vieth, M., Schüller, U., Schneider, M., Blum, H., Wagner, E., Wolf, E., Jung, A., Gerhard, M. (2013) The stem cell factor Sox2 regulates the tumorigenic potential in human gastric cancer cells. *Carcinogenesis*, in press.

Kasper, J., Troiber, C., Kuchler, S., Wagner, E., Friess, W. (2013) Formulation development of lyophilized, long-term stable siRNA/oligoaminoamide polyplexes. *Eur J Pharm Biopharm* 85, 294-305.

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Kopp, F., Wagner, E., Roidl, A. (2013) The proto-oncogen KRAS is targeted by miR-200c. *Oncotarget*, in press.

Kos, P., Scholz, C., Salcher, E.E., Herrmann, A., Wagner, E. (2013) Gene transfer with sequence-defined oligo(ethanamino)amides bioreducibly attached to a polypropyl-enimine dendrimer core. *Pharm Nanotechnology* 1, 269-281.

Kos, P., Wagner, E. (2013) Polymers for siRNA Delivery: Combining precision with multifunctionality. *Chimica Oggi - Chemistry Today* 31(2), 6-10.

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Kubisch, R., Meissner, L., Krebs, S., Blum, H., Günther, M., Roidl, A., Wagner, E. (2013) A comprehensive gene expression analysis of resistance formation upon metro-nomic cyclophosphamide therapy. *Translational Oncology* 6, 1-9.

Lächelt, U., Kos, P., Mickler, F.M., Herrmann, A., Salcher, E.E., Rödl, W., Badgujar, N., Bräuchle, C., Wagner, E. (2013) Fine-tuning of proton sponges by precise diaminoethanes and histidines in pDNA polyplexes. *Nanomedicine NBM*, 2013 Jul 24.

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Li, Y., Lei, Y., Wagner, E., Xie, C., Lu, W., Zhu, J., Shen, J., Wang, J., Liu, M. (2013) A Potent Retro-Inverso D-peptide for Simultaneous Targeting Angiogenic Blood Vas-culature and Tumor Cells. *Bioconjugate Chem.* 24, 133–143.

Marfels, C., Hoehn, M., Wagner, E., Günther, M. (2013) Characterization of in vivo chemoresistant human hepatocellular carcinoma cells with transendothelial differentia-tion capacities. *BMC Cancer* 13, 176.

Noga, M., Edinger, D., Kläger, R., Wegner, S.V., Spatz, J.P., Wagner, E., Winter, G., Besheer, A. (2013) The effect of molar mass and degree of hydroxyethylation on the controlled shielding and deshielding of hydroxyethyl starch-coated polyplexes. *Biomaterials* 34, 2530-2538.

Rödl, W., Schaffert, D., Wagner, E., Ogris, M. (2013) Synthesis of polyethylenimine based nanocarriers for systemic tumor targeting of nucleic acids. *Methods Molecular Biology* 948, 105-20.

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Troiber, C., Kasper, J.C., Milani, S., Scheible, M., Schaubhut, F., Kuchler, S., Rädler, J., Simmel, F.C., Friess, W., Wagner, E. (2013) Comparison of four different particle sizing methods for siRNA polyplex characterization. *Eur J. Pharm. Biopharm.* 84, 255–264.

Vetter, A., Viridi, K., Espenlaub, S., Rödl, W., Wagner, E., Holm, P., Scheu, C., Krepel, F., Spitzweg, C., Ogris, M. (2013) Adenoviral vectors coated with PAMAM dendrimer conjugates allow CAR independent virus uptake and targeting to the EGF Receptor. *Mol. Pharmaceutics* 10, 606-618.

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Abourbeh, G., Shir, A., Mishani, E., Ogris, M., Rödl, W., Wagner, E., Levitzki, A. (2012) PolyIC GE11 polyplex inhibits EGFR-overexpressing tumors. *IUBMB Life* 64, 324-30.

Bogomilova, A., Günther, M., Wagner, E., Hägele, G., Troev, K. (2012) Synthesis and Characterization of New Platinum (II) Phosphinate Complexes. *J. Coord. Chem.* 65, 1093-1106.

Bogomilova, A., Hägele, G., Troev, K., Wagner, E. and Günther, M. (2012) Hydrogen Bonding in α -Aminophosphonic Acids. *Phosphorus, Sulfur, and Silicon and the Related Elements* 187, 165-180.

Dohmen, C., Edinger, D., Fröhlich, T., Schreiner, L., Lächelt, U., Troiber, C., Rädler, J.O., Hadwiger, P., Vornlocher, H.-P., Wagner, E. (2012) Nano sized carrier system with beneficial biophysical properties for folic acid receptor specific siRNA delivery. *ACS Nano* 6, 5198–5208.

Dohmen, C., Fröhlich, T., Lächelt, U., Röhl, I., Vornlocher, H.-P., Hadwiger, P., Wagner, E. (2012) Defined Folate-PEG-siRNA Conjugates for Receptor Specific Gene Silencing. *Mol. Ther. Nucleic Acids* 1, e7, 1-6.

Fröhlich, T., Edinger, D., Kläger, R., Schaffert, D., Troiber, C., Badgular, N., Martin, I., Salcher, E., Hadwiger, P., Vornlocher, H.-P., Wagner, E. (2012) Structure-activity relationships of precise oligo(ethane amino) amides for siRNA delivery. *J. Control Rel.* 160, 532-541.

Fröhlich, T., Edinger, D., Wagner, E. (2012) Stabilization of Polyplexes via Polymer Crosslinking for Efficient siRNA Delivery. *Eur. J. Pharm. Sci.* 47, 914-20.

Kopp, F., Oak, P., Wagner, E., Roidl, A. (2012) miR-200c sensitizes breast cancer cells to doxorubicin treatment by decreasing TrkB and Bmi1 expression, *PLOS One* 7(11), e50469.

Maier, K., Wagner, E. (2012) Acid-labile traceless click linker for protein transduction. *J. Am. Chem. Soc.* 134, 10169-73.

Maier, K., Martin, I., Wagner, E. (2012) Sequence Defined Disulfide-linked Shuttle for Strongly Enhanced Intracellular Protein Delivery, *Mol. Pharmaceutics* 9, 3560–3568.

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Nie, Y., Wagner, E. (2012) pH-responsive Polymers for Delivery of Nucleic Acid Therapeutics. In: *Polymeric Biomaterials, Volume II* (Severian Dumitriu Ed.), Tayler&Francis.

Noga, M., Edinger, D., Rödl, W., Wagner, E., Winter, G., Besheer, A. (2012) Controlled shielding and deshielding of gene delivery polyplexes using hydroxyethyl starch (HES) and alpha-amylase. *J. Control. Rel* 159, 92-103.

Oak, P.S., Kopp, F., Thakur, C., Ellwart, J.W., Rapp, U.R., Ullrich, A., Wagner, E., Knyazev, P., Roidl, A. (2012) Combinatorial treatment of mammospheres with trastuzumab and salinomycin efficiently eradicates HER2-positive cancer cells and cancer stem cells. *Int J Cancer* 131, 2808-19.

Ogris, M., Wagner, E. (2012) Synthesis of linear polyethylenimine and use in transfection. *Cold Spring Harb Protoc.* 2012, 246-50.

Rath, S., Liebl, J., Fürst, R., Ullrich, A., Burkhart, J.L., Kazmaier, U., Herrmann, J., Müller, R., Günther, M., Schreiner, L., Wagner, E., Vollmar, A.M., Zahler, S. (2012) Anti-angiogenic effects of the tubulysin precursor pretubulysin and of simplified pretubulysin derivatives. *British J. Pharmacology* 167, 1048-1061.

Salcher, E., Kos, P., Fröhlich, T., Badgular, N., Scheible, M., Wagner, E. (2012) Sequence-defined Four-arm Oligo(ethan amino)amides for pDNA and siRNA Delivery: Impact of Building Blocks on Efficacy. *J. Control. Rel.* 164, 380–386.

Schaffert, D., Troiber, C., Wagner, E. (2012) New Sequence-defined polyaminoamides with tailored endosomolytic properties for plasmid DNA delivery. *Bioconjug. Chem.* 23, 1157-1165.

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Terziyska, N., Castro Alves, C., Groiss, V., Schneider, K., Farkasova, K., Ogris, M., Wagner, E., Ehrhardt, H., Brentjens, R.J., zur Stadt, U., Horstmann, M., Quintanilla-Martinez, L., Jeremias, I. (2012) In Vivo Imaging Enables High Resolution Preclinical Trials on Patients' Leukemia Cells Growing in Mice. *PLOS One* 7(12), e52798.

Wagner, E. (2012) Functional Polymer Conjugates for Medicinal Nucleic Acid Delivery. *Adv Polymer Sci.* 247, 1–30.

Wagner, E. (2012) Polymers for siRNA Delivery: Inspired by Viruses to be Targeted, Dynamic and Precise. *Accounts Chem. Res.* 45, 1005–1013.

Wiedmann, R.M., von Schwarzenberg, K., Palamidessi, A., Schreiner, L., Kubisch, R., Liebl, J., Schempp, C., Trauner, D., Vereb, G., Zahler, S., Wagner, E., Müller, R., Scita, G., Vollmar, A.M. (2012) The V-ATPase-inhibitor Archazolid abrogates tumor metastasis via inhibition of endocytic activation of the Rho-GTPase Rac1. *Cancer Res.* 72, 5976-5987.

Other Activities

Editor of “Pharmaceutical Research”

Associate Editor of “Journal of Gene Medicine“

Editorial Board of “European Journal of Pharmaceutical Sciences”, "Gene Therapy and Regulation", "Gene Therapy", “Journal of Controlled Release”, “Nanomedicine: NBM”, “Polymers”, “Pharmaceutical Nanotechnology”.

Pharmaceutical Biology

Prof. Dr. rer. nat., Dr. h.c.mult. Hildebert Wagner

Born 1929 in Laufen/Salzach/Bavaria, study of Pharmacy from 1946-1950, 1956 Ph. Degree in the group of Prof. L. Hörhammer, Institute of Pharmacognosy, Ludwig Maximilians Universität Munich, Habilitation 1959, Director and chair holder of Pharmaceutical Biology still 1999, 1971/72 Sabatical as Distinguished Visiting Proessor/Ohio USA, several months Research on the Institute of Arganic Chemistry of the University Budapest (Hungary) 1975-1980, Dean of Faculty of Chemistry/Pharmacy 1981-1983.

Research Topics

Phytochemical investigations with structur elucidation and synthesis of bioactive Natural Products in the field of flavonoids, polyphenols and polysaccharides from foreign countries (China, India, South-America). Pharmacological and immunological work on high and low molecular medicinal drugs.

Honors, Awards, Memberships

Ph. D. honoris causae (h.c.) from Universities of Budapest and Debrecen (Hungary) 1989, Dijon (France) 1992, Helsinki (Finland) 1987 and Iaci (Romania) 2004, Honorar Prof. of the Medicinal Chinese University of Beijing, member of the Hungarian Academy of Science, branch Org. Chemistry
membership of Editorial
Advisory Boards of the International Journals: *Phytochemistry*, *Ethnopharmacology and Natural Products*
Since 1995 Editor in chief of the International Journal of Phytomedicine
Since 1995 the commission from the Bavarian Government to built up a special laboratory for the chemical/analytical quality proof of important Chinese Herbal Drugs for the first Chinese Hospital in Germany (Bad Kötzing), which meets the requirements of the European Regulatory Drug Authority.

Extramural Research Funding

Collaboratory Research Center for the development of new Chinese Phytopharmaceutical for the prevention and therapy of the Metabolic Syndrom (Cardiovascular Diseases, Diabetes and Hyperlipidemia in the framework of a Sino German Joint Venture cooperation.

Editorship of the International Journal Elsevier Publ. Comp. Amsterdam/Munich

Publications – Book edition

Chromatographic Fingerprint Analysis of Herbal Medicines (Thin-layer and High Performance Liquid Chromatography of Chinese Drugs, Vol. 1, 2 (2011), Vol. 3 (2014): H. Wagner, R. Bauer, D. Melchart, Pei-Gen Xiao, A. Staudinger, Springer Wien/New York.

Evidence and Rational Based Research on Chinese Drugs eds. H. Wagner and G. Ulrich-Merzenich, Springer Wien, Heidelberg/New York, Dordrecht, London 2013.

Coauthor in Leitfaden Chinesische Phytotherapie, C.H. Hempen, T. Fischer, Urban & Fischer München, Jena, 2. Aufl.

Pharmaceutical Biology

Apl. Prof. Dr. rer. biol. Hum. Stefan Zahler

Born 1964 in Rosenheim/Bayern, 1984-1989 study of biology at Ludwig-Maximilians University, Munich, 1994 PhD degree in the group of Prof. Dr. Gerlach, Medical Faculty of the LMU, 1994-2003 Postdoctoral fellow at the Institute of Physiology, Medical Faculty, LMU (Profs. Gerlach and Pohl), 2001 teaching credentials (Habilitation) in Medical Physiology, since 2003 group leader at the chair for Pharmaceutical Biology (Prof. Vollmar), 2003 teaching credential in Pharmaceutical Biology, 2011 appointment as “außerplanmäßiger Professor” at the Faculty for Chemistry and Pharmacy, LMU.

Research Topics

Molecular pharmacology of natural compounds, angiogenesis (esp. tumor angiogenesis), endothelial cell biology, structured nano-surfaces and hydrogels, cell migration, and imaging techniques.

Honors, Awards, Memberships

Member of the Editorial Board *Current Angiogenesis*

Extramural Research Funding

Collaborative Research Center 1032 (DFG, German Research Council) „Nanoagents“
German Research Council (DFG) “The role of Cdk5 as target in hepatocellular carcinoma.” ZA 186/7-1

German Research Council (DFG), Inverted and upright confocal laser scanning microscopes for the imaging facility of the Department of Pharmacy

Publications – Scientific Papers

2013

Kretzschmann VK, Gellrich D, Ullrich A, Zahler S, Vollmar AM, Kazmaier U, Fürst R. Novel Tubulin Antagonist Pretubulysin Displays Antivascular Properties In Vitro and In Vivo. *Arterioscler Thromb Vasc Biol.* 2013 Nov 27. [Epub ahead of print] PMID: 24285578.

Rath S, Liebl J, Fürst R, Vollmar AM, Zahler S. Regulation of endothelial signaling and migration by v-ATPase. *Angiogenesis*. 2013 Nov 20. [Epub ahead of print] PMID: 24254321.

Braig S, Kressirer CA, Liebl J, Bischoff F, Zahler S, Meijer L, Vollmar AM. Indirubin derivative 6BIO suppresses metastasis. *Cancer Res*. 2013 Oct 1;73(19):6004-12. doi: 10.1158/0008-5472.CAN-12-4358. Epub 2013 Aug 14. PMID: 23946383.

Weitensteiner SB, Liebl J, Krystof V, Havlíček L, Gucký T, Strnad M, Fürst R, Vollmar AM, Zahler S. Trisubstituted pyrazolopyrimidines as novel angiogenesis inhibitors. *PLoS One*. 2013;8(1):e54607. doi: 10.1371/journal.pone.0054607. Epub 2013 Jan 15. PMID: 23336010.

2012

Wiedmann RM, von Schwarzenberg K, Palamidessi A, Schreiner L, Kubisch R, Liebl J, Schempp C, Trauner D, Vereb G, Zahler S, Wagner E, Müller R, Scita G, Vollmar AM. The V-ATPase-inhibitor archazolid abrogates tumor metastasis via inhibition of endocytic activation of the Rho-GTPase Rac1. *Cancer Res*. 2012 Nov 15;72(22):5976-87. doi: 10.1158/0008-5472.CAN-12-1772. Epub 2012 Sep 17. PMID: 22986742.

Rárová L, Zahler S, Liebl J, Kryštof V, Sedlák D, Bartůněk P, Kohout L, Strnad M. Brassinosteroids inhibit in vitro angiogenesis in human endothelial cells. *Steroids*. 2012 Nov;77(13):1502-9. doi: 10.1016/j.steroids.2012.08.011. Epub 2012 Sep 4. PMID: 22974826.

Schloegl W, Marschall V, Witting MY, Volkmer E, Drosse I, Leicht U, Schieker M, Wigggenhorn M, Schaubhut F, Zahler S, Friess W. Porosity and mechanically optimized PLGA based in situ hardening systems. *Eur J Pharm Biopharm*. 2012 Nov;82(3):554-62. doi: 10.1016/j.ejpb.2012.08.006. Epub 2012 Aug 28. PMID: 22947486.

Willer EA, Malli R, Bondarenko AI, Zahler S, Vollmar AM, Graier WF, Fürst R. The vascular barrier-protecting hawthorn extract WS® 1442 raises endothelial calcium levels by inhibition of SERCA and activation of the IP3 pathway. *J Mol Cell Cardiol*. 2012 Oct;53(4):567-77. doi: 10.1016/j.yjmcc.2012.07.002. Epub 2012 Jul 16. PMID: 22814436.

Eirich J, Burkhart JL, Ullrich A, Rudolf GC, Vollmar A, Zahler S, Kazmaier U, Sieber SA. Pretubulysin derived probes as novel tools for monitoring the microtubule network via activity-based protein profiling and fluorescence microscopy. *Mol Biosyst*. 2012 Aug;8(8):2067-75. doi: 10.1039/c2mb25144b. Epub 2012 Jun 21. PMID: 22722320.

Reichel CA, Pühr-Westerheide D, Zuchtriegel G, Uhl B, Berberich N, Zahler S, Wymann MP, Luckow B, Krombach F. C-C motif chemokine CCL3 and canonical neutrophil attractants promote neutrophil extravasation through common and distinct mechanisms. *Blood*. 2012 Jul 26;120(4):880-90. doi: 10.1182/blood-2012-01-402164. Epub 2012 Jun 6. PMID: 22674804.

Rath S, Liebl J, Fürst R, Ullrich A, Burkhart JL, Kazmaier U, Herrmann J, Müller R, Günther M, Schreiner L, Wagner E, Vollmar AM, Zahler S. Anti-angiogenic effects of the tubulysin precursor pretubulysin and of simplified pretubulysin derivatives. *Br J Pharmacol*. 2012 Nov;167(5):1048-61. doi: 10.1111/j.1476-5381.2012.02037.x. PMID: 22595030.

Egea V, Zahler S, Rieth N, Neth P, Popp T, Kehe K, Jochum M, Ries C. Tissue inhibitor of metalloproteinase-1 (TIMP-1) regulates mesenchymal stem cells through let-7f microRNA and Wnt/ β -catenin signaling. *Proc Natl Acad Sci U S A*. 2012 Feb 7;109(6):E309-16. doi: 10.1073/pnas.1115083109. Epub 2012 Jan 5. PMID: 22223664.

Bubik MF, Willer EA, Bihari P, Jürgenliemk G, Ammer H, Krombach F, Zahler S, Vollmar AM, Fürst R. A novel approach to prevent endothelial hyperpermeability: the *Crataegus* extract WS® 1442 targets the cAMP/Rap1 pathway. *J Mol Cell Cardiol*. 2012 Jan;52(1):196-205. doi: 10.1016/j.yjmcc.2011.10.020. Epub 2011 Oct 31. PMID: 22085704.

Other Activities

Head of the imaging facility of the Department of Pharmacy.

Pharmaceutical Technology & Biopharmaceutics

Dr. Julia Engert, geb. Myschik (University of Otago)

Born 1979 in Steinheim/Westf. Germany. 1999-2003 Pharmacy student at the Westfälische-Wilhelms-University Münster. November 2003 to April 2004 Postgraduate Certificate student at the School of Pharmacy, University of Otago, Dunedin, New Zealand. December 2004 License as a pharmacist in Germany. February 2005 to February 2008 PhD candidate at the School of Pharmacy, University of Otago, Dunedin, New Zealand in the group of Prof. Thomas Rades and Prof. Sarah Hook. Since August 2008 Postdoctoral research fellow in the group of Prof. Gerhard Winter, LMU Munich. Since April 2011 “Akademische Rätin auf Zeit” (tenured research staff), since April 2012 “Habilitation”.

Research Topics

Desired and undesired immunogenicity of protein therapeutics; Immunogenicity of protein aggregates; Use of recombinant spider silk in the area of drug and vaccine delivery; Epidermal powder immunization as an alternative route for vaccination; Preparation and use of antigen-loaded lipid implants for vaccination; Investigation of non-spherical particulate systems for the delivery of drugs or vaccines.

Honors, Awards, Memberships

2012 and 2013 Galenus Support, Galenus Privatstiftung
Member of the German Pharmaceutical Society (DPhG)
Member of the Controlled Release Society (CRS)
Member of the New Zealand Chapter of the Controlled Release Society (NZCRS)
American Association of Pharmaceutical Scientists (AAPS)

Extramural Research Funding

2013 Travel grant LMU Mentoring program

Publications – Scientific Papers

2013

Neubauer MP, Blüm C, Agostini E, Engert J, Scheibel T, Fery A. Micromechanical characterization of spider silk particles. *Biomaterials Science*, 1(11), 1160-1165 2013. doi: 10.1039/C3BM60108K doi: 10.1039/c3bm60108k.

Mathaes R, Hildebrandt C, Winter G, Engert J*, Besheer A*. Quality control of protein crystal suspensions using microflow imaging and flow cytometry. *J Pharm Sci* 2013 Oct;102(10):3860-6. doi: 10.1002/jps.23677. Epub 2013 Jul 30. (*equal contribution)

Mathaes R, Winter G, Engert J*, Besheer A*. Application of different analytical methods for the characterization of non-spherical micro- and nanoparticles. *Int J Pharm* 2013 Sep 10;453(2):620-9. doi: 10.1016/j.ijpharm.2013.05.046. Epub 2013 May 29. (*equal contribution)

Schwab M, McGoverin CM, Gordon KC, Winter G, Rades T, Myschik J, Strachan CJ. Studies on the lipase induced degradation of lipid based drug delivery systems. Part II – Investigations on the mechanisms leading to collapse of the lipid structure. *Eur J Pharm Biopharm* 2013 Aug;84(3):456-63. doi: 10.1016/j.ejpb.2012.12.023. Epub 2013 Feb 4.

Weinberger EE, Himly M, Myschik J, Hauser M, Altmann F, Isakovic A, Scheiblhofer S, Thalhamer J, Weiss R. Generation of hypoallergenic neoglycoconjugates for dendritic cell targeted vaccination: a novel tool for specific immunotherapy. *J Control Release* 2013;165(2):101-109.

2012

Deng Y, Winter G, Myschik J. Preparation and validation of a skin model for the evaluation of intradermal powder injection devices. *Eur J Pharm Biopharm* 2012;81(2):360-368

Hofer M, Winter G, Myschik J. Recombinant spider silk particles for controlled delivery of protein drugs. *Biomaterials* 2012;33(5):1554-62.

Kis EE, Winter G, Myschik J. Devices for Intradermal Vaccination. *Vaccine* 2012;30(3):523-38.

Other Activities

Reviewer for *Acta Biomaterialia*, *AAPS PharmSciTech*, *Biomaterials*, *Comparative Medicine*, *Current Drug Delivery*, *European Journal of Pharmaceutics and Biopharmaceutics*, *Expert Review of Vaccines*, *Journal of Drug Targeting*, *Journal of Pharmacy and Pharmacology*, *Molecular Pharmaceutics*, *Pharmaceutical Research*, *Polymer Bulletin*, *Vaccine...*

Pharmaceutical Technology & Biopharmaceutics

Univ.-Prof. Dr. rer. nat. Wolfgang Frieß

Born 1966 in Nürnberg; 1984-1988 study of pharmacy at the FAU Erlangen-Nürnberg, 1989 licence as pharmacist; 1993 PhD degree in the group of Prof. Dr. E. Nürnberg FAU Erlangen-Nürnberg, Department of Pharmaceutical Technology; 1994-1995 Postdoctoral Fellow in the group of Prof. Dr. G. Lee FAU Erlangen-Nürnberg, Department of Pharmaceutical Technology; 1995-1996 Postdoctoral Fellow in the group of Prof. Dr. M. Groves, Institute for Tuberculosis Research, University of Illinois at Chicago, USA; 1996-1997 Staff Scientist, Genetics Institute, Andover, MA, USA; 1997-2001 Postdoctoral Fellow in the group of Prof. Dr. G. Lee FAU Erlangen-Nürnberg, Department of Pharmaceutical Technology; 2001 Habilitation at the FAU Erlangen-Nürnberg (Collagen as Biomaterial for Drug Delivery); since 2001 C3-Professor for Pharmaceutical Technology and Biopharmaceutics at the Department of Pharmacy, LMU München; Cofounder of Coriolis Pharma.

Research Topics

Activated Biomaterials for Tissue Regeneration; Formulation and Stabilization of Protein Drugs; Parenteral Depot Formulations; Freeze-Drying.

Honors, Awards, Memberships

Member of the German Pharmaceutical Society, Member of the International Association of Pharmaceutical Technology, Member of the Controlled Release Society, German Chapter, Editor of *European Journal of Pharmaceutics and Biopharmaceutics*, Member of the Editorial Board of *Pharmaceutical Technology and Development*, Member of the Editorial Board of *Generics and Biosimilars Initiative Journal*.

Extramural Research Funding

Industrial funding by Abbott, Roche and Boehringer Ingelheim
 German Federation of Industrial Research Associations (AiF) Cornet - Program „Encomed“
 Deutsche Bundesstiftung Umwelt (DBU) Sustainable Pharmacy - Program „Depot-Zyklus“
 Fellowships of DAAD to postdocs and students

Publications – Scientific Papers

Hawe A., Schaubhut F., Geidobler R., Wiggernhorn M., Friess W., Rast M., de Muynck C., Winter G., Pharmaceutical feasibility of sub-visible particle analysis in parenterals with reduced volume light obscuration methods. *Eur. J. Pharm. Biopharm.*, 85, 2013, 1084-1087.

Höger K., Becherer T., Qiang W., Haag R., Friess W., Kuchler S., Polyglycerol coatings of glass vials for protein resistance, *Eur. J. Pharm. Biopharm.*, 85, 2013, 756-764.

Ray N., van Noorden T., Radu F.A., Knabner P., Friess W., Drug release from collagen matrices including an evolving microstructure. *J. Appl. Math. Mech.* 93, 2013, preprint. (EDITORS PICK)

Zoells S., Weinbuch D., Wiggenhorn M., Winter G., Friess W., Jiskoot W., Hawe A., Flow Imaging Microscopy for Protein Particle Analysis-A Comparative Evaluation of Four Different Analytical Instruments. *AAPS Journal* 15, 2013, 1200-1211.

Volkmer E., Leicht U., Moritz M., Schwarz C., Wiese H., Milz S., Matthias P., Schloegl W., Friess W., Goettlinger M., Augat P., Schieker M., Poloxamer-based hydrogels hardening at body core temperature as carriers for cell based therapies: in vitro and in vivo analysis. *J. Mat. Sci.: Mat. in Med.* 24, 2013, 2223-2234.

Kasper J. C., Troiber C., Kuechler S., Wagner E., Friess W., Formulation development of lyophilized, long-term stable siRNA/oligoaminoamide polyplexes. *Eur. J. Pharm. Biopharm.*, 85, 2013, 294-305.

Kasper J.C., Wiggenhorn M., Resch M., Friess W., Implementation and evaluation of an optical fiber system as novel process monitoring tool during lyophilisation. *Eur. J. Pharm. Biopharm.* 83, 2013, 449-459.

Weinbuch D., Zölls S., Wiggenhorn M., Friess W., Winter G., Jiskoot W., Hawe A., Micro-Flow Imaging and resonant mass measurement (Archimedes) – complementary methods to quantitatively differentiate protein particles and silicone oil droplets. *J. Pharm. Sci.* 102, 2013, 2152-2165. (TOP 10 DOWNLOADS)

Claus S., Weiler C., Schiewe J., Friess W., Optimization of the fine particle fraction of a lyophilized lysozyme formulation for dry powder inhalation. *Pharm. Res.* 30, 2013, 1698-1713.

Zölls S., Gregoritz M., Tantipolphan R., Wiggenhorn M., Winter G., Friess W., Hawe A., How Subvisible Particles Become Invisible – Relevance of the Refractive Index for Protein Particle Analysis. *J. Pharm. Sci.* 102, 2013, 1434-1446.

Higel F., Demelbauer U., Seidl A., Friess W., Sörgel F., N-Glycan-Analysis of Biopharmaceuticals using a Reversed Phase Liquid Chromatography-Mass Spectrometry Platform. *Anal. Bioanal. Chem.* 405, 2013, 2481-2493.

Kasper J.C., Pikal M.J., Friess W., Investigations on polyplex stability during the freezing step of lyophilization using controlled ice nucleation-the importance of residence time in the low-viscosity fluid state. *J Pharm Sci.* 102, 2013, 929-946.

Menzen T., Friess W., High-throughput melting-temperature analysis of a monoclonal antibody by differential scanning fluorimetry in the presence of surfactants. *J Pharm Sci* 2013, 102, 415-428.

Steinhilber D., Witting M., Zhang X., Staegemann M., Paulus F., Friess W., Kuechler S., Haag R., Surfactant free preparation of biodegradable dendritic polyglycerol nanogels by inverse nanoprecipitation for encapsulation and release of pharmaceutical biomacromolecules. *J. Contr. Rel.* 169, 2013, 289-295.

Troiber C., Kasper J.C., Milani S., Scheible M., Martin I., Schaubhut F., Kuechler S., Raedler J., Simmel F.C., Friess W., Wagner E., Comparison of four different particle sizing methods for siRNA polyplex characterization. *Eur. J. Pharm. Biopharm.* 84, 2013, 255-264.

Kasper J.C., Kuechler, Sarah; Friess, Wolfgang. Lyophilization of synthetic gene carriers. In Ogris M., Oupicky D., *Nanotechnology for Nucleic Acid Delivery - Methods in Molecular Biology* 948. Humana Press, New York, 2013, 133-147.

Printz M., Friess W., Integrated approaches to aggregates / particles. In Mahler H.-C., Jiskoot W. H., *Analysis of Aggregates and Particles in Protein Pharmaceuticals*. Wiley, New York, 2012, 369-387.

Vay K., Friess W., Scheler S., Understanding reflection behavior as a key for interpreting complex signals in FBRM monitoring of microparticle preparation processes. *Int. J. Pharm.* 437, 2012, 1-10.

Schloegl W., Marschall V., Witting M.Y., Volkmer E., Drosse I., Leicht U., Schieker M., Wiggenhorn M., Schaubhut F., Zahler S., Friess W., Porosity and mechanically optimized PLGA based in situ hardening systems. *Eur. J. Pharm. Biopharm.* 82, 2012, 554-562.

Vay K., Friess W., Scheler S., A detailed view of microparticle formation by in-process monitoring of the glass transition temperature. *Eur. J. Pharm. Biopharm.* 81, 2012, 399-408.

Schloegl W., Klein A., Fuerst R., Leicht U., Volkmer E., Schieker M., Jus S., Guebitz G.M. Stachel I., Meyer M., Wiggenhorn M., Friess W., Residual transglutaminase in collagen - Effects, detection, quantification, and removal. *Eur. J. Pharm. Biopharm.* 80, 2012, 282-288.

Jiskoot W., Randolph T.W., Volkin D.B., Middaugh C.R., Schoeneich C., Winter G., Friess W., Crommelin D.J.A., Carpenter J.F., Protein instability and immunogenicity: Roadblocks to clinical application of injectable protein delivery systems for sustained release. *J. Pharm. Sci.* 101, 2012, 946-954. (TOP 10 DOWNLOADS)

Obermeier A., Kuechler S., Matl F. D., Pirzer T., Stemberger A., Mykhaylyk O., Friess W., Burgkart R., Magnetic Drug Targeting as New Therapeutic Option for the Treatment of Biomaterial Infections. *J. Biomat. Sci.* 23, 2012, 2321-2336.

Pieters S., De Beer T., Kasper J.C., Boulpaep D., Waszkiewicz O., Goodarzi M., Tistaert C., Friess W., Remon J.-P., Vervaet C. Vander Heyden Y., Near-Infrared Spectroscopy for In-Line Monitoring of Protein Unfolding and Its Interactions with Lyoprotectants during Freeze-Drying. *Anal. Chem.* 84, 2012, 947-955.

Printz M., Friess W., Simultaneous detection and analysis of protein aggregation and protein unfolding by size exclusion chromatography with post column addition of the fluorescent dye BisANS. *J. Pharm Sci.* 101, 2012, 826-837.

Printz M., Kalonia D.S., Friess W., Individual second virial coefficient determination of monomer and oligomers in heat-stressed protein samples using size-exclusion chromatography-light scattering. *J. Pharm Sci.* 101, 2012, 363-372.

Patent Applications

Haag R., Steinhilber D., Friess W., Kuchler S., Witting M.Y., Verfahren zur Herstellung eines Polyglycerin-Nanogels zur Verkapselung und Freisetzung biologisch aktiver Substanzen. Deutsche Patentanmeldung 10 2012 108345.2

Other Activities

Co-Organizer of Conference on Freeze-Drying of Pharmaceuticals and Biologicals, Breckenridge, CO, 2012; Grant reviewer for DFG and BMBF; Reviewer for *EJPB*, *Pharm Res*, *J Pharm Sci*, *J Contr Rel*

Pharmaceutical Technology & Biopharmaceutics

Univ.-Prof. Dr. rer. nat. Gerhard Winter

Pharmacy studies (Scholarship Studienstiftung des Deutschen Volkes) at University of Heidelberg, Approbation 1982. Ph.D. in Pharm. Technology in Heidelberg 1983-1987. 1987-88 Laboratory Head at E. Merck, Darmstadt, 1988 - 1999 Laboratory Head, Group leader, Director for Pharmaceutical Development at Boehringer Mannheim GmbH, later Roche Diagnostics GmbH, Mannheim. Since 1999 Professor for Pharmaceutical Technology and Biopharmaceutics at the Department Pharmacy – Center for Drug Research at the LMU München. Research Stay at the University of Colorado, Denver 2004 und 2007.

Research Topics

Formulation and delivery of peptide and protein drugs, including parenteral depot systems. Colloidal drug carriers, including targeting and gene delivery aspects. Parenteral process technologies, protein sterilisation. Freeze drying and alternative drying technologies. Field flow fractionation, Nanoscale thermophoresis, Quantitative protein arrays. Lipid based depot systems, protein–lipid interactions. Rec. spider silk and cyclodextrins as new excipients in protein formulation. New vaccination technologies including device and adjuvant aspects. Antibody pharmacokinetics. Thermosensitive Liposomes. Nanoparticles for immunotherapy, non spherical nanoparticles. Formulation of PEGylated and HESylated protein drugs. Inhalation of protein drugs and nanoparticles.

Honors, Awards, Memberships

Arbeitsgemeinschaft für Pharmazeutische Verfahrenstechnik (APV)
Controlled Release Society (CRS)
Deutsche Pharmazeutische Gesellschaft (DPhG)
Beirat der Fachhochschule Biberach

Extramural Research Funding

Public funding: CSC, BFS, BMBF
Industrial research partners: AbbVie, Acino, Fresenius, Bayer, Nanotemper, Suppremol, AMSilk
Total funding in the review period : about 1,08 Mio €

Publications – Scientific Papers

2013

N.R. Maddux, V. Iyer, W. Cheng, A.M. Youssef, S.B. Joshi, D.B. Volkin, J.P. Ralston, G. Winter, C.R. Middaugh. High throughput prediction of the long-term stability of pharmaceutical macromolecules from short-term multi-instrument spectroscopic data. *J Pharm Sci.* 2014 Jan 13. doi: 10.1002/jps.23849. Epub ahead of print 2013

M. Shomali, A. Freitag, J. Engert, M. Siedler, Z. Kaymakcalan, G. Winter, J.F. Carpenter, T.W. Randolph. Antibody responses in mice to particles formed from adsorption of a murine monoclonal antibody onto glass microparticles. *J Pharm Sci.* 103(1) (2014) 78-89. Epub ahead of print 2013

H. Nishi, R. Mathäs, R. Fürst, G. Winter. Label-free flow cytometry analysis of subvisible aggregates in liquid IgG1 antibody formulations. *J Pharm Sci* 103(1) (2014) 90-99. Epub 2013 Nov 11.

E. Härtl, G. Winter, A. Besheer. Influence of hydroxypropyl-Beta-cyclodextrin on the stability of dilute and highly concentrated immunoglobulin g formulations. *J Pharm Sci* 102 (11) (2013) 4121-4131.

S. Zölls, D. Weinbuch, M. Wiggenhorn, G. Winter, W. Friess, W. Jiskoot, A. Hawe. Flow imaging microscopy for protein particle analysis- a comparative evaluation of four different analytical instruments. *AAPS J.* 15 (4) (2013), 1200-1211.

R. Geidobler, I. Konrad, G. Winter. Can controlled ice nucleation improve freeze-drying of highly-concentrated protein formulations. *J Pharm Sci* 102 (11) (2013), 3915-3919.

R. Mathaes, C. Hildebrandt, G. Winter, J. Engert, A. Besheer. Quality control of protein crystal suspensions using microflow imaging and flow cytometry. *J Pharm Sci* 102 (10) (2013), 3860-3866.

A. R. Prélaud, S. Fuchs, K. Weber, G. Winter, C. Coester, R. S. Müller. In vitro effects of CpG oligodeoxynucleotides delivered by gelatin nanoparticles on canine peripheral blood mononuclear cells of atopic and healthy dogs – a pilot study. *Vet Dermatol* 2013 Oct; 25(5): 494-e117

W. Friess, G. Winter. Meeting the challenges in freeze-drying of pharmaceuticals and biological. *Eur J Pharm Biopharm* 2013 Oct 85(2): 161

J. C. Kasper, G. Winter, W. Friess. Recent advances and further challenges in lyophilization. *Eur J Pharm Biopharm* 2013 Oct; 85(2):162-169.

- K. Schersch, O. Betz, P. Garidel, S. Muehlau, S. Bassarab, G. Winter. Systematic investigation of the effect of lyophilizate collapse on pharmaceutically relevant proteins III: Collapse during storage at elevated temperatures. *Eur J Pharm Biopharm* 2013 Oct; 85(2):240-52
- R. Mathaes, G. Winter, J. Engert, A. Besheer. Application of different analytical methods for the characterization of non-spherical micro- and nanoparticles. *Int J Pharm* 2013 Sep 10;453(2):620-9.
- E. Härtl, N. Dixit, A. Besheer, D. Kalonia, G. Winter. Weak antibody-cyclodextrin interactions determined by quartz crystal microbalance and dynamic/static light scattering. *Eur J Pharm Biopharm* 2013 Nov;85(3 Pt A):781-9
- R. Geidobler, G. Winter. Controlled ice nucleation in the field of freeze-drying: Fundamentals and technology review. *Eur J Pharm Biopharm*. 2013 Oct;85(2):214-22.
- D. Weinbuch, S. Zölls, M. Wiggenhorn, W. Friess, G. Winter, W. Jiskoot, A. Hawe. Micro-flow imaging and resonant mass measurement (Archimedes) – complementary methods to quantitatively differentiate protein particles and silicone oil droplets. *J Pharm Sci* 102 (7) (2013), 2152-2165.
- S. Zölls, M. Gregoritz, R. Tantipolphan, M. Wiggenhorn, G. Winter, W. Friess, A. Hawe. How subvisible particles become invisible-relevance of the refractive index for protein particle analysis. *J Pharm Sci* 102 (5) (2013), 1434-1446
- A. Hawe, F. Schaubhut, R. Geidobler, M. Wiggenhorn, W. Friess, M. Rast, C. de Muynck, G. Winter. Pharmaceutical feasibility of sub-visible particle analysis in parenterals with reduced volume light obscuration methods. *Eur J Pharm Biopharm* 2013 Nov;85(3 Pt B):1084-7
- E. E. Etzl, G. Winter, J. Engert. Toward intradermal vaccination: preparation of powder formulations by collapse freeze-drying. *Pharm Dev Technol* 2013 Mar;19(2):213-22
- M. Schwab, C. M. McGoverin, K. C. Gordon, G. Winter, T. Rades, J. Myschik, C. J. Strachan. Studies on the lipase-induced degradation of lipid-based drug delivery systems. Part II – Investigations on the mechanisms leading to collapse of the lipid structure. *Eur J Pharm Biopharm* 2013 Aug;84(3):456-63
- A. M. Youssef, G. Winter. A critical evaluation of microcalorimetry as a predictive tool for long term stability of liquid protein formulations: Granulocyte Colony Stimulating Factor (GCSF). *Eur J Pharm Biopharm* 84 (1) (2013), 145-155
- M. Noga, D. Edinger, R. Kläger, S. V. Wegner, J. P. Spatz, E. Wagner, G. Winter, A. Besheer. The effect of molar mass and degree of hydroxyethylation on the controlled shielding and deshielding of hydroxyethyl starch-coated polyplexes. *Biomaterials* 34 (10) (2013), 2530-2538.

V. Iyer, N. Maddux, L. Hu, W. Cheng, A. K. Youssef, G. Winter, S. B. Joshi, D. B. Volkin, C. R. Middaugh. Comparative signature diagrams to evaluate biophysical data for differences in protein structure across various formulations. *J Pharm Sci* 102 (1) (2013),43-51.

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G. Sax, B. Kessler, E. Wolf, G. Winter. In-vivo biodegradation of extruded lipid implants in rabbits. *J Control Release* 163 (2) (2012), 195-202.

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S. Buchmann, G.H. Sandmann, L. Walz, H. Hoppe, K. Beitzel, G. Wexel, W. Tian, G. Winter, A.B. Imhoff. Refixation of the supraspinatus tendon in a rat model - influence of continuous growth factor application on tendon structure. *J Orthop Res.* 31 (2) (2013), 300-305.

T. Serno, E. Härtl, A. Besheer, R. Miller, G. Winter. The role of polysorbate 80 and HP β CD at the air-water interface of IgG solutions. *Pharm Res.* 30 (1) (2013), 117-130.

G. Sax, F. Feil, S. Schulze, Ch. Jung, Ch. Bräuchle, G. Winter. Release pathways of interferon α 2a molecules from lipid twin screw extrudates revealed by single molecule fluorescence microscopy. *J Control Release* 162 (2) (2012), 295-302.

K. Schersch, O. Betz, P. Garidel, S. Muehlau, S. Bassarab, G. Winter. Systematic investigation of the effect of lyophilizate collapse on pharmaceutically relevant proteins, Part 2: stability during storage at elevated temperatures. *J Pharm Sci.* 101 (7) (2012), 2288-2306.

Y. Deng, G. Winter, J. Myschik. Preparation and validation of a skin model for the evaluation of intradermal powder injection devices. *Eur J Pharm Biopharm* 81(2) (2012), 360-368.

S. Fuchs, J. Klier, A. May, G. Winter, C. Coester, H. Gehlen. Towards an inhalative in vivo application of immunomodulating gelatin nanoparticles in horse-related preformulation studies. *J Microencapsul.* 29 (7) (2012), 615-625.

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W. Jiskoot, T. W. Randolph, D. B. Volkin, C. R. Middaugh, C. Schöneich, G. Winter, W. Friess W, D. J. Crommelin, J. F. Carpenter. Protein instability and immunogenicity: Roadblocks to clinical application of injectable protein delivery systems for sustained release. *J Pharm Sci.* 101 (3) (2012), 946-54.

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M. Hofer, G. Winter, J. Myschik. Recombinant spider silk particles for controlled delivery of protein drugs. *Biomaterials.* 33 (5) (2012), 1554-62.

E. E. Kis, G. Winter, J. Myschik. Devices for intradermal vaccination. *Vaccine* 30 (3) (2011), 523-538.

S. Bauersachs, S.E. Ulbrich, H.D. Reichenbach, M. Reichenbach, M. Büttner, H.H. Meyer, T.E. Spencer, M. Minten, G. Sax, G. Winter, E. Wolf. Comparison of the effects of early pregnancy with human Interferon, Alpha 2(IFNA2), on gene expression in bovine endometrium. *Biol Reprod* 86 (2) (2012), 1-15.

Patents

EP 2240167 B1 granted Nov 13, 2013
 US 8580933 issued Nov 11, 2013
 US 8436149 issued May 7, 2013
 PCT 2013/0109762 issued May 2, 2013
 US 8404819 issued March 26, 2013
 WO 2013/021056 published Feb 14, 2013
 PCT 2012/0251550 issued Oct 4, 2012
 PCT 2012/0231041 issued Sept 13, 2012
 PCT 2012/0219990 issued Aug 30, 2012
 PCT 2012/0177704 issued July 12, 2012
 US 8168760 issued May 1, 2012
 PCT 2012/0087975 issued April 12, 2012

Other Activities

Member of the editorial Boards of *EJPB* and *J Pharm Sci.*
 Co-editor of Special Issue of *EJPB* on freeze drying 2013
 Reviewer for many journals, consultant to Pharma and Biotech industry
 Co-organizer for Int. Symposium on Lyophilisation, Breckenridge 2012
 Local Head of German Pharm. Society, organization of 9 public lectures/ year.
 Co-founder of biopharmaceutical interest group with Copenhagen and Leiden

Pharmacology

Prof. Dr. rer. nat. Martin Biel

Born 1963 in Völklingen/Saar. 1983-1988 Study of Pharmacy at the Saarland University. 1988-1990 Graduate research at the Institute of Physiological Chemistry, Saarland University. 1990 PhD degree. 1991-1996 Postdoctoral Fellow at the Department of Pharmacology and Toxicology, TU Munich. 1996 Venia legendi in Pharmacology and Toxicology at the Medical Faculty of TU Munich. 1996-1999 “Privatdozent” (equivalent to assistant professorship) at the Institute of Pharmacology and Toxicology, TU Munich. 1997 Offer for a Professorship for Pharmacology at the FU Berlin. Since 1999 C4 Professor and Chair of Pharmacology at the Faculty of Chemistry and Pharmacy, LMU. 2007-2009 Vice Dean and 2009-2011 Dean of the Faculty of Chemistry and Pharmacy, LMU.

Research Topics

Role of ion channels in physiology and disease. Pacemaker channels. Molecular basis of cardiac rhythmicity. Control of neuronal circuit function by ion channels. Visual transduction and analysis of retinal diseases. Development of gene therapy approaches to restore vision. Calcium channels of the plasma membrane and intracellular organelles. Development of genetic mouse models as disease models.

Honors, Awards, Memberships

Feldberg Prize

Member of the German Academy of Sciences Leopoldina

Member of the Munich Heart Alliance

Member of the Munich Center for Neurosciences (MCN)

Member of the Editorial Board *Frontiers in Pharmacology of Ion Channel and Channelopathies*

Member of the Editorial Board *Medizinische Monatsschrift für Pharmazeuten*

Member of the German Pharmaceutical Society (DPhG)

Member of the German Society for Experimental and Clinical Pharmacology and Toxicology (DGPT)

Member of the German Ophthalmological Society (DOG)

Extramural Research Funding

Excellence Cluster *Center for Integrated Protein Sciences Munich* (DFG and the Federal Ministry of Education and Research)

Graduate School *Systemic Neurosciences* (DFG and the Federal Ministry of Education and Research)

Collaborative Research Center 870 (German Research Council)
 RD Cure: Bringing Gene Supplementation Therapy for Inherited PDE6A- and CNGA3-associated Retinopathies into Clinical Practice (Kerstan Foundation)
 Bavarian Research Foundation

Publications – Scientific Papers

2013

Tanimoto N, Sothilingam V, Gloeckner G, Bryda EC, Humphries P, Biel M, Seeliger MW. Auditory event-related signals in mouse ERG recordings. *Doc Ophthalmol*. 2014 Feb;128(1):25-32. doi: 10.1007/s10633-013-9417-7. Epub 2013 Nov 13. PubMed PMID: 24221507.

Fenske S, Krause SC, Hassan SI, Becirovic E, Auer F, Bernard R, Kupatt C, Lange P, Ziegler T, Wotjak CT, Zhang H, Hammelmann V, Pappas C, Biel M, Wahl-Schott CA. Sick Sinus Syndrome in HCN1-Deficient Mice. *Circulation*. 2013 Dec 17;128(24):2585-94. doi: 10.1161/CIRCULATIONAHA.113.003712. Epub 2013 Nov 11. PubMed PMID: 24218458.

Michalakis S, Shaltiel L, Sothilingam V, Koch S, Schludi V, Krause S, Zeitz C, Audo I, Lancelot ME, Hamel C, Meunier I, Preisig MN, Friedburg C, Lorenz B, Zabouri N, Haverkamp S, Garrido MG, Tanimoto N, Seeliger MW, Biel M, Wahl-Schott CA. Mosaic synaptopathy and functional defects in Cav1.4 heterozygous mice and human carriers of CSNB2. *Hum Mol Genet*. 2013 Nov 17. [Epub ahead of print] PubMed PMID: 24163243.

Xu J, Morris L, Thapa A, Ma H, Michalakis S, Biel M, Baehr W, Peshenko IV, Dizhoor AM, Ding XQ. cGMP accumulation causes photoreceptor degeneration in CNG channel deficiency: evidence of cGMP cytotoxicity independently of enhanced CNG channel function. *J Neurosci*. 2013 Sep 11;33(37):14939-48. doi: 10.1523/JNEUROSCI.0909-13.2013. PubMed PMID: 24027293; PubMed Central PMCID: PMC3771030.

Schön C, Biel M, Michalakis S. Gene replacement therapy for retinal CNG channelopathies. *Mol Genet Genomics*. 2013 Oct;288(10):459-67. doi: 10.1007/s00438-013-0766-4. Epub 2013 Jul 17. Review. PubMed PMID: 23861024.

Ma H, Thapa A, Morris LM, Michalakis S, Biel M, Frank MB, Bebak M, Ding XQ. Loss of cone cyclic nucleotide-gated channel leads to alterations in light response modulating system and cellular stress response pathways: a gene expression profiling study. *Hum Mol Genet*. 2013 Oct 1;22(19):3906-19. doi: 10.1093/hmg/ddt245. Epub 2013 Jun 4. PubMed PMID: 23740940; PubMed Central PMCID: PMC3766184.

Michalakis S, Xu J, Biel M, Ding XQ. Detection of cGMP in the degenerating retina. *Methods Mol Biol.* 2013;1020:235-45. doi: 10.1007/978-1-62703-459-3_16. PubMed PMID: 23709038.

Hanke W, Mamasuew K, Biel M, Yang RB, Fleischer J. Odorant-evoked electrical responses in Grueneberg ganglion neurons rely on cGMP-associated signaling proteins. *Neurosci Lett.* 2013 Feb 28;539:38-42. doi: 10.1016/j.neulet.2013.01.032. Epub 2013 Feb 4. PubMed PMID: 23384572.

Cao-Ehlker X, Zong X, Hammelmann V, Gruner C, Fenske S, Michalakis S, Wahl-Schott C, Biel M. Up-regulation of hyperpolarization-activated cyclic nucleotide-gated channel 3 (HCN3) by specific interaction with K⁺ channel tetramerization domain-containing protein 3 (KCTD3). *J Biol Chem.* 2013 Mar 15;288(11):7580-9. doi: 10.1074/jbc.M112.434803. Epub 2013 Feb 4. PubMed PMID: 23382386; PubMed Central PMCID: PMC3597799.

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Brandmayr C, Wagner M, Brückl T, Globisch D, Pearson D, Kneuttinger AC, Reiter V, Hienzsch A, Koch S, Thoma I, Thumbs P, Michalakis S, Müller M, Biel M, Carell T. Isotope-based analysis of modified tRNA nucleosides correlates modification density with translational efficiency. *Angew Chem Int Ed Engl.* 2012 Oct 29;51(44):11162-5. doi: 10.1002/anie.201203769. Epub 2012 Oct 4. PubMed PMID: 23037940; PubMed Central PMCID: PMC3533783.

Shaltiel L, Papparizos C, Fenske S, Hassan S, Gruner C, Rötzer K, Biel M, Wahl-Schott CA. Complex regulation of voltage-dependent activation and inactivation properties of retinal voltage-gated Cav1.4 L-type Ca²⁺ channels by Ca²⁺-binding protein 4 (CaBP4). *J Biol Chem.* 2012 Oct 19;287(43):36312-21. doi:10.1074/jbc.M112.392811. Epub 2012 Aug 30. PubMed PMID: 22936811; PubMed Central PMCID: PMC3476298.

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Zong X, Krause S, Chen CC, Krüger J, Gruner C, Cao-Ehlker X, Fenske S, Wahl-Schott C, Biel M. Regulation of hyperpolarization-activated cyclic nucleotide-gated (HCN) channel activity by cCMP. *J Biol Chem.* 2012 Aug 3;287(32):26506-12. doi: 10.1074/jbc.M112.357129. Epub 2012 Jun 19. PubMed PMID: 22715094; PubMed Central PMCID: PMC3410992.

Grimm C, Hassan S, Wahl-Schott C, Biel M. Role of TRPML and two-pore channels in endolysosomal cation homeostasis. *J Pharmacol Exp Ther.* 2012 Aug;342(2):236-44. doi: 10.1124/jpet.112.192880. Epub 2012 Apr 19. PubMed PMID: 22518024.

Thapa A, Morris L, Xu J, Ma H, Michalakis S, Biel M, Ding XQ. Endoplasmic reticulum stress-associated cone photoreceptor degeneration in cyclic nucleotide-gated channel deficiency. *J Biol Chem.* 2012 May 25;287(22):18018-29. doi: 10.1074/jbc.M112.342220. Epub 2012 Apr 9. PubMed PMID: 22493484; PubMed Central PMCID: PMC3365688.

Xu J, Morris LM, Michalakis S, Biel M, Fliesler SJ, Sherry DM, Ding XQ. CNGA3 deficiency affects cone synaptic terminal structure and function and leads to secondary rod dysfunction and degeneration. *Invest Ophthalmol Vis Sci.* 2012 Mar 1;53(3):1117-29. doi: 10.1167/iovs.11-8168. PubMed PMID: 22247469; PubMed Central PMCID: PMC3339899.

Michalakis S, Mühlfriedel R, Tanimoto N, Krishnamoorthy V, Koch S, Fischer MD, Becirovic E, Bai L, Huber G, Beck SC, Fahl E, Büning H, Schmidt J, Zong X, Gollisch T, Biel M, Seeliger MW. Gene therapy restores missing cone-mediated vision in the CNGA3-/- mouse model of achromatopsia. *Adv Exp Med Biol.* 2012;723:183-9. doi: 10.1007/978-1-4614-0631-0_25. PubMed PMID: 22183332.

Pharmacology

Dr. Dr. Christian Michael Grimm

Born 1975 in Würzburg/Bavaria, 1995-2000 study of pharmacy at Univ. Würzburg, 2004 PhD degree in the group of Prof. Dr. Günter Schultz, Institute for Pharmacology, Medical Faculty, FU Berlin, 2004-2005 Postdoctoral fellow at Harvard University (USA), 2005-2009 Postdoctoral fellow at Stanford University (USA) in the group of Prof. Dr. Stefan Heller, 2009-2011 Group Leader, Pfizer Pain Research Group, UK, 2011 PhD degree in Philosophy (Univ. Kassel and Max-Planck Institute for the History of Science, Berlin), 2011 Group Leader (Habilitation), LMU Munich, Department of Pharmacology, Faculty of Pharmacy and Chemistry, in the group of Prof. Dr. Martin Biel.

Research Topics

Endolysosomal cation channels (TRPML channels and Two-pore channels). Endosomes and lysosomes are important cell organelles involved in trafficking and breakdown of different macromolecules. We investigate the functional roles of TRPML as well as Two-pore channels in endolysosomal trafficking, fusion, pH regulation and cation homeostasis.

Extramural Research Funding

Three-year fellowship for a PhD student, funded by the Bavarian Research Foundation (Bayerische Forschungstiftung), DOK-154-13

Project: Functional characterization of the endolysosomal cation channel TRPML3 using knockout mice and novel activators.

DFG (German Research Foundation) Research Grant, GR-4315/1-1

Project: Investigation of the role of TRPML channel family and two-pore channel family members in intracellular fusion processes and the cation homeostasis of endolysosomal vesicles

Publications – Scientific Papers

2013

Gao, Z., Grimm, C., Becker, L., Ricci, A.J., Heller, S. (2013) A novel ion channel formed by interaction of TRPML3 with TRPV5. PLoS ONE, accepted

Grimm, C. and Cuajungco, M.P. (2013) Mucopolidosis type IV and TRPML channels, in: Koschak, A. and Weiss, N., Pathologies of Calcium Channels, Springer Publishing, accepted

2012

Grimm, C., Jörs, S., Gao, Z., Obukhov, A.G., Heller, S. (2012b) Constitutive activity of TRPML2 and TRPML3 channels versus activation by low extracellular sodium and small molecules. *J. Biol. Chem.*, 287: 22701-22708

Grimm, C., Hassan, S., Wahl-Schott, C., Biel, M. (2012a) Role of TRPML and two-pore channels in endolysosomal cation homeostasis. *J. Pharmacol. Exp. Ther. (Perspectives in Pharmacology)*, 342:236-244

Other Activities

Reviewer for *Journal of Pharmacology and Experimental Therapeutics* (JPET) (www.jpet.aspetjournals.org), *Assay and Drug Development Technologies* (ADT) (www.liebertpub.com/ADT), and *BBA Molecular Cell Research*

Pharmacology

Priv. Doz. Dr. rer. nat. Stylianos Michalakis

Born 1975 in Augsburg, 1995-1999 study of pharmacy at LMU Munich, 2003 PhD (Dr. rer. nat.) degree in the group of Prof. Dr. Martin Biel LMU Munich, 2003-2005 post-doctoral fellow at the Chair of Pharmacology for Natural Sciences LMU Munich, 2005-2011 Academic Counselor at LMU Munich, since 2011 Senior Academic Counselor. November 2011 habilitation in pharmacology.

Research Topics

Gene therapy for inherited retinal diseases.

Mechanisms of retinal degeneration.

Epigenetic regulation of gene expression in retinal development and retinal degeneration.

Honors, Awards, Memberships

Thieme Award of the German Academy of Sciences Leopoldina for Medicine

Habilitation prize of the Munich University Society

Member of the German Society for Experimental and Clinical Pharmacology

Member of the German Society for Gene Therapy

Member of the Association for Research in Vision and Ophthalmology (ARVO)

Member of the German Ophthalmological Society

Extramural Research Funding

Excellence Cluster *Center for Integrated Protein Sciences Munich* (DFG and the Federal Ministry of Education and Research)

Tistou and Charlotte Kerstan Foundation (RD-CURE Project)

Graduate School of *Systemic Neurosciences*, GSN (DFG and the Federal Ministry of Education and Research)

The Munich Center for Neurosciences – Brain & Mind, MCN (DFG and the Federal Ministry of Education and Research)

Publications – Scientific Papers

Michalakis S, Shaltiel L, Sothilingam V, Koch S, Schludi V, Krause S, Zeitz C, Audo I, Lancelot ME, Hamel C, Meunier I, Preising M, Friedburg C, Lorenz B, Zabouri N, Haverkamp S, Garcia Garrido M, Tanimoto N, Seeliger MW, Biel M, Wahl-Schott CA. (2013) Mosaic synaptopathy and functional defects in Cav1.4 heterozygous mice and human carriers of CSNB2. *Hum Mol Genet.* 2013 Nov 17. [Epub ahead of print]

Schön C, Biel M, Michalakis S (2013) Gene Replacement Therapy for Retinal CNG Channelopathies. *Mol Genet Genomics*. Oct;288(10):459-67.

Xu J, Ma H, Morris L, Thapa A, Ma H, Michalakis S, Biel M, Baehr W, Peshenko I, Dizhoor A, Ding XQ. (2013) cGMP Accumulation Causes Photoreceptor Degeneration in CNG Channel Deficiency: Evidence of cGMP Cytotoxicity Independently of Enhanced CNG Channel Function. *J Neurosci*. Sep 11;33(37):14939-48.

Ma H, Thapa A, Morris L, Michalakis S, Biel M, Frank MB, Bebak M, Ding XQ. (2013) Loss of cone cyclic nucleotide-gated channel leads to alterations in light response modulating system and cellular stress response pathways: a gene expression profiling study. *Hum Mol Gen*. Oct 1;22(19):3906-19.

Michalakis S, Xu J, Koch F, Koch S, Biel M, Ding X-Q Detection of cGMP in the degenerating retina. (2013) *Methods Mol Biol*. 2013;1020:235-45.

Cao-Ehlker X, Zong X, Hammelmann V, Gruner C, Fenske S, Michalakis S, Wahl-Schott C, Biel M. Upregulation of HCN3 by specific interaction with K⁺ channel tetramerization-domain containing protein 3 (KCTD3). *J Biol Chem*. Mar 15;288(11):7580-9.

Michalakis S, Schäferhoff K, Spiwoks-Becker I, Zabouri N, Koch S, Koch F, Bonin M, Biel M, Haverkamp S. Characterization of neurite outgrowth and ectopic synaptogenesis in response to photoreceptor dysfunction. *Cell Mol Life Sci*. May;70(10):1831-47.

Mühlfriedel R, Michalakis S, Garcia Garrido M, Biel M, Seeliger MW (2013) Optimized technique for subretinal injections in mice. *Methods Mol Biol*. 2013;935:343-9.

Brandmayr C, Wagner M, Brückl T, Globisch D, Pearson D, Kneuttinger AC, Reiter V, Hienzsch A, Koch S, Thoma I, Thumbs P, Michalakis S, Müller M, Biel M, Carell T. (2012) Isotope-Based Analysis of Modified tRNA Nucleosides Correlates Modification Density with Translational Efficiency. *Angew Chem Int Ed Engl*. Oct 29;51(44):11162-5.

Koch S, Sothilingam V, Garcia Garrido M, Tanimoto N, Becirovic E, Koch F, Seide C, Beck SC, Seeliger MW, Biel M, Mühlfriedel, Michalakis S. Gene therapy restores vision and delays degeneration in the CNGB1^{-/-} mouse model of retinitis pigmentosa. *Hum Mol Gen*. Oct 15;21(20):4486-96.

Thapa A, Morris L, Xu J, Ma H, Michalakis S, Biel M, Ding XQ. (2012) Endoplasmic reticulum stress-associated cone photoreceptor degeneration in cyclic nucleotide-gated channel deficiency. *J Biol Chem*. May 25;287(22):18018-29.

Xu J, Morris L, Michalakis S, Biel M, Fliesler SJ, Sherry DM and Ding XQ (2012) CNGA3 deficiency impairs cone synaptic terminal function and maintenance and leads to secondary rod degeneration and loss of rod terminal integrity. *Invest Ophthalmol Vis Sci*. Mar 1;53(3):1117-29.

Pharmacology

Prof. Dr. med. Christian Wahl-Schott

Born 1971 in Bielefeld/Nordrhein-Westfalen, 1991-1998 study of medicine at the Albert-Ludwigs-University in Freiburg and Ruprecht-Karls-Universität, Heidelberg; 1997 MD degree in the group of Klaus Starke, Institut of Pharmacology and Toxicology, University of Freiburg; 1999-2000 research assistant at the Medizinische Klinik I, Klinikum der Universität München, Großhadern (chair: Prof. G. Steinbeck); 2000 full license to practice medicine (approbation); 2000-2007 postdoctoral fellow at the institute for Pharmacology for Natural Sciences, LMU Munich; 2007 habilitation. 2007-2013 W2 tenure track professor for molecular pharmacology, LMU Munich, Since 2012 W2 tenure professor for molecular pharmacology, LMU, Munich.

Research Topics

Physiology and pathophysiology of voltage gated Ca^{2+} channels and pacemaker channels in the cardiovascular system, the retina and the central nervous system. Functional role of Endo-lysosomal cation channels TPC1 and TPC2. Lysosomal patch clamp. Genetic mouse models. Cardiac electrophysiology and neurophysiology. In vivo cardiac electrophysiology.

Honors, Awards, Memberships

2007 Phoenix Pharmazie-Wissenschaftspreis

2011 Phoenix Pharmazie-Wissenschaftspreis

Member of the German Society for Pharmacology and Toxicology

Member of the Bayerische Akademie für klinische Pharmazie

Extramural Research Funding

Excellence Cluster *Center for Integrated Protein Sciences Munich* (DFG and the Federal Ministry of Education and Research).

Collaborative Research Center 870 (DFG, German Research Council) “Assembly and Function of Neuronal Circuits in Sensory Processing”; project title:” Regulation of retinal network activity by intracellular Ca^{2+} channel domains”

Research Grant (DFG, German Research Foundation), “Functional characterization of TPC channels in vitro and in vivo.“

Publications – Scientific Papers

2013

Fenske S, Krause S, Hassan S, Becirovic E, Auer F, Bernard R, Kupatt C, Lange P, Ziegler T, Wotjak C, Zhang H, Hammelmann V, Papparizos C, Biel M, Wahl-Schott C. Sick sinus syndrome in HCN1 deficient mice. *Circulation* 2013; 128:2585-94

Michalakis S, Shaltiel L, Sothilingam V, Koch S, Schludi V, Krause S, Zeitz C, Audo I, Lancelot ME, Hamel C, Meunier I, Preising MN, Friedburg C, Lorenz B, Zabouri N, Haverkamp S, Garrido MG, Tanimoto N, Seeliger MW, Biel M, Wahl-Schott CA. Mosaic synaptopathy and functional defects in Cav1.4 heterozygous mice and human carriers of CSNB2. *Hum Mol Genet.* 2013 Nov 17. [Epub ahead of print]

Cao-Ehlker X, Zong X, Hammelmann V, Gruner C, Fenske S, Michalakis S, Wahl-Schott C, Biel M. Upregulation of hyperpolarization-activated cyclic nucleotide-gated channel 3 (HCN3) by specific interaction with K⁺ channel tetramerization-domain containing protein 3 (KCTD3). *J Biol Chem.* 2013; 288:7580-9

2012

Shaltiel L, Papparizos C, Fenske S, Hassan S, Gruner C, Rötzer K, Biel M, Wahl-Schott C. Complex regulation of voltage dependent activation and inactivation properties of Cav1.4 L-type Ca²⁺ channels by CaBP. *J Biol Chem.* 2012; 287:36312-21

Direnberger S, Mues M, Micale V, Wotjak C, Dietzel S, Schubert M, Scharr A, Hassan S, Wahl-Schott C, Biel M, Krishnamoorthy G, Griesbeck O. Biocompatibility of a Genetically Encoded Calcium Indicator in a Transgenic Mouse Model. *Nat Commun* 2012; 3:1031

Zong X, Krause S, Chen CC, Krueger J, Gruner C, Cao-Ehlker X, Fenske S, Wahl-Schott C, Biel M. Regulation of HCN channel activity by cyclic cytidine 3', 5'-monophosphate (cCMP). *J Biol Chem.* 2012; 287:26506-12

Other Activities

Grant reviewer for Deutsche Forschungsgemeinschaft, Wellcome Trust, Biotechnology and Biological Sciences Research Council (BBSRC), Israel Science Foundation; Reviewer for EMBO journal, the Journal of Biochemical Chemistry, Biophysical Journal, FEBS Letters, Acta Physiologica Reviews in Neurosciences, BBA – Biomembranes, Frontiers in Pharmacology of Ion Channel.