

Bo Zhang

(Dezember 2013)

November 2010 - Dezember 2013

"Epoxidation and Sulfoxidation Mediated by Ionic Liquids"



Abb. 27: Prof. Janos Mink, Dr. Bo Zhang, Prof. Dr. Fritz E. Kühn, Prof. Dr. Klaus Köhler (v. rechts).

Gemeinsame Publikationen:

- 1) B. Zhang*, F. E. Kühn*, *J. Energy Chemistry*, **2023**, 79, 559-561 (Bio-inspired Tetracarbene Compounds as a New Family of Energy Saving Catalysts).
- 2) Y. Ding, T. Guo, Z. Li, B. Zhang*, F. E. Kühn, C. Liu, J. Zhang, D. Xu, M. Lei*, T. Zhang, C. Li*, *Angew. Chem. Int. Ed.* **2022**, 61, e202206284 (Transition-Metal-Free Synthesis of Functionalized Quinolines by Direct Conversion of β -O-4 Model Compounds).
- 3) B. Zhang, T. L. Guo, Z. W. Li, F. E. Kühn, M. Lei, Z. B. Zhao, J. L. Xiao, J. Zhang, D. Xu, T. Zhang, C. Z. Li, *Nat. Comm.*, **2022**, 13, 3365 (Transition-metal-free synthesis of pyrimidines from lignin β -O-4 segments via a one-pot multi-component reaction).
- 4) C. Li, B. Zhang, Y. Liu, T. Guo, F. E. Kühn, C. Wang, Z. K. Zhao, J. Xiao, T. Zhang, *Angew. Chem. Int. Ed.*, **2021**, 31, 20666-20671 (Sustainable production of benzylamines from lignin).
- 5) B. Zhang, S. Li, E. Herdtweck, F. E. Kühn*, *J. Organomet. Chem.*, **2013**, 739, 63-68 (Schiff Base Complexes of Methyltrioxorhenium(VII): Synthesis and Catalytic Application).
- 6) S. Li, B. Zhang, F. E. Kühn*, *J. Organomet. Chem.*, **2013**, 730, 132-136 (Benzimidazolic Complexes of Methyltrioxorhenium(VII): Synthesis and Application in Catalytic Olefin Epoxidation).
- 7) I. I. E. Markovits, A. A. Eger, S. Yue, M. Cokoja, C. J. Münchmeyer, B. Zhang, M. D. Zhou, A. Genest, J. Mink, S. L. Zang*, N. Rösch*, F. E. Kühn*, *Chem. Eur. J.*, **2013**, 19, 5972-5979 (Activation of hydrogen peroxide with ionic liquids: mechanistic studies and application in the epoxidation of olefins).
- 8) B. Zhang, S. Li, S. Yue, M. Cokoja, M. D. Zhou, S. L. Zang*, F. E. Kühn*, *J. Organomet. Chem.*, **2013**, 744, 108-112 (Imidazolium perrhenate ionic liquids as efficient catalysts for the selective oxidation of sulphides to sulfones).
- 9) S. Yue, D. W. Fang, J. Li, S. L. Zang*, M. D. Zhou, B. Zhang, I. I. E. Markovits, M. Cokoja, F. E. Kühn*, *Z. Naturforsch. B*, **2013**, 68b, 598-604 (Synthesis and Characterization of Ionic Liquid Imidazolium Perrhenates).
- 10) B. Zhang, S. Li, A. Pöthig, M. Cokoja, S. L. Zang, W. A. Herrmann*, F. E. Kühn*, *Z. Naturforsch. B*, **2013**, 68b, 587-597 (Oxidation Reactions Catalyzed by Polyoxymolybdate Salts).
- 11) B. Zhang, M. Köberl, A. Pöthig, M. Cokoja, W. A. Herrmann*, F. E. Kühn*, *Z. Naturforsch. B – Chem.*, **2012**, 67b, 1030-1036 (Synthesis and Characterization of Novel Imidazolium Salts with the Weakly Coordinating $[B(C_6F_5)_4]$ -Anion).

- 12) B. Zhang, M. D. Zhou, M. Cokoja, J. Mink, S. L. Zang, F. E. Kühn*, *RSC Advances*, **2012**, 2, 8416-8420 (Oxidation of Sulfides to Sulfoxides Mediated by Ionic Liquids).



Nora Boerschel (links), Auslandsreferentin und Ulla Hifinger im April 2013 (oben)



Dr. Julia Hauk, Nachfolgerin von Nora Boerschel ab April 2013



Mai 2013: Mini-Symposium „Medizinische Chemie“ am TUM IAS



Kooperation mit Prof. Dr. Jean Marie Basset (mitte), Direktor des Katalysezentrums der King Abdullah University (Saudi Arabien), Sommer 2013



Die Arbeitsgruppe im Juli 2013 in Kloster Weltenburg (oben)



Die Arbeitsgruppe im Dezember 2013

Nidhi Grover

(Januar 2014)

Oktober 2010 - Januar 2014

"Cyclopentadienyl Molybdenum(II) Tricarbonyl Alkene Epoxidation Precatalysts: Synthesis, Catalysis, Kinetics and Mechanisms"



Abb. 28: Prof. Dr. Fritz E. Kühn, Dr. Nidhi Grover, Prof. Dr. Klaus Köhler, Prof. Dr. Kai-Olaf Hinrichsen (v. rechts).

Gemeinsame Publikationen:

- 1) N. Grover, M. Drees, F. E. Kühn*, *J. Catal.*, **2015**, 329, 269-285 (Oxidation of [CpMo(CO)₃R] Olefin Epoxidation Precatalysts with *tert*-Butylhydroperoxide).
- 2) N. Grover, A. Pöthig, F. E. Kühn*, *Cat. Sci. Technol.*, **2014**, 4, 4219-4231 (Cyclopentadienyl Molybdenum Alkylester Complexes as Catalyst Precursors for Olefin Epoxidation).
- 3) A. Schmidt, N. Grover, T. K. Zimmermann, L. Graser, M. Cokoja, A. Pöthig, F. E. Kühn*, *J. Catal.*, **2014**, 319, 119-126 (Synthesis and Characterization of Novel Cyclopentadienyl Molybdenum Imidazo(1,5-a)pyridine-3-ylidene Complexes and their Application in Olefin Epoxidation Catalysis).
- 4) C. Müller, N. Grover, M. Cokoja, F. E. Kühn*, *Adv. Inorg. Chem.*, **2013**, 65, 33-83 (Homogeneous Catalytic Olefin Epoxidation with Molybdenum Complexes).
- 5) N. Grover, F. E. Kühn, *Curr. Org. Chem.*, **2012**, 16, 16-32 (Catalytic Olefin Epoxidation with η^5 -Cyclopentadienyl Molybdenum Complexes).



Kooperationstreffen mit DSM in Basel, Frühjahr 2014

Amylia Abdul Ghani

(Februar 2014)

Oktober 2010 - März 2014

"Transformation of Carbon Dioxide to Esters and Cyclic Carbonates by Molecular Catalysts"



Abb.: 29: Dr. Amylia Abdul Ghani, Prof. Dr. Fritz E. Kühn (v. rechts)

Gemeinsame Publikationen:

- 1) V. d'Elia*, A. A. Ghani, A. Monassier, J. Sofzack-Kreutzer, J. D. A. Pelletier, M. Drees, S. V. Vummaleti, A. Poater, L. Cavallo, M. Cokoja, J. M. Basset*, F. E. Kühn*, *Chem. Eur. J.*, **2014**, 20, 11870-11882 (Dynamics of the NbCl₅-catalyzed cycloaddition of propylene oxide and CO₂. Assessing the dual role of the nucleophilic co-catalysts).
- 2) B. Dutta, J. Sofack-Kreutzer, A. A. Ghani, V. D'Elia*, J. D. A. Pelletier, M. Cokoja, F. E. Kühn*, J. M. Basset, *Cat. Sci. Technol.*, **2014**, 4, 1534-1538 (Nucleophile-directed selectivity towards linear carbonates in the niobium pentaethoxide-catalyzed cycloaddition of CO₂ and propylene oxide).
- 3) S. Y. T. Lee, A. A. Ghani, V. D'Elia*, M. Cokoja, W. A. Herrmann*, J. M. Basset*, F. E. Kühn*, *New J. Chem.*, **2013**, 37, 3512-3517 (Liberation of methyl acrylate from metallalactone complexes via M-O ring opening (M = Ni, Pd) with methylation agents).



Kooperation mit Prof. J. M. Basset (ganz rechts), Frühjahr 2014

Stefan Huber

(April 2014)

Januar 2011 - März 2014

"Applications and Mechanism of Organorhenium(VII) Oxides in the Epoxidation of Olefins"



Abb. 30: Prof. Dr. Fritz E. Kühn, Dr. Stefan Huber, Prof. Dr. Janos Mink (v. rechts).

Gemeinsame Publikationen:

- 1) B. J. Hofmann, S. Huber, R. M. Reich, M. Drees, F. E. Kühn*, *J. Organomet. Chem.*, **2019**, 885, 32-38 (Ethyltrioxorhenium – Catalytic Application and Decomposition Pathway).
- 2) S. Huber, A. Pöthig, W. A. Herrmann, F. E. Kühn*, *J. Organomet. Chem.*, **2014**, 760, 156-160 (Evaluation of functionals for structural and vibrational energy predictions on alkyl-rhenium(VII) complexes).
- 3) S. Huber, M. Cokoja, F. E. Kühn*, *J. Organomet. Chem.*, **2014**, 751, 25-32 (Historical landmarks of the application of molecular transition metal catalysts for olefin epoxidation).
- 4) S. Huber, M. Cokoja, M. Drees, J. Mink, W. A. Herrmann, F. E. Kühn*, *Cat. Sci. Tech.*, **2013**, 3, 388-393 (Xylytrioxorhenium – the first arylrhenium(VII) oxide applicable as an olefin epoxidation catalyst).
- 5) S. Huber, M. Cokoja, M. Drees, W. A. Herrmann*, F. E. Kühn*, *Eur. J. Inorg. Chem.*, **2012**, 1353-1357 (Synthesis and Characterization of Dioxodiphenylrhenium(VII) Propionate).



**Kooperation mit Prof. Dr. Polly L. Arnold (2. v. rechts) über das
Institute of Advanced Study**

Lilian Graser

(Juni 2014)

Dezember 2011 - Juni 2014

"Olefin Epoxidation with Molybdenum based Catalysts"



Abb. 31: Prof. Dr. Klaus Köhler, Prof. Dr. Kai Olaf Hinrichsen, Dr. Lilian Graser, Prof. Dr. Fritz E. Kühn (von links).

Gemeinsame Publikationen:

- 1) L. Graser, R. M. Reich, M. Cokoja, A. Pöthig, F. E. Kühn*, *Cat. Sci. Technol.*, **2015**, 5, 4772-4777 (Aryl-substituted organomolybdenum(II) complexes as olefin epoxidation catalysts).
- 2) C. J. Münchmeyer, L. Graser, Julius I. I. E. Markovits, M. Cokoja, F. E. Kühn*, *Topics in Organic Chemistry*, **2015**, 51, 185-236 (Epoxidation of Olefins with Molecular Catalysts in Ionic Liquids).
- 3) A. Schmidt, N. Grover, T. K. Zimmermann, L. Graser, M. Cokoja, A. Pöthig, F. E. Kühn*, *J. Catal.*, **2014**, 319, 119-126 (Synthesis and Characterization of Novel Cyclopentadienyl Molybdenum Imidazo(1,5-a)pyridine-3-ylidene Complexes and their Application in Olefin Epoxidation Catalysis).
- 4) L. R. Graser, S. Jürgens, M. E. Wilhelm, M. Cokoja, W. A. Herrmann, F. E. Kühn*, *Z. Naturforsch. B.*, **2013**, 68b, 1138-1142 (Epoxidation of Olefins Catalyzed by Polyoxymolybdates Formed in-situ in Ionic Liquids).
- 5) L. A. Schaper, L. Graser, X. Wei, R. Zhong, K. Öfele, A. Pöthig, M. Cokoja, B. Bechlars, W. A. Herrmann*, F. E. Kühn*, *Inorg. Chem.*, **2013**, 52, 6142-6152 (Exploring the Scope of a Novel Ligand Class: Synthesis and Catalytic Examination of Metal Complexes with 'Normal' 1,2,3-Triazolylidene Ligands).
- 6) L. Graser, D. Betz, M. Cokoja, F. E. Kühn*, *Current Inorg. Chem.*, **2011**, 1, 166-181 (Ionic liquids as solvents for ionic transition-metal catalysts).

Valentina A. Korinth

(Oktober 2014)

September 2011 - Oktober 2014

"(Öko-)Toxizität und technische Einsetzbarkeit von Methyltrioxorhenium mit Rhenium-Rückgewinnung"

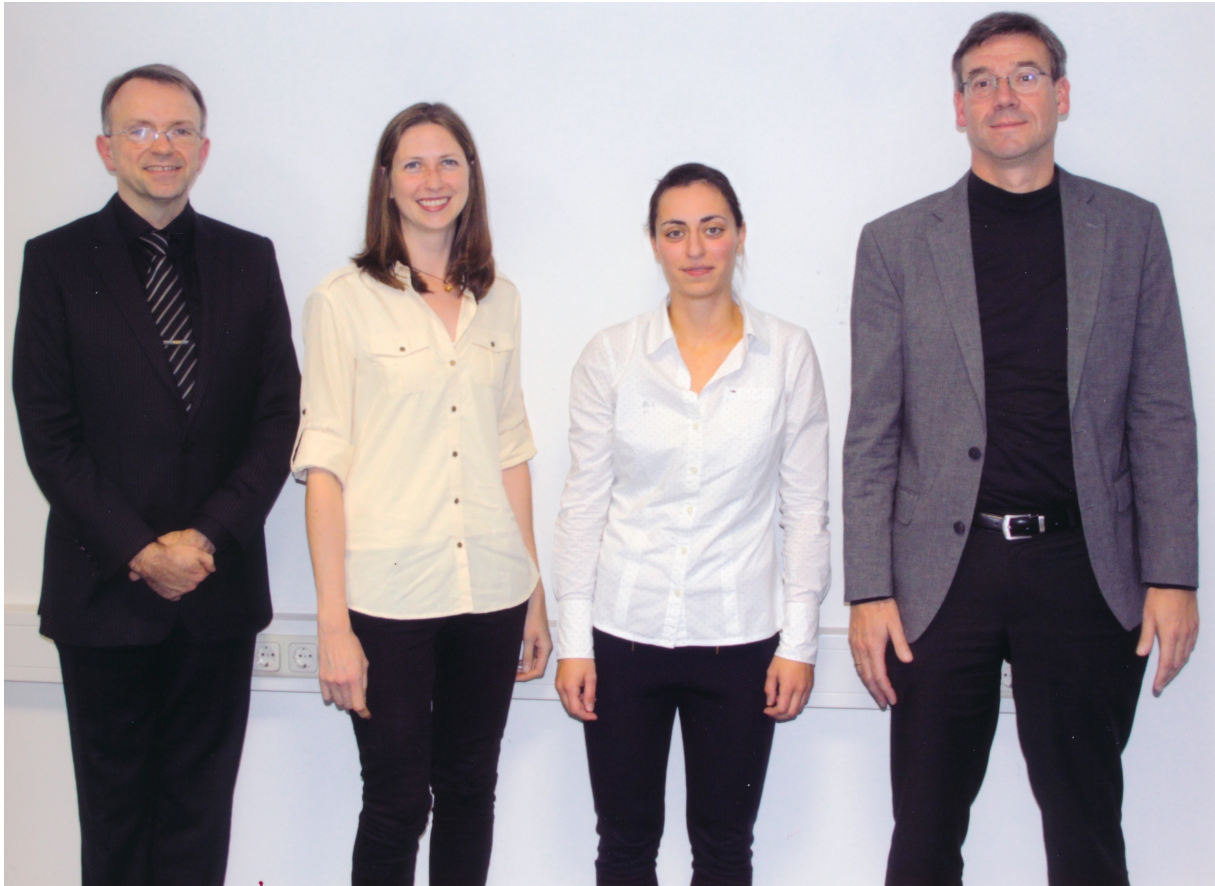


Abb. 32: Prof. Dr. Kai Olaf Hinrichsen, Dr. Valentina Korinth, Prof. Dr. Corinna Hess, Prof. Dr. Fritz E. Kühn (v. rechts).

Gemeinsame Publikationen:

- 1) H. B. T. Thu, M. Markiewicz, J. Thöming, R. M. Reich, V. Korinth, M. Cokoja, F. E. Kühn*, S. Stolte*, *N. J. Chem*, **2015**, 39, 5431-5436 (Catalytically active perrhenate based ionic liquids: A preliminary ecotoxicity and biodegradability assessment).
- 2) S. Stolte,* S. Steudte, H. B. T. Thu, V. Korinth, J. Arning, A. Białk-Bielińska, U. Bottin-Weber, M. Cokoja, A. Hahlbrock, V. Fetz, R. Stauber, B. Jastorff, C. Hartmann, R. W. Fischer, F. E. Kühn,* *Green Chem.*, **2015**, 17, 1136-1144 (Preliminary Toxicity and Ecotoxicity Assessment of Methyltrioxorhenium and Derivatives).
- 3) V. Korinth, F. E. Kühn, e-Eros, (*Encyclopedia of Reagents für Organic Synthesis, Online*), L. A. Paquette (Hrsg.), John Wiley & Sons Ltd., www.mrw.interscience.wiley.com/eros/, **2013**, 2-4 (Bathophenanthroline – First Update).
- 4) A. A. Hauser, V. Korinth, E. Herdtweck, M. Cokoja, W. A. Herrmann*, F. E. Kühn*, *Eur. J. Inorg. Chem.*, **2010**, 4083-4090, (Chromophoric Lewis Base Adducts of Methyltrioxorhenium: Synthesis, Catalysis and Photochemistry).

Su Li

(November 2014)

September 2011 - November 2014

"Synthesis and Characterization of Homogeneous Rhenium Catalysts. Applications in Olefin Epoxidation and Olefin Metathesis"



Abb. 33: Dr. Su Li, Prof. Dr. Fritz E. Kühn, Prof. Dr. Klaus Köhler, Prof. Dr. Corinna Hess (v. rechts).

Gemeinsame Publikationen:

- 1) F. Dyckhoff, S. Li, R. M. Reich, B. J. Hofmann, E. Herdtweck, F. E. Kühn*, *Dalton Trans.*, **2018**, 47, 9755-9764 (Synthesis, characterization and application of organorhenium(VII) trioxides in metathesis reactions and epoxidation catalysis).
- 2) B. Zhang, S. Li, M. Cokoja, E. Herdtweck, J. Mink, S. L. Zang, W. A. Herrmann, F. E. Kühn*, *Z. Naturforsch. B.*, **2014**, 69b, 1149-1163 (Ion Pairs of Weakly Coordinating Cations and Anions: Synthesis and Application for Sulfide to Sulfone Oxidations).
- 3) B. Zhang, S. Li, S. Yue, M. Cokoja, M. D. Zhou, S. L. Zang*, F. E. Kühn*, *J. Organomet. Chem.*, **2013**, 744, 108-112 (Imidazolium perrhenate ionic liquids as efficient catalysts for the selective oxidation of sulphides to sulfones).
- 4) B. Zhang, S. Li, A. Pöthig, M. Cokoja, S. L. Zang, W. A. Herrmann, F. E. Kühn*, *Z. Naturforsch. B.*, **2013**, 68b, 587-597 (Oxidation Reactions Catalyzed by Polyoxymolybdate Salts).
- 5) B. Zhang, S. Li, E. Herdtweck, F. E. Kühn*, *J. Organomet. Chem.*, **2013**, 739, 63-68 (Schiff Base Complexes of Methyltrioxorhenium(VII): Synthesis and Catalytic Application).
- 6) S. Li, B. Zhang, F. E. Kühn*, *J. Organomet. Chem.*, **2013**, 730, 132-136 (Benzimidazolic Complexes of Methyltrioxorhenium(VII): Synthesis and Application in Catalytic Olefin Epoxidation).

Die Arbeitsgruppe im Dezember 2014



Dominik Höhne

(Oktober 2015)

Oktober 2012 - Oktober 2015

“Synthesis and Characterization of Dicarboxylate-bridged and Bisphosphine-substituted Dimolybdenum(II) Complexes as Potential Building Blocks for Supramolecular Coordination Compounds”



Abb. 34: Prof. Dr. Klaus Köhler, Prof. Dr. Fritz E. Kühn, Dr. Dominik Höhne, Prof. Dr. Kai Olaf Hinrichsen (v. rechts).

Gemeinsame Publikationen:

- 1) D. Höhne, E. Herdtweck, A. Pöthig, F. E. Kühn*, *Inorg. Chim. Acta*, **2015**, 424, 210-215 (Synthesis and Characterization of Dimeric and Square-shaped Dicarboxylate-bridged Dimolybdenum(II) Coordination Compounds).
- 2) D. Höhne, E. Herdtweck, A. Pöthig, F. E. Kühn*, *Dalton Trans.*, **2014**, 43, 15367-15374 (Loop Shaped Dicarboxylate Dimolybdenum(II) Bisphosphine Compounds – a Rational Synthesis).
- 3) C. M. Cai, D. Höhne, M. Köberl, M. Cokoja, A. Pöthig, E. Herdtweck, S. Haslinger, W. A. Herrmann*, F. E. Kühn*, *Organometallics*, **2013**, 32, 6004-6011 (Synthesis and Characterization of Dimolybdenum(II) Complexes Connected by Carboxylate Linkers).



Die „Medizinische Chemie“-Gruppe 2015

Daniel T. Weiß

(November 2015)

Oktober 2012 - November 2015

"Influence of Open Chain, Tetradentate NHC and NHC/Pyridine Hybrid Ligands on the Coordination and Electrochemistry of Late Transition Metal Complexes"



Abb. 35: Prof. Dr. Richard W. Fischer, Prof. Dr. Lukas Hintermann, Dr. Daniel T. Weiss, Prof. Dr. Fritz E. Kühn (v. rechts).

Gemeinsame Publikationen:

- 1) M. Hollering, D. T. Weiss, M. J. Bitzer, C. Jandl, F. E. Kühn*, *Inorg. Chem.*, **2016**, 55, 6010-6017 (Controlling Coordination Geometries: Ru-Carbene Complexes with Tetra-NHC Ligands).
- 2) P. J. Altmann, D. T. Weiss, C. Jandl, F. E. Kühn*, *Chem. As. J.*, **2016**, 11, 1597-1605 (Exploring coordination modes: Late transition metal complexes with a methylene-bridged macrocyclic tetra-NHC ligand).
- 3) D. T. Weiss, M. R. Anneser, S. Haslinger, A. Pöthig, M. Cokoja, J. M. Basset, F. E. Kühn*, *Organometallics*, **2015**, 34, 3155-3166 (NHC Versus Pyridine: How "Teeth" Change the Redox-Behavior of Iron(II) Complexes).
- 4) D. T. Weiß, P. J. Altmann, S. Haslinger, C. Jandl, A. Pöthig, M. Cokoja, F. E. Kühn*, *Dalton Trans.*, **2015**, 44, 18329-18339 (Structural diversity of late transition metal complexes with flexible tetra-NHC ligands).
- 5) D. T. Weiß, S. Haslinger, C. Jandl, A. Pöthig, M. Cokoja, F. E. Kühn*, *Inorg. Chem.*, **2015**, 54, 415-417 (Application of Open Chain Tetraimidazolium Salts as Precursors for the Synthesis of Silver Tetra(NHC) Complexes).



Die Arbeitsgruppe 2015

Stefan Haslinger

(November 2015)

Oktober 2012 - November 2015

"Bioinspired Iron *N*-Heterocyclic Carbene Complexes in C-H Bond Oxidation: Reactivity, Electronic Properties, and Catalytic Activity"



Abb. 36: Prof. Dr. Richard W. Fischer, Prof. Dr. Ueli Heiz, Dr. Stefan Haslinger, Prof. Dr. Klaus Köhler, Prof. Dr. Fritz E. Kühn (v. rechts).

Gemeinsame Publikationen:

- 1) T. P. Schlachta, M. R. Anneser, J. F. Schlagintweit, C. H. G. Jakob, C. Hintermeier, A. D. Böth, S. Haslinger, R. M. Reich, F. E. Kühn* *Chem. Commun.*, **2021**, 57, 6644-6647 (Mimicking reactive high-valent diiron- μ_2 -oxo intermediates of nonheme enzymes by an iron teracarbene complex).
- 2) J. F. Schlagintweit, C. Hintermeier, M. Anneser, E. M. H. J. Esslinger, S. Haslinger, F. E. Kühn*, *Chem. Asian J.* **2020**, 15, 1896-1902 (Electronic Fine tuning of a Bio-inspired Iron(II) tetra-NHC Complex by trans Axial Isocyanide Substitution).
- 3) M. R. Anneser, S. Haslinger, A. Pöthig, M. Cokoja, V. d'Elia, M. Högerl, J. M. Basset, F. E. Kühn*, *Dalton Trans.*, **2016**, 45, 6449-6455 (Binding of molecular oxygen by an artificial heme analogue: Investigation on the formation of an Fe-tetracarbene superoxo complex).
- 4) S. Haslinger, J. W. Kück, M. R. Anneser, M. Cokoja, A. Pöthig, F. E. Kühn*, *Chem. Eur. J.*, **2015**, 21, 17860-17869 (Formation of Highly-Strained *N*-Heterocycles via Decomposition of Iron *N*-Heterocyclic Carbene Complexes: The Value of Labile Fe–C Bonds).
- 5) S. Haslinger, A. Pöthig, M. Cokoja, F. E. Kühn*, *Acta Cryst. C*, **2015**, C71, 1096-1099 (Oxidative degradation of the organometallic iron(II) complex [Fe{bis[3-(pyridine-2-yl)-1*H*-imidazol-1-yl]methane}(MeCN)(PMe₃)](PF₆)₂: structure of the ligand decomposition product trapped *via* coordination to iron(II)).
- 6) A. C. Lindhorst, S. Haslinger, F. E. Kühn*, *Chem. Commun.*, **2015**, 51, 17193-17212 (Molecular Iron Complexes as Catalysts for Selective C-H Bond Oxygenation Reactions).
- 7) D. T. Weiß, M. R. Anneser, S. Haslinger, A. Pöthig, M. Cokoja, J. M. Basset, F. E. Kühn*, *Organometallics*, **2015**, 34, 3155-3166 (NHC Versus Pyridine: How “Teeth” Change the Redox-Behavior of Iron(II) Complexes).
- 8) D. T. Weiß, P. J. Altmann, S. Haslinger, C. Jandl, A. Pöthig, M. Cokoja, F. E. Kühn*, *Dalton Trans.*, **2015**, 44, 18329-18339
- 9) S. Haslinger, A. Raba, M. Cokoja, A. Pöthig, F. E. Kühn*, *J. Catal.*, **2015**, 331, 147-153 (Iron-catalyzed Oxidation of Unreactive C–H Bonds: Utilizing Bio-Inspired Axial Ligand Modification to Increase Catalyst Stability).
- 10) S. Haslinger, A. C. Lindhorst, J. W. Kück, M. Cokoja, A. Pöthig, F. E. Kühn*, *RSC Advances*, **2015**, 5, 85486-85493 (Isocyanide Substitution Reactions at the Trans Labile Sites of an Iron(II) *N*-Heterocyclic Carbene Complex).

- 11) I. Klawitter, M. R. Anneser, S. Dechert, S. Meyer, S. Demeshko, S. Haslinger, A. Pöthig, F. E. Kühn*, Franc Meyer*, *Organometallics*, **2015**, 34, 2819-2825 (Iron Complexes of a Macrocyclic NHC/Pyridine Hybrid Ligand).
- 12) M. R. Anneser, S. Haslinger, A. Pöthig, M. Cokoja, J. M. Basset, F. E. Kühn*, *Inorg. Chem.*, **2015**, 54, 3797-3804 (Synthesis and characterization of an iron complex bearing a cyclic tetra-*N*-heterocyclic carbene ligand: An artificial heme analogue?).
- 13) D. T. Weiß, S. Haslinger, C. Jandl, A. Pöthig, M. Cokoja, F. E. Kühn*, *Inorg. Chem.*, **2015**, 54, 415-417 (Application of Open Chain Tetraimidazolium Salts as Precursors for the Synthesis of Silver Tetra(NHC) Complexes).
- 14) S. Haslinger, J. W. Kück, E. M. Hahn, M. Cokoja, A. Pöthig, J.-M. Basset, F. E. Kühn*, *Inorg. Chem.*, **2014**, 53, 11573-11583 (Making Oxidation Potentials Predictable: Coordination of Additives Applied to the Electronic Fine Tuning of an Iron(II) Complex).
- 15) R. Zhong, A. Pöthig*, S. Haslinger, B. Hofmann, G. Raudaschl-Sieber, E. Herdtweck, W. A. Herrmann, F. E. Kühn*, *ChemPlusChem*, **2014**, 79, 1294-1303 (Toward Tuneable Immobilized Molecular Catalysts: Functionalizing the Methylene-Bridge of Bis(NHC)-Ligands).
- 16) J. Rieb, A. Raba, S. Haslinger, M. Kaspar, A. Pöthig, M. Cokoja, J. M. Basset, F. E. Kühn*, *Inorg. Chem.*, **2014**, 53, 9598-9606 (Synthesis, Characterization, and Reactivity of Furan and Thiophene-Functionalized bis(*N*-heterocyclic carbene) Complexes of Iron(II)).
- 17) K. Riener, S. Haslinger, A. Raba, M. P. Högerl, M. Cokoja, W. A. Herrmann*, F. E. Kühn*, *Chem. Rev.*, **2014**, 114, 5215-5272 (The Chemistry of Iron NHC Complexes: Syntheses, Structures, Reactivities and Catalytic Applications).
- 18) T. K. Zimmermann, S. Haslinger, A. Pöthig*, F. E. Kühn*, *Acta Cryst. C*, **2014**, 70, 384-387 (Structure and catalytic activity of the ruthenium(I) sawhorse-type complex $[\text{Ru}_2\{\mu, \eta^2\text{-CF}_3(\text{CF}_2)_5\text{COO}\}_2(\text{DMSO})_2]$).
- 19) X. M. Cai, D. Höhne, M. Köberl, M. Cokoja, A. Pöthig, E. Herdtweck, S. Haslinger, W. A. Herrmann*, F. E. Kühn*, *Organometallics*, **2013**, 32, 6004-6011 (Synthesis and Characterization of Dimolybdenum(II) Complexes Connected by Carboxylate Linkers).
- 20) J. Ziriakus, T. K. Zimmermann, A. Pöthig, M. Drees, S. Haslinger, D. Jantke, F. E. Kühn*, *Adv. Synth. Catal.*, **2013**, 355, 2845-2859 (Ruthenium Catalysed Transvinylolation – New Insights).

Xumin Cai

(November 2015)

Oktober 2012 - November 2015

"Synthesis and Characterization of Dimolybdenum(II) Complexes: On the Way to Functional Molecular Materials"



Abb. 37: Prof. Dr. Johann Plank, Prof. Dr. Ueli Heiz, Dr. Xumin Cai, Prof. Dr. Fritz E. Kühn (v. rechts).

Gemeinsame Publikationen:

- 1) X. Cai, T. K. Meister, A. Pöthig, F. E. Kühn*, *Inorg. Chem.*, **2016**, 55, 858-864 (Filling a Gap: Electrochemical Property Comparison of the Completed Compound Series $[\text{Mo}_2(\text{DArF})_n(\text{O}_2\text{C-Fc})_{4-n}]$ (DArF = *N,N'*-Diarylformamidinate; $\text{O}_2\text{C-Fc}$ = Ferrocenecarboxylate)).
- 2) X. M. Cai, T. K. Zimmermann, A. Pöthig, F. E. Kühn*, *Inorg. Chem.*, **2015**, 54, 6631-6640 (Synthesis and Electrochemical Properties of *cis*- and *trans*- $[\text{Mo}_2(\text{O}_2\text{C-Fc})_2(\text{DArF})_2]$ ($\text{O}_2\text{C-Fc}$ = Ferrocenecarboxylate; DArF = *N,N'*-Diarylformamidinate)).
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