

## Publication list

### Preprint

- [1] "C-H Functionalization Reactions of Unprotected N-Heterocycles by Gold Catalyzed Carbene Transfer" Sripti Jana, Claire Empel, Chao Pei, T. Vinh Nguyen, Rene M. Koenigs, *ChemRxiv*, **2020**, DOI: 10.26434/chemrxiv.12044061.v1.

### Independent publications

- [1] "Author profile", *ChemCatchem*, **2020**, *12*, 2129.
- [2] "Synthesis of *gem*-difluoroolefins through C-H functionalization and  $\beta$ -fluoride elimination reactions" Zhen Yang, Mieke Möller, Rene M. Koenigs, *Angew. Chem. Int. Ed.* **2020**, *59*, 5572-5576; *Angew. Chem.* **2020**, *132*, 5620-5624.
- [3] "Photoinduced Proton Transfer Reactions for Mild O-H Functionalization Reactions of Unreactive Alcohols", Sripti Jana, Zhen Yang, Fang Li, Claire Empel, Junming Ho, Rene M. Koenigs, *Angew. Chem. Int. Ed.* **2020**, *59*, 5562-5566; *Angew. Chem.* **2020**, *132*, 5608-5613 – previously: *ChemRxiv*, **2019**, DOI: 10.26434/chemrxiv.10317947.v1.
- [4] "Iron-porphyrin catalyzed carbene transfer reactions – an evolution from biomimetic catalysis towards chemistry-inspired non-natural reactivities of enzymes", Martin J. Weissenborn, Rene M. Koenigs, *ChemCatChem* **2020**, DOI: 10.1002/cctc.201901565.
- [5] "Metal-free Insertion Reactions of Silanes with Aryldiazoacetates", Feifei He, Fang Li, Rene M. Koenigs, *J. Org. Chem.* **2020**, *85*, 1240-1246.
- [6] "Stoichiometric photochemical carbene transfer reactions via Bamford Stevens reaction", Sripti Jana, Fang Li, Claire Empel, Dennis Verspeek, Polina Aseeva, Rene M. Koenigs, *Chem. Eur. J.* **2020**, *26*, 2586-2591.
- [7] "C-H Functionalization via Iron-Catalyzed Carbene-Transfer Reactions", Claire Empel, Sripti Jana, Rene M. Koenigs, *Molecules*, **2020**, *25*, 880.
- [8] "Photochemical fluoro-amino etherification reactions of aryldiazoacetates with NFSI under stoichiometric conditions", Feifei He, Chao Pei, Rene M. Koenigs, *Chem. Commun.* **2020**, *56*, 599-602.
- [9] "Continuous-Flow Photochemical Carbene Transfer Reactions", Claire Empel, Rene M. Koenigs, *J. Flow Chem.* **2020**, *10*, 157-160.
- [10] "Catalytic synthesis of trifluoromethyl cyclopropenes and oligo cyclopropenes", Uyen P. N. Tran, René Hommelsheim, Zhen Yang, Claire Empel, Katharina J. Hock, T. Vinh Nguyen, Rene M. Koenigs, *Chem. Eur. J.* **2020**, *26*, 1254-1257 – previously: *ChemRxiv*, **2019**, DOI: chemrxiv.7545623.v1.
- [11] "Diazoacetonitrile (N<sub>2</sub>CHCN): a long forgotten but valuable reagent for organic synthesis", Pavel K. Mykhailiuk, Rene M. Koenigs, *Chem. Eur. J.* **2020**, *26*, 89-101.
- [12] "Norcaradiene Synthesis via Visible Light Mediated Cyclopropanation Reactions of Arenes", Yujing Guo, T. Vinh Nguyen, Rene M. Koenigs, *Org. Lett.* **2019**, *21*, 8814-8818.
- [13] "Photochemical ring expansion reactions: synthesis of tetrahydrofuran derivatives and mechanism studies", Sripti Jana, Zhen Yang, Chao Pei, Xinfang Xu, Rene M. Koenigs, *Chem. Sci.* **2019**, *10*, 10129-10134.
- [14] "Artificial Intelligence-Driven Organic Synthesis – *En Route* Towards Autonomous Synthesis?", Claire Empel, Rene M. Koenigs, *Angew. Chem. Int. Ed.* **2019**, *58*, 17114-17116; *Angew. Chem.* **2019**, *131*, 17272-17274.

- [15] "Catalyst-Free [2,3]-Sigmatropic Rearrangement Reactions of Photochemically Generated Ammonium Ylides", Fang Li, Feifei He, Rene M. Koenigs, *Synthesis* **2019**, *51*, 4348-4358.
- [16] "Rhodium catalysed synthesis of seleno-ketals via carbene transfer reactions of diazoesters", Sripati Jana, Polina Aseeva, Rene M. Koenigs, *Chem. Commun.* **2019**, *55*, 12825-12828.
- [17] "Visible Light Induced Metal-free Carbene N-Carbazolation", Claire Empel, Frederic W. Patureau, Rene M. Koenigs, *J. Org. Chem.* **2019**, *84*, 11316-11322.
- [18] "Solvent-dependent-, rhodium catalyzed rearrangement reactions of sulfur ylides", Zhen Yang, Yujing Guo, Rene M. Koenigs, *Chem. Commun.* **2019**, *55*, 8410-8413.
- [19] "Sustainable Carbene Transfer Reactions with Iron and Light", Claire Empel, Rene M. Koenigs, *Synlett*, **2019**, *30*, 1929-1934.
- [20] "Catalytic sigmatropic rearrangement reactions of selenium ylides via carbene transfer reactions", Sripati Jana, Rene M. Koenigs, *Org. Lett.* **2019**, *21*, 3653-3657.
- [21] "Visible light mediated, metal-free carbene transfer reactions of diazoalkanes with propargylic alcohols", Feifei He, Rene M. Koenigs, *Chem. Commun.* **2019**, *55*, 4881-4884.
- [22] "Photochemical, metal-free sigmatropic rearrangement reactions of sulfur ylides", Zhen Yang, Yujing Guo, Rene M. Koenigs, *Chem. Eur. J.* **2019**, *25*, 6703-6706.
- [23] "Doyle Kirmse rearrangement reactions of difluoroacetates" Sripati Jana, Rene M. Koenigs, *Asian J Org. Chem.* **2019**, *8*, 683-686.
- [24] "Difluorodiaoethane (CF<sub>2</sub>HCHN<sub>2</sub>): a new reagent for the introduction of the difluoromethyl group", Pavel K. Mykhailiuk, Rene M. Koenigs, *Chem. Eur. J.* **2019**, *25*, 6053-6063.
- [25] "Tryptamine synthesis by iron-porphyrin catalyzed C—H functionalization of indole with diazoacetonitrile", Katharina J. Hock, Anja Knorrscheidt, Renè Hommelsheim, Junming Ho, Martin J. Weissenborn, Rene M. Koenigs, *Angew. Chem. Int. Ed.* **2019**, *58*, 3630-3634; *Angew. Chem.* **2019**, *131*, 3669-3673 – previously: *ChemRxiv*, **2018**, DOI: 10.26434/chemrxiv.6011096.v1.
- [26] "Blue Light Induced Carbene Transfer Reactions of Diazoalkanes" Rene Hommelsheim, Yujing Guo, Zhen Yang, Claire Empel, Rene M. Koenigs, *Angew. Chem. Int. Ed.* **2019**, *58*, 1203-1207; *Angew. Chem.* **2019**, *131*, 1216-1220. Selected as a Hot Paper by the Editors.
- [27] "Intercepted dealkylative rearrangements of sulfur ylides" Claire Empel, Katharina J. Hock, Rene M. Koenigs, *Chem. Commun.* **2019**, *55*, 338-341.
- [28] "Tropylium-Promoted retro-Claisen Reactions" Mohanad A. Hussein, Vien T. Huynh, Rene Hommelsheim, Rene M. Koenigs, T. Vinh Nguyen, *Chem. Commun.* **2018**, *54*, 12970-12973.
- [29] "Iron-catalysed carbene-transfer reactions of diazo acetonitrile", Claire Empel, Katharina J. Hock, Rene M. Koenigs, *Org. Biomol. Chem.* **2018**, *16*, 7129-7133.
- [30] "Cyanomethyl Anion Transfer Reagents for Diastereoselective Corey Chaykovsky Cyclopropanation Reactions", Rene Hommelsheim, Katharina J. Hock, Christian Schumacher, Mohanad A. Hussein, T. Vinh Nguyen, Rene M. Koenigs, *Chem. Commun.* **2018**, *54*, 11439-11442.
- [31] "The Generation of Diazo Compounds in Continuous-Flow", Katharina J. Hock, Rene M. Koenigs, *Chem. Eur. J.* **2018**, *24*, 10571-10583.
- [32] "Enantioselective [2,3]-sigmatropic rearrangement reactions - metal bound or free ylides reaction mechanism", Katharina J. Hock, Rene M. Koenigs, *Angew. Chem. Int. Ed.* **2017**, *56*, 13566-13568; *Angew. Chem.* **2017**, *129*, 13752-13754. Highlighted on *ChemistryViews* on Oct. 22nd 2017.

- [33] "Corey Chaykovsky Reactions of Sulfur Ylides Enable *cis*-Configured Trifluoromethyl Cyclopropanes", Katharina J. Hock, Renè Hommelsheim, Lucas Mertens, Junming Ho, T. Vinh Nguyen, Rene M. Koenigs, *J. Org. Chem.* **2017**, *82*, 8220-8227.
- [34] "Enabling iron catalyzed Doyle-Kirmse rearrangement reactions with in situ generated diazo compounds", Katharina J. Hock, Lucas Mertens, Renè Hommelsheim, Robin Spitzner, Rene M. Koenigs, *Chem. Commun.* **2017**, *53*, 6577-6580.
- [35] "Efficient Phosphine-Mediated C(sp<sup>3</sup>)-C(sp<sup>3</sup>) Coupling Reactions of Alkyl Halides in Batch and Flow", Uyen P. N. Tran, Katharina J. Hock, Christopher P. Gordon, Rene M. Koenigs, T. Vinh Nguyen, *Chem. Commun.* **2017**, *53*, 4950-4953.
- [36] "Towards nitrile-substituted cyclopropanes – safe and scalable applications of diazo acetonitrile", Katharina J. Hock, Robin Spitzner, Rene M. Koenigs, *Green Chem.* **2017**, *19*, 2118-2122.
- [37] "Difluoro- and trifluoro diazoalkanes – complementary approaches in batch and flow and their application in cycloaddition reactions", Katharina J. Hock, Lucas Mertens, Friederike K. Metze, Clemens Schmittmann, Rene M. Koenigs, *Green Chem.* **2017**, *19*, 905-909.
- [38] "Rhodium catalyzed synthesis of difluoromethyl cyclopropanes", Katharina J. Hock, Lucas Mertens, Rene M. Koenigs, *Chem. Commun.* **2016**, *52*, 13783-13786.  
Highlighted on *ChemistryViews* on Nov. 3rd 2016.
- [39] "Fluorinated diazoalkanes – a versatile class of reagents for the synthesis of fluorinated compounds", Lucas Mertens, Rene M. Koenigs, *Org. Biomol. Chem.* **2016**, *14*, 10547-10556.
- [40] "Fluoroalkyl-substituted Diazomethanes and their Application in a General Synthesis of Pyrazoles and Pyrazolines", Lucas Mertens, Katharina J. Hock, Rene M. Koenigs, *Chem. Eur. J.* **2016**, *22*, 9542-9545.

### Previous publications

- [1] "Asymmetric Hydrogenation of Cyclic Imine and Enamines: Access to 1,5-Benzodiazepine Pharmacophore", R. Borrmann, R. M. Koenigs, J. Zoller, M. Rueping, *Synthesis* **2017**, *49*, 310-318.
- [2] "Photoredox Catalyzed  $\alpha$ -Functionalization of Amines - Visible Light Mediated Carbon-Carbon and Carbon-Hetero Bond Forming Reactions", R. M. Koenigs, I. Atodiresei, M. Rueping, in: B. König (Ed.), *Chemical Photocatalysis*, Walter de Gruyter, Berlin/Boston, **2013**.
- [3] "Photoredox Catalysis as an Efficient Tool for the Oxidation of Amines and Alcohols - Bioinspired Demethylations and Condensations" M. Rueping, C. Vila, A. Szadkowska, R. M. Koenigs, J. Fronert, *ACS Catalysis* **2012**, *2*, 2810-2814.
- [4] "Dual Catalysis: Combination of Photocatalytic Aerobic Oxidation and Metal Catalyzed Alkynylation Reactions - C-C Bond Formation Using Visible Light" M. Rueping, R. M. Koenigs, K. Poschary, D. C. Fabry, D. Leonori, C. Vila, *Chem. Eur. J.* **2012**, *19*, 5170 – 5174.  
Highlighted in *Synfacts* **2012**, *8*, 687.
- [5] "Light-Mediated Heterogeneous Cross Dehydrogenative Coupling Reactions: Metal Oxides as Efficient, Recyclable, Photoredox Catalysts in C-C Bond- Forming Reactions" M. Rueping, J. Zoller, D. C. Fabry, K. Poschary, R. M. Koenigs, T. E. Weirich, J. Mayer, *Chem. Eur. J.* **2012**, *18*, 3478-3481.
- [6] "Visible-light photoredox catalyzed oxidative Strecker reaction", M. Rueping, S. Zhu, R. M. Koenigs, *Chem. Commun.* **2011**, *47*, 12709-12711.

- [7] "Photoredox Catalyzed C-P Bond Forming Reactions - Visible Light Mediated Oxidative Phosphonylations of Amines", M. Rueping, S. Zhu, R. M. Koenigs, *Chem. Commun.* **2011**, 47, 8679-8671.
- [8] "Size-Selective, Stabilizer-Free, Hydrogenolytic Synthesis of Iridium Nanoparticles Supported on Carbon Nanotubes" M. Rueping, R. M. Koenigs, J. Zoller, R. Borrmann, T. Weirich, J. Mayer, *Chem. Mat.* **2011**, 23, 2008-2010.
- [9] "Dual Catalysis: Combining Photoredox and Lewis Base Catalysis for Direct Mannich Reactions" M. Rueping, C. Vila, R. M. Koenigs, K. Poschary, D. Fabry, *Chem. Commun.* **2011**, 47, 2360-2362.
- [10] "Brønsted Acid Differentiated Metal Catalysis by Kinetic Discrimination" M. Rueping, R. M. Koenigs, *Chem. Comm.* **2011**, 47, 304-306. Highlighted in *Synfacts* **2011**, 403.
- [11] "Synthesis and Structural Aspects of *N*-Triflylphosphoramides and Their Calcium Salts – Highly Acidic and Effective Brønsted Acids" M. Rueping, B. J. Nachtsheim, R. M. Koenigs, W. leawsuwan, *Chem. Eur. J.* **2010**, 16, 13116-13126.
- [12] "First Highly Enantioselective Synthesis of Benzodiazepinones by Catalytic Hydrogenation" M. Rueping, E. Merino, R. M. Koenigs, *Adv. Synth. Catal.* **2010**, 352, 2629-2634.
- [13] "Unifying Metal and Brønsted Acid Catalysis – Concepts, Mechanisms, and Classifications" M. Rueping, R. M. Koenigs, I. Atodiresei, *Chem. Eur. J.* **2010**, 16, 9350-9365.
- [14] "Efficient Enantioselective Synthesis of Optically Active Diols by Asymmetric Hydrogenation with Modular Chiral Metal Catalysts" R. Kadyrov, R. M. Koenigs, C. Brinkmann, D. Voigtlaender, M. Rueping, *Angew. Chem. Int. Ed.* **2009**, 48, 7556-7559; *Angew. Chem.* **2009**, 121, 7693-7696.
- [15] "Highly Enantioselective Organocatalytic Carbonyl-Ene Reaction with Strongly Acidic, Chiral Brønsted Acids as Efficient Catalysts" M. Rueping, T. Theissmann, A. Kuenkel, R. M. Koenigs, *Angew. Chem. Int. Ed.* **2008**, 47, 6798-6801; *Angew. Chem.* **2008**, 120, 6903-6906.

### **Independent patents**

- [1] "Verfahren zur Herstellung fluorierter Diazoalkane", Rene M. Koenigs, Katharina J. Hock, Lucas Mertens, DE102016120688.1.

### **Patents with Grünenthal GmbH**

- [1] "8-Amino-2-oxo-1,3-diazaspiro[4.5]decane derivatives as opioid receptor inhibitors and their preparation", S. Kuehnert, R. M. Koenigs, A. Kless, A. Wegert, P. Ratcliffe, R. Jostock, T. Koch, K. Linz, W. Schroeder, WO 2017121650.
- [2] "3-(Carboxymethyl)-8-amino-2-oxo-1,3-diazaspiro[4.5]decane derivatives as opioid receptor inhibitors and their preparation", S. Kuehnert, R. M. Koenigs, F. Jakob, A. Kless, P. Ratcliffe, R. Jostock, T. Koch, K. Linz, W. Schroeder, K. Schiene, A. Wegert, WO 2017121649.
- [3] "3-Arylalkyl-8-amino-2-oxo-1,3-diazaspiro[4.5]decane derivatives as opioid receptor inhibitors and their preparation", S. Kuehnert, R. M. Koenigs, A. Kless, A. Wegert, P. Ratcliffe, R. Jostock, T. Koch, K. Linz, W. Schroeder, K. Schiene, I. Konetzki, WO 2017121648.
- [4] "3-Aryl-8-amino-2-oxo-1,3-diazaspiro[4.5]decane derivatives as opioid receptor inhibitors and their preparation", S. Kuehnert, R. M. Koenigs, A. Kless, A. Wegert, I. Konetzki, P. Ratcliffe, R. Jostock, T. Koch, K. Linz, W. Schroeder, WO 2017121647.
- [5] "3-(Carboxyethyl)-8-amino-2-oxo-1,3-diaza-spiro[4.5]decane derivatives as opioid receptor inhibitors and their preparation", S. Kuehnert, R. M. Koenigs, F. Jakob, A. Kless, A. Wegert, R. Jostock, T. Koch, K. Linz, W. Schroeder, WO 2017121646.

- [6] "Pyrazolyl substituted tetrahydropyranylsulfones", S. Schunk, M. Reich, R. M. Koenigs, WO 2017059966.
- [7] "Pyrazolyl substituted tetrahydropyranylsulfones", S. Schunk, M. Reich, R. M. Koenigs, WO 2017059965.
- [8] "Substituted azaspiro(4.5)-decane derivatives", A. Wegert, S. Kuehnert, R. M. Koenigs, B. Nolte, K. Linz, S. Harlfinger, B.-Y. Koegel, P. Ratcliffe, F. Theil, O. Groeger, B. Braun, WO 2016008582.
- [9] "Aryl substituted heterocyclyl sulfones", S. Schunk, M. Reich, F. Jakob, R. M. Koenigs, N. Damann, M. Haurand, M. Rogers, K. Sutton, R. Hamlyn, US 20150291573.