



M. Oestreich

The author presented on this page has recently published his **25th article** since 2005 in *Angewandte Chemie*: "Enantioselective Addition of Silicon Nucleophiles to Aldimines Using a Pre-formed NHC–Copper(I) Complex as the Catalyst": A. Hensel, K. Nagura, L. B. Delvos, M. Oestreich, *Angew. Chem.* **2014**, 126, 5064–5067; *Angew. Chem. Int. Ed.* **2014**, 53, 4964–4967.

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Education:	1991–1996 Undergraduate studies at the Heinrich-Heine-Universität Düsseldorf, University of Manchester Institute of Science and Technology, and Philipps-Universität Marburg (Diploma with Prof. Dr. P. Knochel) 1999 PhD with Prof. Dr. D. Hoppe, Westfälische Wilhelms-Universität Münster 1999–2001 Postdoctoral research with Prof. Dr. L. E. Overman, University of California, Irvine 2005 Habilitation with Prof. Dr. R. Brückner, Albert-Ludwigs-Universität Freiburg
Awards:	2001–2006 Emmy Noether Junior Research Group Leader (Deutsche Forschungsgemeinschaft); 2006–2008 Karl Winnacker Fellowship (Aventis Foundation); 2011–2015 Einstein Professorship (Einstein Stiftung Berlin)
Current research interests:	Synthetic chemistry of silicon and boron compounds, either as catalysts or as reagents; elucidation of reaction mechanisms; oxidative palladium catalysis
Hobbies:	My family

My favorite time of day is ... the morning—quiet moments before everyone else is awake.

In a spare hour, I ... go for a walk.

My not-so-secret passion is ... cars, two-door vehicles in particular.

If I had one year of paid leave I would ... do an extended road trip with my car.

My favorite way to spend a holiday is ... spending time with my wife and my young son, preferably in our garden.

The secret of being a successful scientist is ... freedom to provide room for creativity.

The most important thing I learned from my students is ... that it is good that everyone is different.

The principal aspect of my personality is ... precision, which sometimes makes things difficult for the people I work with.

My favorite painter is ... Jean (Hans) Arp.

My favorite musician is ... Bob Dylan, but not all periods of his career.

The natural talent I would like to be gifted with is ... patience.

The biggest challenge facing scientists is ... sustainable energy.

Chemistry is fun because ... it is diverse, and it is (in my biased view) the heart of the natural sciences.

Looking back over my career, I ... find it too early to look back.

Last time I went to the pub ... I understood that I ought to include the day after in my future planning.

My favorite food is ... penne all'arrabbiata and Parmesan cheese in an equimolar ratio ... every guest who has had lunch with me knows it.

My favorite drink is ... dense red wine.

What has been your biggest influence/motivation?

I cannot name the one thing that steered my career in this or that direction. I was trained in different academic environments by mentors with different personalities and approaches of how to do research and run a research group. All of this has, consciously or unconsciously, shaped my own way of establishing an independent research program. I have also benefited from dedicated colleagues, together with strong seminar programs, which always create an inspiring atmosphere. I still think that it was a good idea to move to different places before settling. My basic motivation is that I find myself in the (to me) lucky situation that allows me to do what I like ... essentially every day! Independence in what I choose to be an interesting problem to work on is priceless. As long as there are new questions that I want to answer, I will be able to maintain my current level of motivation. And, my co-workers with their shared enthusiasm continue to contribute substantially to that. It is just great to see how co-workers mature and develop during their time in the group. Mentoring young

people is probably the biggest motivation for any professor.

What do you think the future holds for your field of research?

My research is not mainstream, and people consider(ed) it “outside-the-box chemistry” (quote from a famous chemist after a talk at the early stage of my independent career). However, recent years have witnessed tremendous progress in synthetic main-group chemistry, and there is clearly much more to be discovered. I believe that there is a bright future for research at the interface of organic and inorganic chemistry. In a more general perspective, there is the erroneous opinion that organic chemistry, being a classic discipline of chemistry, is now a mature field. I disagree when looking at the exciting developments in both methodology and synthesis in recent years. We have only just scratched the surface, I think. There will always be a demand for new molecules and for new or more efficient ways of making them.

My 5 top papers:

1. “Asymmetric Synthesis of α -Chiral Allylic Silanes by Enantioconvergent γ -Selective Copper(I)-Catalyzed Allylic Silylation”: L. B. Delvos, D. J. Vyas, M. Oestreich, *Angew. Chem.* **2013**, *125*, 4748–4751; *Angew. Chem. Int. Ed.* **2013**, *52*, 4650–4653.
We have been involved in the catalytic activation of the Si–B bond through transmetalation to generate silicon nucleophiles for many years now. In doing this, we solved several long-standing challenges of enantioselective C–Si bond formation, e.g., conjugate addition and the reported allylic substitution. I still find it remarkable that these and related fundamental transformations had been elusive until recently.
2. “Cooperative Catalytic Activation of Si–H Bonds by a Polar Ru–S Bond: Regioselective Low-Temperature C–H Silylation of Indoles under Neutral Conditions by a Friedel–Crafts Mechanism”: H. F. T. Klare, M. Oestreich, J.-i. Ito, H. Nishiyama, Y. Ohki, K. Tatsumi, *J. Am. Chem. Soc.* **2011**, *133*, 3312–3315.
This “bioinspired” splitting of the Si–H bond into a hydride and a silicon electrophile opened the door to several fascinating catalytic transformations, including this dehydrogenative C_{sp}–Si coupling, and there is more to come. It is the result of a wonderful collaboration between the team of Kazuyuki Tatsumi and Yasuhiro Ohki and my laboratory, i.e., a joint effort of a (bio)inorganic and an organic group.
3. “Taming the Silylium Ion for Low-Temperature Diels–Alder Reactions”: H. F. T. Klare, K. Bergander, M. Oestreich, *Angew. Chem.* **2009**, *121*, 9241–9243; *Angew. Chem. Int. Ed.* **2009**, *48*, 9077–9079.

This marks the beginning of a new topic in my group, namely catalysis with ferrocene-stabilized silicon cations. We were later able to crystallographically characterize its intriguing molecular structure, and quantum-chemical calculations established its unique bonding situation.

4. “Conclusive Evidence for an S_N2-Si Mechanism in the B(C₆F₅)₃-Catalyzed Hydrosilylation of Carbonyl Compounds: Implications for the Related Hydrogenation”: S. Rendler, M. Oestreich, *Angew. Chem.* **2008**, *120*, 6086–6089; *Angew. Chem. Int. Ed.* **2008**, *47*, 5997–6000.

This work clarifies a remarkable Si–H bond activation step, thereby bridging the mechanisms of the heterolytic splitting of Si–H and H–H bonds with electron-deficient boron Lewis acids. Obtaining an insight into reaction mechanisms with the aid of silicon-stereogenic silanes as stereochemical probes continues to be a frequently used technique in my group.

5. “Kinetic Resolution of Chiral Secondary Alcohols by Dehydrogenative Coupling with Recyclable Silicon-Stereogenic Silanes”: S. Rendler, G. Auer, M. Oestreich, *Angew. Chem.* **2005**, *117*, 7793–7797; *Angew. Chem. Int. Ed.* **2005**, *44*, 7620–7624.

At the time, this work demonstrated an unprecedented kinetic resolution strategy, making use of stereogenicity at the silicon atom. It is still our finest conceptual contribution, a beautiful example of curiosity-driven research. It had since required almost half a decade to develop the corresponding catalyst-controlled variant.

DOI: 10.1002/anie.201405300