D. Stalke

Dietmar Stalke

Date of birth:	September 21, 1958
Position:	Professor of Inorganic Chemistry, Georg-August-Universität, Göttingen (Germany)
E-mail:	dstalke@chemie.uni-goettingen.de
Homepage:	www.uni-goettingen.de/de/53448.html
Education:	1978–1983 Studies in chemistry and philosophy, Universities of Braunschweig and Göttingen 1985–1987 PhD with Prof. U. Klingebiel, University of Göttingen 1987–1993 Habilitation mentored by Prof. G. M. Sheldrick, University of Göttingen 1989 Postdoc with Prof. P. von R. Schleyer, University of Erlangen-Nürnberg 1991 Postdoc with Dr. P. R. Raithby and Dr. R. Snaith, University of Cambridge (UK)
Awards:	**2005** Arfvedson–Schlenk Prize from the GDCh and Chemetall for major achievements in the area of lithium chemistry; **2011** Award of the Stiftungsrat der Universität Göttingen for exceptional performance in teaching
Current research interests:	Lithiumorganic chemistry, phosphorus- and sulfur-centered ligand design, low-valent silicon chemistry, X-ray structure determination under non-ambient conditions, experimental charge-density determination, computational chemistry
Hobbies:	Carpentry, tiling, plumbing, reading philosophy and thrillers

If I were not a scientist, I would be … a carpenter or a goldsmith.

My favorite food is … the Bratwurst at the Göttingen Christmas market.

I like refereeing because … after the author and the editor, I'm only the third person to read the exciting new science.

The greatest scientific advance in the next decade will be … time-resolved crystallography on excited-state materials.

The biggest problem that scientists face is … competition with science administration for the same limited financial resources.

If I won the lottery, I would … send all our four daughters to Cambridge (UK), Scripps, or MIT to study.

In my opinion, the word "scientist" means … to look at phenomena with eyes wide open and an acute mind.

If I could have dinner with three famous scientists from history, they would be … David Hume, Isaac Newton, and Sigmund Freud.

And I would ask them … whether there really is an ego, superego, and id, and how to promote humanity and rationality in society.

My worst nightmare is … to wake up during the night and see the chemistry institute in flames.

The worst advice I have ever been given was … to stay away from academia because that would never ever get me anywhere.

I can never resist … to "improve" any written, but not yet published, manuscript.

The downside of my job is … the lack of time to really do what we should do: think, give it a try, and come up with something new!

When I'm frustrated I … listen to music of The Doors very loudly.

The most amusing chemistry adventure in my career was … at the age of 14—to evacuate a wasps' nest with a vacuum cleaner, try to anesthetize them with gasoline vapor, and not notice the subsequent vast explosion in the garage (luckily nobody was injured).

My favorite author is … Stanislaw Lem.

My top three films of all time are … Quo Vadis (Mervyn LeRoy), Once Upon a Time in the West (Sergio Leone), and Avatar (James Cameron).

My favorite piece of music is … In A Gadda Da Vida by Iron Butterfly.

The author presented on this page has published more than ***25 articles*** *since 2000 in Angewandte Chemie, most recently:*
"^{7}Li Residual Quadrupolar Couplings (RQCs) as a Powerful Tool to Identify Organolithium Aggregation": A.-C. Pöppler, H. Keil, D. Stalke, M. John, *Angew. Chem.* **2012**, *124*, 7963–7967; *Angew. Chem. Int. Ed.* **2012**, *51*, 7843–7846.

Work by D. Stalke has been featured on the back cover of Angewandte Chemie:
"A Stable Cation of a CSi$_3$P Five-Membered Ring with a Weakly Coordinating Chloride Anion": S. S. Sen, J. Hey, M. Eckhardt, R. Herbst-Irmer, E. Maedl, R. A. Mata, H. W. Roesky, M. Scheer, D. Stalke, *Angew. Chem.* **2011**, *123*, 12718–12721; *Angew. Chem. Int. Ed.* **2011**, *50*, 12510–12513.

Has your approach to publishing your results changed since the start of your career?

When I started publishing on my own, naturally I was quite anxious not to make any mistakes and to find a witness for everything that I reported. Of course, the work from the early days was neither provocative nor very original. Without any reputation and only little confidence, I did not want to stick my neck out too far. Although I still think those papers are getting across good science, today I believe a paper should be—apart from rock-solid—a bit challenging. In my present papers, I try to address that point by being as unconventional as possible without upsetting somebody. Although we all learn from the genius of our ancestors, we need a fresh, different, and independent perspective to science and communication.

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

The structure–reactivity relationship is the Holy Grail of lithiumorganic chemistry. The combination of NMR spectroscopy and time-resolved low-temperature X-ray analysis will shed more light on the modus operandi of reactive organometallic species and will open new wide avenues to unprecedented reactions. We will be able to activate molecules, which today are regarded as inert, in a very selective way. Main-group chemistry will celebrate victories in the synthesis of low-valent silicon and carbon compounds, even with an oxidation state of one. Furthermore, there will be more metal–metal bonding in s-block chemistry. All these species will have unprecedented catalytic activities preserving the resources of rare transition metals. In crystallography, more-powerful home-sources and more-sensitive shutter-free detectors will promote time-resolved experiments. Large facilities will provide more and more X-ray photons and neutrons at spallation sources to study smaller crystals even faster.

My 5 top papers:

1. "Crystal Handling at Low Temperature": T. Kottke, D. Stalke, *J. Appl. Crystallogr.* **1993**, *26*, 615–619.
   The reported device enabled the manipulation of air-sensitive, pyrophoric, low-melting, solvent-containing, and fragile crystals in an easy-to-access environment within minutes or even seconds, and now is commercially available. It still facilitates structure determinations that would otherwise have not been possible.
2. "Structures of Classical Reagents in Chemical Synthesis: $(n\text{BuLi})_6$, $(t\text{BuLi})_4$, and the Metastable $(t\text{BuLi}\cdot\text{Et}_2\text{O})_2$": T. Kottke, D. Stalke, *Angew. Chem.* **1993**, *105*, 619–621; *Angew. Chem. Int. Ed. Engl.* **1993**, *32*, 580–582.
   Not only could the structures of pyrophoric textbook compounds, which are typically formed in situ, be determined, but low-temperature crystallography was also applied to sensitive organometallic compounds. Hence the analysis of aggregates, which are impossible to condense and crystallize in a capillary, was possible.
3. "Charge Density Study of Methane Di(triimido)sulfonic Acid $\text{H}_2\text{C}\{\text{S}(\text{N}t\text{Bu})_2(\text{NH}t\text{Bu})\}_2$—the NR Analogue of $\text{H}_2\text{C}\{\text{S}(\text{O})_2(\text{OH})\}_2$": D. Leusser, B. Walfort, D. Stalke, *Angew. Chem.* **2002**, *114*, 2183–2186; *Angew. Chem. Int. Ed.* **2002**, *41*, 2079–2082.
   This paper outlines our synthetic routes to polyimido sulfur compounds and experimentally overcomes the misconception of hypervalency, one of the most serious obstacles in the development of new synthetic routes. Considering all the electronic features found in this compound, we concluded that the S–N/S=N bonding situation is much better described as an $\text{S}^{\delta+}$–$\text{N}^{\delta-}$ bond that is shortened by reinforcement resulting from orientation of the nitrogen lone pairs towards the positively charged sulfur atom.
4. "Lewis Base Stabilized Dichlorosilylene": R. S. Ghadwal, H. W. Roesky, S. Merkel, J. Henn, D. Stalke, *Angew. Chem.* **2009**, *121*, 5793–5796; *Angew. Chem. Int. Ed.* **2009**, *48*, 5683–5686.
   Although germanium, tin, and lead dichlorides were commercially readily available, the isolation of a silicon dichloride that is stable at room temperature had not been reported until this paper. Now, the availability of base-stabilized dichlorosilylene precursors offers the potential to explore their reactivity. Charge-density investigations establish the mainly s character of the silicon-centered lone pair.
5. "Charge Density Distribution in a Metallaphosphane": J. Henn, K. Meindl, A. Oechsner, G. Schwab, T. Koritsanszky, D. Stalke *Angew. Chem.* **2010**, *122, 2472–2476; Angew. Chem. Int. Ed.* **2010**, 49, 2422–2426; *Angew. Chem. Int. Ed.* **2010**, *49*, 2422–2426.
   Two lone pairs at the central divalent P^{III} atom were theoretically and experimentally located and both employed in chemical bonding to a $\{\text{W}(\text{CO})_5\}$ fragment. This example nicely shows that the results from charge-density investigations can directly be employed in syntheses and immediately generate new classes of compounds.

DOI: 10.1002/anie.201202478