

CiQUS Lecture



Prof. Johannes Florian Teichert

**Homoaromatic Hydrocarbons
as structurally new photoswitches**

Thursday, December 1, 2022
12:15 pm CiQUS Seminar Room



TECHNISCHE UNIVERSITÄT
CHEMNITZ

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Abstract:

The identification and characterization of homoaromatic compounds bearing an interrupted p-system are fundamental challenges for the understanding of electronic interactions in organic molecules. This is further hampered by the fact that no stable neutral homoaromatic hydrocarbon is known. In this talk, I will present the preparation of a new class of neutral homoaromatic compounds, which are supported by experimental evidence (ring current observed by NMR spectroscopy, equalization of bond lengths through X-ray structure analysis) as well as computational analysis (NICS and ACID). Furthermore, my group is able to show that one homoaromatic hydrocarbon is a photoswitch through a reversible photochemical [1,11] sigmatropic rearrangement.

Our computational analysis suggests that upon photoswitching the nature of the homoaromatic state changes in perimeter from a more pronounced local 6p homoaromatic to a global 10p homoaromatic state. These results of stable and accessible homoaromatic neutral hydrocarbons and their photoswitching behaviour provide new insights for the understanding and study of homoconjugative interactions in organic molecules, and for the design of new responsive molecular materials.

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EDUCATION & EXPERIENCE

- 05/2021 – present **Full professor**, Technische Universität Chemnitz, Germany
Organic chemistry
- 08/2016 – 04/2021 **Assistant professor** (“Juniorprofessor”), Technische Universität Berlin, Germany
Organic chemistry, Sustainable synthetic chemistry, supported by an *Emmy-Noether Fellowship* by the *German Research Foundation* (Deutsche Forschungsgemeinschaft, DFG)
- 08/2013 – 07/2016 **Habilitation** (Assistant Professorship), Technische Universität Berlin, Germany
Synthesis and Catalysis, funded by a *Liebig-Stipendium* of the *Chemical Industry Fund* (Fonds der Chemischen Industrie) (mentor: Prof. Dr. Martin Oestreich)
- 06/2013 – 07/2013 **Return Fellowship** of the *German National Academy of Sciences Leopoldina*, Technische Universität Berlin, Germany
- 02/2011 – 05/2013 **Postdoctoral Studies**, ETH Zürich, Switzerland
Synthetic and Physical Organic Chemistry, funded by a postdoctoral fellowship by the *German National Academy of Sciences Leopoldina* (supervisor: Prof. Jeffrey W. Bode)
- 09/2006 – 12/2010 **Ph.D. studies**, Rijksuniversiteit Groningen, The Netherlands
“Catalytic Asymmetric Synthesis of Heterocycles” Organic Chemistry, Asymmetric Catalysis (supervisor: Prof. Ben L. Feringa)
- 08/2004 – 04/2005 **Exchange student**, Université Paul Sabatier, Toulouse, France
supported by a grant of the *German academic scholarship foundation* (*Studienstiftung des deutschen Volkes*), coordination chemistry (supervisor: Prof. Michel Etienne, Laboratoire de Chimie de Coordination)
- 09/2001 – 07/2006 **Diploma Studies (chemistry)**, Philipps-Universität Marburg, Germany
(Diploma thesis supervisor: Prof. Gerhard Hilt)
- 06/2010 **Abitur** (Highschool Diploma), Wilhelm-Raabe-Schule, Lüneburg, Germany