

UniCat Colloquium

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Remote-controlling Ground-State Reactivity with Light

Synthetic chemists are mostly devoted to the questions of what and how to make new molecules and materials. In the future, however, it will become increasingly important to control when and where chemical reactions take place. The ultimate goal is to perform chemistry with highest possible spatial and temporal resolution, which will allow to time reactions, for example in simple cascades or more complex chemical networks, and to localize them, for example in 2D patterns for array chip technologies or even in 3D.

In our research group we exploit photoswitchable systems to obtain spatio-temporal control over chemical processes, materials' properties as well as the function of optoelectronic devices. For this purpose we are exploring light as a highly selective, non-invasive external stimulus in combination with photochromic molecules, which allow for reversible switching. Our work is therefore devoted to developing and improving photoswitches and exploring them in a various settings to gate and power functional molecular systems.

My presentation will focus on our group's endeavor to control ground-state reactivity by light using stoichiometric and catalytic approaches. Recently, we have successfully been developing photoswitchable systems that engage in dynamic covalent chemistry and allow us to influence and even shift thermal equilibria by light. Based on these photocontrolled dynamic covalent systems, we have demonstrated the ability to influence the degree and dynamics of covalent crosslinking in polymeric materials and thereby control the intrinsic self-healing as well as thermal healing properties. In my presentation, the underlying fundamental principles will be analyzed from a mechanistic perspective and implications for energy-efficient chemistry will be discussed, in particular in the context of our ongoing quest to drive thermally unfavorable synthetic transformations by light.

Wednesday, June 28, 2017 at 5:15 PM

TU Berlin, Institute of Chemistry
Straße des 17. Juni 115, 10623 Berlin

Building C, Lecture Hall **C 264**

Prof. Driess (TUB)
Organizer

Coffee and cake will be served 30 minutes before the lecture. Guests are cordially invited to attend!
Prof. Dr. Matthias Driess - Chair of the Cluster of Excellence UniCat - www.unicat.tu-berlin.de

