

UniCat Colloquium

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Catalytic Precision Polymerization

From the synthesis of a single polymer chain (topology, molecular weight, stereoregularity, monomer composition, end groups) to the final macroscopic device, there is a steady increase of information that – at the end – defines the application portfolio of any component. Biology uses DNA for information storage on a molecular level. The same approach in chemistry builds up DNA strands from solid phase synthesis to generate self-assemblies of outstandingly high performance (“DNA origami”). One future vision in macromolecular materials of industrial importance aims towards efficient synthesis protocols to produce economically large quantities of polymers with such a high information content (e.g. perfectly controlled multi-block copolymers), which then afford functional construction components by self-assembling.

One obvious route to this vision is certainly found in catalytic polymerization strategies. The first part of the lecture introduces into the question of high precision polymerization and gives example for it. A second part presents the rare earth metal catalyzed group transfer polymerization (REM-GTP) as an extremely volatile route to produce polar polymers based on catalyzed and living poly(Michael addition) reactions. It provides insight into the thermodynamics of the polymerization mechanism and discusses the ability of those catalysts to convert conventional but also novel monomer types. The last segment of the presentation demonstrates the high precision level of the REM-GTP reaction to produce catalytically functional surface structures (Surface-Induced-GTP) but also surprisingly uniform macromolecular objects and points towards a first example of future applications.

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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

