

cfaed Seminar Series

DATE: June 13, 2019
TIME: 3:00 PM – 4:30 PM
LOC: Seminar room CHE 183 (first floor)
 Chemie-Neubau, Bergstr. 66
 01069 Dresden



GUEST SPEAKER:

Prof. Michael Mastalerz

Organisch-Chemisches Institut, Ruprecht-Karls-Universität Heidelberg, Heidelberg, Germany

TITLE:

“From Soluble Porous Cages to Extended fused π -Systems”

ABSTRACT:

Since the introduction of metal-organic frameworks (MOFs), porous materials experienced a real renaissance, simply because the concept of using oligotopic organic linker molecules coordinating to metal ions or metal oxoion clusters allowed to exploit the chemical space by using an infinitesimal number of possible organic linker molecules. However, MOFs as well as the covalent organic frameworks (COFs) and other three-dimensional porous polymers have with zeolites and charcoals in common that these are insoluble powders. Shape-persistent molecular organic cages have the advantage that these are soluble and therefore more easily processable than the above mentioned polymeric compounds. With specific surface areas of up to 3758 m²/g or high selectivities of gas sorption compounds of this new type of porous materials are no longer exotic exceptions and can compete with MOFs, COFs and zeolites for several applications. The development of this field from the perspective of our laboratory is presented.

Another kind of porous organic molecules are the so called OMIMs (organic molecules of intrinsic microporosity). These rely on frustrated packing. During our work on OMIMs we entered the field of extended fused π -systems that are highly contorted, with exciting intrinsic properties. These systems are discussed in the second part of the presentation

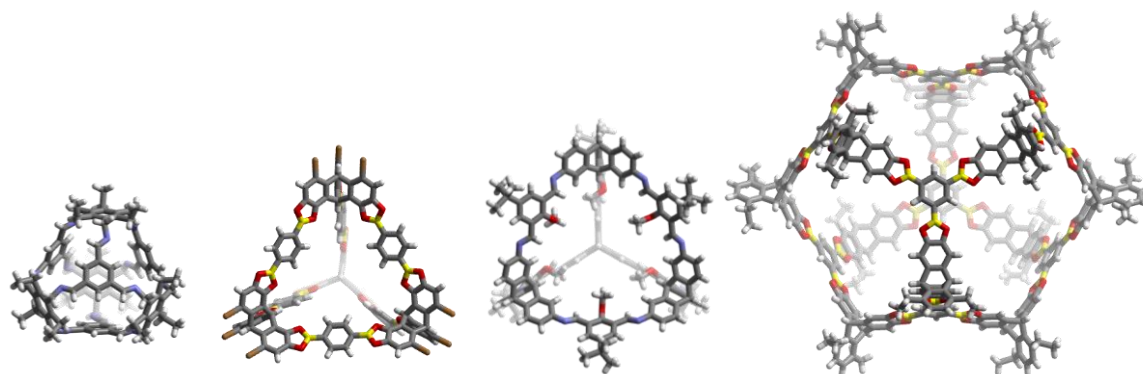


Figure 1: X-ray crystal structures of some porous organic cages

Key References

Michael Mastalerz, Porous Shape-Persistent Organic Cage Compounds of Different Size, Geometry and Function, *Acc. Chem. Res.* **2018**, *51*, 2411-2422.

Bernd Kohl, Frank Rominger, Michael Mastalerz*, A pyrene-fused *N*-heteroacene with eleven rectilinearly annulated aromatic rings characterized by single-crystal X-ray diffraction, *Angew. Chem. Int. Ed.* **2015**, *54*, 6051-6056

BIOGRAPHY:

Since 04/2013	Professor (W3) for Organic Chemistry at Ruprecht-Karls-Universität Heidelberg
02/2013	venia legendi
2009 – 2013	Independent Research (equal to Assistant Professor), Ulm University/Germany
2007 – 2009	Post-doc, Ulm University/Germany, Supervisor: Prof. Dr. Peter Bäuerle
2006 – 2007	Post-doc, Massachusetts Institute of Technology/ Cambridge (USA) Supervisor: Prof. Dr. Gregory C. Fu
2005 – 2006	Working at Taros Chemicals GmbH in Dortmund/Germany
2005	Ph.D. Thesis at the Ruhr-University of Bochum Supervisor: Prof. Dr. Gerald Dyker
2002	Diploma Thesis at University Duisburg-Essen Supervisor: Prof. Dr. Gerald Dyker
1997 – 2002	Studies of Chemistry at Gerhard-Mercator University Duisburg

Main Research Interests

- Organic Porous Molecules and Materials by Dynamic Covalent Bond Formation
- Crystal Engineering and Self-Assembling
- Supramolecular Chemistry
- Nonplanar Extended Aromatic Molecules
- Development of New Synthetic Methods