

**SMART MOLECULES**

<b>Module name</b>	<b>Synthesis, properties, and applications of macrocycles and cage compounds</b>
<b>Number</b>	2012-T1
<b>Aims</b>	1. Understand how macrocycles and cage compounds are obtained by conventional synthesis or self-assembly processes; 2. Understand the chemical properties, spectroscopic and structural features of cyclic or cage compounds 3. Understand the properties and applications of these host compounds.
<b>Basics</b>	History, development and basics of macrocyclic chemistry; basic aspects of porphyrin chemistry (synthesis, specific modifications, spectroscopic properties etc.), organometallic porphyrin chemistry, facially capping phosphorus macrocycles, PN-based macrocycles and cages; naturally occurring macrocycles, modeling of macrocycles, container molecules, coordination cages, spectroscopic properties of cages and capsules
<b>Contents</b>	<ul style="list-style-type: none"> <li>– RNA molecular switches and springs (Jennifer Hines)</li> <li>– Container Molecules (Jonathan Nitschke)</li> <li>– Coordination Gages (Guido Clever)</li> <li>– Modelling Macrocycles (Peter Comba)</li> <li>– MS-Spectroscopy of Cages and Capsules (Christoph Schalley)</li> <li>– Basic and Modern Aspects of Porphyrin Chemistry (Milosz Pawlicki)</li> <li>– Facially Capping Phosphorus Macrocycles (Peter G. Edwards)</li> <li>– PN-based Macrocycles and Cages (Evamarie Hey-Hawkins)</li> <li>– Basics of Macrocyclic Chemistry (Berthold Kersting)</li> </ul>
<b>Methods</b>	Synthesis, Synthesis of Macrocycles, Cages and Capsules, Handling and Characterization of Cyclic and Cage Compounds
<b>Type</b>	Two-day block course
<b>Date (month/year)</b>	28-29 June 2012
<b>Time</b>	9 a.m. (Thursday) – 4 p.m. (Friday)
<b>Work load</b>	15 hours presence / 45 hours self-study
<b>Examination</b>	Friday, 6 <sup>th</sup> July 2012, 11-12 a.m.
<b>Credit points</b>	2
<b>Responsible scientists</b>	Prof. Dr. E. Hey-Hawkins, Prof. Dr. Berthold Kersting
<b>Guest lecturers</b>	Jennifer Hines (Athens, Ohio, USA), Jonathan Nitschke (Cambridge, UK), Milosz Pawlicki (Wroclaw, Poland), Peter G. Edwards (Cardiff, UK), Christoph Schalley (Berlin), Peter Comba (Heidelberg), Guido Clever (Göttingen), Evamarie Hey-Hawkins (Leipzig), Berthold Kersting (Leipzig),
<b>Industrial partners</b>	None
<b>Recommendations for literature</b>	<b>Supramolecular Chemistry</b> , Wiley, 2 <sup>nd</sup> Ed. 2009;

## Schedule

<b>Thursday, June 28<sup>th</sup></b>			
<b>Time</b>	<b>Lecturer</b>	<b>Program</b>	<b>Location</b>
09:00 – 09:05	Evamarie Hey-Hawkins, Leipzig	Welcoming address	Faculty of Chemistry and Mineralogy, Johannisallee 29
09:05 – 10:05	Berthold Kersting, Leipzig	Basics aspects of macrocyclic chemistry	Seminar Room SR102
10:05 – 11:05	Milosz Pawlicki, Wroclaw, Poland	Porphyrin chemistry: Synthesis, modifications, and properties	SR102
11:05 – 11:25	<i>Coffee &amp; Tea, Refreshments</i>		
11:25 – 12:25	Peter G. Edwards, Cardiff University, UK	'Ligand Design, Shape Control and Reactivity with Facially Capping Phosphorus Macrocycles'	SR102
12:25 – 13:30	<i>Lunch break</i>		
13:30 – 14:15	Evamarie Hey-Hawkins, Leipzig	PN-based macrocycles and cages	SR102
14:15 – 15:15	Peter Comba, Heidelberg, Germany	Modelling of Macrocycles: From a Cu Carbo-anhydrase to Cu-Sensors	SR102
15:15 – 15:45	<i>Coffee &amp; Tea, Refreshments</i>		
15:45 – 16:45	Jennifer Hines, Athens, Ohio	RNA molecular switches and springs	SR102
17:00 – 21:00	<i>Barbeque: Destille</i>		
<b>Day 2 (Friday, June 29<sup>th</sup>)</b>			
09:00 – 10:00	Jonathan Nitschke, Cambridge UK	Container Molecules	SR102
10:00 – 10:20	<i>Coffee &amp; Tea, Refreshments</i>		
10:20 – 11:20	Guido Clever, Göttingen, Germany	Coordination Cages	
11:20 – 12:20	Christoph Schalley	Some Gas-Phase Experiments with Macrocycles and Capsules	SR102
12:20 – 13:30	Lunch break		
13:30 – 16:00	Discussion / Closing Remarks		SR102

Didactic elements: Lecture, discussions, presentations.

Expected performance: Active participation in discussions