

SCIENTIFIC AND METHOD MODULES

Module name	Nanoparticles and Catalysis
Number	2011-M07
Aims	Deepen the understanding of generation and handling of nanoparticles and catalysts with nanostructures
Basics	Basic understanding of heterogeneous catalysis
Contents	Nanostructures and nanoparticles are two basic and emerging concepts in modern heterogeneous catalysis. Nanoclusters on microporous carriers are known for a long time and widely applied in various catalytic processes, whereas catalysis with suspended nanoparticles is a relatively new, upcoming approach. Its specific advantages and challenges will be discussed with a focus on applications, e.g., in water treatment processes.
Methods	Techniques for measurement of chemical reaction kinetics characterization of nanostructures and free nanoparticles
Type	two-days block course: including lessons, practical exercises and a final examination
Date	24th and 25th of October 2011
Time	9.00 to 17.00
Work load	15 h presence / 30 h self-study
Examination	Oral, 4th and 5th of November 2011
Credit points	2
Responsible scientists	F.-D. Kopinke and R. Gläser
Guest lecturers	Prof. H. Harms, Dr. K. Schirmer, Prof. C.H. Christensen, Prof. Dr. S. Kureti, , Prof. K. Tryantafillidis, Dr. A. Georgi, Dr. K. Mackenzie
Industrial partners	
Recommendations for lit.	Nanocatalysis (U. Heiz, U. Landmann, Springer 2006, ISSN 1434-4904), Nanoparticles and Catalysis (D. Astruc, Wiley 2008, ISBN 978-3-527-31572-7).

SCHEDULE 2011

Time	Lecturer	Programme	Location
Day 1			
9 - 10 ⁰⁰	Prof. Dr. Frank-Dieter Kopinke, UFZ Leipzig	Introduction to catalysis with free nanoparticles	BBZ, Deutscher Platz 5 room: SR 1.3
10 ¹⁵ - 11 ¹⁵	Prof. Dr. Roger Gläser, Universität Leipzig	Introduction to catalysis with nanostructured materials	
13 ⁰⁰ - 14 ⁰⁰	Prof. Dr. Sven Kureti, TU Freiberg	Oxidation soot on nano iron oxide	
14 ¹⁵ - 15 ¹⁵	Prof. Dr. Claus H. Christensen, Haldor Topsøe, Lyngby, Dänemark	Design of Heterogeneous Catalysts: From Nano to Mega	BBZ, Deutscher Platz 5 room: SR 1.3
15 ³⁰ - 16 ³⁰	Prof. Dr. Kostas Tryantafillidis, Aristotle University of Thessaloniki, Griechenland	Effect of supported metal particle nano-size on catalytic activity: Case studies of Ag-nanoparticles for ethylene epoxidation and Ru-nanoparticles for N ₂ O decomposition	BBZ, Deutscher Platz 5 room: SR 1.3
Day 2			
9 ⁰⁰ - 12 ⁰⁰	Dr. Anett Georgi, UFZ Leipzig	Analytical methods for characterization of suspended nanoparticles: a short introduction	UFZ, Permoserstr.15, room 122
	Dr. Anett Georgi and Dr. Katrin Mackenzie, UFZ Leipzig	Catalysis with and analytics of nanoparticles: Some practical exercises	
13 ³⁰ - 14 ³⁰	Prof. Dr. Hauke Harms, UFZ Leipzig	Microorganisms and enzymes as natural nanocatalysts	BBZ, Deutscher Platz 5 room: SR 1.3
15 ⁰⁰ - 16 ⁰⁰	Dr. Kristin Schirmer, EAWAG Zürich	Ecotoxicological evaluation of nanoparticles	BBZ, Deutscher Platz 5 room: SR 1.3
Day 3+4			
04.11.: 8 ⁰⁰ -18 ⁰⁰ 05.11.: 9 ⁰⁰ - 15 ⁰⁰	Prof. R. Gläser Prof. F.-D. Kopinke	Oral Examinations (single, about 20 min. each)	Office Prof. Gläser at the university (TA, 5 th floor)