BuildMoNa

UNIVERSITÄT LEIPZIG

SCIENTIFIC AND METHOD MODULES

Module name	**Magnetic resonance**
Number	2008-M06
Aims	Magnetic resonance, in particular NMR, is one of the very few local probes of bulk matter with applications in almost all natural sciences. Leipzig has a great tradition in applying and developing magnetic resonance in various areas. The powerful spectroscopic insight from magnetic resonance requires, however, a special knowledge of its methods, techniques, and hardware. Therefore, *basic* courses in magnetic resonance will be provided that lay the foundation for its application. Due to the exceptional breadth of applications, *advanced* courses will focus on current research needs.
Basics	Magnetic resonance (NMR and EPR) for the investigation of materials, which are the focus of the Graduate School, and their properties
Contents	Basic principles of NMR and EPR. NMR of liquids and of solids as basic analytical tool. Advanced methods (e.g., in biological systems, quantum solids, surfaces). Hardware development for special applications (thin films, high fields and frequencies).
Methods	Given the great expertise in magnetic resonance, interdisciplinary teaching (already practiced in Leipzig) will provide first-hand knowledge from leading experts in various fields. The teaching will also profit from a long-standing experience with GDCh courses where we combine lectures on various subjects with concrete experimental training at instruments, which provides hands-on education in complicated methods.
Type	Two-day block course/ yearly recurrence with modification
Date (month/year)	September 2-3
Time	Day 1: 8:30 a.m. – 4 p.m., Day 2: 8:30 a.m. – 4 p.m.
Work load	15 hours presence/ 45 hours self-study
Examination	Written, September 5 at 5 p.m. Technikum Analytikum Room 257
Credit points	2
Responsible scientists	Berger, Haase
International guest lecturers	-
Industrial partners	-
Recommendations for literature, e-learning	M. H. Levitt, Spin Dynamics, Wiley, 2001 S. Berger, S. Braun, 200 and More NMR Experiments, Wiley VCH, 2004 (available in the Library, Faculty of Chemistry and Mineralogy, Johannisallee 29)

Graduate School BuildMoNa
Universität Leipzig
Johannisallee 29
04103 Leipzig
Germany

Phone: +49 341 97-36016
Fax: +49 341 97-36094

buildmona@uni-leipzig.de
www.buildmona.de

SCHEDULE 2008

Tuesday, September 2			
8:30 - 10:00 a.m.	Haase	Introduction into Spin Resonance	TA-257
	Break		
10:30 - 12:00 a.m.	Haase	Spin and Quantum Spin Physics	
Lunch Break			
2:00 – 3:00 p.m.	Haase	Seminar (group 1) Experiments (group 2): Hardware, Solid-State NMR Techniques	
3:00 – 4:00 p.m.	Haase	Seminar (group 2) Experiments (group 1): Hardware, Solid-State NMR Techniques	
Wednesday, September 3			
8:30 – 10:00 a.m.	Berger	2-Dimensional NMR Techniques	TA-257
Break			
10:30 – 12:00	Berger	Application of NMR to Protein Research	
	Lunch break		
2:00 – 3:00 p.m.	Berger	Seminar (group 1) Experiments (group 2): Practical aspects of 2D NMR, NOESY, COSY	
3:00 – 4:00 p.m.	Berger	Seminar (group 2) Experiments (group 1): Practical aspects of 2D NMR, NOESY, COSY	

Didactic elements:
Lecture, discussions, practical training

Expected performance:
Active participation in discussions and practical training