UNIVERSITY OF PANNONIA

SUBJECT DATASHEET

Semester:	2009/10/1
Subject:	Heteronuclear Magnetic Resonance
Code:	VEMKSI4312H
Responsible department:	Institute of Materials Engineering
Responsible department code:	MKSI
Responsible lecturer:	dr. Gábor Szalontai

Educational objectives:

To disseminate the proper knowledge of theory and practice of heteronuclear NMR and its capacity to solve structural problems of different compounds. The student must be able to select proper nucleus and method by which a particular problem can be addressed

Detailed content of the subject:

1. General theory and specific NMR characteristics of hetero nuclei - scalar couplings among heteronuclei - chemical shift anisotropy - relaxation time ranges - effect on electronic environment on the relaxation behaviour 2. Study of dipolar nuclei (1H,19F, 31P): high resolution studies Metal hydrides: 1H and 31P Structure elucidation of phosphine-metal complexes. 13C and 31P NMR (high resolution studies) Stereochemistry of binuclear complexes in solutions 3. Methods for the determination of: Optical purity Size of chelate rings on chemical shifts (organometallic chemistry) Spectra of low-gamma nuclei 4. Study of of quadrupolar nuclei (I=3/2, 5/23, 7/2 etc.) 1D direct detection experiments 2D in direct detection experiments The quadrupole phenmiomenon and its effects NMR of strongly quadrupolar nuclei, and their possible effect on spectra of I=1/2 nuclei 5. Practical aspects of the heteronuclear NMR

Requirements:

Required and suggested references:

Szalontai Gábor: Heteronukleáris NMR Spektroszkópia (CD jegyzet, 2004) Válogatott fejezetek a fémorganikus kémiából. Veszprém, 1996 (jegyzet). Brevard and Granger: Handbook of High Resolution Multinuclear NMR,Wiley,Chichester, 1981.