Chemistry 9503: Advanced NMR Spectroscopy I

Course Description: An overview of the fundamentals of high resolution nuclear magnetic resonance (NMR) spectroscopy and applications in organic and inorganic chemistry. The course will begin with a review of the fundamentals of NMR spectroscopy followed by an overview of chemical shifts, coupling constants, and chemical and magnetic equivalence. Emphasis will be placed on the interpretation of one dimensional first and second order spectra. Following a general discussion of the basic pulsed Fourier Transform NMR experiment including a discussion of the parameters used in data acquisition and processing, the course will finish with a discussion of spin-lattice and spin-spin relaxation, spectral editing techniques and polarization transfer.

Instructor: K. M. Baines, kbaines2@uwo.ca, Chem. Bldg. Room 310A

Lectures and Tutorials: Tuesdays and Thursdays 9:30 am to 11:00 am starting Tues Nov 8 and ending Thurs Dec 15 (times to be confirmed and room to be announced)

Evaluation:

Structure Elucidation Problem Sets (3 x 10%) 30 %
Practical Assignment 15 %
Class participation/team work 15 %
Final exam 40 %

Approximate due dates:

Problem Sets: Nov 21, Nov 28, Dec 5
Practical Assignment: Dec 12

Recommended Texts:

3. NMR Spectroscopy Explained, N.E. Jacobsen, Wiley-Interscience

Approximate Schedule for Advanced NMR Spectroscopy I

Weeks 1&2: fundamentals of NMR spectroscopy; chemical shift and coupling constants; chemical and magnetic equivalence; first order spectra; heteronuclear spectra

Weeks 3&4: second order spectra; how the spectrometers work; data acquisition and processing

Weeks 5&6: spin-lattice and spin- spin relaxation; 1D spectral editing techniques; polarization transfer.