

A Hands on Introduction to NMR

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Abstract

The course provides an introduction to NMR for those who wish to have a background in both the classical theory and in the instrumentation. The course will be run as a series of 8 lectures, each of which will be followed by laboratory experiments to demonstrate the ideas that were presented during the lecture and to familiarize students with state of the art NMR instrumentation. The experiments will cover topics ranging from spin dynamics, to spectroscopy and will include imaging.

Outline

LEC# 1

Nuclear Spin and Magnetic Resonance.

LEC# 2

The Rotating Frame, RF pulses and the Bloch's Equations.

LEC# 3

Magnetic Field Gradients, k-space and Diffusion

LEC# 4

Gradient and Spin Echoes

LEC# 5

NMR Imaging in 2D, Slice Selection

LEC# 6

More Imaging, and Flow Studies

LEC# 7

NMR Spectroscopy, Chemical Shifts, Spin-Spin Couplings

LEC# 8

Two Dimensional NMR Methods, the COSY Experiment

