Duration: 90 min | Level: Post-Graduate | Tuesdays & Thursdays | Time: 10:00 Hours

NMR Basics to Advanced

Prof. P. K. Madhu

TIFR HYDERABAD

URL: https://chempu.ac.in/events/

Prof. P. K. Madhu: http://www.tifr.res.in/~madhu/

Department of Chemistry

Pondicherry University

Tentative Topics

*Basic of NMR, angular momentum, spin precession, phenomenological ideas of relaxation, Bloch equations

*Various spin interactions responsible for NMR spectra, calculation of spectrum from first principles

*Fourier picture, pulses, nutation frequencies

*Design of NMR pulse schemes, spin echo as a model, measurement of relaxation times

*NMR hardware

*Magnetisation transfer schemes through scalar coupling and dipole-dipole coupling

*Nuclear Overhauser effect

*Higher-order quanta in NMR, so-called forbidden transitions

*Two-dimensional spectroscopy, basics, information content, interpretation

*Certain standard 2D schemes for assignments and structural elucidation

*Overview of biomolecular NMR

*Principles of imaging

Learning Objectives

Understand what NMR is all about

Origin of spin-spin coupling and its observation and inference

What are pulses in NMR?

How nuclear spin responds to various pulses

Understanding NMR instrumentation

Magnetic coupling

Structural elucidation through various NMR techniques

How Magnetic resonance imaging works

Other advanced concepts