MULTIDIMENSIONAL NMR SPECTROSCOPY FOR STRUCTURAL STUDIES OF BIOMOLECULES

CHEMISTRY AND BIOCHEMISTRY

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TYPE OF COURSE : New | Elective | PG
COURSE DURATION : 8 weeks (28 jan'19 - 22 Mar'19)
INTENDED AUDIENCE : M. Sc/Ph. D students, Scientists from Pharma/Biotech Companies
EXAM DATE : 31 Mar 2019
PRE-REQUISITES : Mathematics at the 12th Std level, Basic Knowledge of Proteins/Nucleic Acids , A basic knowledge of NMR would be useful, though not necessary

INDUSTRIES APPLICABLE TO : Biocon, Aurigene Laboratories, Pharma Industry

COURSE OUTLINE :

The objective of the course is to introduce methods used in NMR spectroscopy for structure determination of biomolecules and for studying protein-ligand interactions. The course will cover principles and application of two- and three-dimensional NMR experiments along with different isotope labelling schemes that are routinely used for protein structure determination.

ABOUT INSTRUCTOR :

Academic Career : M. Sc – Indian Institute of Technology, Mumbai (1997). Ph. D – Tata Institute of Fundamental Research, Mumbai (2002). Post doctoral Research fellow at State University of New York, Buffalo USA (2002-2006). Currently he is Associate Professor at NMR Research Centre, Indian Institute of Science, Bangalore, India. Research Interests: Development and application of new NMR methodologies in structural Publications/patents/books: Approximately 90 publications in peer.

COURSE PLAN :

Week 01 : Introduction to Basics of NMR

Week 02 : Two dimensional NMR

Week 03 : Important 2D NMR experiments for Biomolecules

Week 04 : 3D NMR Spectroscopy

Week 05 : Basics of Protein and Nucleic Acid Structure

Week 06 : Isotope Labelling

Week 07 : Resonance assignment of Proteins with NMR and Structure Determination

Week 08 : NMR Experiments for Studying Protein-Ligand Interactions