

## NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemistry and Biochemistry - NOC:One and two dimensional NMR Spectroscopy for Chemists

Subject Co-ordinator - Prof. N. Suryaprakash

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - NMR an historical perspective and NMR active nuclei  
Lecture 2 - Spin Angular Momentum and Magnetic moment  
Lecture 3 - Interaction of Spins with the magnetic field  
Lecture 4 - Larmor Precession and Energy of interaction  
Lecture 5 - NMR detection and sensitivity  
Lecture 6 - Inducing Resonance and Bulk Magnetization  
Lecture 7 - Signal detection and Rotating Frame Concept  
Lecture 8 - Pulse phase and signal phase  
Lecture 9 - FID and Fourier Transformation  
Lecture 10 - Selection rules and transitions  
Lecture 11 - External and Internal interactions in NMR  
Lecture 12 - Chemical Shifts  
Lecture 13 - NMR Spectrum and chemical equivalence  
Lecture 14 - Conversion of frequency and ppm  
Lecture 15 - Field dependence and factors affecting chemical shift  
Lecture 16 - Factors contributing to chemical shifts - 1  
Lecture 17 - Factors contributing to chemical shifts - 2  
Lecture 18 - Scalar Couplings - 1  
Lecture 19 - Scalar Couplings - 2  
Lecture 20 - Energy levels of coupled spins  
Lecture 21 - Spin system classification and multiplicity  
Lecture 22 - Multiplicity pattern of coupled spins  
Lecture 23 - Active and passive coupling  
Lecture 24 - Coupling among equivalent spins - 1  
Lecture 25 - Coupling among equivalent spins - 2  
Lecture 26 - Coupling among non-equivalent spins  
Lecture 27 - Geminal and Vicinal couplings  
Lecture 28 - Spin system Nomenclature  
Lecture 29 - Isotope effect

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- Lecture 30 - Analysis of Strongly coupled spin systems
- Lecture 31 - Eigen values of A2 and AMX spin systems
- Lecture 32 - Analysis of Three spin coupled systems
- Lecture 33 - Analysis of Proton NMR spectra - 1
- Lecture 34 - Analysis of Proton NMR spectra - 2
- Lecture 35 - Analysis of Proton NMR spectra - 3
- Lecture 36 - Basics of <sup>13</sup>C-NMR
- Lecture 37 - Coupled and Decoupled <sup>13</sup>C-Spectra
- Lecture 38 - Broadband decoupling in <sup>13</sup>C-NMR
- Lecture 39 - Analysis of <sup>13</sup>C spectra and DEPT
- Lecture 40 - Heteronuclear couplings and satellite analysis - 1
- Lecture 41 - Heteronuclear couplings and satellite analysis - 2
- Lecture 42 - Coupling among magnetic equivalent nuclei and isotope effect
- Lecture 43 - Analysis of spectra of other nuclei
- Lecture 44 - Spin Echoes
- Lecture 45 - Polarization transfer techniques
- Lecture 46 - INEPT and DEPT
- Lecture 47 - Decoupling and NOE
- Lecture 48 - NOE-2
- Lecture 49 - Introduction to 2D NMR
- Lecture 50 - Two-dimensional NMR
- Lecture 51 - Two dimensional NMR
- Lecture 52 - Two dimensional COSY
- Lecture 53 - COSY and examples
- Lecture 54 - Variants of COSY and TOCSY spectra
- Lecture 55 - Heteronuclear correlation and inverse detection
- Lecture 56 - Coupled and decoupled HSQC and HMBC
- Lecture 57 - NMR data acquisition - 1
- Lecture 58 - NMR data acquisition - 2
- Lecture 59 - Practical considerations of 1D NMR
- Lecture 60 - NMR Data processing
- Lecture 61 - NMR Data processing
- Lecture 62 - NMR Instrumentation - 1
- Lecture 63 - NMR Instrumentation - 2
- Lecture 64 - Relaxation processes - 1
- Lecture 65 - Relaxation processes - 2