

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

NPTEL Video Course - Chemistry and Biochemistry - NOC:Ultrafast Laser Spectroscopy

Subject Co-ordinator - Prof. Anindya Datta

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Introduction
- Lecture 2 - Steady State Spectra
- Lecture 3 - Spectro Photometer
- Lecture 4 - How to record Absorption and Emission Spectra
- Lecture 5 - Excited state processes
- Lecture 6 - TCSPC for picosecond- Nanosecond Time Domain
- Lecture 7 - TCSPC for picosecond- Nanosecond Time Domain (Continued...)
- Lecture 8 - TCSPC Lab
- Lecture 9 - Data Fitting 1
- Lecture 10 - Data Fitting 2
- Lecture 11 - Femtosecond Fluorescence Upconversion - 1
- Lecture 12 - Femtosecond Fluorescence Upconversion - 2
- Lecture 13 - Femtosecond Fluorescence Upconversion - 3
- Lecture 14 - FOG Lab
- Lecture 15 - Gate Detectors and Streak Camera - Part 1
- Lecture 16 - Gate Detectors and Streak Camera - Part 2
- Lecture 17 - Stimulated Emission
- Lecture 18 - Two Level System
- Lecture 19 - 3 and 4 level system
- Lecture 20 - From CW to Pulsed Laser
- Lecture 21 - Longitudinal modes
- Lecture 22 - Modelocking for short pulses
- Lecture 23 - Modelocking for short pulses (Continued...)
- Lecture 24 - Kerr lens Modelocking for femtosecond pulses
- Lecture 25 - Titanium Sapphire lasers
- Lecture 26 - Active and Passive Modelocking
- Lecture 27 - Modelocking and cavity damping
- Lecture 28 - Ti
- Lecture 29 - Cavity Dumping

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- Lecture 30 - Cavity dumping (Continued...)
- Lecture 31 - Q switching
- Lecture 32 - Stretching and compressing ultrafast laser pulses
- Lecture 33 - Pulse stretcher/Compressor
- Lecture 34 - Chirped pulsed amplification
- Lecture 35 - Oscillators and Amplifier
- Lecture 36 - Alexandrite and fibril lasers
- Lecture 37 - Regenerative amplifier in our lab
- Lecture 38 - Brief overview of nonlinear optical phenomena
- Lecture 39 - Brief overview of nonlinear optical phenomena (Continued...)
- Lecture 40 - Brief overview of nonlinear optical phenomena (Continued...)
- Lecture 41 - SFG and SHG with ultrafast pulses
- Lecture 42 - SFG and SHG with ultrafast pulses (Continued...)
- Lecture 43 - Optical parametric generation and amplification
- Lecture 44 - OPA in our lab TOPAS C - Part 1
- Lecture 45 - OPA in our lab TOPAS C - Part 2
- Lecture 46 - OPA in our lab TOPAS C - Part 3
- Lecture 47 - Snapshots of bond breaking
- Lecture 48 - Twisted Intramolecular Charge Transfer - Part 1
- Lecture 49 - Twisted Intramolecular Charge Transfer - Part 2
- Lecture 50 - Solvation dynamics - Part 1
- Lecture 51 - Solvation dynamics - Part 2
- Lecture 52 - Vibrational energy transfer in water
- Lecture 53 - Excited state proton transfer
- Lecture 54 - Excited state double proton transfer of 7-Azaindole dimer - 1
- Lecture 55 - Excited state double proton transfer of 7-Azaindole dimer - 2
- Lecture 56 - Excited state double proton transfer of 7-Azaindole dimer - 3
- Lecture 57 - Plasmonic nanoparticles - 1
- Lecture 58 - Plasmonic nanoparticles - 2
- Lecture 59 - Nanoclusters
- Lecture 60 - Semiconductor Nanocrystals - Part 1
- Lecture 61 - Semiconductor nanocrystals - Part 2
- Lecture 62 - Radiative and Nonradiative Relaxation Pathways in CdSe Nanocrystals - Part 1
- Lecture 63 - Radiative and Nonradiative Relaxation Pathways in CdSe Nanocrystals - Part 2
- Lecture 64 - Multiexciton in semiconductor nanocrystals - Part 1
- Lecture 65 - Multiexciton in semiconductor nanocrystals - Part 2
- Lecture 66 - Two dimensional Infrared spectroscopy
- Lecture 67 - 2DIR

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