

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

NPTEL Video Course - Multi Disciplinary - NOC:Biophotonics

Subject Co-ordinator - Prof. Basudev Lahiri

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction to Biophotonics - Part I
Lecture 2 - Introduction to Biophotonics - Part II
Lecture 3 - Introduction to Biophotonics - Part III
Lecture 4 - Nature of Light - Part I (As Wave)
Lecture 5 - Nature of Light - Part II (As Particle)
Lecture 6 - Fact of Matter - Part I
Lecture 7 - Fact of Matter - Part II
Lecture 8 - Basic of Light-Matter Interaction
Lecture 9 - Molecular Materials
Lecture 10 - Introduction to Fluorescence
Lecture 11 - The Cell
Lecture 12 - The Central Dogma
Lecture 13 - Genetic Code
Lecture 14 - Building Blocks
Lecture 15 - Remaining Topics
Lecture 16 - Light-Matter Interactions in Molecules (Basic of Spectroscopy)
Lecture 17 - Light-Matter Interactions in Molecules (Basic of Spectroscopy) (Continued...)
Lecture 18 - Interaction of Light with Cells
Lecture 19 - Interaction of Light with Tissues
Lecture 20 - Photoprocesses in Biopolymers
Lecture 21 - Laser Principles and Operation
Lecture 22 - Types of Lasers
Lecture 23 - Nonlinear Optical Processes
Lecture 24 - In Vivo Photoexcitation
Lecture 25 - Examples and Applications
Lecture 26 - Introduction
Lecture 27 - Microscopy Techniques
Lecture 28 - Near Field Microscopy and Optical Coherence Tomography
Lecture 29 - Fluorophores and Fluorescence Microscopy Techniques

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- Lecture 30 - The Future: AFM-IR
- Lecture 31 - Biosensing Background
- Lecture 32 - Optical Fiber Sensors
- Lecture 33 - Metamaterials
- Lecture 34 - Metamaterials as Biosensors
- Lecture 35 - Biosensing with Optical Nano-antennas
- Lecture 36 - Introduction to Photodynamic Therapy (PDT)
- Lecture 37 - Application of Photodynamic Therapy (PDT)
- Lecture 38 - Light Irradiation for Photodynamic Therapy (PDT)
- Lecture 39 - Real Life Examples of Photodynamic Therapy (PDT)
- Lecture 40 - Future of PDT and Photothermal Therapy (PTT)
- Lecture 41 - Laser Based Tissue Engineering
- Lecture 42 - Laser Tissue Contouring: Dermatological Application
- Lecture 43 - Laser Tissue Welding and Tissue Regeneration
- Lecture 44 - Laser Tissue Contouring: Ophthalmic Application
- Lecture 45 - Laser in Dentistry
- Lecture 46 - Tools for Micromanipulation
- Lecture 47 - The Optical/Laser Tweezer
- Lecture 48 - Design of Optical Tweezers
- Lecture 49 - Optical Scissors
- Lecture 50 - Selected Examples of Application
- Lecture 51 - Introduction to nanotechnology
- Lecture 52 - Processes of Nanotechnology
- Lecture 53 - Nano-Lithography: The Art of Small
- Lecture 54 - Thin Film Deposition
- Lecture 55 - Bionanophotonics Applications
- Lecture 56 - Introduction to Optogenetics
- Lecture 57 - Controlling the Brain with Light
- Lecture 58 - Optical Neuroimaging and Tomography
- Lecture 59 - Functional Near Infrared Spectroscopy (fNIRS) of the Brain
- Lecture 60 - Summary and Revisiting Few topics