NPTEL Video Course - General - NOC:Biomedical Ultrasound: Fundamentals of Imaging and Micromachined Transduce

Subject Co-ordinator - Prof. Himanshu Shekhar, Prof. Karla P. Mercado-Shekhar, Prof. Hardik J. Pandya

Co-ordinating Institute - IIT - Gandhinagar

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

Lecture 1 - Introduction to the course
Lecture 2 - Introduction to ultrasound imaging
Lecture 3 - Basics of wave propagation
Lecture 4 - Scattering and acoustic wave equation
Lecture 5 - Intensity, Reflection, Transmission
Lecture 6 - Recap of Week 1
Lecture 7 - Introduction to Imaging modes
Lecture 8 - Imaging artifacts
Lecture 9 - Ultrasound imaging systems
Lecture 10 - Transducers and transducer arrays
Lecture 11 - Recap of Week 2
Lecture 12 - Introduction to Microfabrication
Lecture 13 - Silicon and Silicon Dioxide
Lecture 14 - Numericals on Ultrasound
Lecture 15 - Introduction to Cleanroom
Lecture 16 - Silicon and Silicon Dioxide - II
Lecture 17 - Thermal Oxidation - I
Lecture 18 - Thermal Oxidation - II
Lecture 19 - Thermal Evaporation theory
Lecture 20 - Thermal Evaporation lab demonstration
Lecture 21 - E beam Deposition theory
Lecture 22 - E beam deposition lab demonstration
Lecture 23 - Sputtering theory
Lecture 24 - Sputtering lab demonstration
Lecture 25 - Chemical Vapor Deposition - I
Lecture 26 - Chemical Vapor Deposition - II
Lecture 27 - Lithography
Lecture 28 - Lithography lab demonstration
Lecture 29 - Lithography optics - I

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Lecture 30 - Lithography optics - II
Lecture 31 - Introduction to Beamforming
Lecture 32 - Beamforming Pt 2
Lecture 33 - Beamforming and Signal Processing
Lecture 34 - Intro to Field II simulation - impulse response, beam pattern
Lecture 35 - Recap of week 7
Lecture 36 - Ultrasound image quality metrics
Lecture 37 - Contrast agents
Lecture 38 - Contrast-enhanced imaging
Lecture 39 - Nonlinear acoustics and imaging
Lecture 40 - Recap of week 8
Lecture 41 - Field II imaging simulations
Lecture 42 - Doppler ultrasound
Lecture 43 - Color and Power Doppler ultrasound
Lecture 44 - Quantitative Ultrasound
Lecture 45 - Recap of week 9
Lecture 46 - Ultrasound bioeffects
Lecture 47 - Bioeffects and safety
Lecture 48 - Ultrasound elastography
Lecture 49 - Shear wave imaging
Lecture 50 - Recap of week 10
Lecture 51 - RIE and DRIE
Lecture 52 - Wet etching and Miller Indices - I
Lecture 53 - Wet etching and Miller Indices - II
Lecture 54 - Wet bench lab demonstration
Lecture 55 - PCB (Printed Circuit Board)
Lecture 56 - Ultrasonic Sensor
Lecture 57 - Material Characterisation : STM and AFM
Lecture 58 - Wire bonding lab demo
Lecture 59 - Piezoelectric polymers
Lecture 60 - Characterisation of materials - I
Lecture 61 - Characterisation of materials - II
Lecture 62 - Characterisation of materials - III
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