NPTEL Video Course - Chemical Engineering - NOC:Biomass Conversion and Biorefinery

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Co-ordinating Institute - IIT - Guwahati

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

Lecture 1 - Energy and Environment scenario
Lecture 2 - Need for biomass based industries
Lecture 3 - Biomass basics
Lecture 4 - Dedicated energy crops
Lecture 5 - Oil cropns and microalgae
Lecture 6 - Enhancing biomass properties
Lecture 7 - Basic concepts and types
Lecture 8 - Feedstocks and properties
Lecture 9 - Economics and LCA
Lecture 10 - Barriers and Types
Lecture 11 - Dilute acid, alkali, ozone
Lecture 12 - Hybrid methods
Lecture 13 - Physical Processes
Lecture 14 - Gasification and Pyrolysis
Lecture 15 - Products and Commercial Success Stories
Lecture 16 - Types, fundamentals, equipments, applications
Lecture 17 - Details of various processes
Lecture 18 - Products and Commercial Success Stories
Lecture 19 - Diesel from vegetable oils, microalgae and syngas
Lecture 20 - Transesterification; FT process, catalysts
Lecture 21 - Biodiesel purification, fuel properties
Lecture 22 - Biooil and biochar production, reactors
Lecture 23 - Factors affecting biooil, biochar production, fuel properties characterization
Lecture 24 - Biooil upgradation technologies
Lecture 25 - Microorganisms, current industrial ethanol production technology
Lecture 26 - Cellulase production, SSF and CBP
Lecture 27 - ABE fermentation pathway and kinetics, product recovery technologies
Lecture 28 - Biohydrogen production, metabolics, microorganisms
Lecture 29 - Biogas technology, fermenter designs, biogas purification

Lecture 30 - Methanol production and utilization
Lecture 31 - Biomass as feedstock for synthetic organic chemicals, lactic acid, polylactic acid
Lecture 32 - Succinic acid, propionic acid, acetic acid, butyric acid
Lecture 33 - 1,3-propanediol, 2,3-butanedioil, PHA
Lecture 34 - Concept, lignocellulosic biorefinery
Lecture 35 - Aquaculture and algal biorefinery, waste biorefinery
Lecture 36 - Techno-economic evaluation
Lecture 37 - Life-cycle assessment