Ministry of Human Resource Development
Government of India

GLOBAL INITIATIVE OF ACADEMIC NETWORKS (GIAN)

A Course Under Global Initiative of Academic Networks
Ministry of Human Resource Development
Government of India
on

Microbial Processes for Lignocellulosic Biofuel Production

December 18-28, 2017

By Foreign Expert Faculty
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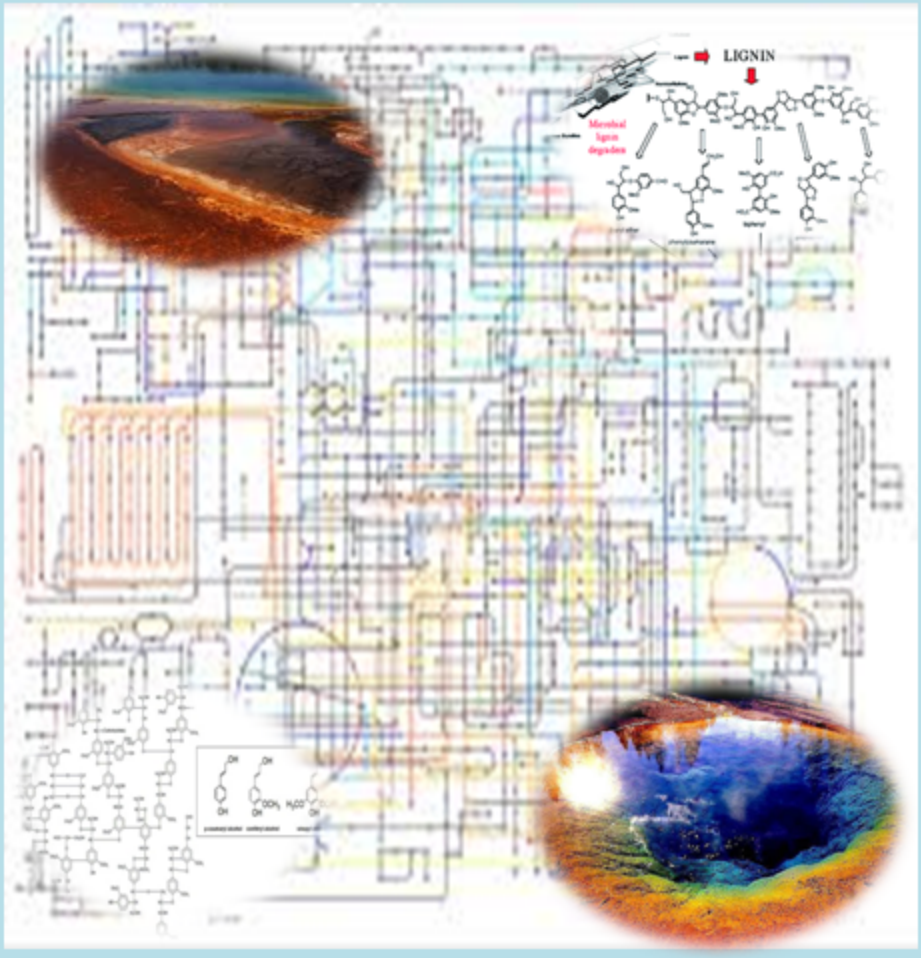

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Microbial Processes for Lignocellulosic Biofuel Production

Department of Bioinformatics, Bharathidasan University | **December 18-28, 2017**

OVERVIEW

The course introduces various renewable energy resources, processes, and products, emphasizing critical aspects and challenges of biomass conversion into biofuels and value-added bioproducts especially using extremophiles and their enzymes. The main goal of the course is to introduce participants to current topics in extremophilic microbial processes, emphasizing critical evaluation of published peer-reviewed scientific literature as well as hands-on experiences on the anaerobic processes including extremophilic consolidated bioprocessing (CBP). In CBP enzyme production, hydrolysis, and fermentation of lignocellulosic biomass are carried out in a single reactor at the same temperature. This course also covers concepts of bioelectrocatalysis and applications in biological fuel cells, electrochemical biosensors, bioelectrosynthesis, microbial electrolysis, and bioelectrochemical remediation of wastes. This course will describe the limitations in exiting biomass conversion technologies and possible ways to overcome those limitations using extremophiles and their enzymes. Integrated decentralized extremophilic biofuel production employing unique hydrolytic- and fermentative-extremophiles in a single step consolidated process will be discussed. To ensure optimal process sustainability and profitability, this course will also discuss the overall techno-economical and life cycle assessments for an integrated process.

Course Module

- Diversity of extremophiles and their mechanisms to adapt various extreme conditions.
- Basic concepts of extremophilic microbial and enzymatic processes.
- Engineering of microbes and enzymes for bioenergy applications.
- Specify engineering principles to extremophilic processes.
- Recognize current trends in extremophilic bioprocessing in response to current demands from various sectors of industry.

Course suites you, if

- you are executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories.
- you are students at all levels (B.Tech./M.Sc./M.Tech./Ph.D.) or Faculty from reputed academic institutions and technical institutions.

Course fess

The participation fees for taking the course is as follows:

- Participants from abroad :US $200
- Industry/Research Organizations : Rs. 6000
- Academic Institutions : Rs. 4000
- Students/Scholars : Rs. 1000

The above fee includes all instructional materials.

Accommodation will be arranged twin sharing basis on payment basis.

The Foreign Faculty

Dr. RAJESH SANI *is an Associate Professor in the Departments of Chemical and Biological Engineering at South Dakota School of Mines and Technology, South Dakota, USA. His research expertise includes Extremophilic Bioprocessing, Biocatalysis, Biomaterials, Gas to Liquid Fuels, Genome Editing of Extremophiles, Homo/Heterologous Expression of Genes, Metabolic Engineering and Bioelectrochemical Systems.*

Over the past 11 years, he has been the PI or co-PI on over $17.8 million in funded research. He has one patent, five invention disclosures, and published over 57 peer-reviewed articles in high impact factor journals, and has contributed in several book chapters. He is currently acting as editor and co-editor for three text books which will be published by Springer International Publishing AG. In addition, he has been in proposal Task Force for the Federal Agencies i) National Science Foundation, ii) U.S. Army Research Office, iii) Department of Energy, and iv) U.S. Geological Survey. He also serve the Industrial Microbiology profession as "Biocatalysis Program Committee Member" of the Society for Industrial Microbiology and Biotechnology (SIMB), technical session chair at the Annual American Institute of Chemical Engineers (AIChE) and SIMB, an associate editor.

The Coordinators

Dr. P. CHELLAPANDI *is an as Assistant Professor in the Department of Bioinformatics, Bharathidasan University, Tiruchirappalli, Tamil Nadu. His research has included Molecular Systems Engineering for the development of microbial cell factory and recombinant therapeutics. His lab mainly focuses on the rapid deployment of molecular systems biology approaches for unravelling gut microbial physiology. He is a recipient of several awards and honours. He has authored 65 research articles and one book.*

Dr. P. MALLIGA *is a Professor in the Department of Marine Biotechnology, Bharathidasan University, Tiruchirappalli, Tamil Nadu. Her research has focused on the biodegradation of lignocellulosic waste and organic farming. She has published 50 research articles and 7 handbooks. She has proficient experience in extension work on organic forming with cyanobacterial fertilizers.*