



Indian Institute of Technology Kanpur

INSTITUTE LECTURE SERIES

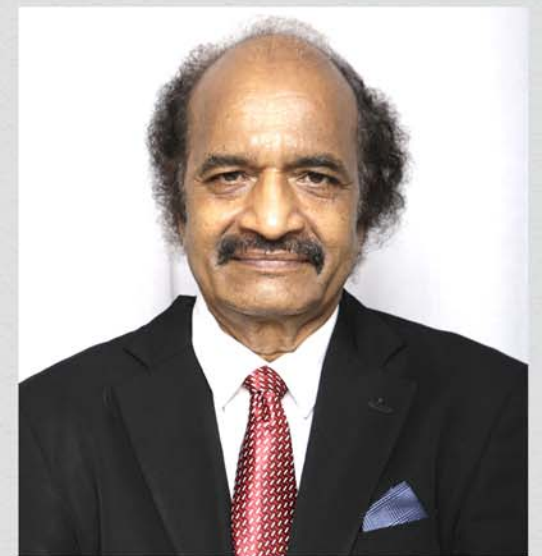
March 21, 2023 (Tuesday) | 6.00 pm

Speaker: Prof. Ganapati D. Yadav

Talk Title: The Net Zero Goal & Sustainability - Adoption of Green Hydrogen Technologies, CO₂ refineries, Biomass Valorization & Plastic Recycling

About the Speaker

Professor Ganapati D. Yadav is the National Science Chair of Govt. of India and Emeritus Professor of Eminence and former Vice Chancellor of the Institute of Chemical Technology, Mumbai. He serves as the Adjunct Professor at University of Saskatchewan, Canada; University of New Castle, Australia; Distinguished Adjunct Professor, IIT Guwahati and SOA University Bhubaneswar. His patented work on the net zero goal, green hydrogen production technology, carbon dioxide refineries and valorization of (waste) biomass and waste plastics is internationally acclaimed. He was conferred Padma Shri by the President of India in 2016. He has been recipient of two honorary doctorates. He is elected as the fellow of all Science and Engineering academies in India, TWAS, RSC (UK), IChemE (UK), US National Academy of Engineering and US National Academy of Inventors among others. He has 515 research papers, 120 granted national and PCT patents, 8 new patent applications and 3 books to his credit. He is on the board of 6 listed companies as an independent director.



Currently he is the President of the Indian Chemical Society and the Maharashtra Academy of Sciences. Professor Ganapati is a poet having written the University song of ICT and is fond of Sanskrit, Vedas, Philosophy and Etymology.

Abstract of the Talk

The net zero goal by 2050 is a cherished dream of all world economies. In achieving the 49000 TWh of energy by 2050 will have 73% of its contribution from renewables. In that hydrogen will have a share of 25%. Hydrogen is best suited for converting any biomass and carbon dioxide emanated from different sources, into fuels and chemicals. Hydrogen will also lead, on its own as energy source and hydrogenation of biomass leads to many valuable products. Today's crude oil-based economy will not have a sustainable future. Faced with the twin challenges of sustaining socioeconomic development and shrinking the environmental footprint of chemicals and fuels manufacturing, a major emphasis is on either converting biomass into low-value, high-volume biofuels or refining it into a wide spectrum of products. This new paradigm for production of fuels and chemicals not only offers the greatest monetization potential for biomass and shale gas, but it could also scale down output and improve the atom and energy economies of oil refineries. There is also a need to rethink on the ban on single use plastic (SUP) and a new policy is required to encourage general public to pay a deposit and get it refunded when it is returned which will allow segregation at source. Apart from the chemical recycling processes for waste plastic, several hydrogenation reactions can be used to depolymerize or to make fuels from waste plastic and the nasty atoms in the plastic such as Cl, S, N can be converted into HCl, H₂S and NH₃ and absorbed. Waste plastic is a great source of fuels and chemicals including monomers.

 RM-101 (Rajeev Motwani Building)

All are cordially invited to attend

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