



# Indian Institute of Technology Kanpur

## Chandrakanta Kesavan Lecture Series



April 27, 2022(Wednesday)



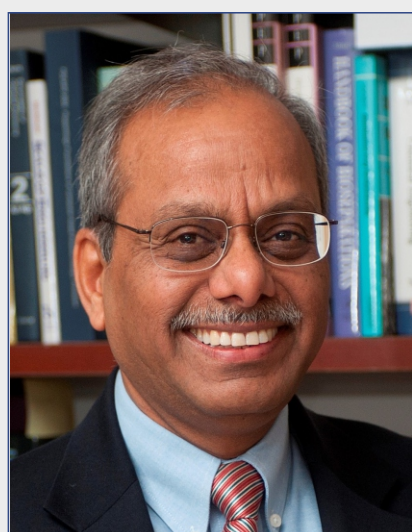
04:00 PM



Online

## Speaker : Prof. Rakesh Agrawal

# Engineering Solutions for a Solar Economy



**Prof. Rakesh Agrawal**

Winthrop E. Stone  
Distinguished Professor

### About the Speaker

**Prof. Rakesh Agrawal** is the Winthrop E. Stone Distinguished Professor in the Davidson School of Chemical Engineering at Purdue University. He is also a Distinguished Visiting Professor with Department of Sustainable Energy Engineering, IIT Kanpur. Before joining Purdue in 2004, Agrawal had a fruitful and productive carrier at Air Products and Chemicals rising to its highest technical position of Air Products Fellow. He received his B. Tech. from the Indian Institute of Technology, Kanpur, M.Ch.E. from the University of Delaware and Sc.D. in chemical engineering from MIT.

His research includes novel processes for the fabrication of low-cost thin-film solar cells, energy systems analysis, shale gas processing, biomass to liquid fuel conversion, synthesis of efficient multicomponent separation processes using distillation, membranes and adsorption, and basic and applied research in gas separation and liquefaction. Agrawal has published 244 technical papers and has given 276 invited lectures. He holds 128 U.S. and more than 500 foreign patents. These patents are used in over one hundred chemical plants with total capital expenditure in multibillion dollars. He has served on technology and engineering advisory boards for a number of companies.

### About the Talk

Recent surge in fossil resource availability, with the ever-increasing rate of energy demand, has necessitated a sustainable source of energy. The solar energy is one such source, it is plentiful, and its use can meet our daily needs for food, chemicals, heat, electricity and transportation for any foreseeable future.

The challenge with the transition from a fossil resource-based economy to a solar economy is that we have to learn to harness, transform and store solar energy at the time scale of our use pattern. This has been a problem due to dilute intensity of solar irradiation and its intermittent availability. Thus, the methods to collect and transform solar energy have to be both efficient and low-cost for wide spread use. This talk will discuss these challenges and interdisciplinary approach for finding potential solutions. The lecture will present the sustainable solutions for transportation and production of fuels and chemicals using biomass. It will also make a case for photons to meet local needs through photovoltaic agriculture farming to enable a 'full earth' scenario. Finally, I will briefly discuss my research on low-cost solution processed inorganic solar cells.

**Zoom Link :** <https://iitk-ac-in.zoom.us/j/94617440128?pwd=SXNxZ1JjeStGWdc3WG9LSFRhaHpldz09>

**Meeting ID :** 946 1744 0128

**Passcode :** 433641

### Organised By

Chandrakanta Kesavan Center for Energy Policy and Climate Solutions

Department of Sustainable Energy Engineering