



C.V. Seshadri Distinguished Lecture 2024

Speaker	Prof. Rajnish Kumar, IIT Madras
Title	Understanding CO₂ Capture, Utilization and Sequestration (CCUS) from a Sustainability Viewpoint
Time	9:15 AM, 10th May 2024
Venue	Outreach Auditorium
	<i>Refreshments will be served after the lecture at 10:55 AM</i>



Abstract

Global CO₂ emission has touched ~40 billion tons of carbon dioxide per year, and despite all the talk about net zero CO₂ emission, the rate of CO₂ emission is expected to stay at the current level for few more years. While role of solar, wind, hydro/waves, hydrogen etc. (perhaps nuclear as well) is acknowledged, current energy need, and proposed GDP growth of developing countries could not be achieved without ensuring implementation of CCUS. CCUS is essentially a three-step process, i) Capturing or separating the CO₂ from its associated gases, ii) Transporting the captured, relatively purer CO₂ (from step-i) to the utilization site where part of the CO₂ could be processed for its utilization, and iii) Majority of the CO₂ which could not be converted (in step-ii) has to be transported and sequestered for geological timescale. Thus, amount of CO₂ utilized or sequestered is directly proportional to the amount of CO₂ captured. CO₂ capture technology has to become robust, and sustainable with time, this presentation would briefly explain the challenges in adaptation of this technology at larger scale.

About the Distinguished Speaker

Rajnish Kumar, FRSC is a professor in the Department of Chemical Engineering at IIT Madras. Prior to that he has served as senior scientist at CSIR-NCL, and research associate at National Research Council, Canada. His PhD is from The University of British Columbia, Canada and has research interests in gas hydrates, carbon dioxide capture & sequestration, process development and scale-up. Rajnish is the most recent awardee of Shanti Swarup Bhatnagar Prize for his contribution to engineering science. Rajnish is also a recipient of NASI – Scopus Young Scientist Award in Chemistry for the year 2016. More recently in 2020, Rajnish received Dr. YBG Verma Award for Excellence in Chemical Engineering Teaching at IIT Madras. Rajnish is one of the editors or in editorial boards of a few journals including, *Environmental Science & Technology Letters*, *Energy & Fuels*, *ACS Engineering Au*, & *Scientific Reports*

About the Memorial Lecture Series



Late Prof. Chetput Venkatasubban Seshadri was a distinguished Indian chemical engineer. He started his academic career as an Assistant Professor of IIT Kanpur in 1965 and later became a full professor. Prof. Seshadri was also the Head of the Chemical Engineering Department of IITK. He took on administrative position by serving as the Dean of Students Affairs at IITK. Prof. Seshadri left IITK in 1974 to join Kasturi Paper Food and Chemicals Ltd., Bangalore, where he set up India's first fodder-yeast plant. In 1976, he joined the Shri A. M. M. Murugappa Chettiar Research Center in Chennai as its founder Director. It was at this Research Center he helped develop several appropriate technologies, including Spirulina Algae. For this effort, he was awarded the prestigious Jamnalal Bajaj award for S&T for rural development in 1981.

Prof. Seshadri earned his Doctorate from Carnegie Mellon University, Pittsburgh & later worked as a Research Associate at Massachusetts Institute of Technology. His friends fondly remember him as someone who could mould ordinary people like a potter into good scientists. Friends, relatives & well-wishers of Late Prof. C. V. Seshadri set up Prof. C. V. Seshadri Memorial Distinguished Lecture Series under his name. The lecture Series is conducted by the Department of Chemical Engineering.

Past Speakers

Dr. Abhijit Chatterjee, IIT Bombay (2023)
 Dr. Dipankar Bandyopadhyay, IIT Guwahati (2019)
 Dr. Rochish Thaokar, IIT Bombay (2018)
 Dr. Amol Kulkarni, NCL Pune (2017)
 Dr. Narendra M. Dixit, IISc Bangalore (2016)

Dr. Ganesh Subramaniam, JNCASR, Bangalore (2015)
 Dr. Guruswamy Kumaraswamy, IIT Bombay (2014)
 Dr. Mahesh Tirumkudulu, IIT Bombay (2013)
 Dr. Sirshendu De, IIT Kharagpur (2011)
 Dr. Rajdip Bandhopadhyaya, IIT Bombay (2011)