



# PROF. C. V SESHADRI MEMORIAL DISTINGUISHED LECTURE

## DEPARTMENT OF CHEMICAL ENGINEERING

### INDIAN INSTITUTE OF TECHNOLOGY KANPUR

**Speaker : Prof. Sirshendu De**

**TITLE** : Technology Innovation: Membrane Casting, Applications & Arsenic Removal

**DATE** : October 4, 2012

**VENUE** : L17

**TIME** : 4:00 PM

#### Abstract

Membrane is a phase that allows selective transport of a species through them, resulting to physical separation of a species. Polymers are one of the key components to prepare these membranes. This talk demonstrates how casting conditions would result to membranes of various characteristics. Also, a novel and cost effective method would be discussed to spin hollow fiber polymeric membranes of various grades starting from microfiltration to dialysis. Various applications like (1) treatment of industrial wastewater; (2) extraction of phytochemicals from plants; (3) Processing of fruit juice; (4) electric field assisted filtration; (5) micellar enhanced ultrafiltration would be discussed.

Several places in India, specially gangetic plains in West Bengal and plains of Bangladesh are badly affected by arsenic contamination. In this talk, development of a low cost, domestic arsenic filter, its technical details, efficiency, design aspects, cost analysis and suitability for rural population is presented.

#### About Speaker

Prof. Sirshendu De did his B. Tech (1990), M. Tech (1993) and PhD (1997) from Department of Chemical Engineering, IIT Kanpur. His main research interest includes membrane separation, membrane casting and various applications, process developments, modeling and design; flow modeling, heat and mass transfer in microchannel, mathematic modeling of different chemical engineering processes. He has authored 6 books, 6 patents, 180+ publications in journals of repute and handled 20 research projects and transferred 2 technologies for commercialization. He has guided 10 PhD and 50+ M. Tech students. Prof. De has been awarded several awards, including INAE Silver Jubilee Award (2012), DAE-SRC Young Investigator Award (2012), Shanti Swarup Bhatnagar Prize in "Engineering Science" category by CSIR, Govt of India (2011), Herdillia Award (2010), VNMM Award from IIT Roorkee (2009), A V Rama Rao Award (2010 and 2007), S. K. Mitra Award (2005), Amar Dye Chem Award (2000) by IChE, Young Engineer Award by INAE (2001). He has become Fellow of Indian National Academy of Engineers, New Delhi in 2011.



#### About Prof. Seshadri

The late Prof. C. V. Seshadri (CVS) was a distinguished Chemical Engineer. He did his Ph.D. with Professor Herbert L. Toor of Carnegie Mellon University, Pitts-burgh, followed by a Research Associateship at MIT. He joined IIT Kanpur as an Assistant Professor in 1965, and later became a Professor and Head of the Chemical Engineering Department. Finally he became the Dean of Students Affairs, IITK. While here, he wrote the famous best-selling textbook: C. V. Seshadri and S. V. Patankar, *Elements of Fluid Mechanics*, Prentice Hall of India, New Delhi, 1971.



CVS 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 Chen-nai as its founder Director, an institute emphasizing appropriate technology, the forte of CVS. It was here that CVS really blossomed and helped develop several appropriate technologies, including Spirulina Algae. For his efforts in this direction, CVS received the prestigious *Jamnalal Bajaj award for S&T for rural development* (1981). As Rajni Bakshi sums up<sup>1</sup> "CVS's youthful zest and enormous energy made it easy to forget the linear dimension of this mortal frame. Yet this is all the sea snatched away. The man's bequest remains, awaiting the nurturing care of fellow-travellers in this and other times." CVS received enormous support and encouragement for his efforts from Mr. M. V. Murugappan, with whose vision the Research Center was set up.

1.) C. V. Seshadri: Gandhi as the Century's Greatest Inventor, chapter in *Bapu Kutu*, Rajni Bakshi, Penguin India, New Delhi, 1998.

#### Previous Speakers

Dr. Rajdip Bandyopadhyaya, IIT Bombay, 2011

Dr. Ashish Lele, NCL Pune, 2011

#### About the donors

The corpus of the Professor C. V. Seshadri (CVS) Memorial Distinguished Lecture in the Department of Chemical Engineering, IITK has been set up by *several* students, family members and friends of CVS. This lecture is to be delivered by a promising young Chemical Engineering researcher (below about 45 years) working in India.

**All are welcome!**