



Prof. C. V. Seshadri Memorial Distinguished Lecture

Department of Chemical Engineering
Indian Institute of Technology Kanpur

Speaker	: Dr. Dipankar Bandyopadhyay
Title	: Genesis of a Dream: Health Care Technologies for a Billion (Distinguished Seminar)
Day & Date	: Saturday, February 15, 2020
Venue & Time	: L-16 11:30AM

Abstract

The vision of improving quality of global health requires diagnostic facilities accessible even for the 'last mile' population. The conventional diagnostic facilities face limitations with institution based centralized operation, costly installation-operating-maintenance, expert dependency in analysis, and limited accessibility. Recently, a flurry of research activities has been observed in the design and development of user operated ultra-fast, affordable, and portable point-of-care-testing (POCT) devices to bridge this gap and provide information on the quality of health at the patient's site before consulting doctors. The machine learning and artificial intelligence tools integrated to such devices even guide the user to take care of critical parameters. For example, the glucometer, pregnancy kit, weighing machine, or pressure monitoring device are some examples, which are very successful even at the commercial levels. However, there is an urgent need to develop such POCT devices specific to many other biomarkers such as amylase, lipase, T3, T4, TSH, sodium, potassium, hemoglobin, protein/fat markers, urea, uric acid, and creatinine in various body fluids such as serum, sebum, urine, saliva, or tear. A complete healthcare solution can be thought of development of such POCT technologies alongside the development of, (i) software for analysis, (ii) manpower for primary care, and (iii) a health management system, around the existing healthcare ecosystem. In bits and pieces, we are able to join many of these points, which will be the center point of this talk on the dream "Healthcare for a Billion"

About Prof. C. V. 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, Pittsburgh, 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 Chennai 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 up¹ "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.

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

About the Speaker



Dr. Dipankar Bandyopadhyay completed a B.Sc in Chemistry and B.Tech in Chemical Engineering from Calcutta University, M.Tech and PhD from IIT Kanpur. Presently, he is a Professor in the Department of Chemical Engineering, Head, Centre for Nanotechnology and is the PI of the upcoming "Centre for Excellence on the Research and Development of Nanoelectronic Theranostic Devices" at IIT Guwahati. He has served as a visiting faculty at Yeungnam University at South Korea under the WCU Program, and KTH Sweden under the Erasmus Mundus program. His research encompasses many areas at the forefront of Chemical Engineering. He has authored ~100 research publications in the international journals and has filed 17 Indian and 7 international patents so far. He is the recipient of NCL's Prof. K Venkataraman CHEMCON Award, Gandhian Young Technology award 2016 and 2019, and BIRAC-SRISTI Appreciation Award 2017. He is a nominated member of ACS, RSC, and IICHe.

Previous Speakers

- ◆ Dr. Rochish Thaokar, IIT Bombay, 2018
- ◆ Dr. Amol A. Kulkarni, NCL Pune, 2017
- ◆ Dr. Naendra M. Dixit, IISc Bangalore, 2016
- ◆ Dr. Ganesh Subramaniam, JNCASR Bangalore, 2015
- ◆ Dr. Guruswamy Kumaraswamy, NCL Pune, 2014
- ◆ Dr. Mahesh S Tirumkudulu, IIT Bombay, 2013
- ◆ Dr. Sirshendu De, IIT Kharagpur, 2012

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