

**Professor Sandeep Verma**

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**Title: Bioinspired Systems for Disease Modeling and Cellular Delivery of Therapeutics****Abstract**

Biomimetic soft matter presents exciting prospects in drug delivery, tissue engineering, and biosensing. It is possible to engineer biocompatibility and stimuli-responsive character, for example pH, ionic strength, temperature, light, and redox environment, in such structures. Moreover, ease of drug integration and approaches for specific cellular targeting, further expands their scope in delivery applications.

Among many examples, we will highlight the use of redox-active, peptide-based scaffolds in delivering therapeutic gas nitric oxide to neuronal cells. We will also discuss rational design of a photoactivatable anticancer nucleoside hydrogel. The extent of gelation was controlled by the presence of potassium cations and the biological activity was achieved upon hydrogel irradiation. Such systems present excellent starting points for translational research.

**About C.N.R Rao Lecture Series**

This lecture series was made possible by a generous donation by Prof. C.N.R. Rao, Linus Pauling Professor at JNCASR, Bangalore. The objective is to give one faculty member of the IIT Kanpur, each year, the honor of delivering a lecture to the institute's community, sharing the excitement of his/her research with them. Prof. Rao was a Professor of Chemistry at IIT Kanpur from 1963-76. During this period, he also served as the Dean of Research and Development. Prof. Rao also served as the chairman of BoG at IIT Kanpur from 2003 to 2006.

Prof. Rao was born on June 30, 1934, in Bangalore. In 1958, he completed his Ph.D. from Purdue University and became a research chemist at the University of California at Berkeley. During 1984-89, he served as the Director of IISc Bangalore. He was the founder president of Jawaharlal Nehru Center for Advanced Scientific Research (JNCASR), Bangalore. He received Bharat Ratna, the highest civilian award in India in the year 2014. He is the recipient of most of the major scientific awards and is a member of all major scientific organizations. He is a foreign member of the US National Academy of Sciences, American Academy of Arts and Sciences and also a Fellow of the Royal Society (London).

**About the Speaker**

Current research interests Prof Sandeep Verma include peptide/protein assemblies for disease modeling and therapeutic delivery, surface chemistry and bioimaging. He is a recipient of Shanti Swarup Bhatnagar Prize (2010), National Prize for Research on 'Interfaces between Chemistry and Biology', J C Bose National Fellow, Ranbaxy Research Award in Pharmaceutical Sciences, and Swarnajayanti Fellowship, to name a few. He is an elected Fellow of the Indian National Science Academy, Indian Academy of Sciences, National Academy of Sciences, India, and Royal Society of Chemistry (UK) and a Senior Fellow, Zukunftskolleg, University of Konstanz, Germany. He also serves as an Associate Editor of Chemical Communications (RSC, UK) and is on the Editorial Advisory Boards of Cell Chemical Biology (Cell Press) and Journal of Peptide Science (Wiley).

**Past five speakers of the C N R Rao Lecture Series**

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| 2016 | Debashish Chowdhury | Molecular Motors: Force and Fluctuations, Information and Infidelity |
| 2015 | Anindya Chatterjee  | Simple models for frictional hysteresis                              |
| 2014 | R P Chhabra         | To yield or not to yield: Convection in Visco-plastic Fluids         |
| 2013 | Debasis Kundu       | Analyzing Periodic Data: Statistical Perspectives                    |

**Contact: Dean of Research & Development**