



Indian Institute of Technology Kanpur

C. N. R. Rao Lecture

June 11, 2021 | 5pm

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Department of Chemistry


Talk Title:

Chirality in Organic Synthesis

Abstract

Chirality (handedness) is a property of asymmetry, which normally controls biological activities of molecules. It is quite a challenge for Organic Chemists to develop methods to synthesize chiral molecules (enantiomers or mirror image isomers) in high level of enantioselectivity (optical yield). This is popularly called asymmetric synthesis, which is important for pharmaceutical companies.

There are several ways to accomplish these transformations. One of the ways is via enantioselective reactions using chiral ligands/catalysts (Lewis acids & Lewis bases). Chiral organic compounds can also catalyze these reactions (Asymmetric Organocatalysis). Thus, one can avoid toxicity of metals, making the process environment friendly. In all these methods, we induce chirality from the chiral ligands/catalysts to the prochiral substrates - a process called asymmetric induction. In this lecture, I will be taking some of the examples of asymmetric synthesis carried out in our laboratory.

5pm | June 11, 2021 (Friday) 

About C.N.R Rao endowed 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

Professor Singh's research falls in the area of Synthetic Organic Chemistry, more specifically, asymmetric synthesis. He has been recognized with several awards and honours such as Swarnajayanti



Fellowship (1998), Shanti Swarup Bhatnagar Prize (2004) and Padma Shri (2014), among others. In addition, he has been elected as a fellow of all the Indian science academies (FNA, FASc, and FNASc) and The World Academy of Sciences (FTWAS), Italy.

Professor Singh is an Editor of a journal, *Tetrahedron Lett.* He is a Member, *Editorial Advisory Board of Org. Lett., J. Org. Chem., Asian J. Org. Chemistry,* and *Organic Chemistry Frontiers.*

As a Founding Director of IISER Bhopal (2008-2018), Professor Singh built the institution ground up. He has served as the Mentor Director of IISER Berhampur, Director of SPA Bhopal (additional charge) and the Chairman of BoG, NITTTTR Bhopal. He also held the additional charge of Directorship of MANIT Bhopal and IIIT Bhopal. Professor Singh had been a Member of the Scientific Advisory Council to the Prime Minister (SAC to PM) during 2009-2014. He is currently the President, Chemical Research Society of India (CRSI).