Indian Institute of Technology Kanpur
C. N. R. Rao Lecture Series

March 27, 2026 (Friday) | 6.00 pm | L - 17

From Wisdom to Algorithms:
The Future of Indian Cities

Speaker: Prof. Sachchida Nand Tripathi

Dean, Kotak School of Sustainability

**Project Director, Airawat Research Foundation
(AI National Centre of Excellence - Sustainable Cities)**

Abstract of the talk

By 2047, nearly 65 crore people will inhabit Indian cities, intensifying pressures on water, air, energy, mobility, and public services. Historically, Indian cities evolved as ecologically responsive, community-centred systems rooted in traditional knowledge.

This lecture argues that sustainable urban futures depend not on replacing that wisdom, but on augmenting it with Artificial Intelligence and real-time data systems. We propose an integrated Urbanware framework that synthesises multimodal data with social and institutional knowledge to enable predictive, cross-sectoral decision-making and informed intervention design. By aligning community insight with urban intelligence, cities can become climate-resilient, adaptive, and socially responsive rather than merely "smart."

Prof. Sachchida Nand Tripathi has developed air quality monitoring technologies in India, including implementation of a nationwide sensor-based air quality network adopted by multiple cities. His research examines aerosol–cloud interactions, aerosol-induced cloud invigoration, regional climate variability, AI/ML-based hyper-local source apportionment, and low-cost sensor-based monitoring systems, with applications in air pollution mitigation and climate assessment.

He is a recipient of the Shanti Swarup Bhatnagar Award, J C Bose National Fellowship, Infosys Prize 2023 in Engineering and Computer Science, Alexander von Humboldt Medal 2025, and the Sir M. Visvesvaraya Chair Professorship. He is an elected Fellow of the Indian National Science Academy (INSA), Indian National Academy of Engineering (INAE), and National Academy of Sciences of India (NASI), and recipient of the Distinguished Alumnus Award of Banaras Hindu University.

About C.N.R Rao endowed Lecture Series

This lecture series was made possible by a generous donations by Prof. C.N.R. Rao, Linus Pauling Professor at JNCASR, Bangalore. The objective of this lecture series is to give one faculty member of the IIT Kanpur, each year, the honor of delivering a lecture sharing the excitement of their research to the institute's community.
Prof. Rao was a Professor of Chemistry at IIT Kanpur (1963-76) and also served as the Dean of Research and Development. He was the chairman of BoG at IIT Kanpur (2003-2006) and served as the Director of IISc Bangalore (1984-89). He was the founder president of Jawaharlal Nehru Center for Advanced Scienfic Research (JNCASR), Bangalore. He received Bharat Ratna, the highest civilian award in India in the year 2014. Prof. Rao is the recipient of most of the major scientific awards and is a member of all major scientific organizations.