

INSTITUTE COLLOQUIUM



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Biosketch: Padma Shri Prof. T. Pradeep is an Institute Professor, the Deepak Parekh Institute Chair Professor and a Professor of Chemistry at the Indian Institute of Technology Madras (IITM), Chennai, India. He studied at the University of Calicut, the Indian Institute of Science (IISc), UC Berkeley, and Purdue University. His research focuses on molecular and nanoscale materials and drinking water purification. He is the recipient of Shanti Swaroop Bhatnagar Prize (2008), Padma Shri (2020), Prince Sultan Bin Abdulaziz International Prize for Water (2022). He has been named as a recipient of Vigyan Shri award of the Government of India (2025).

Water: A Molecular Foundry **From Atomically Precise Clusters to Droplets and Ice for Sustainability**

Abstract: This talk will explore the interconnected realms of materials chemistry in my laboratory - spanning atomically precise clusters, affordable clean water, droplets, and ice. Sustainable nanotechnology has enabled the creation of materials that selectively remove contaminants such as arsenate and arsenite from water, reducing their concentrations below permissible drinking limits. This research culminated in AMRIT (meaning elixir in Sanskrit), an affordable purification technology that currently delivers 80 million litres of arsenic-, iron-, and uranium-free water every day to 1.4 million people, at a cost of just 2.1 paise (US\$0.00026) per litre — the lowest globally.

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