Highlighted by Focus Materialchemie – Monday, **12.12.2022** 15:00 – @ Audimax TU (TU-Wien, Lehárgasse 2, 1060 Wien)

Affordable clean water using advanced materials

T. Pradeep

Indian Institute of Technology Madras, Chennai 600 036

invited by N. Barrabés

Sustainable nanotechnology has made substantial contributions in providing contaminant-free water to humanity. In this talk, I will present the compelling need for providing access to clean water through nanotechnology-enabled solutions and the large disparities in ensuring their implementation. I will discuss the current nanotechnology frontiers in diverse areas of the clean water space with an emphasis on applications in the field and provide suggestions for future research. Extending the vision of sustainable and affordable clean water to environment in general, I note that cities can live and breathe well by adopting such technologies. By understanding the global environmental challenges and exploring remedies from emerging nanotechnologies, sustainability in clean water can be realized. I will suggest specific pointers and quantify the impact of such technologies.

This lecture will be based on our recent review: A. Nagar and T. Pradeep, *ACS Nano*, 14, 6420-6435. DOI:10.1021/acsnano.9b01730

Biography: Thalappil Pradeep is an Institute Professor* at the Indian Institute of Technology Madras (IITM), Chennai, India. He is the Deepak Parekh Institute Chair Professor and is also a Professor of Chemistry. He studied at the University of Calicut, Indian Institute of Science (IISc), UC Berkeley, and Purdue. His research interests are in molecular and nanoscale materials. He is an author of over 525 scientific papers in journals and is an inventor of over 100 patents or patent applications. He is involved in the development of affordable technologies for drinking water purification and some of them have been commercialized. His pesticide removal technology has reached about 10 million people. Along with his associates, he has incubated seven companies and three of them have production units. His arsenic removal technology, approved for national implementation, is delivering arsenic free water to about 1.2 million people every day. He is a recipient of several awards including the Shanti Swaroop Bhatnagar Prize, BM Birla Science Prize, National Award for Nanoscience and Nanotechnology, India Nanotech Innovation Award, JC Bose National Fellowship and National Water Award. He won The World Academy of Sciences (TWAS) prize in Chemistry for the year 2018. The nation conferred Padma Shri on him in 2020. He is also the recipient of Nikkei Asia Prize 2020. He has been named as a laureate of the 2022 Prince Sultan Bin Abdulaziz International Prize for Water. He is a Fellow of all the science and engineering academies of India, TWAS and American Association for the Advancement of Science. He is the author of the introductory textbook, *Nano: The Essentials* (McGraw-Hill) and is an author of the monograph, *Nanofluids* (Wiley-Interscience) and an advanced textbook, *A Textbook of Nanoscience and Nanotechnology* (McGraw-Hill). He is on the editorial boards of journals such as *ACS Nano*, *Chemistry of Materials*, *Analytical Chemistry, Chemical Communications, Nanoscale*, etc., and is an associate editor of *ACS Sustainable Chemistry & Engineering.* He has authored popular science books in Malayalam and is the recipient of *Kerala Sahitya Akademi Award* for knowledge literature. He has received the *Lifetime Achievement Research Award* of IITM and *Distinguished Alumnus Award* of IISc. As part of philanthropy, he supports a school in his village where 500 students are on rolls.

Visit https://pradeepresearch.org/ for more information.

(*) Institute Professor is the highest title a professor can earn in an institute/university. Prof. Pradeep is the second faculty member to earn this title at IIT Madras, among a faculty of 600. There are seven Institute Professors at IIT Madras currently.