

Plenary Lecture
57th Annual Convention of Chemists (ACC) - Indian Chemical Society (ICS)
Recent Trends in Chemical Sciences (RTCS 2020)

Molecules to Materials – Leveraging Sterics

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Abstract:

We consider molecular structure as an embodiment of organic reactivity (both thermal and photochemical) as well as macroscopic bulk property. By dealing with design at the molecular level, it is possible to control organic reactivity as well as properties of macroscopic solids.

I will discuss some results of our research in the last few years on how one may control molecular reactivity and develop functional materials by exploiting ‘sterics’. I will *exemplify* rational molecular design based on sterics as applied to development of i) catalytic hypervalent iodine compounds (IBX) for oxidation chemistry,¹ and organic functional mimics of inorganic zeolites, namely, metal-organic frameworks (MOFs)² and porous organic polymers (POPs).³

References and Notes:

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Bio-Sketch of Speaker

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Dr. J. N. Moorthy obtained M.Sc. degree in Organic Chemistry from Bangalore University, Bangalore in 1988, and Ph.D degree from the Organic Chemistry Department of Indian Institute of Science, Bangalore in 1994. He pursued postdoctoral research in University of Houston, USA, University of Wuerzburg, Germany and University of Victoria, Canada prior to joining the Chemistry Department, IIT Kharagpur in 1998. After a 5-month stint, he moved to IIT Kanpur in the same year. He has been a full professor at IITK since 2008. He moved to IISER Thiruvananthapuram, Trivandrum on deputation in the month of April 2019 to head the institution.

He is a recipient of Alexander von Humboldt postdoctoral research fellowship, Germany (1995-96), young chemist award, and bronze and silver medals of Chemical Research Society of India (CRSI), India. He received Shanti Swarup Bhatnagar Prize in Chemical Sciences, India (2008). He is a Fellow of Indian Academy of Sciences Bangalore (2010), Fellow of Royal Society of Chemistry (2014) and Fellow of Indian National Science Academy (2018). He has also been a J. C. Bose National Fellow since 2015. He has recently been awarded Sastra-CNR Rao award in Chemical Sciences. He has served as a member of the editorial boards of New J. Chemistry, J. Chem. Sci. and Int. J. Photoenergy. He is presently an associate editor of J. Chem. Sci.

His interests are in the areas of supramolecular chemistry, organic materials, mechanistic organic chemistry and organic photochemistry.