

INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE

2A&B, Raja S.C. Mullick Road, Jadavpur, Kolkata-700032, India

Seminar Notice

SPEAKER: Dr. M. S. Bootharaju

TITLE: SOME INTERESTING CHEMISTRY OF MOLECULAR NANOSTRUCTURES

DATE: 12th July 2018 (Thursday, 11:30 am)

Place: C V Raman Hall

ABSTRACT:

Size of a material matters and this has been extensively studied for various organic and inorganic nanomaterials. However, recent developments suggest even more interesting chemistry remained with much smaller dimensions, known as nanocluster or nanomolecules. This talk will focus on tuning and understanding the unusual ligand and metal exchange reactions of some nanoclusters. The single-atom-doped nanoclusters provided unprecedented opportunity to study the dopant effects on stability, photoluminescence and electronic structure. The successful synthesis of the first silver cluster Ag₂₅ with an exact structure of its gold analogue Au₂₅ will pave the way to compare or contrast their properties. By designing the suitable ligand-exchange strategies, we showed for the first time that nanoclusters can be reversibly transformed from one size to other just like molecules. In addition to these, a new class of hydride-rich silver nanoclusters including Ag₁₈H₁₆, Ag₂₆H₂₂ and Ag₂₅H₂₂ were synthesized, which are expected to act as both hydrogen source and catalyst for hydrogenation reactions. The next big thing in the nanoclusters field is assembling them into extended solids for various purposes. I will conclude the talk by showing some implications of the properties of nanoclusters in prospective applications.

BIOGRAPHY:

Dr. M. S. Bootharaju is currently a senior researcher in Prof. Taeghwan

Hyeon's research group at Seoul National University, South Korea.

Previously he worked with Prof Osman Bakr at Kaust. He did his PhD with

Prof. T. Pradeep (received degree in 2014) in Chemistry from IIT Madras,

Chennai. He has authored and co-authored 33 research publications and three

book chapters.

All are cordially invited.