

## “Tuning Atomically Precise Materials for Sustainable Chemistry”

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**Abstract:** With the advent of nanotechnology in the mid-1980s, nanomaterials have attracted tremendous interest due to their unique properties which make them suitable for diverse applications. However, the inherent polydispersity of conventional nanoparticles has precluded an atomic-level understanding of their structure-property relationships. This, in turn, has greatly hampered the complete realization of their target functional properties in real-world applications. This talk will focus on leveraging the principles of synthetic organic and inorganic chemistry to engineer multifunctional atomically precise materials for applications in catalysis, water harvesting, and iodine capture. Specifically, we will discuss two classes of materials, (1) molecularly pure, ligand-protected coinage metal clusters, and (2) covalent organic frameworks (COFs), which are atomically precise tunable materials with extraordinary porosity and crystallinity. Overall, these efforts aim to establish design rules for making functional heterogeneous nanomaterials with known structure-property-function relationships.

**Bio:** Anindita (Dia) Das obtained her Ph.D. with Prof. Rongchao Jin at Carnegie Mellon University, where her research focused on the synthesis and single-crystal growth of atomically precise gold nanoparticles to gain in-depth understanding of catalytic mechanisms. Prior to this, she earned B.Sc. and M.Sc. degrees at Osmania University, India and the University of Pune, India respectively. Following her PhD., Dia carried out postdoctoral research with Prof. Chad Mirkin at Northwestern University, where her work centered on the development of spherical nucleic acids based on atomically precise gold nanoclusters for applications in colloidal crystal engineering. Dia started her independent lab in the Chemistry Department at Southern Methodist University in Fall 2020.