Title: Size induced ferromagnetism in pristine Indium oxide nanoparticles

Author: S. Qaseem S. Rizwan Ali M. Naeem S. Rizvi

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Highlights:

- Pristine In_2O_3 nanoparticles of different diameters were synthesized
- Polycrystalline cubic bixbyite structure of In_2O_3 was observed.
- The blue-shift and defect state of PL spectra confirms the finite size effect of In_2O_3 nanoparticles.
- In2O3 nanoparticles exhibit room temperature ferromagnetism (RTFM) as a size of the particle decreases below a certain value due increasing concentration of surface defects
- The observed RFTM is explained within the framework of defect mediated or d^0 ferromagnetism originating from defect-related hybridization at the Fermi level.