

Seminar

Unexpected weak ferromagnetism at room temperature and Visible/IR range optical absorption in nano-titania

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Nano-titania (TiO_2), a wide band gap semiconductor, endowed with unprecedented properties that are valued for its catalytic, electrical transport and optical properties, and hence it finds uses in diverse applications, such as photocatalysis, solar cells, lithium ion battery, photo electrochemical solar energy conversion, gas sensors, hydrogen production, environmental cleaning, water purification and spintronics. TiO_2 itself is intrinsically non-magnetic; however, room temperature ferromagnetism (RTFM) has been reported in the same via defect-engineered or transition metal doping into it. The controversy of RTFM in TiO_2 is still not clear, because of the existence of intrinsic defects like oxygen vacancies or Ti interstitials and extrinsic factors like magnetic clusters due to dopants. The focus of this presentation is on elucidating the origin of RTFM and narrowing of band-gap in TiO_2 via different mechanisms. A concept of d^0 ferromagnetism in undoped TiO_2 will also be explained.

Tuesday, Aug 27th 2019

4:00 PM (Tea/Coffee at 3:30 PM)

Auditorium, TIFR-H