School of Physical Sciences

Indian Institute of Technology Mandi (HP)

Prof. Ranjani Viswanatha

New Chemistry Unit,
Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore

Venue : A4 Conference Room
Date : April 27th, 2023 Time : 3 PM
Online Link: Webex

Understanding Mechanism of Mn Emission in Perovskite Halides using Raman Spectroscopy and Magnetic Circular Dichroism

Abstract: In this talk, we present a comprehensive study on the origin of Mn emission in Mn-doped perovskite halides using Raman spectroscopy and magnetic circular dichroism (MCD). By analyzing the Raman spectra, we demonstrate the influence of the local structural distortions and phonon modes on the Mn emission. In addition, we investigate the role of magnetic properties on the Mn emission by measuring the MCD spectra. Our results suggest that the Mn emission is strongly influenced by both the local structural distortions and magnetic properties of the host material. MCD shows the interaction of deeper levels of the conduction band and is severely affected by the spin orbit coupling. This study provides a deeper understanding of the Mn emission in perovskite halides and highlights the importance of considering both structural and magnetic properties in designing Mn-doped perovskite halides for optoelectronic applications.

About the speaker: Prof. Ranjani Viswanatha is a faculty member at the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), a leading multidisciplinary research institute located in Bangalore, India. Her research interests lie in the field of nanoscience and nanotechnology, specifically in the synthesis and characterization of semiconductor quantum dots and their applications in optoelectronics. Prof. Ranjani has made significant contributions to the understanding of the electronic and optical properties of semiconductor quantum dots, particularly in the context of their size-dependent properties. Her research has also focused on developing novel methods for synthesizing high-quality quantum dots with controlled size and shape, and exploring their potential applications in areas such as photovoltaics and biosensing. Prof. Ranjani has received numerous accolades for her research, including the INSA Medal for Young Scientists, the Young Scientist Medal from the Indian National Science Academy, and the SERB POWER fellow from the Department of Science and Technology, Government of India. She is an young associate of the Indian Academy of Sciences, the founder member of Indian National Young Academy of Science