

## **Seminar**

### **Revolutionising the Field of Magnetic Quantum Materials: An Exploration of Growth Strategies for Unleashing Unprecedented Topological Response and Functional Properties for Spintronic Applications**

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The synthesis of bulk crystals, thin films, and nanostructures is a crucial aspect of advancing the frontiers of quantum materials. In this research seminar, I will provide a synthesis perspective on how the discovery of quantum materials occurs and how their exotic properties are encountered. Firstly, I will introduce a general paradigm of bulk crystal growth of quantum materials using various techniques and how bulk crystal growers strategically encounter exotic phenomena, exploiting materials composition, structure, symmetry, and topology. Then, I will discuss in detail my recent discovery of colossal angular magneto resistance in a ferrimagnetic nodal line semiconductor  $\text{Mn}_3\text{Si}_2\text{Te}_6$ , with an extremely large angular response of magnetotransport ( $\sim 10^{10}$ ). I will also briefly discuss my recent discovery of a new quantum material  $\text{MnCuSiTe}_3$ , showing room temperature ferroelectricity and low-temperature magnetic ordering. Finally, I will conclude my talk by discussing recent trends and future directions in magnetic quantum materials/2D materials.

***Tuesday, Apr 11<sup>th</sup> 2023***

***04:00 PM (Tea / Coffee 03.45 PM)***

***Auditorium, TIFR-H***