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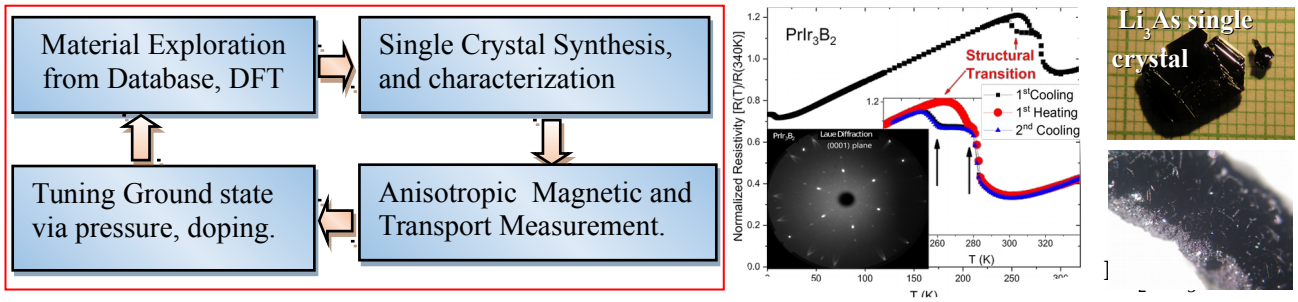
Research Interests

- Discovery, design and single crystal growth of correlated electron materials having novel electronic and magnetic ground states.
- Structural, magnetic, transport and thermodynamic measurements in extreme condition: down to mK temperature, at high magnetic field (few Tesla).
- Tuning the electronic and magnetic properties of materials via chemical doping, external pressure and uni-axial strain.
- Current topics of interest:
  - Magnetically frustrated materials e.g. Spin liquid.
  - Spin-orbit Mott Insulators e.g. Ruthenate and Iridate.
  - Topologically non-trivial materials, e.g.- Dirac and Weyl Semimetal

Brief Summary of Research

Soham is working on single crystal synthesis of correlated electron materials and investigation of its physical properties at low temperature and high magnetic field for nine years and published 19 papers in peer-reviewed journals. He has synthesized single crystals of many interesting materials, beneficial for fundamental physics as well as for technological application using different techniques e.g. Flux, Czochralski, CVT, High Pressure method etc. Following is the schematic of Soham's "Novel Electronic and Magnetic Material" research:



Projects

"Discovery, single crystal synthesis and investigation of anisotropic physical properties of novel spin-orbit materials" DST INSPIRE Faculty Award; Research Grant of Rs. 35 Lakh; October, 2018 – October, 2023

Recent Publications (Full : https://scholar.google.co.in/citations?user=CG6lwyMAAAAJ&hl=en)

1. **S. Manni**, A. Thamizhavel, and S. K. Dhar; *"Investigation of structural and magnetic properties of $PrIr_3B_2$ single crystal"*; AIP Advances **9**, 035021 (2019).
2. S Choi, **S. Manni**, J Singleton, CV Topping, T Lancaster, SJ Blundell, DT Adroja, V Zapf, P Gegenwart, R Coldea ; "*Spin dynamics and field-induced magnetic phase transition in the honeycomb Kitaev magnet α-Li_2IrO_3*" Phys. Rev. B, **99**, 054426 (2019).
3. Dahlia R. Klein, David MacNeill, Jose L. Lado, David Soriano, Efrn Navarro-Moratalla, Kenji Watanabe, Takashi Taniguchi, **Soham Manni**, Paul Canfield, Joaqun Fernndez-Rossier, Pablo Jarillo-Herrero. *"Probing magnetism in 2D van der Waals crystalline insulators via electron"*; Science, 360 (6394), 1218-1222 (2018).