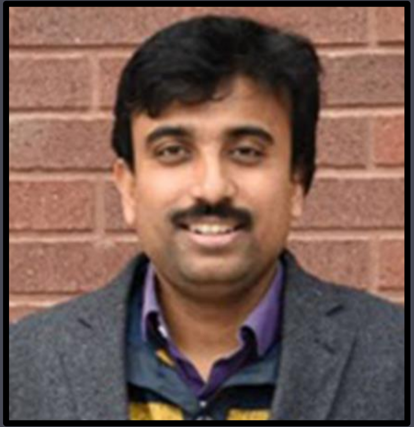
Research topic: 2D material growth and characterization by Molecular Beam Epitaxy

Prof Rajendra Singh
Dep. Of Physics

Research interest:
Wide bandgap semiconductors, device fabrication, growth of 2D material, semiconductor layer transformation.



Prof Ankur Goswami
DMSE

Research interest:
Fabrication of MEMS device for Detection, Sensing and Energy Harvesting Application. Structure Property Correlation in Oxide, 2D semiconductors. Understanding Electronic, Magnetic and Piezo Properties of Materials Using Various Scanning Probe Technique.

Molecular Beam Epitaxy (MBE) is a widely used growth technique to fabricate extremely thin multilayer structures and may play an increasing role in semiconductor technology. Deposition by the MBE offers the possibility of growing periodic-structure layers with constant chemical composition profiles and controlled uniform thicknesses. Now a days it is being a grand challenge using 2D materials in photodetection for large spectral range depending on the material involved. Since 2D semiconductor materials showing unique electrical, mechanical, and optical properties. Transition metal dichalcogenides are a major class of 2D materials. TMDCs have the general formula MX2, where M is a transition metal (Mo, W, Ti, Nb, etc.) and X is either a chalcogen element (S, Se, or Te). Hence, TMDCs (such as MoS2, ~~MoSe2,~~ WS2 etc.), showed extraordinary promise in photodetection because of its high mobility and controllable band gap depending on layer numbers. These TMDCs have an indirect bandgap when in the bulk and direct bandgap for monolayers in the visible spectrum making them attractive for optoelectronics.

Sonika Singh
2020SRZ8251