

## **Students' Annual Seminar**

### **Growth and Characterisation of FeSe, an iron-based Superconductor to Study Proximity Effect**

#### **Archit Bhardwaj**

The success of semiconductor is largely attributed to doping, where intentional impurities are added to change the existing properties of a material. Constructing band structure in this way by playing around with the doping concentration, has made it truly unbeatable when it comes to engineering materials for electronic applications. However there is another approach which is called "Proximity Effect", where a given material acquire the properties of its neighbour and become Superconducting, acquire Magnetic behaviour, enhance Spin Orbit coupling, or become topologically non-trivial. This novel approach has opened up a wider view of looking at condensed matter systems, and has become specially important from the point of view of Spintronics.

In this presentation I will talk about one such proximity effect associated with Iron based Superconductor FeSe, also known as the second class of high  $T_c$  Superconductors. There are lot of interesting properties associated with it, which still remains a mystery in the community. I will also talk about its progress in the optimization within our MBE system to conduct and design experiments for the future.

***Friday, Mar 1<sup>st</sup> 2019***

***2:00 PM (Tea/Coffee at 1:45 PM)***

***Seminar Hall, TIFR-H***