

Highlights for Centre for Material Science and Engineering
Single Crystal Growth and Understanding the Mechanism of
Superconductivity

Dr. Parasharam Shirage and Group

Superconductivity is the field of an enormous interest with more than century ago discovery, due to potential applications of the superconductors from health to transport and ongoing debate of many decades for understanding the mechanism of superconductivity. Dr. Shirage and his group at IIT Indore, actively engaged in understanding the mechanism of superconductivity by growing sizably large single crystals and studying the physical properties. They study electro-magnetic properties, vortex mechanism [*Nature Scientific Reports* 5(2015) 10613], isotope effect, *etc* to understand the mechanism of superconductivity. Dr. Shirage is renowned to invent the inverse isotope effect to understand the mechanism iron based high T_c superconductors [*PRL* 105(2010)037004].

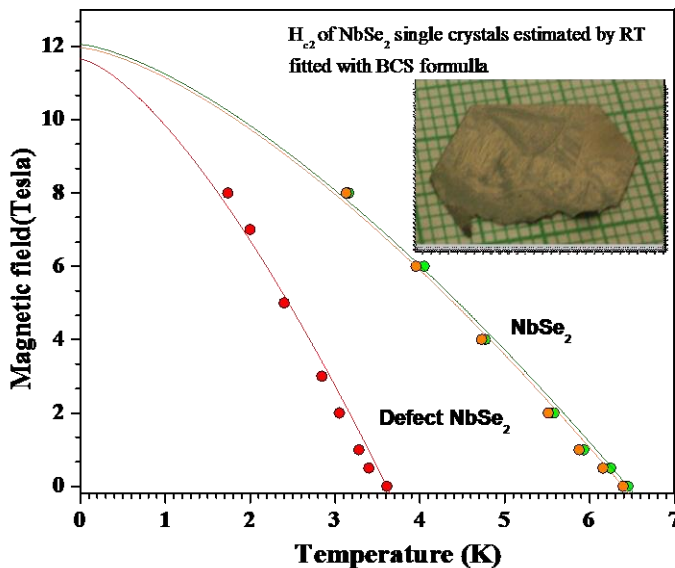


Figure 1 Experimentally determined H_{C2} from the measurement of R-T on the single crystalline NbSe₂ with and without defects. Inset shows the NbSe₂ single crystal grown (dimensions 18 mm x 10 mm x 1 mm).