

Faculty: P. V. Satyam

Four Projects:

Project 1:

(1) Imaging Atomic Columns by Electron Microscopy

This project enables the student to learn on electron microscopy, resolution effects, new developments in aberration correction and visualising atomic columns by experimentation - scanning and transmission electron microscopy facilities at IOP and if necessary elsewhere.

Project 2:

(2) What happens to the atoms on the top surface under ultra clean surfaces?

This project would allow the student to understand the need of ultra clean surfaces and achieving them in practical (using UHV-MBE methods). Also would learn crystallography in 2-dimensions and experiment them with reflection high energy electron diffraction. If possible, the students would learn the Scanning Tunneling Microscopy (STM)

Project 3:

(3) Development of Crystal Monochromator for X-ray Systems

This project requires passion for instrumentation and electronics. The student would expected to make a double-crystal monochromator and program it through computer hardware/software. The student then monochrome the Mo K<sub>alpha</sub> rays from the continuum and the other rays.

Project 4:

(4) MeV Ion Scattering: Non-destructive tool for studying thin films

This project enables the student to understand the accelerators, generation of ion beam and use of them for thin films: Mass, Composition, Thickness and crystallinity determinations. This would be mostly theoretical. But, there is a possibility of carrying out experimentation as well.