X-Ray Photoelectron Spectroscopy (XPS) Facility

- XPS, also known as Electron Spectroscopy for Chemical Analysis (ESCA) is a surface sensitive technique. This technique analyses the near surface region (few nanometer thick) of the sample kept under ultra high vacuum (<10^-8 mbar) conditions.

- XPS is capable of
  - Compositional analysis.
  - Identification of oxidation states of elements.
  - With sputter etching, depth profiling of elements in the sample.

- The system at NAL consists of
  - Twin Anode X-ray source: Al Kα with energy 1486.6 eV
    Mg Kα with energy 1253.6 eV
  - Electron energy analyser: 100mm radius hemispherical analyser with single detector.
  - Ion Gun for surface cleaning: 3kV, 10mA.
  - Flood Gun for charge neutralisation for analysing insulating samples.
  - Pumping system: Turbomolecular and Scroll pumps.
  - Load Lock Chamber.
XPS System at SED-NAL