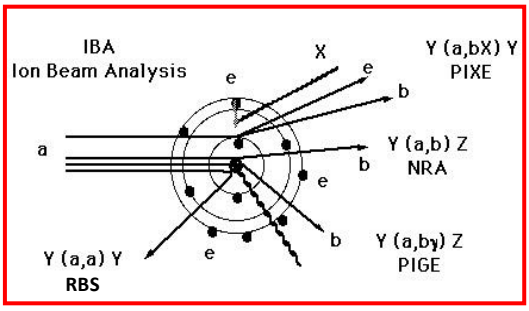
3 MV Tandem Accelerator

Make: High Voltage Engineering Europa
Model: 3MV Tandetron (HC 50194)

Purpose: Compositional characterisation by ion beam analysis (RBS, ERDA, PIGE, PIXE, NRRA) at surface and near surface regions of materials.

Working Principle:
The energetic ion beams used as projectiles are produced by 3 MV Tandetron, a DC machine based on Cockcroft-Walton principles. Negative ions formed at ground potential are injected into the first stage, where acceleration to the positive high-voltage terminal takes place. In a stripper system at the high-voltage terminal, the negative ions lose electrons and are converted into positive ions, which subsequently undergo 2nd stage of acceleration. Particles emerging from accelerator are +vely charged and are mono-energetic having an energy equal to (n + 1)**V** keV, where n is the charge state of the beam and **V** is the terminal voltage(kilo *Volts*). The terminal voltage of the machine can be varied from few hundred kilo *Volts* to 3 million *Volts*. The energetic ion beam thus produced is impinged on the specimens to be analysed. Upon bombarding the target material, various interactions take place, emitting different kinds of particles or radiations which carry information about the target material.



Major Applications

Materials science
Thin films and multi layer coatings
Metals and alloys
Biological and geological materials
Environmental
Minerals