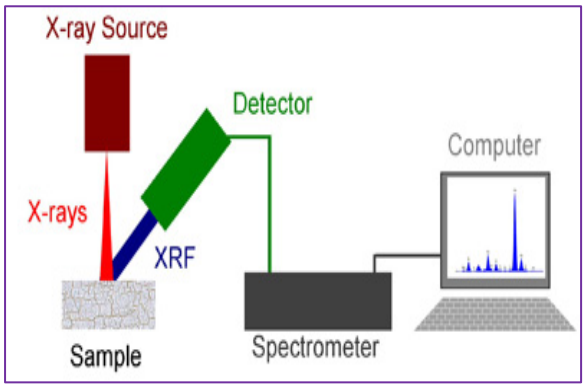
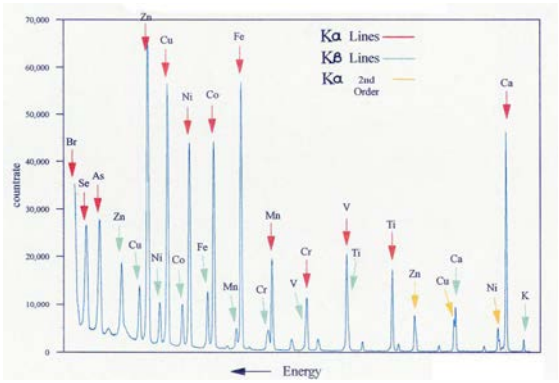
EDXRF Facility for Elemental Analysis

Energy dispersive X-ray fluorescence (EDXRF) Spectrometer

X-ray fluorescence spectrometry (XRF) is a well-established analytical technique for qualitative and quantitative elemental analysis (sometimes from Be to U) of a wide variety of samples. In particular, the truly multi-element character, acceptable speed and economy, ease of automation and the possibility to directly analyse solid samples are the most important features among the many that have made it a very mature analytical tool for routine quality controls in many industries, as well as for analytical support for the research laboratory.





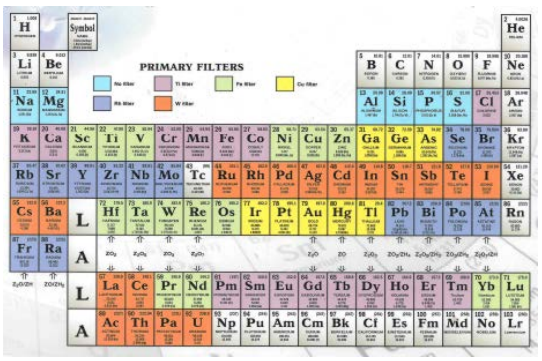


Fig: Model: Xenemetrix EX-6600 AFM

Technical Specification

X-ray Source- 60 kV, 400W, 6.6 mA, Rh Target

Tube filters- Si, Ti, Fe, Cu, Mo, Rh, Sn, W

Secondary Targets- Si, Ti, Fe, Ge, Zr, Mo, Sn, Gd

Detector- LN_2 cooled Si(Li) detector 20 mm^2 (upgraded to SDD in 2019)

Resolution- 131 eV @ 5.9 KeV (Mn, Kα)

Atmosphere- Air, He, Vacuum

Autosampler- with 8 sample holder.

Accessories for sample preparation and Calibration

Standards / SRM- 34 pure elements or their salt standard on nuclepore polycarbonate filter membrane. NIST 2783, IAEA 433, IAEA 407 etc.

XRS-FP quantitative analysis software package - Fundamental Parameters (FP) to convert elemental peak intensities to elemental concentrations without the need of calibration standards (accuracy between 10-20%).

Fig: Pellet making Machine Fig: Water sample Cups Fig: SRM 2783

Application:

Qualitative and quantitative elemental analysis of environmental samples (from Na to U) e.g. air particulates, seawater, salt, sediment, coal and its combustion residues (fly ash and bottom ash). Generated elemental profile of different environmental matrices are useful environmental quality monitoring, environmental impact assessment, understanding environmental processes, source apportionment, and health risk assessment etc.