

Microprobe. Compositional Mineral Analysis...

Xstrata Process Support utilizes Electron Probe Microanalysis (EPMA), a fully quantitative method of precise (1-2 μm) in situ non-destructive compositional (chemical) analysis of solid samples, with detection limits in the order of 100 parts per million (ppm).

Our laboratory facility is equipped with a Cameca SX-100 Microprobe with 5 Wavelength Dispersive Spectrometers and 1 Energy Dispersive detector which can be used for:

- imaging modes which allow for high resolution images including a Secondary Electron (SE) and Backscatter Electron (BSE) for identification and classification of mineralogical features
- acquiring 2D Elemental concentration mapping which enhances the impact of compositional analysis by enabling a visual representation of the chemical variation within the specimen.
- acquiring compositional (chemical) analysis information utilizing Wavelength Dispersive Spectrometry (WDS) and Energy Dispersive Spectrometry (EDS).



Key Advantages:

- Analytical detection limits between ~100-200ppm.
- Non-destructive – can be performed on polished mounts or standard polished thin sections.
- Secondary Electron (SE), Backscattered Electron (BSE) and reflected light imaging.
- Analysis across a wide range of elements from Boron to Uranium.
- Multi-element compositional 2D mapping.
- Equipped with 5 Wavelength Dispersive Spectrometers (WDS) and 1 Energy Dispersive Spectrometer (EDS) for fast and efficient analysis at high sensitivity.
- Point analysis on grains as small as 5 microns.
- Unattended automated mineral analysis

Practical Applications

Xstrata Process Mineralogy have added value to our client's operations and projects through EPMA work in many practical applications such as:

- Quantification of pay metal values in solid solution which may be lost to non-recovered phases in concentrator operations.
 - Chrome losses to slag
 - Ni in pyrrhotite, Ni in silicates
 - Cu in silicates
 - Leach residue compositions
- Quantification of deleterious elements recovered to concentrates due to solid solution levels in recovered phases.
 - Bismuth in bornite
 - Cadmium in sphalerite
 - Arsenic in chalcocite
- Detailed compositional characterisation of slag, mattes, alloys, and mineral concentrates.
- Powerful combination with QEMSCAN platform:
 - Provides detailed compositional data to combine with modal analysis producing accurate elemental department.
 - Quality control measure in the development and refinement of SIPS (Species Identification Program) for quantitative mineralogy.



For further information on XPS Microprobe services please contact:

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“Adding value...
...Reducing risk”