

SPECTRAL EVOLUTION

Using NIR Spectroscopy in Ore Recovery

oreXpress, oreXplorer and oreXpert spectrometers with EZ-ID mineral identification software are often used in core logging to provide fast, accurate, repeatable, and cost effective identification of alteration minerals. Geologists use them to create a precise and complete picture of mining potential.

In addition, alteration minerals help to identify the best potential method for recovering the target mineral from the ore. A geologist or mining mineralogist needs to know what valuable target minerals are present in the ore to determine which process can be most effectively used during recovery. Rock is typically broken, crushed, ground, and processed using separation, concentration, smelting or leaching. Knowing the mineralogy determines the hardness or softness of the rock and affects blasting, crushing, grinding, leaching, flotation—the entire recovery process.

NIR spectroscopy can be used to identify many minerals which are amorphous and don't exhibit hard crystalline structures. These clays, like montmorillonite, kaolinite, talc, or mica, must be identified so that the correct processing procedures can be implemented. For example, a swelling clay like montmorillonite can have an effect on everything from the drilling and blasting procedure to the leaching process.

The oreXpress, oreXplorer or oreXpert with EZ-ID can identify minerals like swelling clays quickly and accurately and improve the ore recovery process. The oreXpress, oreXplorer and oreXpert are purpose built for mining applications. The optional EZ-ID software provides fast mineral identification using the SpecMIN™, USGS and GeoSPEC libraries plus a Custom Library Builder module that allows a user to create their own specific mineral spectra library quickly and easily while scanning. The new library can include scans plus all associated metadata.

The oreXpress is a full range, 350-2500nm spectrometer with the highest available resolution, high sensitivity, and fast operation. With the optional mineral contact probe, scanning is fast and easy.

The oreXpress, oreXplorer and oreXpert provide one touch operation with auto-shutter, auto-exposure, and auto-dark correction before each scan without manual optimization. They're compact and lightweight design—whether used with the shoulder strap or optional backpack—make it easy to use in the field, core shack, or production line.

An oreXpress, oreXplorer and oreXpert can be used with third party chemometrics software to:

- ◆ Determine mineralogy and metallurgical parameters for ore processing
- ◆ Identify potential problem minerals
- ◆ Create proactive process strategies



In the core shack, the oreXpress, oreXplorer or oreXpert provide valuable information that impacts ore processing and recovery.



EZ-ID screen with a scan of kaolinite. Kaolinite is a soft mineral that affects ore processing. It has been identified here using the USGS library.

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