

# SPECTRAL EVOLUTION

## Identifying feldspars with a field spectrometer

Feldspars make up about 60% of the earth's crust. Feldspar minerals are found in igneous, metamorphic and sedimentary rocks. Feldspars are used in industry for their aluminum and alkali content and can appear as plagioclase feldspars or K-feldspars or alkali feldspars. Plagioclase feldspars include:

- ◆ Albite—Sodium aluminum silicate
  - ◆ Oligoclase—Sodium calcium aluminum silicate
  - ◆ Andesine—Sodium calcium aluminum silicate
  - ◆ Labradorite—Calcium sodium aluminum silicate
  - ◆ Bytownite—Calcium sodium aluminum silicate
  - ◆ Anorthite—Calcium aluminum silicate
- While K-feldspars or alkali feldspars include:
- ◆ Microcline—Potassium aluminum silicate
  - ◆ Sanidine—Potassium sodium aluminum silicate
  - ◆ Orthoclase—Potassium aluminum silicate

Industrial uses include glass for drinking, glass for protection, glass wool for insulation, ceramics including tile and tableware, fillers and extenders in paint, plastics, and rubber, as well as other uses.

The plagioclase feldspars can be identified by  $\text{Fe}^{2+}$  absorption feature between 1100 and 1300nm. The K-feldspars typically show  $\text{Fe}^{3+}$  absorption bands at 860nm with a steep absorption edge near 600nm. Water absorption features may also occur for both groups at 1.4nm and 1.9nm.

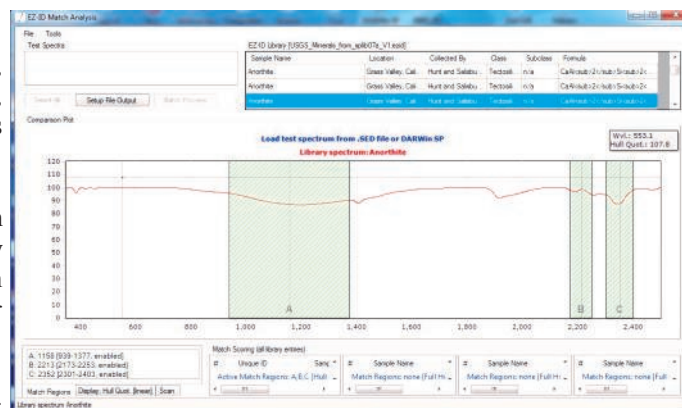
The oreXpress high resolution/high sensitivity field spectrometer can identify minerals. Used with EZ-ID mineral identification software it matches your target minerals against known library samples for fast identification. Samples for the plagioclase and K-feldspar minerals are included in the libraries. EZ-ID allows you to create match regions to focus on specific absorption features for unmixing multiple minerals in a sample.

The oreXpress delivers full range UV/VIS/NIR/SWIR capabilities from 350-2500nm, is lightweight (under 7 lbs/3.5kg), rugged and includes integral auto-exposure, auto-shutter, and auto-dark correction for on-touch operation. An optional GETAC handheld microcomputer includes a digital camera, GPS and voice notes—all data that can be tagged to your spectra. Use the oreXpress with our 10mm spot size contact probe or our 3mm Miniprobe or in the lab with our benchtop probe with sample compactor.

In addition, our DARWin SP Data Acquisition software saves all scans as ASCII files for use (without pre-processing) with third party software such as the Spectral Geologist (TSG) Version 8 and 3D mapping and mining programs. oreXpress, and EZ-ID software are trademarks of Spectral Evolution, Inc.



*The oreXpress with the Miniprobe's 3mm spot size for field or core shack use.*



*EZ-ID has two libraries of over 1600 known mineral spectra to match against. It includes the major plagioclase and K-feldspar minerals.*

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