

SPECTRAL EVOLUTION

Discovering Indicator Minerals for Kimberlites

Kimberlites are a variety of ultramafic volcanic and sub-volcanic rock and are the main source of diamonds worldwide. They occur as clusters of pipes probably along major crustal fracture zones. Common alteration minerals that can be detected by spectroscopy include biotite/phlogopite, Fe-amphibole, Fe, Mg chlorite, serpentine, calcite, saponite and nontronite.

The primary indicator minerals for kimberlites are garnet, chromite, ilmenite, Cr-diopside and olivine. Using EZ-ID with the two spectral libraries, a geologist can quickly identify an indicator mineral that may not be readily identifiable by sight, by matching an unknown sample against a known spectral library. With EZ-ID the geologist can select specific spectral regions to fine-tune the matching and unmixing process for a more precise ID. If the geologist wants to look at a particular absorption feature, the geologist can highlight that or other features and EZ-ID provides new matches.

The two libraries contain more than 600 minerals and 1600 different spectra. By ordering EZ-ID with both libraries, a geologist has access to a wide range of match possibilities for exploration projects in kimberlites.

EZ-ID works right from the DARWin SP Data Acquisition software included with all SPECTRAL EVOLUTION spectrometers and spectroradiometers. All spectra collected with an oreXpress are saved ASCII files for easy import into other 3rd party analysis software for mine planning, mineral mapping and 3D imaging.

oreXpress spectrometers are designed for single-user operation in the field. They are rugged and reliable with fixed optics to avoid breakdowns. They capture high resolution spectra very quickly so that a geologist can scan more and collect more data for discovering kimberlite pipes and planning a drilling strategy that will maximize return on investment.

In the core shack, the speed of the instruments is ideal for core logging. In some cases, a single geologist has been able to log as much 400 meters of core in a day. The data can be used to show mineralogy versus alteration type versus mineral assay.



oreXpress spectrometers are used to better understand and map mineral alteration zones in the field.



EZ-ID software identifies minerals in real-time by matching your target spectra against a known spectral library sample such as diopside (top) or olivine (bottom).

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