

Minerals | LIBS Elemental Analysis

Summary

iPulse®, Progression's process control technology, is a compact versatile tool based on LIBS that provides on-line, real-time elemental analysis of minerals, ores and slurries. LIBS is a simple, rapid, and highly advanced optical technique that measures the elemental composition of a sample by performing a spectroscopic analysis of a laser induced plasma plume. iPulse requires minimal operator training and is effectively non-destructive. The instrument can be mounted directly above a conveyor belt or in a process or effluent stream line, negating the need for manual or automated sampling. Unlike many other elemental techniques, iPulse has no nuclear source. Detection limits for most elements are less than 100 ppm.

Progression, Inc. is a world leader in the development and implementation of Laser Induced Breakdown Spectroscopy (LIBS) techniques and process Nuclear Magnetic Resonance (NMR) technologies for use in the petrochemicals, coal, biofuels and mining industries.

Benefits

LIBS can provide economic and environmental benefits mines and mineral processors.

- Improved plant efficiency through enhanced process control
- Simultaneous multi-element analysis in real-time
- No sample preparation required
- No nuclear source
- Works on solids, liquids, and gases

Selected Applications

- Phosphate rock mining
- Chemical processing
- Zinc and lead mining
- Precious metals
- Copper production
- Trace element detection in water

Plasma is formed by focusing optical pulses from the laser onto the sample. An image of the resulting plasma is analyzed by a CCD camera and spectrograph. This spectra is then processed into useable data.

