



FIELD PORTABLE SPECTROMETERS

THE MOST ACCURATE MINERAL IDENTIFICATION
INSTRUMENTS ON THE MARKET!



- ✓ Highest Resolution
- ✓ Rugged, Field Portable
- ✓ Rapid Data Collection

- ✓ High Signal-to-Noise Ratio
- ✓ Fast Start-up and Use
- ✓ Sturdy construction

Identify minerals in the field in real time!

With Spectral Evolution portable spectrometers and EZ-ID™ software, geologists can measure and identify samples in seconds, and cover more ground in less time than by using traditional field methods or lab analysis. They can identify different mineral phases, work up mineral alteration maps, and more accurately identify mineral pathfinders for vectoring to ore deposits.

Our selection of probes and light sources enables you to analyze minerals in a variety of shapes and sizes such as core samples, chips, and powders. You can even identify small veins with our 3mm spot-size miniprobe.

With the EZ-ID™ mineral identification software you can:

- Instantly match a target scan against libraires of more than 1,100 know minerals
- Select match regions to focus on particular spectral features and mineral unmixing
- Use scalars to better understand crystallinity changes, alteration patterns, and geochemical conditions
- Interface with prediction engines for quantitative chemometrics analysis
- Create custom spectral libraries

The spectral resolution and sensitivity of our spectrometers is unsurpassed and provides the user with the most accurate spectral data.

With real-time mineral identification in the field, you can explore more territory and make more informed decisions on where to drill and maximize exploration outcomes.

In the core shack you can map alteration and eliminate unnecessary assays on cores that show no potential, reduce the time logging takes, and build a digital archive of your results.



Created with consideration for field research.



Academia:

Motivate your students by using the highest spectral resolution in the world. For your research, our ore-X series of instruments provides the best and most precise reflectance data for alteration minerals, soil and geological ground truthing data. We have the highest spectral resolution and precise field spectrometers in the world, which allow us to build predictive models from the spectral data.



Mining & Exploration:

Track and monitor alteration assemblages to better characterize ore deposits. Field portable SWIR (short-wave infrared) is a vectoring tool needed in the exploration stage to help Geologists identify alteration patterns and zoning around important ore deposits such as gold, copper, nickel, etc. Our ore-X series provides data that outperforms other competitors by offering products with higher spectral resolution, better signal to noise and a rugged field package to be used in the field or core shack.



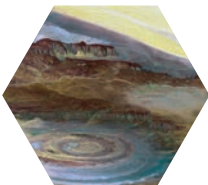
Minerals & Soil:

Identify important clay minerals and monitor soil health by using the ore-X series line of field spectrometers to take reflectance data. Distinguishing between different clay minerals within soil is an important task due to the swelling nature of clays and their impact on soil. Identifying important organic matter within soil and monitoring the pH is an application that soil scientists utilize full range UV-Vis-NIR spectrometer for in the field and lab.



Planetary Geology:

Understanding how different mineralogy processes in our solar system work requires the imitation of conditions here on Earth. Research in planetary geology benefits from using our ore-X series on applications such as tephra deposits, spectral library building of similar mineralogy processes found on Mars and Venus, etc. Our line of spectrometers can be used for field research and lab analysis to help better understand the mineralogy processes on other planets.



Geological Remote Sensing:

Validating hyperspectral data is crucial when doing field campaigns or using other complementary technologies. Ground truthing is a long-standing concept for geological applications such as mining | exploration and soil research. Using our ore-X series line of field spectrometers, researchers can validate their hyperspectral reflectance data on the ground easily and quickly to have more confidence in their hyperspectral surveys.



Oil & Gas Exploration:

Spectral Evolution's spectrometers play a crucial role in oil and gas exploration by analyzing the chemical composition of geological samples, drilling fluids, and gases to identify potential hydrocarbon deposits and monitor well performance. They also help characterize the quality and source of oil, monitor emissions, and optimize production processes.



Environmental Geology:

Our oreX series of spectrometers are valuable tools in environmental geology for analyzing geological samples and assessing environmental impact. They can be used to identify minerals, analyze water and soil composition, and monitor pollutants. Spectrometers also play a role in remote sensing, helping with mineral mapping and hazard mitigation.

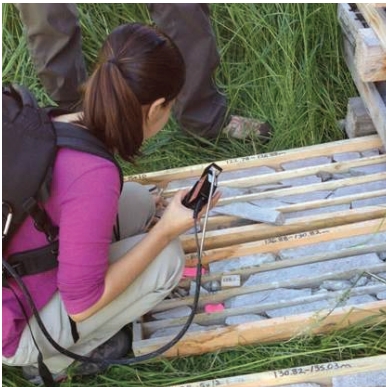
Rugged & Portable Spectrometers for Field Use.

The oreXpress, oreXplorer, and oreXpert spectrometers are specifically designed for the harsh requirements of field use. A rugged design with no moving optical components means reliability for field operation. All spectrometers are portable and compatible with an optional custom backpack.

A wireless connection allows the interface with a tablet or laptop, for real-time analysis in the field. A lithium-ion battery provides hours of data collection in the field. Our fiber optic cables have a stainless-steel sheath and can easily be replaced in the field to prevent any down-time.

Mineral Identification for the following:

- Gold
- Copper
- Rare Earths
- Lithium
- Cobalt
- Silver
- Nickel
- Zinc
- Iron
- Kimberlites
- Uranium
- Garnet
- Limestone
- Lead



Model	oreXpert			oreXplorer			oreXpress		
									
Spectral Range	350-2500 nm			350-2500 nm			350-2500 nm		
Spectral Resolution	1.5 nm @ 700 nm	3 nm @ 1500 nm	3.8 nm @ 2100 nm	2.7 nm @ 700 nm	5.5 nm @ 1500 nm	5.8 nm @ 2100 nm	3.5 nm @ 700 nm	7.8 nm @ 1500 nm	7.8 nm @ 2100 nm
Spectral Sampling Bandwidth (nm)	2048 Sampling channels Data output in 1 nm increments			2048 Sampling channels Data output in 1 nm increments			2048 Sampling channels Data output in 1 nm increments		
Detectors	1024-element UV-enhanced Si Array 512-element TE-cooled InGaAs Array 512-element extended TE-cooled InGaAs Array			1024-element UV-enhanced Si Array 512-element TE-cooled InGaAs Array 512-element extended TE-cooled InGaAs Array			1024-element UV-enhanced Si Array 512-element TE-cooled InGaAs Array 512-element extended TE-cooled InGaAs Array		
Signal to Noise Ratio (SNR)	VNIR: 20,000:1 @ 700 nm	SWIR 1: 30,000:1 @ 1400 nm	SWIR 2: 20,000:1 @ 2100 nm	VNIR: 25,000:1 @ 700 nm	SWIR 1: 35,000:1 @ 1500 nm	SWIR 2: 25,000:1 @ 2100 nm	VNIR: 25,000:1 @ 700 nm	SWIR 1: 35,000:1 @ 1500 nm	SWIR 2: 25,000:1 @ 2100 nm
Software	DARWin™ Data Acquisition Data output in ASCII format for easy post processing. Compatible with: All post-processing software, EZ-ID™ software for instant identification & spectral library building and Eigenvector chemometrics modeling software.								
Power (volts watts)	AC/DC Switching Adapter Input: 100-240 VAC, 50/60 Hz Instrument DC Input: 12VDC 30W			AC/DC Switching Adapter Input: 100-240 VAC, 50/60 Hz Instrument DC Input: 12VDC 30W			AC/DC Switching Adapter Input: 100-240 VAC, 50/60 Hz Instrument DC Input: 12VDC 30W		
Dimensions (millimeters inches)	315 x 221 x 112 mm 12.4 x 8.7 x 4.4 in			315 x 221 x 112 mm 12.4 x 8.7 x 4.4 in			315 x 221 x 112 mm 12.4 x 8.7 x 4.4 in		
Weight (pounds kilograms)	13.8lbs 6.3kg			13.8lbs 6.3kg			13.8lbs 6.3kg		
Instrument Interface	USB & Wireless Bluetooth® Connection			USB & Wireless Bluetooth® Connection			USB & Wireless Bluetooth® Connection		
Minimum Scan Speed	100ms			100ms			100ms		
Wavelength Reproducibility	0.1 nm			0.1 nm			0.1 nm		
Wavelength Accuracy (nm)	±0.5 Bandwidth			±0.5 Bandwidth			±0.5 Bandwidth		
Regulatory Testing	CE Certified EU Directives: 1999/5/EC, 89/336/EEC, 2006/95/EC IEC 61010-1:2010, Ed.1.3 FCC Part 15.107(b)								
Automatic Data Optimization	Automatic Exposure Detector Integration Dark Current Correction								
Input and Accessories	Includes 1.5 m fiber optic (25° FOV), and High-intensity reflectance contact probe (10mm FOV) Optional custom length and submersible fiber optic cables, fore optics, and accessories are available.								
Operational temperature range (°C)	-10°C to 40°C			-10°C to 40°C			-10°C to 40°C		
Stray Light	VNIR: 5,000:1 (0.02%) NIR: 10,000:1 (0.01%)			VNIR: 5,000:1 (0.02%) NIR: 10,000:1 (0.01%)			VNIR: 5,000:1 (0.02%) NIR: 10,000:1 (0.01%)		
Storage Temperature (°C)	-15°C to 70°C			-15°C to 70°C			-15°C to 70°C		
Battery Run Time	Minimum 3 hours			Minimum 3 hours			Minimum 3 hours		
Warranty	12-month manufacturer's warranty including expert customer support			12-month manufacturer's warranty including expert customer support			12-month manufacturer's warranty including expert customer support		
Computer	Windows®			Windows®			Windows®		

What's included in your oreX bundle:

The oreX spectrometers are sold as a bundles so you can start gathering your mission-critical data without delay.



Optional Accessories

All of our spectrometers have SMA connectors to quickly and easily connect to a variety of accessories, including contact probes, field of view lenses, and more.

Contact Probes



- Ergonomic design with external trigger for quick contact measurements
- Built-in 5-watt illumination for great signal to noise across the full spectral range
- Available in 10mm or 3mm spot sizes for flexible targeting
- Scratch-resistant sapphire window

Extra Fiber Optic Cable



- Field replaceable in 2 minutes! Ruggedized, stainless steel, fiber optic cables
- 1.5m, 2m, and custom sizes available
- High-transmission material over 350-2500nm spectral range

Rugged Handheld Tablet



- Real-time, wireless instrument control
- Instantly view scans & match to vegetative, geological, and soil libraries in situ with DARWin and EZ-ID
- 7" capacitive touchscreen – 1280×800 resolution – sunlight readable display
- Built-in GPS, camera, and microphone to collect & organize essential field data

ILM-550



- Illuminates large spot size for standoff measurements
- Aluminum reflector for bright, uniform illumination across the entire spectral range
- Includes two 50-watt tungsten-halogen bulbs for diffuse or spot illumination mode - 70 W & 100 W bulb options available
- Mount on lab benches, optical tables, or tripod for repeatable data collection

Backpack



- Water resistant backpack
- Ideal for field work with all Spectral Evolution instruments
- Provides easy transport and is custom designed for the instrument, accessories, and batteries

White Plates



- Available in 2x2 (plastic case), 5x5, 10x10
- Protective aluminum case with tripod mount (not available with 2x2 inch)
- Panel calibration available (please inquire)
- 100% Diffuse reflectance

Benchtop Probe w/Compactor



- Ideal for hands-free measurement of loose samples such as soil, crushed stone, or powders
- Optional compactor for consistent sample preparation
- SMA-905 fiber optic connection
- Built-in 5-watt tungsten-halogen bulb and durable sapphire window

Battery & Charger Kit



- Smart lithium-ion technology with real-time communication
- Built-in safety protections for reliable operation
- Wide temperature operating range for field use
- Accurate fuel gauging with LCD display
- High-capacity, long-life performance
- Fast, efficient charge cycles
- LED status monitoring for easy use
- Compact, adaptable desktop design

Field of View Lenses



- Lenses provide flexibility for varying target sizes
- SMA fiber mount lenses available: 1°, 2°, 3°, 4°, 5°, 8°, and 10°

UVF Probe



- Fast analysis (~10 seconds)
- Quantitative measurements
- Safer than UV lamp inspection
- Field deployable in daylight (no blackout required)
- Non-destructive
- Designed to measure the fluorescence of samples

Quickly Identify Your Target Mineral with EZ-ID™ Software.

Mineral identification has never been faster, easier, or more accurate than with the EZ-ID software from Spectral Evolution. EZ-ID provides mineral identification capabilities for the oreXpress™, oreXplorer™, and oreXpert™ field portable spectrometers for mining exploration, core logging, alteration mapping or academic research.

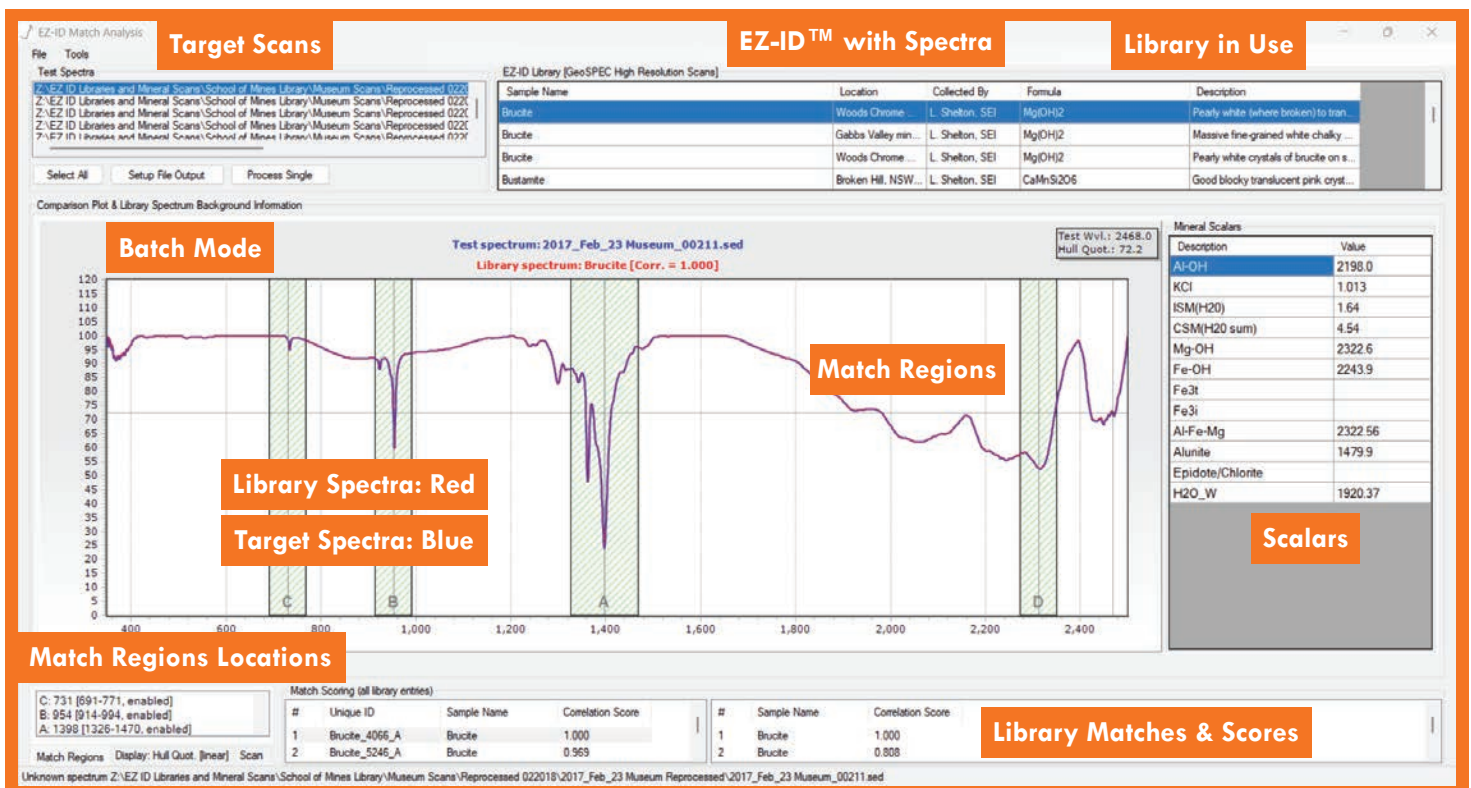
You can perform mineral identification in seconds by matching your target minerals against the latest USGS library of 266 minerals and 466 spectra. The optional SPECMin™ and GeoSPEC™ high-resolution libraries provide an additional 2310 scans for fast identification of over 794 minerals.

EZ-ID instantly compares the target spectra versus the library, allowing you to select regions of interest for closer examination. It also provides the most likely matches with weighted scores and offers SCALARS (Al-OH, KCl, ISM, CSM, Mg-OH, Fe3t, Al-Fe-Mg, Fe-OH, Fe3i, Epidote/Chlorite, Alunite, H2O_W) to enhance the geologist's understanding of crystallinity changes, alteration pattern shifts and geochemical conditions.

A batch processing capability allows a geologist to select target files, along with their associated information and rankings, and import data into a Microsoft Excel spreadsheet, a comma delimited file, or a tab delimited file, for geological modeling or mine planning. EZ-ID software can be used on unknown samples found on outcrops, in pits, hand samples, cores, or anywhere mineral identification is performed.

EZ-ID™ features include:

- Fast and accurate identification of unknown minerals to known library samples
- Easy-to-use, just collect your scans and see results in real time
- SCALARS provide a geologist with a better understanding of mineral formation conditions
- Software provides a weighted score for best matches
- Save spectral match regions of interest for comparisons when looking for similar minerals
- The Library Builder allows you to create your own custom library of minerals
- Conversion of ASD files for use with EZ-ID – save your existing libraries and databases
- EZ-ID works through the DARWin SP Data Acquisition software
- EZ-ID can also be installed on our rugged field tablet for mineral identification in the field





The Pinnacle of Field Spectroscopy!

Bringing lab quality data to field measurements.

Every instrument and accessory built and sold by Spectral Evolution is subject to rigorous quality testing. Each component is meticulously designed, assembled, and calibrated at our facility in Haverhill, MA to ensure the maximum performance and reliability.



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TESTIMONIAL

Given its high resolution, ease of use, and clean data (we collected data with a lens and not a contact probe), the PSR+ was incredibly useful in the field for snow/ice applications.



Dr. Peña - University of Colorado-Boulder

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TESTIMONIAL

The NaturaSpec sent our productivity through the roof!



Zander Jones - CEO Geolite

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We value your time.

By using only photodiode arrays and fixed grating systems, we increase the system's sensitivity and reliability resulting in the highest data quality. There are no moving parts to drift or malfunction during your mission-critical work. We constantly look for ways to make our instruments and software the easiest to use with one-touch autoexposure, auto-dark shutter, auto-ranging controls, and easy software pulldown menus.

We value your mobility.

Without sacrificing ruggedness, our systems are small and lightweight. Portable units are powered with high-capacity lithium-ion batteries and are wireless compatible, so there are no extra cords or cables to restrict your work. Operating our system only requires a small laptop or tablet to keep your travel load as light as possible.

