



## SciAps PowerHouse X for REEs

### LIGHT & HEAVY REE'S IN THE FIELD... IN MINUTES!

#### KEY HIGHLIGHTS

- Delivers low, single digit ppm detection for critical LREE's La, Ce, Nd, and Sm
- Weighs about 22 lbs (< 11 kg) and is easily carried and operated in the field
- Fully shielded and interlocked

#### THE GROUNDBREAKING PORTABLE BENCHTOP XRF

- First ever portable XRF with an 80kV X-ray tube
- Measure Heavy REEs Dy, Tb, Ho, Er, Yb
- Battery Powered, Fully Shielded and Safety Interlocked



A groundbreaking portable XRF that operates SAFELY at 80 kV to deliver single digit ppm limits of detection for light and heavy REE's.

Limits of Detection (2 min)	
Ba	2
La	2
Ce	2
Pr	4
Nd	4
Sm	6
Eu	7
Gd	5
Tb*	10-20
Dy	15
Ho	20
Er	20
Tm	35
Yb*	25-35
Lu	53

\* LOD for Tb and Yb is more sensitive to neighboring interferences and matrix.

#### Reliable and robust K-shell X-ray analysis.

Historically, in field XRF analysis of REE's attempted analysis via the L-shell X-rays due to X-ray tube power and voltage limitations.

L-shell analysis is complicated by the many interferences from transition metals including iron, copper, zinc, nickel, strontium, etc. The Powerhouse - REE uses a proprietary 80 kV X-ray tube. It's powerful enough to excite the K-shell X-rays through Lutetium, far away "spectrally" from interfering transition and heavy metal emissions.



**POWERFUL:**

- Delivers low, single digit ppm detection for critical LREE's La, Ce, Nd, Sm
- In-field results for strategic HREE's Dy, Yb and others in a few minutes, with minimal sample preparation, no acids, no digestion like ICP

**PORTABLE:**

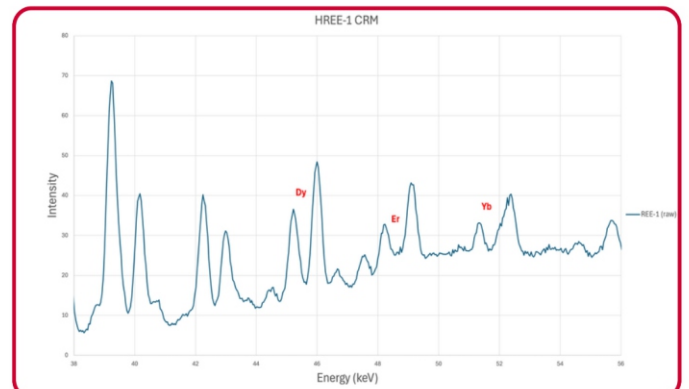
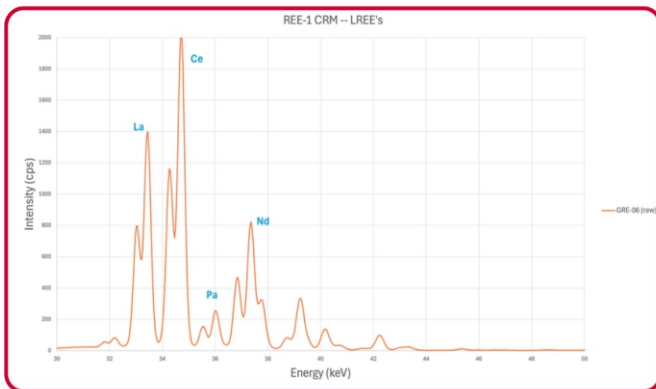
- Weighs about 22 lbs (< 11 kg) and is easily carried and operated in the field
- Battery operated, 2 batteries standard, with hot-swap capability
- AC charger included

**SAFE:**

- Fully shielded and interlocked
- Even at high duty cycles, radiation exposure to operator below all existing regulatory requirements



Spectra for a few common ore bodies are shown below. The PowerHouse efficiently excites the K-shell emission lines for both light and heavy rare earth elements (REEs). By analyzing these high-energy K-lines, the complicated spectral overlaps with common metals are avoided completely, yielding unprecedented limits of detection and superior performance compared to any other portable XRF. Full element suites:



**Light REEs:** La, Ce, Pr, Nd, Pm, Sm, Eu, Gd; **Heavy REEs:** Dy, Tb, Ho, Er, Tm, Yb, Lu, Y

**Transition/pathfinder elements:** Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, As, Se, Sr, Rb, Y, Zr, Nb, Mo, Ag, Cd, Sn, Sb, Ba

**Heavy metals:** Ta, W, Hg, Pb, Bi, U

Others may be available upon request.

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