

# PlasmaQuant MS in Geology and Mining and Metals Industry

## Recommended configurations

### Industry requirements

- Sensitive and robust performance
- Matrix tolerance
- Easy operation
- Reliable, long-term stability
- Wide analytical range
- High sample throughput

### Instrument characteristics

- Robust plasma with exceptional hot and cool plasma capability
- Stable performance even with challenging and changing matrices
- High sensitivity for customized data acquisition speed and fast sample introduction option
- High throughput with >80 samples/hour



ICP-MS has been used in geochemical analysis since its development. The highly sensitive and accurate multielement analysis from ultra-trace to major levels in a single measurement as well as the capability to measure isotope ratios make it the method of choice in exploration, the characterization of REE in minerals, geochronology and provenance testing or the determination of impurities in high-purity metals. The PlasmaQuant MS series is optimally tailored to these requirements as its powerful plasma system, the unique ion optics system and the wide range digital detector provide the perfect technological basis for best performance.

Geochemical analysis is typically done in university labs, mining companies or contract labs.

### Sample types

- Digested geological samples
- Fusion samples
- Minerals like zircons, rutiles
- High purity gold, copper, tungsten, niobium and others

### Recommended instruments

**PlasmaQuant MS Elite S** is the most suitable instrument for multielement geochemical analysis with moderate or high sample throughput. The sensitive and robust performance also enables excellent precision in isotope ratio analysis.

**PlasmaQuant MS Elite** can be recommended whenever highest sensitivity and more flexibility is required, e.g. in research for coupling to laser ablation or specific isotope ratio determination for systems with large ratios.

Application	Sample Introduction Kit	Sheath Gas / Aerosol Dilution	Nitrox	Discrete Sample Introduction	Cones	PlasmaQuant MS		PlasmaQuant MS Elite	
							Q	S	
Minerales	Standard or Inert Geo	Optional	Optional N <sub>2</sub>	Optional	Nickel / Platinum		✓	✓	
Rocks and sediments	Standard or Inert Geo	Optional	Optional N <sub>2</sub>	Optional	Nickel / Platinum		✓	✓	
Inclusions	Standard or Inert Geo	Optional	Optional N <sub>2</sub>	Optional	Nickel / Platinum		✓	✓	
Pore water	Standard	Optional	Optional N <sub>2</sub>	Optional	Nickel / Platinum		✓	✓	

### When to choose which instrument

#### Rule of thumb:

- Sensitive analysis and moderate to high sample throughput  
→ PlasmaQuant MS Elite S
- Lowest detection limits or specific requirements  
→ PlasmaQuant MS Elite

#### Basic configuration

- PlasmaQuant MS model
- Start Kit Geo Inert, Standard
- Autosampler
- Discrete sample
- Chiller

#### Upgrades and accessories

- Aerosol Dilution
- Nitrox
- Laser ablation systems
- Trigger Box TTL – for Laser ablation coupling

#### Benefits of upgrades and accessories

**Autosampler:** automated sample introduction for clean and contamination free sample supply provides the user with time for other activities. Combined with QC samples and defined response actions the automated sequence can run unattended or over night.

**Discrete sample introduction:** autosampler upgrade to enhance ultra-clean sample introduction.

**Aerosol dilution:** software controlled aerosol dilution option allowing the on-line dilution of samples during sample introduction.

**Nitrox:** allows the addition of nitrogen or oxygen to the plasma. Nitrogen improves the sensitivity towards arsenic and selenium in high matrix samples.

**Laser ablation:** coupling to a laser ablation device allows dating and provenance studies as well as high resolution elemental mapping with smallest laser spot sizes.

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