

PlasmaQuant MS in Environmental Monitoring

Recommended configurations

Industry requirements

- Robust, reliable performance
- Matrix tolerance
- Easy operation
- Start-up routine
- Pre-defined methods
- Wide detection range
- Low maintenance
- QC samples and automated response

Regulations

National and global directives for water purity

Instrument characteristics

- Sensitivity with detection limits down to pg/l
- Robust performance <3 % RSD over 5 hours
- Throughput typically 20-30 samples per hour with standard sample introduction
- >80 samples per hour with discrete / fast sample introduction
- Automated QC response
- Pre-defined methods according to US EPA 200.8 or 630 as well as European regulations



Environmental samples cover a variety of matrices, including all kinds of water as well as solid samples that require a sample digestion before analysis. Challenges faced in environmental analysis are high matrix concentrations and high TDS contents as for example in seawater.

Environmental analysis is typically done in governmental institutions, contract labs, universities and industrial labs that monitor environmental and process parameters.

Sample types

- Drinking water, surface water, ground water, waste water, seawater
- Soils and sediments, sand, clay
- Industrial monitoring – sludge, combustibles, residues
- Industrial processes – waste incineration, flue gas desulphurization

Recommended instruments

PlasmaQuant MS is optimized for the analysis of tough samples such as seawater, soil, sludge, combustibles or monitoring of process parameters in industrial applications such as waste incineration and flue gas desulphurization.

PlasmaQuant MS Q provides the fast and more sensitive solution for the characterization of samples with moderate matrix concentration such as drinking and surface water, or digested agricultural samples.

PlasmaQuant MS Elite S can be recommended whenever sensitivity and even lower limits of detection matter or when smallest single particles are to be detected.

Application	Sample Introduction Kit	Sheath Gas / Aerosol Dilution	Nitrox	FAST Sample Introduction	Cones	PlasmaQuant MS		PlasmaQuant MS Elite	
							Q	S	
Drinking water	Standard	No	No	Optional	Nickel	✓	✓	✓	
Surface / Waste Water	Standard	No	No	Optional	Nickel	✓	✓	✓	
Seawater	Standard	Yes	Optional	Optional	Nickel	✓	✓	✓	
Soils, Sediments, Sludge	Standard	Optional	No	Optional	Nickel	✓	✓	✓	

When to choose which instrument

Rule of thumb:

- High matrix loads and moderate sample throughput → PlasmaQuant MS
- Medium matrix loads and moderate to high sample throughput → PlasmaQuant MS Q

In combination with HPLC all PlasmaQuant MS models guarantee fast and reliable speciation analysis far below current international limits.

Furthermore all models allow the characterization of natural and artificial single particles. For diameters <20 nm the PlasmaQuant MS Elite S is recommended.

Recommended basic configuration

- PlasmaQuant MS model
- Autosampler
- Chiller
- Kit Internal Standards

Upgrades and accessories

- Fast/discrete sample introduction
- Aerosol Dilution
- Nitrox
- HPLC, e.g. PQ LC

Benefits of upgrades and accessories

Autosampler: automated sample introduction 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.

Fast/discrete sample introduction: autosampler upgrade that reduces sample or rinse delay times by 80 %, significantly increasing sample throughput.

Aerosol dilution: software controlled aerosol dilution option allowing the on-line dilution of samples such as seawater 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 such as seawater and agricultural samples. Oxygen guarantees stable instrument performance when analyzing organic solvents.

HPLC: coupling of a PQ LC HPLC or others for chromatographic separation of element species for speciation analysis of elements such as As, Se, Cr, and others using LC-ICP-MS.

Headquarters

Analytik Jena GmbH
Konrad-Zuse-Str. 1
07745 Jena - Germany

Phone +49 3641 77 70
Fax +49 3641 77 9279
info@analytik-jena.com
www.analytik-jena.com

Pictures: Analytik Jena GmbH, Endress+Hauser
Subjects to changes in design and scope of delivery as well as further technical development!