

## GUTMAM

- To increase the number of high-quality publications and outputs by providing our university's researchers with an efficient and well-supported environment for conducting scientific studies under optimal conditions,
- To contribute to scientific and technological advancements by establishing sustainable and scalable infrastructure that enables cutting-edge research, serving the needs of universities, the public sector, and private industry,
- To support regional and national economic development by offering services to various industrial and private organizations, particularly in fields prioritized by national development plans—within the framework of university-industry collaboration.

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## ICP-OES

Inductively Coupled  
Plasma Optical Emission  
Spectrometer

Analytik Jena PlasmaQuant 9100  
Elite



## Technical Specifications

**Monochromator:** Echelle double monochromator & quartz prism front monochromator, 400 mm focal length, 5 different adjustable entrance slit settings and fixed intermediate slit (entrance slit dimensions: 35 x 1800  $\mu\text{m}$ )

**Wavelength Range:** 160 - 900 nm

**Wavelength Sensitivity:** < 0.4 pm

**Spectral Resolution:** 0.002 nm (at 200 nm)

**FWHM:**  $\leq 3.5$  pm (As (193.696), Tl (190.796))

**RF:** High Frequency RF Generator, Free-running

**RF-tube generator,** 40 MHz

**Detector:** Charge Coupled Device (CCD)

## Working principle

ICP-OES (Inductively Coupled Plasma Optical Emission Spectrometry) is an analysis technique used to determine the concentration of elements in a sample. The liquefied sample is converted into fine droplets (aerosols) using a nebulizer. These aerosols are introduced into sent into an argon plasma that reaches a temperature of approximately 10,000 K. In the plasma, the elemental atoms are ionized and excited. The excited atoms emit light at characteristic wavelengths as they return to their ground state. This emitted light is separated by an optical system and detected by sensors to quantify the concentration of each element.

ICP-OES instruments such as the Jena PlasmaQuant 9100 are ideal for this type of analysis due to their wide elemental range, high sensitivity and speed. The instrument is widely used in areas such as environmental analysis,

## Device Features

The PlasmaQuant 9100 Elite model from Analytik Jena is one of the advanced ICP-OES systems and stands out with its features such as high resolution, fast analysis and low argon consumption. Thanks to the Echelle double monochromator system and CCD detector, it enables high-precision measurements over a wide wavelength range. Reliable results are achieved even at low detection limits thanks to the 1700 W stable RF plasma source. Dual View technology enables precise analysis over wide concentration ranges by providing both axial and radial plasma observation. In addition, all optical components are housed in a compact and environmentally resistant platform, supporting the long-lasting and stable operation of the device.

## Analyses and Application Areas

- ✓ Reliable analysis of different types of samples (water, soil, food, metal, etc.) independent of different matrix effects, even at low concentrations
- ✓ Obtaining results with low margin of error in analyses such as industrial quality control and purity measurement.
- ✓ Used in biology, chemistry, environmental science, food technologies, materials science, medicine and pharmaceutical industry, petrochemistry, etc.

## Sample Preparation

### Microwave Incineration Device- Speedwave Entry

It offers high disintegration capacity with controlled temperature in TFMTM-PTFE pressure vessels for many samples such as animal and plant products, soil, water, medicine, blood, agricultural grains etc.



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