



**the routine
analyzer.**



novAA 800

Atomic absorption spectrometry

analytikjena
An Endress+Hauser Company

novAA 800 series

novAA 800 is the reliable all-rounder, making routine analysis of diverse samples efficient and cost-effective.

novAA 800 – The routine analyzer

- **Efficient**
High throughput thanks to integrated sampling and dilution
- **Simple**
Easy handling with user-friendly concepts
- **Cost effective**
High performance with low investment and running cost
- **Reliable**
Stable measurement conditions thanks to robust components and a clever design

novAA 800 F
AAS for flame and hydride technology

novAA 800 D
AAS for flame, hydride and graphite furnace technology

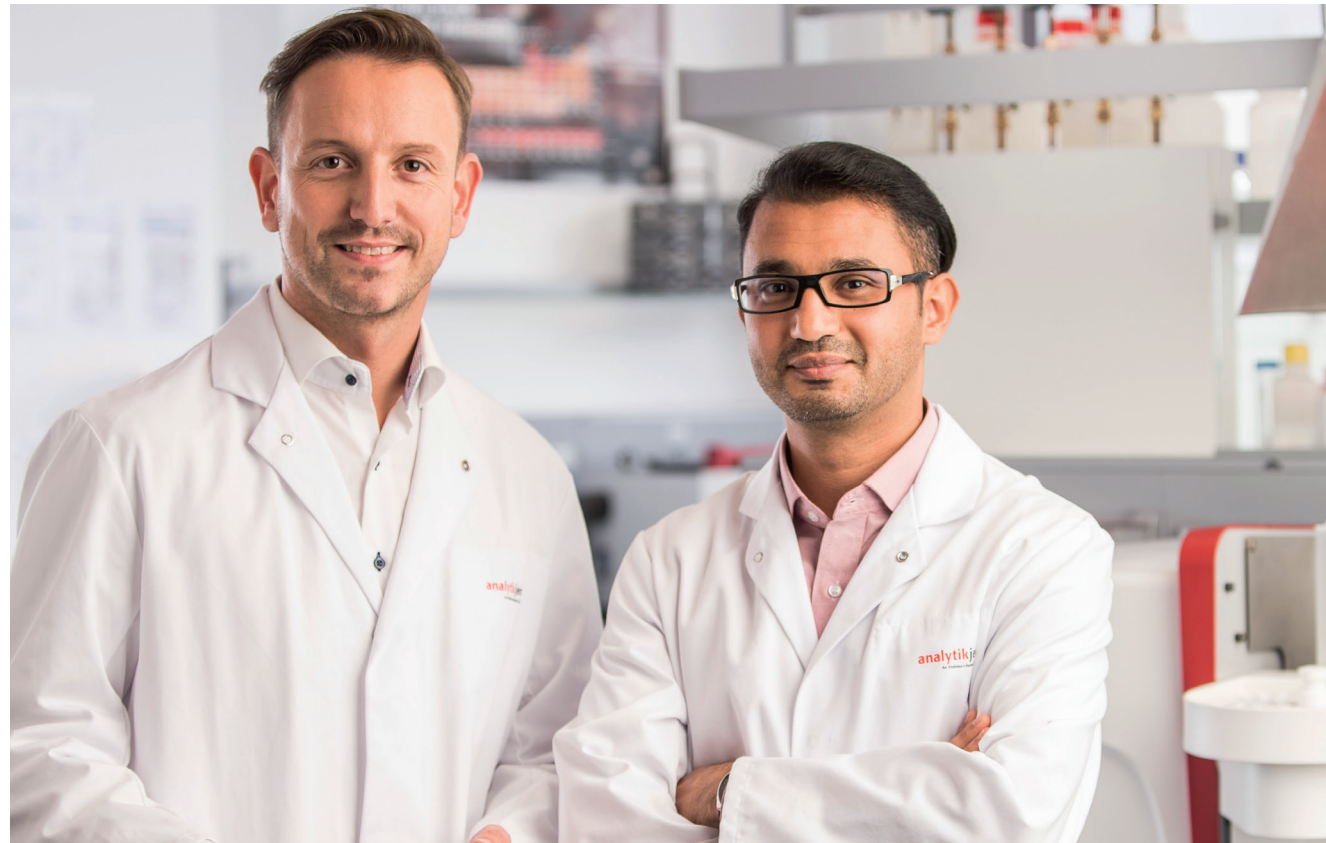


novAA 800

The routine analyzer

The routine analyzer: novAA 800

novAA 800 combines versatility, reliability and automation to be a highly efficient and cost-effective workhorse in your lab.



The novAA 800 series of atomic absorption spectrometers (AAS) covers the complete range of AAS applications from flame to graphite furnace to hydride mode. It offers fast and reliable routine analysis for moderate sample loads over a wide concentration range, while being extremely easy to handle thanks to clever technology that is made in Germany.

Reliable functionality

A rugged design guarantees both a long lifetime and excellent analytical performance through a compact base plate, protection against humidity, lightproof encapsulation, and coated reflective optics. An optional purified air purge improves operation in challenging environments and helps extend the lifetime of the optics and spectrometer.

An advantage we pass on to our customers: A standard 10-year warranty on key optical components reflects our confidence in the long-term reliability of our AAS systems.

Improved workflows

The dual atomizer concept with swivel-mounted atomizers and automatic alignment simplifies operation and saves valuable working time, while an 8-lamp changer maximizes automation and sample throughput. Integrated RFID technology supports coded lamps with automatic identification and lifetime monitoring, helping to prevent unexpected downtime and ensure reliable operation.

The novAA 800 series can be operated in single and double beam mode with deuterium background correction as well as in emission mode.

Efficient analysis

Performance-enhancing accessories increase ease of use and productivity. A range of autosamplers increase the sample throughput, while the Scraper and SFS 6.0 injection switch improve operating conditions and precision. The optional air purge kit safeguards the system against aggressive laboratory atmospheres, ensuring consistent performance and long-term reliability.

Flame technique for simple and robust routines

Fast analysis, automated dilution, reliable quality monitoring, all with uncomplicated handling, are a must in routine element analysis. The novAA 800 series surpasses expectations with clever accessories directly benefiting speed, precision, reproducibility and ease of use of the analysis.

Feature highlights:

- Autosamplers for sampling, over-range dilution and automatic preparation of standards and QC samples
- Automatic scraper enhances safety and analytical precision in N₂O-acetylene flame mode
- Segmented Flow Star, SFS 6.0, injection switch for segmented sample introduction, and continuous rinsing for improved precision and reduced sample volumes

Graphite furnace for cost-effective trace analysis

novAA 800 D comes with a transversely heated graphite furnace. Uniform temperature conditions all along the optical axis of the graphite tube guarantee optimal atomization and eliminate memory and condensation effects. Hence, the use of lower atomizing temperatures prolong tube lifetime.

Feature highlights:

- Real-time temperature control for precise atomization conditions and improved lifetime of graphite tubes
- Suitable for wall tubes and platform tubes allowing full flexibility in applications
- Integrated USB camera for straight-forward method set-up and optimization

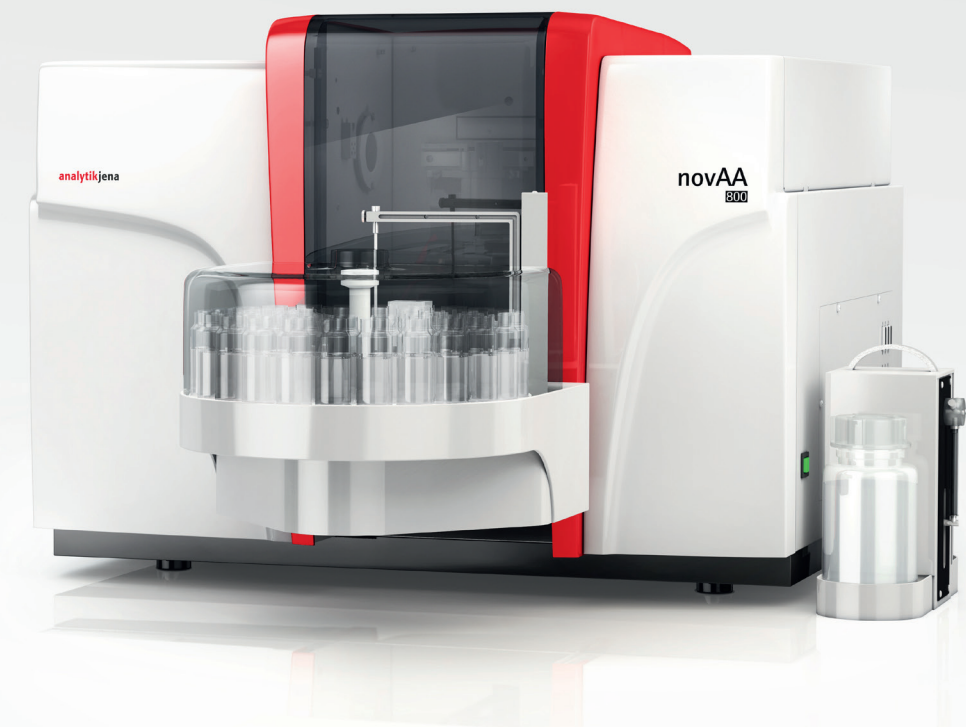
Advanced analysis of arsenic, selenium, and mercury by hydride technique

A range of modular hydride systems for the novAA 800 series allow the dedicated analysis of mercury and hydride-forming elements, including antimony, arsenic, and selenium in either flame or graphite furnace mode. Depending on your application, batch, flow or amalgamation set-up can be used. The systems support a wide range of DIN, ISO, EPA, ASTM, and other internationally established methods for cold vapor and hydride analysis.

Feature highlights:

- Improved detection limits for both flame and graphite furnace applications
- Flow and batch mode for high throughput and reliable handling of challenging matrices
- Amalgamation module for best detection limits of mercury

novAA 800 F with autosampler AS FD for flame technique



Improve the efficiency of routine analysis

Simplify sample handling, improve your precision and lower cost per sample.

Performance-enhancing accessories, such as the Segmented Flow Star (SFS 6.0) or the Scraper help you face the challenges of complex matrices in flame analysis. In graphite furnace analysis the transversely heated graphite tube design improves atomization conditions, tube change and adjusting the sampler pipetting tip, while the integrated USB furnace camera allows monitoring and optimization of atomization conditions.

Autosamplers

The autosamplers AS-F, AS-FD and AS-GF provide a unique flexibility and efficiency in routine analysis. Functions such as intelligent dilution and pre-concentration, automated dosing of modifiers, and automatic depth adjustment, combined with high-dosing precision, make unattended overnight operation a mere routine and guarantee high sample throughputs.

Sample preparation is reduced to a minimum, hence reducing cost per sample and increasing profitability. AS-FD allows fully automatic sample dilution down to a factor of 1:500 for a single dilution step.

SFS 6.0 – injection switch

The Segmented Flow Star, SFS 6.0, continuously rinses the sample introduction system and the burner head, hence allowing the segmented introduction of smallest sample volumes and reduced carryover in case of high salt and matrix content and the risk of burner head clogging.

The Scraper

The Scraper, an intelligent cleaning device for the burner head, improves routines, especially when working with the acetylene-/nitrous oxide flame. It automatically cleans the slot before each measurement and in standby mode, thus guaranteeing a continuous and reproducible measuring cycle. It further contributes to lab safety and precision of results.

Air Purge Kit

This kit provides clean, filtered air by removing dust and neutralizing corrosive laboratory atmospheres. This helps maintain reliable performance and protects the system, even under challenging operating conditions.

LPG burner head

Alternative LPG burner for reliable operation when acetylene is unavailable. While acetylene delivers optimal performance, LPG ensures continued analytical capability under challenging supply conditions.

Burner head with Scraper and lowered graphite furnace (novAA 800 D)



Simplicity meets compliance

User-friendly AAS made as easy as ABC. Software functions and modules help meet statutory requirements and standards.

ASpect LS software package

Simple, routine handling on one hand, great flexibility on the other – ASpect LS meets both requirements with perfection. The clearly laid out user interface makes method development easy and straightforward. The novAA 800 series offers solutions for fast, automated routine operation, both in absorption and emission mode. To achieve optimum results by flame technique, fuel composition and burner height can be adjusted automatically to each sample. A fully automated gas management system ensures the settings and monitoring of all gas parameters.

SOPs for easy method development

Ready-to-use SOPs are available to simplify method development. Create your own worksheet library for fast, standardized routine analyses, enabling efficient operation by users of all experience levels.

High safety precautions

As safe operation is a top priority, all safety-relevant parameters are constantly monitored and tracked by various sensors. For instance, flame ignition and automatic gas switch from air to N₂O are closely controlled to prevent harm and ensure:

- Maximum operating safety in flame mode
- Electrical operating safety
- Automatic control of all gas flows
- Unattended overnight operation in graphite furnace mode
- Seamless operation with performance-enhancing accessories, such as hydride system or the Scraper

Good laboratory practice (GLP)

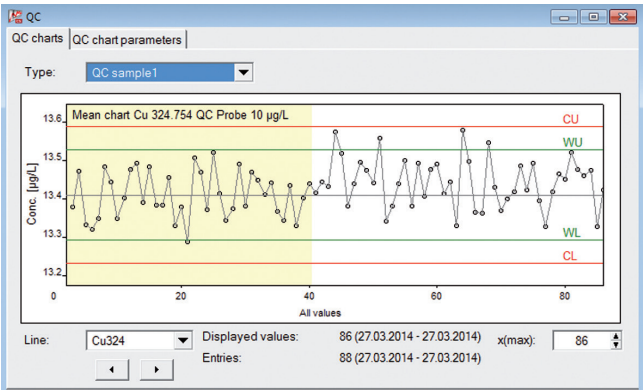
In view of today's statutory requirements, comprehensive quality assurance is a prime consideration of many labs, which is accounted for in the ASpect LS software, offering e.g.:

- Range of control charts for statistical quality control
- Alarms and notifications when defined limits are reached or exceeded
- Data recording and automatic printout from a selection of templates

FDA 21 CFR Part 11 compliance

The optional ASpect CFR module extends the ASpect LS software with advanced features to support 21 CFR Part 11 compliant workflows. Comprehensive user management, audit trails, electronic signatures, and data integrity functions help ensure traceability, security, and regulatory compliance in regulated laboratory environments.

Control chart for a QC sample regularly recorded on novAA 800 by a pharma lab



novAA 800 – partner for your requirements

Quickly set up with minimal effort, concentrations from high percentage to the µg/L (ppb) range are measured in many industries.

Food & agriculture

An accurate measurement of the elemental composition in food and agricultural products is essential to ensure product safety and to maintain adequate levels of nutritional content.

Easy to operate and highly flexible, the novAA 800 F allows fast routine analysis for diverse samples including fertilizers and grains as well as food supplements and beverages. In milk powder samples for example, typical elements such as calcium, iron, potassium, sodium, and zinc can be readily analyzed by a flame AAS routine.

Performance-enhancing accessories like the SFS 6.0 and the AS-FD autosampler make light work of difficult samples, contributing to analytical precision and a high throughput in flame mode. The SFS 6.0 improves flame conditions and sample consumption. In addition, the AS-FD is capable of calibration standard preparation and automatic over-range dilution of highly concentrated samples.

For cost-effective trace analysis of toxic metals, such as arsenic and mercury, a hydride system may be attached to the flame. It offers a flexible choice of batch or flow injection systems for optimized workflows and application versatility.

However, for laboratories with moderate sample loads interested in both the high and the low concentration ranges, the atomizer change of the novAA 800 D offers the highest degree of flexibility.



Environment

Protecting the environment requires reliable analytical data. With growing industrialization and increasing demand for natural resources, the monitoring of industrial and municipal waste, soils, surface waters, and drinking water has become more important than ever.

The determination of toxic and ecotoxic elements in sewage sludge and wastewater is a common application for flame AAS. Typical target analytes include chromium, copper, lead, nickel, and zinc.

The novAA 800 F combines ease of use, high precision, and outstanding method robustness for demanding environmental applications. Even under challenging conditions, it delivers reliable analytical results and efficient routine workflows.

Higher sample throughput and reduced manual sample preparation can be achieved with the AS-FD autosampler, featuring automatic over-range dilution and automated preparation of calibration standards.

For trace-level determination of cadmium and lead, novAA 800 D offers exceptional sensitivity. Its transversely heated graphite furnace technology provides outstanding detection limits while maintaining low operating costs.

Results for a certified wastewater (RVQ3D2) obtained by flame AAS on the novAA 800 F.

Element	Concentration [µg/L]	Certified value [µg/L]
Pb	160.3 ± 19.7	157.4 ± 8.5
Ni	374.0 ± 3.7	360.0 ± 23.76
Cu	282.1 ± 8.6	289.6 ± 17.38
Zn	277.1 ± 10.2	297.3 ± 14.87
Cr	455.6 ± 7.0	457.5 ± 24.25



novAA 800 – partner for your requirements

Quickly set-up with minimal effort, concentrations from high percentage to the µg/L (ppb) range are measured in many industries.

Geology, mining & metals

Flame atomic absorption spectrometry is a simple, robust, and cost-effective technique widely used by mining companies and smelters for the determination of base metals such as cobalt, chromium, copper, iron, manganese, nickel, and zinc, as well as precious metals including silver and gold. It covers a broad concentration range, from low mg/kg levels up to high percentage concentrations.

The novAA 800 series is specifically designed for demanding mining environments, combining ease of use with the durability required for operation in the presence of dust, sand, and corrosive atmospheres. For laboratories located directly at mining sites, the optional Air Purge Kit provides clean, filtered air that protects sensitive components and helps extend instrument lifetime under harsh environmental conditions. In regions where acetylene supply can be limited or unreliable, the optional LPG burner offers an alternative fuel source, ensuring analytical operation can continue when acetylene is unavailable.

Pre-configured SOPs and intuitive software routines simplify routine metal analysis and minimize training requirements, making operation as easy as ABC.

Most base and precious metals can be determined down to sub-mg/L concentrations using a conventional air-acetylene flame. For refractory elements such as aluminum and chromium, the system can be operated with a nitrous oxide-acetylene flame to ensure efficient atomization and reliable results. When even lower detection limits are required, the transversely heated graphite furnace technology of the novAA 800 D provides the ideal solution, delivering outstanding sensitivity for trace-level analysis.

Element	Wavelength [nm]	Flame type	LOQ ⁽²⁾ [mg/L]
Ni	232.0	C ₂ H ₂ /air	0.09
Cu	324.7	C ₂ H ₂ /air	0.012
Zn	213.9	C ₂ H ₂ /air	0.003
Cr	359.3	C ₂ H ₂ /N ₂ O ⁽¹⁾	0.153

(1) Cr as a refractory metal requires higher atomization temperatures, hence a C₂H₂/N₂O gas mixture and a 50 mm burner head may benefit the Cr analysis
(2) Limit of quantification (LOQ)



Chemicals & materials

The chemicals and materials industry is one of the largest and most diverse industrial sectors, encompassing a wide range of analytical applications. These include the analysis of raw materials, fine chemicals, packaging materials, cement, and many other products.

Reliable qualitative and quantitative elemental analysis is essential to ensure product quality, process control, and regulatory compliance. Typical applications include the determination of major constituents such as calcium, iron, magnesium, and potassium, making flame AAS a proven and widely used technique in production and quality control laboratories.

With its user-friendly design and robust performance, the novAA 800 provides reliable and reproducible measurements across a broad range of sample types and matrix compositions. The optional AS-FD autosampler further increases laboratory efficiency through automated dilution and calibration standard preparation, reducing manual sample handling and sample preparation effort.

For demanding applications involving refractory elements such as aluminum and chromium, the high-temperature N₂O-acetylene flame ensures reliable atomization and accurate results. In addition, the novAA 800 F and novAA 800 D support both absorption and emission measurements, enabling the efficient determination of elements such as sodium and potassium, even in samples with high salt content and complex matrices.



novAA 800 D for flame, hydride and graphite furnace technology

Key benefits of the novAA 800 series for your application:

- Small footprint with full flexibility thanks to flame and graphite furnace technology on one platform with Swivel-mounted atomizer interchange by hand
- Stable measurement of high and low matrix samples in absorption and emission mode
- Significant reduction of wet-chemical handling and sample/standard preparation when using autosamplers AS-FD and AS-GF
- Range of system-enhancing accessories, such as hydride systems, Air Purge Kit, Scraper and switching valve technology (SFS 6.0), for high efficiency and ease of use



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