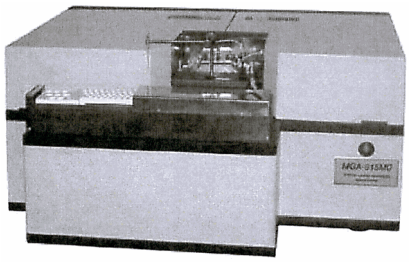



Overview **Technical specifications** **Applications**

ATOMIC ABSORPTION SPECTROMETER MGA-915MD



SHARE

The atomic absorption MGA-915MD spectrometers are intended for measuring the content of chemical elements (primarily, metals) in liquid samples (various types of water, beverages, biological liquids), as well as in other species after their mineralization (soil, bottom sediments and sewage sludge, foodstuffs, fodder and raw stuff for its production, biological tissues, and petrochemicals). These spectrometers have successfully demonstrated high performance both in running routine analyses and in scientific research.

MEASUREMENT TECHNIQUE

The MGA-915MD spectrometer employs a state-of-the-art version of the atomic absorption spectrometry with electrothermal atomization (GFAAS) and Zeeman high-frequency modulated light polarization (ZAAS HFM) correction for the nonselective absorption, which excludes the effect of interfering impurities.

BENEFITS OF THE GFAAS – ZAAS HFM TECHNIQUE

As compared to the other analytical methods, the GFAAS – ZAAS HFM technique provides the optimum ratio of the cost and labor content of measuring concentrations of various elements at the ppb (µg/l) level.

ADVANTAGES OF THE MGA-915MD SPECTROMETER

The ZAAS HFM technique implemented in the MGA-915MD spectrometer is an advanced innovation version of the conventional atomic absorption spectrometry, which, to a great extent, facilitates operation with samples having complex organic or inorganic matrix. As compared with other analytical techniques, the electrothermal atomization AAS provides optimal combination of appropriate cost and labor content of determination of many elements at ppb level.

One more additional feature of this spectrometer is the possibility of the use of high-frequency radiation sources that are, HF electrodeless discharge lamps (EDL), which emit analytical lines of much higher intensity thus providing lower detection limits and higher precision of the measurements. This results in attaining extremely low detection limits for such elements as As, Se, Sb and other elements and even using direct injection of the sample, the hydride generation technique being not needed.

Since no inflammable gases are used in the MGA-915MD spectrometer, this makes operation with it safe and substantially simplifies its installation/commissioning. This spectrometer does not call for special operating conditions and is fairly self-contained due to the use of a built-in closed-loop cooling system of the atomizer.

The MGA-915MD spectrometer is equipped with a system for automated lamp change-over and setting

Products

Capillary Electrophoresis System
Mercury Analyzer
Atomic Absorption Spectrometer
PCR Analyzer
FTIR Spectrometer
InfraLUM® FT-08
InfraLUM® FT-12
InfraLUM® WholeGrain Analyzer
Fluorometer
Industrial Mercury Monitor
Automatic Water Flow Analyzer

appropriate analytical lines. A six-lamp turret provides computer controlled switching from one element to another without manual alignment of the lamp. The use of a 55-vial autosampler makes it possible to automatically inject a prepared sample into the atomizer. The up-to-date dedicated software provides automated data acquisition and processing with subsequent report generation.

A special design of the MGA-915MD atomizer enabled a drastic decrease of the scale effect, which manifests itself in many similar spectrometers as the effect of the volume of the injected sample on the magnitude of the analytical signal. Hence, the MGA-915MD spectrometer can be used to analyze samples of various volumes. This option is very useful because the contents of target objects in real samples greatly vary.

DETECTION LIMITS

The detection limits that may be achieved with the MGA-915MD spectrometer for particular elements are listed in the table below.

The detection limits for specific samples (i.e., for natural or waste water, foodstuff, etc.) are matrix-dependable and are specified in the corresponding application notes.

Element	Wavelength, nm	Absolute detection limit, pg	Relative detection limit, µg/l (V=40 mm^3)
Ag	328.1	0.2	0.005
Al	309.3	1.5	0.038
As	194.0	4	0.1 0.0008*
Au	242.8	4	0.1
Ba*	553.6	12	0.3
Be	234.9	0.4	0.01
Bi	306.8	16	0.4
Ca	442.0	0.4	0.01
Cd	228.8	0.01	0.00025
Co	240.7	6	0.15
Cr	357.9	0.4	0.01
Cu	324.7	1	0.025
Fe	248.3	2	0.05
Hg	253.7	10	0.25 0.002*
Li*	670.8	2	0.05
Mg	285.2	0.2	0.005
Mn	279.5	1	0.025
Mo	313.3	4	0.1
Ni	232.0	4	0.1
Pb	283.3	2	0.05
Pd	244.8	4	0.1

Pt	265.9	30	0.75
Sb	231.2	4	0.1
Se	196.1	4	0.1 0.0008*
Sn	286.3	4	0.1
Sr	460.7	1.1	0.028
Ti	364.3	20	0.5
Tl	276.8	2	0.05
V	318.4	4	0.1
Zn	213.9 307.6	0.01 50	0.00025 1.25

***With RGP-915 hydride generation accessory.**

HYDRIDE GENERATION ACCESSORY "RGP-915"

The RGP-915 hydride generation accessory is used for performing analysis by Cold Vapor technique (for determination of mercury) and hydride generation technique (for determination of As, Se, Sb, Bi, Ge, Pb, Sn, Te). Due to concentrating the analytes on the surface of the graphite furnace of an MGA-915MD spectrometer, the detection limits of foregoing chemical elements can be decreased by two to three orders of magnitude.

RECOMMENDED DELIVERY SET AND TERMS OF SUPPLY

- "MGA–915MD" atomic absorption spectrometer with the autosampler and dedicated software
- Set of hollow–cathode lamps and electrodeless discharge lamps
- "RGP-915" hydride generation accessory
- Set of graphite furnaces (15 pcs included in the delivery set)
- Dispenser 5–50 ml with tips
- SRM and modifiers
- Analytical procedure manuals
- Mandatory installation/commissioning
- Personal computer

WARRANTY

All of the Lumex equipment is covered by a 12-months warranty.

SERVISE

Upon request installation and commissioning of MGA-915MD spectrometer can be carried out on Customer's site by our service engineers. Consultations and initial training of attendance personnel with due account of Customer's specific needs are performed. Spare parts are delivered and repair is made upon Customer's request (free within the warranty period).