



## DETERMINATION OF **As, Ba, Cd, Co, Cu, Fe, Mn, Ni, Pb, Sr, Zn** IN SEAWATER SAMPLES

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### INTRODUCTION

This analytical procedure is designed to measure the content of the elements (arsenic, barium, cadmium, cobalt, manganese, copper, iron, nickel, lead, strontium, and zinc) in seawater samples. Determination of the dissolved forms of the elements in samples with salinity up to 50‰ (including water from oceans and estuaries) is performed using MGA-1000 Graphite Furnace AA Spectrometer. The measurement ranges of the procedure cover all the specified maximum allowable concentration levels and provide accurate determination of the elements at the concentration levels close to natural.

Due to the advanced Zeeman background correction system of MGA-1000 the procedure does not imply laborious sample preparation and provides a simplified calibration procedure.

### MEASUREMENT METHOD

The method is based on measuring light absorption at the resonant wavelength of the element when radiation from a spectral lamp passes through the atomic vapor formed in the electrically heated graphite furnace of the spectrometer during thermal decomposition of the injected sample. The concentration of the elements is determined from the integrated absorption signal and is calculated using a preset calibration graph.

### MEASUREMENT RANGE

Measurement ranges (with dilution) are listed in the table below.

Element	Measurement range, µg/L	Element	Measurement range, µg/L
As	2.5 – 2000	Mn	5 – 2000
Ba	20 – 20000	Ni	2 – 2000
Cd	0.2 – 200	Pb	2 – 2000
Co	2 – 2000	Sr	50 – 20000
Cu	2 – 2000	Zn	5 – 2000
Fe	5 – 2000		

### EQUIPMENT AND REAGENTS

The following equipment and reagents are used for measurements:

- MGA-1000 Graphite Furnace Atomic Absorption Spectrometer
- Calibration standard solution of analyzed elements
- Bidistilled or deionized water
- Concentrated nitric acid, high purity grade
- Lanthanum nitrate, puriss. p.a.
- Magnesium matrix modifier for GFAAS
- Palladium matrix modifier for GFAAS
- Ammonium nitrate, 99.999% trace metals basis

### MEASUREMENT PROCEDURES

Sample should be filtered and acidified before analysis. An aliquot of the prepared sample is injected into the graphite furnace of the spectrometer and the measurement is made according to a selected analytical procedure for a specific element. Most of the elements need using of an appropriate matrix modifier for analysis.

Measurement data is collected and processed by the dedicated software included in the delivery set.

The contents on this paper are subject to change without notice. To get more detailed information on this method, please contact the representative by [sales@lumexinstruments.com](mailto:sales@lumexinstruments.com)