



## DETERMINATION OF INORGANIC CATIONS IN WATER SAMPLES

### INTRODUCTION

The method<sup>1</sup> is used for the determination of the mass concentration of ammonium, potassium, sodium, lithium, magnesium, strontium, barium and calcium in samples of **drinking**, **natural**, **waste waters**, and **other aqueous matrices** by capillary electrophoresis.

### MEASUREMENT METHOD

The measurement method is based on capillary zone electrophoresis with indirect UV detection at the wavelength of 267 nm.

### MEASUREMENT RANGE

The measurement ranges for the components are presented in the table below.

Cations	Measurement range, mg/L	Cations	Measurement range, mg/L
Ammonium	0.5–5000	Magnesium	0.25–2500
Barium	0.1–10.0	Potassium	0.5–5000
Calcium	0.5–5000	Sodium	0.5–5000
Lithium	0.015–2.0	Strontium	0.25–50.0

Injection of samples with sodium concentrations above 200 mg/L results in distortion of ammonium and potassium peak shapes, which, however, does not influence quantitative evaluation of their concentrations.

### EQUIPMENT AND REAGENTS

The CAPEL capillary electrophoresis system is used in measurements. Data acquisition, collection, processing, and output are performed using a personal computer running under WINDOWS® XP/7/8/10 operating system with installed dedicated software package ELFORUN.

Lumex Instruments set, order **No. 0300001763**,

Lumex Instruments kit, order **No. 0300001550** (Available in certain countries. Contact your local distributor.)

### EXAMPLES OF REAL ANALYSES

**BGE:** benzimidazole, with tartaric acid and 18-crown-6

**Capillary:**  $L_{\text{eff}}/L_{\text{tot}}$  50/60 cm, ID 75  $\mu\text{m}$

**Injection:** 150 mbar x sec

**Voltage:** 25 kV

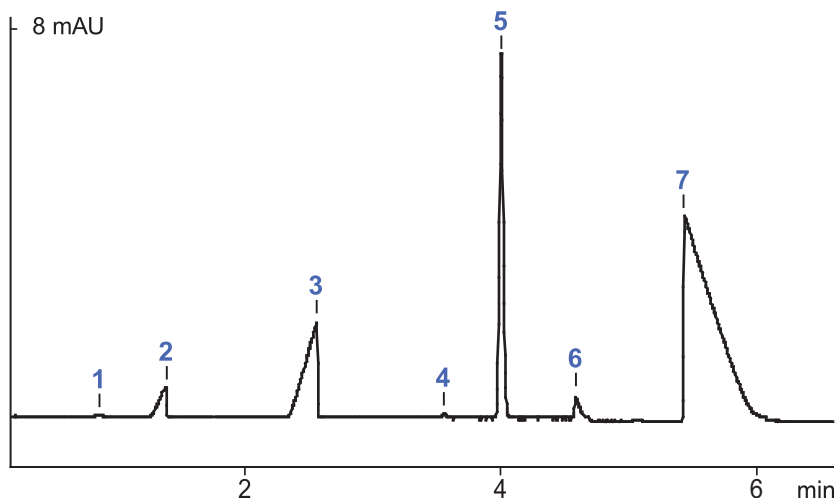
**Temperature:** 20 °C

**Detection:** 267 nm

**Sample:** natural water

#### Measurement results:

- 1 – ammonium (0.4 mg/L)
- 2 – potassium (12.7 mg/L)
- 3 – sodium (28 mg/L)
- 4 – lithium (0.1 mg/L)
- 5 – magnesium (13.7 mg/L)
- 6 – strontium (3.5 mg/L)
- 7 – calcium (93 mg/L)



The contents on this paper are subject to change without notice.

To get more specific information, please contact the representative by [sales@lumexinstruments.com](mailto:sales@lumexinstruments.com)

<sup>1</sup> Regional Standard GOST 31869-2012.