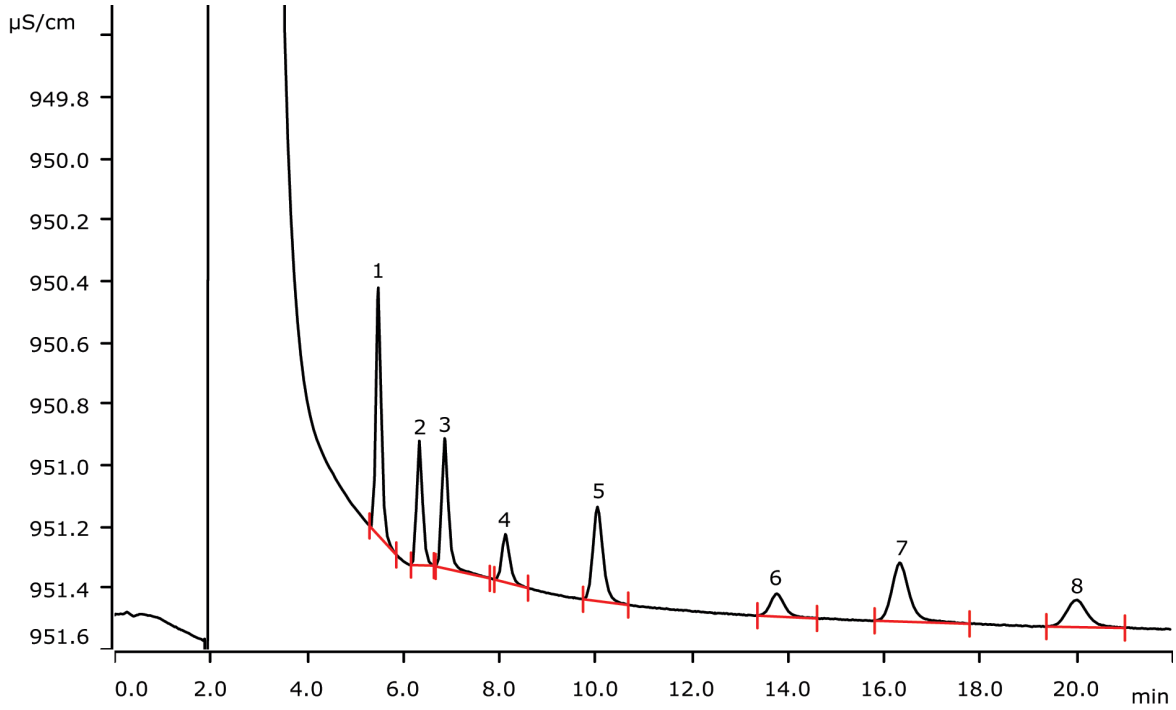
IC Application Note C–159

Trace cations on Metrosep C 4 - 250/2.0 applying Inline Preconcentration and Matrix Elimination



Intelligent Preconcentration Technique with Matrix Elimination (MiPCT-ME) is used for trace determination of the six standard cations plus zinc and diethylamine. On the microbore column Metrosep C 4 - 250/2.0, the analysis is concluded within 24 minutes. Recovery rates are better than 95%. For a preconcentration volume of 4000 µL, the software MagIC Net calculated detection limits in the low ng/L range.

Results

	Cation 0.5 µg/L	Recovery [%]	LOD [µg/L]		Cation 0.5 µg/L	Recovery [%]	LOD [µg/L]
1	Lithium	99	0.001	5	Diethylamine	99	0.007
2	Sodium	99	0.006	6	Zinc	91	0.028
3	Ammonium	100	0.005	7	Magnesium	95	0.011
4	Potassium	96	0.014	8	Calcium	93	0.024

Metrohm

Sample

0.5 µg/L QC standard

Sample preparation

Intelligent Preconcentration Techique with Matrix Elimination (MiPCT-ME).

Columns

Metrosep C 4 - 250/2.0	6.1050.230
Metrosep C 4 Guard/2.0	6.1050.600
Metrosep C PCC 1 HC/4.0	6.1010.310

Solutions

Eluent	2.5 mmol/L nitric acid 0.5 mmol/L oxalic acid

Analysis

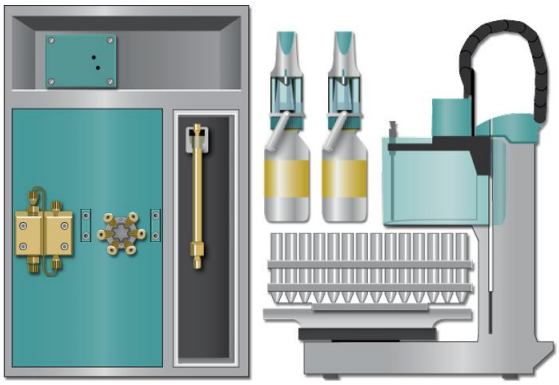
Direct conductivity detection

Parameters

Flow rate	0.3 mL/min
Injection volume (MiPCT-ME)	4000 µL
P_{max}	25 MPa
Recording time	24 min
Column temperature	45 °C

Instrumentation

940 Professional IC Vario ONE	2.940.1100
IC Conductivity Detector	2.850.9010
858 Professional Sample Processor	2.858.0010
2 x 800 Dosino	2.800.0010
IC equipment: MiPCT-ME	6.5330.160



Schematic setup