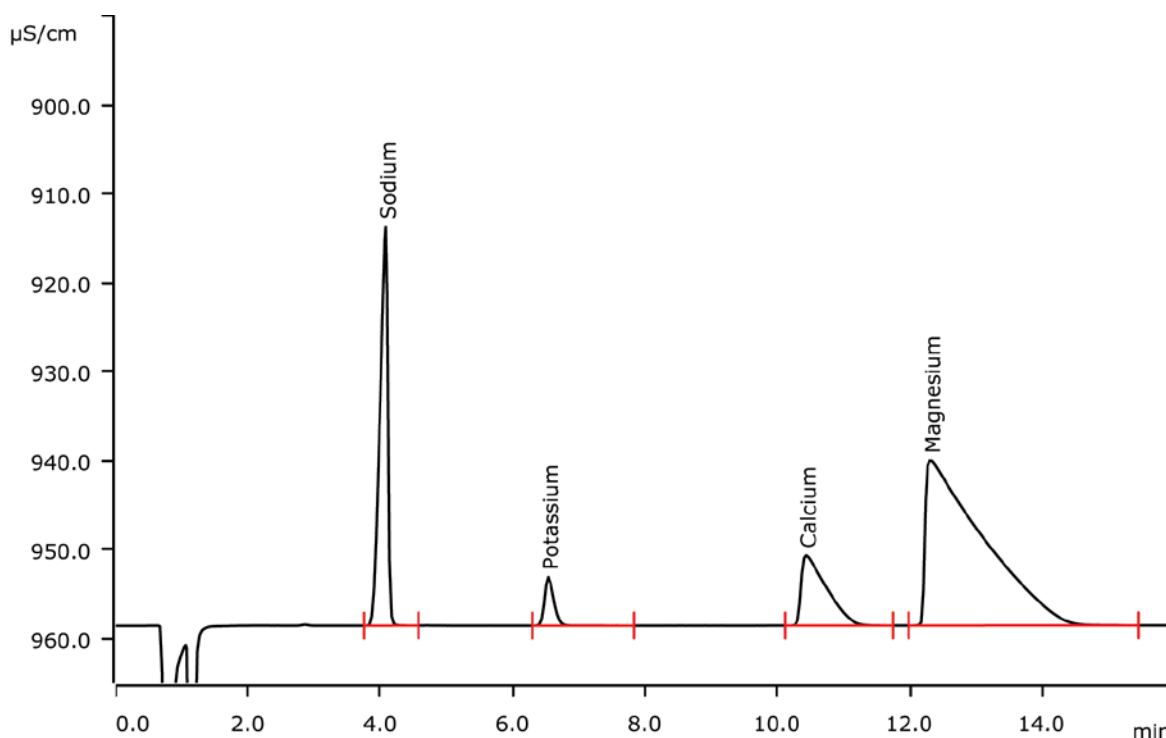


Cations in brine with minimum dilution and low-volume injection



Brine samples have to be strongly diluted to prevent column overloading. Manual dilutions are error prone. To avoid dilution errors, a 0.25- μL -internal-loop injection is applied. Therefore, no additional dilution is required. Sodium, potassium, magnesium, and calcium are determined in brine on a Metrosep C 6 - 150/4.0 column with subsequent direct conductivity detection.

Results

Cation	Concentration [g/kg]
Sodium	62.0
Potassium	12.8
Calcium	43.6
Magnesium	160.8

Sample

Solid brine

Sample preparation

50...70 g homogenized brine dissolved in 500 mL of 2 mmol/L nitric acid.

Columns

Metrosep C 6 - 150/4.0	6.1051.420
Metrosep C 4 Guard/4.0	6.1050.500

Solutions

Eluent	1.7 mmol/L nitric acid 1.7 mmol/L <u>dipicolinic acid</u>
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Analysis

Direct conductivity detection

Parameters

Flow rate	1.4 mL/min
Injection volume	0.25 μ L (internal loop)
P _{max}	20 MPa
Recording time	16 min
Column temperature	50 °C

Instrumentation

940 Professional IC Vario ONE	2.940.1100
IC Conductivity Detector	2.850.9010
858 Professional Sample Processor	2.858.0020
Injector with internal loop 0.25 μ L	6.5904.050

