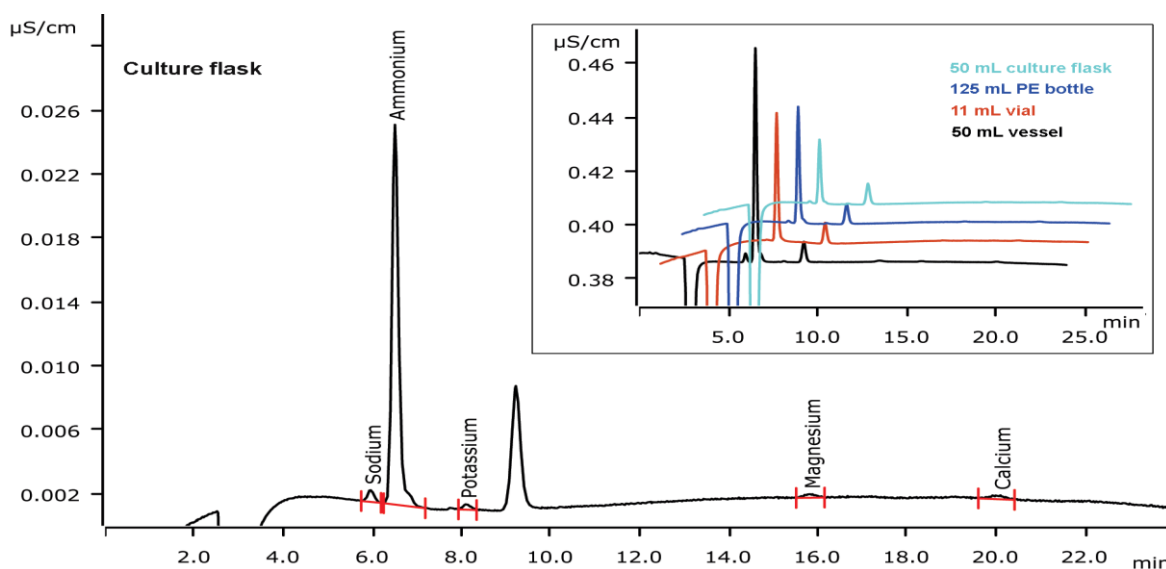


Leaching test of different vial types for trace cation analysis applying sequential suppression



Suppressed cation chromatography improves the detection limits for cations. To obtain these lower limits, the blank cation concentrations from sample vials gain high importance. The leaching test of several types of vials is performed by intelligent Preconcentration Technique with Matrix Elimination on a Metrosep C Supp 1 - 250/4.0 with conductivity after sequential suppression. The 50 mL Corning® cell culture flask (Sigma-Aldrich CLS430168) showed the lowest blank concentration.

Results

Cation \ Vial [µg/L]	50 mL vessels	11 mL vials	125 mL PE bottles	50 mL culture flask
Sodium	0.08	0.02	0.03	0.03
Ammonium	0.97	0.47	0.04	0.03
Potassium	0.03	0.03	0.04	0.03
Magnesium	0.07	0.07	0.07	0.07
Calcium	0.12	0.11	0.11	0.11

Peak at 9.2 min corresponds to Rb⁺ in the eluent

Sample

Leachates from sample vials

Sample preparation

The vials are pre-rinsed three times with ultrapure water before they are leached with ultrapure water. The leachate is injected applying Metrohm intelligent Preconcentration Technique with Matrix Elimination (MiPCT-ME).

Columns

Metrosep C Supp 1 - 250/4.0	6.1052.430
Metrosep C Supp 1 Guard/4.0	6.1052.500
Metrosep C PCC 1 HC/4.0	6.1010.310

Solutions

Eluent	4.0 mmol/L nitric acid 200 µg/L rubidium
Suppressor regenerant	70 mmol/L sodium carbonate 70 mmol/L sodium hydrogen carbonate
Rinsing solution	STREAM

Analysis

Conductivity detection after sequential suppression

Instrumentation

940 Professional IC Vario ONE/SeS	2.940.1400
IC Conductivity Detector	2.850.9010
858 Professional Sample Processor	2.858.0010
3 x 800 Dosino	2.800.0010
941 Eluent Preparation Module	2.941.0010
ELGA PURELAB® Flex 6	
MSM-HC Rotor C	6.2842.200
Coated steel needle	6.2624.200
IC equipment: MiPCT-ME	6.5330.160
IC equipment: Dosino regeneration	6.5330.190

Parameters

Flow rate	1.0 mL/min
Injection volume	2000 µL
P _{max}	15 MPa
Recording time	25 min
Column temperature	40 °C

Calibration MiPCT-ME

Calibration range	Factor of 40
Standard solution:	
All cations	40 µg/L
1. Level	4000 µL = 40 µg/L (not applied)
2. Level	1000 µL = 10 µg/L
3. Level	200 µL = 2 µg/L
4. Level	50 µL = 0.5 µg/L
5. Level	10 µL = 0.1 µg/L
6. Level	5 µL = 0.05 µg/L
7. Level	2.5 µL = 0.025 µg/L



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