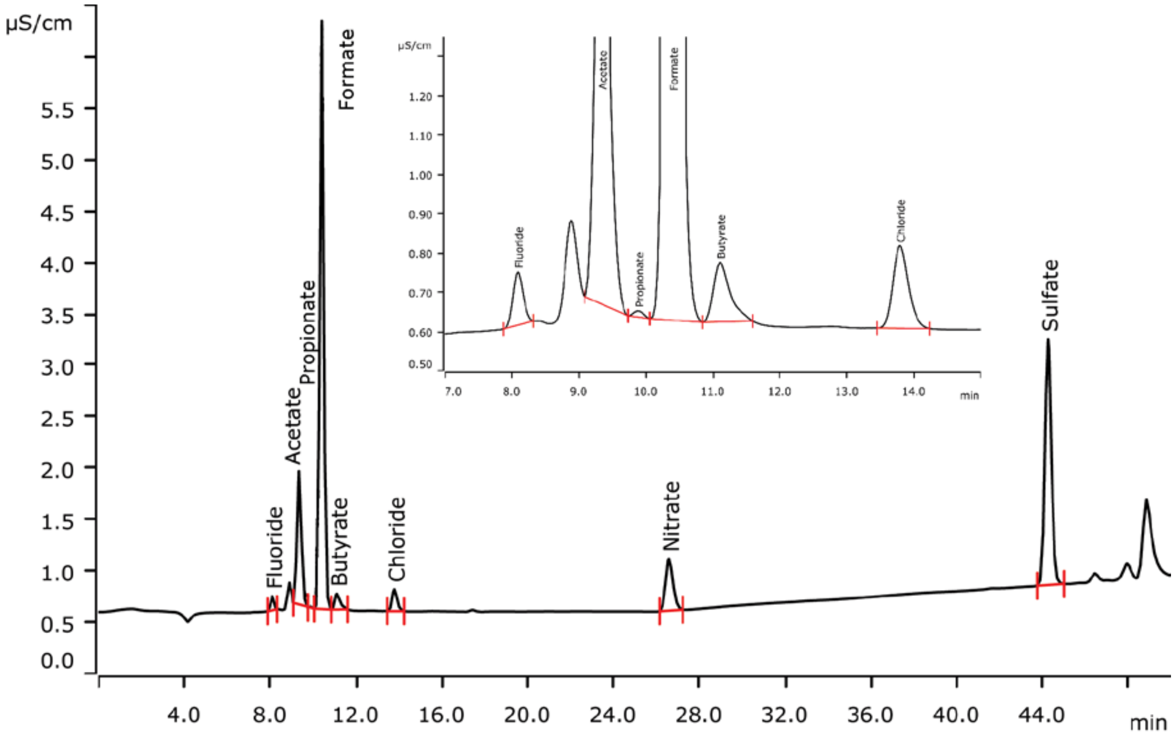
IC Application Note S–310

Short-chain organic acid anions besides standard anions applying a Dose-in Gradient and MiPuT



Formate, acetate, propionate, and butyrate besides standard anions are determined in a coal extract. To improve the separation of the early eluting organic acid anions, a Dose-in Gradient is applied. Due to the limited sample volume available, Metrohm intelligent Pick-up Technique (MiPuT) is utilized.

Results

Anion	Concentration [mg/L]	Anion	Concentration [mg/L]
Fluoride	n.q.	Butyrate	1.9
Acetate	7.1	Chloride	n.q.
Propionate	< 0.5*	Nitrate	n.q.
Formate	14.0	Sulfate	n.q.

* below calibrated concentration range

Sample

Coal extract

Sample preparation

Metrohm intelligent Pick-up Technique (MiPuT)

Columns

Metrosep A Supp 7 - 150/4.0	6.1006.620
Metrosep A Supp 4/5 Guard/4.0	6.1006.500
Metrosep I Trap 1 - 100/4.0	6.1014.200

Solutions

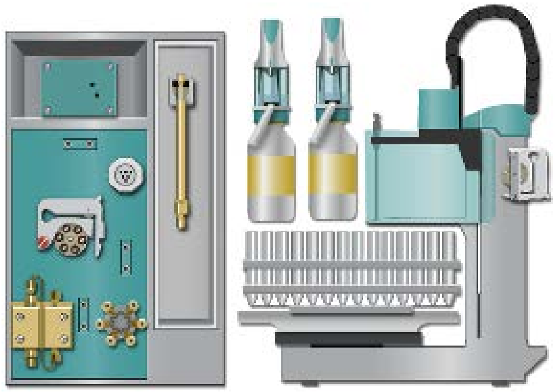
Eluent A	Ultrapure water
Eluent B	20.0 mmol/L sodium carbonate
Suppressor regenerant	100 mmol/L sulfuric acid
Rinsing solution	STREAM

Parameters

Flow rate	0.7 mL/min
Injection volume	10 µL (MiPuT)
P_{max}	15 MPa
Recording time	50 min
Column temperature	45 °C

Instrumentation

930 Compact IC Vario pro Oven/SeS/PP/Deg	2.930.2560
IC Conductivity Detector	2.850.9010
858 Professional Sample Processor	2.858.0020
IC equipment: Liquid Handling Station, left	6.5330.130
IC equipment: Dose-in Gradient	6.5330.150
IC equipment: MiPuT	6.5330.170
2 × 800 Dosino	2.800.0010
Dosing Unit 50 mL	6.3032.250
MSM Rotor A	6.2832.000
Adapter sleeve for Suppressor Vario	6.2842.020

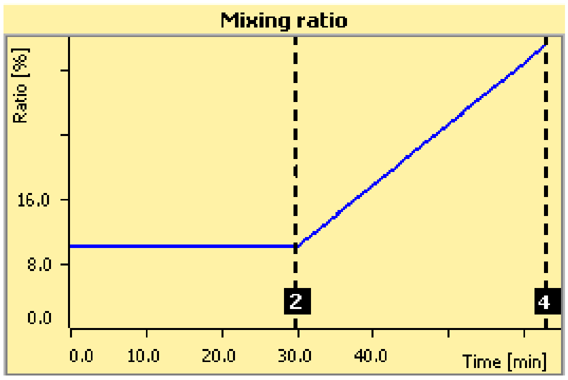


Analysis

Conductivity after Dose-in Gradient and subsequent sequential suppression

Gadient profile

Time	Ratio B [%]	Curve
Start	10.0	
10.0	10.0	Linear
63.0	35.0	Linear
63.1	10.0	Linear



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