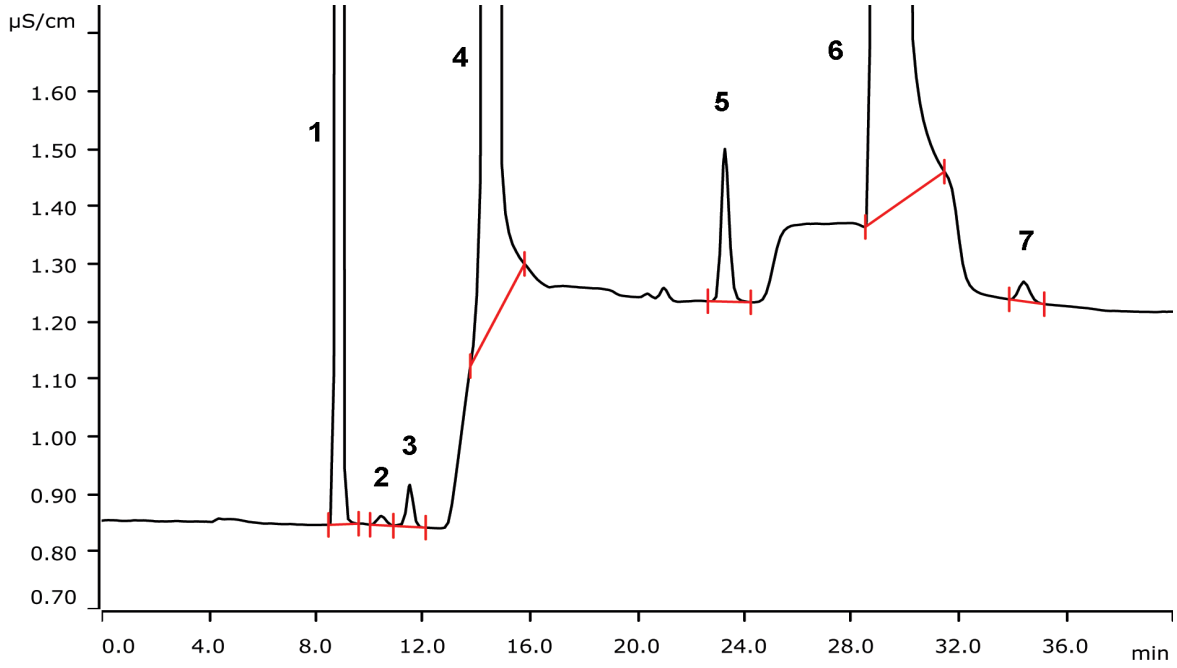
IC Application Note S–340

Trace organic acids besides standard anions applying a Dose-in Gradient



Trace organic acids besides high concentrations of standard anions are difficult to analyze because the peaks of the acids disappear under those of the standard ions. A simple Dose-in Gradient ensures baseline separation of acetate, formate, and fluoride. Similarly, oxalate elutes well after sulfate. Separation is performed on a Metrosep A Supp 7 - 250/4.0 column with subsequent conductivity detection after sequential suppression.

Results

	Anion	Concentration [µg/L]
2	Acetate	48
3	Formate	125
7	Oxalate	105

Peaks 1, 4, 5, and 6 correspond to fluoride, chloride, nitrate, and sulfate, respectively (not quantified)

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Sample

Water treatment samples

Sample preparation

Direct injection

Columns

Metrosep A Supp 7 - 250/4.0	6.1006.630
Metrosep A Supp 4/5 Guard/4.0	6.1006.500

Solutions

Eluent A	1.6 mmol/L sodium carbonate 0.5 mmol/L sodium hydrogen carbonate
Eluent B	6.4 mmol/L sodium carbonate 2.0 mmol/L sodium hydrogen carbonate
Suppressor regenerant (Dosino regeneration)	500 mmol/L sulfuric acid
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	2.858.0020
2 x 800 Dosino	2.800.0010
MSM Rotor A	6.2832.000
Adaptor sleeve for Suppressor Vario	6.2842.020
IC equipment: Dose-in Gradient anions	6.5330.150
IC equipment: Dosino Regeneration	6.5330.190

Parameters

Flow rate	0.7 mL/min
Injection volume	20 µL
P_{max}	15 MPa
Recording time	40 min
Column temperature	45 °C

Gradient

	Time [min]	Ratio [%]	Curve
1	Start	0.0	
2	10.0	0.0	Linear
▶ 3	10.1	60.0	Step
4	50.0	60.0	Linear
5	50.1	0.0	Step
6	60.0	0.0	Linear
7			

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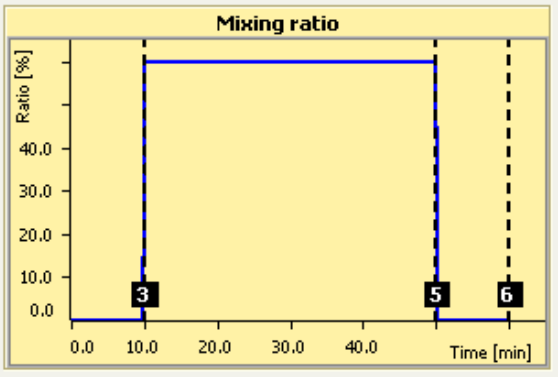

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