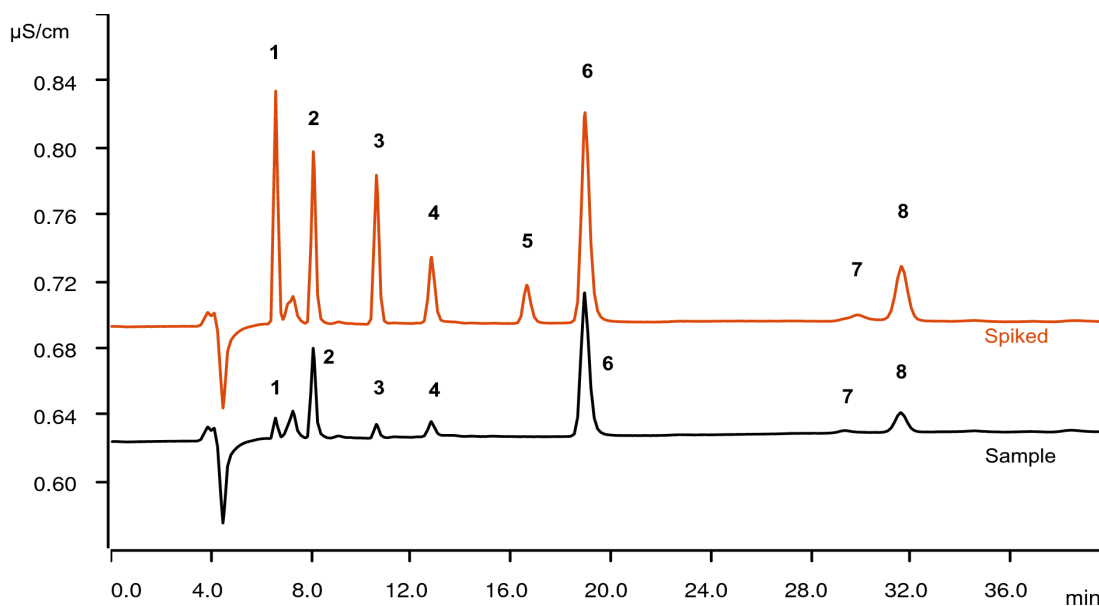


Anions in diesel applying advanced Inline Matrix Elimination

Chloride, nitrate, and sulfate in diesel with Inline Matrix Elimination applying automatic dual solvent rinsing.



Chromatograms (with offset) of an unspiked (black) and a spiked (red) diesel sample diluted 1:1 in isopropanol

Anions in diesel, especially biodiesel, may cause harmful deposits in the engine. Determination with ion chromatography requires the transfer of the diesel anions into an aqueous solution, injectable to the IC. A typical method to transfer the anions into water is via Inline Extraction with subsequent Inline Dialysis prior to the injection (see AN-C-101 for a respective analysis of cations). In the actual Matrix Elimination method, diesel diluted with isopropanol is injected into an isopropanol stream and passed through a preconcentration column. Isopropanol washes off the diesel, and a subsequent rinsing step with ultrapure water removes excess isopropanol.

Results

Anion	Conc. direct [mg/L]	Conc. spiked [mg/L]	Recovery [%]
3 Chloride	0.009	0.103	94
6 Nitrate	0.350	0.510	113
8 Sulfate	0.051	0.140	93

Not quantified: fluoride (1), acetate (2), nitrite (4), bromide (5), phosphate (6)

Sample

Diesel fuel.

Sample preparation

The sample is diluted 1:1 with isopropanol and subsequently injected after Inline Matrix Elimination.

Columns

Metrosep A Supp 7 - 250/4.6	6.1006.630
Metrosep A Supp 4 Guard/4.0	6.01021.500
Metrosep A PCC 2/4.0	6.1006.330
Metrosep I Trap 1 - 100/4.0	6.1014.200

Instrumentation

930 Compact IC Flex Oven/SeS/Deg	2.930.2560
IC Conductivity Detector	2.850.9010
858 Professional Sample Processor	2.858.0030
2 x 800 Dosino	2.800.0010
MSM-HC Rotor A	6.2842.000
IC equipment: MiPuT	6.5330.170
2 x Dosing Unit 5 mL	6.3032.150
Magnetic Stirrer	2.741.0010

Solutions

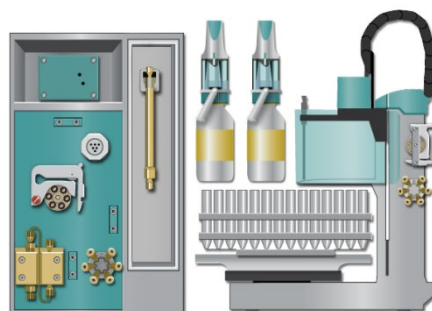
Eluent	3.6 mmol/L sodium carbonate
Regenerant	100 mmol/L sulfuric acid
Suppressor rinsing	STREAM
Transfer solution 1	Ultrapure water
Transfer solution 2	Isopropanol

Parameters

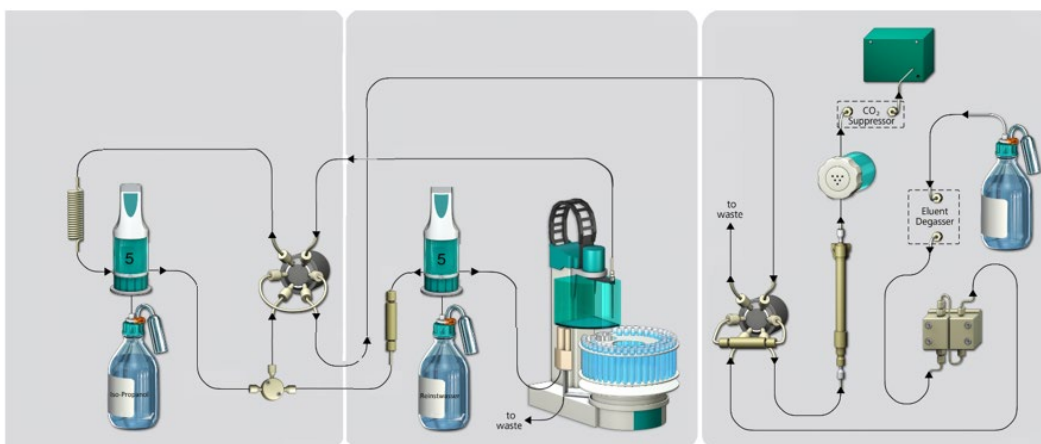
Flow rate	0.7 mL/min
Injection volume	20 μ L
P _{max}	15 MPa
Column temperature	35 °C
Recording time	40 min

Analysis

Conductivity after sequential suppression



System Setup



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