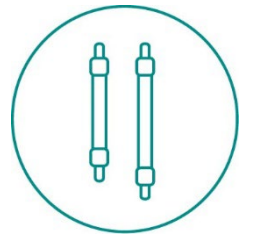




News aus dem Bereich Säulen

Anwenderforum Schweiz 2024

Nadine Seifert
Sr. Product Specialist IC





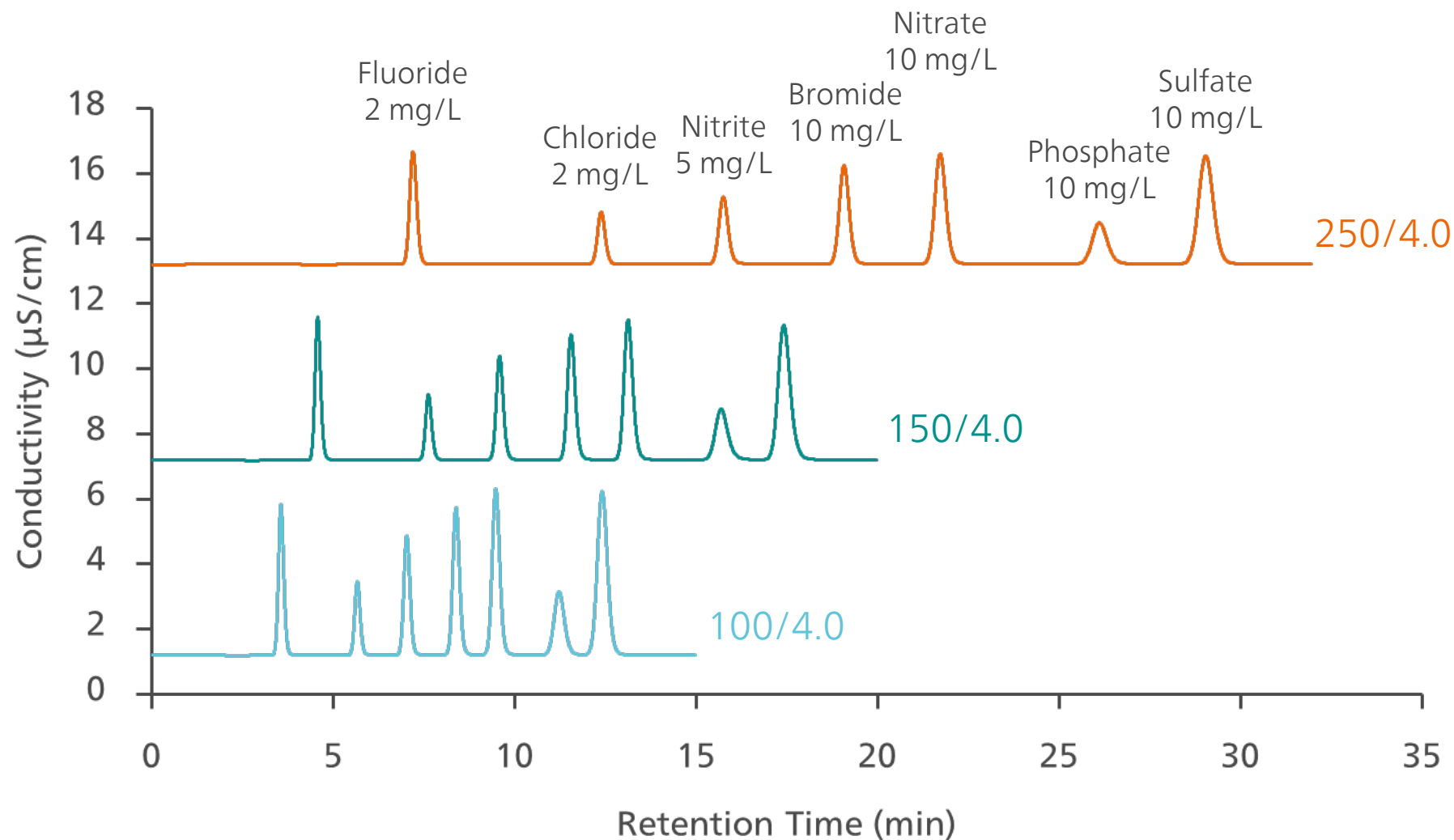
Metrosep A Supp 19

Setting a new standard
in column performance



Metrosep A Supp 19

Standard conditions



Metrosep A Supp 19 - xxx/4.0

Eluent 8.0 mmol/L Na_2CO_3
0.25 mmol/L NaHCO_3

Flow Eluent 0.7 mL/min

Temp 25 °C

Injection 20 μL

Suppression Sequential with
MSM A rotor

Detection Conductivity

Sample Standard anions

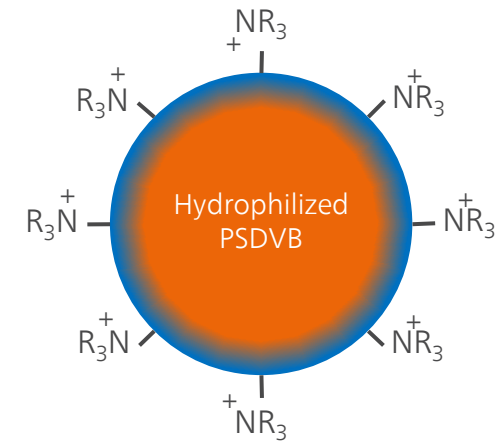
Metrosep A Supp 19

Summary



Technical information	
Substrate	Hydrophilized Polystyrene-divinylbenzene copolymer with quaternary ammonium groups
Particle size	4.6 μm
Capacity	234 μmol chloride
Standard eluent	8.0 mmol/L Na_2CO_3 , 0.25 mmol/L NaHCO_3
Standard flow	0.7 mL/min
Maximum flow	100/4.0: 1.30 mL/min 150/4.0: 1.20 mL/min 250/4.0: 1.00 mL/min
Standard temperature	25 $^\circ\text{C}$
Temperature range	10–70 $^\circ\text{C}$
Typical pressure	100/4.0: 11 MPa 150/4.0: 14 MPa 250/4.0: 18 MPa
Maximum pressure	25 MPa (Except 100/4.0: 20 MPa)
pH range	0–14
Organic modifiers	0–100 % Acetone, Acetonitrile, Methanol

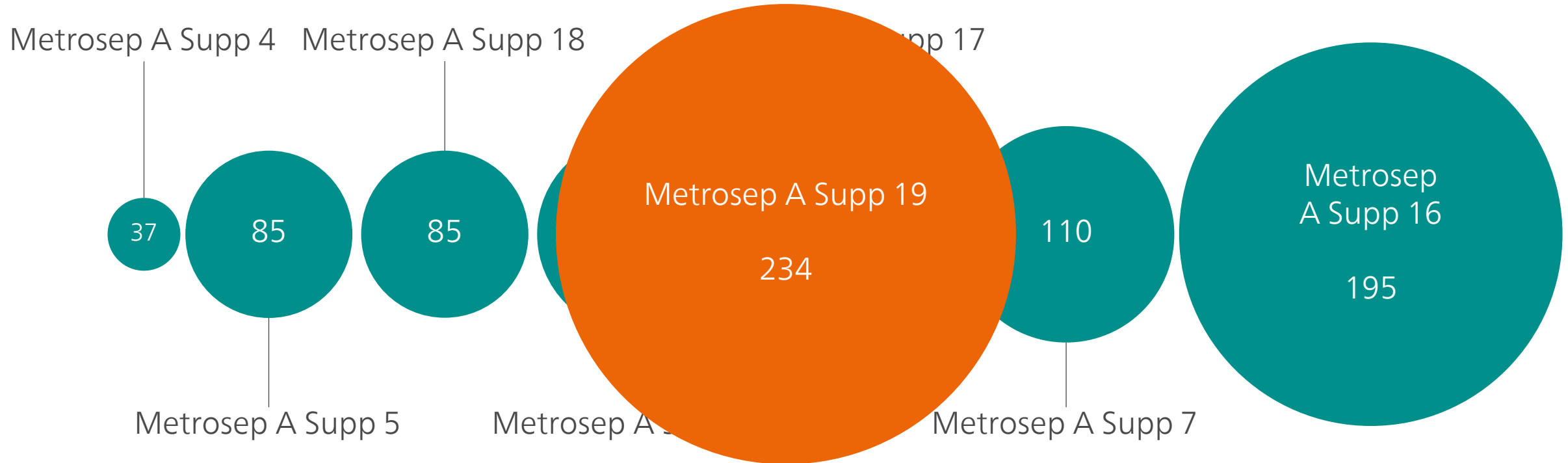
Com



- Metrosep A Supp 19
- + separation capability
- + peak shape
- + capacity
- + resolution
- + mechanical & pH stability

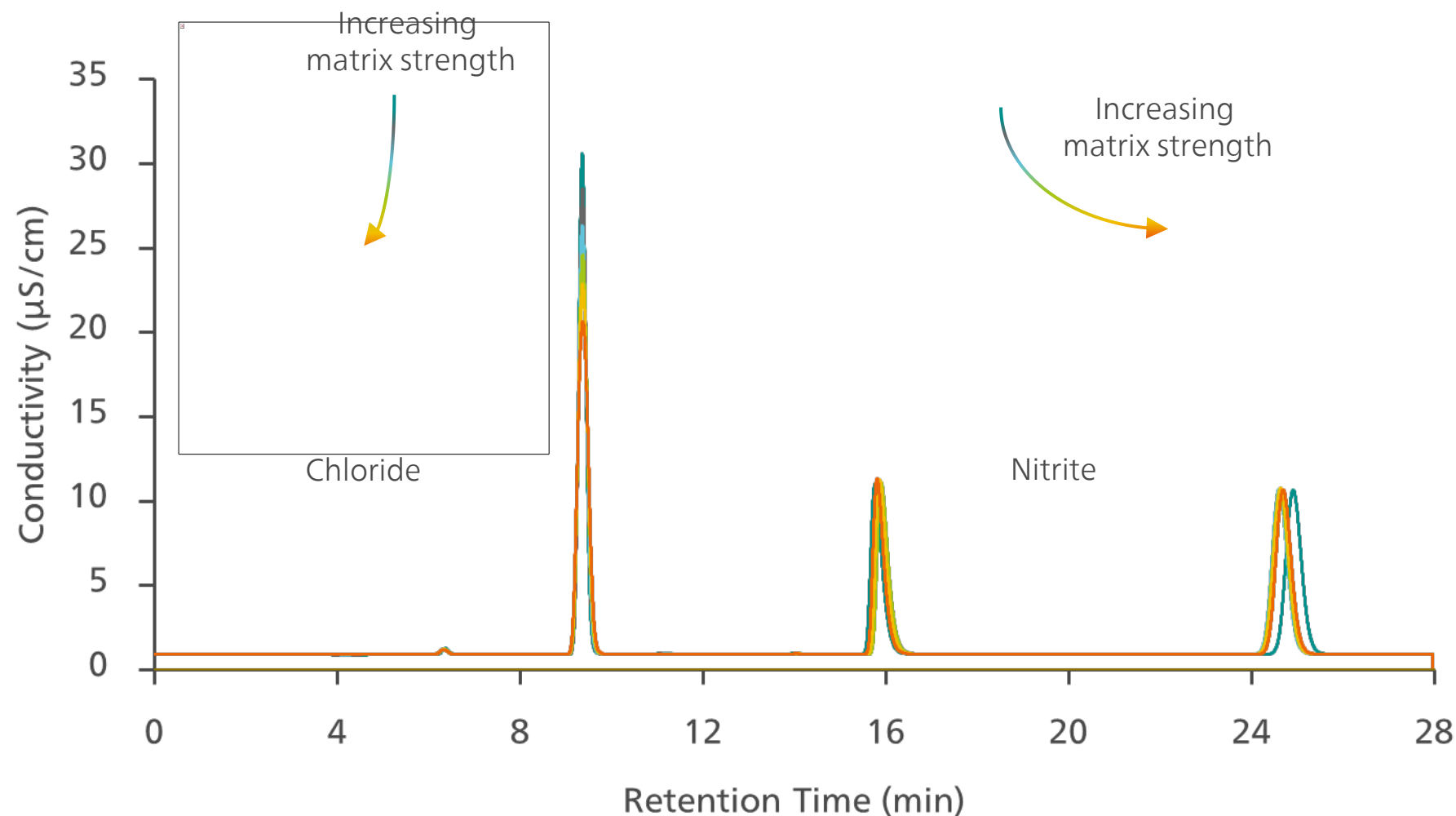


Column capacity ($\mu\text{mol Cl}$)



Carbonate sample matrices

A known issue of the Metrosep A Supp 5 - 250/4.0



Metrosep A Supp 5 - 250/4.0

Eluent 3.2 mmol/L Na_2CO_3
1.0 mmol/L NaHCO_3

Flow Eluent 0.7 mL/min

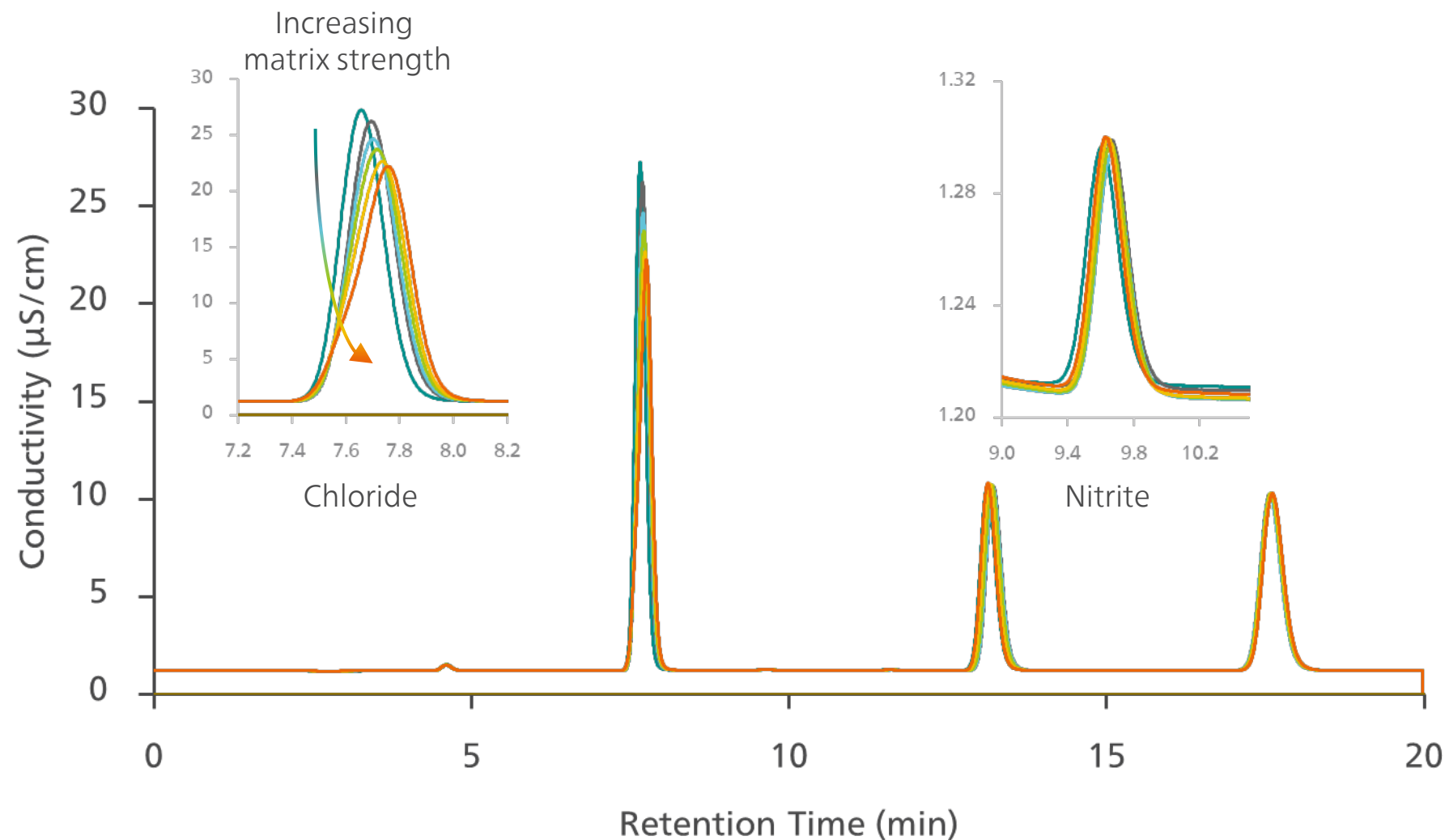
Temp 30 °C

Injection 40 μL

Sample 10 mg/L chloride,
nitrate, sulfate
100 $\mu\text{g}/\text{L}$ fluoride,
nitrite, bromate,
phosphate
0-500 mg/L NaHCO_3

Carbonate sample matrices

Child's play for the Metrosep A Supp 19 - 150/4.0



Metrosep A Supp 19 - 150/4.0

Eluent 8.0 mmol/L Na_2CO_3
0.25 mmol/L NaHCO_3

Flow Eluent 0.7 mL/min

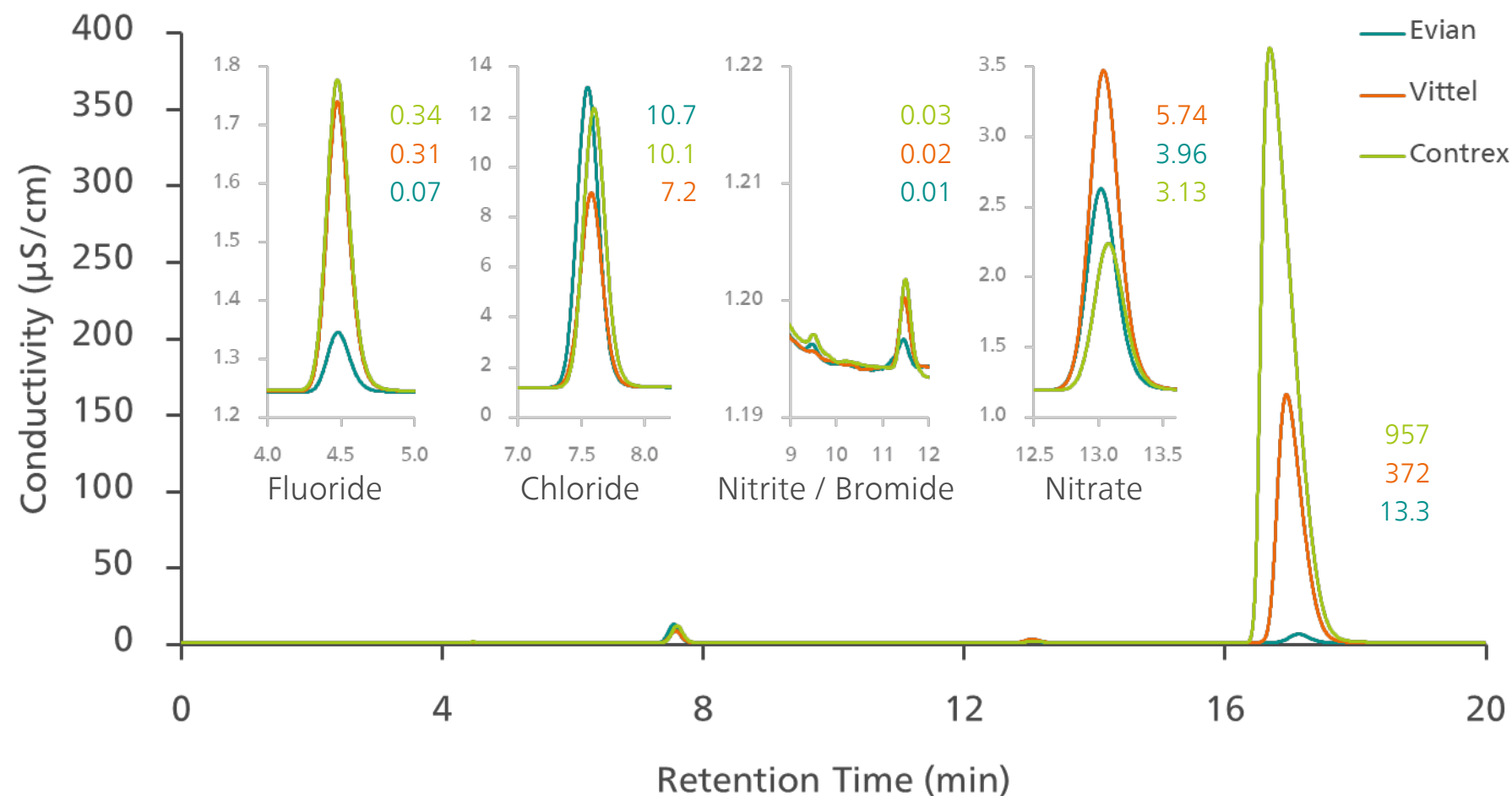
Temp 25 °C

Injection 40 μL

Sample 10 mg/L chloride,
nitrate, sulfate
100 $\mu\text{g}/\text{L}$ fluoride,
nitrite, bromate,
phosphate
0-500 mg/L NaHCO_3

Mineral waters

A simple task for the Metrosep A Supp 19 - 150/4.0



Metrosep A Supp 19 - 150/4.0

Eluent 8.0 mmol/L Na_2CO_3
0.25 mmol/L NaHCO_3

Flow Eluent 0.7 mL/min

Temp 25 °C

Injection 20 μL

Suppression Sequential with
MSM A rotor

Detection Conductivity

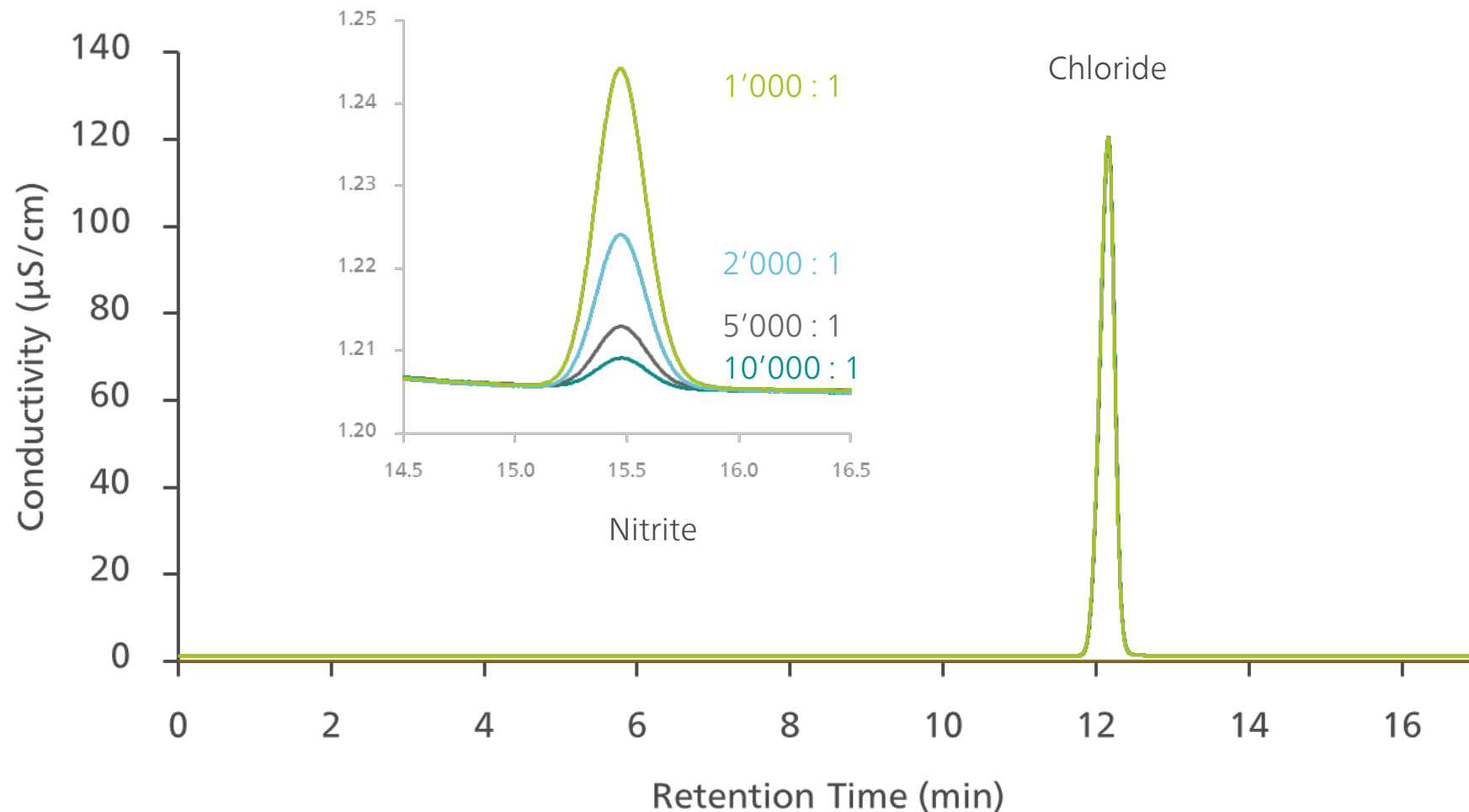
Sample Evian, Contrex, Vittel

Environmental samples

Baseline separation on the Metrosep A Supp 19 - 250/4.0

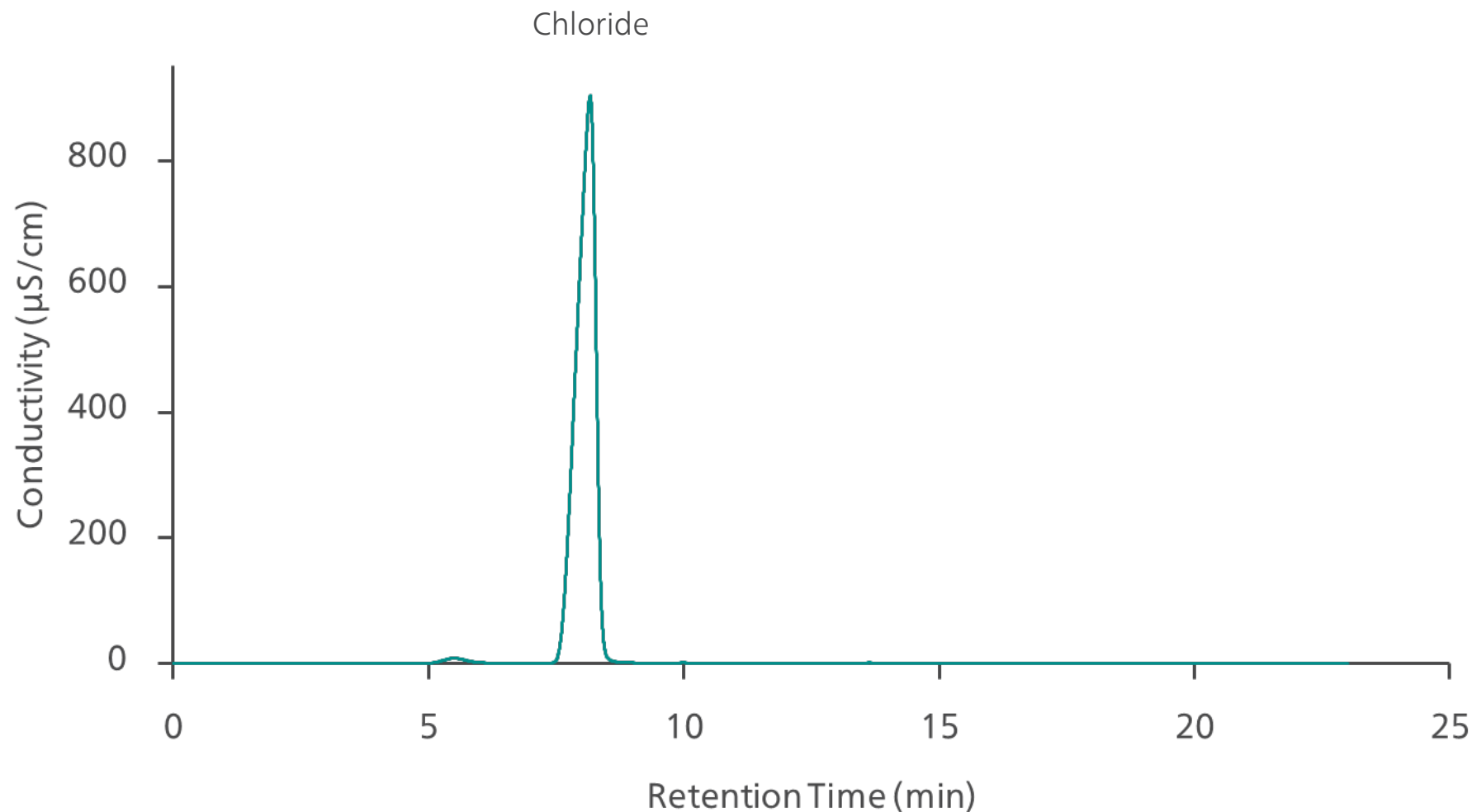


Metrosep A Supp 19 - 250/4.0	
Eluent	8.0 mmol/L Na ₂ CO ₃ 0.25 mmol/L NaHCO ₃
Flow Eluent	0.7 mL/min
Temp	25 °C
Injection	20 µL
Sample	100 mg/L chloride 10-100 µg/L nitrite



Hemodialysis samples

High chloride content – no issue for this column!



Metrosep A Supp 19 - 150/4.0

Eluent 8.0 mmol/L Na₂CO₃
0.25 mmol/L NaHCO₃

Flow Eluent 0.7 mL/min

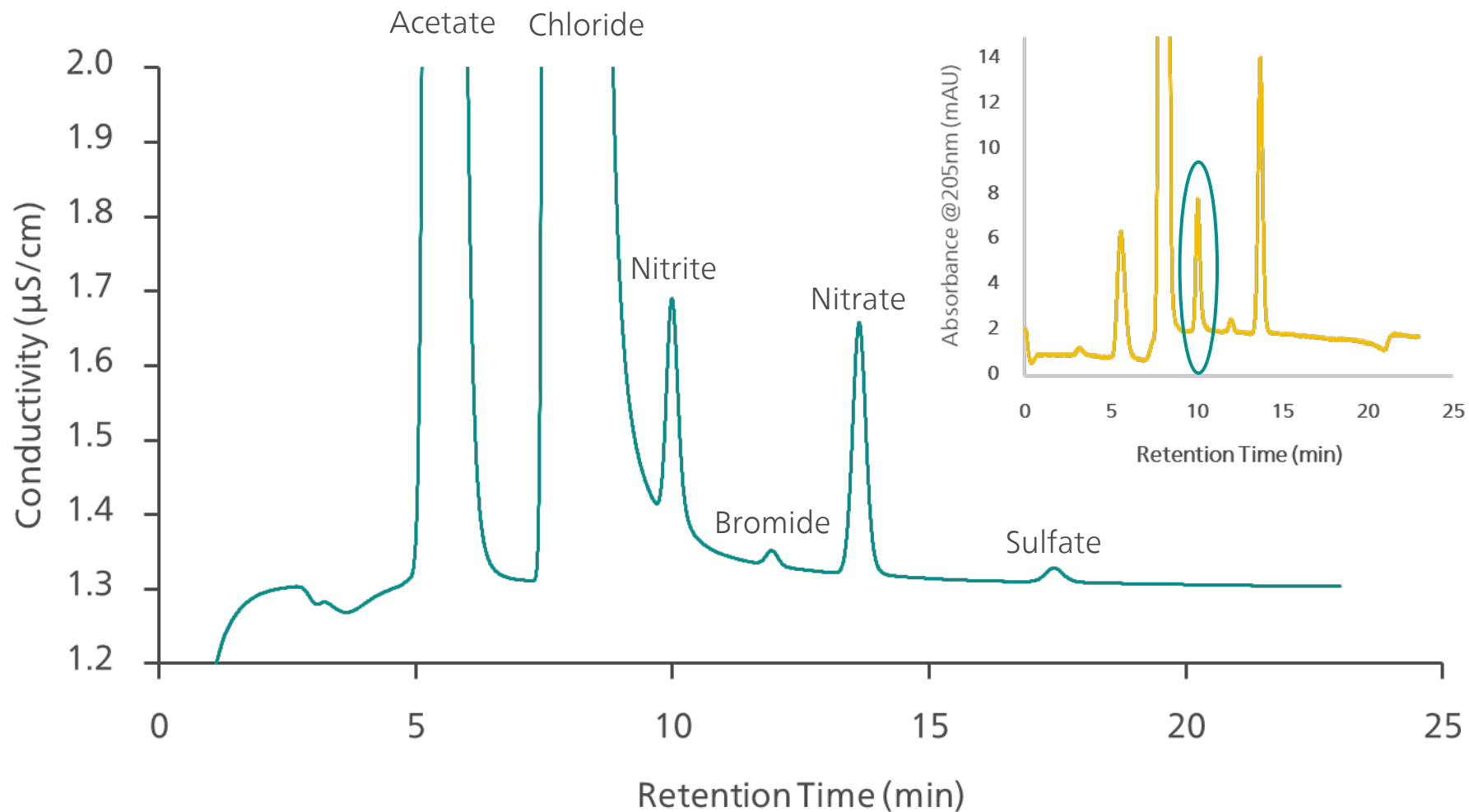
Temp 30 °C

Injection 100 µL

Sample 280 mg/L chloride
200 µg/L nitrite
(1:500 dilution)

Hemodialysis samples

High chloride content – no issue for this column!

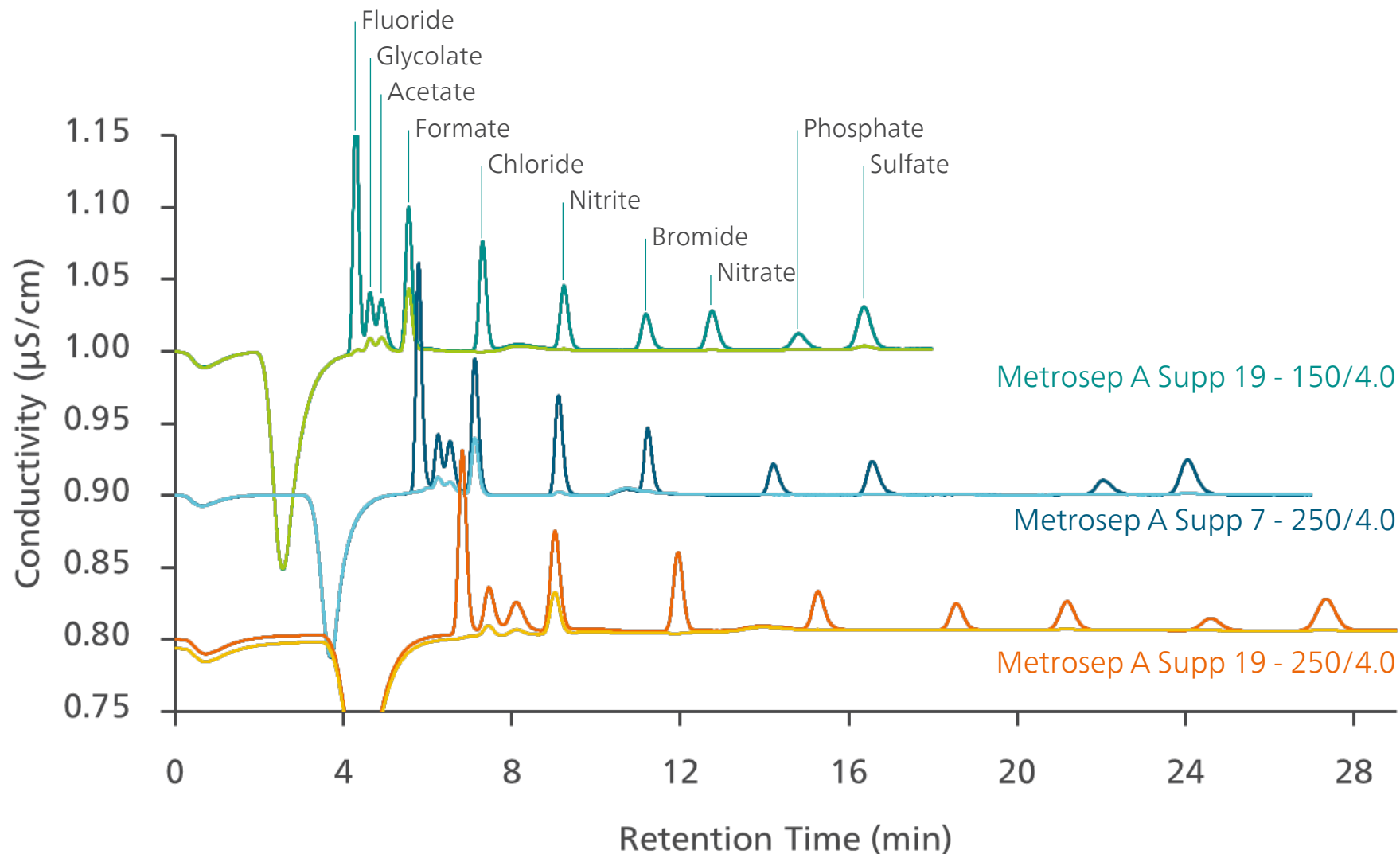


Metrosep A Supp 19 - 150/4.0

Eluent	8.0 mmol/L Na ₂ CO ₃ 0.25 mmol/L NaHCO ₃
Flow Eluent	0.7 mL/min
Temp	30 °C
Injection	100 µL
Sample	280 mg/L chloride 200 µg/L nitrite (1:500 dilution)

Power plants, secondary cycle

New possibilities with the Metrosep A Supp 19



Metrosep A Supp 19 - x50/4.0

Eluent 8.0 mmol/L Na_2CO_3
0.25 mmol/L NaHCO_3

Flow Eluent 0.75 mL/min

Temp 30 °C

Injection 1000 μL (MiPCT-ME)

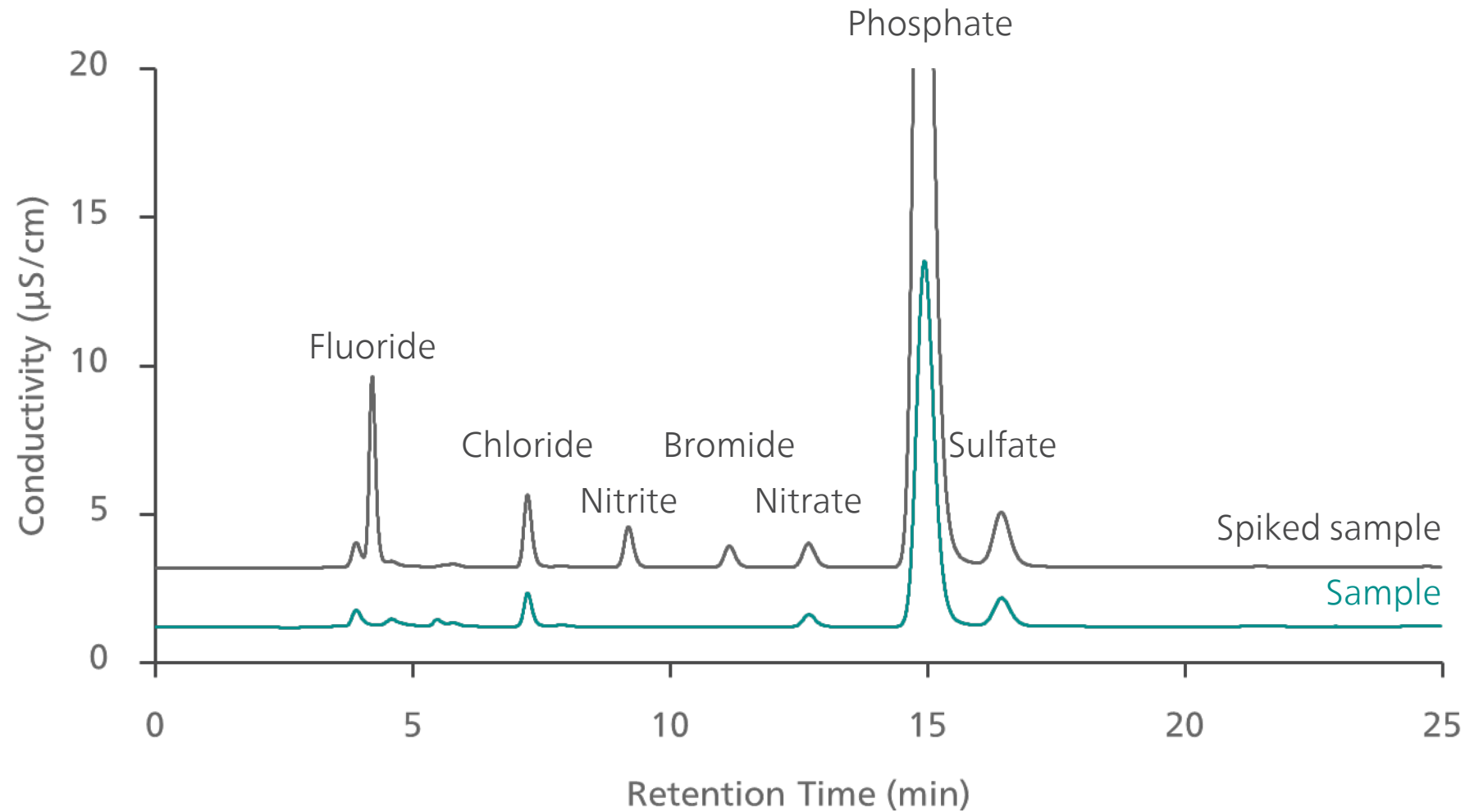
Sample Standard anions & glycolate, acetate, formate (2 $\mu\text{g}/\text{L}$) in 4 mg/L ETA
0.4 mg/L NH_3

Food and beverage

Coke

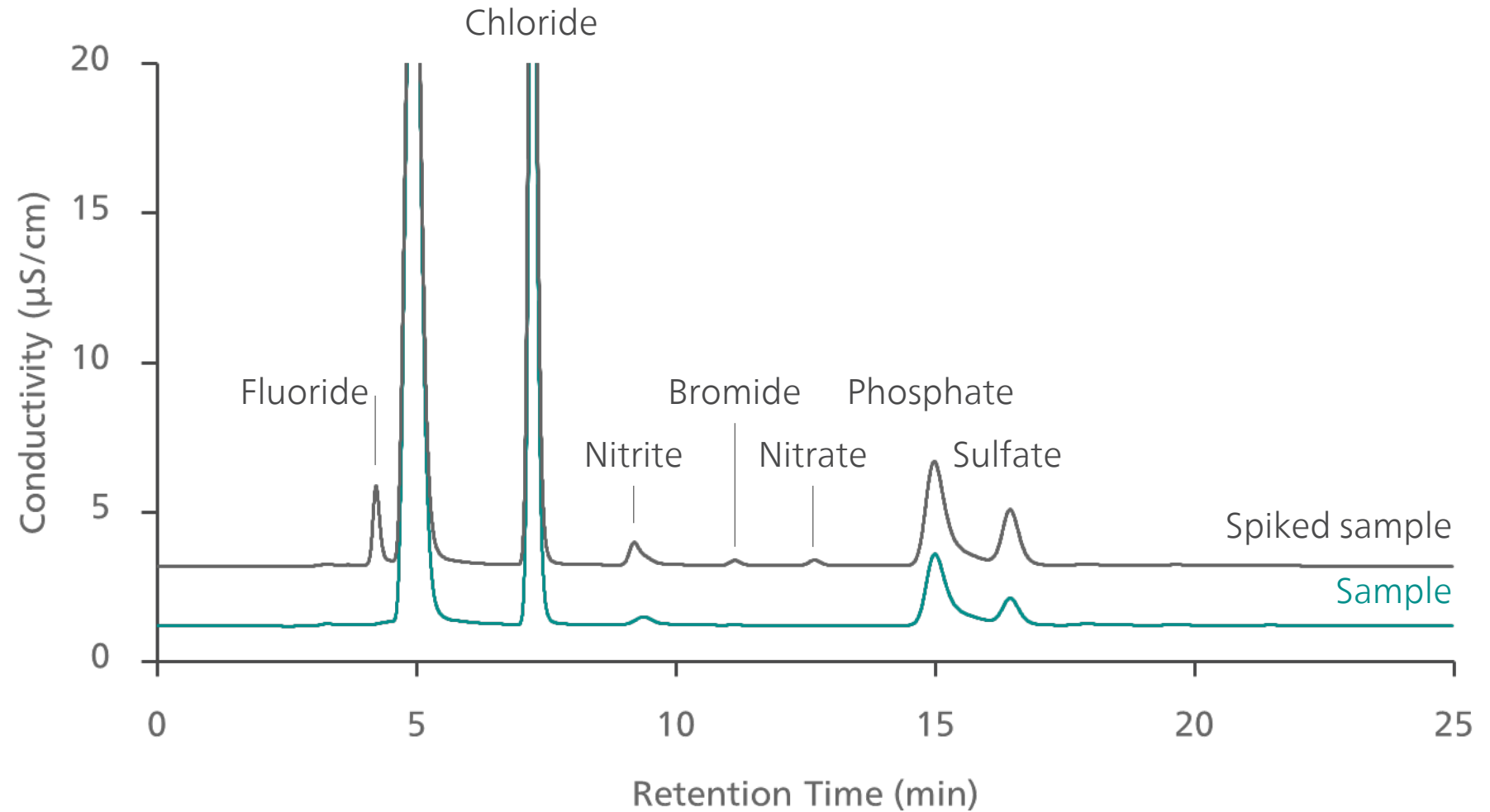


Metrosep A Supp 19 - 150/4.0	
Eluent	8.0 mmol/L Na ₂ CO ₃ 0.25 mmol/L NaHCO ₃
Flow Eluent	0.75 mL/min
Temp	30 °C
Injection	20 µL
Dilution	1:10
Sample	Coca Cola



Food and beverage

Low lactose milk

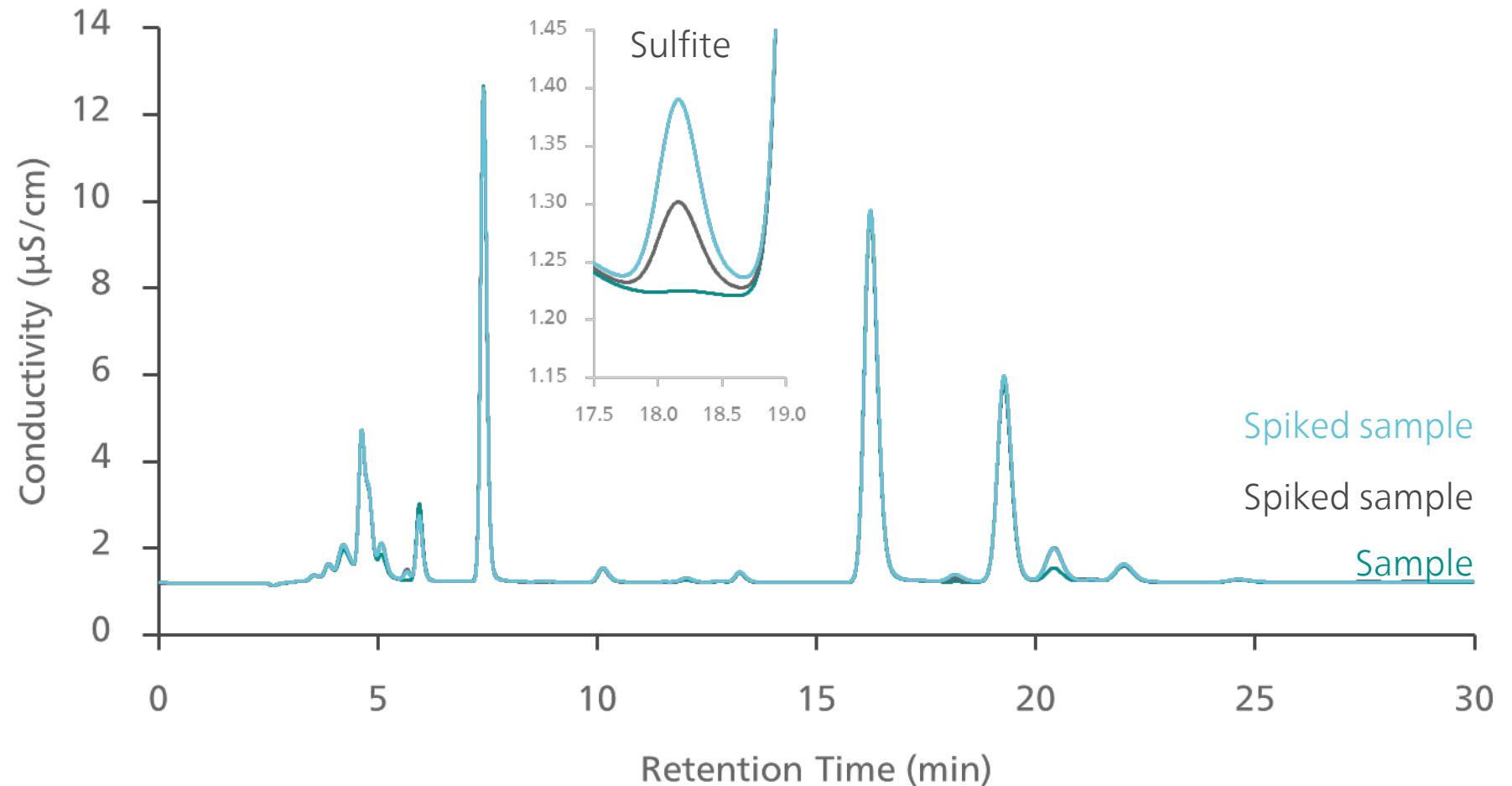


Metrosep A Supp 19 - 150/4.0

Eluent	8.0 mmol/L Na_2CO_3 0.25 mmol/L NaHCO_3
Flow Eluent	0.75 mL/min
Temp	30 °C
Injection	20 μL
Dilution	1:50
Sample	Low lactose milk

Food and beverage - Sulfite

Beer



Metrosep A Supp 19 - 150/4.0 +
Metrosep A Supp 10 HC Guard/4.0

Eluent 8.0 mmol/L Na_2CO_3
0.25 mmol/L NaHCO_3

Flow Eluent 0.75 mL/min

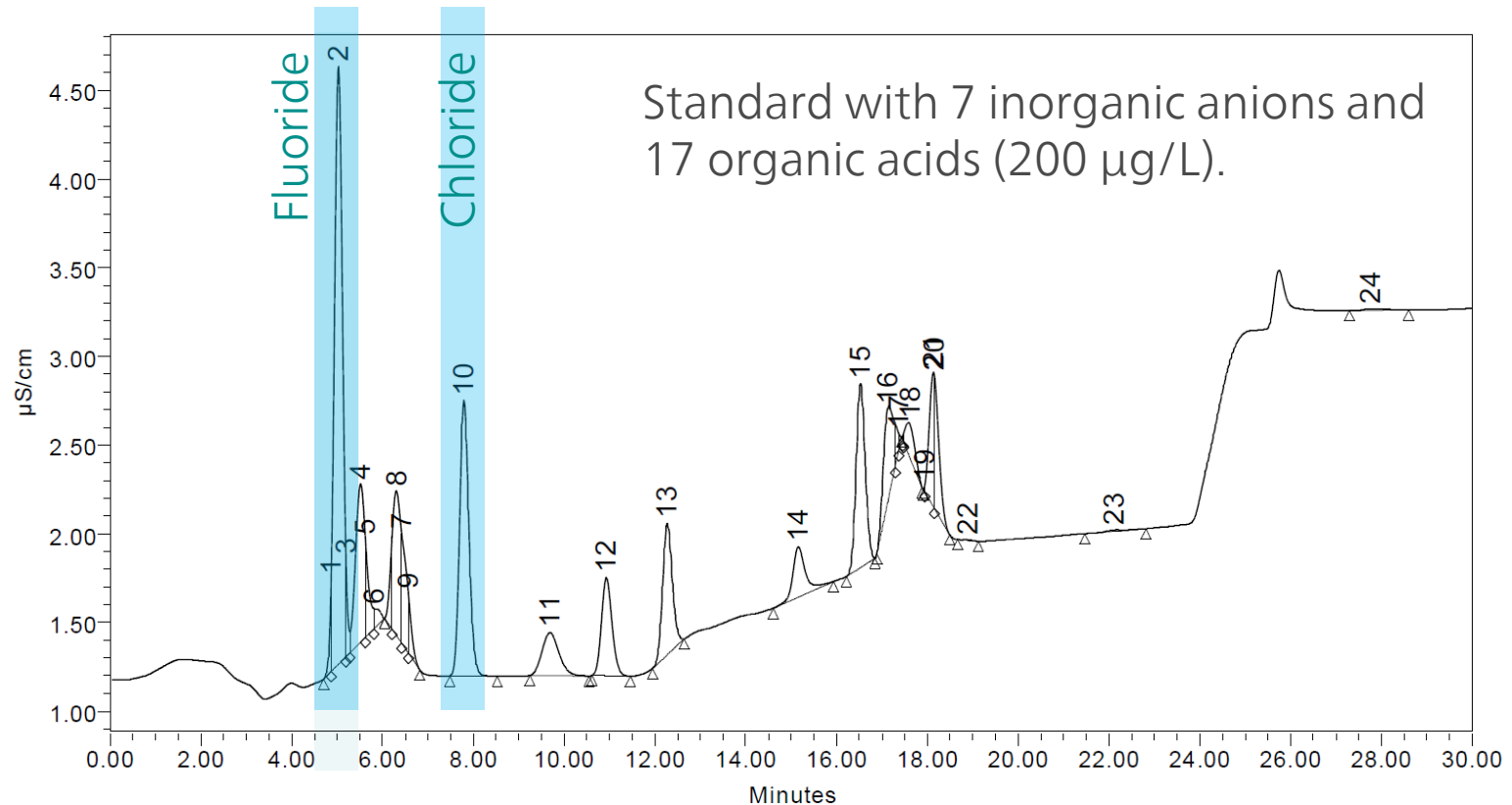
Temp 45 °C

Injection 20 μL

Dilution 1:20

Sample Beer

Organic acids in refreshment drinks with IC-MS



Conductivity signal for evaluation of inorganic anions and system performance monitoring

Resolution for some organic acids is low → quantitate with MS

Metrosep A Supp 19 - 150/4.0

Eluent HPG (Na₂CO₃ / NaHCO₃ / methanol)

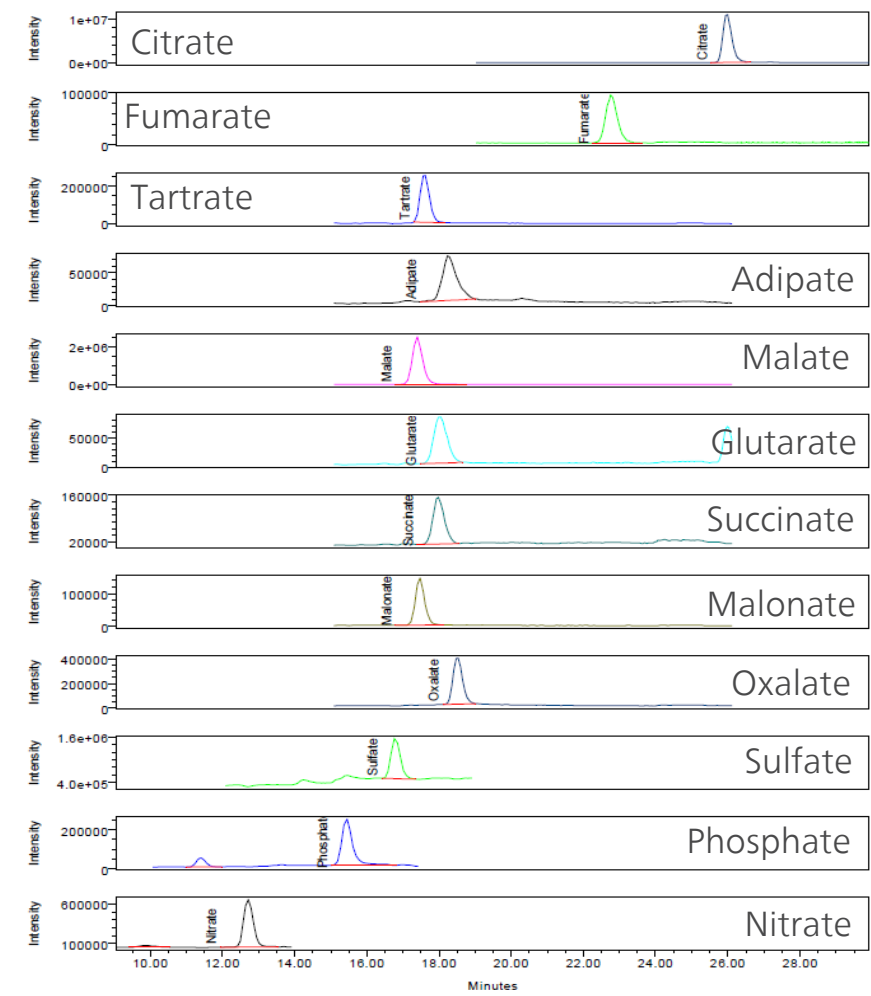
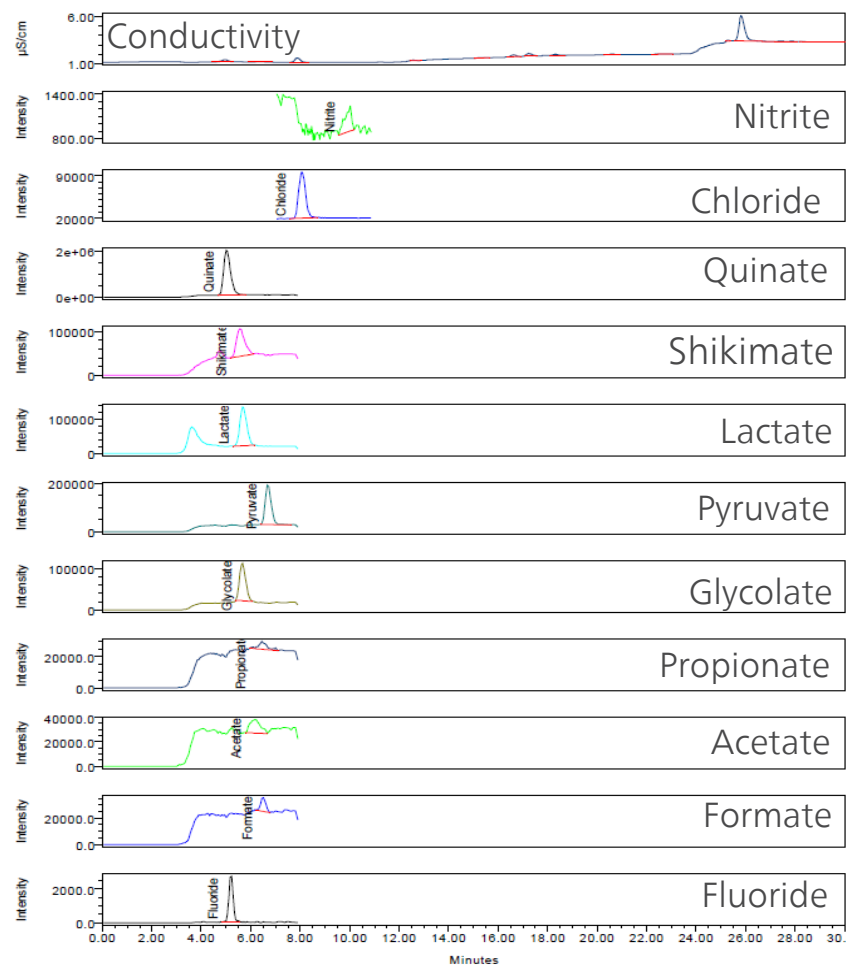
Flow 0.75 mL/min

Temp 60 °C

Injection MiPT 4-200 µL

Detection ESI-MS

Organic acids in refreshment drinks with IC-MS (spiked with 0.2 mg/L)



Metrosep A Supp 19 - 150/4.0

Eluent HPG (Na₂CO₃ / NaHCO₃ / methanol)

Flow 0.75 mL/min

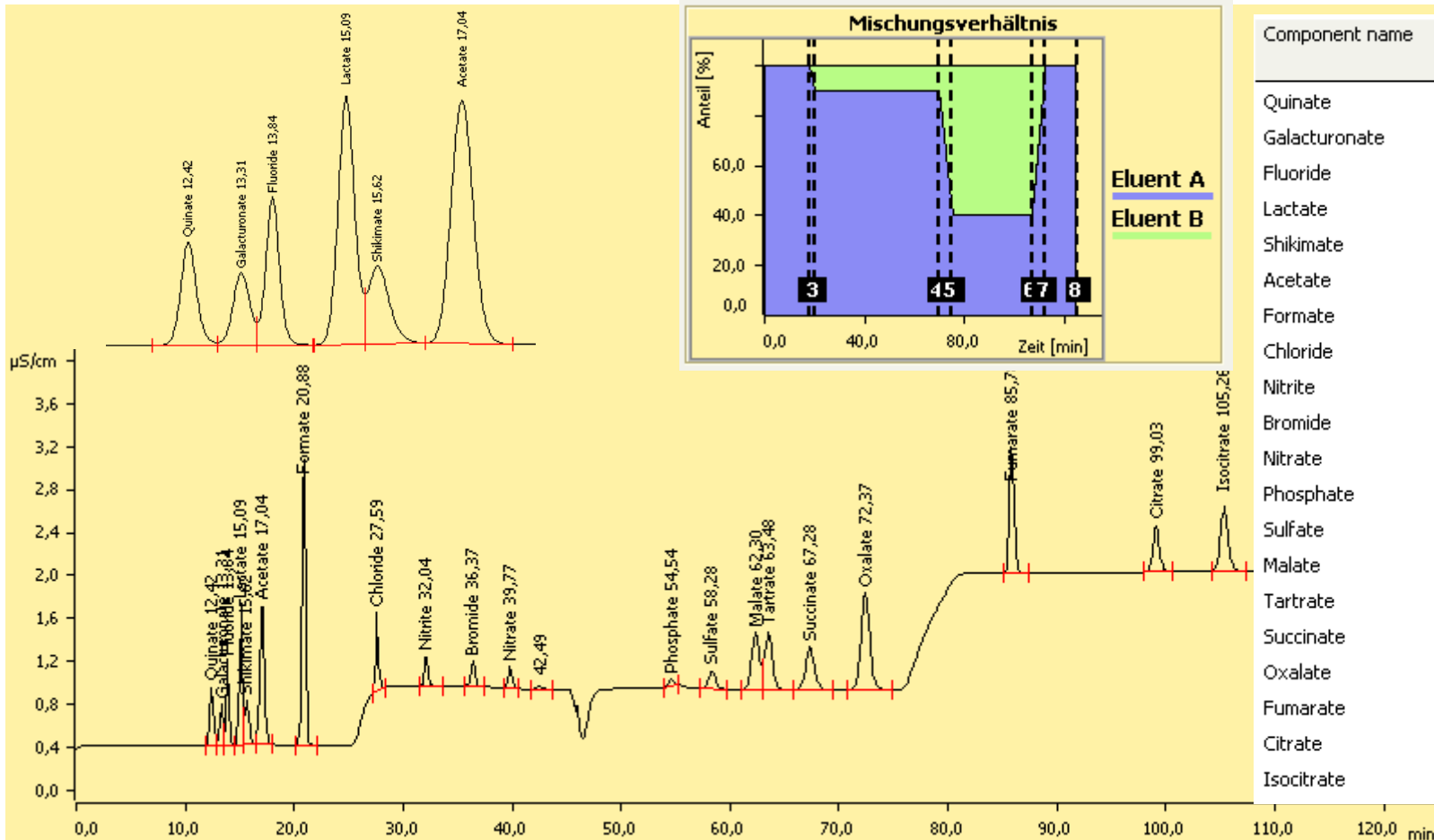
Temp 60 °C

Injection MiPT 10 µL

Detection ESI-MS

Organic acids in food & beverage samples

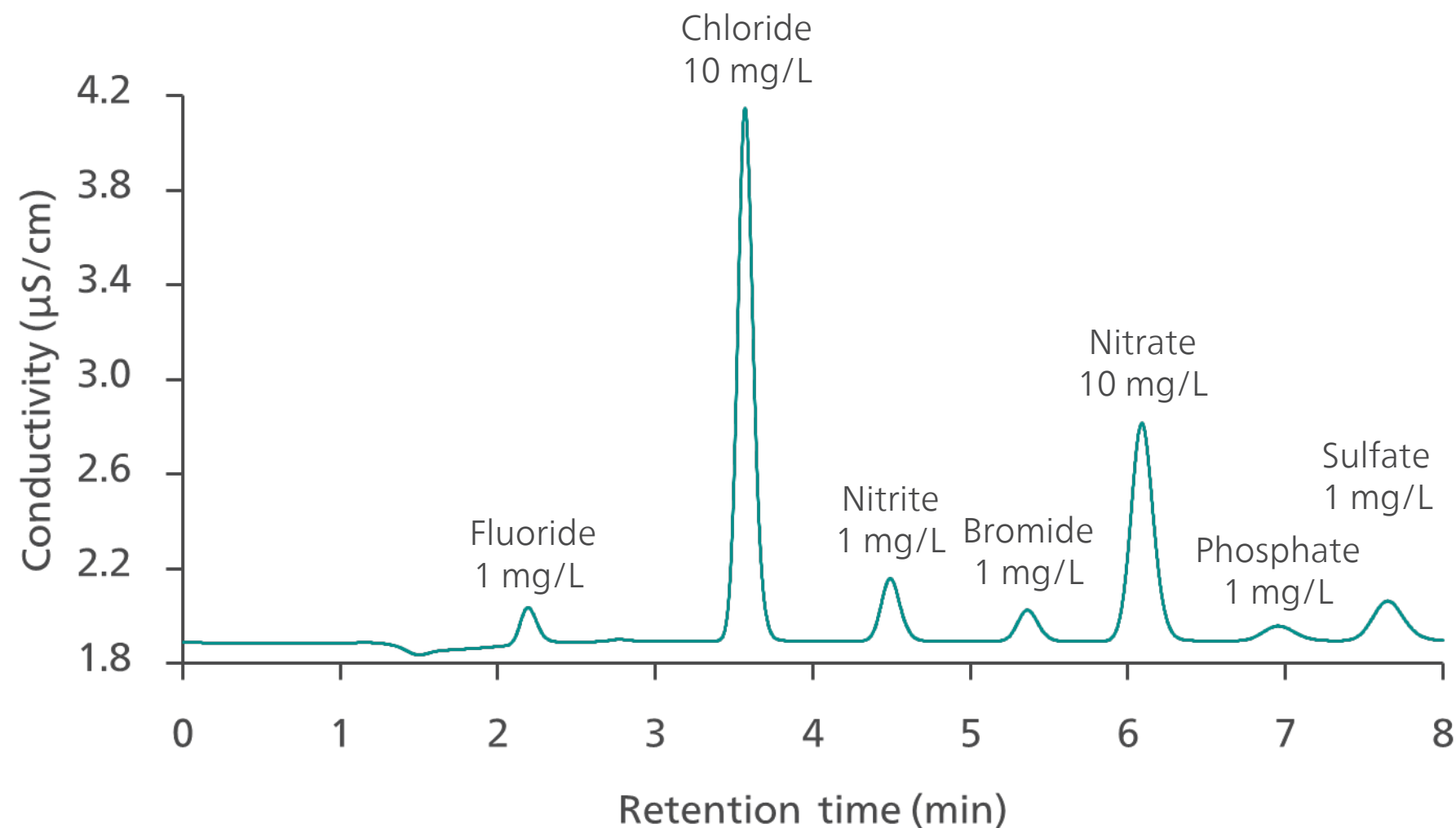
Separation on Metrosep A Supp 19 - 250/4.0



Component name	Concentration [ppm]	Retention time [min]	Theoretical plates	Resolution	Asymmetry
Quinate	2,500	12,42	10432	1,743	1,114
Galacturonate	2,500	13,31	9782	1,098	0,892
Fluoride	0,500	13,84	17036	2,616	1,054
Lactate	2,500	15,09	13075	0,810	0,994
Shikimate	2,500	15,62	6388	1,919	1,724
Acetate	2,500	17,04	9395	5,942	1,053
Formate	2,500	20,88	20136	13,722	0,922
Chloride	1,000	27,59	80414	9,612	1,103
Nitrite	1,000	32,04	56806	7,513	1,217
Bromide	1,000	36,37	56279	5,346	1,056
Nitrate	1,000	39,77	58396	3,369	1,036
Phosphate	1,000	54,54	52212	3,654	1,005
Sulfate	1,000	58,28	45575	3,355	1,036
Malate	5,000	62,30	36681	0,901	0,880
Tartrate	5,000	63,48	36969	2,743	1,220
Succinate	5,000	67,28	34511	3,549	1,054
Oxalate	5,000	72,37	41491	12,691	1,058
Fumarate	5,000	85,78	245688	15,715	1,154
Citrate	5,000	99,03	158845	5,727	1,122
Isocitrate	10,000	105,26	126828	invalid	1,117

Faster analysis

8 minutes on Metrosep A Supp 19 - 100/4.0



Metrosep A Supp 19 - 100/4.0

Eluent 8.0 mmol/L Na₂CO₃
0.25 mmol/L NaHCO₃

Flow Eluent 1.2 mL/min

Temp 25 °C

Injection 20 µL

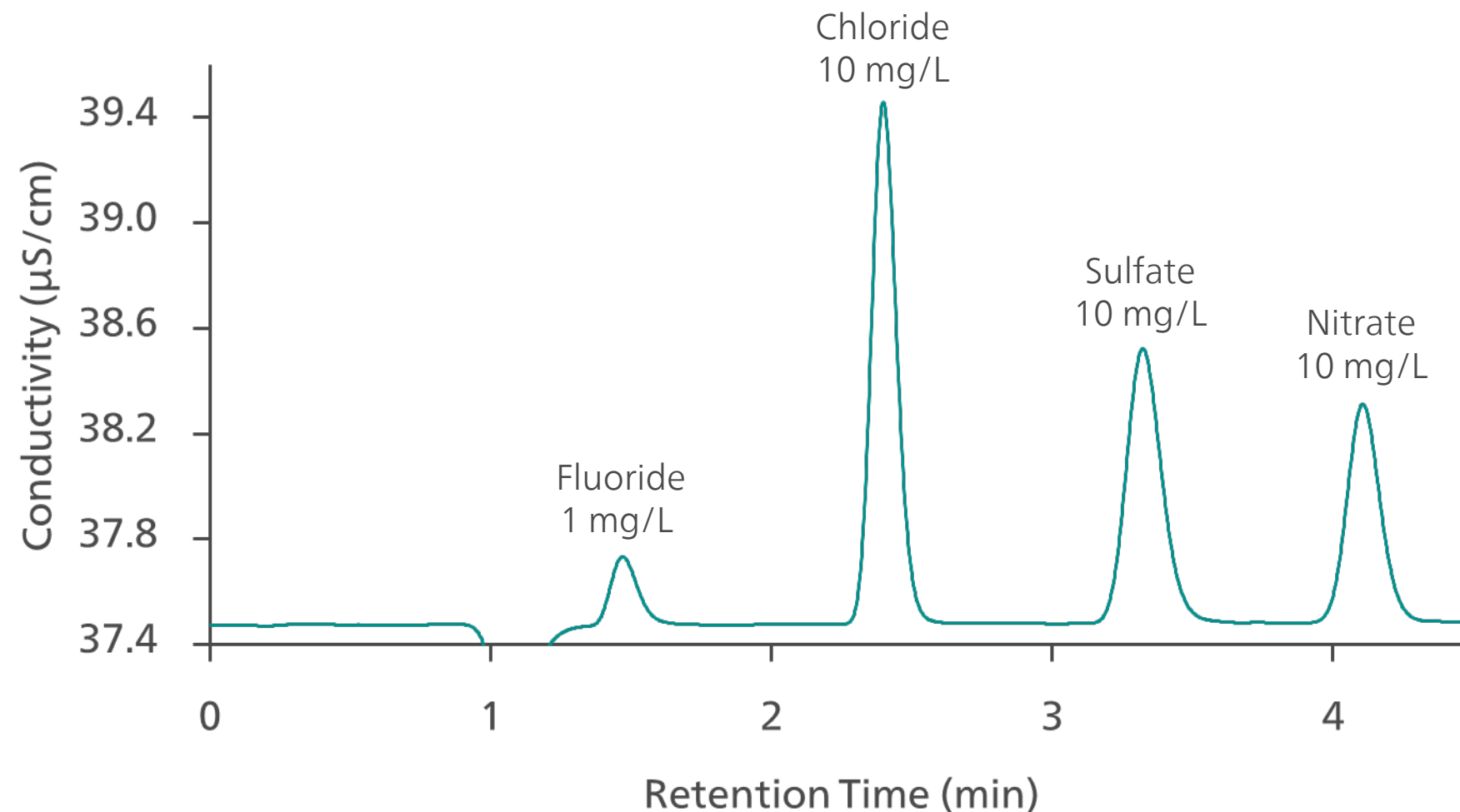
Suppression Sequential with
MSM A rotor

Detection Conductivity

Sample Standards

Ultrafast analysis

4.5 minutes on Metrosep A Supp 19 - 100/4.0



Metrosep A Supp 19 - 100/4.0

Eluent 20.0 mmol/L Na_2CO_3
0.63 mmol/L NaHCO_3

Flow Eluent 1.2 mL/min

Temp 25 °C

Injection 20 μL

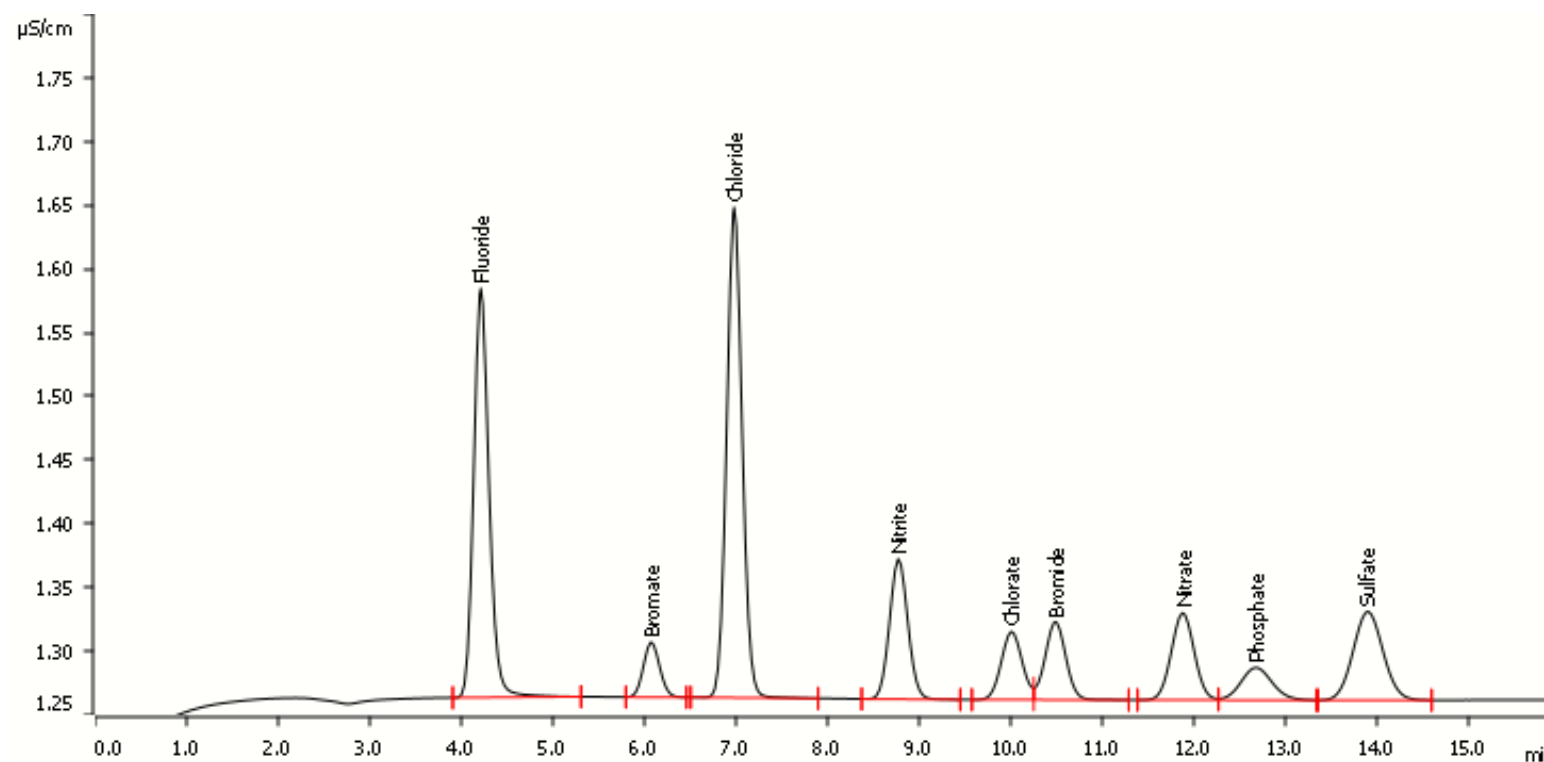
Suppression Chemical with
MSM A rotor

Detection Conductivity

Sample Standards

Fast analysis with wide calibration range

9 anions in 16 min on Metrosep A Supp 19 - 150/4.0



Metrosep A Supp 19 - 150/4.0

Eluent 10.0 mmol/L Na₂CO₃
0.25 mmol/L NaHCO₃

Flow Eluent 0.7 mL/min

Temp 30 °C

Injection variable µL (2-200)

Suppression Sequential, 0.3 mol/L H₃PO₄

Detection Conductivity

Sample Standards

Fast analysis with wide calibration range (factor 500)



Standard solutions of the low calibration curve [in mg/L]

Analyte	2	5	10	20	60	100
F ⁻	0.1	0.25	0.5	1	3	5
BrO ₃ ⁻	0.1	0.25	0.5	1	3	5
Cl ⁻	0.2	0.5	1	2	6	10
NO ₂ ⁻	0.1	0.25	0.5	1	3	5
ClO ₃ ⁻	0.1	0.25	0.5	1	3	5
Br ⁻	0.1	0.25	0.5	1	3	5
NO ₃ ⁻	0.1	0.25	0.5	1	3	5
PO ₄ ³⁻	0.1	0.25	0.5	1	3	5
SO ₄ ²⁻	0.1	0.25	0.5	1	3	5

Standard solutions of the high calibration curve [in mg/L]

Analyte	100	120	140	170	200
F ⁻	5	10	20	35	50
BrO ₃ ⁻	5	10	20	35	50
Cl ⁻	10	20	40	70	100
NO ₂ ⁻	5	10	20	35	50
ClO ₃ ⁻	5	10	20	35	50
Br ⁻	5	10	20	35	50
NO ₃ ⁻	5	10	20	35	50
PO ₄ ³⁻	5	10	20	35	50
SO ₄ ²⁻	5	10	20	35	50

Metrosep A Supp 19 - 150/4.0

Eluent 10.0 mmol/L Na₂CO₃
0.25 mmol/L NaHCO₃

Flow Eluent 0.7 mL/min

Temp 30 °C

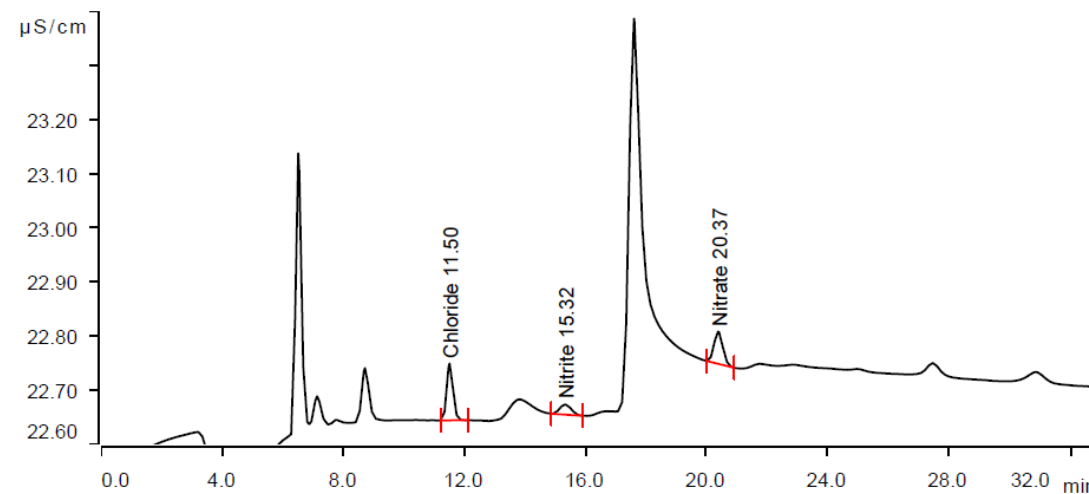
Injection variable µL (2-200)

Suppression Sequential, 0.3 mol/L
H₃PO₄

Detection Conductivity

Sample Standards

Cl, Nitrite and nitrate in varenicline



Component name	Retention time min	Height µS/cm	Area (µS/cm) x min	Concentration mg/kg
Chloride	11.502	0.105	0.0253	1.342
Nitrite	15.315	0.019	0.0083	2.277
Nitrate	20.373	0.060	0.0201	1.943

Sample prep: 0.2 g sample is dissolved with UPW (10 mL), ultra sonicated and filtered

Metrosep A Supp 19 - 250/4.0

Eluent $c(\text{Na}_2\text{CO}_3) = 8.0 \text{ mmol/L}$
 $c(\text{NaHCO}_3) = 0.25 \text{ mmol/L}$

Flow 0.7 mL/min

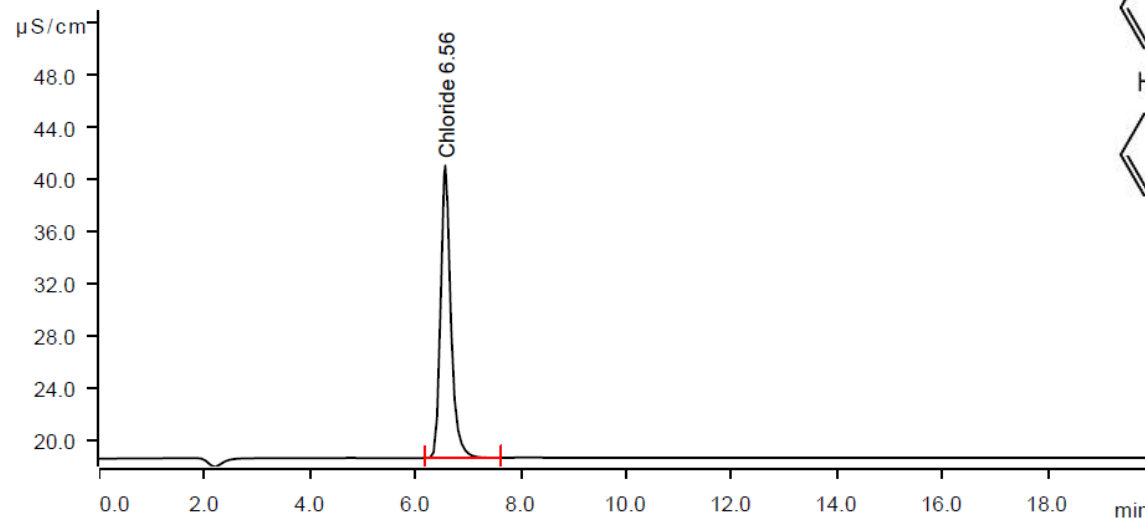
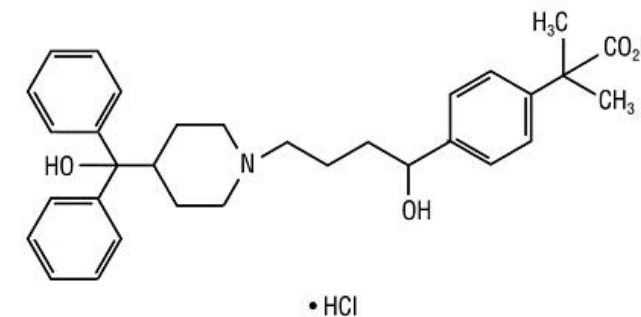
Temp 25 °C

Injection 100 µL

Detection Conductivity

Software MagIC Net

Chloride in Fexofenadine hydrochloride



Component name	Retention time min	Height μS/cm	Area (μS/cm) x min	Concentration mg/L	Concentration in %
Chloride	6.557	22.447	5.0117	65268.050	6.527

The results should be not less than 6.45% and should be not more than 6.75% of chloride found, calculated on an anhydrous basis as per USP. All the results were found within the expected range.

Metrosep A Supp 19 - 250/4.0

Eluent $c(\text{Na}_2\text{CO}_3) = 8.0\text{mmol/L}$
 $c(\text{NaHCO}_3) = 0.25\text{mmol/L}$
 $c(\text{methanol})=5\%$

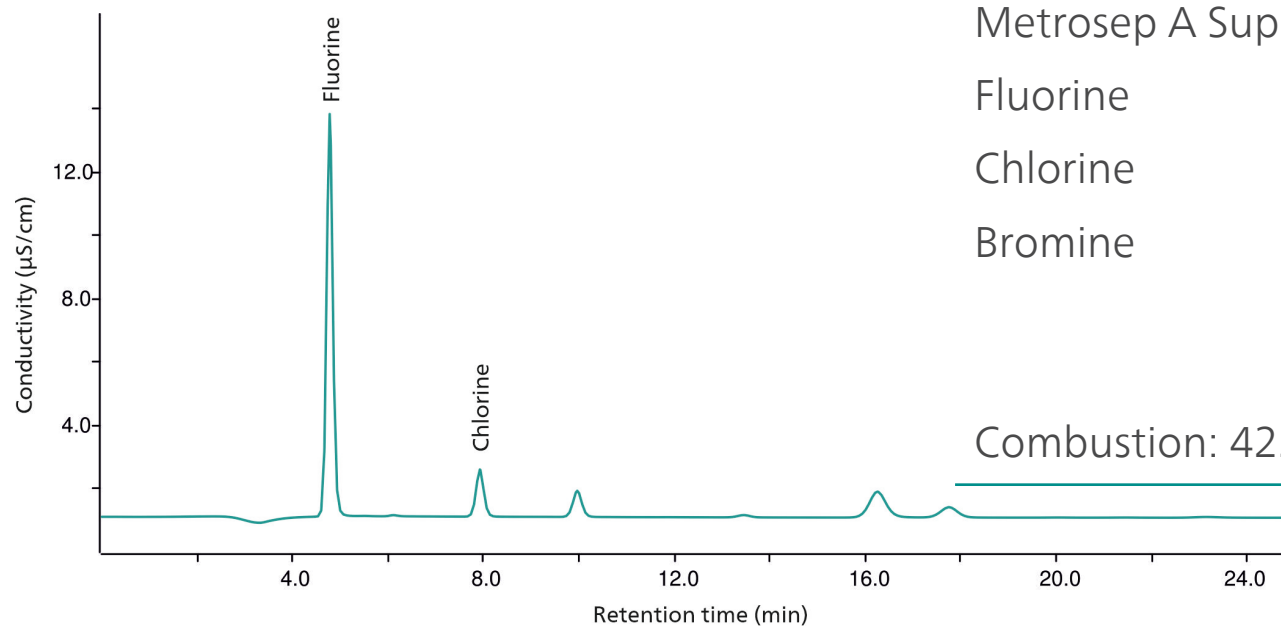
Flow 0.7 mL/min

Temp 25 °C

Injection 10 μL

Detection Conductivity

F, Cl and Br in a polymer mix



Metrosep A Supp 19 – 150/4.0

Fluorine	60.13
Chlorine	16.65
Bromine	< 0.2
	[mg/kg]

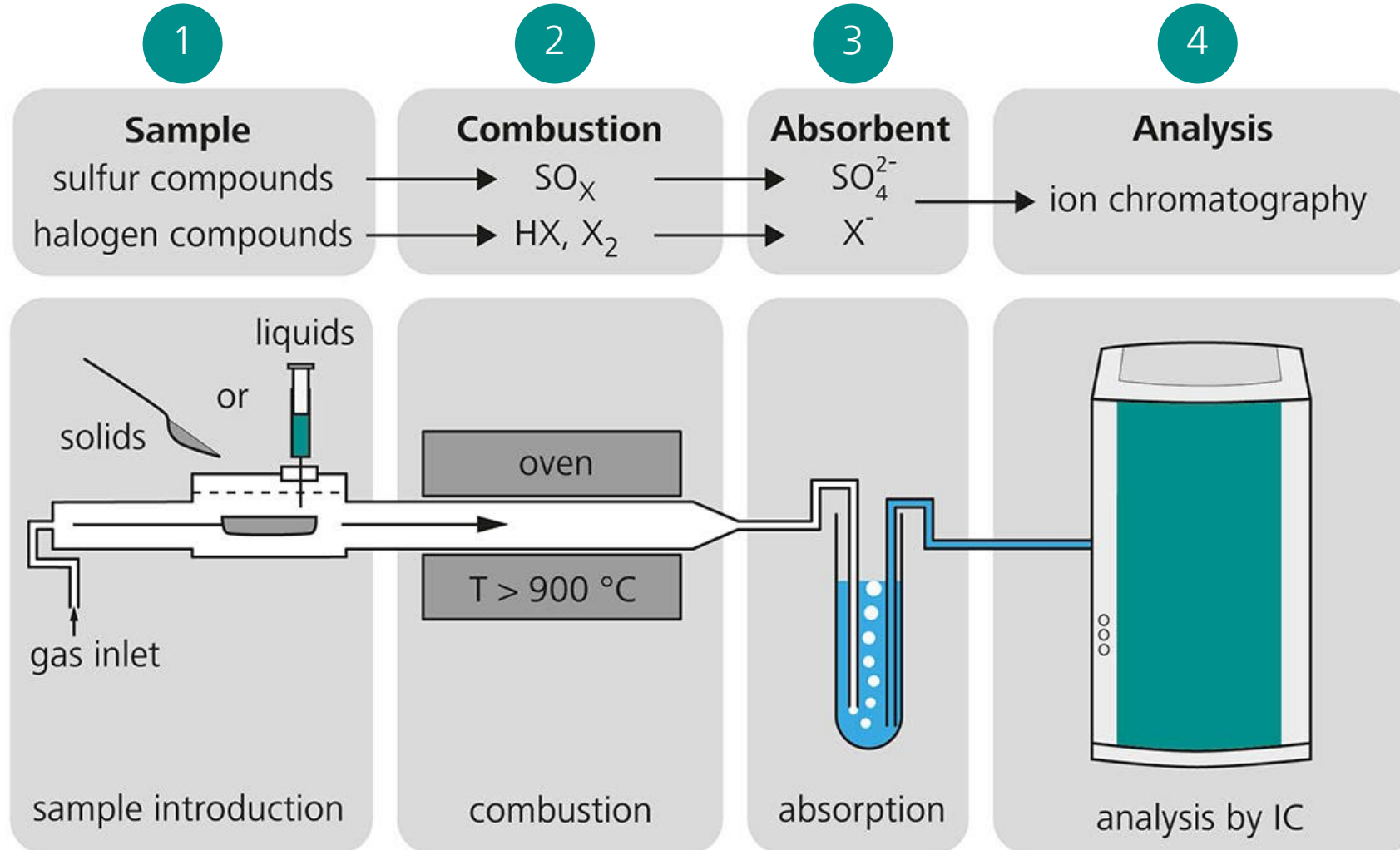
Combustion: 42.7 mg, 1050°C

Metrosep A Supp 19 - 150/4.0

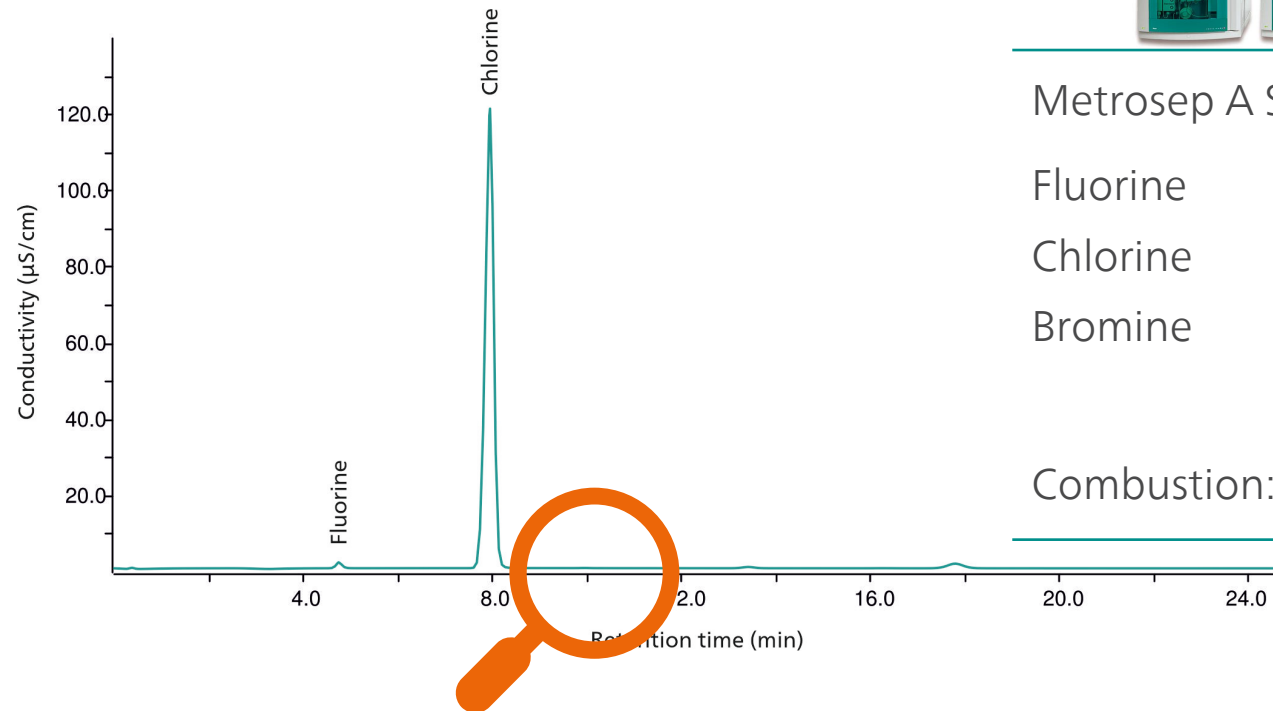
Eluent	$c(\text{Na}_2\text{CO}_3) = 8.0\text{mmol/L}$ $c(\text{NaHCO}_3) = 0.25$
Flow	0.7 mL/min
Temp	30 °C
Injection	200 µL
Detection	Conductivity

Combustion Ion Chromatography

The process of pyrohydrolytic combustion



F, Cl and Br in a pyrolysis oil



Metrosep A Supp 19 – 150/4.0

Fluorine	10.63
Chlorine	1495.3
Bromine	0.35
	[mg/kg]

Combustion: 30 µL, 1050°C

Metrosep A Supp 19 - 150/4.0

Eluent $c(\text{Na}_2\text{CO}_3) = 8.0\text{mmol/L}$
 $c(\text{NaHCO}_3) = 0.25$

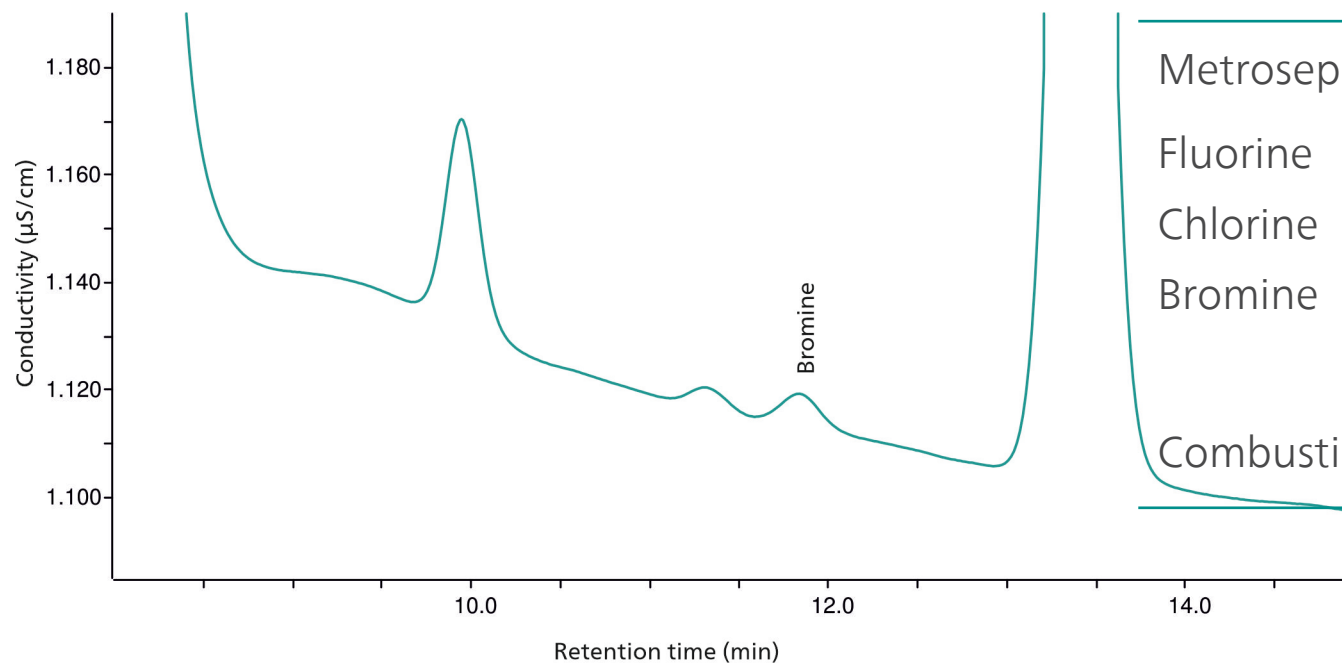
Flow 0.7 mL/min

Temp 30 °C

Injection 200 µL

Detection Conductivity

F, Cl and Br in a pyrolysis oil



Metrosep A Supp 19 – 150/4.0

Fluorine 10.63

Chlorine **1495.3**

Bromine 0.35

[mg/kg]

Combustion: 30 µL, 1050°C

Metrosep A Supp 19 - 150/4.0

Eluent $c(\text{Na}_2\text{CO}_3) = 8.0\text{mmol/L}$
 $c(\text{NaHCO}_3) = 0.25$

Flow 0.7 mL/min

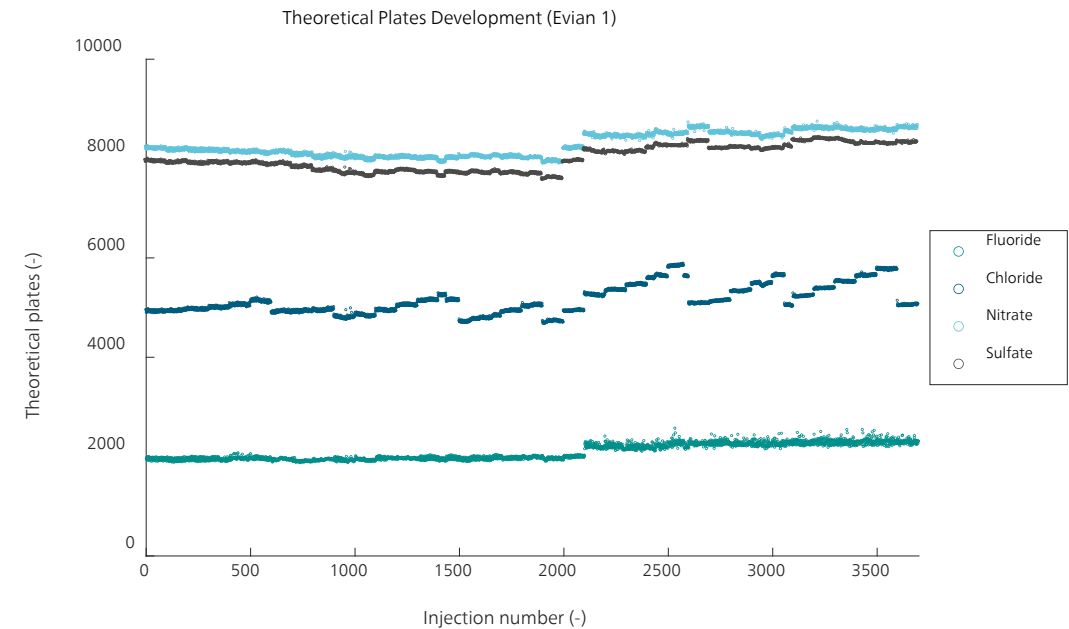
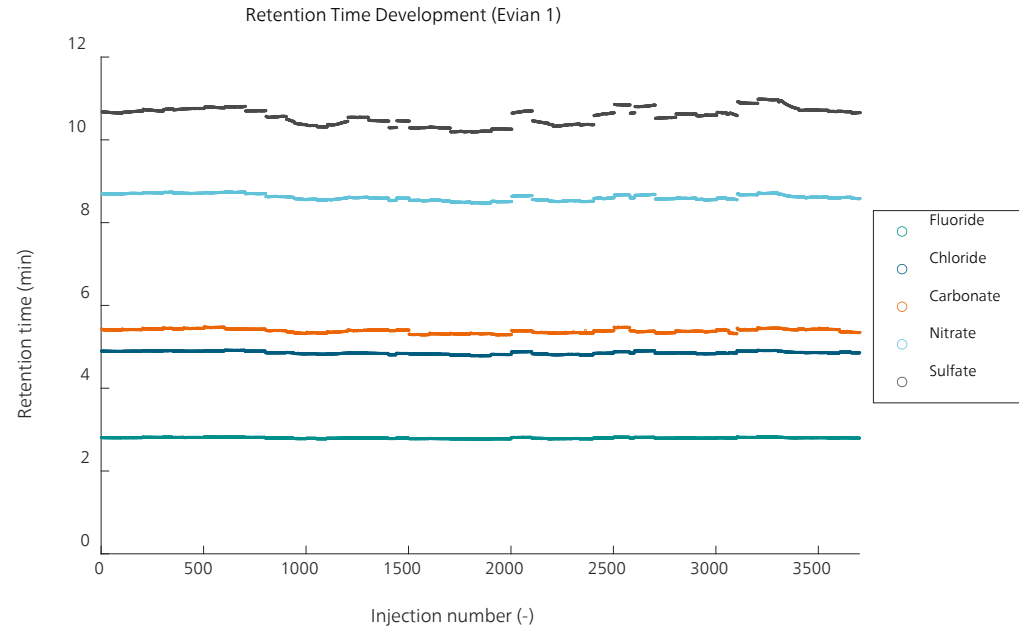
Temp 30 °C

Injection 200 µL

Detection Conductivity

Column durability

Evian



Metrosep A Supp 19 - 150/4.0

Eluent 8.0 mmol/L Na₂CO₃
0.25 mmol/L NaHCO₃

Flow Eluent 1.0 mL/min

Temp 25 °C

Injection 20 µL

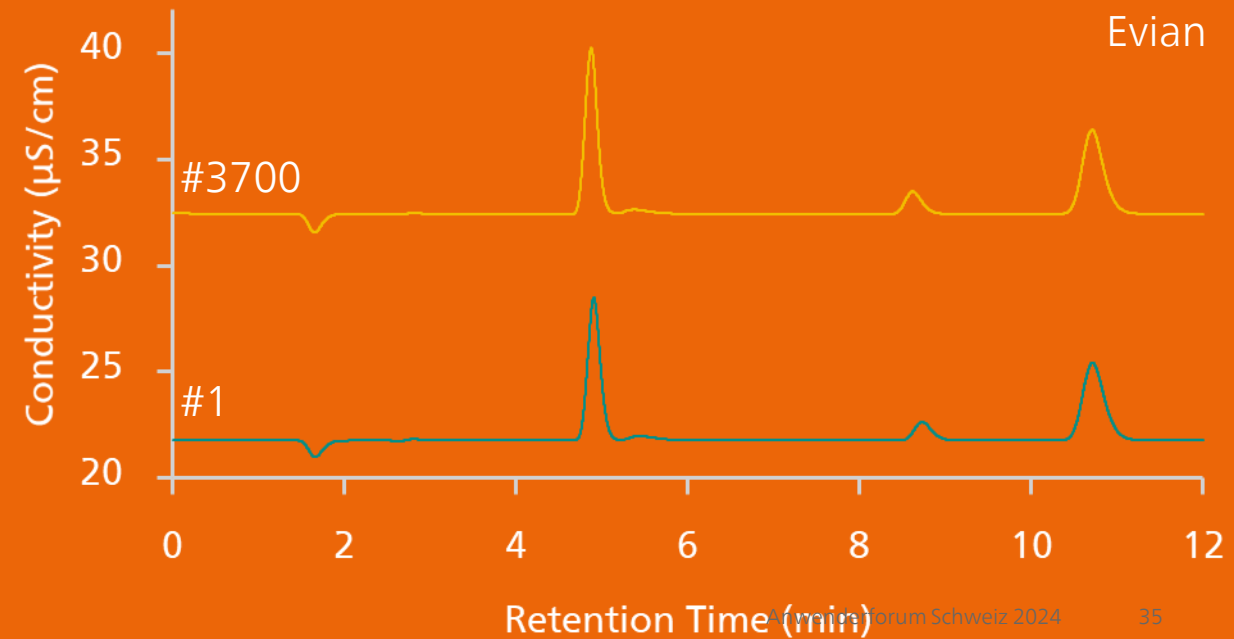
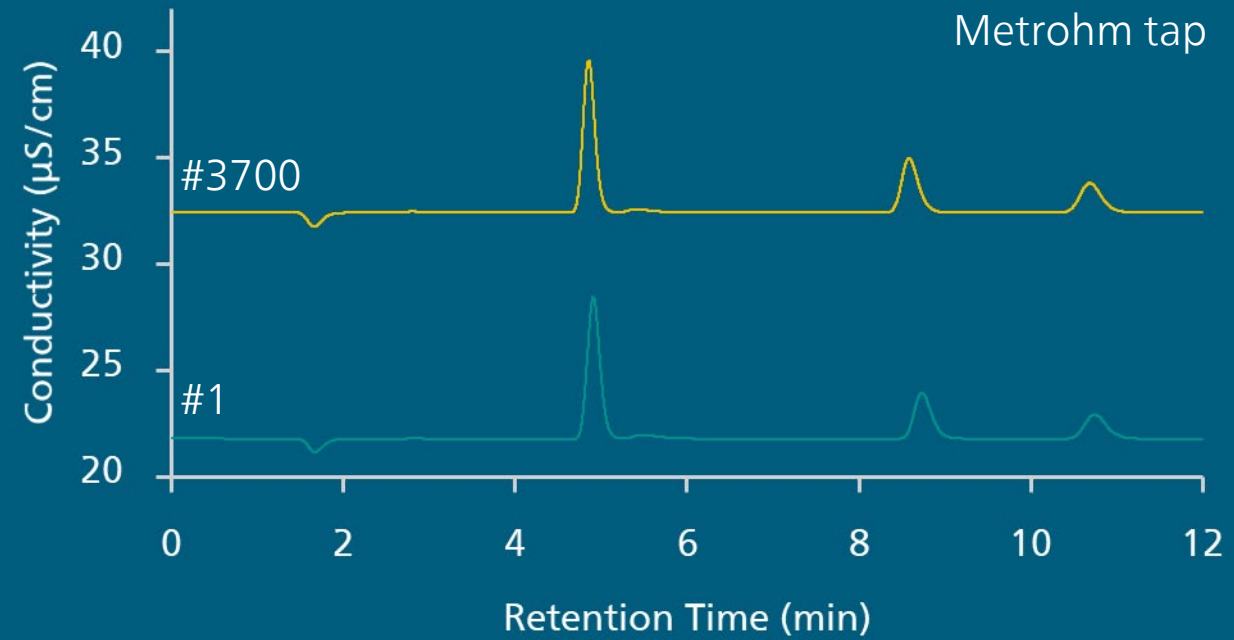
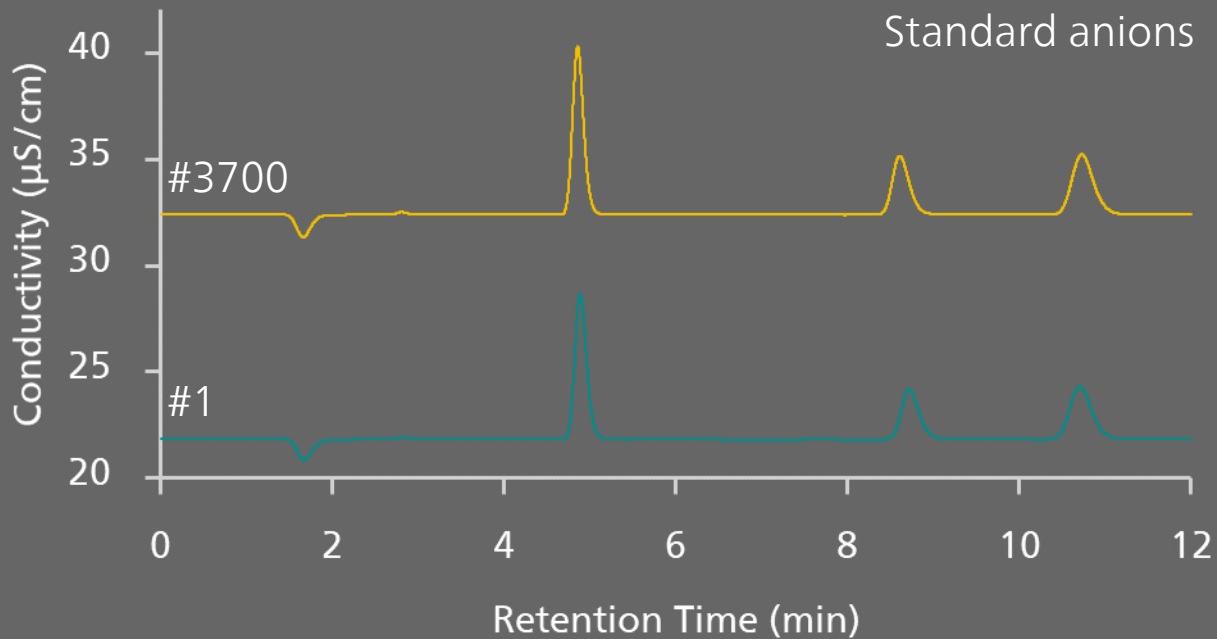
Suppression Chemical with
MSM A rotor

Detection Conductivity

Sample Evian

Overlay first and last chromatograms

Can you spot the change?

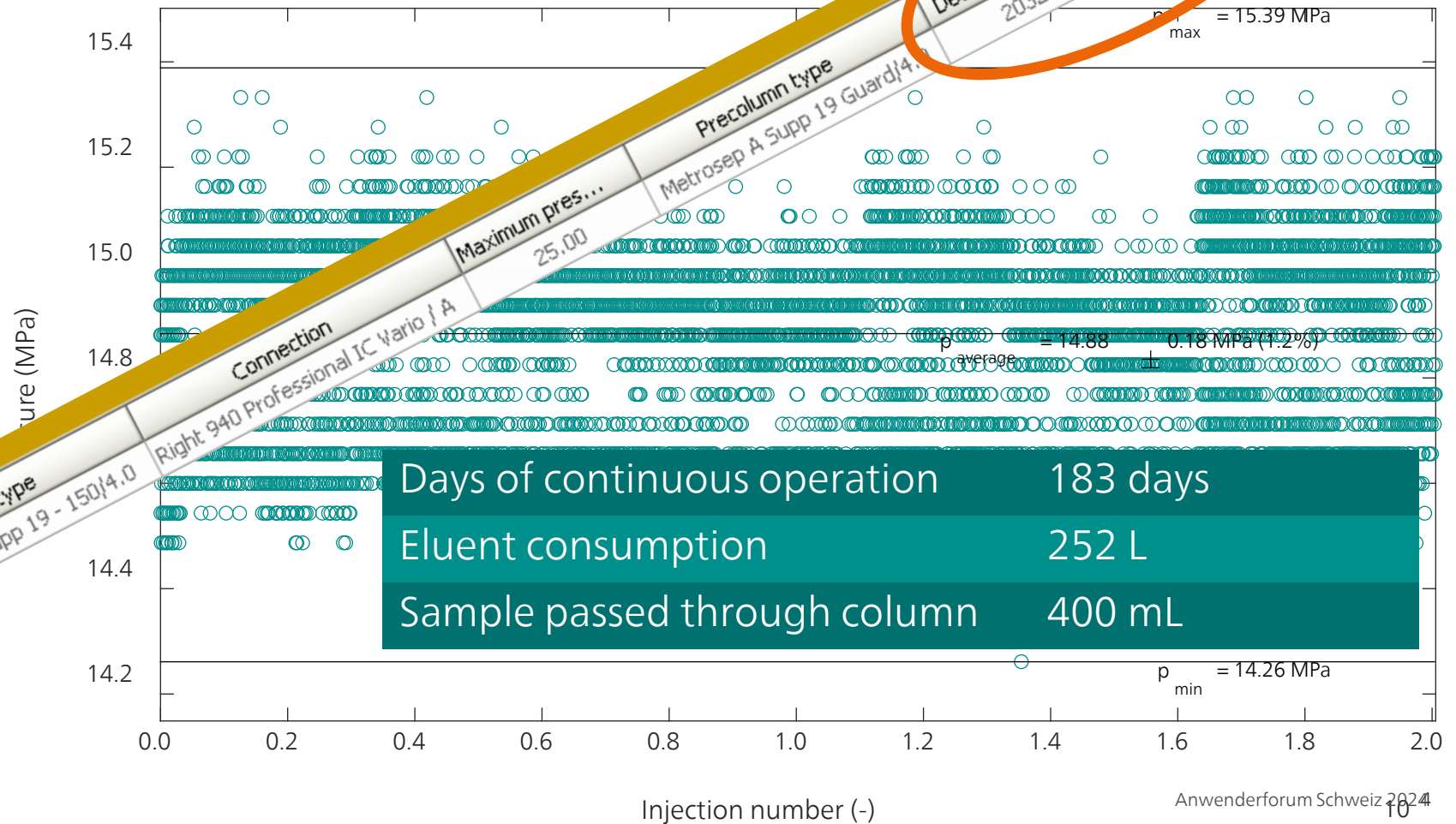


Packing stability

A huge benefit of the Metrosep A Supp 19



Pressure development



Days of continuous operation	183 days
Eluent consumption	252 L
Sample passed through column	400 mL

Metrosep A Supp 19 - 150/4.0

Eluent	8.0 mmol/L Na ₂ CO ₃ 0.25 mmol/L NaHCO ₃
Flow Eluent	1.0 mL/min
Temp	25 °C
Injection	20 µL
Suppression	Chemical
Detection	Conductivity
Samples	standards, Metrohm tap (& spiked), Evian

Columns	Column name
1	ASupp19_150_4_inwei236_1

Metrosep A Supp 19 eluent concentrate

Finally available!

68302 ^{Supelco}
Natriumbicarbonat/Natriumcarbonat-Konzentrat ^{new}
160 mM Na₂CO₃, 5 mM NaHCO₃ eluent concentrate for IC

SKU	Packungsgröße	Verfügbarkeit	Preis	Menge
68302-1L		Voraussichtliches Versanddatum 17. Mai 2023	110,00 CHF	<input type="text" value="1"/>
68302-2.5L		Voraussichtliches Versanddatum 17. Mai 2023	202,00 CHF	<input type="text" value="1"/>

EIGENSCHAFTEN

Qualitätsniveau	100
Konzentration	160 mM Na ₂ CO ₃ 5 mM NaHCO ₃

DOKUMENTATION

Analysenzertifikat
Geben Sie die Chargennummer ein, um nach dem Analysenzertifikat (COA) zu suchen.
Lotnummer:
Hinweise zur Eingabe einer Lotnummer (Analysenzertifikate (CoA))

Ursprungszeugnis
Geben Sie die Chargennummer ein, um nach dem Ursprungszeugnis (COO) zu suchen.
Lotnummer:
Hinweise zur Eingabe einer Lotnummer (Ursprungszeugnis (CoO))

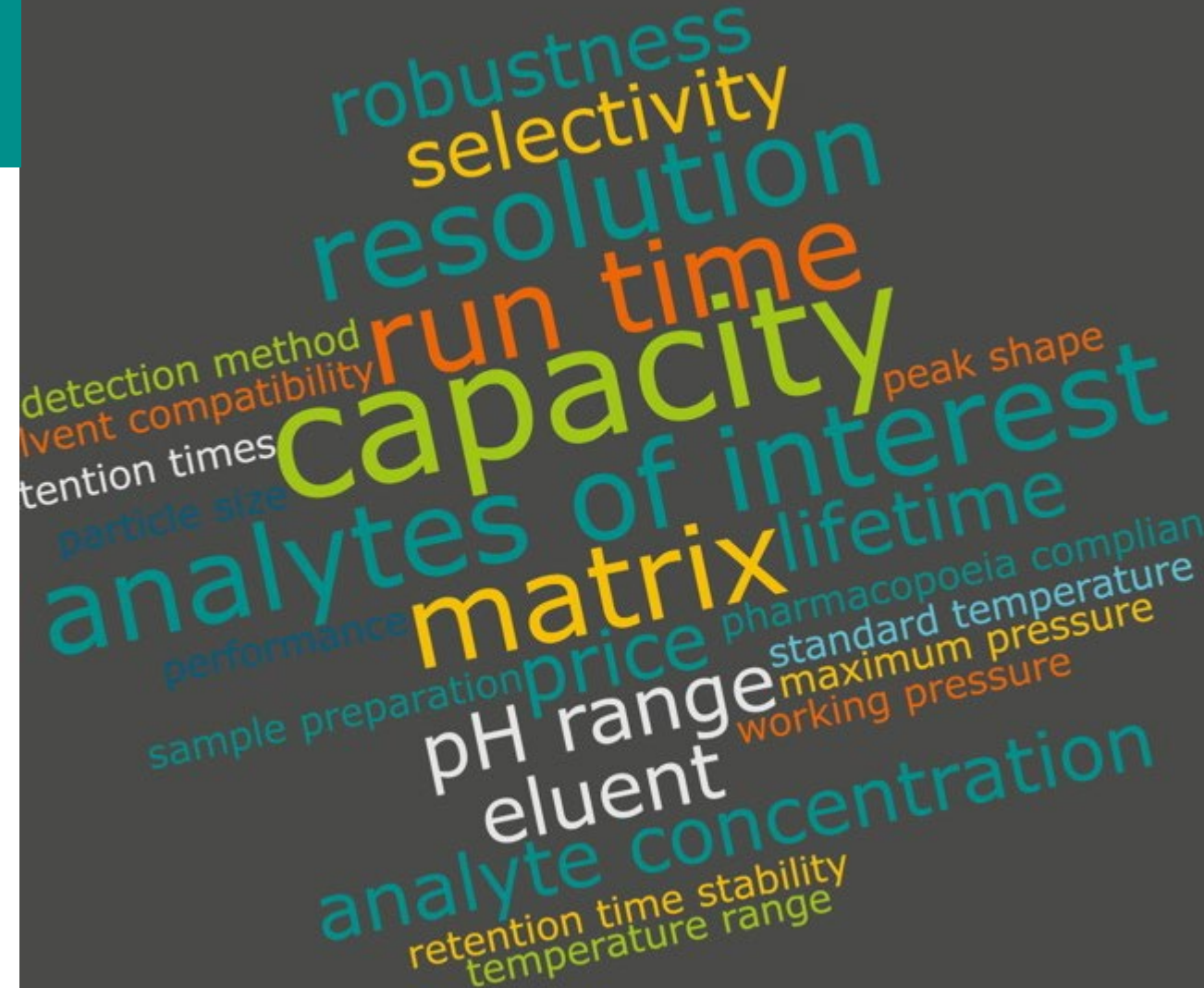
KÜRZLICH ANGESEHENE PRODUKTE

- Supelco product was released by Merck at end of April 2023
- 20x concentrate (160 mmol/L Na₂CO₃, 5 mmol/L NaHCO₃)
- Available in 1 L and 2.5 L
- Merck article number: 68302
- <https://www.sigmaaldrich.com/DE/en/product/supelco/68302>
- At the same time, the Metrosep A Supp 17 eluent concentrate was released (100 mmol/L Na₂CO₃, 5 mmol/L NaHCO₃, article number: 66949)

Advantages

Metrosep A Supp 19

- Very robust column
- High capacity column, e.g. good for high matrix
- Very versatile, can be used for many different applications
- Room temperature column, can be operated also with instruments without column oven
- Good for the separation of organic acids
- Organic modifier stable, e.g. advantage for MS applications
- Good price performance ratio





Metrosep A Supp 21

New opportunities
for the determination of oxyhalides

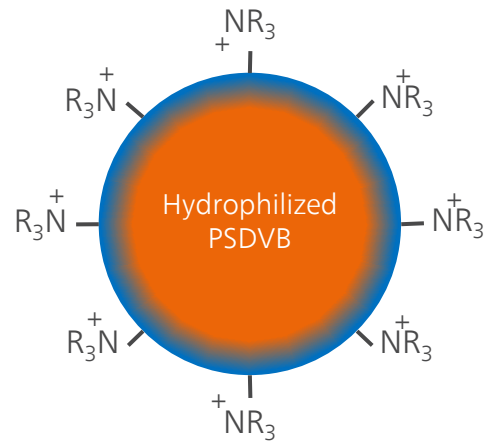
Metrosep A Supp 21

Technical specifications



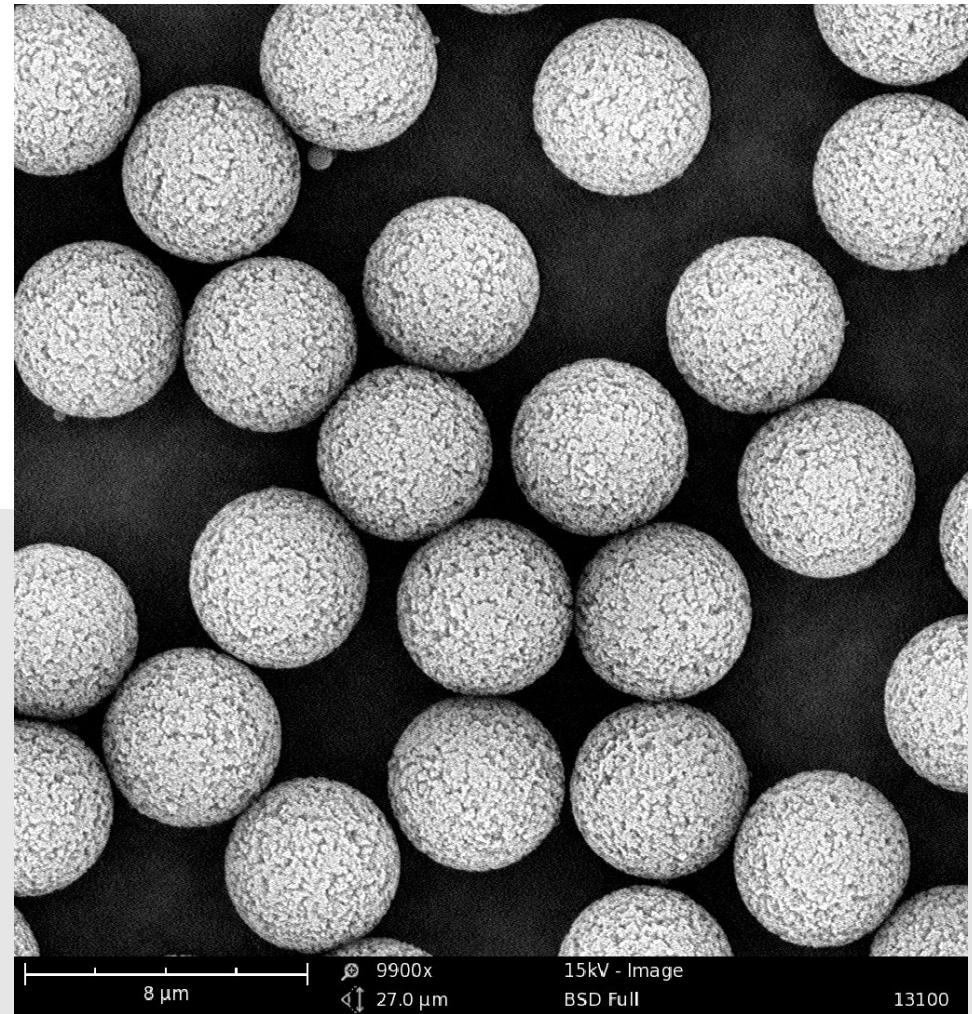
Technical information	
Substrate	Hydrophilized Polystyrene-divinylbenzene copolymer with quaternary ammonium groups
Particle size	4.6 μm
Capacity	410 μmol chloride
Standard eluent	150/4.0: 15...60 mmol/L KOH gradient 250/4.0: 18...80 mmol/L KOH gradient
Standard flow	0.8 mL/min
Maximum flow	150/4.0: 1.4 mL/min 250/4.0: 1.5 mL/min
Standard temperature	150/4.0: 25 $^{\circ}\text{C}$ 250/4.0: 45 $^{\circ}\text{C}$
Temperature range	10–70 $^{\circ}\text{C}$
Typical pressure	150/4.0: 14 MPa 250/4.0: 14 MPa
Maximum pressure	150/4.0: 21 MPa 250/4.0: 25 MPa
pH range	0–14
Organic modifiers	0–100 % Acetone, Acetonitrile, Methanol, Isopropanol

Metrosep A Supp 21 stationary phase



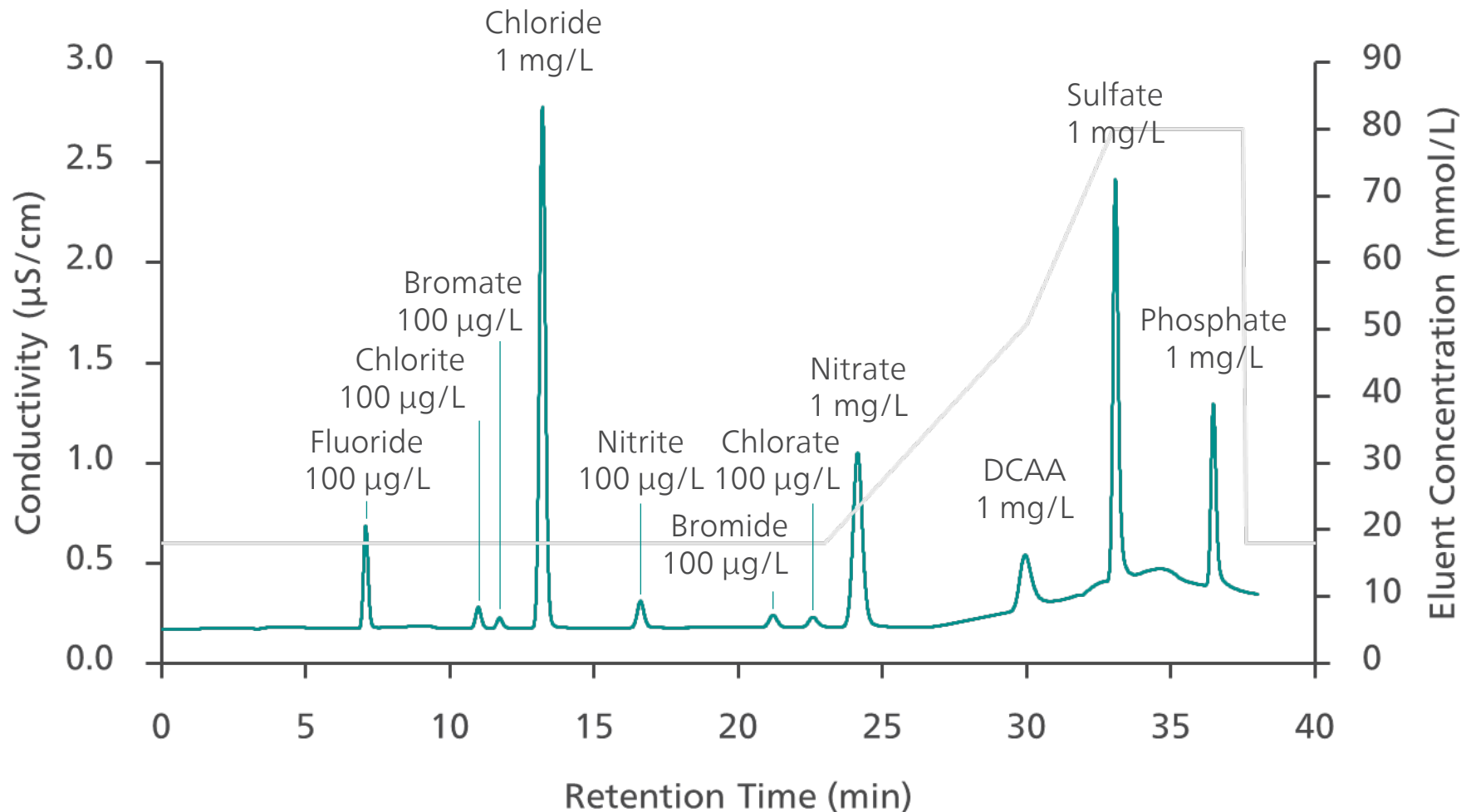
Metrosep A Supp 19 / 21

- + separation capability
- + peak shape
- + capacity
- + resolution
- + mechanical & pH stability



Metrosep A Supp 21 - 250/4.0

Certificate conditions



Metrosep A Supp 21 - 250/4.0

Eluent 18-80 mmol/L KOH
(Dose-in Gradient)

Flow Eluent 0.80 mL/min

Temp 45 °C

Injection 50 µL

Suppression Sequential with
MSM HC A rotor

Detection Conductivity

Sample Standard anions,
DCAA and oxyhalides

US EPA 300.1 A+B

Calibration of standard anions, oxyhalides & DCAA



Metrosep A Supp 21 - 250/4.0

Eluent 18-80 mmol/L KOH
(Dose-in Gradient)

Flow Eluent 0.80 mL/min

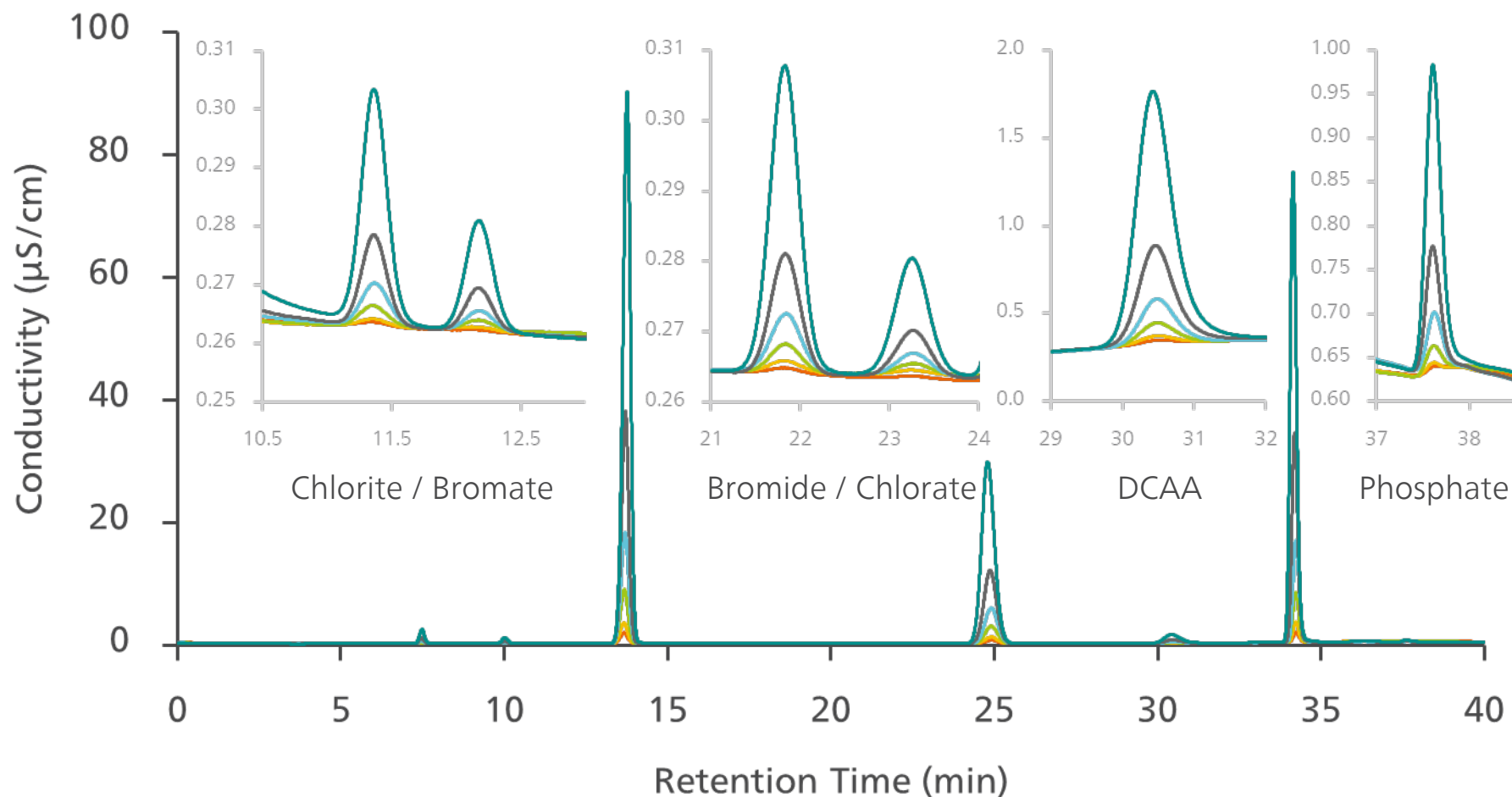
Temp 45 °C

Injection 4-200 µL

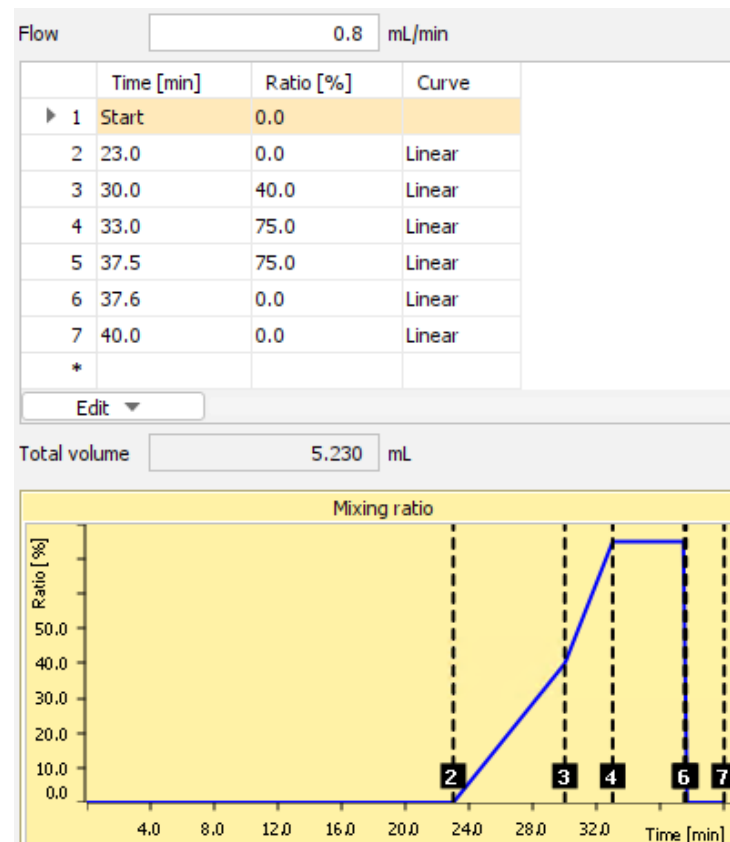
Suppression Sequential with
MSM HC A rotor

Detection Conductivity

Sample Standard anions,
DCAA and oxyhalides



Parameters



Standards		Check standards	Spiking solutions				
	Name	Standard 1	Standard 2	Standard 5	Standard 10	Standard 20	Standard 50
1	Fluoride	0.1	0.2	0.5	1	2	5
2	Chlorite	0.01	0.02	0.05	0.1	0.2	0.5
3	Bromate	0.01	0.02	0.05	0.1	0.2	0.5
4	Chloride	10	20	50	100	200	500
5	Nitrite	0.02	0.04	0.1	0.2	0.4	1
6	Bromide	0.02	0.04	0.1	0.2	0.4	1
7	Chlorate	0.01	0.02	0.05	0.1	0.2	0.5
8	Nitrate	10	20	50	100	200	500
9	DCAA	1	2	5	10	20	50
10	Sulfate	10	20	50	100	200	500
11	Phosphate	0.1	0.2	0.5	1	2	5

Metrosep A Supp 21 - 250/4.0

Eluent A 18 mmol/L KOH
 Eluent B 100 mmol/L KOH

Flow Eluent 0.8 mL/min

Temp 45 °C

Injection 4-200 µL

Suppression Sequential with
 MSM HC A rotor

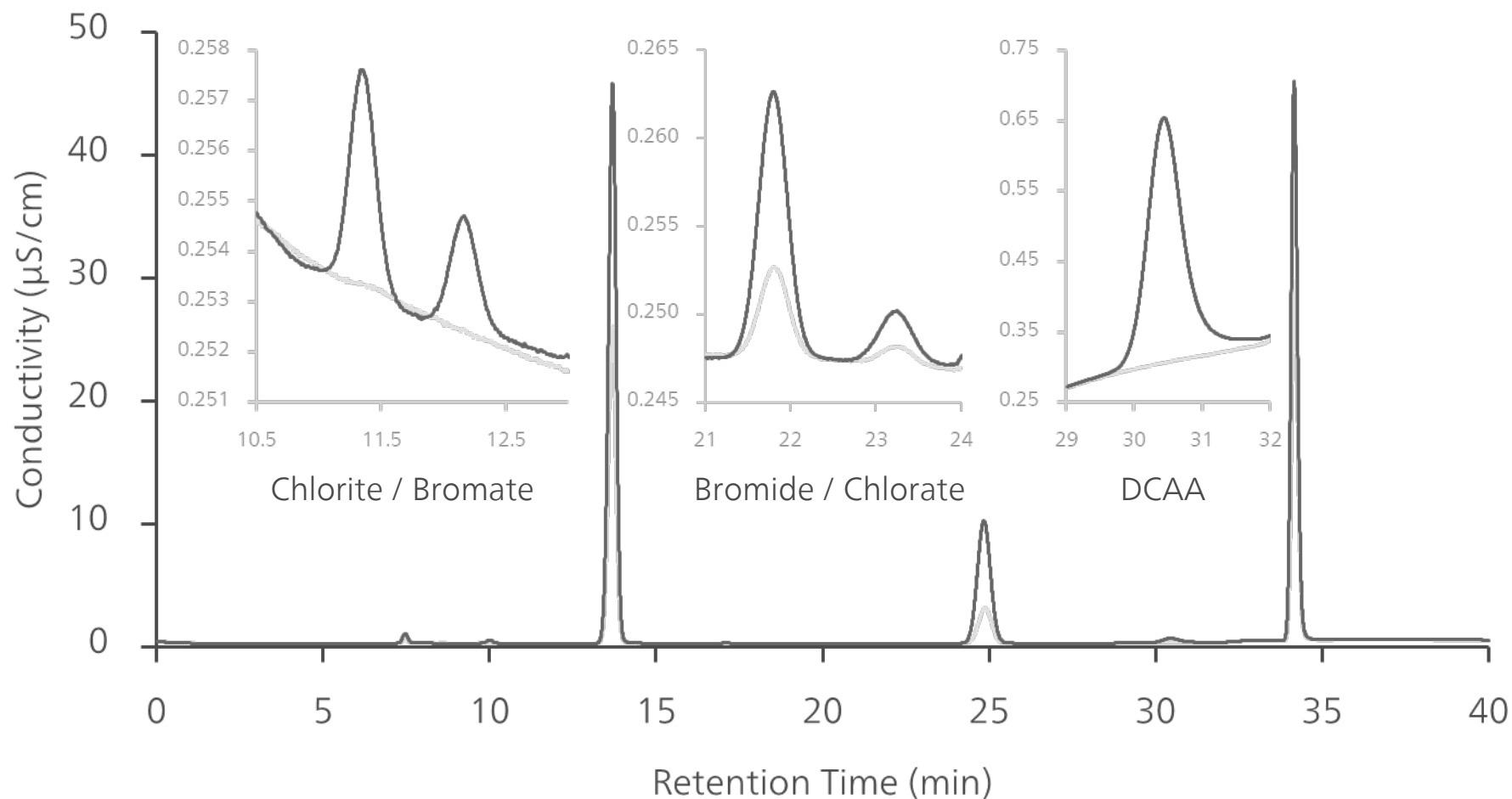
Detection Conductivity

Sample Standard anions,
 DCAA and oxyhalides



US EPA 300.1 A+B

Evian mineral water



Metrosep A Supp 21 - 250/4.0

Eluent 18-80 mmol/L KOH
(Dose-in Gradient)

Flow Eluent 0.80 mL/min

Temp 45 °C

Injection 50 µL

Suppression Sequential with
MSM HC A rotor

Detection Conductivity

Sample Evian with and
without spiking

US EPA 300.1 A+B

Recoveries of the spiked Evian water



Evian mineral water (50 µL)

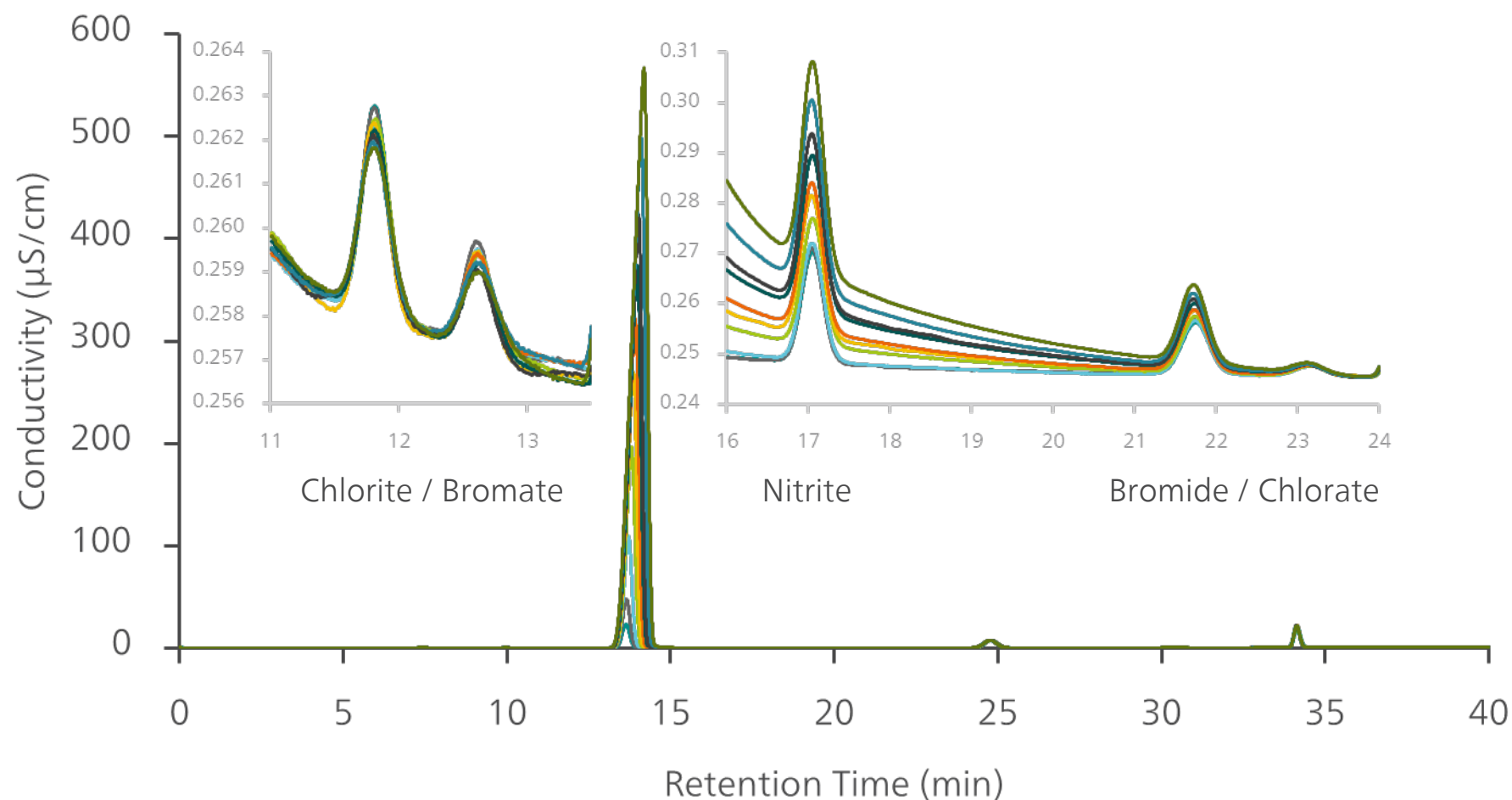
Analyte	Evian		Evian spiked ^(*)		
	µg/L	RSD	µg/L	RSD	Rec
F ⁻	62	0.8%	151	0.5%	95.0%
ClO ₂ ⁻	n.d.	-	5	2.1%	100.4%
BrO ₃ ⁻	n.d.	-	5	1.4%	103.0%
Cl ⁻	11'305	0.3%	20'126	0.3%	99.0%
NO ₂ ⁻	4	3.0%	21	1.0%	90.6%
Br ⁻	10	2.1%	30	1.4%	102.0%
ClO ₃ ⁻	3	3.8%	7	2.9%	96.6%
NO ₃ ⁻	3'963	0.2%	13'660	0.3%	100.7%
DCAA	n.d.	-	1'006	0.6%	100.6%
SO ₄ ²⁻	14'588	0.3%	22'983	0.3%	97.8%

Metrosep A Supp 21 - 250/4.0

Eluent	18-80 mmol/L KOH
Flow Eluent	0.8 mL/min
Temp	45 °C
Injection	50 µL
Suppression	Sequential with MSM HC A rotor
Detection	Conductivity
Sample	Evian with/without spike

US EPA 300.1 A+B

Matrix effects: chloride



Metrosep A Supp 21 - 250/4.0

Eluent 18-80 mmol/L KOH
(Dose-in Gradient)

Flow Eluent 0.80 mL/min

Temp 45 °C

Injection 50 µL

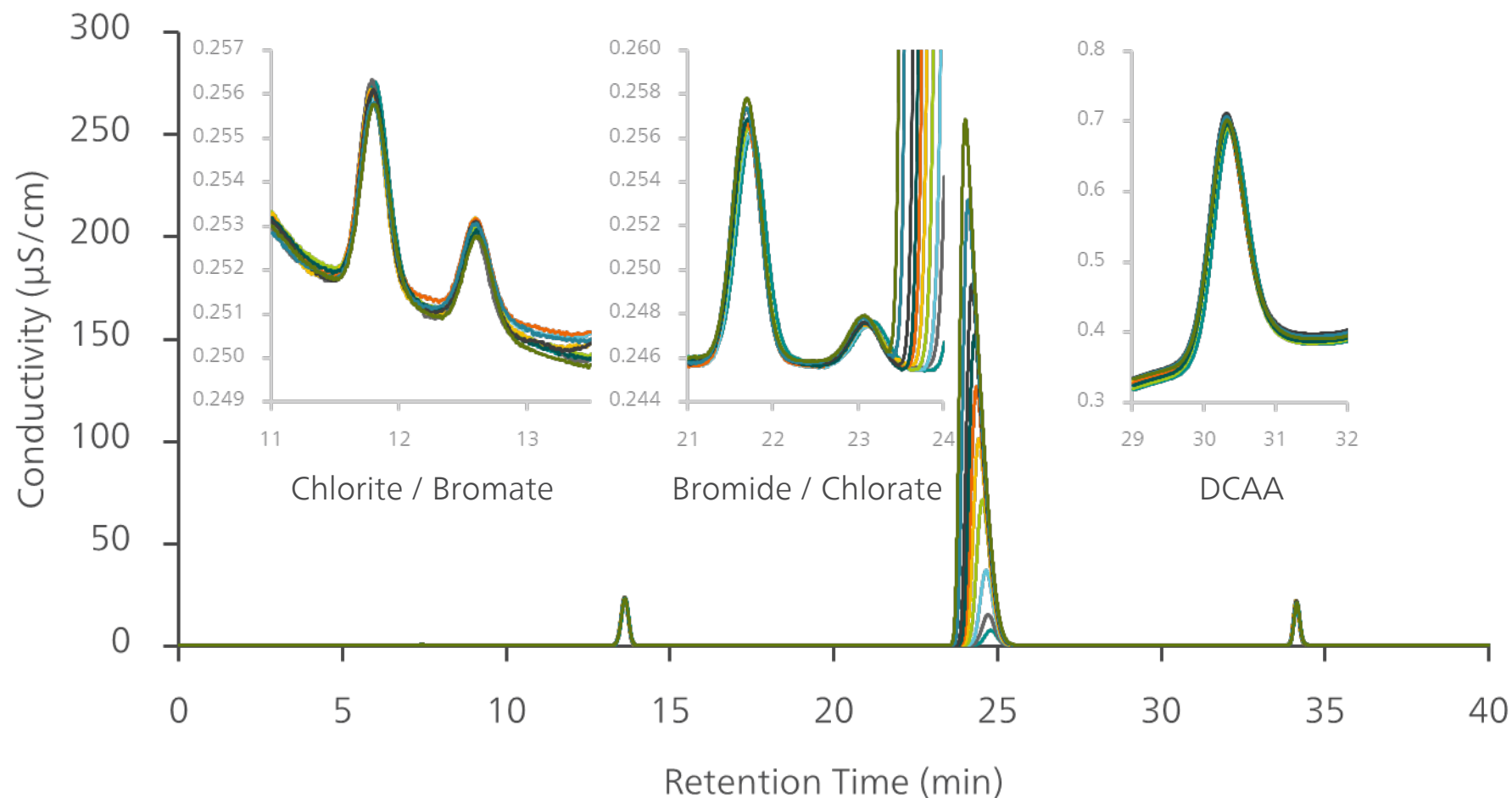
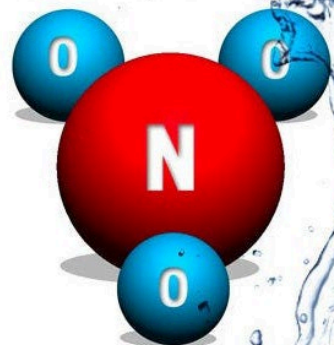
Suppression Sequential with
MSM HCA rotor

Detection Conductivity

Sample Standard with
chloride variation
(10-500 mg/L)

App 1: US EPA 300.1 A+B

Matrix effects: nitrate



Metrosep A Supp 21 - 250/4.0

Eluent 18-80 mmol/L KOH
(Dose-in Gradient)

Flow Eluent 0.80 mL/min

Temp 45 °C

Injection 50 µL

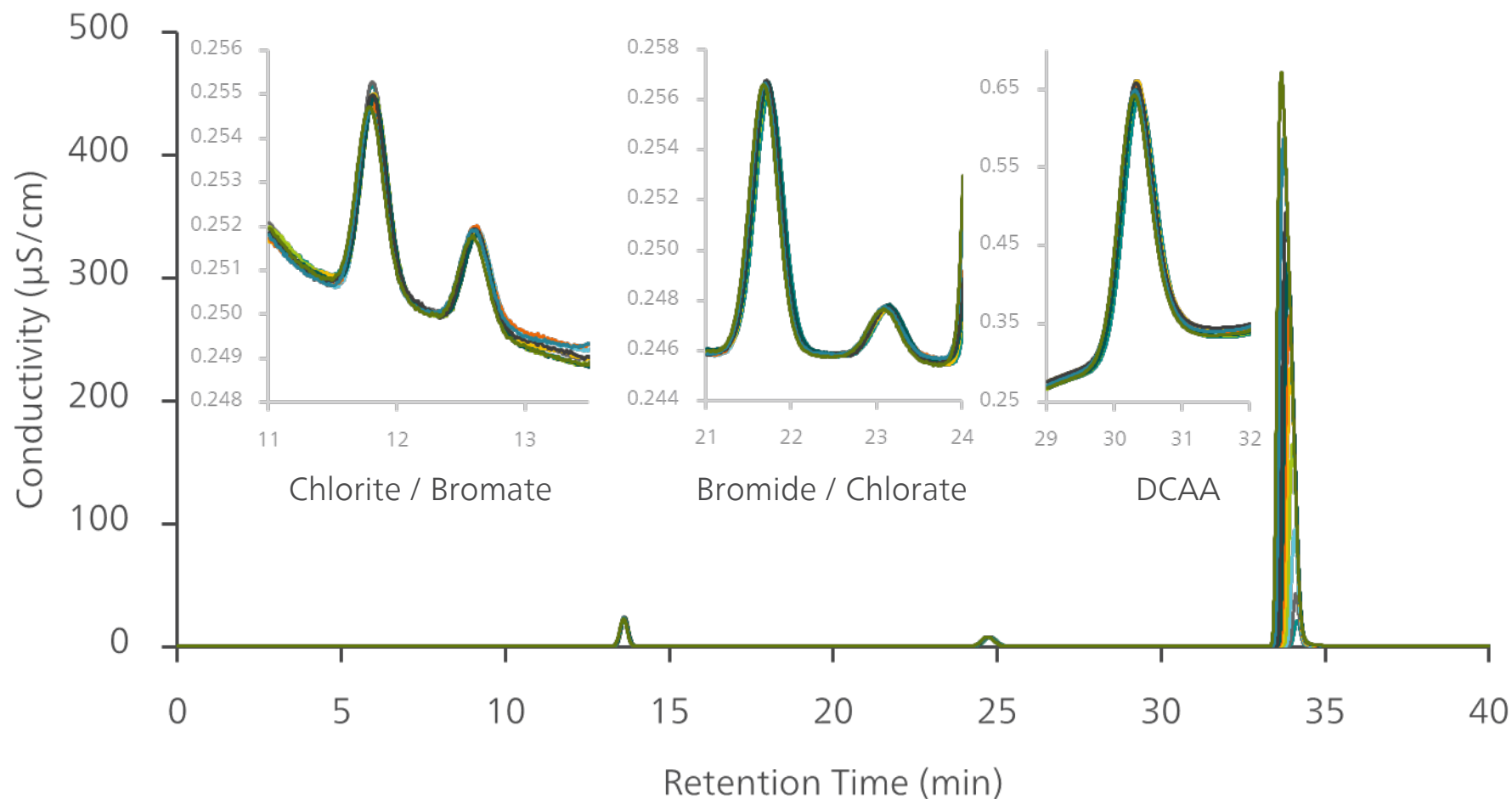
Suppression Sequential with
MSM HCA rotor

Detection Conductivity

Sample Standard with
nitrate variation
(10-500 mg/L)

US EPA 300.1 A+B

Matrix effects: sulfate



Metrosep A Supp 21 - 250/4.0

Eluent 18–80 mmol/L KOH
(Dose-in Gradient)

Flow Eluent 0.80 mL/min

Temp 45 °C

Injection 50 µL

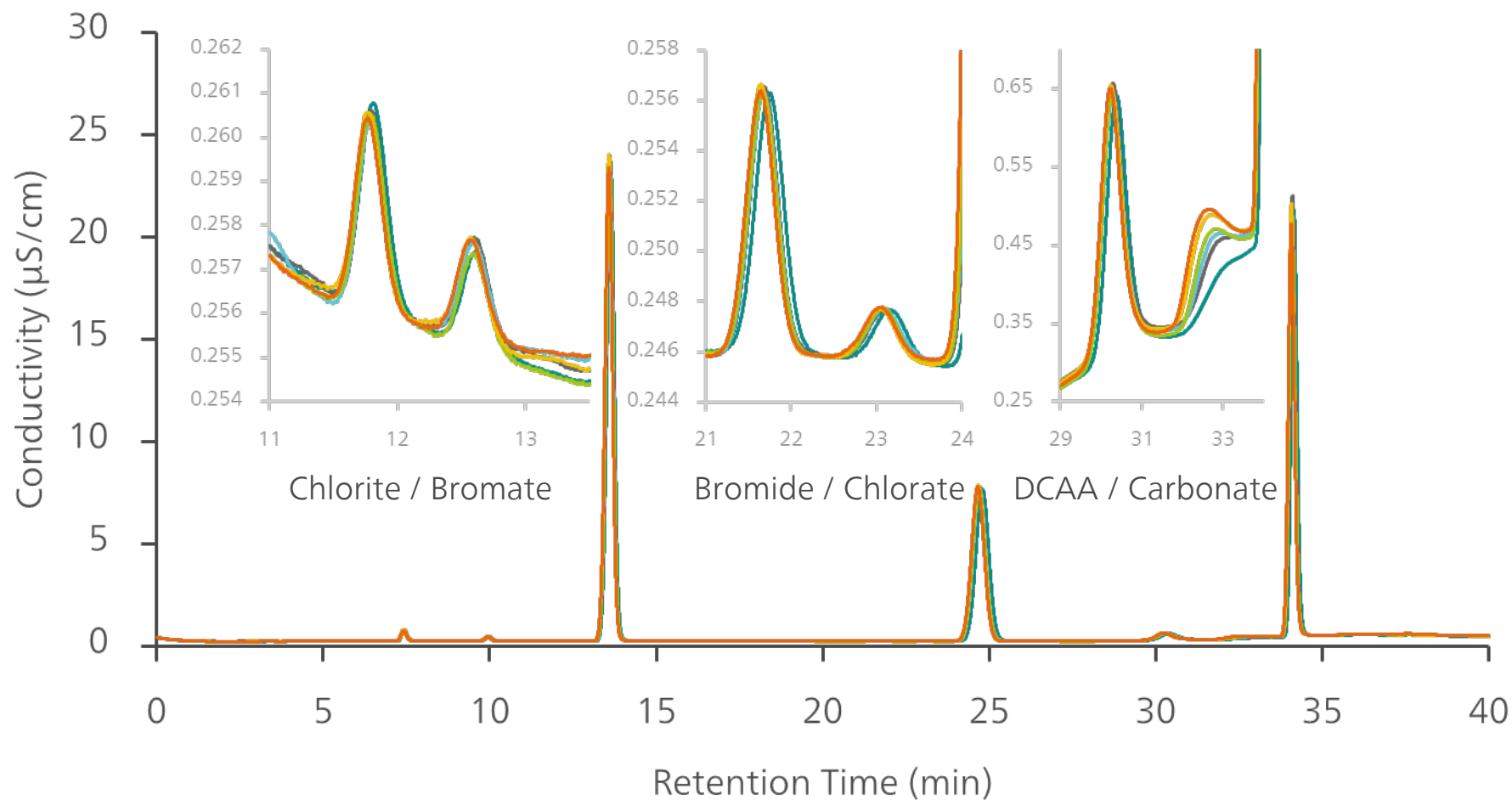
Suppression Sequential with
MSM HCA rotor

Detection Conductivity

Sample Standard with
sulfate variation
(10–500 mg/L)

US EPA 300.1 A+B

Matrix effects: carbonate



Metrosep A Supp 21 - 250/4.0

Eluent	18–80 mmol/L KOH (Dose-in Gradient)
Flow Eluent	0.80 mL/min
Temp	45 °C
Injection	50 µL
Suppression	Sequential with MSM HCA rotor
Detection	Conductivity
Sample	Standard with carbonate variation (0–500 mg/L)

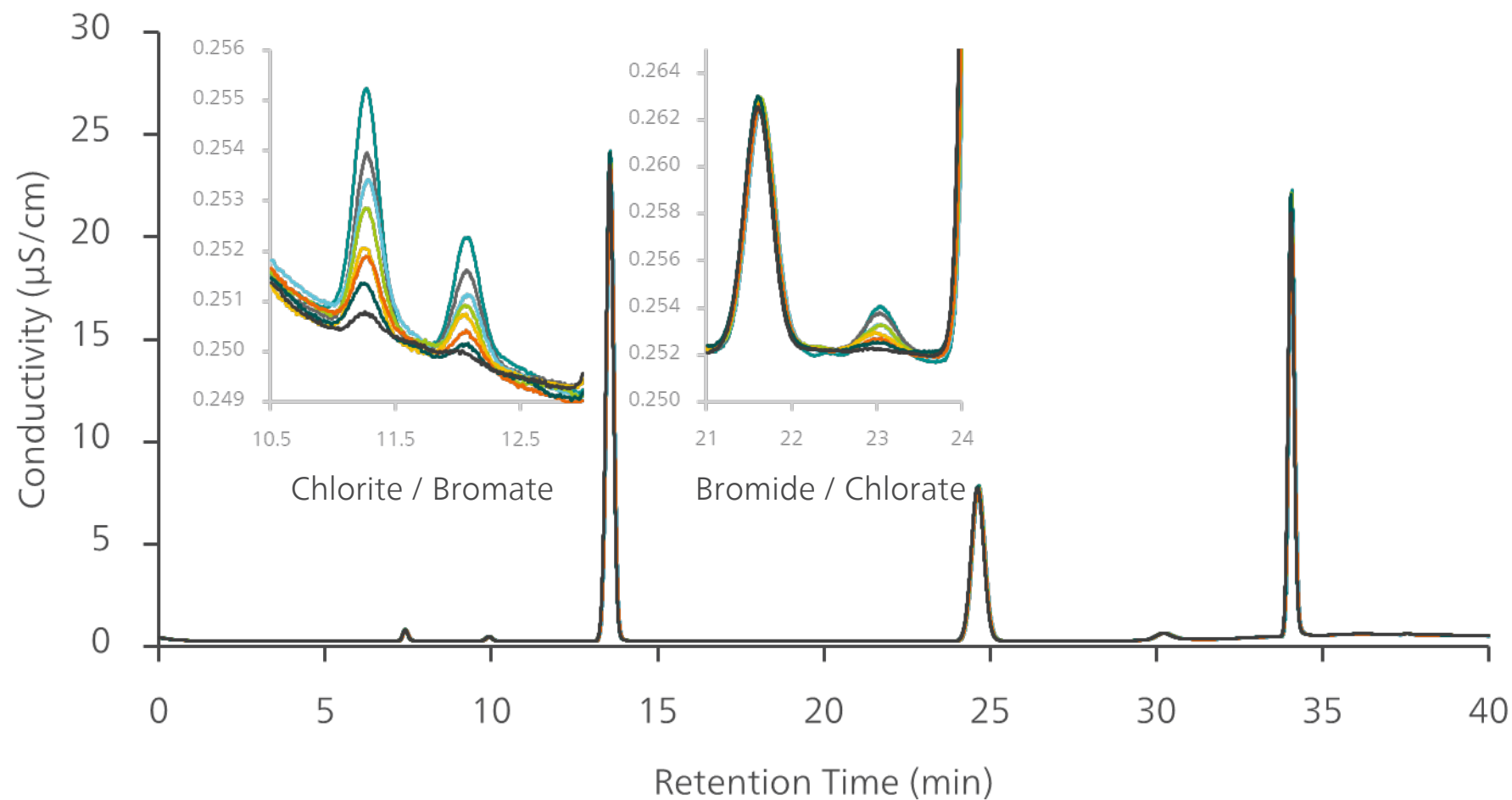
US EPA 300.1 A+B

Detection limits



Metrosep A Supp 21 - 250/4.0

Eluent	18–80 mmol/L KOH (Dose-in Gradient)
Flow Eluent	0.80 mL/min
Temp	45 °C
Injection	50 µL
Suppression	Sequential with MSM HC A rotor
Detection	Conductivity
Sample	Standard with oxyhalide variation (0.5–5 µg/L)



US EPA 300.1 A+B

Detection limits – pushing the limits



Metrosep A Supp 21 - 250/4.0

Eluent 18–80 mmol/L KOH
(Dose-in Gradient)

Flow Eluent 0.80 mL/min

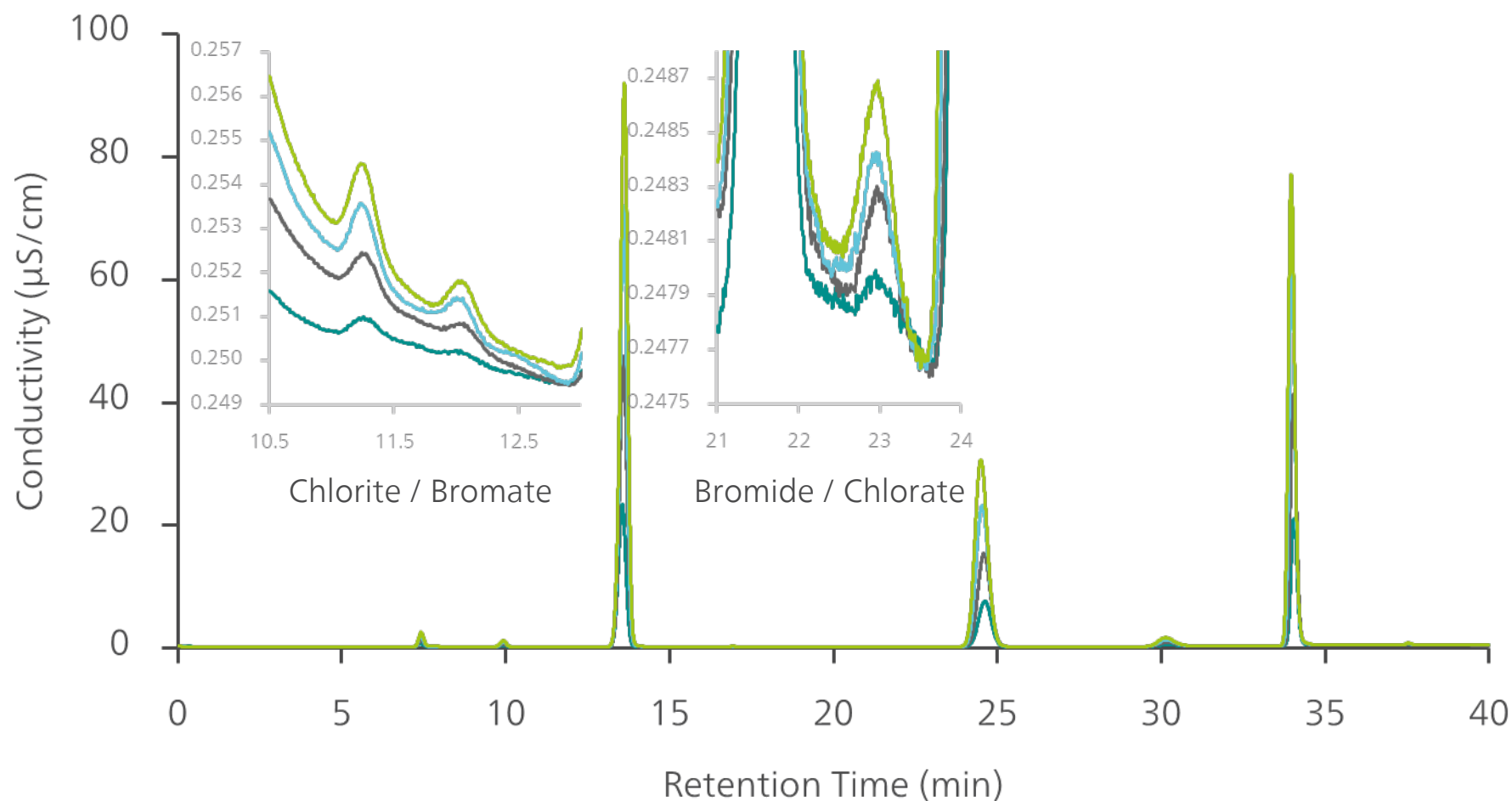
Temp 45 °C

Injection 50–200 µL

Suppression Sequential with
MSM HC A rotor

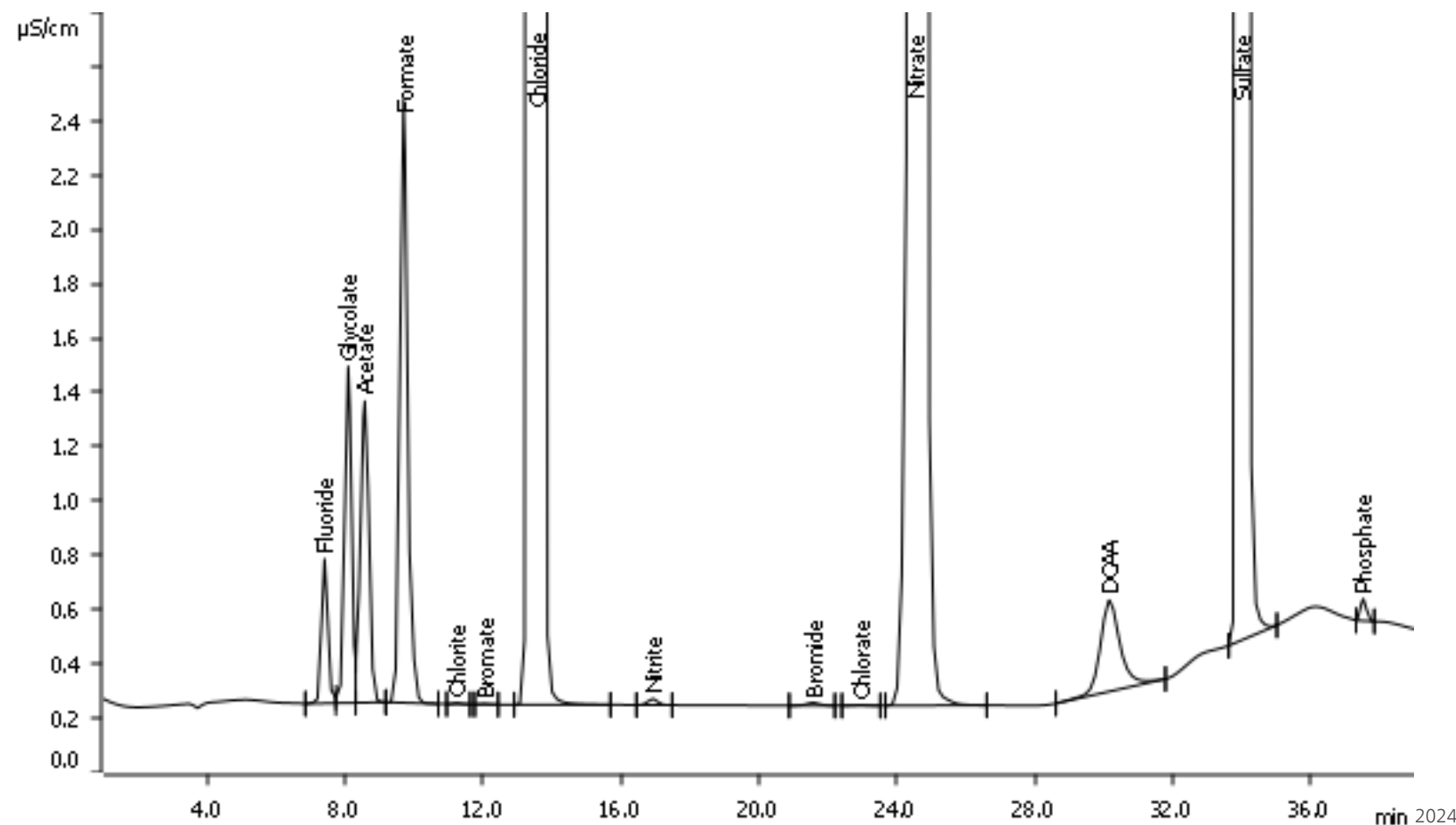
Detection Conductivity

Sample Standard with
oxyhalides (0.5 µg/L)



US EPA 300.1 A+B

Frequently present organic acids



Metrosep A Supp 21 - 250/4.0

Eluent 18-80 mmol/L KOH

Flow Eluent 0.8 mL/min

Temp 45 °C

Injection 50 µL

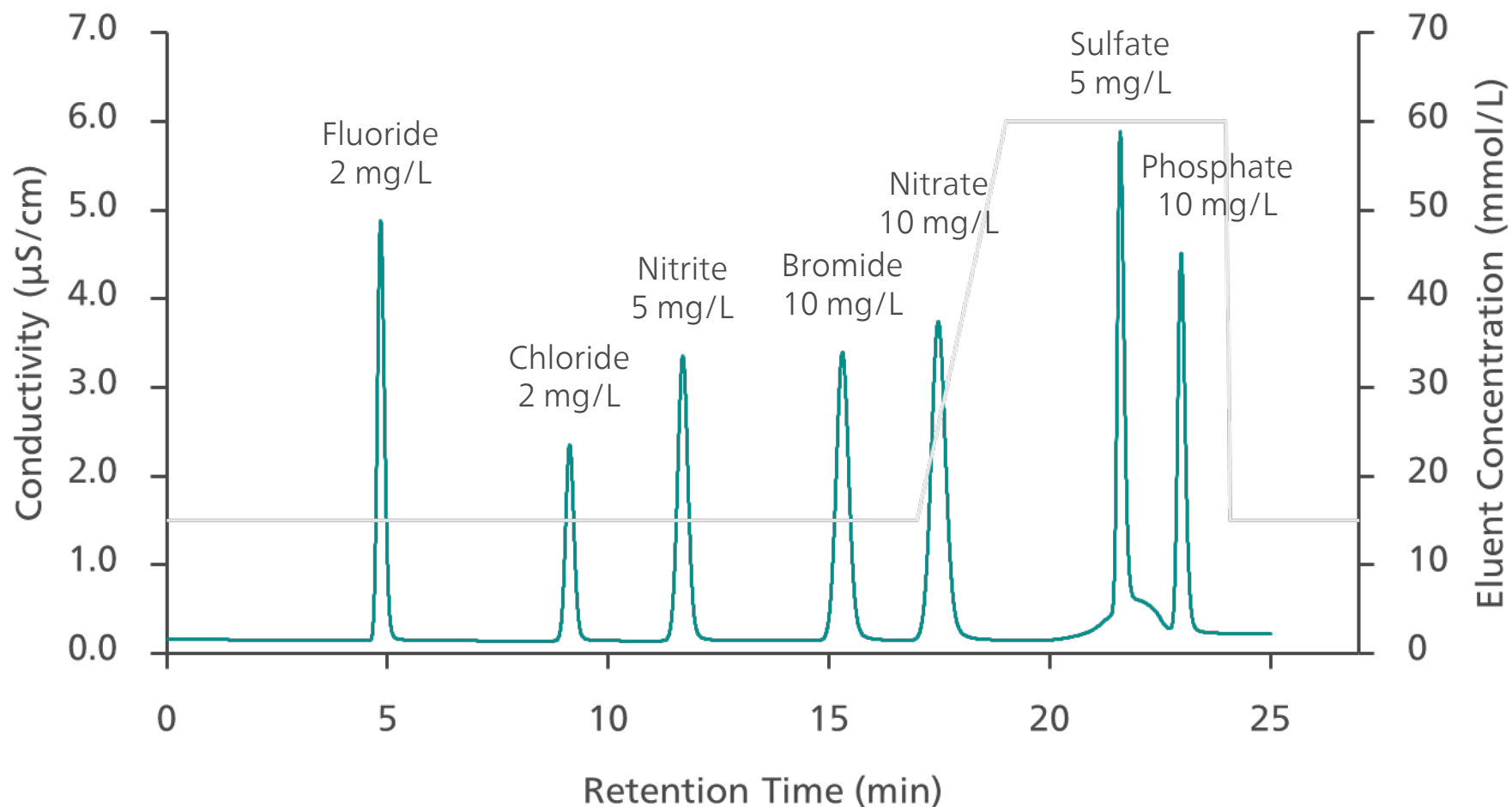
Suppression Sequential with MSM HC A rotor

Detection Conductivity

Sample Standard with glycolate, acetate, formate (1 mg/L)

Metrosep A Supp 21 - 150/4.0

Certificate conditions



Metrosep A Supp 21 - 150/4.0

Eluent	15-60 mmol/L KOH (Dose-in Gradient)
Flow Eluent	0.80 mL/min
Temp	25 °C
Injection	20 µL
Suppression	Sequential with MSM HC A rotor
Detection	Conductivity
Sample	Standard anions

US EPA 300.1 A (including DCAA)

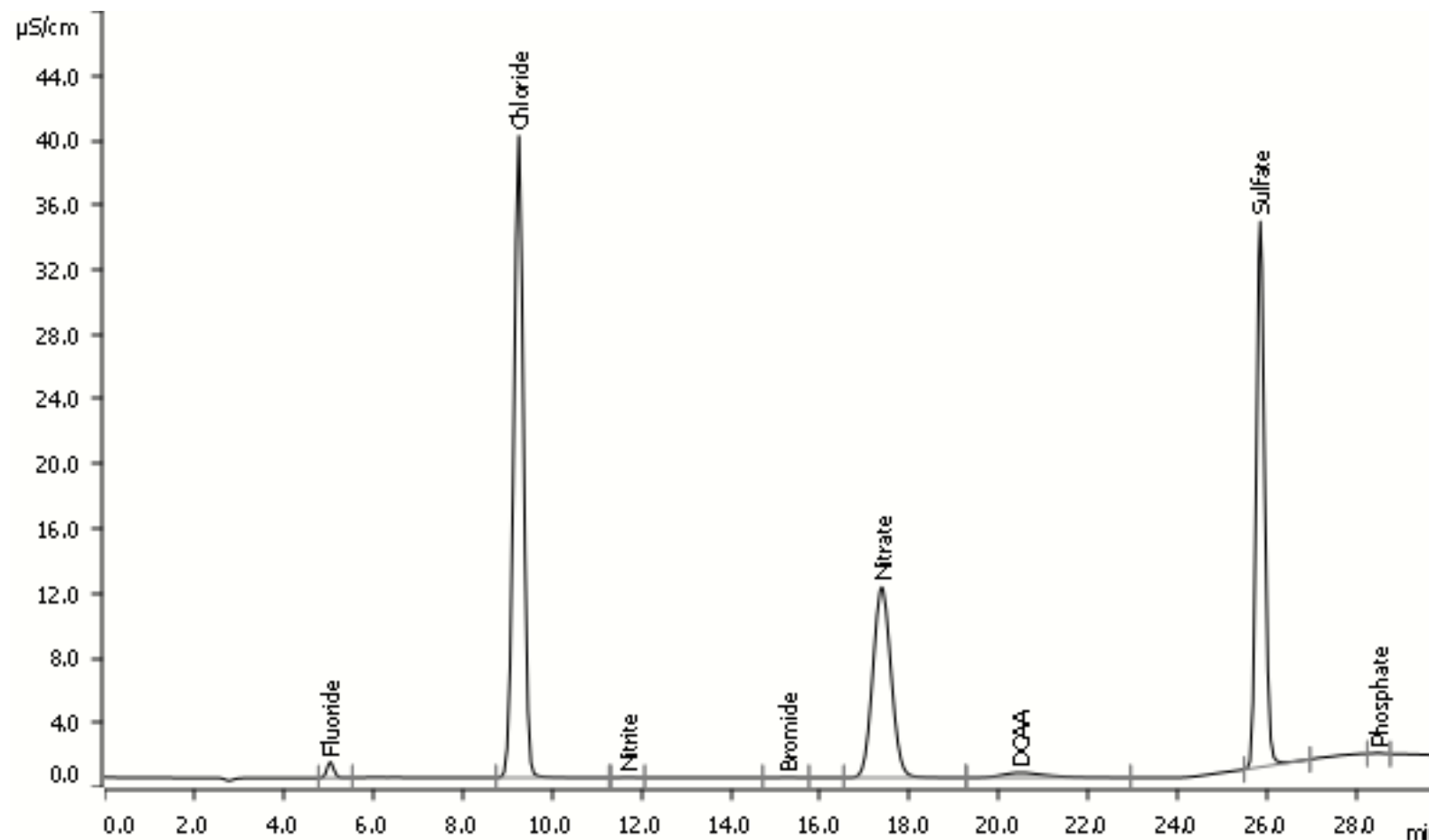
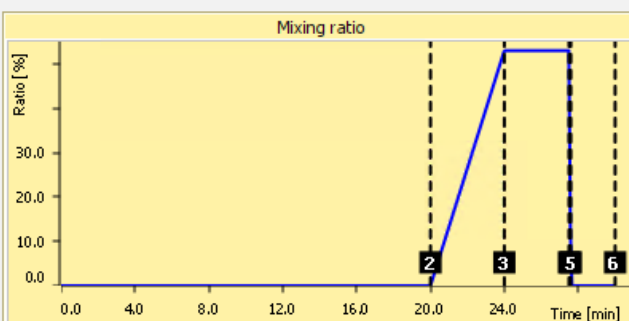
Standard condition

0.8 mL/min

	Time [min]	Ratio [%]	Curve
▶ 1	Start	0.0	
2	20.0	0.0	Linear
3	24.0	53.0	Linear
4	27.5	53.0	Linear
5	27.6	0.0	Linear
6	30.0	0.0	Linear
*			

Edit ▾

Total volume 2.353 mL



Metrosep A Supp 21 - 150/4.0

Eluent 15-60 mmol/L KOH

Flow Eluent 0.80 mL/min

Temp 25 °C

Injection 40 µL

Suppression Sequential with MSM HC A rotor

Detection Conductivity

Sample 2 mg/L F⁻, PO₄³⁻,
200 mg/L Cl⁻, NO₃⁻, SO₄²⁻
0.4 mg/L NO₂⁻, Br⁻; 20
mg/L DCAA

Thank
You

Fragen?