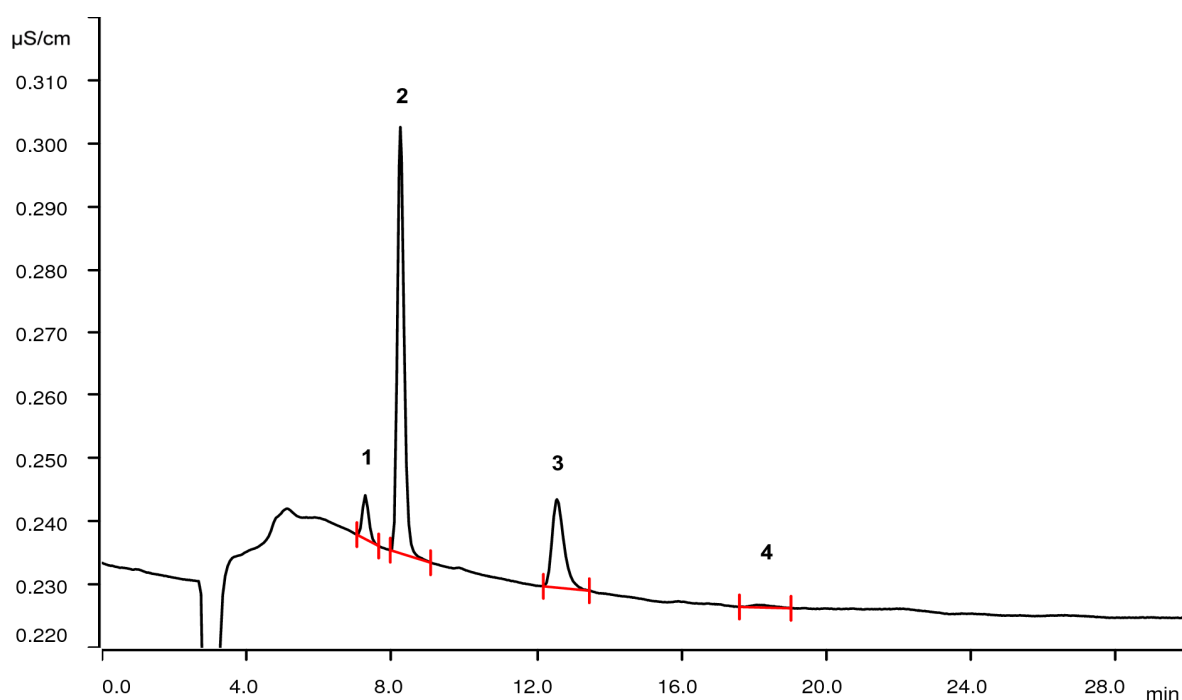# Trace ammonium and trimethylamine in 30% hydrogen peroxide applying sequential suppression

Determination of trace levels of cations and amines in hydrogen peroxide is important in quality determination of high-grade semiconductor chemicals. In particular, some manufactures look for 1 ppb trimethylamine or less in hydrogen peroxide samples. Ion chromatography after MiPCT-ME* with conductivity detection after sequential cation suppression is applied.

Results

	Cation	Conc. [µg/L]	Spike [µg/L]	Conc. spiked [µg/L]	recovery [%]
1	Sodium	n.q.	-	-	-
2	Ammonium	1.72	5.03	7.33	111
3	Potassium	n.q.	-	-	-
4	Trimethylamine	0.17	3.01	3.573	113

* intelligent Preconcentration technique with Matrix Elimination

Ω **Metrohm**

Sample

Hydrogen peroxide, 30%

Sample preparation

Hydrogen peroxide is removed from the preconcentration column applying Metrohm intelligent Preconcentration Technique with Matrix Elimination.

Columns

Metrosep C Supp 2 - 250/4.0	6.01053.430
Metrosep C Supp 2 Guard/4.0	6.01053.500
Metrosep I Trap 1 - 100/4.0	6.1014.200
Metrosep C PCC 1 HC/4.0	6.1010.310

Solutions

|	
Eluent	5.0 mmol/L nitric acid 50 µg/L rubidium 2% acetonitile
Suppressor regenerant	70 mmol/L sodium carbonate 70 mmol/L sodium hydrogen carbonate
Rinsing solution	STREAM

Instrumentation

940 Professional IC Vario One/SeS	2.940.1400
IC Conductivity Detector	2.850.9010
919 IC Autosampler Plus	2.919.0020
3 x 800 Dosino	2.800.0010
MSM-HC Rotor C	6.2842.200
IC equipment: Dosino regeneration	6.5330.190
IC equipment: MiPCT-ME	6.5330.160

Analysis

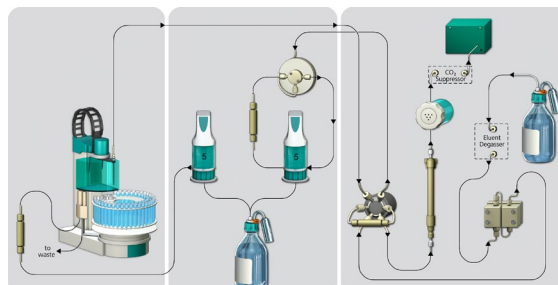Conductivity detection after sequential suppression

Parameters

Flow rate	1.0 mL/min
Injection volume	1000 µL
P_{max}	25 MPa
Recording time	30 min
Column temperature	50 °C
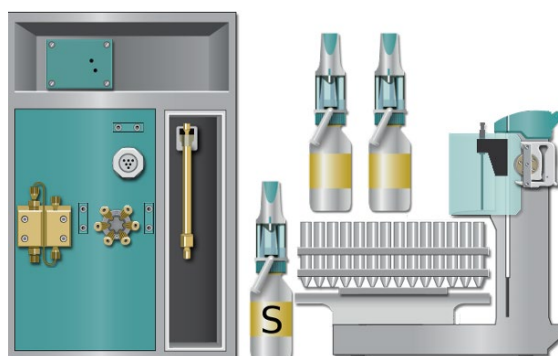
Calibration (MiPCT-ME)

Level	NH$_4$ [µg/L]	Inj. vol.	TMA [µg/L]	Inj. vol.
1	100	1000		
2	50	500		
5	20	200		
10	10	100	10	100
20	5	50	5	50
50			2	20
100			1	10

Parameters

www.metrohm.com

Ω Metrohm