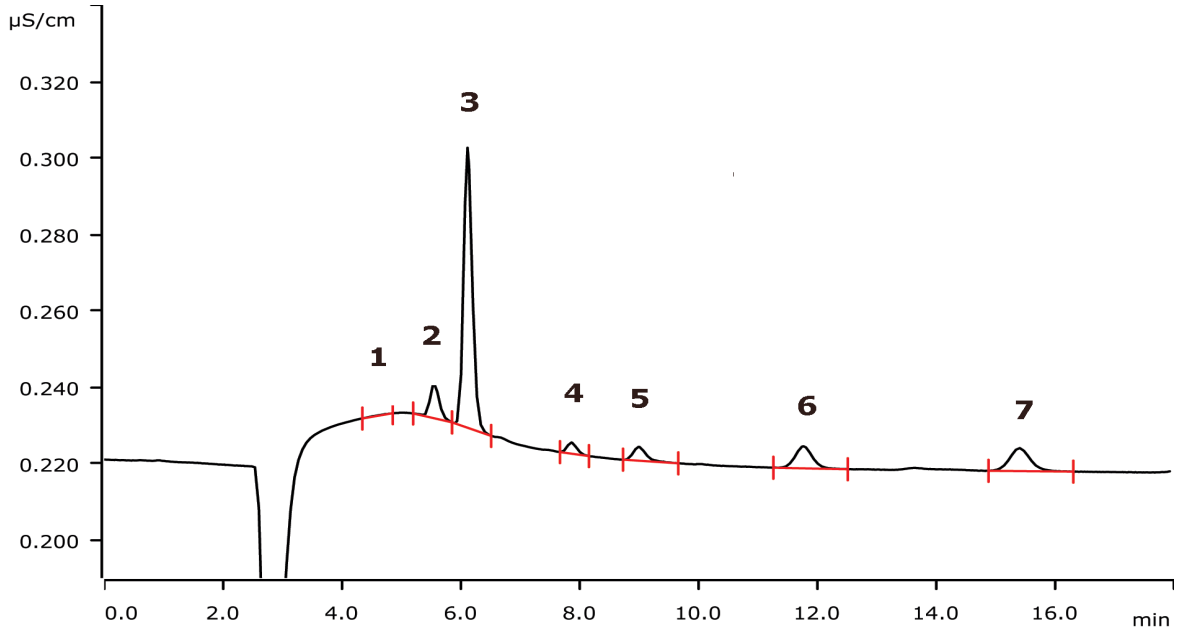
IC Application Note CS–012

Determination of trimethylamine and standard cations in 30% hydrogen peroxide (H_2O_2)



Hydrogen peroxide is available in different purity grades depending on its use. High purity H_2O_2 (electronic grade) requires very low contamination levels, e.g., less than 1 µg/L of trimethylamine (TMA). This application describes the determination of trimethylamine in a high-purity H_2O_2 solution (30%). Analysis is performed using Inline Preconcentration with Matrix Elimination (MiPCT-ME) applying conductivity detection after sequential cation suppression.

Results

	Cation	Conc. [µg/L]	RSD [%]	Recovery [%]		Cation	Conc. [µg/L]	RSD [%]	Recovery [%]
1	Lithium	n.d.	-	79	5	TMA	0.71	3.3	74
2	Sodium	0.39	2.6	89	6	Magnesium	0.55	5.5	84
3	Ammonium	1.83	4.1	87	7	Calcium	0.97	4.1	142
4	Potassium	0.20	12						

Metrohm

Sample

Hydrogen peroxide (30%)

Sample preparation

Metrohm intelligent Preconcentration Technique with Inline Matrix Elimination (MiPCT-ME).

Columns

Metrosep C Supp 1 - 250/4.0	6.1052.430
Metrosep C Supp 1 Guard/4.0	6.1052.500
Metrosep C PCC 1 HC/4.0	6.1010.310
2 x Metrosep I Trap 1 - 100/4.0	6.1014.200

Solutions

Eluent	5.0 mmol/L nitric acid 50 µg/L rubidium
Suppressor regenerant	70 mmol/L sodium carbonate 70 mmol/L sodium hydrogen carbonate
Rinsing solution	STREAM
Matrix elimination	Ultrpure water (ELGA)

Analysis

Conductivity detection after sequential suppression

Parameters

Flow rate	1.0 mL/min
Injection volume	1000 µL
P_{max}	15 MPa
Recording time	18 min
Column temperature	40 °C

Instrumentation

930 Compact IC Flex Oven/SeS/PP/Deg	2.930.2560
IC Conductivity Detector	2.850.9010
858 Professional Sample Processor	2.858.0010
2 x 800 Dosino	2.800.0010
MSM-HC Rotor C	6.2842.200
IC equipment: MiPCT-ME	6.5330.160