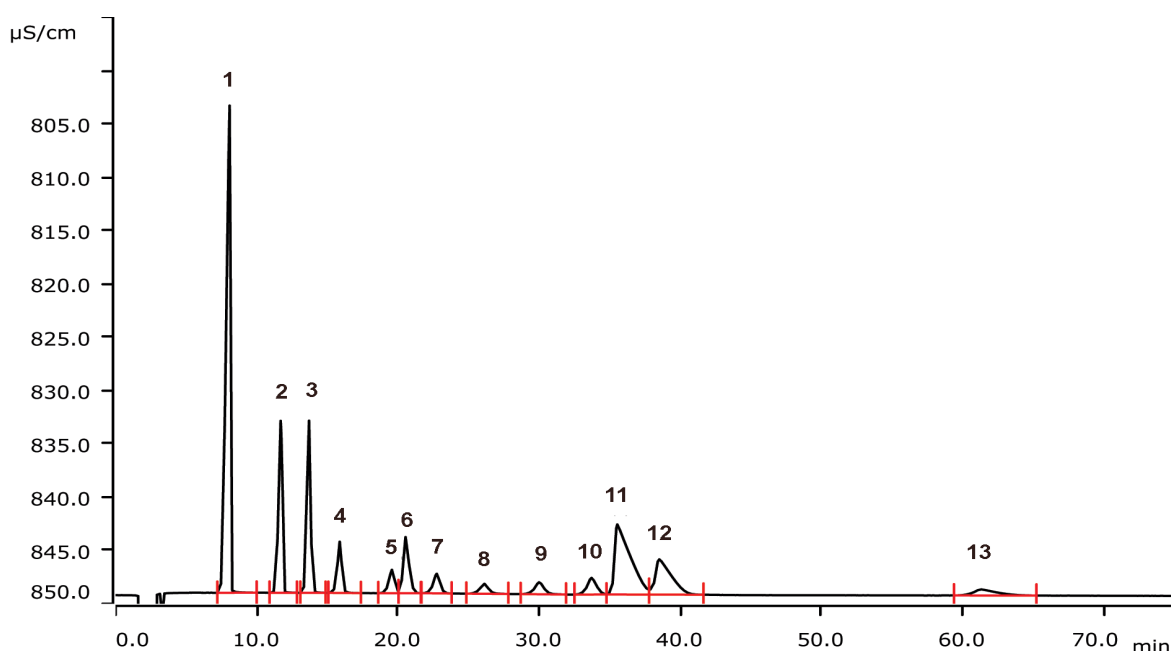


Amines in scrubber solutions of refineries with direct conductivity detection



Natural gas production requires the removal of contaminants like acidic gases (e.g., H₂S and CO₂). Acidic gases are removed by treatment with amines or alkanolamines (gas sweetening). This application shows the separation of various amines besides the standard cations on a Metrosep C 6 - 250/4.0 column with subsequent direct conductivity detection.

Results

Comp.	Conc. [mg/L]	Comp.	Conc. [mg/L]	Comp.	Conc. [mg/L]
1 Li ⁺	49.3	6 K ⁺	49.3	11 Mg ²⁺	49.3
2 Na ⁺	49.3	7 DGA	50.0	12 Ca ²⁺	49.3
3 NH ₄ ⁺	49.3	8 TEA	49.9	13 Cyclo	49.7
4 MEA	50.1	9 MDEA	49.9		
5 DEA	50.0	10 MOPA	50.1		

Table of full names of the amines below.

Sample

Standard

Sample preparation

Direct injection

Columns

Metrosep C 6 - 250/4.0	6.1051.430
Metrosep C 4 Guard/4.0	6.1050.500

Solutions

Eluent	1.0 mmol/L nitric acid 1.5 mmol/L oxalic acid 0.75 mmol/L dipicolinic acid 1% acetone
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Analysis

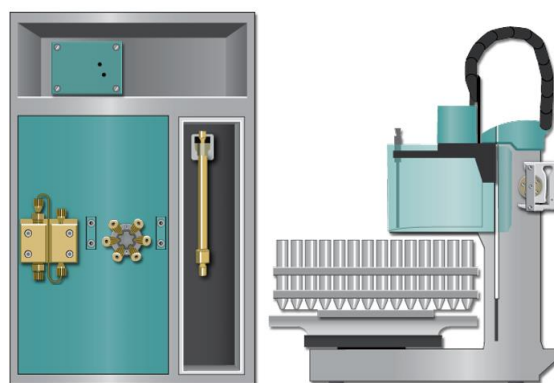
Direct conductivity detection

Parameters

Flow rate	0.9 mL/min
Injection volume	10 μ L
P _{max}	20 MPa
Recording time	75 min
Column temperature	40 °C

Instrumentation

940 Professional IC Vario ONE	2.940.1100
IC Conductivity Detector	2.850.9010
858 Professional Sample Processor	2.858.0020



Amine components

MEA	Monoethanolamine
DEA	Diethanolamine
DGA	Diglycolamine
TEA	Triethanolamine
MDEA	Methyldiethanolamine
MOPA	3-methoxypropylamine
Cyclo	Cyclohexylamine

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