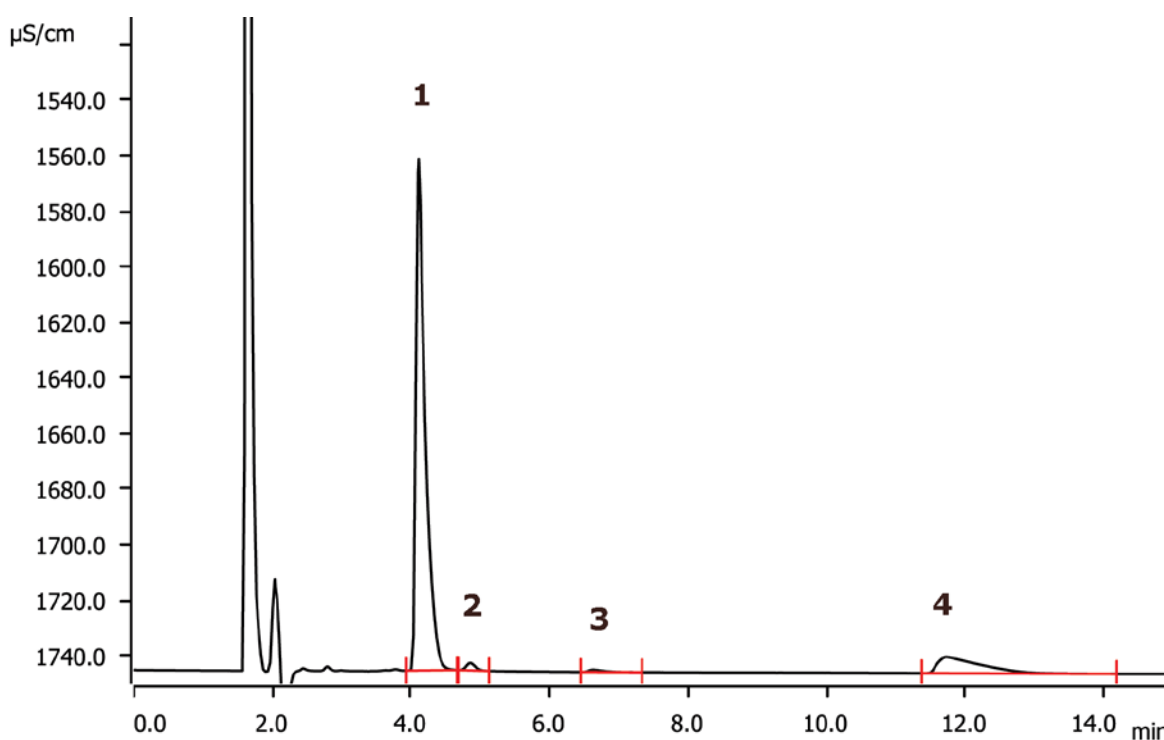


N-methyldiethanolamine and piperazine in scrubber solution



Before the liquefaction process of the natural gas, carbonate and hydrogen sulfide need to be removed through a scrubber solution containing piperazine and N-methyl diethanolamine (MDEA). The concentration ratio of the two components is determined by ion chromatography on a Metrosep C 4 - 150/4.0 column applying direct conductivity detection.

Results

Cation	Concentration [%]
1 MDEA	69.1
2 Strontium	n.q.
3 Barium	n.q.
4 Piperazine	4.5

Sample

NLP scrubber solution

Sample preparation

Dilution 1:1000 with ultrapure water.

Columns

Metrosep C 4 - 150/4.0	6.1050.420
Metrosep C 4 Guard/4.0	6.1050.500

Solutions

Eluent	6.0 mmol/L nitric acid 0.7 mmol/L dipicolinic acid 5% acetone
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Analysis

Direct conductivity detection

Instrumentation

930 Compact IC Flex Oven/Deg	2.930.2160
IC Conductivity Detector	2.850.9010
858 Professional Sample Processor	2.858.0020

Parameters

Flow rate	0.9 mL/min
Injection volume	10 μ L
P _{max}	25 MPa
Recording time	13 min
Column temperature	45 °C

