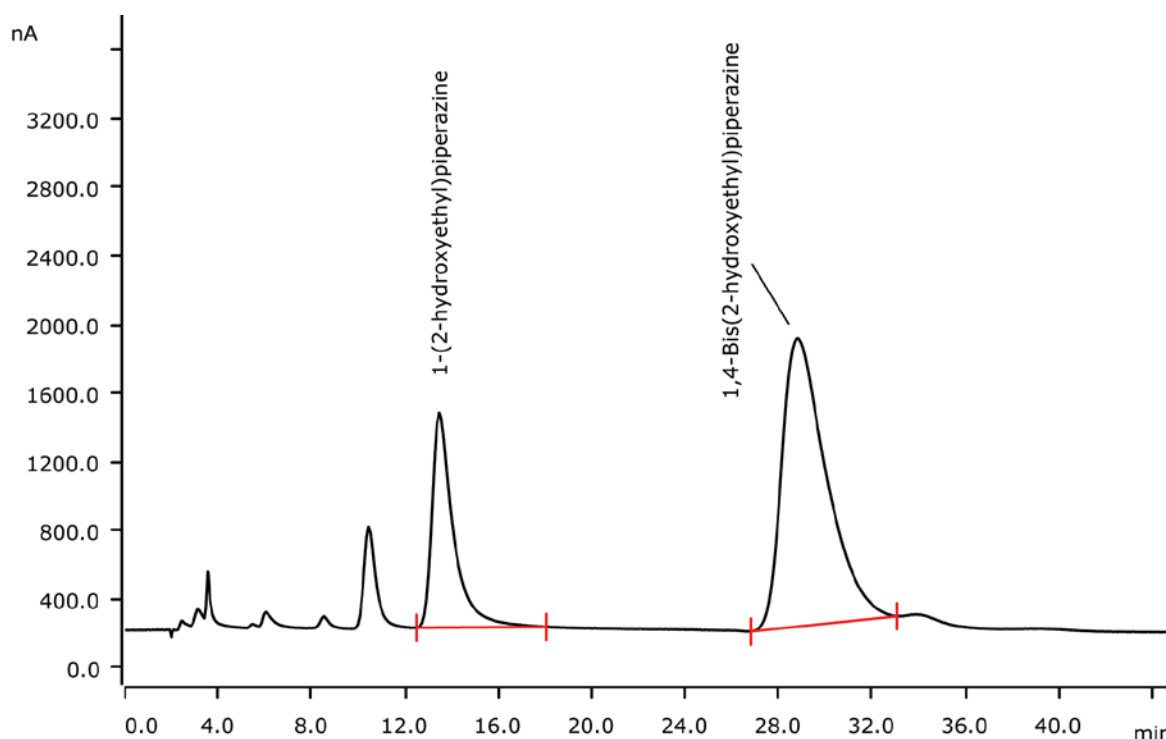


Amines in desulfurization solutions applying IC and pulsed amperometric detection



Scrubber solution for flue gas washing usually contains amines for sufficient absorption of acidic gases like SO₂. 1-(2-hydroxyethyl)piperazine and 1,4-bis(2-hydroxyethyl)piperazine from scrubber solution are separated on the Metrosep Carb 2 - 150/4.0 and subsequently determined by pulsed amperometric detection.

Results

Amine	Concentration [g/L]	RSD [%] n = 3	Recovery [%]
1-(2-hydroxyethyl)piperazine	25.2	1.53	101
1,4-Bis(2-hydroxyethyl)piperazine	158.5	2.20	112

Sample

Scrubber solution

Sample preparation

Dilution 1 : 2000.

Columns

Metrosep Carb 2 - 150/4.0	6.1090.420
Metrosep Carb 2 Guard/4.0	6.1090.500

Solutions

Eluent	30 mmol/L sodium hydroxide
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Parameters

Flow rate	0.5 mL/min
Injection volume	5 µL
Recording time	45 min
Column temperature	30 °C

Analysis

Pulsed amperometric detection

PAD Parameters

Cell	Wall-Jet cell
Working electrode	Gold (3 mm)
Reference electrode	Palladium
Spacer	50 µm
Measuring potential	50 mV
Meas. range	200 µA
Meas. duration	100 ms
Cycle duration	550 ms
Temperature	35 °C
Mode	PAD

Instrumentation

940 Professional IC Vario ONE	2.940.1100
IC Amperometric Detector	2.850.9110
858 Professional Sample Processor	2.858.0020
IC equipment Wall-Jet cell: Carb (Au, Pd)	6.5337.010

