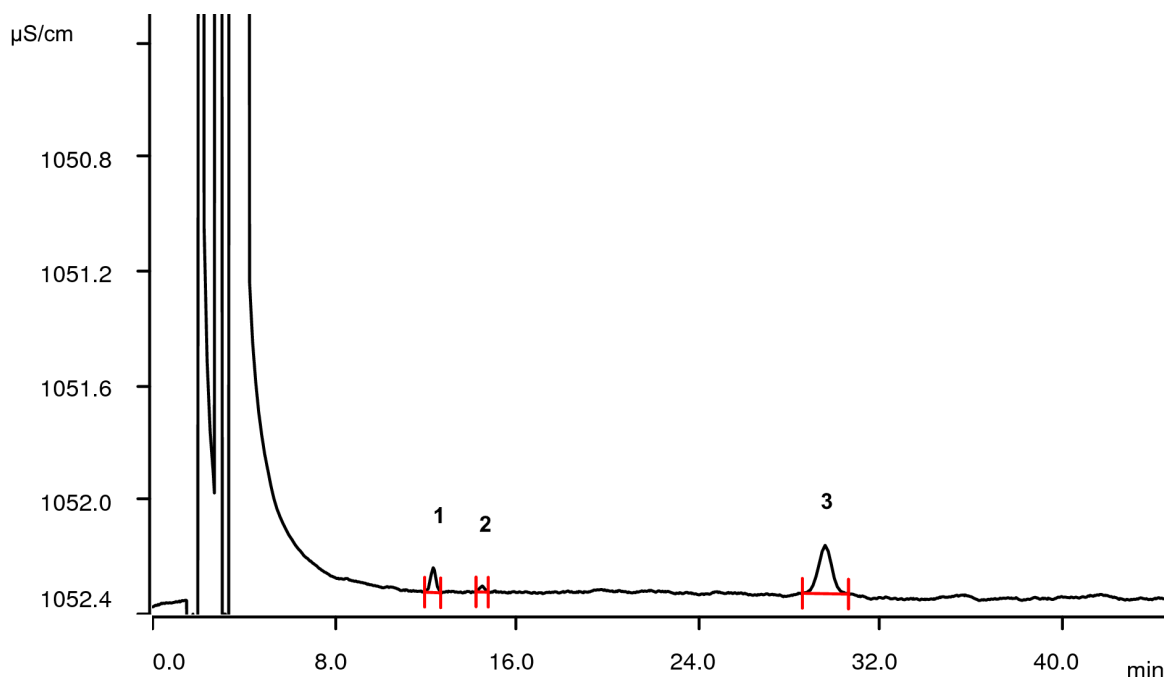


IC Application Note C-191

Sodium in lanthanum acetate

Determination of sodium besides a high concentration of lanthanum on a Metrosep C 6 - 250/4.0 applying direct conductivity detection.



Cation chromatogram of a lanthanum(III) acetate solution.

Lanthanum (La) is a transition metal which oxidizes easily in air to lanthanum(III) oxide. This oxide, as well as salts resulting from its dissolution in acid and recrystallization, is a component of different catalysts. Here, a lanthanum(III) acetate solution prepared by dissolution of lanthanum(III) oxide in acetic acid, has to be tested for a sodium contamination. The high concentration of La^{3+} is complexed by the dipicolinic acid in the eluent and forms anionic complexes. These complexes are eluted in the front and therefore do not interfere with the sodium impurity as well as other cations such as ammonium and calcium.

Results

	Cation	Conc. direct [mg/L]	RSD [%]	Conc. spiked [mg/L]	RSD [%]	Recovery [%]
1	Sodium	5.48	4.0	11.65	1.7	103
2	Ammonium	0.74	-	-	-	-
3	Calcium	35.25	-	-	-	-

Sample

Lanthanum(III) acetate solution.

Sample preparation

Sample is diluted 1:25 in 2 mmol/L nitric acid.

Cation columns

Metrosep C 6 - 250/4.0	6.1051.430
Metrosep C 6 Guard/4.0	6.1051.500

Solutions

Eluent	1.7 mmol/L nitric acid 1.7 mmol/L dipicolinic acid
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Instrumentation

Eco IC	2.925.0020
IC Conductivity Detector	2.850.9010
863 IC Compact Autosampler	2.863.0010

Analysis

Direct conductivity detection

Parameters

Flow rate	0.9 mL/min
Injection volume	10 μ L
P _{max}	20 MPa
Column temperature	ambient
Recording time	45 min

