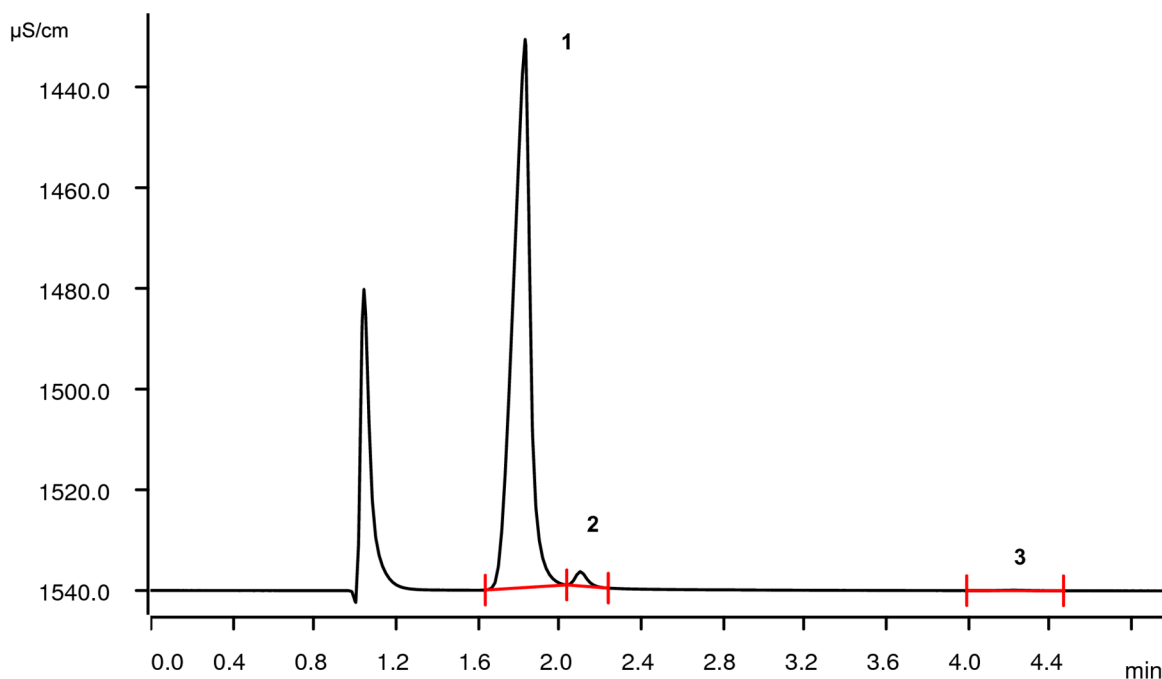


IC Application Note C-189

Cations in lithium ore

Determination of lithium, sodium, and calcium on a Metrosep C 4 - 100/4.0 applying direct conductivity detection.



Cation chromatogram of the lithium ore processing stream.

The exploration and processing of lithium ores is gaining importance with the growing demand for lithium hydroxide. Lithium hydroxide is a key component in the manufacturing of rechargeable batteries for use in various applications including electric vehicles, home storage systems, power tools and consumer electronics. To ensure the efficiency for advanced processing of high purity lithium hydroxide, a fast and reliable quantitative detection technique is required. This application has been developed to monitor the lithium, sodium, and calcium content in the lithium processing samples and mineral concentrates.

Results

	Cation	Concentration [g/L]	RSD [%]
1	Lithium	23.80	0.12
2	Sodium	1.55	0.22
3	Calcium	0.08	0.89

Sample

Lithium ore processing stream.

Sample preparation

Samples were diluted 1000 times in eluent.

Cation columns

Metrosep C 4 - 150/4.0	6.1050.410
Metrosep C 4 Guard/4.0	6.1050.500

Solutions

Eluent	5.0 mmol/L nitric acid
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Instrumentation

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

Analysis

Direct conductivity detection

Parameters

Flow rate	1.0 mL/min
Injection volume	10 μ L
P _{max} (cations)	20 MPa
Column temperature	30 °C
Recording time	5 min

