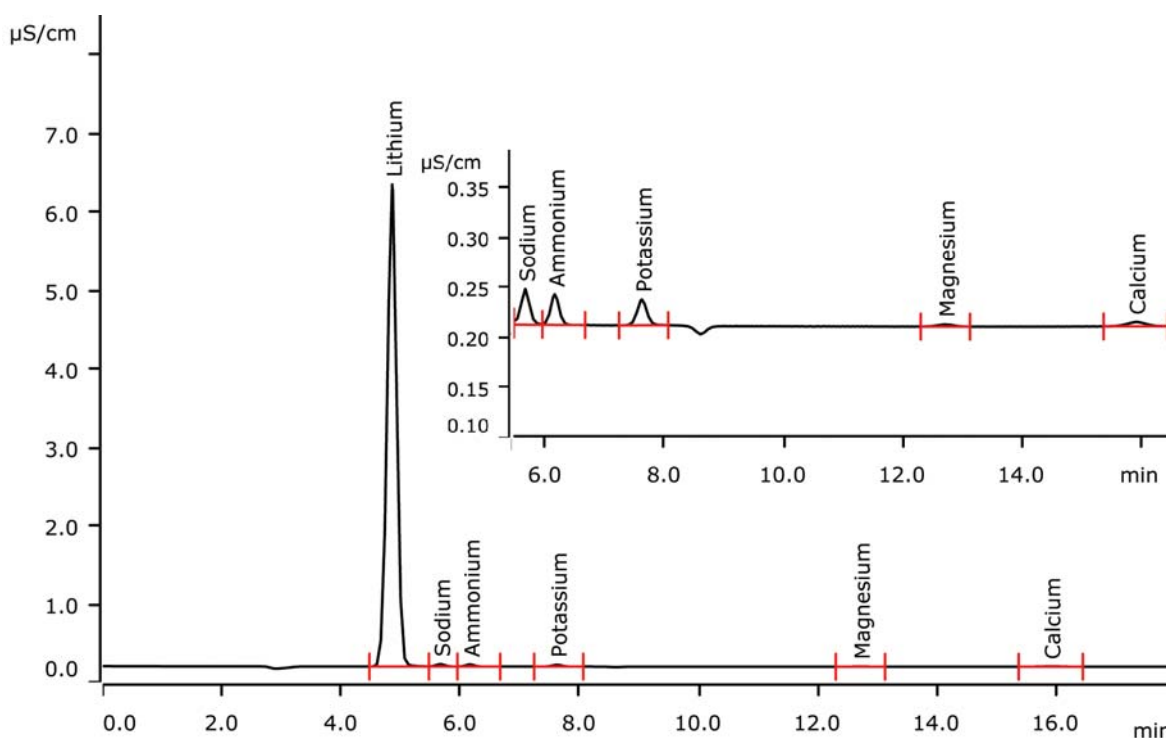


# Trace cations in lithium hexafluorophosphate



Lithium hexafluorophosphate (LiPF<sub>6</sub>) is used as electrolyte in rechargeable batteries. Particularly the high solubility in non-polar solvents and the non-coordinating character of the hexafluorophosphate anion make it ideally suited for lithium-ion cells. This application describes the determination of trace cations in the salt applying conductivity detection after sequential cation suppression.

## Results

Cation	Concentration [μg/L]	Cation	Concentration [μg/L]
Lithium	499	Potassium	3.9
Sodium	3.4	Magnesium	0.3
Ammonium	2.9	Calcium	1.5

## Sample

Lithium hexafluorophosphate

## Sample preparation

109.45 mg of sample are dissolved in 100 mL ultrapure water. Further dilution 1:1000 with 1 mmol/L nitric acid.

## Columns

Metrosep C Supp 1 - 250/4.0	6.1052.430
Metrosep C Supp 1 Guard/4.0	6.1052.500

## Solutions

Eluent	5.0 mmol/L nitric acid 50 µg/L rubidium
Suppressor regenerant	70 mmol/L sodium carbonate 70 mmol/L sodium hydrogen carbonate
Rinsing solution	STREAM

## Analysis

Conductivity detection after sequential suppression

## Parameters

Flow rate	1.0 mL/min
Injection volume (MIPT)	200 µL
P <sub>max</sub>	15 MPa
Recording time	18 min
Column temperature	40 °C

## Instrumentation

930 Compact IC Flex Oven/SeS/PP/Deg	2.930.2560
IC Conductivity Detector	2.850.9010
858 Professional Sample Processor	2.858.0010
800 Dosino	2.800.0010
MSM-HC Rotor C	6.2842.200
IC equipment: MIPT	6.5330.180

