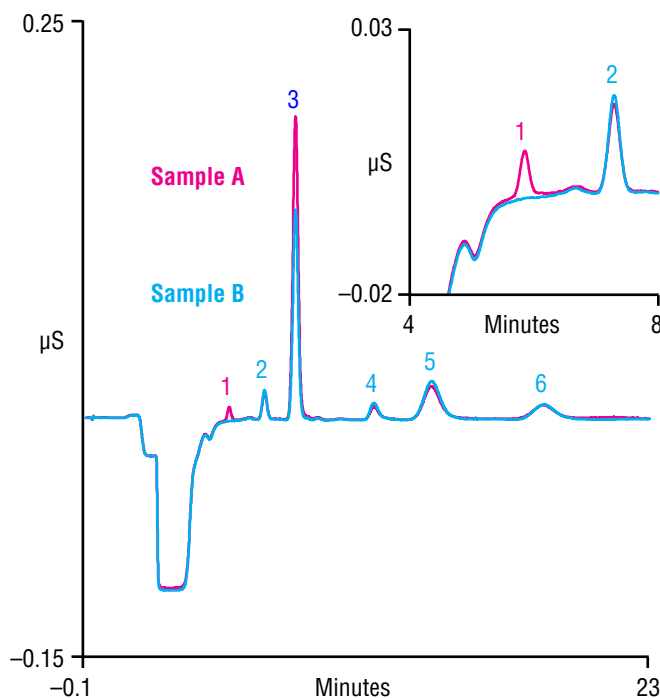


### Separation of Inorganic Cations at Trace Concentrations on an IonPac CS16 Capillary Column Using a 100 $\mu\text{L}$ Injection



Column: IonPac<sup>®</sup> CS16, capillary (0.5 × 250 mm)  
 Eluent Source: Capillary EGC-MSA  
 Eluent: 30 mM MSA  
 Flow Rate: 10  $\mu\text{L}/\text{min}$   
 Injection Vol.: 100  $\mu\text{L}$   
 Temperature: 40 °C  
 Detection: Suppressed conductivity, Cation Capillary Electrolytic Suppressor CCES<sup>™</sup> 300  
 Concentrator: IonSwift<sup>™</sup> MCC-100 (0.5 × 80 mm)

| Peaks:       | Sample A Spiked Concentration $\mu\text{g}/\text{L}$ |
|--------------|--|
| 1. Lithium   | 0.005  |
| 2. Sodium    | 0.02   |
| 3. Ammonium  | 0.025  |
| 4. Potassium | 0.05   |
| 5. Magnesium | 0.025  |
| 6. Calcium   | 0.05   |

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Concentrating a large volume of sample onto a concentrator column is a common technique used to determine ultra-trace (ppt, ng/L) concentrations of inorganic cations. To achieve the required detection limits on a standard bore or microbore chromatograph, typically 10–20 mL of sample is concentrated. Because Capillary IC offers a 100 times higher mass sensitivity this can easily be performed with just a 100  $\mu\text{L}$  sample injection volume. This saves sample loading time and also simplifies the analysis by eliminating additional hardware, such as a sample loading pump.

This chromatogram shows the separation of ppt concentrations of six cations on the IonPac CS16 Capillary column. The 100  $\mu\text{L}$  sample was concentrated onto the IonSwift MCC-100 concentrator column by an autosampler and then eluted onto the column.

The low baseline noise provided by the Cation Capillary Electrolytic Suppressor (CCES 300) facilitates the determination of analytes of interest at ultra-trace levels.