

## 1.4 Determination of anions in 1-propyl-3-methylimidazolium bromide



Ionic liquid is a kind of molten salt which is completely composed of ions, and now it mostly refers to molten salt in liquid state when the temperature is lower than 100°C. It has the following characteristics: small vapor pressure, non flammable, good stability, large heat capacity, good conductivity, with "designability", and special solubility for many inorganic salts and organics. At present, ionic liquids have rapidly expanded from the fields of green chemistry and catalysis to functional materials, photothermal and optoelectronic materials and Life Sciences. 1-propyl-3-methylimidazolium bromide is an important ionic liquid, in which the content of anions affects its properties and application fields.

### Analysis Conditions:

#### (1) Anions

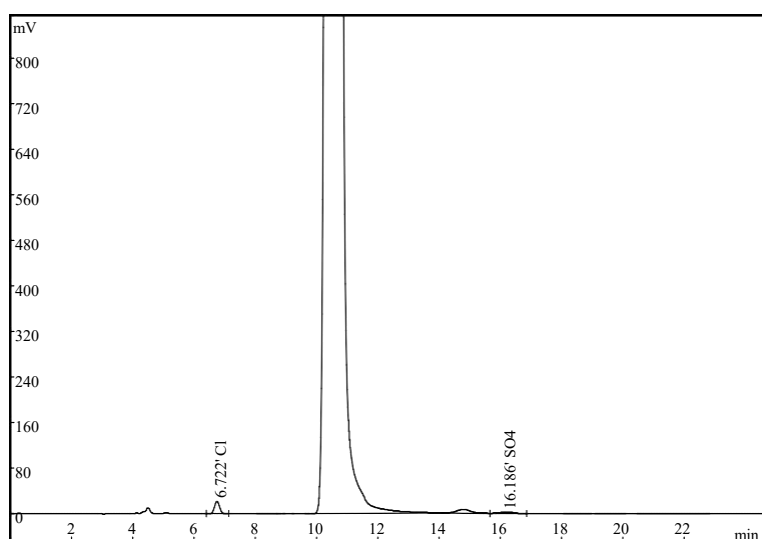
- Analytical Column: SH-G-1+SH-AC-11
- Mobile Phase: 13 mM KOH
- Flow Rate: 1.0 mL/min
- Suppressor: SHY-A-6
- Injection Volume: 25  $\mu$ L

Pretreatment: Weigh 0.5-1.0 g sample (accurately record the quality to 0.0001 g) into a 100 mL volumetric flask, add ultra pure water to dissolve it, shake it up at a constant volume, pass RP column and 0.22  $\mu\text{m}$  disposable needle filter, and then inject the sample to determine  $\text{Cl}^-$ ,  $\text{SO}_4^{2-}$ . In order to reduce the influence of high concentration  $\text{Br}^-$  on the peak of  $\text{NO}_3^-$ , the sample solution was analyzed after passing through RP column, Ag column, Na column and 0.22  $\mu\text{m}$  disposable needle filter to determine  $\text{NO}_3^-$ .

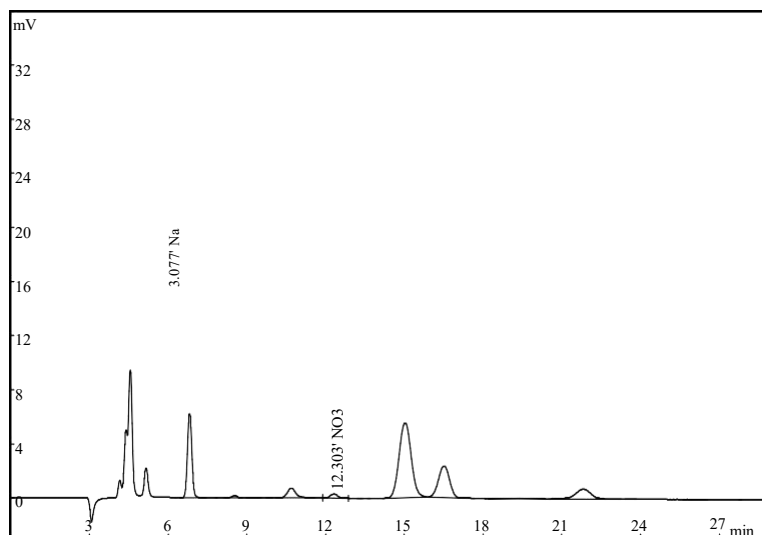
## (2) Cations

- Analytical Column: SH-CC-4
- Mobile Phase: 5 mM MSA
- Flow Rate: 1.0 mL/min
- Suppressor: SHY-C-3
- Injection Volume: 25  $\mu\text{L}$

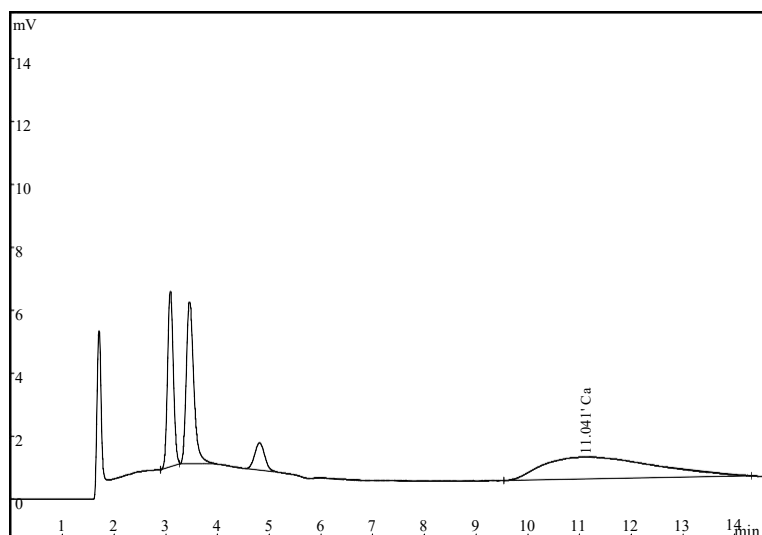
Pretreatment: Weigh 0.5-1.0 g sample (accurately record the quality to 0.0001 g) into a 100 mL volumetric flask, add ultra pure water to dissolve it, shake it up at a constant volume, pass RP column and 0.22  $\mu\text{m}$  disposable needle filter, and then inject the sample to determine  $\text{Na}^+$ ,  $\text{Ca}^{2+}$ .



Chromatogram of  $\text{Cl}^-$  and  $\text{SO}_4^{2-}$  in 1-propyl-3-methylimidazolium bromide



Chromatogram of NO<sub>3</sub><sup>-</sup> in 1-propyl-3-methylimidazolium bromide



Chromatogram of cations in 1-propyl-3-methylimidazolium bromide