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Micellar behavior of ionic liquids in aqueous solutions

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PURPOSE OF THE ABSTRACT

We studied the micellar behavior of 1-decyl-3-methylimidazolium bromide (dmimBr), an amphiphilic room temperature ionic liquid (RTIL), in pure water and aqueous solutions at 298.15 K.
Three types of aqueous solutions, at different concentrations, have been selected:
1. Aqueous solutions of sodium bromide (NaBr), which are classical solutions of strong electrolyte.
2. Aqueous solutions of 1-butyl-3-methylimidazolium bromide (bmimBr), which are solutions of RTIL.
3. Aqueous solutions of 1-butyl-3-methylimidazolium tetrafluoroborate (bmimBF4), which are structured solutions of RTIL.
Conductivity and potentiometry were carried out to determine the aggregation [1; 2] characteristics of dmimBr in aqueous solutions. From these measurements, the critical micelle concentration (CMC) of dmimBr is determined in each aqueous solution with different concentrations of salt, in order to calculate the degree of the counter ion binding ??? according to the Corrin-Harkins model [3].
Using the obtained data, the effect of the salted solutions used on the CMC is analyzed and consequently the micellar behavior of dmimBr in aqueous solutions has been studied.

FIGURES

FIGURE 1

FIGURE 2

KEYWORDS
ionic liquid | micelles | Conductivity | Potentiometry

BIBLIOGRAPHY