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# FT-IR spectroscopic and micellization studies of cetyltrimethylammonium bromide in aqueous and aqueous solution of ionic liquid (1-butyl-3-methylimidazolium bromide) at different temperatures

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## ABSTRACT

The electrical conductivity and infrared spectroscopic measurement of aqueous solutions of cetyltrimethylammonium bromide (CTAB), cationic surfactant, with imidazolium based ionic liquid 1-butyl-3-methylimidazolium bromide [C<sub>4</sub>mim][Br] were determined at different weight percentages and temperatures. The temperature dependence of critical micelle concentration (cmc) obtained from conductivity measurements at different temperatures (298.15, 303.15, and 308.15) K has been used to calculate various thermodynamic parameters of micellization like standard enthalpy of micellization ( $\Delta H_m^0$ ), standard free energy of micellization ( $\Delta G_m^0$ ), and standard entropy of micellization ( $\Delta S_m^0$ ), and the obtained parameters are further used to understand the effect of ionic liquid on surfactant. The influence of ionic liquid 1-butyl-3-methylimidazolium Bromide [C<sub>4</sub>mim][Br] on the micellization process of the cetyltrimethylammonium bromide (CTAB) is discussed.

**Keywords:** 1-Butyl-3-methylimidazolium bromide, Cetyltrimethylammonium bromide, FT-IR, CMC, Micellization.

## 1. INTRODUCTION

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