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Kraft temperature and thermodynamic study of interaction of glycine, diglycine, and triglycine with hexadecyltrimethylammonium chloride and hexadecyltrimethylammonium bromide: A conductometric approach

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ABSTRACT

Kraft temperature (T$_k$) and thermodynamic parameters for the micellization of aqueous mixtures of hexadecyltrimethylammonium chloride (HDTCl) and hexadecyltrimethylammonium bromide (HDTBr) with glycine (Gly), diglycine and triglycine. Thermodynamic parameters of micellization, free energy of micellization (ΔG$_m$), enthalpy of micellization (ΔH$_m$), and entropy of micellization (ΔS$_m$) have been determined from the specific conductivity data. Linear relations (Gibbs free energy and enthalpy versus pure surfactant T$_k$) have been used to determine the Kraft temperature of the mixed surfactant systems. The Kraft temperature of the mixed surfactant systems increases with increasing amount of amino acids, and decreases with increasing amount of surfactant. The Kraft temperature of the mixed surfactant systems increases with increasing amount of amino acids, and decreases with increasing amount of surfactant. The Kraft temperature of the mixed surfactant systems increases with increasing amount of amino acids and decreases with increasing amount of surfactant. The Kraft temperature of the mixed surfactant systems increases with increasing amount of amino acids and decreases with increasing amount of surfactant.

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1. Introduction

In pharmaceutical [1,2], industrial [3], biochemical [4,5], and environmental [6,7] applications, the Kraft temperature (T$_k$) and critical micelle concentration are significant to data indicate the physicochemical characteristics. Many researchers [7–16], chromatography [17], electrochemistry [18], spectrophotometry [19], and fluorescence spectroscopy [20,21] Kraft, micelle formation [22,23], thermodynamic parameters [24–26], and micellization of mixed surfactant were investigated. The effect of organic additives, hydrotropes [27–29], and electrolytes [30–32] on the Kraft temperature and critical micelle concentration [33,34] have been reported. Glycine derivatives with surfactants also exhibit interesting properties [35–38]. Amino acids and peptides are used in the synthesis of surfactants, which are biodegradable, biocompatible, and biocompatible. Surfactants can be combined with hydrotropes to enhance the solubility. Hydrotropes have proved advantageous in addition to increasing the solubility of surfactants, hydrotropes have been used in pharmaceuticals, preventing their coagulation, in pharmaceutical formulations, and in the synthesis of nanomaterials. Hydrotropes have been used in pharmaceutical and industrial applications, and industrial manufacturing. Hydrotropes have been used in the synthesis of nanomaterials, and in the synthesis of nanomaterials. Understanding the nature and magnitude of water-hydrotrope interactions is important from academic as well as from industrial point of view.

Our continuous focus on efforts to form solid hydrates on gas hydrate formation [39–41], and on the effect of hydrotropes on gas hydrate [42–44], electrical conductivity, critical micellization concentration and Kraft temperature [45–48], hydrotropes extensively influence the Kraft temperature [49]. The Kraft temperature of the mixed surfactant systems increases with increasing amount of the interactions between mixed surfactants, and decreases with increasing amount of surfactant. The Kraft temperature of the mixed surfactant systems increases with increasing amount of amino acids