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Muhammad Asghar Jamal, Bushra Naseem, Muhammad Kaleem Khosa, Majid Munir, Junaid Hayat Khan



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Effect of anionic micellar medium on thermo-acoustical parameters of aspartic acid and serine solutions.

Muhammad Asghar Jamal^{*a, b}, Bushra Naseem^c, Muhammad Kaleem Khosa^b, Majid Munir^b, Junaid Hayat Khan^b

^aInstitute of Chemical Sciences, Bahauddin Zakariya University Multan 60800, Pakistan

^bDepartment of Chemistry, Government College University, Faisalabad 38000, Pakistan

^cDepartment of Chemistry, Lahore College for Women University, Jail Road, Lahore 54000, Pakistan.

Corresponding author: Muhammad Asghar Jamal (email: m.asgharjamal@gmail.com)

Abstract

Density and sound velocity data for aspartic acid and serine in water and in aqueous solution of anionic surfactant; Sodium dodecyl sulphate (SDS) were measured over a temperature range (303.15 K - 313.15 K). Various volumetric and acoustical parameters including apparent molar volume (Φ_v), partial molar volume (Φ_v^o), partial molar transfer volume, apparent molar isentropic compressibility (Φ_k), partial molar isentropic compressibility (Φ_k^o) and intermolecular free length (L_f) etc. for amino acid solutions in water and in aqueous surfactant (SDS) solutions were calculated from the measured data of density and sound velocity. The above mentioned calculated parameters have been used to explore the amino acid-surfactant interactions. Values of apparent molar volume are positive at all temperatures and are increasing with increasing temperature and amino acids concentrations. Similarly, intermolecular free length decreases with increasing amino acids concentrations both in water and aqueous surfactants solutions, which indicate strong intermolecular interactions in amino acids solutions. From results it is also obvious that due to the presence of resonance stabilization, aspartic acid interacts more strongly in both aqueous and SDS environment than serine.

Keywords

Aspartic acid; serine; Sodium dodecyl sulphate; volumetric parameters; acoustical parameters; solute-solvent interactions

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