

Executive Summary of UGC Minor Research Project

Topic: “ULTRASONIC AND VOLUMETRIC STUDIES OF INORGANIC SALTS IN
AQUEOUS MEDIUM AT DIFFERENT TEMPERATURES”

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Conducted By

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The present work includes study of density, viscosity and ultrasonic velocity of aqueous solution of sodium chloride, sodium bromide and sodium iodide over a range of concentrations and at four different temperatures of 288, 293, 298 and 303K. The studies of molecular interactions have been carried out with derived parameters like adiabatic compressibility, free length, acoustic impedance, relaxation time, free volume, internal pressure, Gibb's free energy, Rao constant and Wada constant of aqueous electrolytic solution at temperature 288, 293, 298 and 303K and at frequency 2 MHz.

Chapter 1 deals with general introduction of ultrasound and its application in studying the structure and properties of matter. The biological importance of electrolytes and the types of molecular interactions like Van der Waal's Forces, Dipole-Dipole interaction, Hydrogen Bond, Ion-Dipole interaction and Dispersion forces have also been discussed. A broad review of the research work done by various workers on the forces and interactions involved in the solution of aqueous electrolytes have been given at the end of this chapter.

Chapter 2 describes the materials and the methods involved in carrying out these studies. The chapter explains the chemicals and techniques used in the present work.

Chapter 3 deals with the dependence of thermodynamic parameters on association and dissociation or repulsion and dissolved solutes exist under the internal pressure of the medium and their interactions with the solvent arise through hydrogen bonding, charge transfer, Columbic (or) Van der Wall's interactions have been discussed.

Chapter 4 describes the result and discussions. The observations made in the present study clearly indicate the presence of strong solute-solvent interactions.