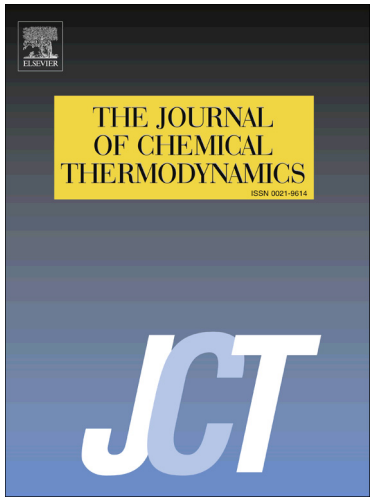

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Analysing the molecular interactions of sucrose in aqueous triammonium citrate and trilithium citrate solutions at different temperatures T = (288.15-318.15) K through volumetric and ultrasonic investigations

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ABSTRACT

The density (ρ) and speed of sound (u) measurements at T = (288.15–318.15) K and experimental pressure p = 0.1 MPa is used for determining the interactions of citrate salts *i.e.* trilithium citrate (TLC) and triammonium citrate (TAC) with sucrose at different concentrations and different temperatures. The experimental values of density and speed of sound has been used for calculating the apparent molar volumes (V_ϕ), partial molar volumes (V_ϕ^o) and partial molar volumes of transfer (ΔV_ϕ^o), partial molar expansion coefficients $(\partial E_\phi^o / \partial T)_p$, apparent molar isentropic compression ($K_{\phi,s}$), partial molar isentropic compression($K_{\phi,s}^o$), partial molar isentropic compression of transfer ($\Delta K_{\phi,s}^o$) for sucrose in (0.0, 0.2, 0.4, 0.6) mol·kg^{-1} aqueous TAC and TLC solutions at temperatures in the range (288.15-318.15) K at experimental pressure p = 0.1 MPa. The pair and triplet interaction coefficients have been calculated from partial molar volumes of transfer and partial molar isentropic compression of transfer.

Keywords: Trilithium citrate (TLC); Triammonium citrate (TAC); Sucrose; Density; Speed of sound; Apparent molar property.

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1. Introduction