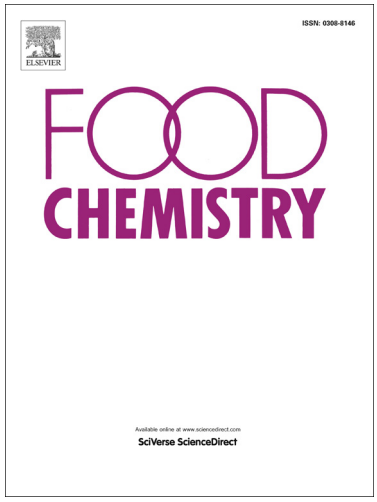

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Volumetric and acoustical behaviour of sodium saccharin in aqueous system over Temperature Range (20.0 - 45.0)^{0}C

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ABSTRACT

Densities and ultrasonic velocity values for aqueous solutions of sodium saccharin (SS) has been measured as a function of concentration at 20.0 - 45.0^{0}C and atmospheric pressure using DSA-5000M.The density and ultrasonic velocity values have been further used to calculate apparent molar volume, apparent specific volume, isentropic apparent molar compressibility and compressibility hydration numbers and reported. The values for apparent molar volume obtained at given temperatures showed negative deviations from Debye-Huckel limiting law and used as a direct measure of the ion–ion and ion-solvent interactions. The apparent specific volumes of the solute were calculated and it was found that these values of the investigated solutions lie on the borderline between the values reported for sweet substances. The sweetness response of the sweeteners is then explained in terms of their solution behaviors. Furthermore, the Partial molar expansibility, its second derivative, ($\partial^2 V^0/\partial T^2$) as Hepler's constant and thermal expansion coefficient have been estimated.

Keywords: density, sound velocity, partial molar volume, apparent specific volume, Sodium Saccharin

1. Introduction