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## Thermodynamic molecular interaction studies in the mixtures of triethylene glycol and glycerol

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The interactions of triethylene glycol with glycerol have been examined with the help of volumetric and acoustic studies. The density and speed of sound for the mixtures of triethylene glycol and glycerol have been measured with the help of Anton Paar DSA 5000 M. The measured densities and speeds of sound are utilized to evaluate various quantum thermodynamic parameters such as acoustic impedance, intermolecular free length, adiabatic compressibility, molar volume, available volume, Wada's constant, Rao's constant and Van der Waal's constant. The variations in these parameters have been inspected and corresponding change in them has been discussed in terms of molecular interactions prevailing in the mixtures. The measured values of speed of sound have been compared with theoretically estimated values with the help of empirical models like Van Dael, Nomoto, Impedance dependence relation and Vangeels ideal mixing relation. The deviations of experimental ultrasonic speeds from theoretically estimated ultrasonic speeds have also been calculated. The studied parameters revealed the presence of strong intermolecular interactions in the mixtures of triethylene glycol and glycerol.

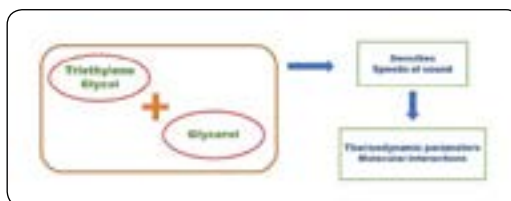


Figure: Schematic diagram

### Recent Publications

1. Sarode A V and Kumbharkhane A C (2011) Dielectric relaxation study of poly (ethylene glycols) using TDR technique. Journal of Molecular Liquids 164:226–232.
2. Kinart C M and Klimczak M (2009) Thermodynamic and structural properties of binary mixtures of some glycols with 2-butoxyethanol at T=(293.15, 298.15 and 303.15) K. Journal of Molecular Liquids 148:132–139.
3. Maitra A and Bagchi S (2008) Study of solute–solvent and solvent–solvent interactions in pure and mixed binary solvents. Journal of Molecular Liquids 137:131–137.
4. Syal V K, Chauhan A and Chauhan S (2005) Ultrasonic velocity, viscosity and density studies of poly (ethylene glycols) (PEG-8,000, PEG-20,000) in acetonitrile (AN) and water (H<sub>2</sub>O) mixtures at 250C. Journal of Pure and Applied Ultrasonics 27:61.
5. Ku H C and Tu C H (2000) Densities and viscosities of seven glycol ethers from 288.15 K to 343.15 K. Journal of Chemical and Engineering Data 45:391–394.

### Biography

Kirandeep Kaur is pursuing PhD in the field of molecular interaction study of some sugar free alcohols with glycols, from Lovely Professional University. Her research leads to create awareness about usage of sugar-free/diet products. She has published 5 research papers in reputed journals.

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