Excess Molar Volumes and Spectroscopic Studies for the Binary Mixtures of Alkoxyethanols with Amides/Amines at 298.15 K

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The effect of simultaneous presence of ether (-O-) and hydroxyl (-OH) groups on thermodynamic properties and corresponding behaviour of alkoxyalkanols in the mixtures is of great importance from both practical and fundamental point of view to understand the interactions. The excess molar volumes V_m^E and the I R spectra have been measured for binary mixtures of 2-propoxyethanol, or 2-isopropoxyethanol, with N,N-dimethyl formamide, N,N-dimelhyl acetamide, 2-pyrrolidinone, N-methyl-2-pyrrolidinone, propyl amine and dipropyl amine at 298.15 K. The excess molar volumes V_m^E are negative over the whole mole fraction range. The shifts in the C=O and O—H stretch have been used to interpret the excess molar volumes V_m^E. Moreover, the measured excess molar volumes have been compared with values obtained from the ERAS model. The effects of the specific interactions on the dependence of these properties on the position of methyl group in 2-propoxyethanol and 2-isopropoxyethanol and the influence of N,N-disubstituted and cyclic amides have been discussed in the light of I R measurements.

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