



Study of Refractive Indices, Densities and Excess Properties of Binary Solutions of Alcohol and Water Using Intensity Modulated Fiber Optic Chemical Sensor

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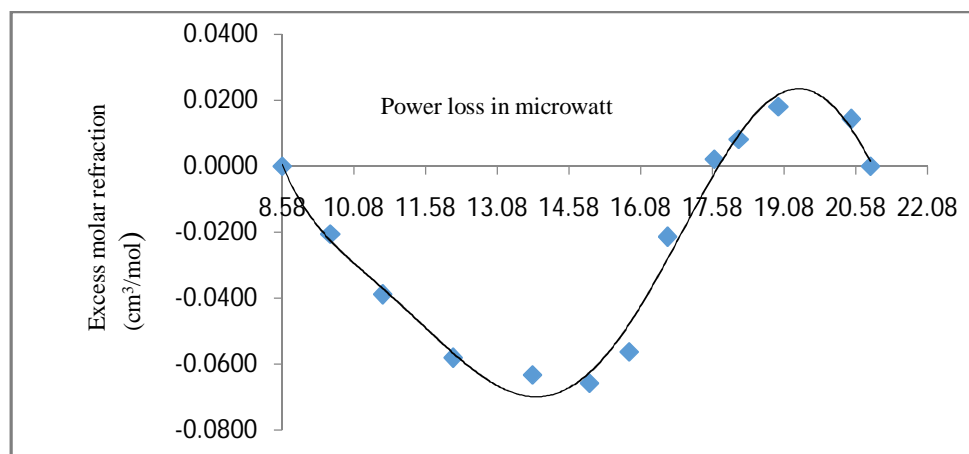
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ABSTRACT

The refractive index, 'n' and density, 'ρ', of binary mixtures of alcohols and water; have been measured at a temperature of 298.15 K and atmospheric pressure. Molar volume and Molar refraction for the whole composition range were determined, using the obtained values of refractive index and density. Further, Excess molar refraction and Excess molar volume are calculated over the entire range. An intensity modulated fiber optic chemical sensor is designed to study the excess properties of the binary mixtures using the power loss over the entire range.

Graphical Abstract



Relation between power loss and excess molar refraction of ethanol water solution.

Keywords: Refractive index, Density, Fiber optic Chemical sensor, Change in output power, Power loss, Properties of binary mixtures, Excess Molar Properties.