

## **DIELECTRIC RELAXATION STUDIES OF 1:1 COMPLEXES OF NITROBENZENE AND PHENYLACETONITRILE IN BENZENE AND 1,4-DIOXANE**

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### **Abstract**

The dielectric relaxation and dipole moment of different concentrations of nitrobenzene and the complex (1:1) mixture of nitrobenzene and phenylacetonitrile in the dilute solutions of benzene and 1, 4-Dioxane at 303K were calculated. The dielectric relaxation of binary mixtures of polar liquids in non polar solvents at microwave frequencies has been attempted. Such studies provide meaningful information regarding intermolecular and intramolecular association between the solutes and solvent molecules. The static dielectric constants of nitrobenzene and the complex (1:1) of nitrobenzene and phenylacetonitrile in benzene and 1, 4-Dioxane was determined at 303K by LCR Bridge. Different dielectric parameters like dielectric constant  $\epsilon'$  and dielectric loss  $\epsilon''$  at microwave frequency, static dielectric constant  $\epsilon_0$  and dielectric constant  $\epsilon_\infty$  at optical frequency have been determined with the help of X-band microwave bench of frequency 9.37 GHz. The molecular relaxation time ( $\tau$ ) and the dipole moment  $\mu$  also calculated.

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**Keywords** : Dielectric relaxation, Nitrobenzene, phenylacetonitrile, Dipolemoment

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