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Electrical Conductivity Study of Novel Organic Copolymer Resin Synthesized from 2-Hydroxy, 4-Methoxybenzophenone, 1, 5-Diaminonaphthalene and Formaldehyde

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Abstract: *Copolymer 2-H, 4-MBP-1,5-DANF-IV has been synthesized from 2-hydroxy, 4-methoxybenzophenone, and 1,5-diaminonaphthalene with formaldehyde by polycondensation method in acidic medium with 4:2:7 molar ratios of reacting monomers. The copolymer has been characterized by elemental analysis, FT-IR and ^{1}H-NMR spectra. Electrical conductivity measurement has been carried out to ascertain the semiconducting nature of the copolymer resin. The electrical conductivity of the copolymer has been found to be 4.23 × 10^{-9} to 9.36 × 10^{-7} $ohm^{-1}cm^{-1}$ in the temperature range 313-428 K. The activation energy of electrical conduction has been found to be 6.68 × 10^{-20} J/K. The plots of log σ Vs 10^3/T are found to be linear over a wide range of temperature, which obeyed the Wilson's exponential law $\sigma = \sigma_0 \exp(\Delta E/KT)$ and the copolymer can be ranked as semiconductor*

Keywords: Copolymer, Resin, Condensation, Synthesis, Electrical Conductivity Semiconductors

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