Impedance Spectroscopy of Binary Mixtures of Dimethyl Silicone Fluid and Methyl Iso Butyl Ketone

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**Abstract**. Parallel resistance (RP) and parallel capacitance (CP) of a capacitive cell filled with the samples of the binary mixtures of the methyl iso butyl ketone (MIBK) and dimethyl silicone fluid (DMSF) were measured using precision LCR meter in the frequency range 100 Hz to 2 MHz at 303.15 K temperature. Complex impedance Z\*(ω) were calculated using RP and CP. Complex impedance data were fitted to the equivalent four element representative circuit. The geometric time constant was calculated using the four element equivalent circuit. Equivalent circuit elements obtained by fitting complex impedance data representing different electrical processes taking place in the capacitive measurement cell under the effect of applied ac field are also confirmed by the Bode plot presentation of the complex impedance data. The electronic double layer capacitance (EDLC) phenomena and ionic conduction relaxation phenomena are observed in complex impedance formalism. Complex impedance formalism is also used to gain the information about various electrical processes in the binary mixtures.