

Ternary liquid-liquid equilibria and their constituent binary mixture properties for the {hexadecane + benzene or toluene or p-xylene + acetonitrile} systems at 298.15 K and atmospheric pressure

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The aromatics are the raw material of the most important petrochemical intermediates which are used in the production of polymers, solvents, resins, paints, polishes, polyesters, plastics, rubber, fiber, pharmaceutical and food processing agents. The organic solvents such as acetonitrile, 1,3,5-trimethylbenzene, N-formylmorpholine etc. could be an effective solvent of aromatics from distillate. In this work, therefore, liquid-liquid equilibria (LLE) have been obtained for the system {Hexadecane + Benzene or Toluene or p-Xylene + Acetonitrile} at 298.15 K and at atmospheric pressure. The experimental data were correlated through the GE models: the non-random two-liquid (NRTL) and universal quasi-chemical activity coefficient (UNIQUAC) models. In addition, excess properties such as excess molar volume (VE) and deviations of refractivity ( $\Delta R$ ) for the binary systems were measured at 298.15 K over the entire composition range. The experimental data were correlated very well with Redlich-Kister polynomial.