ISOCHORIC HEAT CAPACITY AND PVT PROPERTIES OF BINARY AZEOTROPIC SYSTEM N-HEPTANE-WATER

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The results of the study azeotropy phenomena in complex systems are of interest at the design of technology for the extraction, azeotropic distillation and obtaining from oil the chemicals of high purity. Isolation of high-boiling fractions from hydrocarbons is achived by an azeotropic distillation using a steam.

The investigated system of n-heptane-water [(1-x)C_7H_{16}+H_2O], (x-content of the polar component) is a complex hydrocarbon-water system consisting of components that differ significantly in molecular structure and properties.

Investigations were carried out on an automated pilot plant that is based on the well-known technique of Amirhanov high-temperature adiabatic calorimetry-piezometer.

The temperature and volume dependences of thermodynamic properties of the system [(1-x)C_7H_{16}+H_2O] were studied for several constant compositions $0.147 \leq x \leq 0.420$ m.f. with different content of the polar component (water) in the intervals from the normal boiling temperature of components up to 570 K. Were made measurements on 7-12 isochores ρ=const, for each system of constant composition x = const.

As a result of researches on the temperature and volume dependences of the isochoric heat capacity and pressure are found the peculiarities in behavior of thermophysical properties of dual exfoliating system n-heptane - water, allowed to identify areas of mutual solubility of components, boundary of phase equilibria, the dependence of composition displacement of the system azeotrope state on the temperature and pressure.

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