EQUATION OF STATE OF DENSE NON-ISOTHERMAL PLASMA

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In this work interaction potentials considering Pauli exclusion principle were used [1, 2]. Pauli principle prohibits the simultaneous presence of two electrons in the same state, hence taking into account different directions of spin. The influence created by difference between temperatures of electrons and ions was also considered [3]. Thermodynamic properties, including equation of state, were calculated using these potentials and obtained on their basis radial distribution functions (RDFs).

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INVESTIGATION OF PHASE EQUILIBRIUM OF BINARY SYSTEM "NAPHTHALINE-SCF-SOLVENT"

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To simulate, optimize and scale the processes of deep processing of hydrocarbon feedstock using GFR media, reliable phase behavior data of high-pressure mixtures of interest are required, in particular solubility of low-volatile liquid and solid components in the GFR medium. These facts point to the need for reliable data on the phase equilibrium of the systems "GFR medium-hydrocarbon raw materials components".

In this paper, a hydrocarbon of naphthalene was chosen as an oil component. Naphthalene refers to aromatic hydrocarbons. The content of aromatic hydrocarbons in oil varies from 10-15 to 30% (by weight). These hydrocarbons form the basis of heavy oil residues. This involves the choice of naphthalene as an object of research in this work. To study the solubility of naphthalene in the GFR media, an experimental setup has been developed that implements the dynamic method. To test the installation, pilot experiments were conducted to study the solubility of naphthalene in GFR CO2 [1, 2]. A good convergence of the data obtained in this work with literature data was obtained.

The solubility of naphthalene in a GFR propane-butane mixture containing 75% propane and 25% butane [3] was investigated in the pressure range of 5–20 MPa and in the temperature range 373–423 K. The effect on the solubility of the thermodynamic parameters of the process was analyzed.

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