

Phase diagram of kerogen from oil shale using a double lattice to extended to the equation of state

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Oil shale becomes very useful alternative energy these days by raising the oil price. It is a type of sedimentary rock that contains solid bituminous material, known as kerogen, that releases oil or gas when heated. Thus, analysis of kerogen is important to develop the oil shale technology.

In this paper, we study for thermodynamic properties of Kerogen and correlating our equation of state model which is the lattice model including the chain-length dependence and the specific interaction such as hydrogen bonds. To account for free volume effects, firstly, pure components are mixed to form a close-packed polymer solutions and next, holes are introduced to mix with the close-packed solution which is considered to be a pseudo-substance.

In mixtures of bitumen-toluene and bitumen-methanol, at each temperature the number of molecules of solvent per molecule of solute was calculated for both toluene and methanol. In conclusion density data calculated with our equation of state was compared to empirical density data in order to determine the effect of using any of them.