Prediction of Density, Viscosity, Kinematic Viscosity for Pure Components and Mixtures Using Polynomial Expansion Method and Activity Coefficient Model

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The predictive methods for liquid density and viscosity are important for many practical design problems concerning fluid flow, mass and heat transfer. Some predictive methods for pure components have been proposed based on the principle of corresponding state and group contribution method. Recently the predictive methods based on chemoinformatic procedures using polynomial expansion equation and genetic algorithms have been proposed by our group [1-3].

This paper deals with prediction of density and viscosity for pure component using polynomial expansion equation and genetic algorithm. Secondary the kinematic viscosity for ternary system has been predicted using vapor-liquid equilibria and kinematic viscosity data for binary systems [4]. Thirdly the predictive method of kinematic viscosity has been shown using ASOG-VISCO method [5, 6]. Still more the binary viscosity at high pressure has been predicted using low-pressure viscosity data [7].