Vapor-Liquid Equilibrium of Hydrocarbon-Amine Mixtures using Nonrandom Lattice Fluid Equation of State with Hydrogen Bonding

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Various vapor-liquid equilibrium (VLE) data sets for hydrocarbon-amine mixtures have
been measured using an isobaric VLE Cell. Nonrandom lattice equation of state with hydrogen bonding (NLF-HB EoS) has been utilized for correlation. For hydrocarbon-amine mixtures the inclusion of hydrogen bonding term in lattice equation of state clearly improves prediction of the VLE. Other parameter studies were carried to determine the influence of size and energy parameters on the correlation. The results were compared with the cubic equations of state Peng-Robinson withWong-Sandler mixing rule (PR-WS EoS). Both equations of state showed similar degree of accuracies but with different number of adjustable parameters. Especially the number of needed temperature dependent binary interaction parameter was higher for the PR-WS EoS.