A Qausi-Chemical Nonrandom Lattice Fluid Theory for the Alkanes + Nonionic Surfactant Systems

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Surfactants systems, especially micelle and microemulsion systems, was highly non-ideal behavior due to the hydrogen bonding and hydrophobic interaction. Alkoxyethanols are a very interesting class of substances, in a theoretical point of view due to the strong intra-molecular effects related to the presence of the O and OH groups in the same molecule.
The objective of this study is to present a Qausi-Chemical nonrandom associating lattice model (QALF) for studying fluid systems with both intramolecular and intermolucular associating bonds in alkane + nonionic surfactant systems. Vapor liquid equilibria data for alkane + nonionic surfactant (C1E1, C2E1, C4E1) systems were correlated using intramolecular QALF equation of state. The QALF equation of state for both intramolecular and intermolecular hydrogen bonding for correlating parameters resulted in a better agreement with an experimental data than that for only intermolecular hydrogen bonding.