Measurement and Correlation of Liquid-Liquid Equilibria of Simplified Pseudo-crude Oil and Additive Solutions

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Although the demand for crude oil is rising constantly, the world oil deposits are running out rapidly. The opportunity crude oil has been a promising solution to replace ground exploited crude oils. There is plenty methods to remove acid constituents from opportunity crude oils including blending, neutralization, extraction and decarboxylation. However, most of these methods have little possibility to be commercialized in the field. From among these, extraction has the most effective economic results to remove acids by using diol solvent. Diol solvents are selected to extract naphthenic acids and other solutions are added to enhance the extraction capability. Pseudo-crude oil mixture prepared by adding naphthenic acid to diesel oil was used at this experiment but it contained many complex constituents. As a result, it had low reproducibility to be used. Simplifying the solvents and the pseudo-crude oil to pure substances made the results of the experiment more clear to analyze. It also had similar extraction efficiency and a model of liquid-liquid equilibrium systems will be made. The results simplified by this model will be developed to a commercially meaningful level.