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Thermodynamic Modelling of Liquid-Liquid Equilibria (LLE) in the Separation of p-Cresol from the Coal Tar by Solvent Extraction

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Abstract : Coal tar is a liquid by-product of the process of coal gasification and carbonation. This liquid oil mixture contains various kinds of useful compounds such as aromatic compounds and phenolic compounds. These compounds are widely used as raw material for insecticides, dyes, medicines, perfumes, coloring matters, and many others. This research investigates thermodynamic modelling of liquid-liquid equilibria (LLE) in the separation of phenol from the coal tar by solvent extraction. The equilibria are modeled by ternary components of Wohl, Van Laar, and Three-Suffix Margules models. The values of the parameters involved are obtained by curve-fitting to the experimental data. Based on the comparison between calculated and experimental data, it turns out that among the three models studied, the Three-Suffix Margules seems to be the best to predict the LLE of p-Cresol mixtures for those system.

Keywords : coal tar, phenol, Wohl, Van Laar, Three-Suffix Margules
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