Phase equilibrium of North Sea oils with polar chemicals: Experiments and CPA modeling - DTU Orbit (08/11/2017)

Phase equilibrium of North Sea oils with polar chemicals: Experiments and CPA modeling

This work consists of a combined experimental and modeling study for oil - MEG - water systems, of relevance to petroleum applications. We present new experimental liquid-liquid equilibrium data for the mutual solubility of two North Sea oils + MEG and North Sea oils + MEG + water systems in the temperature range 303.15-323.15 K and at atmospheric pressure. These new data are for North Sea oils which are substantially heavier and with higher aromatic/naphthenic content compared to previous studies. The new data compare favorably with previously reported measurements for other North Sea oils. The data have been successfully modeled using the Cubic- Plus-Association (CPA) equation of state (EoS) using a previously developed characterization method and new correlations for estimating binary interaction parameters between MEG-hydrocarbons and water-hydrocarbons. The results are in satisfactory agreement to the experimental data, considering especially the complexity of the studied reservoir fluids, in particular their heavy and aromatic character.

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