Generalized High Pressure Gas Adsorption Model

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Knowledge of the adsorption behavior especially at high pressure, has been long been important in processes involving high pressure gas adsorption such as: gas separation, gas storage, and CO; sequestration. However research on high pressure adsorption is considerably rare, also model that can accurately represent high pressure gas adsorption. Accurate model which has a strong theoretical base can improve model ability to predict gas adsorption when experimental data are not available. Therefore, the new model need to be developed to overcome the discrepancies of the existing model. In this study, we evaluate and further develop adsorption models based the Ono-Kondo (OIG theory to improve their predictive capabilities when dealing with near-critical and supercritical adsorption systems. The goal of such developments is to facilitate the use of reliable computational frameworks for representing adsorption behavior, as well as improving our understanding of the phenomenon. The abilities of the two-parameter OK models to correlate accurately supercritical adsorption systems are demonstrated by representing the adsorption data with 3. 6% AAD on average. The generalized OK model can also predict the adsorption on activated carbon with 8% AAD. Furthermore, a high potential exist the model that provides reasonably accurate predictions for other gases adsorption isotherms based on adsorption data for one gas at given temperature.