Title: Experimental Measurements and Correlation of the Solubility of Three Primary Amides in Supercritical CO2: Acetanilide, Propanamide, and Butanamide

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Abstract: Solubilities of three primary amides, namely, acetanilide, propanamide, and butanamide, in supercritical carbon dioxide were measured at T = (308.2, 313.2, and 323.2) K over the pressure range (9.0 to 40.0) MPa by a flow type apparatus. The solubility behavior of the three solids shows an analogous trend with a crossover region of the respective isotherms between (12 to 14) MPa. The solubility of each amide, at the same temperature and pressure, decreases from propanamide to acetanilide. Pure compound properties required for the modeling were estimated, and the solubilities of the amides were correlated by using the Soave-Redlich-Kwong cubic equation of state with an absolute average relative deviation (AARD) from (1.3 to 6.1) %.

KeyWords Plus: Carbon-Dioxide; Fluids; Solids; Equilibria; Butyramide; Solvation; Systems; Energy; Model

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