Phase Behavior of the Ternary Mixture System of biodegradable polymer, Dichloromethane and Carbon dioxide

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The high-pressure phase behavior of biodegradable polymer (poly(D-lactic acid) (Mw = 359,000), poly(L-lactic acid) (Mw = 312,000)), dichloromethane, and carbon dioxide ternary system was measured using a variable-volume view cell. The experimental temperatures and pressure ranged from 313.15 K to 363.15 K and up to 300 bar as functions of the CO_2/dichloromethane mass ratio and temperature, at poly(D-lactic acid) weight fractions of 1.0, 2.0, and 3.0%. The correlation results were obtained from the hybrid equation of state for the CO_2-polymer system using the van der Waals one-fluid mixing rule. The three binary interaction parameters were optimized by the simplex method algorithm.