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Empirical equations for representing vapor-liquid equilibria in the CO_2-H_2O system at 110-350°C

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Results and Discussion

Empirical isothermal equations have been developed to represent vapor-liquid equilibria (VLE) in the CO_2-H_2O system at 110-350°C. The expressions accurately reproduce the CO_2-H_2O VLE data of Takenouchi and Kennedy (1964), Blencoe et al. (2001), and Blencoe (in prep.) (Figs. 1-2). However, additional accurate CO_2-H_2O VLE data are needed for 250-360°C to facilitate development of reliable *polythermal* functions for representing the phase relations. These equations would have numerous, important applications in geochemistry, high-temperature aqueous chemistry, and chemical engineering.

Figure 1. Bubble-point data (open squares—Takenouchi and Kennedy, 1964; filled circles—Blencoe et al., 2001, and Blencoe, in prep.), and calculated bubble-point curves (this study), for CO_2-H_2O fluids at 110-350°C.

Figure 2. Dew-point data (open squares—Takenouchi and Kennedy, 1964; filled circles—Blencoe et al., 2001, and Blencoe, in prep.), and calculated dew-point curves (this study), for CO_2-H_2O fluids at 110-350°C.