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CALCITE-ARAGONITE EQUILIBRIUM FROM 50°C TO 150°C

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ABSTRACT

The slope of the calcite-aragonite transition curve from 50°C to 150°C is determined as 13.8 bars/degree; the 0°C intercept as 3.04 kbar. These data confirm recent work at higher temperatures and pressures and the previous determination of the 100°C equilibrium pressure of 4.35 kbar.

Recent works on the calcite-aragonite equilibria rely on the equilibrium point of 100°C and 4.35 kbar established by Crawford and Fyfe (1964). It seemed well to examine this system between 50°C and 150°C to provide a check of the location of the 100°C point, to permit an experimental determination of the slope of the equilibrium curve in this region, and to give a comparison of this curve with that obtained from higher temperature data.

A banded sample containing approximately equal widths of a bladed aragonite layer on a druse calcite layer was ground to pass a 325 mesh screen (Table 1). An X-ray powder diffractogram of this start material exhibits strong peaks of both aragonite and calcite. The powder was placed in small hot-seal vessels, brought to the desired temperature dry, and then pumped to the desired pressure. The phase produced and changes in relative quantities were determined by com-