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Calorimetric studies of the energetics of order-disorder in the system $Mg_{1-x}Fe_xCa(CO_3)_2$

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ABSTRACT

Calorimetric studies by Chai and Navrotsky (1996) on dolomite-ankerite energetics have been extended by including two additional types of samples: a very disordered stoichiometric $MgCa(CO_3)_2$ prepared from low-temperature aqueous solution and three largely ordered natural samples of intermediate iron content.

Combining these data with previous work, we see three distinct energetic trends. These represent samples with nearly complete order, nearly complete disorder, and intermediate order. From these trends, the enthalpy of complete disordering is estimated to be 33 ± 6 kJ/mol for $MgCa(CO_3)_2$ and 18 ± 5 kJ/mol for $FeCa(CO_3)_2$.