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Ikaite, $CaCO_3 \cdot 6H_2O$: Cold comfort for glendonites as paleothermometers

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ABSTRACT

Neutron diffraction results are linked to the pre-diffraction, morphological crystallography of E.S. Dana to show that ikaite is the precursor of "glendonite" and "thinolite" and that some of the unusual features of the morphology can easily be explained by an accidental near-equivalence of the unit cell of ikaite, $CaCO_3.6H_2O$. This relationship between the morphology of the pseudomorphs and the crystallography of ikaite gives strong justification for the use of "glendonite" as a paleothermometer, representing near freezing conditions for water.