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# Experimental Transformation of a Chlorite into a Vermiculite\*

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**Abstract:** An orthochlorite (sheridanite) was heated to 610° C to dehydroxylate the hydroxide sheet and to oxidize ferrous iron. The heated sample was shaken for 20 min in a mixed solution of 0– 2 N HCl and 0– 2 N NaCl to dissolve the dehydroxylated hydroxide sheet. X-ray diffraction, thermal, infrared absorption and chemical analyses showed that the resulting product was similar to Kenya vermiculite. The procedure shows promise for the individual determination of the composition of the hydroxide sheet and of the mica layer in the chlorite structure. The experiments indicate that the hydroxide sheet in orthochlorites must be structurally disturbed before it can be selectively removed. In nature, structural disorganization of the hydroxide sheet of chlorite by dehydroxylation and oxidation of ferrous iron might occur during metamorphic processes, and chlorite to vermiculite transformation could take place during subsequent acid weathering. In pedogenic weathering conditions it is likely that oxidation of ferrous iron plays a major role in initiation of the structural disorder required for the selective removal of the hydroxide sheet in the weathering of chlorite to vermiculite.

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