

Halloysite from weathered micaceous rocks of Hong Kong

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Muscovite in mica schists and siltstones is transformed under humid, tropical weathering in Hong Kong to halloysite-rich weathering products. The original micaceous minerals alter progressively from the platy morphology of muscovite to that of single or branched halloysite tubes. Development of halloysite tubes starts in the plane of the platy muscovite along the edges of long, narrow lath-shaped features. Edges of the narrow laths curl upward from the muscovite surface to points of contact or so they overlap. The morphology of the newly formed halloysite is much like that formed from weathered feldspars in Hong Kong's granitic rocks. It seems likely that the weathering products from South China's micaceous rocks may be halloysite-rich rather than kaolinite rich. Halloysite, eroded from the areas weathered rocks, is abundant in some of the shallow, recent marine muds of the area..

Unpublished, six-month long weathering experiments of muscovite show in direct carbon electron micrographs that similar laths are formed in mica's platy surfaces. Edges of the laths curl upward from opposite sides to join or overlap producing a "covered bridge" appearance. The initial laths progressively alter to halloysite tubes also on the surfaces of deeply weathered K-feldspars.

Scattered 0.2 micro-meter crystals, possibly boehmite ($\text{AlO}(\text{OH})$), are evident on the artificially weathered muscovite. In addition, small amounts of imogolite exist on the artificially-weathered muscovite surfaces. Imogolite is a non-crystalline weathering product having the appearance of snarled masses of spaghetti.

*Abstract: Research grant results for the Office of International Programs,
University of Minnesota, 1969.*