

## A Mineral Named for Iowa

Minerals are named after many things. Some are named for their chemical composition, some for some physical property, some after people or places. A few are named after states of the Union. Surprisingly, however, only five states are so honored by having minerals named after them. In this compilation we are included only mineral names officially accepted by the International Mineralogical Association's Commission on New Minerals and Mineral Names. Some substances named for states are discredited as minerals. Thus I do not count "californite" which is simply a variety of vesuvianite, "arizonite" which turns out to be a synonym for pseudorutile, or "alaskaite" which is a mixture instead of a mineral. Three of the five minerals named after states are not surprises, as these states are known for the rich diversity of odd and beautiful minerals found in them. There is coloradoite, a mercury telluride; montanite, a complex hydrated tellurium oxide; and oregonite, a nickel iron arsenide. A fourth state so honored is a surprise, for there really is a mineral called iowaite.

Iowaite is a relatively attractive blue-green mineral with a formula of  $MgFe(OH)OCl \cdot 2-4H_2O$ . The "2-4 H<sub>2</sub>O" means that it can contain varying amounts of water. The mineral forms tiny platy crystals with a greasy luster, a soapy texture and a good cleavage similar to that of mica. Iowaite is very soft, with a hardness of only 1 on Moh's hardness scale. It can be found associated with serpentine, brucite and magnesite. Those familiar with Iowa geology and minerals will probably be convinced by now that I am pulling a few legs. I am not. But the story of iowaite does have a few twists in it.

In 1966, the New Jersey Zinc Company was exploring a geophysical anomaly in Sioux County, Iowa by drilling a 1,500 foot deep hole and removing a core sample. Sioux County is in northwestern Iowa, not far from the Minnesota border southwest of Worthington. The company drilled through the glacial sediments and overlying sedimentary rocks into the Precambrian basement rocks buried about 1,000 feet down. The Precambrian rocks consist of a complex series of igneous and metamorphic rocks such as is exposed in northern Minnesota and Wisconsin. In Sioux County, the company found that the Precambrian rock consisted of serpentinite, a rather rare rock formed by the metamorphism of an igneous rock consisting largely of olivine and pyroxene. The original igneous minerals had been replaced by a mixture of serpentine, brucite and magnesite. In examining the core, two geologists, D. Kohls and J. Rodda, noticed veinlets in the serpentinite 1-20 mm wide filled with calcite, dolomite, brucite, magnesite, pyrite and tiny blue-green crystals 2-3 mm long. Detailed X-ray and chemical analysis was done on the blue-green mineral. Its structure was worked out by mineralogist from John Hopkins University and the University of Marburg in Germany. It was soon proven that this was a mineral new to science. The discoverers named it iowaite.

Iowaite is not a particularly stable mineral. Upon exposure to the air it turns light green, then whitish green, then rusty as the water, which is only loosely bonded into the mineral's structure, leaves. It also picks up CO and converts upon weathering to a well-known mineral called pyroaurite.

Iowaite has, to my knowledge, only been found in this one drill core in this one spot. One reason for this is its tendency to break down readily upon even slight weathering, so it is likely never to be found stably in rocks at the surface. Some occurrences of pyroaurite may have initially been iowaite. Thus an ordinary "rockhound" will probably never collect a specimen of it. Even so, the mineral's uniqueness is proven and its discoverers have raised Iowa to a privileged status in the mineralogic world as one of the few states to have a mineral named after it.

At the start I mentioned that 5 states have had minerals named after them. We have now Iowa, Colorado, Montana and Oregon. So what's the fifth state? Why, Minnesota, of course! Interestingly enough minnesotaite is the most common of these state-named minerals, and you may even have some in your collections.

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#### References:

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