

## ANATASE



One of the three polymorphs of TiO<sub>2</sub> along with rutile and brookite. In Michigan, anatase occurs primarily in sedimentary rocks as a microscopic accessory mineral of diagenetic origin. It is reported as such in various Huronian and Keweenaw sedimentary formations by Tyler et al. (1940) and in the Cambrian Jacobsville Formation by Denning (1949). Northern Peninsula.

**Gratiot County:** Near Ithaca, T10N, R2W in Michigan Basin Deep Drill Hole in the altered lower basaltic unit with titanite replacing pyrogenic ilmenite (McCallister et al., 1978).

**Houghton County:** Found in the heavy mineral assemblage as a minor constituent of the Jacobsville Sandstone in samples from Traverse Island, Little Traverse Bay, Indian Orphanage, and Jacobsville as square, pale yellow, microscopic tablets partly altered to "leucoxene" (Denning, 1949).

**Keweenaw County:** 1. Gay: Same as in Houghton County. 2. North side Keweenaw Peninsula: Occurs as a microscopic diagenetic alteration product of titaniferous magnetite and silicates in the Copper Harbor Conglomerate (Elmore, 1981).

**Marquette County:** Niobian anatase (0.5-5% Nb<sub>2</sub>O<sub>5</sub>) occurs with brannerite (q.v.) in a 2.56 billion-year-old migmatite zone near Republic. Formed by the incomplete reaction of niobian ilmenite and brannerite (Hoffman, 1982; 1987).

**Ontonagon County:** White Pine: As rare microscopic grains in the Copper Harbor Conglomerate (Hamilton, 1967).

**FROM: Robinson, G.W., 2004 Mineralogy of Michigan by E.W. Heinrich updated and revised: published by A.E. Seaman Mineral Museum, Houghton, MI, 252p.**

### UPDATE

**Marquette County:** 1. Road cut on state highway 95, SE ¼ SE ¼ section 20, T47N, R29W, north of Republic: Anatase has been identified as small, spongy masses of brownish gray to black,

interlocking, tabular microcrystals replacing titanite in a weakly radioactive friable zone in pink felsic gneiss. Confirmed by X-ray diffraction and energy dispersion X-ray spectrometry. 2. Road cut on state highway 95, SE ¼ NW ¼ section 21, T47N, R29W, north of Republic: As tabular metallic blue microcrystals associated with biotite and purple fluorite in a pegmatite outcropping on the east side of the highway. Confirmed by energy dispersion X-ray spectrometry.

**UPDATE FROM: Robinson, G.W., and Carlson, S.M., 2013, Mineralogy of Michigan Update: published online by A.E. Seaman Mineral Museum, Houghton, MI, 46p.**