

Crystal Data: Monoclinic. *Point Group:* m . As irregular pseudohexagonal plates, to 8 mm, and aggregates of plates; commonly massive.

Physical Properties: *Cleavage:* Perfect on $\{001\}$. *Tenacity:* Flexible but inelastic. Hardness = 2–2.5 $D(\text{meas.}) = 2.5\text{--}2.7$ $D(\text{calc.}) = 2.582$

Optical Properties: Transparent, quite or nearly. *Color:* White. *Luster:* Pearly. *Optical Class:* Biaxial (–) or (+). *Orientation:* $Z = b$; $X \wedge c = 7^\circ\text{--}12^\circ$. *Dispersion:* $r > v$, weak. $\alpha = 1.557\text{--}1.560$ $\beta = 1.562\text{--}1.563$ $\gamma = 1.563\text{--}1.566$ $2V(\text{meas.}) = 40^\circ\text{--}90^\circ$

Cell Data: *Space Group:* Cc . $a = 8.909(2)$ $b = 5.146(1)$ $c = 15.697(2)$ $\beta = 113^\circ 42'(5)'$ $Z = 4$

X-ray Powder Pattern: Tracy mine, Michigan, USA.
7.18 (100), 4.361 (80), 3.588 (80), 4.130 (70), 2.432 (60), 2.404 (40), 1.486 (40)

Chemistry:	(1)	(2)
SiO_2	46.22	46.55
Al_2O_3	39.92	39.50
H_2O	13.96	13.95
Total	100.10	100.00

(1) St. Peters Dome, Colorado, USA. (2) $\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})_4$.

Polymorphism & Series: Dickite, halloysite, and kaolinite are polymorphs.

Mineral Group: Kaolinite-serpentine group.

Occurrence: Of hydrothermal origin.

Association: Kaolinite, dickite, mica, quartz.

Distribution: Probably at many localities, but careful characterization is required for confirmation. A few verified localities include: in Germany, from Brand-Erbisdorf, near Freiberg, and Erdmannsdorf, Saxony, with large crystals from St. Andreasberg, Harz Mountains. At Lodève, Haute-Vienne, France. From Groby, Leicestershire, England. At Sidi-Amour-ben-Salem, Tunisia. From near Saint-Amable and at St. Eustache, Quebec, Canada. In the USA, at the Tracy mine, south of Negaunee, Marquette Co., Michigan; from near Texas, Cecil Co., Maryland; at St. Peters Dome, near Pikes Peak, El Paso Co., Colorado. From San Juanito, Chihuahua, Mexico. In Japan, at Yaita, Tochigi Prefecture; in the Kobayashi, Kanekura, and Yonago mines, Nagano Prefecture; and the Kasuga mine, Kagoshima Prefecture.

Name: From the French *nacre*, for *mother of pearl*, in allusion to its appearance.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 685. (2) Deer, W.A., R.A. Howie, and J. Zussman (1963) Rock-forming minerals, v. 3, sheet silicates, 194–212. (3) Bailey, S.W. (1963) Polymorphism of the kaolin minerals. Amer. Mineral., 48, 1196–1209. (4) Blount, A.M., I.M. Threadgold, and S.W. Bailey (1969) Refinement of the crystal structure of nacrite. Clays and Clay Minerals, 17, 185–194. (5) Zvyagin, B.B., S.V. Soboleva, and A.F. Fedotov (1972) Refinement of the structure of nacrite by high-voltage electron diffraction. Kristallografiya (Sov. Phys. Crystal.), 17, 514–520, 1972 (in Russian).