

**Crystal Data:** Monoclinic. *Point Group:* *m*. As irregular pseudo-hexagonal 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(meas.) = 2.5–2.7 D(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 <sub>2</sub>	46.22	46.55
Al <sub>2</sub> O <sub>3</sub>	39.92	39.50
H <sub>2</sub> O	13.96	13.95
Total	100.10	100.00

(1) St. Peters Dome, Colorado, USA. (2) Al<sub>2</sub>Si<sub>2</sub>O<sub>5</sub>(OH)<sub>4</sub>.

**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).