

Crystal Data: Monoclinic. *Point Group:* 2/*m*. As short prismatic to acicular crystals with large prism faces, to 2 cm; commonly massive. *Twinning:* Simple twins according to the Manebach, Baveno, or Carlsbad laws.

Physical Properties: *Cleavage:* Perfect on {001}, good on {010}, and poor on {110}. *Tenacity:* Brittle. Hardness = 6–6.5 D(meas.) = 3.10–3.39 D(calc.) = 3.26

Optical Properties: Transparent. *Color:* Colorless, white, yellow. *Luster:* Vitreous. *Optical Class:* Biaxial (+). *Orientation:* $Y = b$; $X \wedge c = 3^\circ\text{--}5^\circ$; $Z \wedge a = 28^\circ\text{--}30^\circ$. $\alpha = 1.579\text{--}1.587$ $\beta = 1.583\text{--}1.593$ $\gamma = 1.588\text{--}1.600$ $2V(\text{meas.}) = 83^\circ\text{--}92^\circ$

Cell Data: *Space Group:* *I*2/*c*. $a = 8.622(4)$ $b = 13.078(6)$ $c = 14.411(8)$
 $\beta = 115.09(2)^\circ$ $Z = 8$

X-ray Powder Pattern: Jakobsberg, Sweden.
3.47 (100), 3.35 (100), 3.02 (95), 2.582 (75), 3.26 (60), 3.80 (55), 6.52 (50)

Chemistry:	(1)	(2)	(3)
SiO ₂	32.43	31.07	32.00
Al ₂ O ₃	26.55	28.35	27.16
Fe ₂ O ₃	0.12	0.36	
MgO	0.11		
CaO	0.23		
BaO	39.72	39.92	40.84
Na ₂ O	0.16		
K ₂ O	0.22	0.24	
F	0.64		
H ₂ O	0.64		
Total	100.82	[99.94]	100.00

(1) Jakobsberg, Sweden. (2) Aberfeldy, Scotland; by electron microprobe; original total given as 99.99%. (3) BaAl₂Si₂O₈.

Polymorphism & Series: Dimorphous with paracelsian; forms a series with orthoclase.

Mineral Group: Feldspar group.

Occurrence: In amphibolite-grade, regional or contact metamorphic, Mn, Ba-rich rocks, some of which probably were submarine exhalatives.

Association: Manganoan aegirine, manganoan biotite, paracelsian, jacobsite, hausmannite, rhodochrosite, rhodonite, rutile, hyalophane, barite, cymrite, taramellite, quartz, zoisite, spessartine, dolomite, muscovite.

Distribution: At Jakobsberg and Långban, Värmland, Sweden. In the Simplon region, Valais, Switzerland. In the USA, from Franklin, Sussex Co., New Jersey; near Big Creek, Fresno Co., and Trumbull Peak, near Incline, Mariposa Co., California. At the Benallt mine, Rhiw, Lleyrn Peninsula, Wales. From near Aberfeldy, Scotland. In Kazakhstan, from the Burultas deposit, west of Lake Balkhash. In Namibia, at Otjosondu. From Piggery Creek, Broken Hill, New South Wales, Australia. In the Kaso mine, Totiki Prefecture, Japan.

Name: To honor the Swedish astronomer and naturalist, Anders Celsius (1701–1744).

References: (1) Dana, E.S. (1899) Dana's system of mineralogy, (6th edition), app. I, 15. (2) Deer, W.A., R.A. Howie, and J. Zussman (1963) Rock-forming minerals, v. 4, framework silicates, 166–178. (3) Gay, P. (1965) An X-ray powder method for the estimation of (K,Ba) feldspars. Mineral. Mag., 34, 204–213. (4) Griffen, D.T. and P.H. Ribbe (1976) Refinement of the crystal structure of celsian. Amer. Mineral., 61, 414–418. (5) Fortey, N.J. and B. Beddoe-Stephens (1982) Barium silicates in stratabound Ba–Zn mineralization in the Scottish Dalradian. Mineral. Mag., 46, 63–72.

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