

Allanite-(Nd)**CaNd(Al₂Fe²⁺)(Si₂O₇)(SiO₄)O(OH)**

Crystal Data: Monoclinic. *Point Group:* 2/m. As prismatic crystals to 0.5 mm in aggregates in altered thalénite-(Y); as crude crystals to ~0.5 m.

Physical Properties: *Cleavage:* Imperfect on {001}. *Tenacity:* Brittle. *Fracture:* Conchoidal. Hardness = 6 D(meas.) = 3.98 D(calc.) = 4.04 Locally metamict. Nonfluorescent.

Optical Properties: Translucent. *Color:* Black to brownish black. *Streak:* Grayish brown. *Luster:* Vitreous.

Optical Class: Biaxial (-). $\alpha = 1.723(5)$ $\beta = 1.754(7)$ $\gamma = 1.772(5)$ $2V(\text{meas.}) = 82(3)^\circ$
Pleochroism: Moderate for large fragments, *X* = pale grayish brown, *Z* = grayish brown; smaller fragments colorless. *Dispersion:* Strong, $r > v$.

Cell Data: *Space Group:* $P2_1/m$. $a = 8.8897(5)$ $b = 5.7308(2)$ $c = 10.1010(6)$ $\beta = 115.166(7)^\circ$ $Z = 2$

X-Ray Diffraction Pattern: Åskagen pegmatite, Värmland, Sweden.
 2.89 (100), 2.70 (60), 2.61 (60), 3.51 (46), 2.87 (45), 1.66 (43), 2.12 (38)

Chemistry:	(1)		(1)
SiO ₂	31.70	Dy ₂ O ₃	0.52
Al ₂ O ₃	16.92	Er ₂ O ₃	0.17
Y ₂ O ₃	2.21	Fe ₂ O ₃	[3.20]
La ₂ O ₃	0.20	FeO	[10.15]
Ce ₂ O ₃	3.59	MnO	0.54
Pr ₂ O ₃	1.47	CaO	10.85
Nd ₂ O ₃	9.91	MgO	0.41
Sm ₂ O ₃	3.99	H ₂ O	[1.58]
Gd ₂ O ₃	1.96	Total	99.37

(1) Åskagen pegmatite, Värmland, Sweden; average electron microprobe analysis supplemented by Mössbauer spectroscopy, Fe₂O₃/FeO calculated for charge balance, H₂O from stoichiometry; corresponds to ⁴¹(Ca_{0.957}Mn_{0.043})_{Σ=1.000}⁴²(Nd_{0.337}Ca_{0.154}Sm_{0.131}Ce_{0.125}Y_{0.112}Gd_{0.062}Pr_{0.051}Dy_{0.016}La_{0.007}Er_{0.005})_{Σ=1.000}⁴¹(Al_{0.860}Fe³⁺_{0.140})_{Σ=1.000}⁴²Al³(Fe²⁺_{0.760}Al_{0.112}Fe³⁺_{0.070}Mg_{0.058})_{Σ=1.000}⁷Si₃O_{11.978}(OH)_{1.032}.

Mineral Group: Epidote supergroup, allanite group.

Occurrence: An accessory phase in the blocky zone of a NYF-type granitic pegmatite (Sweden).

Association: Iimoriite-(Y), keiviite-(Y), allanite-(Y), tenerite-(Y).

Distribution: At the Åskagen pegmatite, Värmland, Sweden [TL]. At the Kingman pegmatite, Cerbat Range, ~1.5 km northwest of Kingman, Arizona, USA. At La Cabrera, Spain and Ryoke, Japan.

Name: The suffix identifies the *Nd*-analog of *allanite*-(Ce). Honors Thomas *Allan* (1777-1833), Scottish mineralogist who discovered the species.

Type Material: Department of Mineralogy and Petrology, Moravian Museum, Brno (B10589) and Department of Mineralogy and Petrology, National Museum, Prague, Czech Republic (P1P 1/2010).

References: (1) Škoda, R., J. Cempírek, J. Filip, M. Novák, F. Veselovský, and R. Čtvrtlík (2012) Allanite-(Nd), CaNdAl₂Fe²⁺(SiO₄)(Si₂O₇)O(OH), a new mineral from Åskagen, Sweden. *Amer. Mineral.*, 97, 983-988. (2) Hanson, S.L., A.U. Falster, W.B. Simmons, and T.A. Brown (2012) Allanite-(Nd) from the Kingman Feldspar mine, Mojave Pegmatite District, Northwestern Arizona, USA. *Can. Mineral.*, 50, 815-824.