Allanite-(Nd) $CaNd(Al_2Fe^{2+})(Si_2O_7)(SiO_4)O(OH)$

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 (-). α = 1.723(5) β = 1.754(7) γ = 1.772(5) 2V(meas.) = 82(3)°
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) β = 115.166(7)° 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_2O_3	0.52
Al_2O_3	16.92	Er_2O_3	0.17
Y_2O_3	2.21	Fe_2O_3	[3.20]
La_2O_3	0.20	FeO	[10.15]
Ce_2O_3	3.59	MnO	0.54
Pr_2O_3	1.47	CaO	10.85
Nd_2O_3	9.91	MgO	0.41
Sm_2O_3	3.99	H_2O	[1.58]
Gd_2O_3	1.96	Total	99.37

(1) Åskagen pegmatite, Värmland, Sweden; average electron microprobe analysis supplemented by Mössbauer spectroscopy, Fe_2O_3/FeO calculated for charge balance, H_2O from stoichiometry; corresponds to $^{A1}(Ca_{0.957}Mn_{0.043})_{\Sigma=1.000}{}^{A2}(Nd_{0.337}Ca_{0.154}Sm_{0.131}Ce_{0.125}Y_{0.112}Gd_{0.062}Pr_{0.051}Dy_{0.016}La_{0.007}Er_{0.005})_{\Sigma=1.000}{}^{M1}(Al_{0.860}Fe^{3+}{}_{0.140})_{\Sigma=1.000}{}^{M2}Al^{M3}(Fe^{2+}{}_{0.760}Al_{0.112}Fe^{3+}{}_{0.070}Mg_{0.058})_{\Sigma=1.000}{}^{T}Si_3O_{11.978}(OH)_{1.032}$.

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), tengerite-(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), $CaNdAl_2Fe^{2+}(SiO_4)(Si_2O_7)O(OH)$, 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.