Allanite-(Ce) $(Ca, Ce)_2(Al, Fe^{2+}, Fe^{3+})_3(SiO_4)(Si_2O_7)O(OH)$

©2001 Mineral Data Publishing, version 1.2

Crystal Data: Monoclinic; may be metamict. *Point Group:* $2/m$. Crystals tabular ∥ {100}, or prismatic to acicular ∥ [010], to 90 cm; granular, massive. *Twinning:* Polysynthetic, common on {100}.

Physical Properties: *Cleavage:* Imperfect on {001}; poor on {100} and {110}. *Fracture:* Conchoidal to uneven. *Tenacity:* Brittle. Hardness = 5.5–6 D(meas.) = 3.5–4.2 D(calc.) = 4.11 May be radioactive.

Optical Properties: Translucent to opaque. *Color:* Brown to black; brown or green in thin section. *Streak:* Gray. *Luster:* Vitreous, resinous to submetallic. *Optical Class:* Biaxial (+) or (–); isotropic when metamict. *Pleochroism:* X = pale olive-green, reddish brown; Y = dark brown, brownish yellow; Z = dark reddish brown, greenish brown. *Orientation:* $Y = b$; $X \wedge c = 1°–47°$; $Z \wedge a = 26°–72°$. *Dispersion:* $r > v$, strong. n = 1.54–1.72, metamict. α = 1.690–1.791 β = 1.700–1.815 γ = 1.706–1.828 2V(meas.) = 40°–123°

Cell Data: *Space Group:* $P2_1/m$. $a = 8.932$ $b = 5.770$ $c = 10.1575$ $\beta = 114.69°$ Z = 2

X-ray Powder Pattern: Luangwe Bridge area, Zambia; non-metamict.
2.920 (100), 2.714 (66), 3.53 (43), 2.627 (41), 2.182 (36), 2.886 (28), 2.158 (23)

Chemistry:

	(1)		(1)		(1)
SiO_2	29.79	Ce_2O_3	12.8	MgO	0.64
TiO_2	0.02	RE_2O_3	4.78	CaO	10.10
Al_2O_3	12.75	Fe_2O_3	10.64	H_2O^+	1.64
Y_2O_3	0.04	FeO	9.02	H_2O^-	0.10
La_2O_3	7.2	MnO	0.85	Total	100.37

(1) Luangwe Bridge area, Zambia; wet chemical and spectrographic analysis; $RE_2O_3 = Pr_2O_3$ 1.0%, Nd_2O_3 3.10%, Sm_2O_3 0.60%, Gd_2O_3 0.06%, Er_2O_3 0.02%. Analyses have been made of materials rich in La and Y but they are not otherwise described.

Mineral Group: Epidote group.

Occurrence: An accessory in some granites and granite pegmatites, syenites, more rarely in gabbroic pegmatites. Rarely in schists, gneisses, and some contact metamorphosed limestones; a clastic component of sediments.

Association: Epidote, muscovite, fluorite.

Distribution: Widespread; some localities affording good crystals or rich material follow. From Qáqarssuatsiaq, Alluk, south Greenland. At Ytterby and Finbo, Sweden. From Kragerö, Arendal, and on Hitterö Island, Flekkefjord, Norway. From Sillböle, Stansvik, and Vaarala, Finland. At Miass, Ilmen Mountains, Southern Ural Mountains, Russia. From the Trimouns talc deposit, six km northeast of Luzenac, Ariège, France. In the USA, at Pacoima Canyon, Los Angeles Co., California; in the Baringer Hill pegmatite, 26 km west of Burnet, and on the Rode Ranch, Llano Co., Texas. In Canada, from Olden Township, Frontenac Co., Quebec; in the McDonald mine, Hybla, Ontario; and at Hoidas Lake, near Nisikkatch Lake, Saskatchewan. From near Telixtlahuaca, Oaxaca, Mexico. In the Mary Kathleen mine, Queensland, and at Broken Hill, New South Wales, Australia. From Ribuae, Mozambique.

Name: For Thomas Allan (1777–1833), Scottish mineralogist who discovered the species.

Type Material: University of Copenhagen, Copenhagen, Denmark, 5, 6; The Natural History Museum, London, England, 94377.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 522–526. (2) Deer, W.A., R.A. Howie, and J. Zussman (1986) Rock-forming minerals, (2nd edition), v. 1B, disilicates and ring silicates, 151–179. (3) Vlasov, K.A., Ed. (1966) Mineralogy of rare elements, v. II, 302–308. (4) Dollase, W.A. (1971) Refinement of the crystal structures of epidote, allanite and hancockite. Amer. Mineral., 56, 447–464.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without the prior written permission of Mineral Data Publishing.