

**Cappelenite-(Y)****Ba(Y, Ce)<sub>6</sub>Si<sub>3</sub>B<sub>6</sub>O<sub>24</sub>F<sub>2</sub>**

©2001 Mineral Data Publishing, version 1.2

**Crystal Data:** Metamict; hexagonal after reconstitution at 725 °C. *Point Group:* 3. As crystals, thick hexagonal prismatic, showing {10 $\bar{1}$ 0}, {0001}, and {10 $\bar{1}$ 3}, to 2 cm.

**Physical Properties:** *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 6–6.5  
D(meas.) = 4.407 D(calc.) = [4.50]

**Optical Properties:** Translucent. *Color:* Greenish brown, pale yellowish. *Luster:* Vitreous to greasy.

*Optical Class:* Uniaxial (-).  $n = \sim 1.76$ ; birefringence rather strong.

**Cell Data:** *Space Group:* P3.  $a = 10.67(2)$   $c = 4.680(2)$   $Z = 1$

**X-ray Powder Pattern:** Metamict.

**Chemistry:**

	(1)	(2)
SiO <sub>2</sub>	14.21	14.51
ThO <sub>2</sub>	0.80	
B <sub>2</sub> O <sub>3</sub>	[17.16]	16.82
Y <sub>2</sub> O <sub>3</sub>	52.62	54.55
La <sub>2</sub> O <sub>3</sub>	2.97	
CeO <sub>2</sub>	1.29	
CaO	0.67	
BaO	8.02	12.35
Na <sub>2</sub> O	0.25	
K <sub>2</sub> O	0.20	
F		3.06
LOI	1.81	
-O = F <sub>2</sub>		1.29
Total	[100.00]	100.00

(1) Lille Arø Island, Langesundsfjord, Norway; B<sub>2</sub>O<sub>3</sub> by difference, corresponds to (Ba<sub>0.64</sub>La<sub>0.22</sub>Na<sub>0.10</sub>K<sub>0.05</sub>)<sub>Σ=1.01</sub>(Y<sub>5.74</sub>Ca<sub>0.15</sub>Ce<sub>0.09</sub><sup>4+</sup>Th<sub>0.04</sub>)<sub>Σ=6.02</sub>Si<sub>2.91</sub>B<sub>6.07</sub>O<sub>24</sub>F<sub>2</sub>. (2) BaY<sub>6</sub>Si<sub>3</sub>B<sub>6</sub>O<sub>24</sub>F<sub>2</sub>.

**Occurrence:** In a small vein in nepheline syenite pegmatite.

**Association:** Wöhlerite, rosenbuschite, thorite, catapleiite, låvenite, nepheline, sodalite.

**Distribution:** On Lille Arø Island, in the Langesundsfjord, Norway.

**Name:** For D. Cappelen of Holden, Norway, a collector who discovered the mineral, and its yttrium content.

**Type Material:** University of Oslo, Oslo, Norway; National Museum of Natural History, Washington, D.C., USA, 160547.

**References:** (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 413–414. (2) Vlasov, K.A., Ed. (1966) Mineralogy of rare elements, v. II, 248. (3) Shen, J. and P.B. Moore (1984) Crystal structure of cappelenite, Ba(Y, RE)<sub>6</sub>[Si<sub>3</sub>B<sub>6</sub>O<sub>24</sub>]F<sub>2</sub>: a silicoborate sheet structure. Amer. Mineral., 69, 190–195.