Cordylite-(Ce)  \((\text{Na, Ca})\text{Ba(Ce, La)2(CO}_3)_4\text{F}\)

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Crystal Data:  Hexagonal.  \textit{Point Group: } 6/m 2/m 2/m.  As prismatic or thin to thick tabular crystals with hexagonal outline and dominant \{10\overline{1}0\}, \{004.15\}, \{10\overline{1}1\}, to 13 mm; may have scepterlike terminations with striations \parallel \{0001\}; in rosettes, subparallel and spherical aggregates of thin platy crystals.


Optical Properties:  Transparent to translucent.  \textit{Color: }Colorless, white, wax-yellow, amber-yellow, pale yellow, yellowish green, greenish gray, may be radially zoned, ocher-yellow if altered; colorless to pale yellow in transmitted light.  \textit{Streak: }Amber-yellow, pale yellow, yellowish green, greenish gray, may be radially zoned, ocher-yellow.  \textit{Luster: }Adamantine, vitreous, resinous, oily, pearly on \{0001\}; waxy if altered.

\textit{Optical Class: }Uniaxial (−).  \textit{Pleochroism: }Weak; \textit{O} = greenish yellow; \textit{E} = brownish yellow.  \(\omega = 1.764–1.775\)  \(\epsilon = 1.576–1.598\)


X-ray Powder Pattern:  Mont Saint-Hilaire, Canada. 3.193 (10), 3.510 (9), 4.336 (8), 3.843 (8), 2.550 (8), 2.040 (8), 2.122 (7)

Chemistry:  

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<tbody>
<tr>
<td>\text{CO}_2</td>
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<td>[24.50]</td>
<td>1.78</td>
<td>1.46</td>
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<td>\text{Ce}_2\text{O}_3</td>
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<td>\text{La}_2\text{O}_3</td>
<td>14.61</td>
<td>14.73</td>
<td>1.09</td>
<td>0.74</td>
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<tr>
<td>\text{Nd}_2\text{O}_3</td>
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<td>4.90</td>
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<td>\text{O} = \text{F}_2</td>
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<td>Total [100.00]</td>
<td>[97.15]</td>
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(1) Narssârkkuk, Greenland; by electron microprobe, \text{CO}_2 by difference; corresponds to (\text{Na}_{0.18}\text{Ca}_{0.14})/\Sigma = 1.22 (\text{Ba}_{0.03}\text{Sr}_{0.10})/\Sigma = 1.13 (\text{Ce}_{0.96}\text{La}_{0.04}\text{Nd}_{0.20}\text{Pr}_{0.08})/\Sigma = 1.88 \text{CO}_3)_{1.35} \text{F}_{1.35}.  (2) Saint-Amable, Canada; by electron microprobe, \text{CO}_2 and \text{F} calculated from stoichiometry; corresponds to (\text{Na}_{0.29}\text{Ca}_{0.04})/\Sigma = 0.96 (\text{Ba}_{0.98}\text{Sr}_{0.05})/\Sigma = 1.03 (\text{Ce}_{0.10}\text{La}_{0.65}\text{Nd}_{0.21}\text{Pr}_{0.06}\text{Sm}_{0.01})/\Sigma = 1.98 \text{CO}_3)_{1.35} \text{F}_{1.35}.

Occurrence:  Rare in an alkali pegmatite (Narssârkkuk, Greenland); a late-stage mineral in mafic-ultramafic rocks and fractures (Mont Saint-Hilaire, Canada); in pegmatite dikes associated with an intrusive alkali gabbro-syenite complex (Mont Saint-Hilaire, Canada).

Association:  Aegirine, anclylite-(Ce), synchysite-(Ce), parisite-(Ce), neptunite (Narssârkkuk, Greenland); analcime, aegirine, albite, pyrophanite (Mont Saint-Hilaire, Canada); parisite, cebaeite-(Ce), barite (Bayan Obo deposit, China); vaterite, alstonite, anclylite-(Ce), kakharenkoite-(Ce), mckelveyite-(Y), fluorapatite, barite (Vuoriyarvi complex, Russia).

Distribution:  From Narssârkkuk, Greenland. In Canada, large crystals at Mont Saint-Hilaire, and from near Saint-Amable, Quebec. In the Khibiny massif, the Vuoriyarvi carbonatite complex, and the Lesnaya Varaka carbonatite, Kola Peninsula, Russia. From the Bayan Obo Fe–Nb–REE deposit, 130 km north of Baotou, Inner Mongolia, China.

Name:  From the Greek for club, in allusion to its typical clublike crystal habit.

Type Material:  University of Copenhagen, Copenhagen, Denmark.


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