

**Crystal Data:** Monoclinic. *Point Group:* 2/m. Crystals display {010} and  $\{2\bar{0}1\}$ , with {100} and {001} terminations, as flattened prismatic to acicular individuals to 0.5 mm. *Twinning:* By rotation about [100] forming trillings.

**Physical Properties:** *Cleavage:* None. *Fracture:* Uneven. *Tenacity:* Brittle. *Hardness:* = 4  
D(meas.) = n.d. D(calc.) = 4.65

**Optical Properties:** Transparent. *Color:* White, pale green, or colorless. *Streak:* White.  
*Luster:* Vitreous.

*Optical Class:* Biaxial (-).  $\alpha = 1.581(3)$   $\beta \approx \gamma = 1.715(5)$   $2V(\text{meas.}) = 5(3)^\circ$   $2V(\text{calc.}) = 0^\circ$   
*Orientation:*  $X \wedge a = 9^\circ$ ,  $Y = b$ ,  $Z \wedge c \approx 26^\circ$ .

**Cell Data:** *Space Group:* P2<sub>1</sub>/m.  $a = 13.396(4)$   $b = 5.111(1)$   $c = 6.672(2)$   $\beta = 106.628(4)^\circ$   
 $Z = 2$

**X-ray Powder Pattern:** Hilairitovoye pegmatite, Kirovsky mine, Mt. Kukisvumchorr, Khibiny alkaline massif, Kola Peninsula, Russia.

4.01 (100), 3.27 (100), 2.14 (80), 1.998 (80), 2.54 (50), 1.636 (20), 1.370 (20)

Chemistry:	(1)		(1)
Na <sub>2</sub> O	0.23	Pr <sub>2</sub> O <sub>3</sub>	0.87
K <sub>2</sub> O	0.27	Nd <sub>2</sub> O <sub>3</sub>	0.76
CaO	0.99	ThO <sub>2</sub>	9.41
SrO	2.38	CO <sub>2</sub>	21.30
BaO	44.10	F	3.38
La <sub>2</sub> O <sub>3</sub>	11.18	<u>- O = F</u>	<u>1.42</u>
Ce <sub>2</sub> O <sub>3</sub>	5.36	Total	98.81

(1) Hilairitovoye pegmatite, Kirovsky mine, Mt. Kukisvumchorr, Kola Peninsula, Russia; average of 9 electron microprobe analyses supplemented by IR spectroscopy, CO<sub>2</sub> calculated; corresponding to (Ba<sub>1.78</sub>Sr<sub>0.14</sub>K<sub>0.04</sub>) $\Sigma=1.96$ (La<sub>0.43</sub>Th<sub>0.22</sub>Ce<sub>0.20</sub>Ca<sub>0.11</sub>Na<sub>0.05</sub>Pr<sub>0.03</sub>Nd<sub>0.03</sub>) $\Sigma=1.07$ (CO<sub>3</sub>)<sub>3</sub>F<sub>1.10</sub>.

**Occurrence:** A late hydrothermal mineral in cavities in pegmatite veins cutting an alkaline igneous complex.

**Association:** Microcline, albite, calcite, nenadkevichite, hilairite, catapleiite, strontianite, donnayite-(Y), synchysite-(Ce), pyrite (one vein); pectolite, aegirine, microcline (a different vein).

**Distribution:** From the Hilairitovoye pegmatite at the Kirovsky mine, Mt. Kukisvumchorr, Khibiny alkaline massif, Kola Peninsula, Russia.

**Name:** As the Lanthanum-dominant analog of *kukharenkoite*-(Ce).

**Type Material:** A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia.

**References:** (1) Pekov, I.V., N.V. Chukanov, N.N. Kononkova, A.E. Zadov, and S.V. Krivovichev (2003) Kukharenkoite-(La), Ba<sub>2</sub>(La,Ce)(CO<sub>3</sub>)<sub>3</sub>F, a new mineral from Khibiny massif, Kola Peninsula. *Zapiski Vseross. Mineral. Obshch.*, 132(3), 55-64 (in Russian, English abs.).  
(2) Krivovichev, S.V., T. Armbruster, and I.V. Pekov (2003) Cation frameworks in the structure of natural fluorocarbonates of barium and rare-earth elements: Crystal structure of kukharenkoite-(La), Ba<sub>2</sub>(La,Ce)(CO<sub>3</sub>)<sub>3</sub>F. *Zapiski Vseross. Mineral. Obshch.*, 132(3), 65-72 (in Russian, English abs.).  
(3) (2004) *Amer. Mineral.*, 89, 1828-1829 (abs. refs. 1 & 2).