Podlesnoite $BaCa_2(CO_3)_2F_2$

Crystal Data: Orthorhombic. *Point Group*: 2/*m* 2/*m* 2/*m*. As prismatic crystals to 4 mm elongated along [001] and showing dominant {100}, {001}, (110) and {210) or as spherulites to 8 mm of radial fibrous crystals elongated along [010]. Striations sometimes on {001} parallel to [010] and typically on {110} and {210} parallel to [001]. As auto-epitactic intergrowths of the two morphological varieties.

Physical Properties: *Cleavage*: None. *Tenacity*: Brittle. *Fracture*: Conchoidal. Hardness = 3.5-4 D(meas.) = 3.62(1) D(calc.) = 3.63 In SW UV, crystals fluoresce strong pinkish orange; spherulites show weak bluish lilac. Strong effervescence in dilute HCl when powdered.

Optical Properties: Transparent, translucent (fibrous). *Color*: Colorless, snow-white (fibrous). *Streak*: White. *Luster*: Vitreous.
Optical Class: Biaxial (-). $\alpha = 1.500(2)$ $\beta = 1.612(2)$ $\gamma = 1.614(2)$ 2V(meas.) = 10(5)° 2V(calc.) = 14° *Orientation*: $X = a$, $Y = b$, $Z = c$.

Cell Data: *Space Group*: *Cmcm*. $a = 12.511(5)$ $b = 5.857(2)$ $c = 9.446(4)$ Z = 4

X-Ray Diffraction Pattern: Kirovskii mine, Mt. Kukisvumchorr, Kola Peninsula, Russia. 3.527 (100), 3.397 (71), 2.609 (20), 2.313 (43), 1.940 (40), 1.948 (39), 2.302 (22)

Chemistry:

	(1)	(2)
Na_2O	0.11	
K_2O	0.05	
CaO	29.02	29.87
SrO	0.13	
BaO	40.77	40.83
MnO	0.07	
FeO	0.25	
CO_2	22.9	23.44
F	9.95	10.12
$-O = F_2$	4.19	4.26
Total	99.06	100.00

(1) Kirovskii mine, Mt. Kukisvumchorr, Kola Peninsula, Russia; average electron microprobe analysis supplemented by IR spectroscopy, H_2O by TGA; corresponds to $Ba_{1.02}(Ca_{1.98}Fe_{0.01}Na_{0.01}Sr_{0.005})_{\Sigma=2.005}C_{1.99}O_6F_{2.00}$. (2) $BaCa_2(CO_3)_2F_2$.

Occurrence: In cavities within a hydrothermal lensoidal body in urtite.

Association: Natrolite, biotite, ilmenite, aegirine, lorenzenite, barytocalcite, calcite, fluorite, astrophyllite, burbankite.

Distribution: From the Kirovskii apatite mine, Mt. Kukisvumchorr, Khibiny massif, Kola Peninsula, Russia.

Name: Honors Aleksandr Semenovich *Podlesn*yi (b. 1948), Russian amateur mineralogist and mineral collector, for his contributions to the mineralogy of the Khibiny massif.

Type Material A.E. Fersman Mineralogical Museum, RAS, Moscow, Russia (3460/1).

References: (1) Pekov, I.V., N.V. Zubkova, N.V. Chukanov, D.Y. Pushcharovsky, N.N. Kononkova, and A.E. Zadov (2008) Podlesnoite $BaCa_2(CO_3)_2F_2$ a new mineral species from the Kirovskii mine, Khibiny, Kola Peninsula, Russia. Mineral. Record, 39, 137-148. (2) Zubkova, N.V., D.Y. Pushcharovsky, I.V. Pekov, and M.K. Rabadanov (2007) The crystal structure of podlesnoite, $BaCa_2(CO_3)_2F_2$. Zeitschrift Kristallog., 222, 474-476.