Hydroxylbastnäsite-(Nd) $(Nd, Ce, La)(CO_3)(OH, F)$

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Crystal Data: Hexagonal. *Point Group:* $\overline{6}m2$. Stacked platy crystals, to 0.2 mm, in massive intergrowths.

Physical Properties: *Cleavage:* On {0001}, a parting. Hardness = 1–2 in aggregates. D(meas.) = n.d. D(calc.) = 4.89

Optical Properties: Translucent. *Color:* White. *Streak:* White. *Luster:* Dull in aggregates. *Optical Class:* Uniaxial (+). $\omega = 1.715(2)$ $\epsilon = 1.81(1)$

Cell Data: *Space Group:* $[P\overline{6}2c]$ (by analogy to other bastnäsite species). $a = 7.191(1)$ $c = 9.921(2)$ Z = 6

X-ray Powder Pattern: Near Nikšić, Yugoslavia.
2.911 (100), 4.95 (88), 3.596 (79), 2.042 (51), 1.914 (30), 2.077 (29), 2.481 (16)

Chemistry:

	(1)		(1)
CO_2	20.63	Eu_2O_3	1.3
Y_2O_3	0.2	Gd_2O_3	1.4
La_2O_3	27.1	CaO	0.3
Ce_2O_3	0.3	F	3.3
Pr_2O_3	8.5	H_2O	2.26
Nd_2O_3	31.5	$-O = F_2$	1.39
Sm_2O_3	4.4	Total	99.80

(1) Near Nikšić, Yugoslavia; by electron microprobe, CO_2 and H_2O by TGA and mass spectrometer, presence of $(CO_3)^{2-}$ and H_2O confirmed by IR; corresponds to $(Nd_{0.41}La_{0.36}Pr_{0.11}Sm_{0.06}Gd_{0.02}Eu_{0.02}Ca_{0.01})_{\Sigma=0.97}[(OH)_{0.55}F_{0.38}]_{\Sigma=0.93}(CO_3)_{1.03}$.

Polymorphism & Series: Dimorphous with kozoite-(Nd).

Occurrence: As a rare authigenic mineral in a bauxite deposit developed on limestone.

Association: "Bauxite".

Distribution: From the Zagrad bauxite deposit, near Nikšić, Montenegro, Yugoslavia.

Name: For a member of the *bastnäsite* group with $(OH)^{1-} > F^{1-}$ and with *neodymium* the dominant rare earth element.

Type Material: University of Belgrade, Belgrade, Yugoslavia, Zagrad 10,8397; Hungarian Academy of Sciences, Budapest, Hungary; Royal Ontario Museum, Toronto, Canada.

References: (1) Maksimović, Z. and G. Pantó (1985) Hydroxyl-bastnaesite-(Nd), a new mineral from Montenegro, Yugoslavia. Mineral. Mag., 49, 717–720. (2) Farkas, L., Z. Maksimović, and G. Pantó (1985) X-ray powder data and unit cell of natural hydroxyl-bastnaesite-(Nd). Neues Jahrb. Mineral., Monatsh., 298–304. (3) (1988) Amer. Mineral., 73, 440–441 (abs. refs. 1 and 2).

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