Synchysite-(Nd) $Ca(Nd,La)(CO_3)_2F$

Crystal Data: Orthorhombic, pseudohexagonal. *Point Group:* n.d. As bladed crystals, to 0.036 mm, in radial to platy aggregates.

Physical Properties: Hardness = ∼1, in aggregates. D(meas.) = n.d. D(calc.) = 4.14

Optical Properties: Transparent to translucent. *Color:* Pale grayish blue; pale brown, grayish brown, pale violet to colorless in transmitted light. *Streak:* White. *Luster:* Dull. *Optical Class:* Biaxial (+). *Orientation:* Negative elongation, parallel extinction. $\alpha = 1.61$ $\beta = 1.66$ $\gamma = 1.74$ 2V(meas.) = n.d.

Cell Data: *Space Group:* n.d. $a = 4.039(2)$ $b = 6.984(5)$ $c = 54.27(4)$ Z = 12

X-ray Powder Pattern: Holičky deposit, Czech Republic.
4.52 (100), 9.04 (60), 2.77 (36), 1.898 (33), 3.50 (19), 3.25 (16), 2.26 (16)

Chemistry:

	(1)	(2)		(1)	(2)
CO_2	[26.9]	[17.1]	Dy_2O_3	2.5	1.4
UO_2	0.9		Ho_2O_3	0.3	
La_2O_2	0.9	17.9	Lu_2O_3	0.2	
Ce_2O_3	0.7	3.0	Y_2O_3	9.0	5.8
Pr_2O_3	1.8	6.8	CaO	18.3	12.6
Nd_2O_3	17.6	23.2	F	6.8	7.0
Sm_2O_3	6.9	4.3	$-O = F_2$	2.9	2.9
Eu_2O_3	2.3		Total	[100.0]	[100.0]
Gd_2O_3	7.8	3.8			

(1) Holičky deposit, Czech Republic; by electron microprobe, CO_3 by difference, determined present by IR; corresponds to $(Ca_{1.03}U_{0.01})_{\Sigma=1.04}(Nd_{0.33}Y_{0.25}Gd_{0.14}Sm_{0.13}Eu_{0.04}Dy_{0.04}Pr_{0.03}La_{0.02}Ce_{0.01}Ho_{0.01})_{\Sigma=1.00}(CO_3)_{1.94}F_{1.13}$. (2) Grebnik deposit, Yugoslavia; by electron microprobe, average of three analyses, CO_2 calculated by difference; corresponds to $Ca_{1.10}(Nd_{0.34}La_{0.27}Y_{0.12}Pr_{0.10}Sm_{0.08}Gd_{0.05}Ce_{0.04}Dy_{0.02})_{\Sigma=1.02}(CO_3)_{1.90}F_{0.90}$.

Occurrence: An authigenic minerals in cement in sandstone (Holičky deposit, Czech Republic); filling cavities in the base of a bauxite deposit in contact with limestone (Grebnik deposit, Yugoslavia).

Association: Florencite-(La), sphalerite, manganoan siderite, pyrite, kaolinite, quartz (Holičky deposit, Czech Republic).

Distribution: From the Holičky deposit, near Česká Lípa, Czech Republic. In the Grebnik bauxite deposit, Serbia, Yugoslavia. At the Pyörönmaa pegmatite, Kangasala, Finland.

Name: For its relation to *synchysite*-(Ce) and dominant *neodymium*.

Type Material: Charles University, Prague, Czech Republic, 21242, National Museum of Natural History, Washington, D.C., USA, 161213.

References: (1) Scharm, B. and P. Kühn (1983) Synchisite-(Nd), $Ca(Nd,Y,Gd,...)F|(CO_3)_2$, a new mineral. Neues Jahrb. Mineral., Monatsh., 201–210. (2) Maksimović, Z. and G. Pantó (1978) Minerals of the rare-earth elements in karstic bauxites: synchisite-(Nd), a new mineral from the Grebnik deposit. Proc. 4th International Congress for the study of bauxites, alumina, and aluminum, Athens, 13 pp.