

Synchysite-(Nd)**Ca(Nd, La)(CO₃)₂F**

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Crystal Data: Orthorhombic, pseudo-hexagonal. *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. $\alpha = 1.61$
 $\beta = 1.66$ $\gamma = 1.74$ $2V(\text{meas.}) = \text{n.d.}$

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 ₂ O ₃ | 2.5 |
| UO ₂ | 0.9 | | Ho ₂ O ₃ | 0.3 |
| La ₂ O ₂ | 0.9 | 17.9 | Lu ₂ O ₃ | 0.2 |
| Ce ₂ O ₃ | 0.7 | 3.0 | Y ₂ O ₃ | 9.0 |
| Pr ₂ O ₃ | 1.8 | 6.8 | CaO | 18.3 |
| Nd ₂ O ₃ | 17.6 | 23.2 | F | 6.8 |
| Sm ₂ O ₃ | 6.9 | 4.3 | —O = F ₂ | 2.9 |
| Eu ₂ O ₃ | 2.3 | | | 2.9 |
| Gd ₂ O ₃ | 7.8 | 3.8 | Total | [100.0] |
| | | | | [100.0] |

(1) Holičky deposit, Czech Republic; by electron microprobe, CO₃ by difference, determined present by IR; corresponds to (Ca_{1.03}U_{0.01})_{Σ=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})_{Σ=1.00}(CO₃)_{1.94}F_{1.13}. (2) Grebnik deposit, Yugoslavia; by electron microprobe, average of three analyses, CO₂ 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})_{Σ=1.02}(CO₃)_{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, manganese 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) Synchysite-(Nd), Ca(Nd, Y, Gd, ...)F|(CO₃)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: synchysite-(Nd), a new mineral from the Grebnik deposit. Proc. 4th International Congress for the study of bauxites, alumina, and aluminum, Athens, 13 pp.