Horváthite-(Y) $NaY(CO_3)F_2$

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. As stacks of crystals, platy on {100}, or as blocky cylindrical aggregates of radiating striated crystals, prismatic along [010], showing {100}, {001}, {010}, minor {110}, {011}, {101}, to 1 mm.

Physical Properties: *Cleavage:* On {100}, very good; on {010}, good. *Tenacity:* Brittle. Hardness = 4 D(meas.) = > 3.3 D(calc.) = 3.61

Optical Properties: Transparent to translucent. *Color:* Colorless to pale beige. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Biaxial (–). *Pleochroism:* Weak; X = colorless; $Y \simeq Z$ = pale brown. *Orientation:* $X = b$; $Y = a$; $Z = c$. $\alpha = 1.457(1)$ $\beta = 1.543(1)$ $\gamma = 1.622(1)$ 2V(meas.) = 82(1)° 2V(calc.) = 83°

Cell Data: *Space Group: Pmcn.* $a = 6.959(2)$ $b = 9.170(2)$ $c = 6.301(1)$ Z = 4

X-ray Powder Pattern: Mont Saint-Hilaire, Canada.
3.477 (100), 5.19 (90), 2.800 (50), 2.087 (50), 2.057 (50), 1.966 (50), 1.849 (50)

Chemistry:

	(1)
CO_2	[19.83]
Y_2O_3	45.07
Gd_2O_3	0.45
Tb_2O_3	0.12
Dy_2O_3	2.49
Ho_2O_3	0.81
Er_2O_3	3.02
Yb_2O_3	1.64
CaO	1.86
Na_2O	12.62
F	17.22
$-O = F_2$	7.23
Total	[97.90]

(1) Mont Saint-Hilaire, Canada; by electron microprobe, average of two analyses, CO_2 calculated for stoichiometry; corresponding to $(Na_{0.90}Ca_{0.07})_{\Sigma=0.97}(Y_{0.89}Er_{0.04}Dy_{0.03}Yb_{0.02}Gd_{0.01}Ho_{0.01})_{\Sigma=1.00}(CO_3)F_{2.01}$.

Occurrence: A very rare, late-forming mineral in an altered pegmatite dike in nepheline syenite, part of an alkalic igneous complex.

Association: Microcline, aegirine, dawsonite, rhodochrosite, sodalite, natrolite, albite, serandite, siderite, taeniolite, catapleiite, astrophyllite, genthelvite.

Distribution: From Mont Saint-Hilaire, Quebec, Canada.

Name: Honors Elsa Horváth (1947–) and László Horváth (1937–), husband and wife collectors of Mont Saint-Hilaire, Canada minerals.

Type Material: Canadian Museum of Nature, Ottawa, Canada, 81536.

References: (1) Grice, J.C. and G.Y. Chao (1997) Horváthite-(Y), rare-earth fluorocarbonate, a new mineral species from Mont Saint-Hilaire, Quebec. Can. Mineral., 35, 743–749. (2) (1998) Amer. Mineral., 83, 401 (abs. ref. 1).