Hochelagaite $(Ca, Na, Sr)Nb_4O_{11}\cdot 8H_2O$

Crystal Data: Monoclinic. *Point Group:* n.d. Intimately intergrown with franconite, in bladed crystals, to 0.03 mm, radiating in globules, to 150 μm, commonly with a granular core; in radial spherical aggregates and matted fibrous masses.

Physical Properties: *Tenacity:* Brittle; flexible when fibrous. Hardness = ∼4 D(meas.) = 2.89(1) D(calc.) = 2.883 May show a weak pale yellow fluorescence under SW and LW UV.

Optical Properties: Semitransparent. *Color:* White. *Streak:* White. *Luster:* Vitreous to silky.
Optical Class: Biaxial (–). *Orientation:* Z = elongation; $X \perp$ blades. $\alpha = 1.72(1)$ $\beta = [1.81(1)]$ $\gamma = 1.82(1)$ 2V(meas.) = 35(5)°

Cell Data: *Space Group:* n.d. $a = 19.98(2)$ $b = 12.88(1)$ $c = 6.446(6)$ $\beta = 93.41(8)°$ Z = 4

X-ray Powder Pattern: Francon quarry, Canada.
10.0 (10), 3.115 (8), 3.208 (7), 5.39 (5), 4.96 (5b), 2.799 (4), 1.979 (3b)

Chemistry:

	(1)
Nb_2O_5	75.3
Ta_2O_5	0.0
SiO_2	1.3
TiO_2	1.4
Al_2O_3	0.4
CaO	7.3
SrO	0.3
Na_2O	0.8
H_2O	[13.2]
Total	[100.0]

(1) Francon quarry and Mont Saint-Hilaire, Canada; by electron microprobe, average of eight analyses, H_2O by difference, considered to be partially dehydrated from 8–9 H_2O required to match measured densities; corresponds to $(Ca_{0.84}Na_{0.16}Sr_{0.02})_{\Sigma=1.02}(Nb_{3.70}Si_{0.14}Ti_{0.11}Al_{0.05})_{\Sigma=4.00}O_{10.71}\cdot 5.47H_2O$. (2) Saint-Amable, Canada; by electron microprobe, corresponding to $(Ca_{0.87}Na_{0.13})_{\Sigma=1.00}(Nb_{3.81}Ti_{0.19}Mg_{0.05})_{\Sigma=4.05}O_{10.89}\cdot 8H_2O$.

Occurrence: In vugs of a dawsonite-bearing sill in a limestone deposit (Francon quarry, Canada); in cavities in altered pegmatite dikes, hornfels, sodalite syenite, or miarolitic cavities, associated with an intrusive alkalic gabbro-syenite complex (Mont Saint-Hilaire, Canada); in miarolitic cavities in a syenite sill (near Saint-Amable, Canada).

Association: Franconite, weloganite, calcite, quartz (Francon quarry, Canada).

Distribution: In the Francon quarry, Montreal Island, Montreal, at Mont Saint-Hilaire, and near Saint-Amable, Quebec, Canada. From Vardeåsen, Langesundsfjord, Norway.

Name: For *Hochelaga*, an early name for Montreal, Canada and its surrounds, within which the mineral occurs.

Type Material: Geological Survey of Canada, Ottawa, 64285–64288; Royal Ontario Museum, Toronto, Canada, M37547, M37548.

References: (1) Jambor, J.L., A.P. Sabina, A.C. Roberts, M. Bonardi, D.R. Owens, and B.D. Sturman (1986) Hochelagaite, a new calcium-niobium oxide mineral from Montreal, Quebec. Can. Mineral., 24, 449–453. (2) (1987) Amer. Mineral., 72, 1024 (abs. ref. 1). (3) Horváth, L. and R.A. Gault (1990) The mineralogy of Mont Saint-Hilaire, Quebec. Mineral. Record, 21, 284–359, esp. 314–315. (4) Horváth, L., E. Pfenninger-Horváth, R.A. Gault, and P. Tarassoff (1998) Mineralogy of the Saint-Amable Sill, Varennes and Saint-Amable, Québec. Mineral. Record, 29, 83–118, esp. 101.