Mineevite-(Y) $Na_{25}Ba(Y,Gd,Dy)_2(CO_3)_{11}(HCO_3)_4(SO_4)_2F_2Cl$

Crystal Data: Hexagonal. *Point Group:* $6/m$. Anhedral grains, to 1 cm.

Physical Properties: *Cleavage:* On {0001}, perfect. *Fracture:* Irregular. *Tenacity:* Brittle. Hardness = 4 D(meas.) = 2.85(2) D(calc.) = 2.84 Pale yellowish green fluorescence under UV.

Optical Properties: Transparent. *Color:* Pale green to yellowish green; nearly colorless in thin fragments. *Luster:* Vitreous, pearly on cleavages.
Optical Class: Uniaxial (–). $\omega = 1.536(2)$ $\epsilon = 1.510(2)$

Cell Data: *Space Group:* $P6_3/m$. $a = 8.811(7)$ $c = 37.03(3)$ Z = 2

X-ray Powder Pattern: Mt. Alluaiv, Kola Peninsula, Russia.
2.829 (100), 2.270 (90), 2.531 (71b), 2.659 (51b), 1.660 (46), 3.32 (40), 7.61 (39)

Chemistry:

	(1)		(1)
SO_3	7.63	Ho_2O_3	0.15
CO_2	30.83	Er_2O_3	0.51
Y_2O_3	5.90	Yb_2O_3	0.06
La_2O_3	0.19	BaO	7.33
Ce_2O_3	0.58	Na_2O	36.87
Nd_2O_3	0.50	F	1.80
Sm_2O_3	0.95	Cl	1.70
Gd_2O_3	2.33	H_2O	[1.66]
Tb_2O_3	0.35	$-O = (F,Cl)_2$	1.14
Dy_2O_3	1.80	Total	[100.00]

(1) Mt. Alluaiv, Kola Peninsula, Russia; by electron microprobe, average of three analyses, CO_2 and F by wet methods, H_2O by difference; corresponds to $Na_{25.30}Ba_{1.02}(Y_{1.11}Gd_{0.27}Dy_{0.20}Sm_{0.11}Ce_{0.07}Nd_{0.06}Er_{0.06}Tb_{0.04}La_{0.03}Ho_{0.02}Yb_{0.01})_{\Sigma=1.98}(CO_3)_{10.98}(HCO_3)_{3.92}(SO_4)_{2.03}F_{2.01}Cl_{1.02}$.

Occurrence: Very rare in pegmatites in a differentiated alkalic massif.

Association: Nahcolite, trona, thermonatrite, sidorenkite, neighborite, aegirine, albite, sphalerite, manganotychite.

Distribution: On Mt. Alluaiv, Lovozero massif, Kola Peninsula, Russia.

Name: Honoring Professor Dmitry Andreevich Mineev (1935–1992), Russian geochemist and mineralogist, founder of the Russian Academy of Sciences.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, p575/1.

References: (1) Khomyakov, A.P., L.I. Polezhaeva, N.A. Yamnova, and D.Y. Pushcharovskiy (1992) Mineevite-(Y) – $Na_{25}Ba(Y,Gd,Dy)_2(CO_3)_{11}(HCO_3)_4(SO_4)_2F_2Cl$ – a new mineral. Zap. Vses. Mineral. Obshch., 121(6), 138–143 (in Russian). (2) (1994) Amer. Mineral., 79, 764 (abs. ref. 1).