Chernykhite $(Ba,Na)(V^{3+},Al)_2(Si,Al)_4O_{10}(OH)_2$

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Crystal Data: Monoclinic. *Point Group:* $2/m$ or m. In small veinlets and leaflets, to 5 mm.

Physical Properties: *Cleavage:* Perfect on {001}. Hardness = 2.5–3.6 on {001}; 2.9–4.5 $\perp$ {001}. D(meas.) = 3.14–3.16 D(calc.) = 3.10

Optical Properties: Translucent. *Color:* Olive-green, dark green. *Streak:* Light green. *Luster:* Pearly on cleavage.
Optical Class: Biaxial (–). α = 1.640–1.643 β = 1.686–1.691 γ = 1.702–1.704
2V(meas.) = 11°–12°

Cell Data: *Space Group:* $C2/c$ or Cc. a = 5.29(1) b = 9.182(2) c = 20.023(6) $\beta = 95°41(5)'$ Z = 4

X-ray Powder Pattern: Kara-Tau Mountains, Kazakhstan.
3.33 (100), 2.607 (70), 1.996 (60), 1.660 (60), 3.01 (50), 1.530 (50), 2.887 (40)

Chemistry:

	(1)	(2)
SiO_2	29.90	30.06
Al_2O_3	25.90	27.24
Fe_2O_3	0.40	0.36
V_2O_4	5.40	5.30
V_2O_3	18.30	18.90
MgO	1.60	trace
BaO	9.35	9.60
Na_2O	1.32	
K_2O	0.70	0.90
H_2O^+	6.00	6.10
H_2O^-	1.10	1.00
Total	99.97	99.46

(1) Kara-Tau Mountains, Kazakhstan; corresponds to $(Ba_{0.28}Na_{0.20}K_{0.07})_{\Sigma=0.55}(V^{3+}_{1.13}Al_{0.65}V^{4+}_{0.30}Mg_{0.18}Fe_{0.02})_{\Sigma=2.28}(Si_{2.30}Al_{1.70})_{\Sigma=4.00}O_{10}(OH)_2$. (2) Do.; corresponds to $(Ba_{0.29}K_{0.09})_{\Sigma=0.38}(V^{3+}_{1.18}Al_{0.76}V^{4+}_{0.29}Fe_{0.02})_{\Sigma=2.25}(Si_{2.30}Al_{1.70})_{\Sigma=4.00}O_{10}(OH)_2$.

Polymorphism & Series: $2M_1$ polytype.

Mineral Group: Mica group.

Occurrence: In small veinlets cutting carbonate rocks interbedded with vanadium-rich lower Paleozoic shales.

Association: n.d.

Distribution: From the Balasauskandyk and Kurumsak vanadium deposits, northwestern Kara-Tau Mountains, southern Kazakhstan.

Name: Honoring Viktor Vasil'evich Chernykh (1889–1941), Professor of Mineralogy, the Mining Institute, St. Petersburg, Russia.

Type Material: Alma-Ata, Kazakhstan; Mining Institute, St. Petersburg, 1056/1; Vernadsky State Geological Museum, Moscow, 49845; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 72369, vis5548.

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