Karelianite V_2O_3

Crystal Data: Hexagonal. *Point Group:* $[\overline{3}\ 2/m]$ (by analogy to the hematite group). As prismatic grains, to 0.5 mm.

Physical Properties: *Fracture:* Conchoidal. Hardness = 8–9 VHN = 1790 (50 g load). D(meas.) = n.d. D(calc.) = [4.95]

Optical Properties: Opaque. *Color:* Black; brownish olive-gray in reflected light.
Streak: Black.
Optical Class: Uniaxial. *Anisotropism:* Strong; reddish brown to gray. *Bireflectance:* Weak.
R: (400) 14.3, (420) 14.4, (440) 14.5, (460) 14.8, (480) 15.2, (500) 15.8, (520) 16.3, (540) 16.8, (560) 17.2, (580) 17.6, (600) 18.0, (620) 18.3, (640) 18.7, (660) 19.2, (680) 19.8, (700) 20.6

Cell Data: *Space Group:* $R\overline{3}c$. a = 4.99 c = 13.98 Z = 6

X-ray Powder Pattern: Outokumpu mine, Finland; close to hematite.
1.70 (100), 2.71 (90), 2.49 (80), 3.67 (70), 1.44 (40), 1.84 (25), 2.20 (20)

Chemistry:

	(1)
Fe_2O_3	4.1
V_2O_3	92.9
Cr_2O_3	3.7
MnO	1.5
Total	102.2

(1) Outokumpu mine, Finland; by electron microprobe.

Mineral Group: Hematite group.

Occurrence: In sulfide-rich portions of glacial boulders derived from high-grade metamorphic rocks, as schists and quartzites (Outokumpu mine, Finland); in primary unoxidized U–V ores (Mounana mine, Gabon); in vanadiferous anthraxolite bitumen (Guangxi, China).

Association: Pyrrhotite, chalcopyrite, pyrite, tremolite, graphite, titanite, quartz (Outokumpu mine, Finland); corvusite, montroseite, uraninite, quartz (Mounana mine, Gabon); millerite, violarite, montroseite (Guangxi, China).

Distribution: At the Outokumpu mine, northern Karelia, Finland. From the Roter Bär mine, St. Andreasberg, Harz Mountains, Germany. In Russia, near Lake Baikal, Siberia, in the Slyudyanka complex, Sayan Mountains, and 4.5 km south of Olkhon Gate Strait. In the Shanglin and Hechi bitumens, Guangxi, Zhuang Autonomous Region, China. From the Mounana uranium mine, Franceville, Gabon. At the Urcal deposit, La Rioja Province, Argentina. In the Hemlo gold mine, Thunder Bay district, Ontario, Canada.

Name: For the Karelian schist belt, the region of Finland where the mineral occurs.

Type Material: National Museum of Natural History, Washington, D.C., USA, 121785 and 121786.

References: (1) Long, J.V.P., Y. Vuorelainen, and O. Kouvo (1963) Karelianite, a new vanadium mineral. Amer. Mineral., 48, 33–41. (2) Finger, L.W. and R.M. Hazen (1980) Crystal structure and isothermal compression of Fe_2O_3, Cr_2O_3, and V_2O_3 to 50 kbars. J. Appl. Phys., 51, 5362–5367.