

Kochite



TRICLINIC

Locality: The northern side of Hvide Ryg in the mountain range of Werner Bjerger on the eastern coast of Greenland (Lat. 72° N, Long. 24° W).

Occurrence: In a loose block of nepheline syenite between the Sirius Glacier and Hvide Ryg. Associated minerals are: nepheline, alkali feldspar and l avenite.

General appearance: Lath-shaped to acicular grains in parallel to subparallel aggregates up to 0.3 H 1.0 mm.

Physical, chemical and crystallographic properties: *Luster:* vitreous. *Diaphaneity:* transparent.

Color: pale brown. *Streak:* not given. *Luminescence:* not given. *Hardness:* 5. *Tenacity:* brittle. *Cleavage:* {100} perfect. *Fracture:* uneven. Density: 3.32 g/cm³ (meas.), 3.35 g/cm³ (calc.). **Crystallography:** Triclinic, $P\bar{1}$, a 10.032, b 11.333, c 7.202 Å, α 90.192, β 100.334, γ 111.551°, V 747.1 Å³, $Z = 1$, $a:b:c = 0.8852:1:0.6355$. Morphology: no forms were observed; crystals are elongate along [010]. Twinning: none mentioned.

X-ray powder-diffraction data: 3.951(3)(120,221), 3.028(6)(211), 2.908(10)(122, 222), 2.600(8)(040), 2.462(2)(340,222,122,420), 1.868(6)(422,522,420), 1.670(5)(340), 1.554(2)(542,622). **Optical data:** Biaxial (+), α 1.684, β 1.695, γ 1.718, $2V(\text{meas.})$ 73°, $2V(\text{calc.})$ 70°; dispersion not given; pleochroism weak with X colorless and Z pale yellow; $X = c$, $Z \wedge [100] \sim 20^\circ$. **Chemical analytical data:** Mean of four sets of electron-microprobe data: Na₂O 10.33, MgO 0.01, CaO 21.39, MnO 4.92, FeO 1.08, SrO 0.12, Al₂O₃ 0.05, V₂O₅ 0.03, Y₂O₃ 0.39, La₂O₃ 0.25, Ce₂O₃ 0.57, SiO₂ 31.55, TiO₂ 8.44, ZrO₂ 12.12, HfO₂ 0.09, Nb₂O₅ 1.86, Ta₂O₅ 0.02, F 6.83, sum 100.05, less O = F 2.88, Total 97.17 wt.%. Empirical formula: (Na_{1.92}Sr_{0.02})Σ1.94 (Na_{2.77}Ca_{1.23})Σ4.00 (Ca_{3.52}Na_{0.48})Σ4.00 (Mn_{1.07}Ca_{0.81}Y_{0.05}Ce_{0.05}La_{0.02})Σ2.00 (Zr_{1.41}Fe_{0.23}Ca_{0.35}Hf_{0.01})Σ2.00 (Ti_{1.64}Nb_{0.22}Zr_{0.11}Al_{0.02}V_{0.01})Σ2.00 (Si₂O₇)_{4.07}F_{4.00}(O_{1.94}F_{1.57})Σ3.51.

Relationship to other species: It is a member of the rosenbuschite group.

Name: After Lauge Koch (1892–1964), Danish geologist who made significant contributions to the knowledge of the geology of Greenland and mapped the geology of the type locality of this mineral.

Comments: IMA No. 2002–012.

CHRISTIANSEN, C.C., GAULT, R.A., GRICE, J.D. & JOHNSEN, O. (2003): Kochite, a new member of the rosenbuschite group from Werner Bjerger alkaline complex, East Greenland. *European Journal of Mineralogy* 15, 551-554.

CHRISTIANSEN, C.C., JOHNSEN, O. & MAKOVICKY, E. (2003): Crystal chemistry of the rosenbuschite group. *Canadian Mineralogist* 41, 1203-1224.