NEW MINERAL NAMES*

MICHAEL FLEISCHER, G. Y. CHAO AND CARL A. FRANCIS

Aurbosite


The deposit is in Permian sandstones adjacent to the granodiorite-tonalite of the Adanello pluton. The mineral occurs in contact silicates, mainly epidote. Microprobe analysis of a fresh, bluish-reflecting grain gave Fe 41.1, V 16.6, Si 6.9, O 35.3; "corrected values" (not explained) Fe 41.9, V 16.3, Si 6.9, O 34.8, corresponding to Fe₂V₃Si₂O₇ or 3FeO·2Fe₂O₃·2V₂O₅·3SiO₂. Cleavage cubic. Color, variable blue. Reflectance variable; internal reflections sometimes observed.

The name is for the locality, the Almhütte Bos.

Discussion

Data inadequate, should not have been named. M.F.

Bessmertnovite*


Seven electron microprobe analyses on 3 samples gave (range and average) Au 68.0-75.0, 72.3; Ag 3.21-4.18, 3.77; Cu 4.58-7.82, 6.27; Fe 0.27-0.93, 0.72; Pb 7.53-7.48, 7.16, sums 98.3-100.5, 99.2%. This average corresponds to (Au₃Au₉Ag₂₆)(CuO₉FeO₁₂)(TeO₅Pb₄₅) or (Au₅Ag₃)Cu(Fe,Pb).

The X-ray powder pattern resembles that of Au₄Zn. The strongest lines (20 given) are: 3.30(7)(312), 2.61(8)(710), 1.744(8-9)(111·1·470). These are indexed on an orthorhombic cell with a = 4.036, b = 4.025, d = 4.061Å, D calc. 16.3.

The mineral occurs in volcanicogenic gold telluride deposits of the Far Eastern USSR in zones of cementation, associated with bilibinskite (64, 652(1979)), rarely as rims around grains of gold. They are elongated platy or irregular grains up to 0.2 × 0.05 mm. In reflected light the mineral resembles gold, is very bright orange-yellow color, with lower reflectivity: 460 nm, 15.7; 540, 37.5; 580, 52.4; 660, 58.7%. Weakly anisotropic in neutral gray shades. Microhardness 310-374, av. 353 kg/mm² at 20 g load; 343-370, av. 360 kg/mm² at 10 g load.

The name is for M. S. Bessmert and V. V. Bessmert, investigators of the mineralogy of ore deposits.

Type material is at the Fersman Mineralogical Museum, Academy of Sciences, USSR, and at the Institute of the Mineralogy, Geochemistry, and Crystal Chemistry of Elements, both in Moscow. M.F.


Wet chemical analysis of an impure sample gave CaO 11.94, MgO 0.56, MnO 0.32, Al₂O₃ 0.74, Fe₂O₃ 0.05, ThO₂ 52.65, P₂O₅ 27.68, SiO₂ 2.27, H₂O 2.07, Σ = 99.28%. From DTA and TGA studies the H₂O was attributed to admixed brockite. Recalculated to 100%, this yields the empirical formula (Ca₁₉Mg₃₄Fe₃₈Oₙ)₉. This structural analogy to monazite is established by infrared spectra and X-ray powder patterns.

Brabantite is monoclinic, P2₁, with Z = 2. Guinier photographs yield lattice parameters (unheated and heated) a = 6.726±0.006, 6.718±0.004; b = 6.933±0.005, 6.916±0.003; c = 6.447±0.012, 6.442±0.009Å; β = 103°53'±16', 103°46'±11'. D meas. 4.72, 5.02; calc. 5.26, 5.28. The strongest X-ray lines for the unheated mineral (25 given) are 4.15(30)(111), 3.46(25)(020), 3.27(60)(200), 3.06(100)(120), 2.85(75)(112,012), 1.947(30)(312).

Crystals are elongated, gray-brown and altered to reddish brown on the surfaces. Hardness is 5½. Cleavages (100) and (001). Optically biaxial, β = 1.73, γ = α = 0.05. Brabantite occurs in a zone of microcrystalline muscovite associated with thorite and uraninite in the younger shell of a pegmatite on the Brabant farm in the Karibib district, Namibia.

The name is for the locality. Type material is preserved at the Institut für Mineralogie und Kristallographie, Technische Universität, Berlin, W. Germany.

Discussion

See discussion following Lingaitukuang (below). C.A.F.

Lingaitukuang ("cathophorite")** (= Brabantite)


Chemical analysis gave CaO 13.33, MgO trace, Fe₂O₃ 0.66, TiO₂ 0.12, ThO₂ 51.12, (Ce,Y)₂O₃ 3.05, UO₂ 1.23, UO₂ 0.29, SiO₂ 1.60, P₂O₅ 28.78, sum 100.18 wt%, corresponding to (Ca₀.₅₂Th₀.₄₈Te₁.₀₀(PO₄)₀.₈₉SiO₄)o.₆₆ or ideally Ca₀.₅₂Th₀.₄₈Te₀.₃₀(PO₄)₀.₈₉SiO₄o.₆₆. The mineral dissolves in HCl.

The X-ray powder diffraction pattern of the unheated mineral is clear and sharp and is essentially identical to that of the synthetic Ca₀.₅₂Th₀.₄₈Te₀.₃₀(PO₄)₀.₈₉SiO₄o.₆₆ which is used here because an English name was not proposed in this article. The name "cathophorite" appeared in Chem. Abs. (91, no. 4, 24051, 1979) without reference to the source.

* Minerals marked with asterisks were approved before publication by the Commission on New Minerals and Mineral Names of the International Mineralogical Association.

** Lingaitukuang, a Pin-Yin translation of the Chinese name meaning a mineral of Ca, Th and P, is used here because an English name was not proposed in this article. The name "cathophorite" appeared in Chem. Abs. (91, no. 4, 24051, 1979) without reference to the source.
The mineral occurs in Xingjiang, China, in a rare-metal-bearing pegmatite. The common associated minerals are hafnian zircon, spodumene, managanocolumbyte, and albite.

**Discussion**

The mineral is identical to brabantite (see above) which, although published in 1980, was approved by the IMA Commission on New Minerals and Mineral Names on March, 1978. Brabantite has priority over lingaitukuang as the latter was published without the approval by the Commission. However, both brabantite and lingaitukuang seem to be unnecessary as the intermediate member, cheralite (Amer. Mineral., 38, 734, 1953; 39, 403, 1954), in the monazite-CaTh(PO₄)₂ series could be redefined to include the pure (Ca,Th) end-member. The type cheralite contains more than 50% CaTh(PO₄)₂. G.Y.C.

*Colquiriite*


Analysis by the Fresenius Institute gave Ca 22.8, Na 0.34, Mg 0.55, Li 3.1, Al 13.4, F 58.0, weight loss at 105°C 0.5, sum 98.69%, corresponding to CaLiAlF₆. Additional microprobe determinations gave Ca 21.0, Al 15.1%. Spectrographic analysis showed traces of K, Sr, Ba, Ag, Cu, Cr, Ti, Si. Heating to 800–900°C gave fluorate and cubic Al₂O₃ at higher temperatures all the F was lost and mayenite (Ca₂Al₂O₄)₃ was formed.

X-ray study shows the mineral to be trigonal, space group P3₁c₁, possibly P3₁c, a = 5.02, c = 9.67Å, Z = 2, D meas. 2.94, calc. 2.95. The strongest X-ray lines (22 given) are 3.98(7)(1011), 3.23(10)(1012), 2.22(9)(1122), 1.736(6)(1124), 1.446(6).

The mineral occurs in anhedral white grains up to 1 cm in size. No cleavage, fracture conchoidal. H about 4. Uniaxial negative to slightly biaxial, ω = 1.388, ε = 1.385 (both ±0.002). Does not fluoresce in UV light.

The mineral occurs in the Colquiri tin mine, Bolivia, intergrown with ralstonite and garberksite and associated with spalheterite, madocite, and pyrite.

The name is for the locality. M.F.

**Gregoryite**


"Gregoryite is about to be submitted as a new mineral name to the IMA Commission on New Minerals and Mineral Names. The mineral has a highly disordered structure that is of (Na₉₂, K₉₂Ca₉₃CO₃) type and has composition (Na₉₂K₉₂Ca₉₃CO₃). This is close to the limit of solid solution at the 1 kbar liquidus in Na₂CO₃–K₂CO₃–CaCO₃. The solubility of CaCO₃ in (Na,K)₂CO₃ decreases sharply at sub-solidus temperatures, and X-ray diffraction of gregoryite usually shows exsolved neryerite. Gregoryite phenocrysts have a rounded shape in thin section."

The mineral occurs in the carbonates lavas of Oldoinyo Lengai, Tanzania.

Analysis gave CaO 9.10, SrO 0.66, BaO 0.24, Na₂O 44.87, K₂O 3.95, CO₂ (36.22), SO₃ 4.28, P₂O₅ 1.92, F 0.4, Cl 0.60, H₂O not detd., sum 102.24 — (0 = F,Cl) 0.31 = 101.93%.

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The name is for J. W. Gregory (1864–1932), who pioneered the study of the volcanoes and geological structure of the East African rift system.

**Discussion**

Publication premature. M.F.

*Kalborsite*  


Three microprobe analyses gave K₂O 29.84, 30.27, 30.08, av. 30.06; B₂O₅ 4.99, 4.99, 4.96, av. 4.98; Al₂O₃ 20.99, 21.25, 21.31, av. 21.18; SiO₂ 38.49, 38.72, 38.41, av. 38.54; Cl 3.71, 3.72, 3.71, av. 3.71, H₂O (calc.) 3.81, sum (av.) 102.28 — (0 = Cl₂) 0.84 = 101.44%.

This corresponds to K₆B₁₃Al₂Si₃O₁₂(OH)₂Cl₀.₉₉, or from the crystal structure data K₆Ba₂Al₂Si₃O₁₂[B(OH)₄]Cl. The mineral is not decomposed by cold water or 10% HCl. When the mineral is heated to 600°C, it becomes dull, the n decreases somewhat but the X-ray pattern does not undergo substantial change.

X-ray study shows the mineral to be tetragonal, space group P4₂, c, a = 9.851±0.005, c = 13.060±0.005Å, Z = 2, D calc. 2.48, meas. 2.43. The strongest X-ray lines (127 given) are 3.44(8)(220), 3.08(10)(222), 2.94(8)(302), 2.79(9)(132), 2.24(5)(134), 2.08(5)(116), 2.42(4)(111). The structure is a three-dimensional framework of SiO₄ and Al₂O₄ tetrahedra, with a channel along the c-axis containing K, Cl, and B(OH)₄ tetrahedra.

Kalborsite is colorless with a slight rose-brownish tint, luster vitreous to pearly on the perfect cleavage (110). Hardness 733–897, av. 838 kg/mm² or about 6 on the Mohs scale. Optically uniaxial, positive, ω = ε = 1.525, with birefringence less than 0.001.

Kalborsite occurs as grains up to 1–2 mm in size in rischorrite pegmatite of Mt. Rassvumchorr, Khibina massif, Kola Peninsula. It occurs in segregations of petolite, forming rims around deposits of lovozerite.

The name is for the composition. Type material is in the Fersman Mineralogical Museum, Academy of Sciences, USSR, Moscow. M.F.

**NEW DATA**

*Chukhrovite-(Ce), Rhabdophane-(Ce)*

In Am. Mineral 65, 1065 (1980), I commented that nothing was said of the presence or absence of Y in these minerals. Professor Walenta (private commun., Jan. 14, 1981) informs me that Y could not be detected in either M.F.

*Natrophosphate*


A new occurrence is described. Analysis by A.V.B. gave P₂O₅ 21.51, Na₂O 32.60, F 3.20, CO₂ 2.60, H₂O 41.30, sum 101.23 — (0 = F,Cl) 0.34 = 99.87%, corresponding to Na₂(P₂O₅)₂·19H₂O, after deducting CO₂ absorbed in the air. Infra-red study of fresh mineral showed no bands of CO₂. The X-ray pattern corresponds with that of synthetic Na₂(P₂O₅)₂·19H₂O (ASTM 25-1311). M.F.