

NEW MINERAL NAMES*

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

Almosite

P. Ramdohr and G. Cevalles (1980) A uranium deposit altered by contact with igneous rocks. *Mineralium Deposita* 15, 383-390 (in German).

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 $\text{Fe}_9\text{V}_4\text{Si}_3\text{O}_{27}$ or $5\text{FeO} \cdot 2\text{Fe}_2\text{O}_3 \cdot 2\text{V}_2\text{O}_5 \cdot 3\text{SiO}_2$. 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*

E. M. Spiridonov and T. N. Chvileva (1979) Bessmertnovite, $\text{Au}_4\text{Cu}(\text{Te},\text{Pb})$; a new mineral from the zone of oxidation of deposits of the Far East. *Doklady Akad. Nauk SSSR* 249, 185-189 (in Russian).

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 7.53-11.6, 8.95; Te 6.93-7.48, 7.16, sums 98.3-100.5, 99.2%. This average corresponds to $(\text{Au}_{3.59}\text{Ag}_{0.34})(\text{Cu}_{0.97}\text{Fe}_{0.12})(\text{Te}_{0.55}\text{Pb}_{0.43})$ or $(\text{Au},\text{Ag})_4\text{Cu}(\text{Te},\text{Pb})$.

The X-ray powder pattern resembles that of Au_4Zn . The strongest lines (20 given) are 3.30(7)(312,411), 2.61(8)(710), 1.744(8-9)(11 \cdot 1 \cdot 4,720). These are indexed on an orthorhombic cell with $a = 4.036$, $b = 4.025$, $d = 4.061 \text{ \AA}$, D calc. 16.3.

The mineral occurs in volcanogenic 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/mm^2 at 20 g load; 343-370, av. 360 kg/mm^2 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.

Brabantite*

Rose, D. (1980) Brabantite, $\text{CaTh}[\text{PO}_4]_2$, a new mineral of the monazite group. *Neues Jahrb. Mineral. Monatsh.*, no. 6 247-257.

Wet chemical analysis of an impure sample gave CaO 11.94, MgO 0.56, MnO 0.32, Al_2O_3 0.74, Fe_2O_3 0.05, ThO_2 52.65, P_2O_5 27.68, SiO_2 2.27, H_2O 3.07, $\Sigma = 99.28\%$. From DTA and TGA studies the H_2O was attributed to admixed brockite. Recalculated to 100%, this yields the empirical formula $(\text{Ca}_{1.000}\text{Mg}_{0.065}\text{Mn}_{0.021}^{2+}\text{Al}_{0.068}\text{Fe}_{0.003}^{3+})_{1.157}\text{Th}_{0.936}(\text{P}_{1.832}\text{Si}_{0.177})_{2.009}\text{O}_8$ corresponding to the ideal formula $\text{CaTh}[\text{PO}_4]_2$. The structural analogy to monazite is established by infrared spectra and X-ray powder patterns.

Brabantite is monoclinic, $P2_1$ with $Z = 2$. Guinier photographs yield lattice parameters (unheated and heated) $a = 6.726 \pm 0.006$, 6.718 ± 0.004 ; $b = 6.933 \pm 0.005$; 6.916 ± 0.003 ; $c = 6.447 \pm 0.012$, $6.442 \pm 0.009 \text{ \AA}$; $\beta = 103^\circ 53' \pm 16'$, $103^\circ 46' \pm 11'$. 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), 3.26(70)(200), 3.06(100)(120), 2.85(75)($\bar{1}$ 12,012), 1.947(30)($\bar{3}$ 12).

Crystals are elongated, gray-brown and altered to reddish brown on the surfaces. Hardness is $5\frac{1}{2}$. Cleavages (100) and (001). Optically biaxial, $\beta = 1.73$, $\gamma - \alpha = 0.05$. 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)

Wang Xianjue (1978) A new mineral—lingaitukuang. *Kexue Tongbao*, 23, 743-745 (in Chinese).

Chemical analysis gave CaO 13.33, MgO trace, Fe_2O_3 0.66, TiO_2 0.12, ThO_2 51.12, $(\text{Ce},\text{Y})_2\text{O}_3$ 3.05, UO_2 1.23, UO_3 0.29, SiO_2 1.60, P_2O_5 28.78, sum 100.18 wt%, corresponding to $(\text{Ca}_{0.52}\text{Th}_{0.43}\text{TR}_{0.04}\text{U}_{0.01})(\text{PO}_4)_{0.89}(\text{SiO}_4)_{0.06}$, or ideally $\text{CaTh}(\text{PO}_4)_2$. 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 $\text{CaTh}(\text{PO}_4)_2$. The strongest lines (18 given) are: 4.13(111)(5), 3.25(200)(6), 3.05(120)(9), 2.84(112,012)(10), 2.15(031)(5), 1.94($\bar{2}$ 12)(4), 1.845(032,103)(5), 1.717(040)(4).

The mineral is pale yellow to brownish green with a greasy luster. Habit granular (0.2-0.3 mm) and granular aggregates,

** 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.

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

cleavage not observed, hardness small, sp. gr. 5.20. Optically biaxial, positive, $\alpha = 1.691$, $\beta = 1.696$, $\gamma = 1.725$, $2V = 44^\circ$, weakly pleochroic.

The mineral occurs in Xingjiang, China, in a rare-metal-bearing pegmatite. The common associated minerals are hafnian zircon, spodumene, manganocolumbite, 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.

Colquirite*

Kurt Walenta, B. Lehmann, and Martina Zwiener (1980) Colquirite, a new fluoride mineral from the Colquiri tin ore deposit, Bolivia. *Tschermaks Min. Petrog. Mitt.* 27, 275–281 (1980) (in German)

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 fluorite and cubic Al₂O₃; at higher temperatures all the F was lost and mayenite (Ca₁₂Al₄O₃₃) was formed.

X-ray study shows the mineral to be trigonal, space group $P\bar{3}1c$, possibly $P31c$, $a = 5.02$, $c = 9.67\text{\AA}$, $Z = 2$, D meas. 2.94, calc. 2.95. The strongest X-ray lines (22 given) are 3.98(7)(10 $\bar{1}$ 1), 3.23(10)(10 $\bar{1}$ 2), 2.22(9)(11 $\bar{2}$ 2), 1.736(8)(11 $\bar{2}$ 4), 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, $\omega = 1.388$, $\epsilon = 1.385$ (both ± 0.002). Does not fluoresce in UV light.

The mineral occurs in the Colquiri tin mine, Bolivia, intergrown with ralstonite and gearsutite and associated with sphalerite, madoctite, and pyrite.

The name is for the locality. M.F.

Gregoryite

J. Gittins and D. McKie (1980) Alkalic carbonatite magmas: Oldoinyo Lengai and its wider applicability. *Lithos* 13, 213–215.

"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 (Na₂, K₂, Ca, □)CO₃ type and has composition (Na_{0.78}K_{0.05})₂Ca_{0.17}(CO₃). 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 nyerereite. Gregoryite phenocrysts have a rounded shape in thin section."

The mineral occurs in the carbonate 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%.

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*

A. P. Khomyakov, S. M. Sandomirskaya, and Yu. A. Malinovskii (1980) Kalborsite, K₆BAl₄Si₆O₂₀(OH)₄Cl, a new mineral. *Doklady Akad. Nauk SSSR*, 252, no. 6, 1465–1468 (in Russian).

Yu. A. Malinovskii and N. V. Belov (1980) Crystal structure of kalborsite *Doklady Akad. Nauk SSSR* 252, no. 3, 611–615 (in Russian).

Three microprobe analyses gave K₂O 29.84, 30.27, 30.08, av. 30.06; B₂O₃ 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 K_{6.04}B_{1.35}Al_{3.93}Si_{6.07}O_{22.58}Cl_{0.99}, or from the crystal structure data K₆BAl₄Si₆O₂₀[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 $P42_1c$, $a = 9.851 \pm 0.005$, $c = 13.060 \pm 0.005\text{\AA}$, $Z = 2$, D calc. 2.48, meas. 2.5. 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)(116,242). The structure is a three-dimensional framework of SiO₄ and AlO₄ 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, $\omega \approx \epsilon = 1.525$, with birefringence less than 0.001.

Kalborsite occurs as grains up to 1–2 mm in size in rischorrite pegmatite of Mt. Rasvumchorr, Khibina massif, Kola Peninsula. It occurs in segregations of pectolite, 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. P. Khomyakov and A. V. Bykova (1980) Natrophosphate—the first occurrence in the Lovozero alkalic massif. *Mineralog. Zhurnal* 2, no. 6, p. 88–91. See 58, 139 (1973).

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 = F₂ 1.34) = 99.87%, corresponding to Na₇(PO₄)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 Na₇(PO₄)F · 19H₂O (ASTM 25-1311). M.F.