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NEW MINERAL NAMES

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Marthozite

FABIAN CESBRON, R. OOSTERBOSCH AND ROLAND PIERROT (1969). Une nouvelle espece minerale: la marthozite, uranylselenite de cuivre hydrate. *Bull. Soc. Fr. Mineral Cristallogr.* **92,** 278–283.

Chemical analysis on 60 mg by J. Fritsche gave SeO_2 23.7, UO_3 60.5, CuO 4.3, H_2O 10.7, sum 99.2% giving $CuO:SeO_2:UO_3:H_2O = 1:3.95:3.91:10.95$. Electron probe analysis by R. Giraud gave SeO_2 23.2±0.5, UO_3 55.9±4, CuO 4.3±0.5%. The leads to the formula: $Cu(UO_2)_4(SeO_3)_4(OH)_2 \cdot 10H_2O$, which is unsatisfactory, because the unit cell would then have $Z = 3$, giving Cu_3 in the unit cell, whereas the symmetry requires an even number. Possibly there is a vacancy, so that the unit cell contains 4 $[(Cu—_{0.75}\square_{0.25})(UO_2)_3(SeO_3)_3(OH)_2 \cdot 7H_2O]$. A structure determination is under way to resolve the uncertainty.

A TGA curve shows loss of 3.05% at 100°, 3.80% additional from 100 to 180°, 3.65% additional to 485° (total 10.50%, presumably H_2O), then 15.2% additional from 485 to 635° (presumably SeO_2). The mineral dehydrates at room temperature to a meta-phase, orthorhombic with $a = 15.80 \pm 0.08$, $b = 17.20 \pm 0.05$, $c = 6.98 \pm 0.03$ Å. At 70° a new phase is formed, monoclinic, twinned, with $a = 8.05 \pm 0.08$, $b = 7.06 \pm 0.03$, $c = 16.90 \pm 0.22$ Å., $\beta = 102° \pm 40'$. The mineral dissolves in HNO_3 (1+1) and in dilute HCl.

Marthozite occurs in millimeter-size crystals, flattened on (100); this face is striated parallel to [001]. Faces noted $\{100\}$, $\{010\}$, $\{011\}$, $\{2\bar{3}0\}$ large, $\{101\}$, $\{201\}$, $\{301\}$, $\{211\}$, $\{210\}$, and $\{230\}$ vicinal. Rotation and Weissenberg photographs showed it to be orthorhombic, space group *Pnma* or $Pn2_1a$ probably the latter, with $a = 16.40 \pm 0.05$, $b = 17.20 \pm 0.05$, $c = 6.98 \pm 0.03$ Å. The strongest lines (40 given) are 8.65 (ms) (020), 8.23 (vvs) (200), 4.44 (ms) (031), 3.54 (ms) (401), 3.42 (ms) (102), 3.22 (vs) (022), 3.09 (vvs) (051), 3.02 (s) (431, 222), 2.900 (vs) (251), 1.935 (ms), 1.9222 (ms). Cleavage perfect $\{100\}$, imperfect $\{010\}$.

Color is yellowish-green to greenish-brown; the latter contain inclusions insoluble in HNO_3. $\rho = 4.4$ measured, 4.7 calculated. Optically biaxial, neg., $2V = 37°$ (Cd), 39° (Na), 42° (Hg), *ns* α not measured, β 1.780–1.785, γ 1.78001.785, $X = a$, $Y = b$. Pleochroic, X yellow-brown, Y greenish-yellow.

Marthozite occurs in the zone of oxidation of the Musonoi deposit, Katanga, Africa, from which the selenites guilleminite and demesmaekerite have been described, as well as kasolite, cuprosklodowskite, uranotile, malachite, chalcomenite, and sengierite.

The name is for A. Marthoz (died 1962), formerly Director-general of the Union Miniere du Haut-Katanga. Type material is preserved at the Sorbonne and the Ecole Nationale Superieure des Mines, Paris. The mineral and name were approved before publication by the Commission on New Minerals and Mineral Names, IMA.

Unnamed Pb-Bi Sulfosalt

W. NOWACKI AND H. A. STALDER (1969). Zwei Wismutsulfosalze von Sta. Maria, Val Medel, Kt. Graubünden *Schweiz. Mineral. Petrogr. Mitt.* **49,** 97–101.

Two sulfosalts from the above locality are described. One was cannizzarite; the other appears to be a new mineral. Microprobe analyses by H. Rudolf gave Pb 47.3, 47.9; Bi 35.8, 35.6; S 17.0, 16.3; sum 100.1, 99.8%. The formula might be $Pb_8Bi_6S_{17}$ (same as giessenite, but the X-ray data differ), or $Pb_5Bi_4S_{11}$ (same as bursaite), or $Pb_{13}Bi_{10}S_{28}$.

X-ray study (P. Engel) gave $a=39.6\pm0.1$, $b=4.10\pm0.05$, $c=14.28\pm0.05$ Å, $\alpha=\beta=\gamma=90°$, space group Cm, $C2$, or $C2/m$. The strongest lines (13 given) are 4.16 (8), 4.57 (10), 4.47 (10), 2.160 (5).

Reflectance 52.0–54.5% (white), 50.0–51.5% (green), 48–50.5% (orange-red). Microhardness in two perpendicular directions 350–477.

Unnamed Tetragonal Natrolite

E. Krogh Andersen, Marianne Danø, and O. V. Petersen (1969). A tetragonal natrolite. *Medd. Gronland* **181** (10) 1–19.

A white, fibrous mineral occurs in hydrothermal veins cutting naujaite rock at two localities at Ilimaussaq, Greenland. It consists of aggregates of sheaf-like groups of prismatic crystals up to 0.01 mm in size, showing a single prism and either a basal pinacoid or a bipyramid.

X-ray powder data (Guinier-Hägg camera) are similar to those of orthorhombic natrolite, but index on a tetragonal cell, $a=18.446\pm0.002$, $c=6.619\pm0.001$ Å with space group $F\bar{4}_1dm$ or $F\bar{4}d2$; in the I-setting this becomes $a=13.043$, $c=6.619$Å, both ±0.001 Å, space group $I4_1md$ or $I\bar{4}2d$, probably the latter. The strongest lines (44 given) (I-centered) are 6.530 (10) (200); 5.902 (20) (101), 4.377 (10) (211), 3.171 (10) (321), 2.851 (20) (411).

Analysis by M. Mouritzen gave SiO_2 48.81, TiO_2, MgO none, Al_2O_3 25.83, Fe_2O_3, K_2O trace, CaO 0.69, Na_2O 14.60, H_2O 10.70, sum 100.63%, corresponding to $Na_2Al_2Si_3O_{10}\cdot 2H_2O$. The DTA curve shows a single endothermic break with peak at 328° (natrolite gives a similar one with peak at 309°). The TGA curve shows a loss of 10.7%, nearly all from 275 to 350°.

Color white, occasionally dull pink. ρ (suspension) $=2.210\pm0.002$. Optically uniaxial, positive, $\omega=1.480$, $\epsilon=1.493$ (both ±0.001).

The mineral differs from hydronepheline, ranite, and gonnardite.

NEW DATA

Crichtonite

M. H. Hey, P. G. Embrey, and E. E. Fejer (1969). Crichtonite, a distinct species. *Mineral. Mag.* **37,** 349–356.

Crichtonite (de Bournon, 1813) has long been considered to be limenite (*The System of Mineralogy . . . of Dana 7th ed.* **1,** 534–541). It was stated to be an independent species in 1952 [*Amer. Mineral.* **38,** 734 (1943)] but the data had not been published.

Microchemical analysis on 11.1 mg containing a little quartz gave on recalculation, assuming the loss of 5/16% to be quartz, TiO_2 69.57, Fe_2O_3 15.10, FeO 15.33%, suggesting the ideal formula $Fe_{16}^{2+}Fe_{14}^{3+}Ti_{66}O_{169}$ (with $Z=3$ for the full rhombohedral cell) or perhaps the empirical formula $Fe_9^{2+}Fe_8^{3+}Ti_{36}O_{93}$. $\rho=$ (corrected for quartz) 4.46.

X-ray study indicates a rhombohedral cell with $a=22.70$ Å, $\alpha=111°6'$; there is a strong pseudocell with $a=7.117$ Å, $\alpha=23°18'$. Goniometric data are given; the crystals are steep rhombohedra with prominent base and rhombohedron and many small faces. Their distribution and anomalies, in the X-ray photographs suggest that the true symmetry is probably orthorhombic or lower. The strongest X-ray lines are 3.387 (s), 2.875 (s), 2.838 (ms), 2.243 (ms), 2.121 (s), 1.796 (ms), 1.596 (s), 1.440 (s).

It is not known how Sir Alexander Crichton pronounced his name; it is suggested that krĭkhtena͞it is preferable, to avoid homophony with kreittonite.

Hammarite (3^2-Aikinite)

M. M. Povilaitis, N. N. Mozgova, Yu. S. Borodaev, V. M. Senderova, and G. N. Ronami (1969). The first occurrence of hammerite in the USSR. *Doklady Akad. Nauk SSSR* **187,** 886–889 [in Russian].

Hammarite was found in the Dzhida Mo-W deposit, Western Transbaikal (second known occurrence). Chemical analysis by VMS gave Cu 7.69, Pb 23.13, Zn 1.78, Fe 0.05, Ag 0.17, Bi 49.00, Sb 0.14, Sn 0.05, S 17.57, Se 0.004, Te 0.02, SiO_2 0.50, sum 100.10%. Electron probe analysis by GNR gave Cu 8.8±0.5, Pb 26.2±0.5, Bi 46.5±0.5, S 18.2±0.1, sum 99.7%. Both agree well with the original analysis. ρ 6.734. X-ray powder data, optics, and microhardness are given. The X-ray powder data, indexed on an orthorhombic cell gave $a=11.18$, $b=11.44$, $c=4.00$ Å; aikinite gave $a=11.33$, $b=11.56$, $c=4.07$ Å.

Compare *Amer. Mineral.* **52,** 1874–1876 (1967); *ibid.* **53,** 351 (1968).