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NEW MINERAL NAMES*

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Cl-Tyretskite

Renate v. Hodenberg and Robert Kühn (1977). A new mineral of the hilgardite group: Cl-tyretskite from Boulby. *Kali und Steinsalz, 7,* 165–170 (in German).

Analysis of an impure sample gave CaO 25.46, SrO 0.30, MgO 0.92, FeO 3.63, B_2O_3 46.15, Cl_2 15.80, K_2O 5.33, Na_2O 2.51, CO_2 0.34, H_2O 3.81, insol. 0.27; sum 104.42 − ($O = Cl_2$) = 100.86%. After subtracting all K as sylvite (8.43%), all Na as halite (4.73%), and all CO_2 as dolomite (0.73%) the remaining Mg and Fe were subtracted as "boracite" (10.32%),[1] leaving for the composition of the main mineral $(Ca_{1.987}Sr_{0.013})B_5O_{8.07}Cl(OH)_{1.86}$, the same composition as hilgardite and parahilgardite; it differs from tyretskite in having $Cl(OH)_2$ in place of $(OH)_3$.

X-ray study showed the mineral to be triclinic, with $a = 6.297 \pm 0.001_5$, $b = 6.464 \pm 0.001$, $c = 6.56 \pm 0.001$A, $\alpha = 74.14$, $\beta = 61.58$, $\lambda = 61.26°$ (all ± 0.01°), space group *P1*, $Z = 1$, G calc 2.67, G meas 2.69. The strongest X-ray lines (77 given) are 2.880(100)(002), 2.827(83)(020), 2.029(64)(312,321), 3.147(57) (211,121), 2.757(54)(201,212), 2.742(47)(221), 3.182(39)(112).

The mineral occurs as white rosette-like aggregates in nodules of the Boulby K mine, England. **M. F.**

Kanoite*

Hideo Kobayashi (1977) Kanoite, $(Mn^{+2},Mg)_2(Si_2O_6)$, a new clinopyroxene in the metamorphic rock from Tatehira, Oshima Peninsula, Hokkaido, Japan. *J. Geol. Soc. Japan, 83,* 537–542 (in English).

Microprobe analyses of three samples of K. Tazaki and S. Iizuma gave SiO_2 49.87, 50.59, 50.14; Al_2O_3 0.04, 0.04, 0.03; FeO (total Fe) 3.06, 3.15, 3.11; MnO (total Mn) 31.16, 31.21, 31.19; MgO 15.01, 15.17, 15.06; CaO 0.58, 0.59, 0.65; sum 99.72, 100.75, 100.18%. Chemical analyses gave in addition Na_2O 0.03, K_2O 0.03, FeO 2.64, Fe_2O_3 0.39%. This corresponds to $(Mn_{1.040}Mg_{0.885}Fe^{2+}_{0.087}Fe^{3+}_{0.012}Ca_{0.024})Si_{1.973}O_6$.

Kanoite is monoclinic, with $a = 9.739$, $b = 8.939$, $c = 5.260$A, $\beta = 108.56°$, space group probably $P2_1/c$, G 3.66 meas, 3.60 calc. The strongest lines (26 given) are: 3.211 (100)(220), 3.021 (90)($\bar{2}21$), 2.921 (80)($\bar{3}11$), 2.910 (90)(310), 2.493 (40)(002), 1.627 (40)($\bar{5}31$).

Color light pinkish-brown, luster vitreous, streak white. H = 6. Cleavage {110} perfect. Optically biaxial, positive, $\alpha = 1.715$, $\beta = 1.717$, $\gamma = 1.728$ (all ±0.002), $2V = 40$–$42°$, $Y = b$, $Z{:}c = 42°$, polysynthetic twinning on {100} common.

The mineral occurs in a seam 1–2 cm thick and 30 cm long in pyroxmangite–cummingtonite rock. The seam contains kanoite, spessartine, manganoan cummingtonite, and minor pyroxmangite, the kanoite grains being 0.1 × 0.1 mm in maximum size.

The name is for Dr. Hiroshi Kano, Professor of Petrology, Akita University. Type material is at Shimane University, Matsue, Japan, and in the National Science Museum, Tokyo. **M.F.**

Merlinoite*

E. Pasaglia, D. Pongiluppi, and R. Rinaldi (1977) Merlinoite, a new mineral of the zeolite group. *Neues Jahrb Mineral. Monatsh.,* 355–364.

Electron microprobe analysis (standards albite, microcline, synthetic glass, synthetic olivine, and paracelsian) gave SiO_2 51.82, Al_2O_3 18.04, Fe_2O_3 0.72, MgO none, CaO 3.18, SrO none, BaO 2.49, Na_2O 0.65, K_2O 7.53, H_2O 15.57, recalculated to 100%; H_2O by weight loss. The unit-cell content is $(K_{4.21}Ca_{1.49}Na_{0.55}Ba_{0.24}Fe_{0.24})(Al_{9.31}Si_{22.68})O_{64} \cdot 22.74\ H_2O$. The DTG curve peaks at 215 and 250°C.

X-ray study shows the mineral to be orthorhombic, space group *Immm*, $a = 14.116$, $b = 14.229$, $c = 9.946$A, pseudotetragonal with $a = b = 14.184$, $c = 9.962$A. The strongest X-ray lines (65 given) are 7.115 (90)(020), 7.080 (88)(200), 5.359 (40)(121,211), 3.258 (44)(141), 3.241 (41)(411), 3.176 (100)(240,420). The mineral is closely related to phillipsite.

Merlinoite occurs as white spheroidal radial aggregates less than 1 mm in diameter. G meas 2.14, calc 2.19. Mean *n* 1.494, elongation positive. It occurs in cavities in kalsilite–melilite rock, Cupaello, Italy, associated with phillipsite, chabazite, calcite, and apophyllite.

The name is for Stefano Merlino, Professor of Crystallography, University of Pisa. Type material is at the Museo Civico Storia Nationale, Milan, Italy. **M.F.**

Motukoreaite*

K. A. Rodgers, J. E. Chisholm, R. J. Davis and C. S. Nelson (1977) Motukoreaite, a new hydrated carbonate, sulphate, and hydroxide of Mg and Al from Auckland, New Zealand. *Mineral. Mag., 41,* 389–390.

Motukoreaite occurs as relatively abundant white clay-like cement in both beach-rock and basaltic volcanic tuffs on the flanks of a small extinct late Pleistocene basaltic cone at Brown's Island (Motukorea), within Waitemata Harbour. Wet-chemical analysis of a separate of the cement containing some 5 percent quartz and traces of calcite and goethite gave: SiO_2 5.55, Al_2O_3 17.87, Fe_2O_3 0.73, CaO 0.92, MgO 22.98, MnO 0.70, ZnO 0.56, Na_2O 0.71, K_2O 0.10, CO_2 9.32, SO_3 10.00, H_2O+ 19.62, H_2O- 10.35, sum 99.41%. The idealized formula $NaMg_{19}Al_{12}(CO_3)_{6.5}(SO_4)_4(OH)_{54} \cdot 28H_2O$ is proposed. Dimensions of the hexagonal cell, derived from powder diffraction data, are $a = 9.336$, $c = 44.72$A, $Z = 1$. The mineral is

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[1] The "boracite" subtracted had the formula $Fe_{4.45}Mg_{1.55}B_{14}O_{26}Cl_2$, hence was actually ericaite.

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

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nearly isotropic, *n* about 1.51. H (Mohs) 1–1½; G 1.48–1.53 by Berman balance, 1.478 calculated from ideal formula.

The strongest lines in the powder pattern are: 11.32 (vvs)(004), 5.58 (s)(008), 4.59 (s)(108), 3.72 (s)(0.0.12), 2.578 (s)(305), 2.386 (s)(1.1.16,1.0.18), 2.158 (s)(1.0.20), 1.921 (s)(3.1.12).

The name is from the Maori name of the type locality—Motukorea—meaning 'island of cormorants'. **A.P.**

Rucklidgeite*

E. N. Zav'yalov and V. D. Begizov (1977) Rucklidgeite, $(Bi,Pb)_3Te_4$, a new mineral from the Zod and Kochkar gold ore deposits. *Zapiski Vses. Mineralog. Obshch., 106*, 62–68 (in Russian).

Electron microprobe analyses gave: Bi 37.4, 38.1, 39.6; Pb 15.4, 13.6, 9.4; Sb 1.0, 2.9, n.d.; Ag 1.2, 1.1, 1.9; Te 43.9, 44.2, 44.9; sums 97.9, 98.0, 98.7 for one grain from the Kochkar and two from the Zod deposit, respectively. These analyses correspond to $(Bi_{2.08}Pb_{0.86}Ag_{0.13})Te_{4.00}$, $(Bi_{2.11}Pb_{0.76}Sb_{0.10}Ag_{0.12})Te_{4.00}$, and $(Bi_{2.15}Pb_{0.52}Sb_{0.27}Ag_{0.20})Te_{4.00}$, and the general formula $(Bi,Pb)_3Te_4$.

The strongest lines in the X-ray powder pattern (Fe*Kα* radiation) for the Kochkar sample: 3.22(10)($10\bar{1}7$); 2.34(9)($10\bar{1}.14$); 2.21(4)($11\bar{2}0$); 1.976(5)(000.21); 1.822(4)($20\bar{2}7$, 101.20); 1.607(4)($20\bar{2}.14$); 1.473(6)($11\bar{2}.21$, $10\bar{1}.26$); and 1.382(4)($10\bar{1}.28$, 000.30). The pattern is similar to that of tellurobismuthite except for several of the weak reflections. Space group $R\bar{3}m$ is proposed, with $a = 4.422$, $c = 41.49$A, $Z = 3$, D = 7.739 g/cm³ meas, 8.06 g/cm³ calc.

Rucklidgeite is microscopically very similar to tellurobismuthite, occurring as silver-white foliated aggregates intergrown with gold (9 × 13 mm) along fractures in dolomite (1.1 mm wide), and as smaller (up to 0.5 mm) tabular grains of different orientations bordering arsenopyrite and boulangerite in dolomite. Streak is lead-gray, metallic lustre (strong on fresh fracture), cleavage very perfect on the pinacoid and average on the rhombohedron. Rucklidgeite is easily split into flexible but inelastic plates along the plane of cleavage. Non-magnetic. The mineral is brittle, fractures and chips around the microindentation even at 5g load, and exhibits hardness anisotropy, $VHN_{10} = 62.9$ and 51.6. In reflected light, rucklidgeite is white with a very weak rose tint. It appears creamy relative to volynskite but pale rose relative to altaite. Birefringence very weak in air and noticeable in immersion. Under crossed nicols a block structure of elongated grains is observed; in air and in immersion anisotropy is distinct, reddish-brown to bluish-grey. Reflectances for one sample 62.0, 59.8 (440 nm), 62.5, 60.1 (460 nm), 62.7, 60.3 (480 nm), 63.2, 60.6 (500 nm), 63.3, 60.5 (520 nm), 63.7, 60.8 (540 nm), 63.8, 60.8 (560 nm), 64.0, 60.9 (580 nm), 64.1, 61.0 (600 nm), 64.6, 61.3 (620 nm), 65.0, 61.9 (640 nm), 65.5, 62.4 (660 nm), 65.9, 62.9 (680 nm), 66.2, 63.1% (700 nm).

The mineral is named after Dr. J. C. Rucklidge of the University of Toronto, who first noted a mineral of analogous composition in the Robb-Montbray deposit, Que., Canada (*Am. Mineral., 55*, p. 1444, 1970). Type material has been deposited in the Mineralogical Museum, Academy of Sciences, USSR.

Discussion

The ideal formula is proposed by analogy to X-ray structural work on synthetic compounds of similar composition, but there is no report on the range of substitutions permitted. Negative indices are inconsistently presented in Table 3. There is an apparent typographical error for sample No. 1 in Table 3 where *d* = 1.097 rather than 1.009. **L.J.C.**

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Slavyanskite*

B. V. Dolishnii (1977) Slavyanskite, a new mineral. *Zapiski Vses. Mineralog Obshch., 106,* 331–335 (in Russian).

Analysis by R. Ya. Chudnovskaya and G. I. Baranova gave Al_2O_3 31.04, Fe_2O_3 0.86, CaO 17.47, MgO 1.05, H_2O 48.38, SiO_2 1.07, sum 99.87%, corresponding to $Ca_{1.00}Mg_{0.08}Al_{1.96}Fe_{0.04}Si_{0.06}O_{4.18} \cdot 8.61\ H_2O$, equivalent to $CaAl_2O_4 \cdot nH_2O$, n = 8 or 8.5. Spectrographic analysis showed 0.0x to 0.00x% Sr, Zr, V, and Ti. Tests for sulfate, chloride, fluoride, borate, and carbonate were negative. The DTA curve shows an intense endothermic effect at 430° (loss of water) and a weak exothermic effect at 880°. The mineral becomes amorphous when heated at 430°.

Slavyanskite is tetragonal, $a = 11.26 \pm 0.03$, $c = 6.56 \pm 0.02$A, $Z = 4$, G calc 2.49. The strongest lines (38 given) are 5.66 (9)(101,200), 3.57 (9)(310), 2.757 (7)(212), 2.589 (10)(401), 1.792 (7)(323). H 4–5, G 2.52 ± 0.03. Colorless, luster vitreous. Brittle, cleavages {110},{100} distinct. Optically uniaxial, positive, ω 1.571, ϵ 1.600 (both ± 0.002). The mineral occurs as crystals 1–2 mm in size, showing (001), (101), and (110) forms, in a zone of tectonic breccia in the Adamovskii salt stock of the Slavyansk salt deposit, southeastern part of the Dneprovsk-Donets Basin, USSR.

The name is for the locality. Type material is at L'vov University. **M.F.**

Unnamed magnesium analogue of roemerite

B. V. Oleinikov and S. L. Shvartsev (1968) Contemporary sulfate formation in the zone of oxidation of pyrrhotite–chalcopyrite hydrothermal ores, northwestern Siberian Platform. *Geol. Geofiz. no. 6,* P. 15–25 (in Russian).

Analysis of supergene botryoidal to earthy incrustations formed on pyrite gave SO_3 38.39, Fe_2O_3 19.94, FeO 4.33, MgO 2.55, H_2O 34.25, sum 99.44%, corresponding to $(Mg_{0.56}Fe^{2+}_{0.49})Fe^{3+}_{2.03}(SO_4)_{3.97} \cdot 15.5H_2O$. Spectrographic analysis shows Ca, Na, Mn, Cu, Co, Sn, As 0.04%, Al, Ni, Pb 0.004%. DTA shows endothermic breaks at 140, 200, 805, and 1015°, and small exothermic effects at 350, 485, 575°.

X-ray powder data (48 lines) show strongest lines at 19.5 (10), 9.3 (10), 6.14 (6), 5.63 (9), 3.56–3.47 (9). The mineral is yellowish, luster greasy, taste astringent. **M.F.**

NEW DATA

Likasite

J. P. Declercq, Gabriel Germain and Paul Piret (1977) Composition et structure de la likasite, $Cu_3P_2H_3(NO_3)(OH)_2 \cdot H_2O$. *Acta Crystallogr., B33,* 1422–1427.

The formula of likasite is usually given as $Cu_{12}(NO_3)_4(PO_4)_2(OH)_4$ (*Am. Mineral., 40,* 942, 1955). A new structural study shows the mineral to be orthorhombic, space group $Pc2_1n$, $a = 5.828$, $b = 6.769$, $c = 21.690$A, $Z = 4$ $(Cu_3P_2H_3(NO_3)(OH)_2 \cdot H_2O$, with P^{3-} present.

Discussion

The formulation of a mineral that contains nitrate and occurs with cuprite, malachite, and buttgenbachite as a phosphide is surely one of the most unlikely suggestions made in a long time. Calculation of Eh would be interesting. **M.F.**

Modderite

A. I. Makhmudov and I. P. Laputina (1977) First occurrence of modderite in the USSR. *Zapiski Vses. Mineralog. Obshch., 106*, 347–350 (in Russian).

Modderite, described in 1923, is supposedly CoAs, but analyses have been lacking. This paper gives microprobe analyses of 11 grains, Co 35.3–41.3, Fe 3.1–9.9, Ni 0.0.4, As 55.9–57.5%, with average composition $(Cu_{0.89}Fe_{0.12})As$. Optical data are given. The mineral occurs in grains 0.01–0.05 mm associated with alloclasite, safflorite, glaucodot, and cobaltite at the Dashkesan deposit, Azerbaidzhan.

Discussion

Synthetic CoAs is orthorhombic. No X-ray data have been published. **M.F.**

Nyerereite

Duncan McKie and E. J. Frankis (1977) Nyerereite: a new volcanic carbonate mineral from Oldoinyo Lengai, Tanzania. *Z. Kristallogr., 145*, 73–95.

Previous data were summarized in *Am. Mineral., 60*, 487–488 (1975). A new chemical analysis and an electron microprobe analysis are given; these yield a unit-cell content $(Ca_{3.78}Sr_{0.18}Ba_{0.03}Mg_{0.03}Mn_{0.01})(Na_{6.69}K_{1.45})(CO_{3_{7.50}}SO_{4_{0.16}}PO_{4_{0.04}}F_{0.23}Cl_{0.06}(OH)_{0.25}O_{0.10})$, or nearly $Ca_4(Na,K)_8CO_3,SO_4,F)_8$, or $4(CaCO_3 \cdot Na_2CO_3)$.

The mineral occurs "in the remarkable carbonate lavas erupted by the volcano Oldoinyo Lengai, Tanzania, between March, 1960, and September, 1965."

The mineral inverts to a hexagonal cell at 292°. The mineral is orthorhombic, space group $Cmc2_1$, $a = 5.044$, $b = 8.809$, $c = 12.743$A. The strongest lines (48 given) are 6.377 (vs)(002), 4.385 (vs)(110,020), 3.181 (ms)(004), 3.046 (vvs)(113,023), 2.582 (s)(114,024), 2.536 (vs)(130), 2.199 (s)(040,115), 2.161 (ms)(221), 2.122 (s)(006), 2.671 (vs)(222), 1.956 (s)(043), 1.812 (s)(044), 1.805 (s)(224). The mineral is invariably twinned.

Crystals are colorless, tabular. G (suspension) = 2.541±0.002. Optically biaxial, negative, $\alpha = 1.5112$, $\beta = 1.5333$, $\gamma = 1.5345$ (all ±0.0005), $2V = 29°$, $X = c$, $Y = a$, $Z = b$.

Discussion

The absence of data on occurrence and paragenesis is deplorable. **M.F.**

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NOTICES

The fifth Iraqi Geological Congress will be held between December 28, 1978, and January 6, 1979, at the Iraqi Geological Union building, Baghdad. The Congress will deal with different aspects of the geology of Iraq and the Middle East. Further information can be obtained from:

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