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NEW MINERAL NAMES

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Chernykhite

S. G. ANKINOVICH, E. A. ANKINOVICH, I. V. ROZHDESTVENSKAYA, AND V. A. FRANK-KAMENETSKII (1972) Chernykhite, a new barium-vanadium mica from northwestern Karatau. *Zapiski Vses. Mineral. Obsch.* **101,** 451–458 (in Russian).

Analyses by T. L. Vileshina on olive-green and dark-green samples gave, respectively: SiO_2 29.90, 30.06; Al_2O_3 25.90, 27.24; Fe_2O_3 0.40, 0.36; V_2O_3 18.30, 18.90; V_2O_4 5.40, 5.30; MgO 1.60, trace; BaO 9.35, 9.60; Na_2O 1.32, ——; K_2O 0.70, 0.90; H_2O^+ 6.00, 6.10; H_2O^- 1.10, 1.00; sum 99.97, 99.46 percent. These correspond to the formulas:

$$(Ba_{0.28}Na_{0.20}K_{0.07})(V^{+3}_{1.13}Al_{0.65}V^{+4}_{0.30}Mg_{0.18}Fe_{0.02})(Si_{2.30}Al_{1.70})O_{10}(OH)_2$$

and

$$(Ba_{0.29}K_{0.09})(V^{+3}_{1.18}Al_{0.76}V^{+4}_{0.29}Fe_{0.02})(Si_{2.30}Al_{1.70})O_{10}(OH)_2$$

i.e. The Ba-analogue of roscoelite, with a marked deficiency in the (Ba, K) position. DTA curves show two shallow, broad endotherms with maxima at 825–830° (decomposition) and at 890–920° (oxidation of V).

X-ray study showed the mineral to be monoclinic, $2M_1$ type, space group $C\ 2/c$ or Cc, a 5.29 ± 0.01, b 9.182 ± 0.002, c 20.023 ± 0.006Å., β 95°41′ ± 5′. The strongest X-ray lines (50 given) are 3.326 (100)(006), 3.232 (40)(114), 3.011 (50)(025), 2.887 (40)(115), 2.802 (40)(116), 2.607 (70)(20$\bar{2}$, 131) 2.160 (40)(135), 1.996 (60)(029, 00.10), 1.660 (60)(00.12), 1.530 (50)(060).

The mineral is olive-green to dark green, streak light green, luster on cleavage pearly. H. 2.5–3.6 on {001}, 2.9–4.5 in the perpendicular direction. Cleavage basal very perfect. G. 3.14–3.16. Optically biaxial neg., $2V$ 11–12°, *n*s of analyzed samples, α 1.643, 1.640; β 1.691, 1.686; γ 1.704, 1.702 (all ±0.002).

The mineral occurs as veinlets and leaflets, tenths of a mm to 5 mm in size, cutting carbonate rocks interbedded with vanadiferous Lower Paleozoic shales of N.W. Karatau, southern Kazakhstan.

The name is for the late V. V. Chernykh, professor at the Leningrad Mining Institute. Type material is deposited in the Mineralogical Museums of the Academy of Sciences USSR, Moscow, and the Kazakh SSR, Alma-Ata.

The mineral and name were approved in advance of publication by the Commission on New Minerals and Mineral Names, IMA.

Pseudo-armalcolite

M. CHRISTOPHE-MICHEL-LEVY, C. LEVY, AND R. PIERROT (1972), Mineralogical aspects of APOLLO XIV samples: Lunar chondrites, pink-spinel-bearing rocks, ilmenites. *Abstracts of Papers Presented at Third Lunar Sci. Conf., Houston, Texas, Jan. 10–13,* **1,** 136–138.

C. LEVY, M. CHRISTOPHE-MICHEL-LEVY, P. PICOT, AND R. CAYE (1972) A new titanium and zirconium oxide from the APOLLO 14 samples. *Proc. Third Lunar Sci. Conf.,* **1,** 1115–1120.

Microprobe analysis gave TiO_2 71.2, ZrO_2 4.4, Al_2O_3 1.7, Cr_2O_3 8.8, FeO 9.1, MgO 1.9, CaO 3.1, SiO_2 0.6, sum 100.8 percent. Calculated to O = 5, this gives the formula:

$$Ti_{1.91}Zr_{0.08}Fe_{0.27}Cr_{0.25}Mg_{0.10}Al_{0.07}Ca_{0.12}Si_{0.02}O_5,$$

Close to those of armalcolite and of "phase X."

The mineral is isotropic. Reflectances are given at 15 wave lengths (420–700 mm): 420, 21.4; 460, 18.7; 540, 16.7; 580, 16.35; 640, 16.1 percent. The curve of reflectance differs in form and magnitude from that of armalcolite, the differences are believed to be too great to be explained by the considerably higher contents of Zr and Cr.

The mineral was found as a grain about 30 microns in diameter from soil sample 14003, 47, APOLLO XIV.

Discussion

The name was premature. X-ray study is required.

Santanaite

ARNO MÜCKE (1972) Santanaite, a new lead chromate mineral. *Neues Jahrb. Mineral., Monatsh.* 455–458 (in German).

Electron probe analysis gave Pb 88.0 ± 2.0, Cr 1.9 ± 0.2, O (by difference) 10.1 percent, corresponding to $Pb_{11}CrO_{16}$, or $9PbO \cdot 2PbO_2 \cdot CrO_3$.

X-ray study showed the mineral to be hexagonal, space group $P\ 6_3\ 22$, a 9.03 ± 0.01, c 39.84 ± 0.08Å., Z = 6, G. calc 9.155. The strongest X-ray lines (27 given) are 3.539 (10$\bar{1}$)(11$\bar{2}$7), 2.948 (4)(21$\bar{3}$1), 2.846 (000.14), 2.606 (8)(30$\bar{3}$0), 2.080 (5)(11$\bar{2}$.17, 22$\bar{4}$9), 1.701 (5)(41$\bar{5}$2).

Color straw-yellow, luster adamantine. Cleavages {0001} perfect, also {1$\bar{2}$10}, rarely {1010}. H. about 4. Optically uniaxial, negative, *n*O 2.32, *n*E 2.12. The mineral polishes well, under the reflecting microscope shows dirty gray-brown colors, weak reflection pleochroism, reflectance about 15 percent.

The mineral occurs at Mina Santa Ana, Caracoles, Sierra Gorda, Chile, as aggregates of platelets up to 0.5 mm. long, 0.2 mm. wide, in a druse surrounded by corroded galena. Associated minerals include phoenicochroite, chromatian wulfenite, quartz, diaboleite, and an unknown chromate. The mineral was approved before publication by the Commission on New Minerals and Mineral Names, IMA.

Tetrawickmanite

J. S. WHITE, JR., AND J. A. NELEN (1973) Tetrawickmanite, tetragonal $MnSn(OH)_6$ a new mineral from North Carolina, and the stottite group. *Mineral. Rec.* **4,** 24–30.

Electron microprobe analysis gave Mn 19.5, Fe 0.9, Ca 0.2, Mg 0.1, Sn 36.0, Si 0.4, Al 0.2, corresponding to

$$(Mn_{0.94}Fe_{0.045}Ca_{0.01}Mg_{0.005})(Sn_{0.984}Si_{0.11}Al_{0.005})(OH)_6,$$

assuming all Fe to be ferrous.

Precession photographs show the mineral to be tetragonal, space group (by analogy to stottite) probably $P\,4_2(n)$, a 7.787, c 7.797 (both ±0.001Å), G. calc 3.79, obs 3.65. The strongest X-ray lines (49 given) are 4.518 (30)(111), 3.939 (100)(200), 3.880 (30)(002), 2.770 (90)(202), 1.760 (50) (420), 1.605 (40)(422).

Color honey-yellow to brownish-orange, clear to turbid. Optically uniaxial, negative, nO 1.724, nE 1.720.

The mineral occurs in vugs in pegmatite from King's Mountain, North Carolina, occurring on bavenite, eakerite, albite, quartz, and associated with sideriterhodochrosite. Crystals up to 1 mm in diameter showed {112}, {001}, and {100}.

Type material is preserved at the U. S. National Museum.

The mineral and name were approved before publication by the Commission on New Minerals and Mineral Names, IMA.

The stottite group is reviewed, and evidence for the occurrence of $FeSn(OH)_6$ is presented.

Zircophyllite

YU. L. KAPUSTIN (1972) Zircophyllite, the zirconium analogue of astrophyllite. *Zapiski Vses. Mineral. Obshch.* **101,** 459–463 (in Russian).

Analysis by M. E. Kazakova gave SiO_2 32.64, TiO_2 2.30, ZrO_2 13.61, Nb_2O_5 2.30, FeO 18.06, MnO 18.83, CaO 0.94, K_2O 5.61, Na_2O 1.55, H_2O 3.20, F 1.20, sum 100.24 − (O = F_2) 0.49 = 99.75 percent. This corresponds to

$$(K_{1.70}Na_{0.71}Ca_{0.24}Mn_{0.35})(Mn_{3.43}Fe_{3.57})(Zr_{1.58}Nb_{0.25}Ti_{0.17})(Si_{7.76}Ti_{0.24})(O_{26.84}(OH)_{3.26}F_{0.90})\cdot 0.9\,H_2O,$$

the zirconium analogue of astrophyllite. Another analysis gave

$$TiO_2\ 4.16,\ ZrO_2\ 7.60,\ Nb_2O_5\ 3.20\ (Zr_{0.86}Ti_{0.56}Nb_{0.36}),$$

indicating a solid solution series with astrophyllite. Spectrographic analysis by I. P. Toyushev showed HfO_2 1.2 percent and traces of Sr, Ba, Y, Pb, and Be.

Single crystal data are not given. The X-ray powder pattern is similar to that of astrophyllite and even more so to that of niobophyllite. The strongest lines (20 given) are 9.80 (4), 3.50 (10), 2.80 (7), 2.66 (5), 2.10 (5). Presumbly triclinic.

Color dark brown, nearly black. Cleavage {001} very perfect. Streak pale brown, luster vitreous to adamantine. H. between 4 and 4.5; extremely brittle. G. 3.34. Optically biaxial, neg., α 1.708, β 1.738, γ 1.747, $2V$ 62°. Pleochroic, X and Y dark yellow, Z brown, $r > v$ strong, elongation parallel to cleavage, neg. $Y = a$, $X \wedge b = 9$–11°, Z perpendicular to cleavage.

The mineral occurs in platy crystals in the natrolite zone of alkalic pegmatites of Korgereda-binsh, Tuva A.S.R., associated with aegirine-augite, leucophanite, fluorite, apatite, and apophyllite.

The name is for the composition. Type material has been deposited in the Mineralogical Museum, Academy of Sciences USSR, Moscow. The mineral and name were approved before publication by the Commission on New Minerals and Mineral Names, IMA.

Unnamed $Pb_{11}As_8S_{31}$

I. BURKART-BAUMANN, J. OTTEMANN, AND G. C. AMSTUTZ (1972) The X-ray amorphous sulfides from Cerro de Pasco, Peru, and the crystalline inclusions. *Neues Jahrb. Mineral. Monatsh.* 433–446 (in German).

The mineral occurs as spears or pseudohexagonal crystals in an amorphous matrix. Microprobe analyses gave Pb 57.9, 61.2, 60.9; As 16.8, 16.9, 14.2; S 28.2, 24.8, 27.7 percent; Sb ---, 0.7, ---. Vickers hardness 243–259. Extremely strong anisotropy effects, reflectance 36 percent. X-ray lines (intensities not given) 5.33_3, 4.22_6, 3.60_4, 3.47_6, 3.18_6, 3.04_6, 2.83_6, 2.67_3, 2.60_6, 2.44_2, 2.32_0, 2.20_1, 2.02_2, 1.94_6, 1.87_4, 1.70_2.

Unnamed Pb–Bi Telluride-Sulfide

JAYANTA GUHA, AND RICHARD DARLING (1972) Ore mineralogy of Louven copper deposits, Val d'Or, Quebec. *Can. J. Earth Sci.* **9,** 1596–1611.

Probe analysis of laths in chalcopyrite gave Pb 40.7, Bi 36.2, Te 18.0, S 6.0, sum 100.9 percent. The mineral is intergrown with an isotropic gray silver telluride. Color white, anisotropic with colors from light brown to gray.

NEW DATA

Cuprobismutite

C. M. TAYLOR, A. S. RADTKE, AND C. L. CHRIST (1973) New data on cuprobismutite. *J. Res. U. S. Geol. Surv.* **1,** 99–103.

Microprobe analysis of cuprobismutite from the Ohio mining district, Piute County, Utah, gave S 18.5, Se 0.50, Te 0.07. Bi 63.8, Sb 0.08, Cu 1.5:1, Ag 1.19, Pb 0.84, Mn 0.14, sum 100.2 percent, indicating the formula

$$5Cu_2S\cdot 6Bi_2S_3 \text{ or } Cu_{10}Bi_{12}S_{23}, \text{ not } CuBiS_2$$

as previously given. X-ray powder data are calculated to the unit cell a 17.628, b 3.911, c 15. '90A., β 101°16′.