

NEW MINERAL NAMES

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Bauranoite, Metacaltsuranoite

V. P. ROGOVA, L. N. BELOVA, G. N. KIZIYAROV, AND N. N. KUZNETSOVA (1973) Bauranoite and metacaltsuranoite, new minerals of the group of hydrous uranium oxides. *Zapiski Vses. Mineralog. Obshch.* **102**, 75-81 (in Russian).

Analyses of bauranoite gave UO_3 63.74, 67.37, 66.88; PbO 0.53, 0.55, 0.74; BaO 21.21, 21.14, 17.43; CaO 2.62, 0.40, 0.47; SiO_2 0.48, 0.97, 3.54; CO_2 3.20, 0.60, 0.39; H_2O 8.24, 8.19, 10.07; sum 100.02, 99.22, 99.52 percent, corresponding, resp., to $BaO \cdot 1.94 UO_3 \cdot 4H_2O$, $BaO \cdot 1.75 UO_3 \cdot 3.4H_2O$, and $BaO \cdot 2 UO_3 \cdot 4.8 H_2O$, or $BaU_2O_7 \cdot 4-5H_2O$. Spectrographic analysis showed also 0.n percent Na, Al, Mg, Zr, Sr, and traces of Fe, Mn, Ti, Zn. DTA and TGA curves are given. Endothermic breaks occur at 180° and 790°, an exothermic break at 850°. The mineral lost approximately (wt percent): 100°, 0.5; 200°, 2.3; 300°, 1.7; 400°, 1.0; 500°, 0.6; 600°, 0.3; 700°, 0.7; 800°, 0.9; total 8.0 percent.

Analysis of metacaltsuranoite gave UO_3 76.91, PbO 2.29, BaO 4.84, CaO 4.86, Na_2O 2.47, H_2O^+ 3.78, H_2O^- 0.007, As_2O_5 0.48, Fe_2O_3 0.44, Al_2O_3 0.25, SiO_2 1.0, ZrO_2 0.45, CO_2 1.80, sum 99.58 percent, corresponding to $(Ca_{0.37}Na_{0.31}Ba_{0.24}Pb_{0.08})O \cdot 2.1 UO_3 \cdot 1.7H_2O$, or $(Ca, Na, Ba)U_2O_7 \cdot 1.7 H_2O$. Spectrographic analysis showed also 0.n percent Mg and Sr and 0.0 n percent Mn, Ti.

X-ray powder data for bauranoite (22 lines) show strongest lines 3.41 (7), 3.09 (10), 1.98 (6), 1.948 (6), 1.908 (6), 1.723 (6), 1.277 (5). Data for metacaltsuranoite (31 lines) show strongest lines 3.425 (5), 3.089 (9), 1.986 (4), 1.944 (4), 1.676 (6), 1.283 (6). These show some resemblance to one another and to wölsendorfite.

For bauranoite, color reddish-brown, H. 5 (372-380 kg/sq mm), G. 5.28-5.42, optically biaxial, neg., $2V$ 81°, $n_s \alpha$ 1.911-1.916, γ 1.920-1.932. For metacaltsuranoite, color orange, G. 4.90, optically biaxial, neg. $2V$ 81°, α 1.897, β 1.911, γ 1.932.

Both minerals occur as dense, fine-grained aggregates in the oxidation zone of a U-Mo deposit, locality not given, replacing pitchblende and being replaced by uranophane.

The names are for the composition. The minerals and names were approved in advance of publication by the Commission on New Minerals and Mineral Names, IMA.

Brannockite

J. S. WHITE, JR., J. E. AREM, J. A. NELEN, P. B. LEAVENS, AND R. W. THOMSEN (1973) Brannockite, a new tin mineral. *Mineral. Rec.* **4**, 73-76.

Analysis by Oak Ridge National Laboratory by flame photometry on 3.08 mg (a) and by electron microprobe (b) gave K_2O 3.72 (a), 4.5 (b); Li_2O 3.75 (a), Na_2O 0.74 (a), SnO_2 28.2 (b), SiO_2 65.8 (b), sum 102.2, 103

percent, corresponding to $KSn_2LiSi_{1.2}O_{30}$, the $LiSn$ analogue of osumilite.

Precession photographs showed the mineral to be hexagonal, space group $P6/mcc$, a 10.0167, c 14.2452 Å, $Z = 2$, G. 2.98, calc 3.08. The strongest lines (60 given) are 8.693 (6)(100), 7.141 (8)(002), 5.504 (7)(102), 4.343 (8)(200), 4.109 (10)(112), 2.905 (9)(114), 2.681 (6)(302), 2.502 (6)(220), 2.147 (6)(313), 1.992 (6)(314), 1.833 (6)(306), 1.044 (6) (529).

The mineral occurs in thin transparent colorless plates (<1 mm), showing {001} (dominant), {100}, {110}, {114}; c/a (goniometer) = 1.430 (X-ray 1.421). Twinning is present as shown by X-ray study, but not evident optically. Brittle. Optically uniaxial, neg., nO 1.567, nE 1.566. Fluoresces bright bluish-white in short wave UV radiation.

The mineral occurs in minute amounts in a pegmatite, enriched in Li and Sn, near Kings Mountain, North Carolina, in vugs and on flat fractured surfaces. It is associated with bavenite, pryite, tetrawickmanite, stannian titanite, albite, and quartz.

The name is for the late Kent C. Brannock, chemist and mineral collector.

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

Haapalaite

MAIJA HUUMA, Y. VUORELAINEN, T. A. HAKLI, AND HEIKKI PAPUNEN (1973) Haapalaite, a new nickel-iron sulphide of the valleriite type from East Finland. *Bull. Geol. Soc. Finland*, **45**, 103-106.

Microprobe analyses, using as standards pentlandite for S, Ni, Fe, and Co, diopside for Mg, chalcopyrite for Cu, and valleriite for O, gave Fe 28.8-29.4, av. 29.10; Ni 14.8-14.9, av. 14.85; Cu 0.12; Co 0.01; Mg 11.2-11.5, av. 11.32; Al 0.08; Ca none; S 21.6-22.4, av. 22.04; O 21.0-21.4, av. 21.20, sum 98.72 percent. This was recalculated by placing the Ni, Cu, and Co in the sulfide, with sufficient Fe to give the metal:S ratio 1:1; the rest of the Fe, along with Al and Mg, was assigned to the hydroxide layer, giving the formula:

$2(Fe_{0.63}Ni_{0.37})S \cdot 1.610(Mg_{0.84}Fe_{0.16})(OH)_2$, plus a slight excess of water.

X-ray powder data are indexed on a hexagonal cell with a 3.64, c 34.02 (both ± 0.02) Å. The strongest lines are 11.34 (vs)(003), 5.67 (vs)(006), 3.16 (s,b)(010), 1.842 (ms)(10.15), 1.823 (ms)(110).

Color bronze-red. In reflected light brown, pleochroism distinct from light brown to grayish-brown. Anisotropy very strong with colors from bronze-red to grayish-white. Very soft, microhardness 9-11 (3 g. wt.), less than that of graphite. Polishes poorly. Etch reactions: iridescent tarnish

with HNO₃ and HCl, stains dark brown with FeCl₃, neg. with other reagents.

The mineral occurs as small thin scales in the Kokka serpentinite, 33 km. NNW of Outokumpi, Finland, associated with pentlandite and rare maucherite and chalcopyrite, in lizardite and in carbonate, but only rarely in chrysotile.

The name for Paavo Haapala, Chief Geologist, Outokumpu Co., Tapiola, Finland, where type material is preserved. The mineral and name were approved before publication by the Commission on New Minerals and Mineral Names, IMA.

Mpororoite

O. V. KNORRING, TH. G. SAHAMA, AND MARTTI LEHTINEN (1972) Mpororoite, a new secondary tungsten mineral from Uganda. *Bull. Geol. Soc. Finland*, **44**, 107–110.

Analysis of hand-picked material containing a little scheelite gave WO₃ 66.90, Al₂O₃ 8.22, Fe₂O₃ 9.78, CaO 0.27, H₂O⁺ 7.97, H₂O⁻ 6.89, sum 100.03 percent, corresponding to (Al,Fe)₂W₂O₆·6H₂O, with Al:Fe = 0.57:0.43. Anthoinite is Al₂W₂O₆·3H₂O. DTA and TGA curves, obtained on 30 mg, showed two endothermic peaks at 90° and 145°, the total loss to 145° being about 6.5 percent.

X-ray study gave 20 lines; the strongest are 8.21 (100) (002), 6.18 (16)(110), 5.69 (18)(102), 4.20 (17)(113), 4.09 (19)(004), 3.084 (b) (90)(220, 024). The pattern was indexed on a monoclinic cell with *a* 8.27 ± 0.01, *b* 9.32 ± 0.01, *c* 16.40 ± 0.02 Å., β 92°29' ± 15', *Z* = 5; G. calc 4.59.

The mineral is greenish-yellow, powdery, very fine-grained. Under the electron microscope it appears to be platy. It occurs as an alteration product of scheelite in the Mpororo tungsten deposit, Kigezi district, Uganda, with ferberite, anthoinite, and ferritungstite.

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

Nambulite

M. YOSHI, Y. AOKI, AND K. MAEDA (1972) Nambulite, a new lithium- and sodium-bearing manganese silicate from the Tunakozawa mine, northeastern Japan. *Mineral. J. (Japan)* **7**, 29–44.

Analysis by K. M. on purified material containing a little rhodochrosite gave SiO₂ 49.23, TiO₂ 0.01, Al₂O₃ 0.37, Fe₂O₃ 0.40, MgO 1.32, MnO 40.67, CaO 0.81, Na₂O 2.49, K₂O 0.04, Li₂O 1.55, H₂O⁺ 1.63, H₂O⁻ 0.26, P₂O₅ 0.02, CO₂ 0.19, Cl, SO₃ none, sum 98.99 percent, corresponding to the formula (O + OH = 30) Li_{1.00}(Na_{0.98}Ka_{0.01})(Mn_{0.98}Mg_{0.40}Li_{0.27}Ca_{0.18}Al_{0.09}Fe_{0.06})(Si_{10.00}O_{27.79}(OH)_{2.21}, or idealized, LiNaMn₅Si₁₀O₂₈(OH)₂. Spectrographic analysis showed (ppm) Ba 850, Cr 100, Zn 100, Ag 1. An infra-red absorption curve shows peaks at 550, 640, 675, 710, and 780 cm⁻¹, indicating that 5 Si–O tetrahedra form a unit of the chain in the structure.

X-ray study showed the mineral to be triclinic, space group *P*1 or *P*1̄, *a* 7.621, *b* 11.761, *c* 6.731 (all ± 0.003) Å., α 92°46', β 95°05', γ 106°52' (all ± 3'), *Z* = 1. G calc 3.49, meas 3.51 ±

0.01. The strongest lines (52 given) are 3.17 (65) (102, 031), 3.14 (45) (012), 3.09 (55) (112), 3.07 (60) (221), 2.97 (80) (022), 2.96 (100) (112), 2.92 (70) (140, 102).

Color reddish-brown with an orange tint, luster-vitreous, streak pale yellow. Cleavages {001} perfect, {100} and {010} distinct. H. 6½. In section transparent with little pleochroism. Optically biaxial, pos., *ns* (Na) α 1.707, β 1.710, γ 1.730 (all ± 0.002), 2*V* 30 ± 2°, dispersion *r* > *v* weak. The extinction angle is X' ∧ *c* = 19° on (010).

The mineral occurs in veinlets up to 5 cm thick that cut braunite ores in chert of the Tunakozawa mine, Kitakami Mountains, N. E. Japan. Coarse prismatic crystals up to 8 × 4 × 3 mm are found near the center of the veins. Albite, neotocite, and rhodochrosite are associated minerals.

The name is for Professor Matsuo Nambu of Tohoku University for his studies of Mn minerals. The mineral and name were approved in advance of publication by the Commission on New Minerals and Mineral Names, IMA.

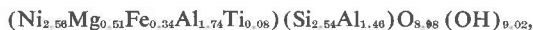
Discussion

"Hydrorhodonite" from Langban (Dana's System, 6th ed, p. 381) is somewhat similar, containing Li₂O 1.23 percent, but it contained H₂O 11.84, MgO 6.98, CaO 3.60 percent.

Nimesite

Z. MAKSIMOVIC (1972) Nimesite, a new septechlorite from a bauxite deposit near Magara, Greece. *Bull. Sci. Cons. Acad. Sci. Arts R. S. F. Yugoslav. Sect. A*, **17**, 224–226 (in English).

Analyses from the Matmara bauxite, Greece, 1. by D. Nikolic, 2. quoted by G. de Weisse, *Mineralium Deposita*, **2**, 349–356 (1967), gave SiO₂ 23.61, 25.73; TiO₂ 0.99, 1.04; Al₂O₃ 25.27, 32.18; Cr₂O₃ —, 0.26; Fe₂O₃ 0.45, 3.55 (probably total Fe); FeO 3.40, —; NiO 29.65, 22.02; MgO 3.17, 3.54; Na₂O 0.10, —; K₂O 0.20, —; H₂O⁺ 12.59, 11.73; H₂O⁻ 0.70, —; sum 100.13, 100.05 percent. These correspond to the formulas:



The DTA curve shows endothermic peaks at 608 and 700°, and exothermic peak at 848° plus very weak exothermic peaks at 140° (probably adsorbed water), at 327° (probably goethite), and another at 465°. The curve for amesite is similar but the breaks are at higher temperatures.

X-ray data show strongest lines (14 given) at 7.05 (100), 4.53 (14), 3.527 (75), 2.610 (16), 2.467 (15), 2.360 (17), 1.521 (17), close to the corresponding ones for amesite.

Color green. Electron photomicrographs show irregular aggregates composed of extremely thin fibers, about 0.15 microns long and thickness down to less than 0.001 microns. G. 3.005, mean *n* (Na) = 1.635 ± 0.001.

The origin of the name is not stated; it is presumably from Ni + amesite.

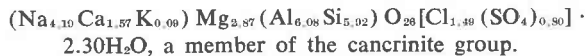
Discussion

This is the Ni-analogue of the septechlorite amesite. Single crystal study is needed. The name is unfortunate, being readily confused with Nimate, the 14 Å dimorph.

Pharaonite

E. M. EL SHAZLY, AND G. S. SALEEB (1972) Scapolite-cancrinite mineral association in St. John's Island, Egypt. *Int. Geol. Congr., Rep. 24th Session Montreal, Aug. 1972, Sec. 14, Mineralogy*, pp. 192-199.

Analysis of the pure mineral gave SiO_2 30.40, Al_2O_3 26.50, MgO 9.90, CaO 7.50, Na_2O 11.12, K_2O 0.36, H_2O^+ 3.55, H_2O^- 2.10, SO_3 5.82, CO_2 trace, Cl 4.50, sum 101.75—($\text{O} = \text{Cl}_2$) 1.07 = 100.68 percent (given as 100.67). This corresponds to—



X-ray study by J. Zemmann shows the mineral to be hexagonal, space group $P6$, Pc , or $P6/m$, a 12.74, c 5.35 (both ± 0.04 Å.), G . calc 2.53, meas 2.49. The strongest X-ray lines: (41 given) (not indexed) are: 4.82(50), 3.68(100), 3.29(80), 2.75(35), 2.66(30), 2.45(30), 2.12(50).

The mineral occurs as aggregates of prismatic crystals up to 14 cm long and 4 cm thick. Colorless to gray or light brown, luster vitreous, cleavage prismatic good, basal poor. H . 5½-6. Optically biaxial, positive, nO 1.528, nE 1.534.

The mineral occurs in metamorphosed basaltic rocks, associated with scapolite, quartz, garnet, and chlorite.

Discussion

The nomenclature of the cancrinite group is confused, but this mineral appears to be a magnesium-rich davynite, and the name does not seem to be necessary.

Raite, Zorite

A. N. MER'KOV, I. V. BUSSEN, E. A. GOIKO, E. A. KUL'CHITSKAYA, YU. P. MEN'SHIKOV, AND A. P. NEDOREZOVA (1973) Raite and zorite, new minerals from the Lovozero Tundra. *Zapiski Vses. Mineral. Obshch.* **102**, 54-62 (in Russian).

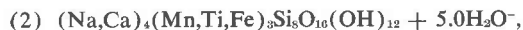
The minerals were found in alkalic pegmatite of the Kola Peninsula on walls of fractures and cavities filled by nepheline; they are associated with aegirine, mountainite, and natrolite.

Raite

Analysis by EAK on 1.2 g gave SiO_2 46.20, TiO_2 3.11, ZrO_2 0.16, $(\text{Nb,Ta})_2\text{O}_5$ 0.44, Al_2O_3 0.12, Fe_2O_3 1.86, FeO 0.37, MnO 15.00, MgO 0.20, CaO 1.24, Na_2O 11.24, K_2O 0.17, ΣTR (RE_2O_3 ?) 0.16, H_2O^+ 8.01, H_2O^- 11.36, CO_2 0.40, sum 100.04 percent. Spectrographic analysis showed traces of Be, Ta, Pb, Ga, Ba, Cu, Sr, and P. The mineral loses 11.9 percent up to 160°, 13.4 percent to 300°, 15.5 percent to 340°. The DTA curve shows an endothermic effect at 160°, and a slight exothermic effect at 700°. Before the blowpipe sinters to a gray, bubbly mass, melts at 745° to a gray-brown glass with n 1.623. Insoluble in H_2O , slowly decomposed by dilute HCl or HNO_3 giving skeletal silica. The formula of the mineral may be:



or



or approximately



X-ray study showed the mineral to be orthorhombic, C 222 i , a 30.6 \pm 0.1, b 5.31 \pm 0.02, c 18.20 \pm 0.05 Å, Z = 4 formula units (2nd formula), G . calc 2.32, 2.39 \pm 0.02 det. The strongest X-ray lines (67 given) are 11.4 (10)(202), 4.5 (8)(112, 004, 311), 3.8 (6b)(801, 313), 2.939 (804, 713, 605), 2.650 (10)(020, 021, 805), 2.482 (6)(421, 715), 1.640 (6)(533, 17.1.3, 730, 801, 18.0.3), 1.575 (6)(335, 429, 828, 230, 1.1.11), etc.

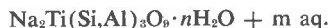
Crystals are acicular, 1-2 mm long, 0.02-0.04 mm thick. Cleavage {100}, {010}, {001} perfect. Color gold to lustrous brown. H . 3, brittle, elongation positive. Optically biaxial, positive, ns α 1.540, β 1.542, γ 1.550 (all \pm 0.002), $2V$ calc 53°, $Z \wedge c$ = 0-30°, pleochroism distinct, X nearly colorless, Y yellowish, Z gold or brown.

The name is in honor of the international collective of scientists on the voyage of the papyrus ship "Ra."

Zorite

Analysis by EAK on 1.6 g gave SiO_2 41.70, TiO_2 15.21, ZrO_2 0.21, $(\text{Nb,Ta})_2\text{O}_5$ 5.95, Al_2O_3 4.92, Fe_2O_3 0.53, MgO 0.10, MnO 0.10, CaO 0.58, Na_2O 15.09, K_2O 0.69, H_2O^+ 11.31, H_2O^- 3.17, F 0.29, P_2O_5 0.05, CO_2 0.18, sum 100.08 — ($\text{O} = \text{F}_2$) 0.11 = 99.97 percent. Spectrographic analysis showed traces of Ba, Be, Pb, and Ta. The mineral began to lose weight at 50°, at 170°, 2.9 percent; at 290°, 6.8 percent; at 340°, 12.1 percent. The DTA curve showed an endothermic effect with max. at 360°. Before the blowpipe sinters to a white bubbly mass, then melts to a brown glass with n = 1.574. Insoluble in water, slowly decomposed by dilute HCl or HNO_3 with the formation of silica gel.

The formula is given as:



Oscillation photographs show the mineral to be orthorhombic, space group $Cmcm$, Cmc 2 i , or $C2cm$, a 23.9 \pm 0.1, b 7.23 \pm 0.02, c 14.25 \pm 0.05 Å, Z = 6 for the first formula without H_2O^- , G . calc 2.33, measured for crystals 2.36-2.40. The strongest X-ray lines (89 given) are 11.6 (8)(200), 6.9 (10)(110), 4.45 (5)(311), 3.43 (5)(204, 220), 3.38 (8)(221), 3.067 (8)(404, 513), 2.979 (8)(314, 800), 2.588 (8)(713, 423), 1.742 (8)(10.2.4, 12.0.4, 12.2.0, 242), 1.701 (6)(717, 427, 12.2.2).

The mineral occurs as intergrowths of prismatic acicular crystals 1-2 mm long and as polycrystalline plates (pseudomorphs ?) up to 10 \times 6 \times 0.5 cm. Color rosy, luster vitreous, cleavages {010} and {001} perfect, {110} less so. H . 3-4. ns not given, pleochroic, X rose, Y nearly colorless, Z bluish.

The name is for the color, referring to the rosy radiance of the sky at dawn.

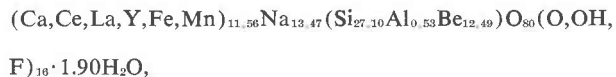
Both minerals and names were approved in advance of publication by the Commission on New Minerals and Mineral Names, IMA. Type material is at the Mineralogical

Museums, Leningrad Mining Institute and Kola Branch, Academy of Sciences, USSR.

Semenovite

O. V. PETERSEN, AND J. G. RONSBO (1972) Semenovite—a new mineral from the Ilimaussaq alkaline intrusion, south Greenland. *Lithos*, 5, 163–173.

Microchemical analysis by N. Hansen, supplemented by spectrographic determination of Pb, atomic absorption determination of Ce, Nd, Sm, and Eu by G. Asmund, gave SiO₂ 42.8, Al₂O₃ 0.7, BeO 8.2, Fe₂O₃ 2.4, FeO 0.8, ZnO 0.5, MnO 1.8, CaO 6.0, Na₂O 11.0, K₂O 0.1, PbO 0.5, CeO₂ 6.8, La₂O₃ 6.8, Y₂O₃ 2.3, Nd₂O₃ 2.2, Gd₂O₃ 0.6, (Sm,Eu)₂O₃ 0.3, H₂O 1.9, F 4.5, sum 100.2-(O = F₂) 1.9 = 98.3 percent. A micro TGA curve on 5.8 mg showed a loss of 0.9 percent from 50–600°C and a loss of 5.5 percent from 650–1200°; the latter is considered to be F + H₂O, and the H₂O was calculated from the total weight loss minus the determined F content. This gives a unit cell content of



or



Oscillation and Weissenberg photographs show the mineral to be tetragonal, space group $P4_2/n$, a 13.866 ± 0.009, c 9.892 ± 0.007 Å. The strongest X-ray lines (25 given) are 8.082 (7)(101), 3.282 (10)(312), 2.841 (10)(402), 2.727 (10)(332). The unit cell is related to that of aminoffite, with the c values nearly the same and a (sem.) = $\sqrt{2} \times a$ (aminoff).

Colorless, transparent crystals, 0.1 to 1.0 mm, rarely to 10 mm, in size. Always intricately twinned, twinning plane (110). Fracture uneven, no cleavage, H. 3.5–4, G. 3.140 ± 0.002. Optically uniaxial to biaxial, neg., $2V$ 0–40°, n_s (Na) α 1.595, β = γ = 1.614 (all ± 0.002).

The mineral occurs in cavities and open fractures in albitites of the Ilimaussaq alkalic intrusive, south Greenland, associated with eudidymite, epididymite, albite, and Li-mica.

The name is for E. I. Semenov, mineralogist of the Institute of Mineralogy and Geochemistry of Rare Elements (IMGRE) in Moscow.

The mineral and name were approved in advance of publication by the Commission on New Minerals and Mineral Names, IMA. Type material is at the Mineralogical Museum, University of Copenhagen.

Shadlunite, Manganese-shadlunite

T. L. EVSTIGNEEVA, A. D. GENKIN, N. V. TRONEVA, A. A. FILIMONOVA, AND A. I. TSEPIN (1973) Shadlunite, a new sulfide of copper, iron, lead, manganese, and cadmium from copper-nickel ores. *Zapiski Vses. Mineral. Obshch.* 102, 63–74 (in Russian).

Microprobe analyses of shadlunite, Mayak Mine, and of manganese-shadlunite from Mayak Mine and Oktyabr de-

posit gave, resp., Cu 27.5, 29.8, 31.19; Fe 24.1, 26.4, 27.21; Pb 16.6, 8.2, 4.8; Mn —, 3.2, 4.6; Cd 3.9, 1.3, 1.0; S 27.4, 29.4, 31.46, sum 99.5, 98.3, 100.26 percent ratio Σ Me:S = 9.18:8, 9.18:8, 8.92:8, formulas shadlunite, (Fe,Cu)₈(Pb_{0.7}Cd_{0.2})S₈, manganese-shadlunite (Fe,Cu)₈(Mn_{0.7}Pb_{0.2}Cd_{0.1})S₈; in both Fe:Cu = nearly 1:1.

X-ray study showed the minerals to be cubic, $a = 10.91$ Å. (sh.), 10.73 Å. (Manganese-sh.). The strongest lines (18 given) are resp., 3.84 (4), 3.78 (2)(220); 3.29 (10), 3.23 (10)(131); 2.11 (4), 2.07 (3)(333, 115), 1.925 (9), 1.894 (9)(440), as indexed on the pentlandite pattern. The large cations are probably in six-fold coordination.

In reflected light show polysynthetic twinning. Weakly anisotropic, weakly birefringent, no internal reflections. Color grayish-yellow, darker than cubanite. Reflectances (sh. and manganese-sh., resp.) are given at 16 wave lengths (440–740 nm): 460, 20.1, 22.7; 540, 24.8, 29.0; 580, 26.8, 30.8; 660, 30.0, 33.8 percent. Hardness (20g. load) shadlunite 210, manganese-shadlunite 195 kg/sq. mm.

The minerals occur as irregular grains, hundredths of a mm to 0.4 mm in size and as veinlets less than 0.1 mm, mostly in cubanite, also in talnakhite ores of the Talnakh and Oktyubr deposits, Noril'sk region, USSR. The name is for Tatyana Shadlun, well-known for her researches on ore minerals. The minerals and names were approved in advance of publication by the Commission on New Minerals and Mineral Names, IMA. Type material is preserved at the Fersman Museum, Academy of Sciences USSR, Moscow.

Unnamed Ag, Sb, Te, S Minerals

V. S. AKSENOV, K. S. GAVRILINA, A. N. LITVINOVICH, KH. A. BESPÆV, A. P. PRONIN, E. A. KOSYAK, AND A. P. SLYUSAREV (1969) Occurrence of new minerals of silver and tellurium in ores of the Zyranov deposits. *Altai Izvest. Akad. Nauk Kazakh SSR, Ser. Geol.* 26, 74–78 (in Russian).

The minerals were found at depths 260–360 m in quartz veins and quartz-calcite veins containing coarse-grained galena, chalcopyrite, and sphalerite and rare pyrite and argentian tetrahedrite. They were analyzed by electron probe. Reflectances are given at 9 wave lengths (442–689 nm).

Mineral X

Analyses gave Ag 60, 58; Cu 1.5, —; Sb 8, 11; Te 20, 18; S 10, 13; Sum 99.5, 100 percent. Microhardness (5 g load) 126–152 kg/sq mm. Polishes well, has a greenish tint. Anisotropic. Reflectances (max. and min.) 465 nm, 36.4, 34.5; 551, 35.9, 34.7; 588, 35.0, 33.6; 667, 32.7, 31.6 percent. The mineral occurs as plates up to 0.01 × 0.04 mm in size, intergrown with hessite and tetrahedrite.

Mineral Y

Analyses gave Ag 61, Te 27, S 11, Sn 1, sum 100 percent. Isotropic. Color light gray. Polishes well. Reflectances: 465 nm, 32.0; 551, 39.0; 588, 28.2, 667, 27.7 percent. The mineral occurs as very fine veinlets in tetrahedrite and as irregular grains intergrown with galena, tetrahedrite, and sphalerite.

Mineral Z

Analyses gave Ag 68, Te 22, S 7, sum 97 percent. It occurs in irregular masses up to 0.05×0.08 mm. Microhardness 84–87 kg/sq mm. Isotropic, color greenish-blue. Reflectance: 465, 40.1; 551, 39.0; 588, 38.1; 667, 36.2 percent.

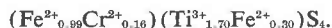
Mineral U

Analysis gave Ag 66, Sb 16, Te 8, S 10, sum 100 percent. It occurs in galena in the form of individual plates up to 0.025×0.1 mm in size and in intergrowth with hessite in mineral Z. It polishes well. Birefringence noticeable in air, distinct in oil. Distinctly bluer in color than galena. Strongly anisotropic, dark blue parallel to elongation, yellowish perpendicular to it. Reflectance (max. and min.): 465 nm, 37.6, 26.1; 551, 35.9, 33.1; 588, 35.4, 32.6; 667, 34.2, 31.3 percent.

Unnamed Mineral

KLAUS KEIL, AND ROBIN BRETT (1973) $(\text{Fe,Cr})_{1+x}(\text{Ti,Fe})_z\text{S}_4$, a new mineral in the Bustee enstatite achondrite (abstr), *Meteoritics*, **8**, 48–49.

Microprobe analysis of 2 samples gave Ti 28.5, 31.4; Fe 25.1, 11.3; Cr 2.9, 7.92; Mn —, 0.02; Mg —, 0.25; S 44.9, 46.6; sum 101.4, 97.6 percent. The first gave the formula:



The phase was synthesized at 650°C in silica glass tubes, giving a product with X-ray and optical properties identical with the natural material.

The X-ray data are indexed on a monoclinic cell with a 5.91, b 3.41, c 11.4 Å., β near 90°, in fairly good agreement with data on synthetic FeTi_2S_4 . The strongest lines are 2.06 (100), 2.63 (75), 1.71 (75), 2.9 (50).

The mineral is cream-white in color, with reflection pleochroism from purple gray to cream gray. Hardness similar to that of troilite. It occurs with the Bustee meteorite as rare anhedral grains less than 100 microns in diameter; the associated troilite contains up to 16 percent Ti.

NEW NAMES**Macrokaolinite**

W. C. ISPHORDING, AND WILLIAM LODDING (1968) Origin of the Woodstown, New Jersey, macrokaolinite. *Clays Clay Minerals*, **16**, 257–264.

W. C. ISPHORDING, AND WILLIAM LODDING (1973) Geochemistry and diagenesis of macrokaolinite. *Geol. Soc. Amer. Bull.* **84**, 2319–2326.

Not a mineral name; used for a rock consisting predominantly of illite plus montmorillonite, mixed-layer clays, quartz, and kaolinite that is present in unusually large grains, some larger than 0.2 mm.

Discussion

The use of a mineral name to designate a rock can lead only to confusion. This name should be dropped.