American Mineralogist, Volume 68, pages 1248–1252, 1983

NEW MINERAL NAMES*

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Bijvoetite* Lepersonnite*
Unnamed Co–Ni–Mg uranyl silicate

M. Deliens and P. Piret (1982) Bijvoetite et lepersonnite, carbonates hydratés d'uranyle et des terres rares de Shinkolobwe, Zaïre. Can. Mineral., 20, 231–238.

Bijvoetite

Bijvoetite and lepersonnite occur with hydrated uranium oxides near primary uraninite in the lower part of the oxidation zone at Shinkolobwe, Zaïre. Bijvoetite is rare and is known only from a single specimen. Associated minerals are: lepersonnite, sklodowskite, curite, uranophane, becquerelite, rutherfordine, studtite and a Co–Mg–Ni uranyl silicate structurally related to uranophane.

The mineral is present as minute crystals tabular parallel to {001}; there is a very good cleavage in the plane of the tablets. The mineral is sulfur-yellow and transparent to pale-yellow and translucent with a vitreous luster. It is not fluorescent under short- or long-wave ultraviolet light. The Vickers microhardness is 36 kg/mm and D (meas.) is 3.9 g/cm^3. Bijvoetite is optically biaxial positive, $2V = 84°$ meas. and 83° calc., $\alpha = 1.600$, $\beta = 1.650$, $\gamma = 1.722$ (all ±0.002); pleochroic with X colorless, Y pale yellow and Z dark yellow; orientation, $X = c$, $Y = a$.

Bijvoetite is orthorhombic, *C2ma*, *Cm2b* or *Cmma*, $a = 21.22(3)$, $b = 45.30(7)$, $c = 13.38(2)$Å, Z = 16, ($V = 12862(57)$, J.A.M.). Crystals are tabular parallel to {001} and elongated along [110]; the elongation gives a monoclinic aspect to the crystals. Forms present in order of importance are {001}, {110}, {130} and {010}. The strongest lines in the X-ray powder diffraction pattern (for Cu*Kα*) are: 8.61(80)(041), 6.70(100)(002), 4.16(60)(2.10.0), 3.52(50)(2.10.2, 620), 3.36(50)(004) and 2.996(60)(4.12.1).

An electron microprobe analysis gave: UO_3 60.66, Y_2O_3 7.52, Dy_2O_3 5.61, Gd_2O_3 2.80, Tb_2O_3 0.96, CO_2 8.88 (by chromatography), H_2O 13.57 (by difference), total 100.00 wt.%. The empirical formula given is $(Y_{1.26}Dy_{0.57}Gd_{0.29}Tb_{0.10})_{\Sigma 2.22}U_{4.01}C_{3.82}O_{23} \cdot 14.26H_2O$ or, ideally, $(RE)_2(UO_2CO_3)_4(OH)_6 \cdot {\sim}11H_2O$. The density calculated from the empirical formula and the cell parameters is 3.907 g/cm^3.

The name is in honor of the Dutch crystallographer, Professor Johannes Martin Bijvoet (1892–1980). The type specimen is preserved at the Musée royale de l'Afrique centrale, Tervuren, Belgium.

Lepersonnite

Lepersonnite occurs as mammilary crusts and as isolated spherules made up of radiating acicular crystals. The mineral is bright yellow and is transparent and translucent. No fluorescence was observed under short- or long-wave UV. The measured density is 3.97 g/cm^3. It is optically biaxial negative, $2V = 73°$ calc., $\alpha = 1.638$, $\beta = 1.666$, $\gamma = 1.682$; pleochroic with X pale yellow, Y bright yellow and Z bright yellow; orientation, only $Y = c$ is given.

The mineral is orthorhombic, *Pnnm* or *Pnn*2 with $a = 16.23(3)$, $b = 38.74(9)$, $c = 11.73(3)$Å, Z = 2, ($V = 7375(50)$Å^3, J.A.M.). The density calculated from the unit cell parameters and the empirical formula is 4.01 g/cm^3. Strongest lines in the X-ray powder diffraction pattern (for Cu*Kα*) are: 8.15(100)(200), 4.06(15)(400), 3.65(70)(133), 3.21(50)(0.12.0) and 2.86(40)(283).

An electron microprobe analysis gave: SiO_2 2.79, UO_3 76.14, Gd_2O_3 2.09, Dy_2O_3 1.07, Y_2O_3 0.41, Tb_2O_3 0.09, CaO 0.45, CO_2 4.02 (by chromatography), H_2O 12.12 (by TGA), total 99.18 wt.%. The empirical formula calculated on the basis of 100 oxygen ions is $Ca_{0.71}(Gd_{1.04}Dy_{0.52}Y_{0.32}Tb_{0.06})_{\Sigma 1.94}U_{23.95}C_{8.10}Si_{4.18}O_{100} \cdot 59.90\ H_2O$ or, in oxide form, $CaO \cdot (RE)_2O_3 \cdot 24UO_3 \cdot 8CO_2 \cdot 4SiO_2 \cdot 60H_2O$.

Lepersonnite's occurrence and associations are given under bijvoetite. The name is in honor of Dr. Jacques Lepersonne, honorary head of the Department of Geology and Mineralogy, Musée royal de l'Afrique centrale at which institution the type specimens are preserved.

Unnamed Co–Mg–Ni uranyl silicate

Occurring with bijvoetite and lepersonnite is a new Co–Mg–Ni uranyl silicate. Preliminary study shows that it is structurally related to uranophane. Detailed work is in progress. It is similar in appearance to lepersonnite. **J.A.M.**

Kelyanite*

V. I. Vasil'ev, Yu. G. Lavrent'ev, and N. A. Pal'chik (1982) Kelyanite, $Hg_{36}Sb_3(Cl,Br)_9O_{28}$, a new mineral. Zapiski Vses. Mineralog. Obshch., 111, 330–334 (in Russian).

Electron microprobe analyses (standards calomel for Hg and Cl, montroydite for O, synthetic Sb_2S_3 for Sb, synthetic Tl(Cl,Br) for Br) gave (av. of 12). Hg 85.6, Sb 4.70, Cl 3.31, Br 0.91, O 5.35, sum 99.87%, corresponding to $Hg_{35.99}Sb_{3.28}Cl_{7.82}Br_{0.93}O_{28.07}$, or $Hg^{+2}_{20}Hg^{+1}_{16}Sb^{+3}_{3}(Cl,Br)_9O_{28}$, Z = 2, D calc. 8.51. Also possible is $Hg^{+2}_{16}Hg^{+1}_{8}Sb^{+3}_{2}(Cl,Br)_6O_{20}$, Z = 3, D calc. = 8.55. Laser analysis showed Cu and Ag each 0.001%.

X-ray study shows kelyanite to be monoclinic, space group *C2/m*, *C2*, *Cm*, *C2/c*, or *Cc*, $a = 23.50 \pm 0.12$, $b = 13.62 \pm 0.06$, $c = 10.31 \pm 0.05$Å., $\beta = 97.01 \pm 0.12°$. The strongest lines (48 given) are 3.78(6)(60$\bar{1}$), 3.30(10)(62$\bar{1}$), 3.24(5)(530), 2.72(6)(801), 2.53(6)(11$\bar{4}$,64$\bar{1}$), 2.364(5)(80$\bar{3}$).

In transmitted light kelyanite is poorly translucent reddish-brown, pleochroic from reddish-brown to pale brown; in reflected light, grayish-white, anisotropic, birefringence weak. Reflectances: 460 nm, 20.5, 19.9; 546, 18.9, 18.1; 620, 17.8, 17.1%.

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

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Internal reflections deep brownish-red to raspberry-red. Etch reactions: darkened by KOH and conc. HCl, effervesces and dissolves with HNO_3, with 1:1 HCl becomes iridescent. Cleavage and twinning were not observed; D meas. 8.51–8.63, av. 8.57.

The mineral occurs as irregular grains up to 1–2 mm in the oxidation zone of the stibnite–cinnabar ores of the Kelyan deposit, Buryat ASSR, associated with calomel, eglestonite, Sb oxides, native Hg, and shakhovite. It replaces calomel and is also replaced by calomel.

The name is for the locality. Type material is at the Central Siberian Geological Museum, Novosibirsk, and the Fersman Mineralogical Museum, Moscow. **M.F.**

Khanneshite*

G. E. Eremenko and V. A. Bel'ko (1982) Khanneshite, $(Na,Ca)_3(Ba,Sr,RE,Ca)_3(CO_3)_5$, a new mineral of the burbankite group. Zapiski Vses. Mineralog. Obshch., 111, 321–324 (in Russian).

Analyses (by V.A.B.) gave BaO 38.85, 38.30; SrO 5.80, 6.50; CaO 6.13, 7.30; MnO 0.08, 0.07; Na_2O 6.99, 6.55; K_2O 0.77, 0.60; Fe_2O_3 0.13, 0.25; Al_2O_3 0.26, 0.12; SiO_2 0.39, 0.70; RE_2O_3 8.43, 8.71; CO_2 24.56, 22.66; SO_3 4.91, 6.98; H_2O^+ 1.46, 1.30; H_2O^- 0.07, none; sum 99.98, 100.87%. After deducting barite, chlorite, and dolomite, these correspond to $(Na_{2.13}Ca_{0.87})(Ba_{1.82}Sr_{0.35}RE_{0.49}K_{0.15})C_{4.96}O_{15} \cdot 0.67H_2O$, and $(Na_{2.02}Ca_{0.98})(Ba_{1.55}Sr_{0.60}RE_{0.51}Ca_{0.25}K_{0.12})C_{4.89}O_{15} \cdot 0.5H_2O$. The rare earths by spectrographic analysis by L. K. Magur, were $La_{20.2}Ce_{44.6}Pr_{6.0}Nd_{9.5}Sm_{6.0}Eu_{0.1}Gd_{4.8}Dy_{0.3}Ho_{0.2}Er_{0.8}Tm_{0.05}Yb_{0.5}Y_{7.5}$ and $La_{20.9}Ce_{51.2}Pr_{4.7}Nd_{7.3}Sm_{4.7}Eu_{0.1}Gd_{3.7}Dy_{0.4}Ho_{0.1}Er_{0.9}Tm_{0.56}Yb_{0.2}Y_{5.8}$, *i.e.*, selective Ce type. The DTA curves show endothermic peaks at 590 and 645°, also a small one at 360° associated with loss of water. Readily dissolved by HCl.

X-ray study by R. G. Sizova showed the mineral to be hexagonal, space group $P6_3mc$, $a = 10.65$, $c = 6.58$ (both ±0.01)Å, D calc. 3.94, meas. 3.8–3.9. The strongest X-ray lines (24 given) are 3.78(50)(201), 3.08(62)(211), 2.66(100)(220), 2.19(55)(401), 2.09(42)(222), 1.691(40)(510).

Color pale yellowish, hardness low, brittle. Cleavage indistinct parallel to the elongation, also a rough transverse parting. Uniaxial, negative, ω 1.623–1.620, ε 1.610–1.609. The mineral occurs as elongated prismatic crystals 5–10 mm long, 2–3 mm in diameter, disseminated in fine-grained carbonatite at Khanneshin, Afghanistan, in close intergrowth with dolomite, calkinsite, carbocernaite, barite, and chlorite. Commonly altered and replaced by barite.

The name is for the locality. Type material is at the Mining Institute, Leningrad, and the Fersman Mineralogical Museum, Acad. Sci. USSR, Moscow. **M.F.**

Pirquitasite* and unnamed $(Ag,Cu)_2FeSn_3S_8$

Z. Johan and P. Picot (1982) La pirquitasite, Ag_2ZnSnS_4, un nouveau membre du goupe de la stannite. Bull. Mineral., 105, 229–235.

Pirquitasite

In polished section, the mineral is brownish gray and strongly anisotropic with colors changing from brick-red to light green. It frequently shows red internal reflections and it is polysynthetically twinned. The Vickers microhardness is 218 kg/mm² (25 g load). Reflectivity values, max.–min. (λ), are: 24.6–21.7(420), 23.8–21.8(500), 24.1–22.2(540), 24.1–22.9(600) and 21.6–20.1(700 nm); values are given for 15 wavelengths from 420 nm to 700 nm.

Pirquitasite is tetragonal, $I\bar{4}2m$ or $I\bar{4}$ with $a = 5.786$, $c = 10.829$Å, Z = 2, $V = 362.5$Å³. D calc. = 4.822 g/cm³. The mineral has a stannite-like structure and is crystallographically similar to hocartite, Ag_2FeSnS_4. The strongest lines in the X-ray powder diffraction pattern (21 given for Cu$K\alpha$) are: 3.267(10)(112), 2.901(4)(200), 2.049(6)(220), 1.976(8)(204), 1.735(8)(132), 1.289(4)(240) and 1.165(4)(244).

Data from 21 electron microprobe analyses are given showing that there is extensive solid solution between pirquitasite and hocartite (12 to 67 mol%). The grain which was closest to end-member pirquitasite has: Ag 39.72, Cu 0.06, Zn 11.40, Fe 1.31, Sn 23.12, S 24.42, total 99.18. The empirical formula (based on 8 atoms per formula unit) derived from these data is: $(Ag_{1.93}Cu_{0.01})_{\Sigma 1.94}(Zn_{0.92}Fe_{0.12})_{\Sigma 1.04}Sn_{1.02}S_{4.00}$ or, ideally, $(Ag,Cu)_2(Zn,Fe)SnS_4$.

The mineral occurs with hocartite, pyrite, marcasite, wurtzite, franckeite, miargyrite, aramayoite, chalcostibite, stannite, kesterite, rhodostannite and cassiterite in the Pirquitas deposit, Jujuy province, Rinconada department, Argentina. The name is for the deposit. Type material is preserved at l'École nationale des mines in Paris.

Unnamed $(Ag,Cu)_2FeSn_3S_8$

Electron microprobe analyses of several grains of the rhodostannite ($Cu_2FeSn_3S_8$) associated with the pirquitasite show that they are essentially free of Zn and that they contain significant amounts of Ag substituting for Cu. In fact, two of the analyzed grains have Ag > Cu (atomic %). The results of the two analyses are: Ag 14.17, 14.86; Cu 6.70, 6.75; Fe 6.59, 6.50; Zn 0.00, 0.00; Sn 42.20, 42.00; S 29.82, 30.15; totals 99.47, 100.25 (the totals should be 99.48 and 100.26, J.A.M.). Reflectivity values are given for 15 wavelengths from 420 to 700 nm. The maximum and minimum values at selected wavelengths are: 23.0–22.8(420), 27.1–26.9(500), 28.3–28.1(540), 29.2–28.9(600) and 29.6–29.4(700). The authors decided not to name the mineral because X-ray diffraction studies could not be made. **J.A.M.**

Potosiite*

M. Wolf, H. -J. Hunger and K. Bewilogua (1981) Potosiite, a new mineral of the cylindrite–franckeite group. Freiberger Forschungshefte, 364, 113–133.

Seven microprobe analyses gave (range and average) Pb 53.41–57.10(55.23), Sn 10.52–12.97(11.57), Fe 2.18–2.59(2.32), Sb 9.91–12.10(10.58), Ag 0.08–0.34(0.21), S 18.79–20.51(19.80), sum = 97.85–103.51(99.71%) corresponding to $Pb_{24.0}Sn_{8.78}Fe_{3.74}Ag_{0.16}Sb_{7.83}S_{55.63}$, or $48PbS \cdot 18SnS_2 \cdot 7FeS \cdot 8Sb_2S_3$.

Electron diffraction patterns show potosiite to be triclinic, space group $P1$ or $P\bar{1}$, $a = 188.06$, $b = 70.10$, $c = 17.28$Å, $\alpha = \gamma = 90°$, $\beta = 92.2°$, D calc. = 6.20. The mineral has two interpenetrating sublattices, one pseudotetragonal with $a = 5.88$, $b = 5.84$, $c = 17.28$Å; the other pseudohexagonal with $a = 6.26$, $b = 3.70$, $c = 17.28$Å, both with $\alpha = \gamma = 90°$, $\beta = 92.2°$. The strongest lines (16 given) and their indexing on these two sublattices, respectively, are 4.43(3)(004,004), 3.45(88)(005,005), 2.876(100)(006,006).

The mineral occurs in the Andacabe deposit, Potosi, Bolivia, intergrown with quartz, galena, and cerussite, in crystals 5–10 microns long. Reflectances (nm, min. and max.): 486.1,36.2, 36.9; 551,34.9,35.35; 589.3,34.4,35.1; 656.3,33.9,34.5%. In reflected light appears whiter $\perp c$ than $\parallel c$. The name is for the locality. **M.F.**

Pumpellyite-(Mn^{2+})*

A. Kato, S. Matsubara, and R. Yamamoto (1981) Pumpellyite-(Mn^{2+}) from the Ochiai Mine, Yamanashi Prefecture, Japan. Bull. Mineral., 104, 396–399.

Chemical analysis by electron microprobe yielded SiO_2 35.66, TiO_2 0.02, Al_2O_3 13.40, Fe_2O_3 2.43, Mn_2O_3 7.74, MnO 13.41, MgO 0.89, CaO 20.69, Na_2O 0.01, H_2O (by difference) 5.75, sum = 100.00%. This yields a calculated formula, based on 32 cations, exclusive of H: $(Ca_{7.54}Mn^{2+}_{0.32})_{\Sigma 7.86}(Mn^{2+}_{3.54}Mg_{0.46})_{\Sigma 4.00}(Al_{5.78}Mn^{3+}_{2.00}Fe^{3+}_{0.82})_{\Sigma 8.00}Si_{12.14}O_{41.62}(OH)_{13.04}$. This is idealized as $Ca_2Mn^{2+}(Al,Mn^{3+})_2[H_2O|(OH)_2|SiO_4|Si_2O_7]$ with Z = 4. This is the Mn^{2+} analogue of pumpellyite.

Single crystals were not found due to small grain size. The X-ray powder diffraction data were indexed on a monoclinic cell by analogy with pumpellyite and yielded the unit cell parameters $a = 8.923$, $b = 5.995$, $c = 19.156$Å, $\beta = 97°8'$, with space group *A2/m*. The strongest lines in the powder diffraction pattern are: 4.75(65)(004,111), 3.844(65)(202), 2.930(100)$(300,115,30\bar{2})$, 2.725(90)(302), 2.654(55)$(30\bar{4})$. Pumpellyite-(Mn^{2+}) is light grayish pink to brownish pink; luster is vitreous; cleavage is perfect, {001}; hardness (Mohs') is 5. The calculated density is 3.34. Optically, pumpellyite-(Mn^{2+}) is biaxial negative with $2V$ about 40°; dispersion is indiscernible. Indices of refraction are $\alpha = 1.752(2)$, $\beta = 1.795(5)$, and $\gamma = 1.800(5)$. The extinction is parallel; pleochroism is strong: X = pale pink, Y and Z = brownish pink. Pumpellyite-(Mn^{2+}) is similar to macfallite in thin section. Crystals range in size up to 0.1 mm. The mineral occurs associated with braunite, caryopilite, quartz, johannsenite and rhodochrosite at the Ochiai Mine, about 3.5 km west of Barazawa, Kohsai-cho, Nakakoma-gun, Yamanashi Prefecture, Japan. The name is for the relation to pumpellyite. **P.J.D.**

Sulphotsumoite*

E. N. Zav'yalov and V. D. Begizov (1982) Sulphotsumoite, Bi_3Te_2S, a new bismuth mineral. Zapiski Vses. Mineralog. Obshch., 111, 316–320 (in Russian).

Electron microprobe analyses (standards Bi, galena, and synthetic Bi_2Te_3 and PbTe) gave Bi 70.1,67.7; Te 27.0,28.6; S 3.2,3.4; Se 0.5,-; sum 100.8,99.7%, corresponding to $Bi_{3.08}Te_{1.94}(S_{0.92}Se_{0.06})$ and $Bi_{2.97}Te_{2.06}S_{0.97}$.

X-ray data showed the mineral to be hexagonal, space group probably $P\bar{3}m1$, $a = 4.316$, $c = 23.43$Å, Z = 2, D calc. 8.13. The strongest X-ray lines (39 given) are 3.16(10)$(\bar{1}014)$, 2.32(6)$(10\bar{1}8)$, 2.16(5)$(11\bar{2}0)$, 1.779(4)$(20\bar{2}4)$, 1.367(4)$(12\bar{3}4)$.

Color gray-white, luster metallic, one very perfect cleavage, very soft and brittle, polishes poorly, optically scarcely distinguishable from other Bi–S–Te minerals. Reflectances (max. and min.): 460 nm, 54.7,52.0; 540, 57.3,53.6; 580, 58.0,53.9; 640, 58.0,53.6%. Hardness 63.9–66.2 kg/sq.mm at 5 g load.

The mineral occurs as a 1 mm rim around tsumoite, Magadan region, and as aggregates with joseite-B from the Egerlyakh deposit, Yakut A.S.S.R.

The name is for the relationship to tsumoite. **M.F.**

Swamboite*

M. Deliens and P. Piret (1981) La swamboïte, nouveau silicate d'uranium hydraté du Shaba, Zaïre. Can. Mineral., 19, 553–557.

Swamboite occurs as very pale yellow needles. It is optically biaxial, negative, *ns* $\alpha = 1.640$, $\beta = 1.661$, $\gamma = 1.663$, $2V$ = about 30° meas. 34° calc. Pleochroic with X = colorless, Y and Z = pale yellow. $X \cong a$, $Y \cong b$, $Z \angle c = 13°$ (in the obtuse angle). Dispersion strong ($r > v$). Swamboite is non-fluorescent in UV light. It has a good $\{\bar{2}01\}$ cleavage. D = 4.0 g/cm^3 meas. and 4.064 g/cm^3 calc.

The average of six electron microprobe analyses (with water by TGA) is: UO_3 67.43, SiO_2 12.73, H_2O 19.93, total 100.09. The empirical formula derived from these data based on 11 oxygens in the anhydrous part is $2.29UO_3 \cdot 2.06SiO_2 \cdot 10.76H_2O$. By analogy to the uranophane group, the ideal formula is: $U_{1/3}H_2(UO_2SiO_4)_2 \cdot 10H_2O$.

Swamboite is monoclinic, $P2_1/a$, $a = 17.64(3)$, $b = 21.00(5)$, $c = 20.12(4)$Å, $\beta = 103.4(2)°$, $V = 7250$Å^3, Z = 18. Ignoring the weak reflections gives a much smaller cell with $a' = 8.82$, $b' = 7.00$, $c' = 6.67$Å, $\beta = 102.0°$. This smaller cell shows that swamboite is related to the uranophane group. The strongest lines in the X-ray powder diffraction pattern (28 given for Cu*Kα* and indexed on the smaller cell) are: 8.67(100)(100), 4.76(80)(101),4.32(80)(200),3.51(60)(020)and2.979(60B)$(211,\bar{1}12)$.

The mineral occurs with soddyite and curite in the Swambo uranium deposit, Shaba, Zaïre (about 36 km west of Shinkolobwe). The name is for the occurrence. The type specimen is preserved in the Musée royal de l'Afrique centrale, Tervuren, Belgium. **J.A.M.**

Tetraauricupride*

Chen Keqiao, Yu Tinggao, Zhang Yongge and Peng Zhizhong (1982) Tetraauricupride, CuAu, discovered in China. Scientia Geologica Sinica, 111–116 (in Chinese with English abstract).

Microprobe analysis gave Cu 23.74, Au 75.18, sum 98.92 percent, corresponding to $Cu_{0.3736}Au_{0.3817}$ ($Cu_{0.99}Au_{1.01}$ based on 2 atoms per formula, GYC) or ideally CuAu. The mineral is insoluble in HCl, H_2SO_4 and HNO_3.

The strongest lines in the X-ray powder pattern (26 given) are 2.24(10)(111), 1.99(5)(020), 1.195(10)(131), 1.125(6b)(113,222), 1.040(5b)(207,312), 0.877(7b), 0.832(6), 0.797(9b). The indexing was based on a tetragonal *C4/mmm* cell with $a = 3.98$, $c = 3.72$Å, Z = 2. The primitive cell has $a = 2.815$, $c = 3.720$Å, Z = 1. D calc. 14.67 g/cm^3.

The mineral occurs as irregular grains (600 × 350 × 50 micron) often with striations on the surface. Under the binocular microscope the mineral is golden yellow with strong metallic luster. The mineral is malleable and takes polishing well. Microhardness: VHN_5 344, VHN_{10} 288, VHN_{20} 294. Under reflected light the mineral is copper red with a yellow tint, weakly anisotropic from gray to light gray. Reflectances in air are 405 nm 44.6, 436 nm 46.8, 480 nm 50.3, 526 nm 55.8, 546 nm 61.2, 578 nm 74.4, 589 nm 76.6, 622 nm 83.6, 644 nm 84.9, 656 nm 85.4, 664 nm 86.6, 700 nm 91.3. Color indices are R_{vis} 67, x 0.38836, y 0.3587, λ_d 586 nm, P_e 0.2365.

The mineral was found in a PGE-bearing basic to ultrabasic stock at Sardala, Marneshi county, Xinjiang Autonomous Region, China. The associated minerals are tremolite, diopside, serpentine, chlorite, epidote, apatite, zircon, magnetite, chromite, pyrrhotite, pyrite, chalcopyrite, gold, silver and PGM.

The name is for the composition and symmetry. Type material is preserved in the Geological Museum, Ministry of Geology, Beijing, China.

Discussion

The authors noted the report of a similar mineral from South Africa in Lehrbuch der Mineralogie (Klockmann, 1978, p. 395) under the name auricuprid-CuAu which has not been considered by the Commission on New Minerals and Mineral Names, I.M.A. Readers should also refer to the related minerals argentocuproaurite (62, 593, 1977), aurocuproite (62, 593, 1977) and rozhkovite (62, 595, 1977). **G.Y.C.**

NEW DATA

Carbocernaite

S. Nicheng, M. Zhesheng and P. Zhizhong (1982) The crystal structure of carbocernaite. Kexue Tongbao, 27, 76–80.

Crystal structure analysis of carbocernaite from Bayan Obo, Baoton, China, indicated that Sr and Ca occupy distinct sites in the structure (R = 0.062). The calculated formula is $(Sr_{0.44}RE_{0.40}Ba_{0.10})_{\Sigma 0.94}(Ca_{0.78}Na_{0.26})_{\Sigma 1.04}(CO_3)_2$ or, ideally $(Sr,RE)Ca(CO_3)_2$. The studied crystal is orthorhombic, *Pmc*2, with a = 5.214, b = 6.430 and c = 7.301Å, Z = 2. Chemical analysis yielded Ce_2O_3 10.27, La_2O_3 8.78, Pr_6O_{11} 0.99, Nd_2O_3 2.47, Sm_2O_3 0.30, Gd_2O_3 0.39, SrO 17.77, BaO 5.24, CaO 16.68, FeO 0.53, Na_2O 3.15, CO_2 33.85, H_2O 1.22, sum = 101.64%. **P.J.D.**

Chaoite

P. P. K. Smith and P. R. Buseck (1982) Carbyne forms of carbon: do they exist? Science, 216, 984–986.

Reflectivity and hardness observations on a cotype chaoite sample conflict with the original description. Chaoite is now found to be lower in both reflectivity and polishing hardness than graphite. TEM study suggests that chaoite powder diffraction data might be a mixture of quartz and nontronite. The authors suggest that the present data are insufficient to base a justification for a valid species.

Discussion

This species has not been formally discredited by the I. M. A. **P.J.D.**

Guettardite

N. N. Mozgova, N. S. Bortnikov, Y. S. Borodaev and A. I. Tzépine (1982) Sur la non-stoechiométrie des sulfosels antimonieux arséniques de plomb. Bull. Mineral., 105, 3–10.

Electron microprobe analyses, X-ray diffraction and electron microdiffraction studies show that synthetic Sb–As–Pb sulfosalts and natural material from Novoye, Khaidarkan, Kirghizie, U.S.S.R., are non-stoichiometric and that the ratios Sb/As and Pb/(As+Sb) are variable. Guettardite and twinnite are considered to be a single homologous series and it is suggested that they be referred to by the single name twinnite.

Discussion

The suggestion that the single series to which the authors assign twinnite and guettardite should be called twinnite carries with it the discarding of the name guettardite. This is a matter for ajudication by the Commission on New Minerals and Mineral Names, I. M. A. **J.A.M.**

Posnjakite

T. Ridkosil and P. Povondra (1982) The relation between posnjakite and langite. Neues Jahrbuch für Mineralogie Monatschefte, 16–28.

Wet-chemical analysis of posnjakite from Piesky, near Banská Bystrica, Slovakia, Czechoslovakia, yielded CuO 65.33, SO_3 17.10, H_2O 17.57, sum = 100.00% (after deduction of insolubles). X-ray single-crystal study indicated this sample is monoclinic, space group *Pa* or *P*2/*a*, with a = 10.595, b = 6.334, c = 7.934Å, β = 118.15°. The chemical formula, based on 12(O,OH), is: $Cu_{4.043}(SO_4)_{1.052}(OH)_{5.982} \cdot 1.81H_2O$, or ideally, $Cu_4(SO_4)(OH)_6 \cdot 2H_2O$, indicating that posnjakite is a dihydrate and polymorphous with langite and wroewolfeite. **P.J.D.**

Schuilingite

P. Piret and M. Deliens (1982) Nouvelles données sur la schuilingite, carbonate hydraté de terres rares, de plomb et de cuivre. Bull. Minéral., 105, 225–228.

Study of several specimens of schuilingite from the weathered zones of the copper deposits at Menda and Kasompi, Southern Shaba, Zaire, reveals that the mineral originally described as a carbonate of lead, copper and calcium is really a hydrated carbonate of lead, rare earths and copper. An electron microprobe analysis (with CO_2 by chromatography and total CO_2 + H_2O by TGA) gave: PbO 36.03, CuO 11.89, Y_2O_3 2.04, La_2O_3 1.00, Pr_2O_3 1.14, Nd_2O_3 8.51, Sm_2O_3 3.44, Eu_2O_3 2.44, Gd_2O_3 3.95, Tb_2O_3 traces, Dy_2O_3 3.05, Yb_2O_3 and Lu_2O_3 traces, CO_2 20.74, H_2O 5.10, total 99.33. The empirical formula based on 11 oxygen ions in the anhydrous part is: $2.08PbO \cdot 1.93CuO \cdot 0.99(RE_2O_3) \cdot 6.01CO_2 \cdot 3.62H_2O$. The ideal formula is given as: $PbCuRE(CO_3)_3OH \cdot 1.5H_2O$. The distribution of the rare earths is: $Y_{0.118}$, $La_{0.040}$, $Pr_{0.045}$, $Nd_{0.329}$, $Sm_{0.128}$, $Eu_{0.091}$, $Gd_{0.142}$ and $Dy_{0.107}$.

The mineral is orthorhombic, $P2_1cn$, a = 7.418, b = 18.87, c = 6.385Å, V = 893.8Å^3, Z = 4. The strongest lines in the X-ray powder diffraction pattern (37 given for Cu*Kα*): 4.77(80)(130), 4.67(80)(040,111), 4.46(90)(031), 3.827(100)(131), 3.162(90)(211), 2.928(100)(102) and 2.634(80)(161). D 4.74 g/cm^3 calc.

Discussion

This paper makes no mention of a comparative study of the schuilingite specimen described by Guillemin and Pierrot (1957).

If this has not been done, there is some doubt as to the identity of the two materials. **J.A.M.**

Studtite

M. Deliens and P. Piret (1982) Bijvoetite et lepersonnite, carbonates hydratés d'uranyle et des terres rares de Shinkolobwe, Zaïre. Can. Mineral., 20, 231–238.

During the study which led to the discovery of lepersonnite, it was found that about half of the "studtite" found at Shinkolobwe is actually lepersonnite. The two minerals are very similar in appearance. **J.A.M.**

Taimyrite

V. D. Begizov, E. N. Zav'yalov, and E. G. Palov (1982) New data on taimyrite, $(Pd,Cu,Pt)_3Sn$, from copper-nickel ores of the Talnakh deposit. Zapiski Vses. Mineral. Obshch., 111, 78–83 (in Russian).

Analyses by electron probe gave Pd 52.4,50.8,51.6,46.9,53.1, 54.0; Cu 8.6,8.7,9.4,10.3,9.7,8.6; Pt 11.2,13.2,13.0,15.4,10.0,6.3; Sn 24.5,23.8,24.7,23.8,23.4,18.7; Sb 1.8,1.9,2.5,2.5,3.4,7.4; Pb 1.4,-,-,-,-,2.8; sums 99.9,98.4,101.2,98.9,99.6,97.8. A general formula approximates $(Pd,Cu,Pt)_3(Sn,Sb,Pb)$ or more simply $(Pd,Cu,Pt)_3Sn$.

X-ray powder study gives a pattern indexed as orthorhombic $a = 16.11(2)$, $b = 11.27(1)$, $c = 8.64(1)$Å (Variant I) and $a = 12.57(2)$, $b = 13.40(2)$, $c = 17.09(2)$Å (Variant II). The strongest X-ray lines (22 given) for four patterns are 2.36–2.37(3–5)(042 or 117,136), 2.29(5–6)(033,602 or 027,440), 2.15–2.16(10)(004 or 062) and 1.435–1.443(3–5)(006,570 or 753, plus 5 more).

Taimyrite occurs as rounded inclusions, sometimes vein-like up to 12 mm long but most often 0.3–0.5 mm in diameter, in the Talnakh deposit. It is found in the upper selvage of massive ore in contact with taxitic gabbro-dolerite as well as in disseminated and veinlet-disseminated ores in taxitic gabbro-dolerites and in chalcopyrite-galena concentrations in massive ores. Taimyrite is often restricted to the contact of sulfides and gangue minerals (often chlorite). It is intergrown with küstelite, electrum, cuprian gold, polarite, sperrylite, sobolevskite, galena, and sphalerite. It is characteristically coarser-grained than other platinum-group minerals of the Talnakh deposit.

Under the binocular, taimyrite is bronze-gray with a metallic luster. The mineral is non-magnetic and cleavage was not observed. $VHN_{50} = 480(25)$ with impressions of regular form. The mineral is not etched by dilute and concentrated acids (H_2SO_4, HCl, HNO_3), browns in 30 seconds in aqua regia and blackens on longer etching. Taimyrite is light gray with a distinct rose tint in reflected light; birefringence is distinct, light-gray with a rose tint to a creamy tint. Anisotropic with color effects from dark gray with a blue tint to yellowish-gray. The mineral is optically biaxial and reflectance measurements (R_1,R_2% nm) with a pyrite standard gave 33.0,37.1(400), 37.8,41.2(430), 39.6,42.3(460), 42.3,45.2(490), 44.0,47.8(520), 45.5,49.6(550), 47.4,51.6(580), 49.7,54.0(610), 51.4,56.5(640), 53.0,59.2(670), and 54.0,61.9(700). Most taimyrite grains are polysynthetically twinned.

The name is for the locality, the Taimyr Peninsula. Samples are preserved in the Fersman Mineralogical Museum, Academy of Sciences, USSR and in the Mineralogical Museum of the Moscow Geological-Prospecting Institute.

Discussion

The mineral was approved by the I.M.A. in 1973 with quite different analyses and unit cell parameters. There remains considerable uncertainty about the true identity of this mineral. There is allusion to single crystal data, in spite of the frequent twinning, but no details are given. No mention is made of synthesis or of the known related synthetic phases Pd_2SnCu (orthorhombic), Pd_2Sn (orthorhombic), and Pd_3Sn (cubic); nor is mention made whether Cu and Pt are essential. **L.J.C.**

Discredited Mineral

Soumansite (= wardite)

F. Pillard, F. Fontan et F. Permingeat (1981) Un nouveau gisement de wardite en France (Ruffiac, Morbihan) et la synonymie ⟨⟨soumansite⟩⟩ = wardite. Bull. Minéral., 104, 681–685.

Larsen and Shannon (1930) (See Am. Min., 15, 307–377) compared the optical properties of type soumansite with those of wardite and concluded that the two species were identical. This study compares optical data, chemical analyses, measured and calculated densities, unit cell parameters and X-ray powder diffraction data of type soumansite and wardite. The two minerals are definitely identical and wardite has priority. **J.A.M.**

BOOK REVIEWS

GLOSSARY OF MINERAL SPECIES 1983. By Michael Fleischer, The Mineralogical Record, Inc., Tucson. 202 pages. $8.00 plus 50¢ per copy postage and handling.

This is an update of the 1980 Glossary which has become a standard reference work for professional mineralogists and amateur collectors alike. 186 pages are devoted to an alphabetic listing of all mineral species, with crystal system, formula, literature reference and significant relations to other minerals, such as the mineral group to which a species might belong. The Glossary has two especially significant features for the professional mineralogist. First, it is an up-to-date compilation of *all* minerals and as such represents one of the most convenient sources of data on those very rare or newly described species whose names are, at the least, obscure. Indeed, such a compilation is especially useful to those mineralogists most familiar with, and doing research on, the significant rock-forming minerals. Secondly, a recent or otherwise significant reference, usually to a paper in the American Mineralogist, is included with most, but not all, minerals. This provides a most valuable starting point for literature searches and the one reference is sufficient for many purposes.

At the end of the text are several pages which contain lists of minerals according to mineral "groups." In this and in several other ways within the mineral listing, Dr. Fleischer's unique expertise and encyclopedic knowledge of minerals has been put to good use in making sensible decisions on mineral relations where they may be questionable.