NEW MINERAL NAMES*

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Aleksite*  

Electron microprobe analyses of 2 samples gave Pb 20.3, 20.5; Bi 46.0, 45.5; Te 27.3, 27.3; S 6.3, 6.3; Ag, Sb, Se not found, sum 99.9, 99.6, corresponding to Pb₀.₉Bi₂₀.₉Te₅₀.₉S₈₀.₉.

The X-ray pattern (55 lines given) (Fe radiation, Mn filter) has strongest lines 3.09(10) (0.11.1.14), 2.25(4) (1.0.1.28), 2.12(6) (1110), 1.348(4) (1.2.3.14), 1.307(4) (1.1.1.48). This indicates a cell with \( a = 4.238 \), \( c = 79.76 \) Å, \( Z = 6 \), \( G_{calc} = 7.80 \). The mineral occurs as platy grains up to 1 mm in sulfide-quartz veins at Alekseev mine, Sutamskiiregion, Stanovoi Range, USSR, with galena, gold, altaite, tetradymite, rucklidgeite, and other tellurides. Cleavage perfect, \( \{0001\} \). Hardness (20 g load), \( \alpha \) of 6, = 51±8 kg/sq mm. Relieflow, polishes well. In reflected light palegray with slight greenish tint, weakly anisotropic. Reflectivity is given at 15 wavelengths. \( R_g = 460, 51.4; 540, 53.2; 580, 53.4; 640, 54.2 \)%

The name is for the mine. Type material is preserved at the Moscow Gosudarst University. M.F.

Altmarkite, unnamed Hg-Pb analagm  

Metallic deposits on installations of the natural gas plant at Altmark, East Germany, contained Hg and Pb. Hg₉Pb₁₀ containing Hg 27–36, Pb 73–64 atomic percent, has strongest X-ray lines 2.78, 2.49, 1.67Å, corresponding to synthetic tetragonal Hg₉Pb₁₀ with \( a = 2.52, c = 4.53 \)Å, \( G = 12.1, H = 2 \), silver-white to gray. It is named altmarkite for the locality. Also present is an unnamed Hg-Pb analagm, Hg 20, Pb 80 atomic percent, cubic, \( Fm₃m \), \( a = 4.87 \)Å, strongest lines 2.80, 2.43, 1.73Å, \( G = 11.8 \).

Discussion  
Data inadequate. It is not clear whether the material is of natural origin or an artefact. M.F.

Bilibinskite*  
E. M. Spiridonov, M. S. Bezsmertnaya, T. N. Chileva, and V. V. Bezsmertny (1978)  

Electron microprobe analyses, with pure Au, Ag, Cu, Fe, Te, and Se, and chemically analyzed altaite, clausthalite, and chalcopyrite as standards, of 8 spots from 2 samples from Far Eastern USSR gave Au 40.7–50.5, av 48.4; Ag 0.63–3.05, av. 1.54; Cu 7.43–11.8, av. 9.35; Fe 0.13, 0.36, av. 0.19; Pb 16.7–22.5, av. 19.2, Te 18.5–22.9, av. 21.6; Se 0–1.35, av. 0.34; sum 99.4, 101.7, av. 100.6%, giving the formula \( (Au₉₋ₓAgₓ)₉(Cu₁₋ₓFeₓ)₃Pb₇Te₂₆Se₈₋ₓ \).

X-ray study gave 12 lines, the strongest being 2.37(10) (111), 2.05(7) (200), 1.44(8) (622), and 1.23(8) (311). The pattern is similar to that of gold with primitive pseudocubic cell \( a = 4.10 \)Å.

The mineral occurs in the zone of weathering of telluride deposits of the Far Eastern USSR and Kazakhstan, associated with tellurides of Au, Cu, Pb, and Fe, as rims on Au, and replacing sylvanite and krennerite. It had previously been called rickardite, which it resembles in optical properties.

The color is light brown, rose-brown, luster semi-metallic, streak gold-brown to brown. No cleavages. It polishes well and easily. In reflected light, blue-violet to beige-cream. Reflectances are given at 15 wavelengths with \( R_g \) and \( R_p \), respectively, for 2 samples: 460 nm, 13.4–14.5, 10.2–10.7; 540 nm, 21.5–23.2, 4.5–6.8; 580 nm, 25.0, 28.1, 6.1–12.0; 640 nm, 23.9–30.7, 8.5–36.5%; the optical sign changes at 620 nm. Hardness (load 20 g) 329–419, av. 381 kg/sq mm.

The name is for the Soviet geologist Yuri A. Bilibin (1901–1952). Type material is preserved in the Mineralogical Museum, Acad. Sci. USSR, Moscow, and at IMORE, Moscow. M.F.

Canavesite*  
G. Ferraris, M. Franchini-Angela, and P. Orlandi (1978)  

The mineral occurs as milky-white rosette-like aggregates of fibers (~1 mm long) on ludwigite and magnetite skarns in the iron mine of Brosso, Province of Torino, Piedmont, Italy. The slightly flexible fibers are very thin and elongated parallel to [010], have vitreous luster, and do not fluoresce under ultraviolet light. G meas about 1.8, calc 1.79. Very rare crystals show pseudohexagonal prismatic habit. One or more \( \{h0l\} \) cleavages or partings were observed. It is biaxial(+), \( 2V \) is very large, \( Z = b, \alpha = 1.485(4), \beta = 1.494(4), \gamma = 1.505(2) \), dispersion very weak. Canavesite is monoclinic with a space group having a diffraction symbol \( 2/mP\).\textsuperscript{2} The X-ray powder diffraction pattern was indexed using \( a = 2.49(2), b = 6.164(6), c = 21.91(2) \)Å, \( \beta = 114.91(9) \)°. The strongest lines (average for FeKα and CuKα) are: 9.54(100) (202), 8.12(40) (201), 7.80(18) (102,301), 4.56(21) (301,503), and 3.110(19) (407).

Chemical analyses (two complete and one partial) gave the following average values: MgO 31.60, B₂O₃ 12.70, CO₂ 18.57, H₂O 37.44, total 100.31 wt.%. On the basis of eleven oxygen ions, the empirical formula calculated from these data is \( Mg₉(OH)(CO₃)₁₀(HBO₃)₉₋ₓ \) or, ideally, \( Mg(CO₃)(HBO₃)·5H₂O \).
Color green, H = 3, brittle. In thin section rich green. Under the microscope a good cleavage on (012) and a poor one (101). Optically biaxial, positive, ns (Na, 22°C) α = 1.880, β = 1.928, γ = 2.029 (all ±0.008), □V = 72° (calc), X = a. Pleochroic with X pale bluish-green, Y rich yellow-green, Z deep emerald green, abs. Z ~ Y > X. Dispersion moderate, r > ω.

The mineral occurs in crystals up to 0.5 mm elongated on a, with terminations showing d(013) and n(100). It occurs in veins of the Bambolita mine near Moctezuma, Sonora, Mexico, associated with electrum, teintite, and carlifreelite.

The name is for Fabian Cesbron, French mineralogist. Type material is at the British Museum of Natural History, London, and at the University of Paris. M.F.

Donnayite*


This mineral formerly designated "UK33" occurs in small quantities in the pegmatite dikes, miarolitic cavities, and interstices in the nepheline syenite at Mont St. Hilaire, Quebec. Associated minerals are microcline, analcite, natrolite, calcite, chlorite, aegirine, arfvedsonite, siderite, rhodochrosite, ancyrite, pyrite, sphalerite, hematite, goethite, pyrophosphate, catapleiite, gaidonnayite, and astrophyllite. Donnayite is commonly in syntactic intergrowths with ewaldite, a Sr-analog of ewaldite, mckelveyite, and rarely synchysite. The crystals are usually small, from 0.05 to 1.0mm, rarely 2mm. The color is usually pale yellow to yellow, but some crystals are colorless, white, gray, and rarely reddish-brown due to hematite inclusions. The mineral has a white streak and is transparent with a vitreous luster, although the white and gray varieties are opaque and earthy. The hardness is about 3 and an indistinct to fair basal cleavage is present. G meas = 3.30(1), G calc = 3.266. The mineral dissolves rapidly in 1:1 HCl with strong effervescence. Optically, donnayite is biaxial (–), α = 1.551–1.561(2), β = 1.646(2), γ = 1.652(2). 2V varies 0° to 20° with 5° to 10° the most common values. The X principal vibration direction is approximately parallel to c*.

Donnayite crystals display apparent trigonal or hexagonal symmetry with habits varying from platy, tabular, saucer-shaped, columnar, barrel-shaped, to irregularly granular; some crystals are hemimorphic. Single-crystal X-ray study shows that the mineral is triclinic, pseudo-rhombohedral, and isomorphous with weloganite. The space group is P1, a = 9.000(1), b = 8.999(1), c = 6.793(1) Å, α = 102.77(1)°, β = 112.68(1)°, γ = 59.99(1)°, Z = 1. Strongest X-ray lines (for CuKα) are: 6.103(4)[001], 4.368(7)[120] etc., 3.209(3)[121] etc., 2.839(10)[211] etc., 2.598(4)[030] etc., 2.038(3)[310] etc., 2.018(3)[420] etc., 1.978(3)[032] etc., 1.916(3)[241] etc., and 1.694(3)[150] etc. etc. refers to other hk i designations for these d-spacings. J.A.M. Most donnayite crystals are twinned according to the following twin laws: rotation about [103] on; reflection across (010), (30T), or (3T1).

Electron microprobe analysis of a crystal free of syntactic intergrowths gave: Na 0.337, CaO 5.75, BaO 0.85, SrO 35.8, Y₂O₃ 13.1, Nd₂O₃ 1.83, La₂O₃ 0.45, CO₃ (30.98). H₂O (6.34), total (98.47). Values of CO₃ and H₂O were calculated on the basis of 6(CO₃)²⁻ and 3H₂O per formula by analogy with weloganite. The data give an empirical formula (based on 21 oxygen ions) of Na₂(2CaSr₂NdO₃)[Sr₂S₄Ba₂Baₐ₁]Y₂(3CO₃)₃·3H₂O, which corresponds closely to the ideal formula NaCaSr₂Y(CO₃)₃·3H₂O.

Donnayite is isomorphous with weloganite, Na₄Sr₂Zr(CO₃)₆·3H₂O.

Cesbronite*  


Electron microprobe analysis by R. F. Symes gave Cu 49.4, 49.8, 50.3, av. 49.95; TeO₂ 39.3, 39.2, 38.6, av. 38.92%; Penfield determination gave 11.0% H₂O, corresponding to Cu₂(Fe₃O₄)(OH)₂H₂O. The mineral is readily dissolved by cold or warm 1:1 HCl and NaNO₃; insol. in H₂O or 40% KOH. Weissenberg and rotation photographs show it to be orthorhombic, space group Phcn, a = 8.624, b = 11.878, c = 5.872 (all ±0.016 Å), Z = 2, G calc 4.455, G meas 4.45±0.2. The strongest X-ray lines (18 given) are 5.934(100)(020), 4.889(71)(120), 3.490(92)[220], 2.379(38)[212], 2.358(70)[032], 0003–004X/79/0506–0653$00.50.
Friedrichite*  

The mineral occurs as isolated crystals or as granular aggregates (0.2mm to 1.5mm) in "head-sized" vein-quartz boulders. Friedrichite grains are commonly altered to cerussite, a hydrous (?) Cu–Bi sulfate, and a hydrous carbonate–sulfate of Bi. Trace amounts of chalcopyrite, covellite, chalcoite, and mica are also present. The boulders were found in the screens of a landslip, below the well-known emerald deposit of the "Sedl" region at the east side of the Habach Valley, Salzburg, Austria.

Although a megascopic description is not given, Friedrichite presumably is similar in appearance to other members of the aikinite-bismuthinite series. In polished section it is creamy yellowish-white in air, more pinkish in oil. Bireflectance is moderate in air and distinct in oil; from creamy yellowish-white with a pink tint to pinkish gray-white or light bluish yellow-white. Anisotropism is distinct in air and strong in oil. Reflection values, maximum–minimum, and (average) are: at 470nm, 46.7–41.0(44.2); at 546nm, 46.2–40.1(43.5); at 589nm, 45.8–39.9(43.0); and at 650nm, 45.6–39.9(42.9). Micro-indentation testson seven grains gave VHN₅₀ = 201 to 244 (av. 224).

Etch tests: HNO₃ (1:1) burns with effervescence and darkens surface within seconds; T.T. Chen, E.Kirchner and W.Paar (1978) Friedrichite, Cu₈Pb₃Bi₂₅₄, and mckelveyite, NaCaBa,Y(CO₃)₃·3H₂O. The name is for Professors J. D. H. Donnay and G. Donnay. Type material is preserved in the National Museum of Natural Sciences, Ottawa, and the Royal Museum, Toronto. J.A.M.
relationship to dresserite. Chemically it is the barium analog of alunohydrocalcite, but otherwise the two minerals are not related. Type material is deposited in the Royal Ontario Museum, Toronto, and in the National Mineral Collection, Geological Survey of Canada, Ottawa. J.A.M.

Jokokuite*


Analysis gave MnO 27.34, FeO 1.13, ZnO 0.94, MgO, CaO none, SO₃ 33.06, H₂O 37.68, sum 100.15%, corresponding to (Mn₆.9₂Fe₀.0₆Zn₀.0₆(SO₄))·5.07H₂O, or MnSO₄·3H₂O. DTA and TG curves are given. The DTA curve shows weak endothermic peaks at 60°, 83°, and 890°, strong endothermic peaks at 140°, 328°, and 1032°C. The break at 140°C corresponds todehydration to MnSO₄·H₂O, that at 328° to MnSO₄, that at 1032° to loss of SO₃. The final product at 1080°C consisted mainly of hausmannite. The mineral is readily soluble in H₂O. It dehydrates to iliesite at 20°C and 50% humidity.

X-ray powder data are given (50 lines) (Fe/Mn radiation). The strongest lines are 5.84(100)(100), 5.66(56)(110), 4.98(61)(110), 3.28(25)(111), 2.727(72)(112,130), 2.290(27)(032), 1.622(31)(311). They are not indexed.

The mineral occurs in a gahnite-chlorite-coronadite-quartz schist near Kanona, Zambia. The name is for the locality. Type material is at Charles University, Prague. M.F.

Kleberite


Electron microprobe analyses gave for grain 1, Roda, Ti 44.5, Fe 7.9, Si 1.2, Cr 0.2, Ba 1.7, Ca 0.4, Mg 0.1; for seven grains, Ti 40.5–46.6, Fe 7.0–10.6, Si 0.9–1.3, Al 0.3–1.1, Ba 1.2–1.8, Ca 0.4–0.8, P 0.2–0.3. The first analysis and the average of these seven respectively gave TiO₂ 74.4, 71.7; FeO 10.2, 11.3; SiO₂ 2.6, 2.6; Al₂O₃ 1.3; Cr₂O₃ 0.3; BaO 1.9, 1.7; CaO 0.6, 0.8; MgO 0.2; P₂O₅ 0.5; H₂O (by ignition at 1050°C) 9.3, 9.3%. These give the formulas: (Fe₁₀.₅B₉.₅BaO₀.₅Si₁.₃)(Ti₁.₉₅Si₀.₃₃Cr₀.₀₅)(OH)₅.₃₃, 0.05. This is given in the second paper as approximating FeTiO₄·4H₂O. The state of oxidation of Fe is not known.

Kanonaite*


Microprobe analysis at 24 points, using analyzed pyromarganite, andalusite, kaersutite, barite, galena, Mn₂O₄, Cu, and Zn as standards, gave SiO₂ 32.2, TiO₂ 0.01, Al₂O₃ 33.9, Fe₂O₃ 0.66, Mn₂O₃ 32.2, MgO 0.04, ZnO 0.13, CuO 0.01, CaO 0.01, BaO 0.04, PbO 0.01, sum 99.21%. There was slight zoning; the Mn₂O₄ content ranged from 27.6 to 32.6%.

X-ray study showed the mineral to be orthorhombic, space group *Pmnm*, a = 7.953, b = 8.038, c = 5.619, Z = 4; G calc = 3.395. The strongest lines (39 given) are 5.669(100)(110), 4.590(75)(011,101), 3.587, 3.567(90)(120,210), 2.827(94)(220), 2.299(69)(022,311), 2.212(83)(320,122,212), 2.162, range 2.060–2.238. Birefringence = 0.04–0.05. No cleavage.

The mineral occurs in a gahnite-chlorite-coronadite-quartz schist near Kanona, Zambia. The name is for the locality. Type material is at Charles University, Prague. M.F.

Kanonaite*
Maricite (pronounced MA·RICH·AIT) is colorless to gray and pale brown, vitreous, transparent to translucent, non-fluorescent under UV light, streak white. There is no cleavage; H 4 to 4.5; G mean 3.66(2) 3.64 g/cm³. Maricite is biaxial (−), 2V meas 43° ±, calc 43°, 2V = 1.676(2), β = 1.695(2), γ = 1.698(2), dispersion weak r > v, non-pleochroic, X = a, Y = b.

The elongation of grains is [100], and LePage and Donnay recognized the following forms: (010), (011), (012), and (032). The mineral is orthorhombic, space group Pmmn, α = 6.867, b = 8.989, c = 5.049 Å, Z = 4. Strongest X-ray lines (CuKα) are: 3.705(40)(IlI), 2.729(90)(220), 2.707(80)(211). 2.574(100)(031), 2.525(30)(002), 1.881(30)(240), and 1.853(60)(222).

The average values of six electron microprobe analyses are: NaO 16.5, MgO 0.8, CaO 0.0, MnO 3.1, FeO 37.4, P₂O₅ 42.5, total 100.3 wt.%. The formula (based on four oxygen ions) derived from electron microprobe analysis gave U58.40, Ti20.16, O20.85, sum 99.41 wt%, corresponding to (UO₄)₂(UO₂)₂(Ti₂O₅)(FeO₄)Nb₂O₅(OH)₅, or simply NaFePO₄rede. Although the formula is similar to those of triphylite (LiFePO₄), natrophilite (NaMnPO₄), and lithiophilite (LiMnPO₄), its structure is different.

The name is for Professor Dr. Luba Marić, long-time head of the Department of Mineralogy and Petrology, University of Zagreb. The type material is preserved in the Royal Ontario Museum and the Mineralosko-Petrografski MUSEJ in Zagreb, Yugoslavia.

Orthobranerinite


Chemical analysis gave UO₂ 28.75, UO₂ 31.08, ThO₂ 1.03, TiO₂ 0.28, CaO 0.44, PbO 0.17, TiO₂ 35.35, FeO 0.40, Nb₂O₅ 0.19, Ta₂O₅ 0.01, SiO₂ 0.65, H₂O + 1.11, H₂O – 0.76, sum 100.22 wt%, corresponding to (UO₄)₂(UO₂)₂(Ti₂O₅)(FeO₄)Nb₂O₅(OH)₅, or simply NaFePO₄rede. Although the formula is similar to those of triphylite (LiFePO₄), natrophilite (NaMnPO₄), and lithiophilite (LiMnPO₄), its structure is different.

The name is for Professor Dr. Luba Marić, long-time head of the Department of Mineralogy and Petrology, University of Zagreb. The type material is preserved in the Royal Ontario Museum and the Mineralosko-Petrografski MUSEJ in Zagreb, Yugoslavia.

Discussion

The name orthobranerinite is a poor choice for the mineral, as the name implies an orthorhombic polymorph of brannerite. The ideal formula of the mineral is better written as U⁴⁺U⁺TiO₄(OH)₃, with Z = 1. G.Y.C.

Parakeldyshite*


The mineral occurs as irregular cleavage masses up to several cm in size in nepheline syenite pegmatites which transect a foyaite at Brathagen, Lågendalen, near Larvik, Norway. Associated minerals are alkali feldspar, nepheline, aegirine, pyrophanite, loparite, and biotite. In other parts of the pegmatite dikes are astrophyllite, catapleiite, ramsayite, analcime, and zeolites. Minor minerals present are boehmite, genthelvite, barylite, hialaite, anetite, and some unidentified phases.

Parakeldyshite is white with a slight bluish tinge, translucent, and vitreous. It fluoresces a strong cream color in short-wave UV light and a very weak cream color in long-wave UV. H = 5½ to 6, G meas 3.39, calc 3.40 g/cm³. Three cleavages result in a pseudohexahedral aspect; the cleavages are {001} perfect, {100} and {110} somewhat less perfect. The acute angles between these planes are all between 75° and 82°. There is also a good cleavage parallel to {011}. The mineral is polycrystalline twinned on {011}. The color and polycrystalline twinning give the mineral the appearance of a plagioclase feldspar, but it is quickly distinguished from these by its fluorescence and by its pronounced weathering on exposed surfaces. Parakeldyshite is biaxial(−), 2V meas 84°, calc 88°; Y near c, X near b, Z near a; a' = 1.670, β' = 1.692, γ' = 1.713, all measured on cleavage fragments, but because of the orientation these are probably close to the principal refractive indices.

Parakeldyshite is triclinic, space group probably P1, a = 5.419, b = 6.607, c = 8.806 Å, α = 71.50°, β = 87.15°, γ = 85.63°. Z = 2. The strongest X-ray lines (FeKα) are: 6.606(011), 4.234(7)(110), 4.179(8)(002), 3.963(10)(110), 2.913(9)(211), 2.718(6)(212), and 2.703(7)(200).
Platinum-shale, Typematerial is preserved in the Mineralogical-Geological Museum, University of Oslo.

Discussion

This is not the original description of parakeldyshite nor the first mention of the name in print. Soviet mineralogists have used the name as early as 1975 and have given descriptions in 1972, 1973, 1974, and 1975. This is, however, the best description available in that it compares the Soviet and Norwegian materials. J.A.M.

Penikisite


The mineral is very similar in appearance to kulanite, BaFe₅(PO₄)₃(OH), and crystals grade from one to the other. Penikisite zones are generally near the edges of kulanite–penikisite crystals. The mineral is blue to green, transparent to translucent, non-fluorescent under UV light, vitreous, streak very pale green to white. H about 4, fair to good cleavages parallel to {010} and {100}. G meas. 3.79(2), calc. 3.82. Penikisite is biaxial (+), α = 1.684(2), β = 1.688(2), γ = 1.705(2), Vα 56° (meas.) and 52° (calc.), pleochroic with X grass-green, Y blue-green, Z pale pink, absorption X ~ Y > Z; very strong asymmetrical dispersion, r >> υ; orientation Y ~ b, ZAC = −6°, but YAB ranges from 0° to 19°. The locality is the same as for kulanite.

Penikisite is morphologically and dimensionally monoclinic, but the asymmetrical dispersion indicates triclinic symmetry. The space group is P1 or P1, a = 8.999, b = 12.069, c = 4.921A, α ~ 90°, β ~ 100°31'; γ ~ 90°, V = 525.49A³, Z = 2. Crystal forms are the same as observed for kulanite. The X-ray powder diffraction pattern is almost identical to that of kulanite. The strongest lines (Cu/Kα) are: 8.816(100), 3.094(100)(221,031), 3.028(60)(131), 2.915(80)(211), 2.684(60)(311), 2.649(70)(320).

Of the ten electron microprobe analyses quoted, eight are Fe-dominant (kulanite) and two are Mg-dominant (penikisite). The two penikisite analyses are: MgO 6.5, 6.1; CaO 1.4, 1.3; MnO 0.0, 0.4; FeO 9.5, 10.1; BaO 24.9, 24.6; Al₂O₃ 18.0, 17.5; P₂O₅ 37.1, 36.4; H₂O 3.9 (one analysis by TGA); total 101.3, 100.3 wt.%. The first analysis gives an empirical formula of Ba₁₀₋₉Mg₁₋₉Fe₅₋₄Ca₁₋₉O₃₋₄(OH)₁₋₉ or, ideally, Ba(Mg₁₋₉Fe₅₋₄Ca₁₋₉)₂Al₁₋₉PO₆Oh. The mineral is ferroan penikisite.

The name is for Mr. Gunar Penikis who, with Mr. Alan Kulan, discovered the phosphate occurrence in the northeastern part of the Yukon. J.A.M.

Platarsite


The mineral occurs with Pt–Fe–Cu–Ni alloys, genkinite, sperryite, bornite, stibiopalladinite, ruthenarsenite, mertieite II, some unidentified minerals, and chromite in coarse-grained, dark greenish-brown silicates from the Onverwacht No. 330 deposit, Lydenburg district, Transvaal. Platarsite is gray in polished section, isotropic. It occurs as subhedral grains up to 1.1 mm on an edge. Reflectance measurements (average for two grains; another grain gave higher values) are (in percent): 51.3 (470 nm), 49.7 (546 nm), 49.4 (589 nm), and 49.2 (650 nm). It is relatively hard: VHN₉₀ = 1486, VHN₁₀₀ = 1402 (another grain gave VHN₁₀₀ = 1246). G meas. 8.0, calc. for the empirical formula given for grain 1 8.375 (the abstracter gets 8.414 for grain 1, 8.875 for grain 3, J.A.M.)

Platarsite is cubic, space group Pa3 with a = 5.790 (grain 1) and 5.824A (grain 3), Z = 4. The strongest X-ray lines (Cu/Kα for grain 1): 3.345(8)(111), 2.896(9)(200), 2.047(6)(220), 1.746(10)(311), 1.114(7)(333).

Four electron microprobe analyses are given; those for grains 1 and 3 are respectively: Pt 26.9, 31.4; Rh 12.8, 10.3; Ru 11.4, 8.5, Ir 3.6, 6.1; Os 0.58, 0.10; As 31.7, 33.6; S 13.0, 10.0; total 99.98, 100.00 percent. These give the following empirical formulas (based on 3 atoms): grain 1, (Pt₀.₈,₃Rh₀.₇,₁Ru₀.₉,₄Fe₀.₇,₃)₁₋₉S₀.₉₃S₀.₇₃₉, and grain 3, (Pt₀.₉₁,Rh₀.₇,₁Ru₀.₇,₃Fe₀.₇,₃S₀.₉₃₉). The ideal formula is Pt₄S₃, and type material is the rhodian and ruthenian variety.

The name is for the composition. Type material is in the Royal Ontario Museum (Toronto), Smithsonian Institution (Washington), Mineralogical Museum of the Academy of Sciences (Moscow), and Pinch Mineralogical Museum (Rochester). J.A.M.

Satterlyite


Satterlyite is transparent, pale yellow to pale brown, streak pale yellow, luster vitreous, H 4½ to 5, no cleavage, and does not fluoresce under ultraviolet light; G meas. 3.68(5), calc. 3.60. It occurs as grains up to 1×1×40mm elongate parallel to [0001] in radiating aggregates in nodules. The nodules (up to 10 cm in diameter) are found in shales along the Big Fish River in northeastern Yukon Territory (68°30'N, 136°30'W). Associated minerals are quartz, pyrite, wolfeite, and maricite. Satterlyite is uniaxial (−), ω = 1.721, ε = 1.719; dichroic in thick grains with O pale yellow, E brownish-yellow, absorption E > O.

Single-crystal X-ray study shows that the mineral is hexagonal with possible space groups P31m, P31m, and P312. Cell parameters are: a = 11.36, c = 5.033A (a and c refined from the X-ray powder data are 11.361 and 5.041 A, respectively); Z = 6. The strongest X-ray lines (Cu/Kα) are: 4.49(100)(101), 3.520(200)(213), 2.990(40)(213), 2.840(80)(224), 2.470(100)(224), 1.868(40)(224), 1.640(40)(6080) and 1.447(60)(51522, 2243).

Analytical data were obtained by electron microprobe analysis (with H₂O by the Penfield method). Total Fe from the microprobe analyses was recalculated as FeO and Fe₂O₃ on the basis of a ferric to ferrous ratio of 6.42 to 1.00 determined by wet-chemical means. The average of five analyses (range in brackets) gave: Na₂O 1.5 (1.2–1.6), MgO 7.1 (7.0–7.5), MnO 1.3(1.2–1.4), FeO 43.1 (42.7–43.8). FeO₇. S = 0.2 (0.0–0.2), P₂O₅ 34.8 (34.1–35.3), total 100.7 (100.0–101.3%). These give an empirical formula (based on five oxygen ions) of (Fe₂₋₈Mg₁₋₈Fe₅₋₇Cu₀.₈H₄₀₄Na₀.₉Mn₀.₁₈O₆)PO₄(OH). The ideal formula is Fe₁₋₈Mg₁₋₈Fe₅₋₇Cu₀.₈H₄₀₄Na₀.₉Mn₀.₁₈O₆PO₄(OH).

Satterlyite is a hexagonal polymorph of wolfeite. DTA curves of the two minerals show no evidence of inversion. Weight loss in
satterlyite began at about 531° and continued to about 603°, after which a weight gain began and continued to about 943°C. The DTA curve shows broad exothermic peaks at 527° and 782° and an endothermic peak at 957°C.

The name is in honor of Dr. Jack Satterly, long-time geologist with the Ontario Department of Mines and, since 1971, a Research Associate in the Department of Mineralogy and Geology, Royal Ontario Museum. Type material (grams) is preserved in the Royal Ontario Museum, Toronto. J.A.M.

Synchysite—(Nd)

In the Grebnik bauxite deposit, Yugoslavia, diaspor and hematite are the principal minerals. Rare earths were found to be concentrated at the bottom of the deposits and in contact with the footwall limestone. Synchysite occurs as micro-cavity fillings, up to 30 microns in diameter. The average of three electron microprobe analyses gave La₂0, 17.9, Ce₂0, 3.0, Pr₂0, 1.4, Nd₂0, 5.8, Sm₂0, 1.4, Y₂0, 3.8, Dy₂0, 4.3, Gd₂0, 8.9, Ho₂0, 1.5, Er₂0, 5.8, CaO 12.6, F 7.0, O₂(calc) 17.1. The total oxide weight gain began and continued to about 943°C. The DTA curve shows broad exothermic peaks at 527° and 782° and an endothermic peak at 957°C. The name is in honor of Dr. Jack Satterly, long-time geologist with the Ontario Department of Mines and, since 1971, a Research Associate in the Department of Mineralogy and Geology, Royal Ontario Museum. Type material (grams) is preserved in the Royal Ontario Museum, Toronto. J.A.M.

Tetrakalsilite
Ettore Benedetti, Maurizio de Gennaro and Enrico Franco (1977) First occurrence in nature of tetrakalsilite. Atti Accad. Naz. Lincei, Cl. Sci. Fis. Mat. Nat., 62, 835-838 (in Italian). Tetrakalsilite was described as a new phase [Am. Mineral., 42, 286 (1957)]. It has now been found in ejected blocks of the Somma-Vesuvius volcano, associated with augite, nepheline, kalsilite, melilite, and biotite. Analysis gave SiO₂ 39.60, Al₂O₃ 31.90, FeO 0.35, MgO 0.15, CaO 0.43, SrO 0.01, BaO 0.12, Na₂O 5.74, K₂O 21.52, Rb₂O 0.07, H₂O 0.12, sum 100.12%. The mineral is monoclinic, ex = 1.554, ß = 1.573, ð = 1.577 (all ± 0.001), 2V = 48°, dispersion ρ > σ, medium, elongation negative. Twinning on {001}, simple and multiple. Cleavage (010) perfect, (001) doubtful. Extinction angles Z₁a = 13-16°, a = 10-18°. G 2.65-2.70 (calc from refractive indices). X-ray powder data are given. The strongest of 27 lines are 11.43(35), 8.36(30), 5.70(30), 3.062(100), 2.909(40), 2.771(35), 2.417(50), 2.230(30), 1.962(40), 1.899(50), 1.837(70). M.F.

Wollastonite—7T

The mineral was found in a single sample from skarn at Fuka, as an intergrowth with wollastonite-2M (parawollastonite). The lattice constants are a = 54.3 ± 0.3, b = 7.30 ± 0.03, c = 7.08 ± 0.2A, α = 90.0°, β = 95.5°, γ = 92.1° (all ± 0.2°). It may be regarded as a mixed layer structure composed of 3 2M and 1 7T. M.F.

NEW DATA
Arsenopalladinite

Type arsenopalladinite is Pd₄(As,Sb)₆ with As:Sb ≈ 5:1. It is triclinic with a = 7.43, b = 13.95, c = 7.35A, α = 92°53', β = 119°30', γ = 87°51', Z = 6. Stillwaterite from the Stillwater Complex is hexagonal Pd₄As₆, but grains with the composition Pd₄(As,Sb)₆ where As(Sb + Sn) > 5:1 are probably triclinic and must be considered arsenopalladinolite. Strongest X-ray lines of type arsenopalladinolite (Co radiation, λ = 1.7902A) are: 2.34(6)(213), 2.13(10)(003,241), 1.41(4)(264), 1.24(3)(525), 1.21(3)(474). J.A.M.

Chalcocithallite

Electron microprobe analysis of chalcocithallite from Ilimaussaq, Greenland, gave Ti 36.2, Cu 32.7, Fe 3.9, Sb 11.2, S 13.05, total 97.05%, giving the formula (Cu₅.15Fe₉.7)Ti₁₁Sb₁₁Sb₁₁Sb₁₁O₈0.5. The X-ray pattern is indexed on a tetragonal cell with a = 3.87, c = 13.16A. M.F.

Fersmanite

Fersmanite from the Kola Peninsula, USSR has been restudied, and the following new data are presented. On the basis of fourteen electron microprobe analyses carried out on four grains, the following formula is proposed: (Ca,Na)₃(Ti,Nb)₂SiO₆(F,OH): the main substitution is of the type CaTi = NaNb, but some OH may replace O. Fersmanite is triclinic, space group PI or PI, a =
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7.210(1), b = 7.213(2), c = 20.451(3) Å, α = 95.15(3)°, β = 95.60(2)°, γ = 89.04(5)°, Z = 4. Strongest X-ray lines (radiation?) are: 3.058(100(123,023,024,213), 2.815(62)(024,025,116), 1.801(51)(numerous), 1.687(45)(numerous), 1.552(40)(numerous), 1.518(55)(numerous). J.A.M.

McKelveyite


During their study of the new species donnayite, the authors found that it and mckelveyite are isomorphous and probably form a solid solution. The original analysis of mckelveyite has been recalculated, on the basis of 6CO3 per formula, to (Na1.26
K0.07)Ca0.73Sr0.17(Y0.45RE0.55)(CO3)6·3.48H2O which is close to the expected ideal formula, NaCaBa,Y(CO3)6·3H2O.

J.A.M.

Rustumite


Single-crystal study showed rustumite to be monoclinic, space group C2/c, with unit cell as given by Agrell in 1965, a = 7.62, b = 18.55, c = 15.51 Å, β = 104°20'. The structure shows, however, both SiO4 and SiO3 groups and one peak requiring Cl for fit, so that the formula becomes Ca11(Si4O10)(SiO3)Cl2(OH)6, Z = 4. M.F.