NEW MINERAL NAMES*

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Cameronite*


Cameronite, a new copper-silver telluride from the Good Hope mine, Vulcan, Colorado. Can. Mineral., 24, 379-384. Two closely matching microprobe analyses of cameronite, ideally Cu₄AgTe₆, give an average of Cu 24.45, Ag 6.34, Te 69.11, sum 99.90 wt%, corresponding to Cu₄Ag₁₀Te₄ assuming 10 Te atoms. Single-crystal X-ray study indicates tetragonal symmetry, a = 3a' = 12.695(2), c = 7c' = 42.186(6) Å, space groups P4₁/mmc, P4₁/mc, or P4₁/c. Dcalc = 7.144 g/cm³ for the ideal formula with Z = 16. The strongest lines (26 given) are 3.456(100)(307), 2.118(100)(33.14,600), 1.804(60)(637), 1.377(40)(63.21,907), and 1.222(40)(93.14). In hand specimen, cameronite resembles tetrahedrite: opaque, gray, metallic, brittle, subconchoidal fracture, no cleavage, calculated Mohs' hardness 3.5-4, VHN₁₀₀ = 163 (150-170), VHN₂₀₀ = 151-172. In reflected light, slightly bireflectant and pleochroic from pale gray to pale brownish gray; anisotropism distinct with colors in air from medium gray to slate gray to brownish gray. Reflectance spectra in air and in oil for six grains are given in 10 steps; average values in air in 50-nm steps from 400 to 700 nm for R₁, R₂ are 23.8, 28.2; 27.8, 31.6; 30.6, 33.2; 31.9, 33.5; 32.7, 33.3; 33.1, 33.2; 33.4, 33.3. Bireflectance positive from 400 to about 625 nm, negative from about 645 to 700 nm. Color indices (2856 K) in air for R₁, R₂ are (1.456-.457), (1.447-.452); y 0.413-.414, .411-.412; λu 583-584; 546-580; P% 10.0-10.8; 1.9-6.3. Cameronite masses up to 2 x 2 mm are associated with native tellurium, rickardite, vulcanite, arsenopyrite, and pyrite. The name is for E.N. Cameron, who with I.M. Threadgold originally identified and partly characterized the mineral in 1961 (Am. Mineral., 46, 258-268). Type material is in several repositories, including the National Mineral Collection at the Geological Survey in Prague, Czechoslovakia. Ottawa, the British Museum (Natural History), London, and the Pinch Mineralogical Museum, Rochester, New York. J.L.J.

Chvaleticeite*


Classical chemical analyses gave MnO (by titration) 15.81, MgO (by EDTA titration) 6.41, CaO 0.04 (by AAS), FeO trace, Fe₃O₄ (by AAS) 0.10, Al₂O₃ trace, K₂O (by AAS) 0.005, Na₂O (by AAS) 0.011, SO₄ (determined gravimetrically as BaSO₄) 31.48, P₂O₅ trace, H₂O⁻ (by modified Penfield method) 0.37, H₂O⁺ (by modified Penfield method) 45.22, insoluble 0.36, sum 99.81 wt%, corresponding to (on the basis of SO₄ = 1) (Mn₀.₃₉Mg₀.₆₁Ca₀.₀₀Fe₂₀.₃₂Mn₁₀.₆₁SO₄·6.39H₂O or on the basis of anhydrous O = 4) Mn₀.₃₉Mg₀.₆₁Ca₀.₀₀Fe₂₀.₃₂Mn₁₀.₆₁SO₄·6.42H₂O. The ideal formula is (Mn,Mg)SO₄·6H₂O with Mn > Mg and Z = 8. DTA-TGA analysis showed major peaks at 105 (H₂O), 310 (H₂O), 987 (SO₄), and 100°C (H₂O). Chvaleticeite (as described, magnesian chvaleticeite) is the Mn-dominant member of the hexahydrate group.

Material suitable for single-crystal study was not found so that unit-cell parameters were calculated by analogy with hexahydrate. The mineral is monoclinic, space group C2/c with a = 10.05 (2), b = 7.24 (2), c = 24.3 (1) Å, β = 98.02°. The strongest lines of the Guinier powder film (32 given) are 5.458(11), 4.910(102), 4.478(114), 3.98(114), 3.42(7), 3.25(8), and 2.967(7). Chvaleticeite forms white, relatively hard, fine-grained aggregates as well as pinkish to yellowish-green loose coatings. Grains do not exceed 0.05 mm in longest dimension and are translucent with a vitreous luster. H₁.5, D₁.84, D₂₀ 1.84. Soluble in water. Optically, only α = 1.457(2) and γ = 1.506(2) could be measured because of the fine-grained nature of the material. In thin section the mineral is colorless and transparent.

Chvaleticeite is a rare constituent of a sulfate-rich paragenesis within the oxidation zone of an upper Proterozoic volcano-sedimentary deposit of pyrite-manganese ores at Chvaletice, Bohemia, Czechoslovakia. It is associated with melanterite, Mg-Mn melanterite (= magnesian, manganon melanterite), epsomite, Mg-Fe mallardite (= magnesian, ferroan mallardite), Mg-jokokuite (= magnesian jokokuite), Mg-ilesite (= magnesian ilesite), rozenite, copiapite, and gypsum. Chvaleticeite forms by dehydration of Mg-mallardite (= magnesian mallardite) and dehydrates to Mg-jokokuite (= magnesian jokokuite). The name is for the locality. Type material is deposited at the Geological Survey in Prague, Czechoslovakia.

Discussion. The use of unapproved Mg-, Mn-, and Fe-modified mineral names is deplored. A.C.R.

Erlianite*


Analysis by colorimetric microanalysis yielded SiO₂ 38.80, FeO 26.67, Fe₂O₃ 21.26, V₂O₅ 1.15, MgO 1.00, CaO 0.83, MnO 0.55, P₂O₅ 0.051, K₂O 0.079, Na₂O 0.09, Al₂O₃ 0.19, TiO₂ 0.38, H₂O 7.65, H₂O 0.90, sum 99.60 wt%. Major-element contents were confirmed by electron-microprobe analysis. K, Na, Ca, P, and H⁻ are assumed to be minor contaminants or interlayer elements. The provisional empirical formula is (Fe₀.₃₉Fe₀.₃₉Mg₀.₃₉Mn₀.₃₉)₀.₃₁₃₉(Fe₁₇₃₂V₀.₆₈)₀.₃₁₂₀(Si₁₅₁₃₇Ti₃₀₆₄Al₀.₃₉Fe₀.₃₉Fe₀.₃₉)₀.₃₅₆₀(OH,OH)₀.₃₄₄₄. The mineral is soluble in dilute HCl. The TGA curve is smooth, and the lack of a distinct exothermic peak shows that the water contained in the mineral escaped slowly. The water content may therefore be structural. The DTA curve exhibits three
exothermic peaks at 320, 720, and 940°C. At 320°C the crystal structure was destroyed and quartz was found; at 720°C no new phase was produced; and at 940°C the specimen was converted to quartz and hematite. Data from Mössbauer and infrared spectroscopy are also presented.

Selected-area electron-diffraction patterns gave unit-cell data of \(a = 23.2\), \(b = 9.2\), \(c = 13.2\) Å and indicated the space group to be \(Pmn\) or \(Pm2_1n\). No suitable crystals have been found for a single-crystal diffraction study. X-ray powder diffraction data show the mineral to be orthorhombic with unit cell \(a = 23.2(0.01)\), \(b = 9.2(0.01)\), \(c = 13.18(0.01)\) Å, \(V = 2813\) Å³, and \(Z = 1\). The strongest lines (27 given) are 11.5(100)(200,101), 3.05(50)(223,130), 2.89(60)(603,800,231), 2.61(60)(523,105,332,224), 2.52(50)(324,901,115,033,531), and 2.42(30)(424,803,614,821).

Erlianite is found at the Harhadu iron mine along the Jining-Erlian railway, Inner Mongolia Autonomous Region, People's Republic of China. The mineral occurs sparingly in a fractured zone within the upper part of the deposit. Associated minerals include magnetite, minnesotaite, stilpnomelane, deerite, quartz, siderite, albite, and other phases. The distribution of erlianite is closely related to structural features, and it is often developed in red-brown stilpnomelane and dark brown minnesotaite along shear planes.

Erlianite occurs as opaque fibers, flakes, and lathlike aggregates. Color black, streak brownish gray, and luster silky. The grain size is 1–2 cm. The mineral is not fluorescent; it has two perfect cleavages on \{001\} and \{100\}. \(H = 3.7\), \(D_{\text{meas}} = 3.11\). In thin section the mineral is brown with moderate relief. Biaxial negative, \(\alpha = 1.667\), \(\beta = 1.674\), \(\gamma = 1.679\). The orientation is \(X = b\), \(Y = c\), and \(Z = a\). Slightly pleochroic with \(Z\) (dark brown) = \(I\) (dark brown) > \(X\) (light brown). Weak dispersion with \(r < V\); either positive or negative elongation. Most elongate sections show parallel extinction, although extinction angles up to 29° have been measured. J.E.S.

**Hochelagaite**


Microprobe analyses of four globules of the mineral gave CaO 6.3–7.7, SrO 0.0–1.2, Na2O 0.0–1.3, Nb2O5 71.7–78.3, TiO2 1.2–1.5, Al2O3 0.0–0.8, SiO2 0.4–1.5, H2O (by diffr.) 10.3–18.9, corresponding to the formula \((\text{Ca},\text{Na},\text{Sr})(\text{Nb},\text{Ti},\text{Si},\text{Al})\text{O}_7\cdot n\text{H}_2\text{O}\) (n = 8–7).

Owing to the fine grain size of the mineral, single-crystal X-ray studies were not undertaken. The powder pattern was indexed on the basis of similarity of the mineral with francescoite and gave \(a = 19.88\), \(b = 12.83\), \(c = 6.44\) Å, \(\beta = 93.20°\), with \(Z = 4\). The six strongest powder-diffraction lines are 10.0(100), 3.115(80), 3.308(70), 5.39(50), 4.96(50), and 2.799(40).

Hochelagaite occurs as white globules, 150 µm across, in vugs of a dawsonite-bearing sill in the Francon limestone quarry, Montreal, Quebec. The globules mainly consist of radiating bladed crystals with a vitreous luster and white streak; \(H = 4\). Optically negative and biaxial with \(\alpha = 1.72\), \(\beta = 1.81\), \(\gamma = 1.82\). \(2V = 35°\). Optical orientation: \(Z = c\) and \(X = b\) (perpendicular to the blades). \(D_{\text{meas}} = 2.85–2.94\), \(D_{\text{calc}} = 2.82–2.88\).

The mineral is named after the original name for Montreal (Hochelaga).

Holotype specimens are deposited in the National Mineral Collection at the Geological Survey of Canada (64285 and 64288) and at the Royal Ontario Museum (M37547, M37548).

**Hydrodelhayelite**


Chemical analysis gives SiO2 55.53, TiO2 0.01, Al2O3 8.46, Fe2O3 0.65, MnO 0.18, CaO 12.72, SrO 0.22, MgO 0.21, Na2O 0.22, K2O 6.18, F 0.00, CI 0.15, H2O* = 9.62. H2O* = 8.85, sum = 99.64 wt%, corresponding to the idealized formula 

\[
\frac{K\text{Ca}(\text{Si},\text{Al})\text{O}_7(\text{OH})_2}{n\text{H}_2\text{O}}
\]

Hydrodelhayelite is orthorhombic, \(a = 6.648\), \(b = 23.846\), \(c = 7.073\) Å, space group \(Pmn2_1\), \(Z = 2\). The strongest lines in the X-ray powder pattern are 2.292(100), 3.069(75), 2.800(55), 3.319(43), and 6.79(38).

The mineral occurs as an alteration product of delhayelite in an ilomite-urrite pegmatite of the Khibina alkaline massif; greenish-gray delhayelite alters to grayish-white hydrodelhayelite in the supergene zone. Hydrodelhayelite is grayish white with a vitreous luster; \(H = 4\). It has three orthogonal cleavages with \(\{001\}\) very perfect, \(\{100\}\) and \(\{010\}\) imperfect; \(D = 2.168\) g/cm³. It is biaxial with \(\alpha = 1.503\), \(\gamma = 1.518\).

The name is for the composition and its relationship to delhayelite. F.C.H.

**Kimrobinsonite**


Electron-microprobe analysis gave Na2O 0.7, FeO 0.4, Sb2O3 0.7, Ta2O5 78.5, Nb2O5 6.6. Adjusted values from CHN microanalysis gave H2O 8.9, CO2 4.2. The sum equals 100.0 wt%. The ideal formula is \((\text{Ta,Nb})\text{(OH)}_{12/3} (\text{O,CO}_2)\).

Kimrobinsonite occurs in aggregates of cryptocrystalline white individuals whose luster is dull and chalky; the material has a white streak. Friable and soft (VHN 70 with a 20-g load), the mineral is isotropic.

The name honors Mr. Kim Robinson of Perth, who discovered the material in weathered pegmatite near Mt. Holland in Western Australia (32°10'S, 119°44'E). Kimrobinsonite occurs intergrown with cesstitantite as a mass in the skeletal void of a precursor Ta-Sb mineral of unknown identity. Associated minerals in the pegmatite include montmorillonite, K-feldspar, lithium-bearing muscovite, tourmaline, and several rare element-bearing minerals. Type material resides at the Government Chemical Laboratories of Western Australia, the British Museum of Natural History, and the Smithsonian. K.W.B.

**Lapharnite**


Analysis by electron microprobe gave As 47.0, Se 43.7, S 8.7,
NEW MINERAL NAMES

Mathewrosite


Combined results of electron-microprobe analysis and elemental analysis for (H2O) gave PbO 57.5, MgO 0.1, FeO 1.7, Al2O3 0.8, Al2O3 5.9, GeO 3.9, SiO2 26.2, H2O 1.9, sum 98.0 wt%, corresponding to the formula Pb5(Mg,Fe)2Al1.5Ge2.5Si10.8O30(OH)16.5. The mineral is colorless, translucent, white or pale greenish yellow, with glassy luster (weak pearly luster on cleavage planes); white streak. H about 2. Soluble in HNO3. Its optical properties are uniaxial negative with ω = 1.810, ε = 1.745.

The name is for Mathew Rogers, the first prospector in Tsumeb. Type material is at the Institute of Mineralogy and Crystal Chemistry of Stuttgart (FRG) University and at the Smithsonian Institution in Washington. E.A.J.B.

Montroyalite


Montroyalite occurs as white translucent 1-mm-sized hemispheres in cavities of a silicocarbonate silt exposed at the Francon quarry, Montreal, Quebec. Indistinct fibers radiate from the cores of these hemispheres. Individual grains are irregular to lath shaped, up to 20 μm long and 5 μm thick. Brittle. White streak. Uneven to splintery fracture and no visible cleavage. Soluble in 1:1 HCl and fluoresces white under both long- and short-wave-length ultraviolet light. H = 3.5, D = 2.677. Montroyalite is biaxial and negative, α = 1.515, β = 1.520, γ = 1.545; 2V = 80°, 2V = 89°. Y nearly parallel to elongation of lath; X and Z make angles of about 45° with the plane of the lath.

Major associated minerals: albito, quartz, stromdottierite, calcite, dawsonite, ankerite, and fluorite.

Montroyalite is named after the Montagnais hill Mont Royal, a landmark in Montreal. Type material is deposited in the Systematic Reference Series of the National Mineral Collection at the Geological Survey of Canada, Ottawa, under the catalogue numbers 64261 and 64265. R.A.S.

Moolooite


Partial microchemical analysis by CHN analyzer gave C 14.10 and H 0.52% corresponding to C3O4, 42.3 and H2O 4.65%. A microchemical test for the oxalate radical gave a positive result. Cu and Si were detected by microprobe scan but could not be determined quantitatively owing to rapid sample degradation under the electron beam. Si is variable and attributed to intergrown opaline silica. Assumimg sufficient Cu2+ for stoichiometry requires CuO 46.7, C3O4 42.3, H2O 4.65, total 93.6 wt%. Assuming that the shortfall from 100% is due to silica impurity, the derived empirical formula is Cu2(C3O4)0.44(H2O) and the general formula is Cu2(C3O4)nH2O with 0 ≤ n < 1 and Z = 1.

Extrusive studies of the analogous artificial compound indicate that
the water is zeolitic and not essential to maintaining structural integrity.

The mineral is too fine grained for single-crystal study. Orthorhombic unit-cell parameters, \( a = 5.35, b = 5.63, c = 2.56 \) Å, were calculated with reference to the artificial compound CuO\(_4\)\(\cdot\)0.1H\(_2\)O (PDF 21-297). The strongest lines of the X-ray powder pattern (25 given) are 3.88(100)(110), 2.50(30)(120), 2.33(18)(011), 2.31(25)(101), 2.14(20)(111), 1.938(18)(220), 1.787(25)(120), and 1.753(30)(211). Moolooite occurs as variable blue-green microconcretions that have a dull to waxy luster. Individual crystallites are lathlike or prismatic in shape and are less than 1 µm in size. \( D_{\text{sg}} = 3.43. \)

Obradovicite occurs on brecciated and leached vein-quartz and on cruits of jarosite. Tiny wulfenite crystals are also associated with obradovicite. Known only from Chuquicamata, Chile, the mineral is named for Martin T. Obradovic from whose collection the type material came. Type material resides at the Colorado School of Mines Museum, the Smithsonian, and the Mining Museum in Copiapó, Chile. K.W.B.

**Orthoserpierite**


Electron-microprobe analysis gave CuO 43.61, CaO 9.33, ZnO 7.29, SO\(_4\) 21.20, H\(_2\)O (by difference) 18.57, which yields a formula (based on 17 oxygen atoms) of Ca\(_{1.04}(\text{Cu}_{3.54}Zn_{0.56})\text{AsO}_6\)(\text{OH})\(_6\) \( \cdot\) 3H\(_2\)O. Single-crystal and powder X-ray diffraction studies show the mineral to be orthorhombic, space group \( \text{Pca}_2_1 \), cell \( a = 22.10(2), b = 6.20(2), c = 20.39(2) \) Å, \( Z = 8 \). The strongest X-ray lines (48 given) are 10.21(100)(002), 5.10(90)(004), 3.40(90)(006,112), 3.184(50)(513), 2.610(50)(117,442,713), 2.558(50)(217,803,008), 2.511(40)(521,423,811), 2.384(60)(424), and 2.111(35)(119,426,103).

The mineral occurs as masses and fibrous crusts associated with gypsum, devilline, and calcite on a brecciated argillite. The sky-blue crystals have a vitreous luster and a light green streak. Tabular crystals, flattened on (001) are elongate parallel to the \( b \) axis and measure up to 0.2 mm. Splinty fracture. Soluble in HCl. Mauve fluorescence in LW or SW. \( D_{\text{max}} = 3.00 \) g/cm\(^3\), \( D_{\text{sg}} = 3.07 \) g/cm\(^3\). Optically biaxial negative, \( a = 1.586, \beta = 1.645(2), \gamma = 1.650(2), 2V = 32(2), 2V = 32°. \) Dispersion \( r > v \). Weak pleochroism with \( X \) colorless or very pale green, \( Y \) and \( Z \) pale green. Orientation matrix \( X = c, Y = a, Z = b \).

The name delineates the species as the orthorhombic polymorphic of serpierite. The holotype is preserved in the Muséum d'Histoire Naturelle de Genève. J.D.G.

**Otjisumeite**


Analysis of two homogeneous crystals by electron microprobe gave GeO\(_2\) 64.74, PbO 35.55, sum 100.2 wt%, corresponding to \( \text{Pb}_2\text{Ge}_2\text{O}_5\), or idealized PbGe\(_4\)O\(_5\). Single-crystal X-ray study with different methods shows the mineral to be triclinic, space group \( \text{P1} \) or \( \text{P1}\), with \( a = 6.945, b = 6.958, c = 9.279 \) Å and \( \alpha = 102.94, \beta = 103.05, \gamma = 114.77° \). \( Z = 2, D_{\text{max}} = 5.77 \) g/cm\(^3\). The strongest X-ray diffraction lines (18 listed) are 5.87(30)(010,110), 4.20(40)(102,012,002), 3.41(50)(112,112,110), 2.95(100)(102,212,012,021), 2.41(30)(121,211,222,272), 2.26(30)(114,104,014,122,250)(130,231,310,230), 1.847(40)(322,115), and 1.782(40)(312,312,031).

Otjisumeite could be a low-temperature modification of the synthetic hexagonal phase PbGe\(_4\)O\(_5\). The mineral forms pseudohexagonal crystals, and the unit-cell parameters can be expressed in pseudohexagonal symmetry with \( a' = 11.76, b' = 11.79, c' = 9.279 \) Å, and \( \alpha' = 89.78, \beta' = 89.73, \gamma' = 59.65° \). Otjisumeite occurs in small replacement cavities in germanium ore from the Tsumeb mine, Namibia. The primary ore consists of tennantite, germainite, and renierite. The secondary minerals in the cavities include chalcocite, calcite, quartz, siderite, gypsum,
otjisumeite, and schaerite. The otjisumeite crystals are up to 1 mm in length and have a diameter of less than 0.1 mm; they are elongated parallel to the c axis, and they have a columnar to fibrous habit; they usually form radiating aggregates. Weak (001) cleavage.

The mineral is white or colorless and often translucent, with greasy luster. H about 3. Its optical properties are biaxial positive with \( \alpha = 1.920, \beta = 1.922, \gamma = 1.943 \) and \( 2V^\prime = 20^\circ; \alpha \cap c = 3-5^\circ \), no dispersion.

The name is derived from the Herero indication of the locality. Type material is at the Institute of Mineralogy and Crystal Chemistry of Stuttgart (FRG) University and at the Smithsonian Institution in Washington. E.A.J.B.

**Spheniscidite**


Analysis by X-ray fluorescence spectrometry and pyrolys... of cassiterite, but all peaks are very weak and diffuse. Microprobe analysis of the mineral gave SnO, 58.2, Sb\(_2\)O\(_3\) 11.2, CuO 10.1, FeO (total Fe as FeO) 9.0, SiO\(_2\) 2.7, CaO 0.4, Al\(_2\)O\(_3\) 0.3, H\(_2\)O (by difference) 9.1, sum 100.0 wt\%.

The mineral is pale green with a vitreous luster and occurs in fine veinlets of transparent material (mushistonite?). R.A.S.

**Unidentified Pt-group minerals**


The outer parts of a hollingworthite grain contain minute inclusions of stillwaterite, probable guanginite, and three unidentified minerals. Microprobe (electron probe) analyses of two of these give possible formulas of \((\text{Pt,Rh,Pd})(\text{As,S})\), \((\text{Pd,Rh,Pt})\)\(_2\)\text{Bi}\(_2\text{Te}\).

The third and largest grain, \(8 \times 8\) mm, gave Pd 14.8, Rh 12.8, Pt 2.0, Ir 1.8, Re 0.7, Cu 1.5, S 24.3, As 15.7, sum 99.4 wt\%.

The authors note that the formula ratios for CuFe(Pd, Rh)(S, As) are similar to those of unnamed Pt(Rh, Ir)CuS\(_2\) described by Cabri et al. (1981, Bull. Mineral., 104, 508-525). If the Cabri et al. formula is written as \((\text{Pt,Rh,Ir})\text{CuS}_2\), the equivalent formula of the largest inclusion is \((\text{Fe,Pd,Rh})\text{CuS}_2\)\(_{12}\) \((\text{S,As})\)\(_{12}\)\(_{47}\). The small inclusion having the composition \((\text{Pt,Rh,Pd})(\text{As,S})\) could be platarsite. J.L.J.

**Unnamed Sn mineral**


Microprobe analysis of the mineral gave SnO\(_2\) 58.2, Sb\(_2\)O\(_3\) 11.2, CuO 10.1, FeO (total Fe as FeO) 9.0, SiO\(_2\) 2.7, CaO 0.4, Al\(_2\)O\(_3\) 0.3, H\(_2\)O (by difference) 9.1, sum 100.0 wt\%.

The material of this occurrence differs from material described elsewhere in that it is black and opaque, except in the very thinnest particles. K.W.B.

**New Data**

**Cesstibtantite**


Electron-microprobe analysis gave Na\(_2\)O 2.2, Cs\(_2\)O 6.5, FeO 0.1, Sb\(_2\)O\(_3\) 17.0, Ta\(_2\)O\(_5\) 65.3, Nb\(_2\)O\(_3\) 5.1, H\(_2\)O 1.9 (calculated to maintain electrical neutrality as OH\(_2\)).

The material of this occurrence differs from material described elsewhere in that it is black and opaque, except in the very thinnest particles. K.W.B.
Ganomalite


Electron-microprobe analysis of four ganomalite specimens from Franklin and seven from Jacobsberg gave, on average, SiO2 19.46, CaO 11.17, PbO 67.69, MnO 2.18, with traces of MgO, BaO, Cl, and Al2O3, sum 100.5 wt%. With Mn present in a relatively constant 1 to 5 ratio with Ca, a new formula of Pb,Ca,MnSiO3 is indicated, with Z = 1.

Preliminary crystal-structure data indicate that the Mn and Ca are ordered, as implied by the chemical analysis; ganomalite is hexagonal, space group P3, with a = 9.82 and c = 10.13 Å. D.P.

Glaucocerinite


Chemical analysis on the type specimens of glaucocerinite from Laurion, Greece, yields the formula [(Zn,Cu)2Al6(OH)18[(SO4)3-9]

9H2O], based on a pyroaurite-like structure.

The strongest lines in the X-ray powder pattern, indexed on a hexagonal pseudocell, are 10.9(100)(003), 5.45(90)(006), 3.63(80)(009), 2.62(60)(012), 2.46(60)(015), 2.23(50)(018), and 1.981(50)(0.11). Optical data are 2V = 60°, a = 1.540, b = 1.554, γ = 1.562; Dmax = 2.40 ± 0.1 g/cm³, Dcalc = 2.33 g/cm³.

The authors also present evidence that a so-called “woodwardite” from Caernarvonshire, Wales, is a Cu analogue of glaucocerinite, and an 11-Å mineral occurring with carboydite in Western Australia is the Ni analogue. D.P.

Likasite


The crystal structure of likasite was determined and refined to an R index of 10.8% for 1017 reflections. The chemical formula was revised from Cu6(OH)3(NO3)(PO4) to Cu6(OH)3(NO3)-2H2O. F.C.H.

Motukoreaite

J. Rius, F. Plana (1986) Contribution to the structure of motukoreaite and refined to an R index of 11.4% for 336 observed reflections. The unit-cell dimensions are a = b = 9.172, c = 33.51 Å; space group R3m. F.C.H.

Rhodizite


The crystal chemistry of rhodizite was re-examined using data from high-resolution electron microscopy (HREM), magic-angle spinning nuclear magnetic resonance (MASNMR), single-crystal X-ray structure refinement, and a new chemical analysis. Material from Ambatofinandrana, Ankarana Mountains, Madagascar (29°33'S, 46°49'E), has the formula (K19,2Ca12Si12O36)(NH4)2(H2O)2(Al3+12Mn3+4). Be2,34Be1,66Li5(20)(19)O36H2O, is cubic with a = 7.318(1) Å and has space group P43 m. A lengthy discussion of the crystal-chemical aspects of the rhodizite structure is presented. A.C.R.

Rosalite


The unit cell of rosasite, (Cu,Zn)CO3(OH),, was determined and refined to a = 12.873(3), b = 9.354(3), c = 3.156(2) Å β = 110.36(3)°; space group P21/a. F.C.H.

Santafeite


Santafeite, originally described by Sun and Weber (1958) from the Grants uranium district, McKinley County, New Mexico, was re-examined using single-crystal and microprobe techniques. The new idealized formula, consistent with equipoint rank requirements for space group B22,2, is (Mn4+1+, Fe3+1+, Al, Mg, MnO)2(Mn4+1+, Mn3+12)(Ca,Sr,Na),((VO4)1,3(AsO4)1,3(OH))8,6H2O. An electron-microprobe analysis yielded Al2O3 1.1, Fe2O3 1.1, MgO 0.9, CaO 5.2, SrO 8.5, Na2O 5.0, V2O5 36.5, As2O5 3.2, MnO 16.5, MnO 13.3, H2O 8.8, sum 100.1 wt%. In determining the formula, the H2O content and the Mn4+1+Mn3+12 ratio reported in the original description of this mineral were used. This analysis corresponds to (Mn4+1,Fe3+1,Al2,92,9,Mg,Na)2(VO4)1,3(AsO4)1,3(OH)8,6H2O or to the simplified formula given above.

X-ray diffraction data confirmed the unit cell and space group of santafeite as originally reported, but also showed that there is significant disorder in the crystal structure. A structural analysis is needed to clarify several uncertainties regarding the structure and crystal chemistry of the mineral. J.E.S.

Schneiderhöhnte


from the Tsumeb mine, Namibia, yielded the following results. The mineral is triclinic, space group P1, a = 9.824, b = 10.016, c = 9.103 Å, α = 59.91, β = 112.41, γ = 81.69°, V = 590.8 Å³; Z = 2. Structure refinement to a final residual R of 4.5% on 3184 unique observed (I > 2.5σI) reflections. The determination of the structure leads to the new formula Fe2+Fe3+As1+O4 instead of the previously reported Fe2+As1+O4 (Am. Mineral., 59, 1139). A survey of recently refined arsenite minerals shows a constant geometry for the arsenite group with (As-O) = 1.776 Å and (O-As-O) = 97.2°. E.A.J.B.