NEW MINERAL NAMES*

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Arctite*


Analysis of material containing rasvumite and a new unnamed potassium zirconium silicate gave P₂O₅ 33.83, SiO₂ 3.60, CaO 31.80, BaO 12.00, Na₂O 9.72, K₂O 1.64, Fe₂O₃ 0.20, ZrO₂ 3.25, S 0.22, F 5.25, H₂O 0.50, sum 102.01. After deducting all K, Fe, Zr, S, Si, and part of the F, this gave P₂O₅ 31.80, BaO 12.60, Na₂O 9.72, K₂O 1.72, CaO 31.80, Fe₂O₃ 0.20, ZrO₂ 3.25, S 0.22, F 0.25, H₂O 2.91, sum 99.33. 

The mineral is insoluble in water, dissolves readily in 5% HCl.

Cesanite*


Cesanite occurs both as a solid vein (1 cm thick) and as a cavity filling of an explosive breccia in core samples from Cesano geothermal field. Other sulfates identified in the core samples include: gypsum, anhydrite, epsomite, glauberite. Microprobe analysis supplemented samples: gypsum, anhydrite, epsomite, glauberite. Microprobe analysis of 8 grains gave Cu 41.17–46.87, Ag none–0.68, Fe 1.44–4.31, Zn 0.82–4.59, Sn 10.75–19.11, Sb 2.97–7.25, As 0.80–2.58, Mo 0.41–1.08, S 27.70–28.88, sum 98.17–101.33%, corresponding to the formula (Cu,Ag)₀.₀₆(Fe,Zn,Cu,Cu,Sb,As)₀.₃₂₋₀.₆₈.Sn₂₋₀.₃₂-O.₅₈₋₀.₇₂, Fe is dominant in nos. 1–4, Zn in no. 5, and Cu in nos. 6–8. The mineral is black, luster submetallic to greasy, microhardness 78–124, average 95 kg/sq.mm (load 25 g). In reflected light white, strongly anisotopic, red internal reflections; reflectances are given in Am. Mineral., 64, 272 (1979). It occurs at the Jas Roux mine, Hautes-Alpes, France, in dolomitic limestones, associated with pierrotite, parapierrotite, and many other sulfides and sulfosalts, also at Abuta, Hokkaido, Japan, associated with getchellite, sphalerite, and barite.

Chatkalite*


Microprobe analyses of 8 grains gave Cu 41.17–46.87, Ag none–0.68, Fe 1.44–4.31, Zn 0.82–4.59, Sn 10.75–19.11, Sb 2.97–7.25, As 0.80–2.58, Mo 0.41–1.08, S 27.70–28.88, sum 98.17–101.33%, corresponding to the formula (Cu,Ag)₀.₀₆(Fe,Zn,Cu,Cu,Sb,As)₀.₃₂₋₀.₆₈.Sn₂₋₀.₃₂-O.₅₈₋₀.₇₂. In the (Fe,Zn,Cu) position, Fe is dominant in nos. 1–4, Zn in no. 5, and Cu in nos. 6–8. Probably these represent minerals of the (Cu,Ag)₀.₀₆(Fe,Zn,Cu,Cu,Sb,As)₀.₃₂₋₀.₆₈.Sn₂₋₀.₃₂-O.₅₈₋₀.₇₂. X-ray patterns could not be obtained, so that they are not named.

X-ray data show that chatkalite is tetragonal, space group P4₃/m, a = 9.442(6), c = 6.903(3)Å. The principal lines in the X-ray powder pattern are 3.896(9)(1121), 3.448(87)(0002), 2.822(60)(2131), 2.727(100)(3030) and 1.844(71)(2133). The mineral has been named after the locality of occurrence. A.P.
Chalcopyrite occurs as rounded grains (30–100 μm), associated with cassiterite, hemisite, and hessite, in tetrahedral in sulfide-quartz veins of the Chaltak-Kurum-Kin Mts., eastern Uzbekistan. Under the microscope it is pale rose. The birefringence is low, barely discernible. Anisotropy weak, mostly in shades of brown. Reflectances are given at 16 more wavelengths, (R'g and R'p): 460 nm, 25.6, 25.1; 540, 27.6, 27.1; 580, 28.6, 28.0; 660, 29.4, 28.6%. Hardness by micro-impression (20 g load) 258–287, av. 274 kg/sq.mm.

The name is for the locality. Type material is at the National Museum of the Smithsonian Institution. J.A.M.

Comancheite*


Comancheite occurs as anhedral red masses and as orange-red to yellow acicular crystals. The masses are said to have a resinous lustre and the crystals a vitreous lustre. (Because lustre is a function of refractive index and absorption, two different lusters for the same substance seem contradictory, J.A.M.) The mineral has an orange-yellow streak, a hardness of 2 and does not fluoresce in ultraviolet light. It is brittle and has fair cleavages parallel to [001] and [110]. Comancheite is not affected by cold concentrated HCl, H2SO4 or HNO3 but slowly turns dull orange-brown in 40% KOH. D meas. 7.7(4); calc. 8.0. (Using an empirical formula based on O + Cl * Br : 17, D calc. is 7.93, J.A.M.). Complete optical data could not be determined because of strong absorption and small crystal size, but crystals exhibit parallel extinction, are length-fast and refractive indices lie between 1.78 and 1.79. The authors point out that these refractive indices are much lower than those predicted by the Gladstone-Dale relationship (~2.1–2.3) and that the reason for the discrepancy is unknown.

X-ray single crystal study shows that comancheite is orthorhombic, space group Pnam or Pmn2. Unit cell parameters refined from the powder data are: a = 18.41(1), b = 21.64(1), c = 6.677(2) Å, V = 2660.1Å³, a:b:c = 0.851; 1:0.309; Z = 4. The strongest lines in the X-ray powder diffraction pattern are: 5.68(70)(230); 5.42(6)(121); 2.878(80)(232), 2.710(50)(242,080,402), 2.669(100)(640), 2.457(50)(512); and 1.415(50)(644) Å for CuKα radiation.

Electron microprobe analyses gave HgO 89.7; Cl 5.1; Br 8.9; total 103.7; less O = Cl + Br 2.0, sum 101.7 wt.%. Hg was assumed to be divalent. The empirical formula based on 13 Hg ions, is Hg13(0.3₁Ca₄,15₁Br₃,50₁S₂,8₁O₉,07) (Based on O + Cl + Br = 17, the empirical formula is Hg₁₃(C₄,8₁Br₃,50₁S₂,8₁O₉,07), J.A.M.) or, ideally, Hg₁₃(C₁Br₁₃O₉) with Cl:Br = 1:0.77.

Comancheite occurs on two specimens labeled montoydite (no montoydite was found on either specimen) from Terlingua, Brewster Co., Texas (One specimen was labeled Mariposa mine, Brewster Co., Texas). Associated minerals on the type specimens are: calcite, goethite, hematite and quartz.

The name is for the Comanche Indians who were the first miners at Terlingua. Type material is preserved in the National Mineralogical Museum, Acad. Sci. USSR, Moscow. M.F.

Ferrotychite*


Analysis by X-ray spectrography (CO₂ calculated) gave Na₂O 32.30, FeO 15.26, MnO 4.35, MgO 2.77, SO₄ 14.00, CO₂ 30.75, sum 99.43%, corresponding to Na₆(Fe₂⁺₃Mg₄₀₃Mn₃₀₆S₀₉Ca₃₂O₁₆) or Na₆(Fe₂⁺₃Mg₄₀₃Mn₃₀₆S₀₉(CO₃)₄), the Fe²⁺ analogue of tychite. The mineral is readily decomposed by cold water with the formation of a fibrous brown material that is amorphous to X-rays, and an aqueous solution that is alkaline. The infra-red spectrum shows absorption maxima characteristic of sulfate and carbonate.

X-ray study showed ferrotychite to be isometric space group Fd3̅, a = 13.962Å., Z = 8, D. calc. 2.794, meas. 2.79. The strongest X-ray lines (35 given) are 4.18(9)(311); 2.68(10)(511,333); 2.47(8)(440); 1.614(6)(751,555).

The mineral occurs in small grains (0.5–1 mm) that are colored gold-brown by a surface film of alteration product. On fresh surfaces, it is colorless to light yellow, luster vitreous, fracture conchoidal. H (micro-impression) 2.8–2.9, av. 2.28 kg/sq.mm (= 4 on the Mohs scale). Optically isotropic, n = 1.550. Strongly magnetic. The mineral was found in a drill core at depth 539 m in the southeastern part of the Khibina alkalic massif, Kola Peninsula. It is associated with shortite and the Fe-analogue of souzalite, and new data for souzalite. Can. Mineral., 19, 381–387.


Gormanite*


Gormanite occurs as blue-green elongate crystals (up to 3 x 0.5 x 0.1 mm) in radial aggregates and as blade-like crystals. It has a pale green streak, vitreous luster and is non-fluorescent under ultraviolet light. The hardness of 4 to 5 may be low due to breaking of individuals in the aggregates. There is a single poor cleavage parallel to [010]. D meas. 3.13(2). Gormanite is biaxial.
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Hydrohonesite*


Honesite, until recently an inadequately characterized species, has been redefined by Bish and Livingstone as the sulphate analogue of reevesite, i.e., with SO$_4^2-$ taking the place of CO$_3^2-$ and a basal spacing of 8.8 Å. Based on microprobe analyses of honesite from the chromite deposits of Hagdale, Unst, Shetland, a structural formula analogous to that of reevesite is assigned, (Ni$_{5.5}$Mg$_{0.16}$Fe$_{1.33}$)(OH)$_{1.33}$SO$_4$, where $x$ is about 4.

Hydrohonesite is described by Nickel and Wildman on the basis of material from the Otter Shoot nickel mine at Kambalda, from the Otter Shoot ore dump and from the Carr Boyd nickel mine, all in Western Australia. Microprobe analysis of hydrohonesite from Kambalda yielded Ni 25.7, Fe 10.3, SO$_4$ 15.6%.

Based on the assumption that iron is all trivalent and other assumptions appropriate for a mineral of pyroaurite-type structure, a generalized formula is assigned, [Ni$_2$Fe$_2$O$_6$](OH)$_{6-x}$[SO$_4$]$_x$·2H$_2$O, where $x$, $y$, and $z$ are approximately 2.6, 7.0, and 1.0 respectively. Hydrohonesite is too fine-grained for hardness or density determination. It occurs as tiny hexagonal crystals encrusting botryoidal quartz and muscovite in a fracture in supergene Ni-Fe sulphides. Cell dimensions derived by least squares from a powder diffraction pattern are $a = 3.09, b = 10.80$ Å. Strongest lines in the powder pattern are 11.0(10)(001), 5.36(5)(002), 3.68(4)(003), 2.709(3)(004), 100. The mineral is bright yellow, uniaxial negative, with $e = 1.59$ and $\omega = 1.63$. Hydrohonesite also occurs with honesite at Unst, Shetland and at Lindon, Wisconsin, the type locality for honesite.

A.P.

Kinichilite*


Analysis by ICP emission spectroscopy on 1.02 mg gave TeO$_2$ 67.6, SeO$_2$ 0.53, FeO 11.6, MgO 2.70, ZnO 4.97, MnO 1.72, Na$_2$O 0.93, H$_2$O (by difference) 9.9, corresponding to the formula [Fe$_{6.05}$Mn$_{0.10}$Zn$_{0.47}$Ni$_{0.32}$](Te$_{2.24}$O$_{6.26}$)(OH)$_{2.44}$ . 1.69H$_2$O or, ideally, (Fe$_3^2$+Mg$_{0.5}$)$_3$(OH)$_9$ . 2H$_2$O. Density calculated from the cell parameters and empirical formula is 3.12.

X-ray study shows the mineral to be hexagonal, space group $P6_3/m$ (the latter more probable), $a = 9.419, c = 7.665$ Å, $Z = 2$, D calc. 3.96. The strongest X-ray lines (24 given) are 8.15(90)(1010), 4.079(100)(2020), 2.861(50)(2131), 2.790(85)(2022).

Color dark brown, streak brown, luster subadamantine. H low, no cleavage. Optically uniaxial, positive; $n$ cannot be measured because of rapid reaction with immersion liquids, but both $\omega$ and $e$ are $> 1.80$. Weakly dichroic, from light brown to yellowish brown.

The mineral occurs as a hexagonal prism less than 2 mm long in a quartz vein at the Kawazu mine, Izu Peninsula, Japan. The name is for Dr. Kin-ichi Sakurai, a well-known amateur mineralogist, for whom Sakuraiite was named. M.F.

Mapimite*, Ojuelaite*


Mapimite

Analysis by Marjorie Duggan gave As$_2$O$_3$ 35.6, Fe$_2$O$_3$ 25.6, ZnO 15.8, FeO 0.9, H$_2$O 21.6, sum 99.5%, corresponding to (Zn$_{1.33}$Fe$_{2.67}$)$_{10}$ (AsO$_4$)$_2$.0 . 11.61H$_2$O or Zn$_{2.67}$Fe$_{1.33}$ (AsO$_4$)$_2$(OH)$_4$ . 10H$_2$O. The DTA curve shows a sharp endothermic break at 190°C, a smaller one at 343°C, and an exothermic break at 638°C. Readily soluble in dilute acids. Fuses readily to a brown scoria.

The mineral is monoclinic, space group Cm, $a = 11.425, b = 11.296, c = 8.667$ Å, $\beta = 107.04^\circ$, $Z = 2$, D meas. 2.95, calc. 2.90. The strongest X-ray lines (64 given) are 8.24(100)(001), 7.83(94)(110), 4.662(61)(021), 3.883(46)(221), 3.217(41)(222).

Color variable in shades of blue, bluish-green, and green.
Mountkeithite*


Mountkeithite [(Mg,Ni)r(Fe3+,Cr,Al)3(OH)3](CO3,SO4) occurs near a black, sooty film. Soft, brittle, cleavage imperfect. Hardness 9.0, 12 kg/sq.mm. Reflectances are given at 16 wave lengths, av. for 2 grains; 460 nm, 14.75; 540 nm, 18.9; 580 nm, 22.3.

Mountkeithite occurs as friable aggregates and rosettes of soft, pearly to translucent, pale pink to white flakes with perfect basal cleavage. Soft, brittle, cleavage imperfect. Hardness 9.0, 12 kg/sq.mm. Reflectances are given at 16 wave lengths, av. for 2 grains; 460 nm, 14.75; 540 nm, 18.9; 580 nm, 22.3.

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