NEW MINERAL NAMES*

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Anyuiite*


Electron-microprobe analyses of the mineral and of an antimony-bearing variety gave Au 32.6, 34.3, 36.7, Ag 0.35, not detected, Pb 64.8, 59.0, 52.9, Sb 0.3, 5.8, 10.2; sum 98.05, 99.1, 99.8 wt%, corresponding to (Au0.35Pb0.65Sb0.30), o, (Mg2SO4), o. Fragments are opaque, silvery gray, luster metallic. Oxidizes after 1.5–2 days, becoming dull lead-gray. In reflected light, light gray (silvery gray, luster metallic. Oxidizes after 1.5–2 days, becoming dull lead-gray. In reflected light, light gray (silvery gray, luster metallic. Oxidizes after 1.5–2 days, becoming dull lead-gray. In reflected light, light gray (silvery gray, luster metallic. Oxidizes after 1.5–2 days, becoming dull lead-gray. In reflected light, light gray (silvery gray, luster metallic. Oxidizes after 1.5–2 days, becoming dull lead-gray. In reflected light, light gray (silvery gray, luster metallic. Oxidizes after 1.5–2 days, becoming dull lead-gray. In reflected light, light gray (silvery gray, luster metallic. 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Efremovite*


A chemical analysis gave SO4 38.37, FeO 0.72, CaO 0.35, MgO 11.47, MnO 0.25, Na2O 0.13, K2O 0.50, (NH4)2O 8.31, insoluble residue 39.97, sum 100.07 wt%, corresponding to [(NH4)20Fe0.67K0.33Na0.02][Mg0.69Fe0.06C0.29Mn0.02S0.01]O12 (ideally (NH4)2Mg(SO4)). Sulfate was determined gravimetrically with BaCl2, magnesium gravimetrically with pyrophosphate, ammonia + potassium as chlorplatinate, and potassium by flame photometry. The insoluble residue is inferred to be organic matter and quartz that were admixed with the mineral. The mineral is soluble in water; upon heating with alkali and upon heating in a closed tube, ammonia is evolved.

* Before publication, minerals marked with an asterisk were approved by the Commission on New Minerals and Mineral Names, International Mineralogical Association.
and \((\text{NH}_2)\text{SO}_3\) melts out and subsequently decomposes with evolution of ammonia. In air at ordinary temperatures, the mineral is hydrated to boussingaultite in the course of several days. The mineral shows an endothermic effect at 430–495 °C (maximum 475 °C) accompanied by a weight loss of 35.8% associated with decomposition into \(\text{MgSO}_4\) and \((\text{NH}_2)\text{SO}_3\) and breakdown of the latter (the calculated weight loss from the ideal formula is 35.5%). Occurs as equant grains, 0.01–0.015 mm, in gray to white aggregates that have a dull luster, \(H = \sim 2\), uneven fracture, vitreous luster, no cleavage. Aggregates are opaque except in thin slivers. In immersion oil, colorless to locally tinted weak brown, isotropic, \(n = 1.550(1)\). Hydration results in zoned grains with anisotropic margins of boussingaultite. No single-crystal XRD data. Given the close correspondence of the powder pattern with that of the synthetic compound (PDF 18–110), cubic, space group \(P2_1\bar{3}\), \(a = 9.99(1)\,\AA\), \(D_{calc} = 2.52\,\text{g/cm}^3\) with \(Z = 4\). The strongest lines (31 given) of the powder pattern are: 5.76(35,111), 4.07(70,211), 3.15 (100,310), 3.00(35,311), 2.668(50,321), and 1.620 (25,611).

The mineral occurs in the burning dumps from two shafts in the Chelyabinsk coal basin in the southern Urals, USSR. At one shaft the mineral was deposited from hot gases issuing from a fumarole. The deposit consists of four layers overlying red burning rock: (1) unconsolidated material on top, (2) asphalt-like crust with crystals of sulfur and kladnoite, (3) crusts and stalactites of mascagnite, (4) dense cementlike gray masses dominantly of efremovite, hydrated in the upper part to boussingaultite. At the other shaft, the mineral occurs in a white, fine-grained crust on an incompletely combusted area of the dump that is enriched by a carbonaceous mass. The new mineral is interpreted to have formed by the decomposition of carbonate rocks (e.g., dolomite) in the dumps by sulfuric acid, ammonia, and the products of burning coal at temperatures between 180 and 400 °C. The association with carbonaceous and organic (hydrocarbons?) materials may have enhanced the stability of the mineral, slowing its hydration. The mineral is named in honor of the Soviet geologist and science-fiction writer Ivan Antonovich Yefremov (1907–1972). Type samples are in the Fersman Mineralogical Museum of the USSR Academy of Sciences, Moscow.

**Discussion.** Acceptance of the chemical analysis presumes that the mineral is entirely soluble in water, as opposed to being partly soluble with separation of an insoluble portion, which could have been overlooked in the 40 wt% insoluble residue. E.S.G.

**Perraultite**


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**E.S.G.**

**Svyatoslavite**


Electron-microprobe analysis of two grains gave SiO\(_2\), 43.62, 43.51, Al\(_2\)O\(_3\), 35.37, 35.28, CaO 19.33, 19.15, Na\(_2\)O 0.41, 0.44, FeO 0.02, 0.03, MgO 0.03, 0.01, K\(_2\)O 0.01, 0.02, MnO 0, 0, sum 98.79, 98.44 wt%; the average corresponds to \((\text{CaO},95\text{NaO},05)\text{Al}_{2}\text{Si}_{2}\text{O}_{8}\), ideally CaAl\(_2\)Si\(_4\)O\(_8\). The mineral forms colorless crystals up to 0.5 to 0.8 mm across, prismatic, elongate [100]. The main forms are \{011\} and \{100\}; \{110\} is common, but weakly developed. Streak white, luster vitreous, fluoresces weakly yellowish in ultraviolet (360 nm). Cleavage \{100\} weak, fracture conchoidal, brittle, \(H = \sim 6\), \(D_{calc} = 2.695(5)\) in heavy liquids, \(D_{calc} = 2.687\,\text{g/cm}^3\) with \(Z = 2\). Biaxial negative, \(\alpha = 1.552(2), \beta = 1.578(2), \gamma = 1.581(2), 2V_{calc} = 37.08^\circ, Z = a, Y = b, X = c\). Orthorhombic, space
group $P2_12_12$ by a single-crystal method. Unit-cell parameters determined from powder data are $a = 8.232(5)$, $b = 8.606(10)$, $c = 4.852(5)$ Å. The strongest lines (59 given) are: 4.16(80,101), 3.75(60,111), 3.22(100,021), 2.94(60,211), 2.71(70,130), 2.09(80,321), 1.967(70,041), 1.670(70,322), 1.329(60,252), and 1.150(50,622).

The mineral occurs in burning dumps at Kopeysk, Chelyabinsk coal basin, southern Ural, USSR, where it formed at temperatures not below 700–900 °C as a sublimate on fracture walls in coal together with anorthite, troilite, cohenite, fayalite, titanite, and graphite. The mineral apparently formed earlier than anorthite, and no intergrowths with anorthite were found. The new name is honor of the Soviet geologist Svyatoslav Nestorovich Ivanov (1911–). Type material is in the Fersman Mineralogical Museum of the USSR Academy of Sciences, Moscow.

**Discussion.** The space group was determined by extinction rules established by unfolding the layer lines through rotation around all 3 twofold axes. Unfortunately, the authors did not consider the possibility that the mineral was the monoclinic modification of CaAl$_3$Si$_2$O$_6$, synthesized by Takéuchi et al. (Zeits. Kristallogr., 137, 380–398, 1973), who also refined its crystal structure. Takéuchi et al. reported that monoclinic CaAl$_3$Si$_2$O$_6$, space group $P2_1$, has pronounced orthorhombic pseudosymmetry for which extinctions are consistent with $P2_12_12$. Takéuchi et al. suggested that Davis and Tuttle’s (Am. J. Sci., 250A, 107–114, 1952) orthorhombic CaAl$_3$Si$_2$O$_6$, for which only powder data were obtained, is identical to monoclinic CaAl$_3$Si$_2$O$_6$. Takéuchi et al. reported for the monoclinic phase $a = 8.228(1)$, $b = 8.621(1)$, $c = 4.827(1)$ Å, $\beta = 90.00(5)^\circ$, parameters that are close to Davis and Tuttle’s $a = 8.244(16)$, $b = 8.606(6)$, $c = 4.836(5)$ (both Z = 2) and to those of the new mineral. E.S.G.

**Unnamed BaMn(CO$_3$)$_2$.**


The Hagidaira manganese mine at the village of Azuma, Zeta Township, Gumma Prefecture, Japan, contains thermally metamorphosed bedded chert, rhyolite, alabandite, rhodochrosite, manganosite, and tephroite with associated witherite and BaMn(CO$_3$)$_2$. Electron-microprobe analysis (one of three similar analyses) gave MnO 15.39, MgO 1.98, CaO 2.32, FeO 0.04, SrO 0.00, BaO 51.18, CO$_2$ (calc): 28.25, sum 99.16 wt%, corresponding to (Mn$_{0.68}$Mg$_{0.15}$Ca$_{0.13}$)O$_{2.93}$Ba$_{0.76}$(CO$_3$)$_{2.00}$, ideally BaMn(CO$_3$)$_2$. A fragment extracted from a polished thin section gave a Gandolfi X-ray pattern having strongest lines at 3.89(m), 3.08(s), 2.54(m), 2.14(m), and 1.910(m) Å; these results are similar to those reported by Chang (Am. Mineral., 49, 1142–1143, 1964) for synthetic BaMn(CO$_3$)$_2$.

At the Fukumaki mine near the city of Hikari, Yamaguchi Prefecture, thermally metamorphosed bedded manganese ore consisting of rhodonite, tephroite, manganosite, galaxite, rhodochrosite, and alabandite also contains witherite and BaMn(CO$_3$)$_2$. Three electron-microprobe analyses of the last mineral gave a composition range of (Ba$_{0.89-0.91}$Sr$_{0.09-0.10}$)(Mn$_{0.62-0.66}$Mg$_{0.23-0.25}$Ca$_{0.14-0.15}$)(CO$_3$)$_2$. At both the Hagidaira and Fukumaki mines the unnamed mineral is intimately associated with witherite.

**Discussion.** The authors cite $T = 1220$ °C, $P = 1$ atm for “α-leboite” and $T = 1420$ °C to melt Si. No attempt
is made to infer what conditions might be required for these at the mantle depths at which the kimberlite is interpreted to have originated. The temperatures needed to melt Si at these depths may be too great for a kimberlite magma, and "a-oleboite" may not be stable at high pressures. The name "a-oleboite" is used by metallurgists for a high-temperature phase of composition FeSi$_2$, variously described as orthorhombic or tetragonal, in which 13–23% of the Fe sites are vacant (R. Hultgren et al., Selected Values of the Thermodynamic Properties of Binary Alloys, 871–883, 1973, Am. Soc. for Metals). An abstract of data for Si will appear in the March–April issue of Am. Mineral. E.S.G.

**Titanian biotite**–$4M_1$


A chemical analysis gave SiO$_2$ 35.62, TiO$_2$ 7.50, Al$_2$O$_3$ 15.89, Fe$_2$O$_3$ 2.19, FeO 10.43, MnO 0.04, MgO 13.86, CaO 0.12, BaO 1.07, Na$_2$O 0.62, K$_2$O 9.08, Li$_2$O 0.01, H$_2$O $\pm$ 3.15, HO$_2$ $\pm$ 0.11, F not detected, sum 99.69 weight %. Corresponding to (K$_{0.07}$Na$_{0.06}$Ca$_{0.01}$)$_{20.67}$(Mg$_{1.55}$Fe$_{2.57}$Fe$_{1.15}$Ti$_{0.42}$Al$_{0.13}$Si$_{2.1}$O$_{6.34}$)(O$_{0.37}$OH)$_{3.63}$. Electron-diffraction study gave $a = 5.335$, $b = 9.24$, $c = 40.03$ Å, $\beta = 92.54^\circ$, and intensities and extinctions are consistent with a monoclinic, heterogeneous $4M_1$ polytype. The titanian biotite forms {001} platy, reddish megacrysts in a monoclinic, heterogeneous $4M_1$, polytype. The titanian biotite forms {001} platy, reddish megacrysts in a monoclinic, heterogeneous $4M_1$, polytype. The titanian biotite forms {001} platy, reddish megacrysts in a monoclinic, heterogeneous $4M_1$, polytype. The titanian biotite forms {001} platy, reddish megacrysts in a monoclinic, heterogeneous $4M_1$, polytype. The titanian biotite forms {001} platy, reddish megacrysts in a monoclinic, heterogeneous $4M_1$, polytype. The titanian biotite forms {001} platy, reddish megacrysts in a monoclinic, heterogeneous $4M_1$, polytype.

**Discussion.** Structural relations are discussed in greater detail in Kristallografiya, 35(2), 406–413, 1990. E.S.G.

**Mont Saint-Hilaire minerals**


Mont Saint-Hilaire, an alkaline intrusive complex containing abundant appaïtite syenites, is in Rouville County, about 40 km east of Montreal, Quebec. The complex contains more than 250 species and numerous unidentified minerals, the latter designated by the prefix UK. In 1979, Chao and Baker updated the published list of the UK minerals to UK47 (Mineral. Record, 10, 99–101); as only five of these UK minerals remain unidentified, they are included in the summary given below. Most of the UK minerals occur in silicate cavities or in sodalite xenoliths (abbreviated below as SC and SX, respectively). Omission of a UK number means that the phase has been identified.

UK29. Black to dark reddish brown balls (1 mm), golden yellow to reddish brown flakes in irregular patches on microcline, analcime, natrolite, and others. An Fe$^{2+}$-rich trioctahedral smectite of composition (Na$_{0.1}$K$_{0.1}$)$_{0.5}$HO$_2$·(Fe$^{2+}$,Mg,Al,Mn,Ti)$_{3.1}$O$_{10}$·nH$_2$O. Strongest X-ray powder-diffraction lines and intensities are 12.4(10), 2.636(20), 2.508(15), 2.309(10), 1.537(15), and 1.528(10) Å. Occurs in pegmatites, marble xenoliths, and SC.

UK32. A hydrous carbonate of Ca-Y-Al occurring as white, silky aggregates, rarely as acicular, colorless hexagonal crystals striated along the length. Good basal cleavage, $D_{max} = 2.15(1)$ g/cm$^3$, strong effervescence in HCl. Hexagonal, $P6/mmm$, $P6_2mm$, $P6_2m$, or $P6_22m$, $a = 10.830(2), c = 10.516(5)$ Å. Optically uniaxial negative, $\epsilon = 1.501(1), \omega = 1.532(1)$. Strongest X-ray lines are 9.38(100), 4.58(65), 3.77(45), 3.35(45), 2.491(70), and 2.143(50) in pegmatite and SC.

UK33A. Sr$_2$Na$_3$(Ce,La)Y(CO$_3$)$_4$·3H$_2$O (2); a REE analogue of donnayite-(Y), from which it is megascopically indistinguishable. Pseudotrigonal, probably triclinic. Strongest X-ray lines 4.27(90), 3.207(50), 2.827(100), 2.023(60), 1.976(60), 1.916(60) Å. In SC and carbonate cavities(?). UK33 is donnayite-(Y).

UK37A. White, greenish gray, brown barrel-shaped and pagoda-shaped crystals megascopically indistinguishable from ewaldite, donnayite-(Y), and mckelveyite-(Y). Hexagonal, $P6/mmc$, $a = 5.193(1), c = 12.25(1)$ Å; strongest X-ray lines 4.50(60), 4.23(80), 3.023(100), 2.597(70), 2.391(50), and 1.976(90). Composition Sr$_2$Na$_3$CaY(CO$_3$)$_4$·3H$_2$O (2), probably the Sr analogue of ewaldite. In SC and carbonate cavities, pegmatites, and igneous breccia. UK37 is ewaldite.

UK38. Canary-yellow patches of minute flakes, rarely as small tabular hexagonal crystals. Composition
(Na,K),(Mn,Fe,Ca,Ti,Al),(Si,Al)O_{20}·8H_{2}O (?) 

UK48. Beige, prismatic crystals (0.2 mm), commonly in clusters. Composition CaYr_{12}(Si,Be,B)_{9}(O,OH)_{2}·2H_{2}O. In pegmatite and SC and pegmatites.

UK51. A(OH)_{3} (?). White, translucent to opaque balls aggregates; also as irregular grains with curved crystal faces of nordstrandite.

9.5'. Strongest X-ray lines 6.09(50), 4.83(50), 3.778(30), 2.528(50), 2.222(70), and 2.058(60). In SC (?).

UK52. Composition (Na,K)_{4}SrTi_{4}Si_{8}O_{24}(OH)_{4}·4H_{2}O. In veins in albite-quartz hornfels.

UK55. Cu_{2}S, X = 0.12–0.37. Irregular submetallic grains, black with a violet tint. X-ray patterns fall into four major groups, one of which is similar to that of anilite, Cu_{2}S. In SX.

UK56. White balls (0.5 mm) of silky fibers of composition CaNb_{4}O_{11}·12H_{2}O (?) 

UK57. (Na,Ca,K),Si_{10}O_{25}(F,OH,Cl)·4H_{2}O (?) 

UK58 group. M_{4}Al_{4}(OH)_{8}(CO_{3})·4H_{2}O (?) where M = Mg,Fe,Mn. Colorless to white (Mg), pale brown, brown, and pale blue (Mn,Fe); hexagonal, tabular to prismatic and barrel-shaped crystals. Group 1: hexagonal, a = n × 5.3, c = 15 Å (n = 1 or 2); strongest lines 7.56(100), 3.774(70), 2.576(50), 2.218(50), 1.854(50), and 1.554(40). Group 2: trigonal, a = 11.0, c = 22.8 Å; strongest lines 7.56(100), 3.774(70), 2.668(50), 2.344(30), 1.969(30), and 1.586(20).

Optically uniaxial negative, e = 1.531–1.549, ω = 1.531–1.550. Birefringence 0.039. Mn and Fe members are strongly pleochroic from light brown to brown. In SC and carbonate cavities, pegmatite, rarely hornfels.

UK59. NaCa(Mn,Fe)(Ti,Nb,Zr)Si_{3}O_{4}(F,P)_{2}, the Ti analogue of jolsteinite and Ca analogue of janhuagite. Yellow to orange-brown fibrous crystals, flattened {001}, elongate [001]; distinct {100} cleavage. Monoclinic, P2_{1}/a, a = 10.828(7), b = 9.790(7), c = 7.054(2) Å, β = 108.213(3)°. Optically uniaxial negative, α = 1.763(2), β = 1.785(2), γ = 1.810(5), 2V = 29–44°. Y: b, c {X} = 15° in obtuse β; r > v moderate, X = pale greenish yellow, Y = yellow, Z = brownish red to deep red. Strongest X-ray lines 3.945(20), 3.234(30), 2.859(100), 2.807(70), 1.762(20), and 1.741(20). In SC and nepheline syenite.

UK60. Carbonate of Sr, Ba, Ca, REE, with Sr > Ba; probably hydrous. Small (0.1 mm) pearly white, hexagonal plates, or as flakes in rosettes or irregular clusters. Strongest X-ray lines 4.45(100), 3.012(60), 2.563(30), 2.420(15), 2.211(40), and 1.975(40) Å. Mainly in SC, also in SX.

UK60A. Similar to UK60, but with Ba > Sr. Strongest X-ray lines 4.43(100), 4.05(20), 3.102(30), 2.557(70), 2.206(30), and 2.163(30) Å.

UK61. Na_{2}Ca,Ti,Si_{3}O_{5}(OH)_{2}·5H_{2}O (?) 

UK62. Na_{4}(Ca,Mn)_{2}(CO_{3})_{2}(F,OH). Vitreous, colorless, tan to brown, transparent to translucent masses and blocky to prismatic crystals (0.3 mm). Conchoidal fracture, good (001) cleavage, (010) imperfect, H = 3.5, D_{irr} = 2.67(2) g/cm^{3}. Effervesces in HCl. Optically uniaxial negative, α = 1.472(1), β = 1.562(1), γ = 1.569(1), 2V = 25(1)°, Y = b, X = a, Z = c. Strongest X-ray lines 11.59(100), 6.93(100), 5.27(30), 3.069(30), 2.984(30), and 2.588(30). In breccia (?) 

UK63. NaLi_{2}PO_{4}. Vitreous, white, pale yellow, pale blue irregular grains. Fracture conchoidal, good cleavages (100), (010), (001), (110). Orthorhombic, Pnmb or P2_{1}/nb, a = 6.874(2), b = 9.971(4), c = 4.928(5) Å. Optically biaxial negative, α = 1.533(1), β = 1.540(1), γ = 1.541(1), 2V = 49(1)°, X = a, Y = c, Z = b. Strongest
X-ray lines 4.02(100), 3.512(100), 3.440(100), 2.489(90), 2.462(90), and 1.719(40). In SX.

UK64. NaCa,Ce(PO4)3(SiO4)2(OH,F)3·4H2O (?); water assumed, by difference. Vitreous, brown to reddish brown, irregular grains to prismatic crystals coated with a film of amorphous substance; good {001} and {110} cleavages. Orthorhombic, P2221, a = 12.297(2), b = 14.660(3), c = 7.2454(4) Å. Optically biaxial, refractive indices ≈ 1.52–1.64 approximately along elongation, X = b, Y = c, Z = a. Strongest X-ray lines 9.42(80), 6.56(40), 6.29(40), 4.72(50), 3.948(60), 2.722(100), and 2.577(70). In SX.

UK65. Ba,Ce(CO3)2F (?)• CO2 by difference. White to silvery gray, vitreous to dull crystals (0.1 mm), commonly in dendritic and stellate groups. Effervescences in HCl. Monoclinic, P211, or P2121/m, a = 13.18(1), b = 5.073(1), c = 6.724(4) Å, β = 102.16(3)°. Optically biaxial negative, α = 1.594(1), β = 1.710(5), γ = 1.715(5), 2V = 16(1)°, Y = b, Z Δ c = 26° in obtuse β. Strongest X-ray lines 4.02(100), 3.272(90), 2.539(20), 2.143(40), 2.007(50), and 1.636(30). In hornfels.

UK67. White, translucent balls (0.1 mm) of a Na-K-Mn-Fe-Ca-Zr silicate; low analytical total, probably not homogeneous. Strongest X-ray lines 6.97(100), 6.47(90), 4.79(100), 4.02(80), 2.852(100), and 2.703(50). In SX.

UK68. Na-Mn-Nb oxide or hydroxide (?). Thin, bright yellow plates when fresh; alters to poorly crystalline, red, crumbly masses of splinters. Strongest X-ray lines 10.30(100), 8.497(90), 7.83(60), 7.56(60), 2.911(60), and 2.462(90). In SX.

UK69. Na2Zr3Si4O12(OH,F)3·8H2O (?)• water assumed, by difference. Shown by single-crystal X-ray study to be a mosaic with overall hexagonal symmetry. White, pale green, massive, botryoidal, radiating clusters of fibers and small elongate plates. An emerald-green variety became discolored completely in a few months under laboratory conditions. Strongest X-ray lines 14.97(100), 7.61(20), 4.16(30), 3.814(30), 3.045(50), and 1.823(60) Å. The most intense line varies between 14 and 15 Å. In SC.

UK70. Ca-K-Mn-Nb-Al silicate. Pink, earthy to porcelaneous alteration product; also pseudomorphs after an unidentified mineral. Strongest X-ray lines 9.93(100), 6.47(70), 5.98(50), 4.717(50), 2.792(90), and 2.465(70) Å. In SX.

UK71. Ca silicate with minor Al and Fe. White, irregular patches and balls of powder or very fine fibers. Strongest X-ray lines 16.9(100), 3.410(40), 3.105(90), 2.930(50), 1.893(50), and 1.876(70) Å. In marble xenoliths. UK72. Na-Ca-Ti silicate with minor Fe, Nb. White, fibrous aggregates, and vitreous, white to colorless, acicular crystals. Monoclinic, C2/c, a = 28.67(3), b = 8.619(3), c = 5.215(1) Å, β = 90.98(2). Strongest X-ray lines 14.32(100), 4.77(30), 2.995(50), 2.738(30), 2.149(20), and 2.134(20). In SX.

UK73. Probably hydrous Na carbonates. Three members. White, powdery, silky, fibrous efflorescence. Soluble in water, effervescent in HCl. The three members give distinct X-ray patterns; strongest lines of only one member are given: 9.76(100), 8.40(70), 3.931(80), 3.411(50), 2.792(90), and 2.465(70) Å. In SX.

UK74. Na-Ca-Ti silicate with minor Fe, Nb. White, fibrous aggregates, and vitreous, white to colorless, acicular crystals. Monoclinic, C2/c, a = 28.67(3), b = 8.619(3), c = 5.215(1) Å, β = 90.98(2). Strongest X-ray lines 14.32(100), 4.77(30), 2.995(50), 2.738(30), 2.149(20), and 2.134(20). In SX.

UK75. (Na,K)CaTi5Si8O24(OH)·6H2O (?); water assumed, by difference. Ti analogue of lemoynite. Vitreous, brown, irregular grains (0.5 mm) in a carbonate matrix. Brittle, conchoideal fracture. Monoclinic, C2/m, a = 10.197(3), b = 15.885(7), c = 9.118(3) Å, β = 104.5(2)°. Optically biaxial positive, α = 1.567(1), β = 1.591(1), γ = 1.618(1), 2V = 87°, X = b, Y = a, Δ = 15°, Z = 43°. Strongest X-ray lines 8.85(80), 7.93(100), 6.85(50), 4.34(60), 3.509(90), and 3.421(80). In breccia or marble xenoliths (?). UK76. Mn5Al2(SO4)3(CO3)2(OH)·7.7H2O (?); water assumed, by difference. Analytical totals vary, suggesting differences in hydration states. White, pale green, massive, botryoidal, radiating clusters of fibers and small elongate plates. An emerald-green variety became discolored completely in a few months under laboratory conditions. Strongest X-ray lines 14.97(100), 7.61(20), 4.16(30), 3.814(30), 3.045(50), and 1.823(60) Å. The most intense line varies between 14 and 15 Å. In SC.

UK78. Na-Mn silicate. Colorless to white needles. Strongest X-ray lines 10.06(100), 6.91(10), 3.008(10), 2.950(50), and 2.658(10) Å. In SX.

UK79. Na-Fe-Mn silicate. Pale green fibers. Strongest X-ray lines 8.39(100), 7.15(30), 6.19(20), 3.307(40), 2.808(100), and 2.160(20) Å. In SX.

UK80. Na-Mn-Al silicate. Dark brown, massive patches grading into fine yellowish brown fibers. Strongest X-ray lines 10.72(100), 7.34(20), 3.144(20), 2.806(80), 1.931(20), and 1.719(20) Å. In SX.

UK81. NaLiSi3O7·2H2O. Colorless, vitreous, transparent, tabular crystals, colorless needles, silky white fibrous groups; perfect (001) and distinct (100) cleavages, conchoideal fracture; Dmax = 2.24 g/cm³. Monoclinic, A2/m, a = 5.061(1), b = 8.334(2), c = 14.383(3) Å, β = 96.67°. Optically biaxial positive, α = 1.515(1), β = 1.516(1), γ = 1.518(1), 2V = 61(1)°, X = b, Y = a, Δ = 16°, Z = 23°. Strongest X-ray lines 7.14(100), 4.24(80), 4.15(100), 4.02(80), 2.852(100), and 2.703(50). In SX.
Strongest X-ray lines 12.68(100), 9.24(50), 5.17(40), 4.24(50), 3.651(25), and 3.077(30) Å. In SX.

**UK84. Na$_4$(Zn,Mn)$_2$Si$_7$O$_{18}$·5H$_2$O.** Colorless to mauve, vitreous, equant, pseudohexagonal crystals. Perfect {101}, {010}, and poor {120} cleavages; conchoidal fracture, $H$ = 6.5, $D_{\text{meas}}$ = 2.52 g/cm$^3$, bright apple-green fluorescence in short-wave ultraviolet light. Orthorhombic, $F2dd$, $a$ = 10.211, $b$ = 39.88, $c$ = 10.304 Å. Perfect {101}, {010}, and poor {120} cleavages; conchoidal fracture, $H$ = 6.5, $D_{\text{o}}$ = 2.52 g/cm$^3$, bright apple-green fluorescence.

**New Data**

**Euchlorine**


X-ray single-crystal structural study ($R$ = 0.048) of euchlorine from fumarolic deposits at Mount Vesuvius, Italy, indicates that the mineral is monoclinic, space group $C2/c$, $a$ = 18.41(5), $b$ = 9.43(3), $c$ = 14.21(5) Å, $\beta$ = 113.7(3)$^\circ$, $D_{\text{meas}}$ = 3.28, $D_{\text{calc}}$ = 3.28 g/cm$^3$ for NaKCu$_3$O(SO$_4$)$_6$, with $Z$ = 8. The structural results are an elaboration of data previously reported by the authors [abstracted in Am. Mineral., 75, p. 1214, 1990]. J.L.J.

**Nacaphite**


X-ray crystal-structure study of nacaphite gave triclinic symmetry, space group $P1$, $a$ = 13.387(7), $b$ = 13.383(5), $c$ = 7.072(3) Å, $\alpha$ = 90.25(3), $\beta$ = 89.73(4), $\gamma$ = 133.12(3)$^\circ$. Elimination of a block of nine weak reflections and adoption of the non-standard space group $C1$ reduces $R$ to 7.54%; parameters for the $C1$ cell are $a$ = 10.656(4), $b$ = 24.444(6), $c$ = 7.102(2) Å, $\alpha$ = 89.99(2), $\beta$ = 90.01(2), $\gamma$ = 90.01(2). The structural formula is Na$_2$(Na$_{0.97}$Mn$_{0.03}$)$_2$(Na$_{3.12}$Ca$_{4.87}$)(Ca$_{9.7}$Sr$_{0.33}$)[PO$_4$]$_4$F$_4$. $D_{\text{calc}}$ = 2.88 g/cm$^3$ with $Z$ = 2. The formula, cell, and symmetry are new. J.L.J.

**Platynite**


Fifteen electron-microprobe analyses of three grains gave the following averages for each grain: Pb 20.8, 17.7, 27.1, Bi 49.3, 52.4, 43.1, Se 25.5, 26.2, 25.8, S 2.91, 2.18, 2.5, sum 98.63, 98.48, 98.5 wt%, corresponding to Pb$_{0.71}$Bi$_{2.19}$Se$_{0.81}$SO$_{3.84}$, Pb$_{0.77}$Bi$_{2.27}$Se$_{0.73}$SO$_{3.61}$, and Pb$_{0.71}$Bi$_{1.89}$Se$_{0.71}$SO$_{3.71}$, suggesting solid solution of the type Pb$_{1-x}$Bi$_x$(Se, S)$_2$. The mineral forms aggregates, up to 1.5–2.0 cm across, of allotriomorphic grains. Color white, luster metallic, cleavage perfect in two directions, brittle, conducts electricity, $H$ = 100–140 kg/mm$^2$ (mean 112), but possibly only 70–100 kg/mm$^2$ because of hardening during polishing. White in reflected light, highly reflecting and distinctly anisotropic. $R$, mostly 44.5–45.5%, $R_2$, 47.5–43.5% (400–750 nm) [specific values are not tabulated, but reflectance is illustrated in a diagram]. The strongest powder X-ray diffraction lines (20 given) are: 5.45(100), 3.965(100), 2.973(40), 2.598(20), 2.549(20), and 1.981(20) Å.

The mineral occurs in pitchblende-selenide mineralization in a zone of faulting and folding in a lower Proterozoic volcanogenic sedimentary complex in the Baltic Shield, USSR. The mineral is closely associated with the first generation of pitchblende dated at 1760 Ma, and is partly replaced by clausenthalite and paraguanaujaitite. Associated minerals include pyrite, clayspyrite, and more rarely, magnetite, chalcocite, sphalerite, galena, and native iron. E.S.G.

**Sobolevite**


Single-crystal X-ray structural study of sobolevite gave triclinic symmetry, space group $P1$, $a$ = 7.078(1), $b$ = 5.4115(7), $c$ = 40.618(10) Å, $\alpha$ = 90.01(2), $\beta$ = 93.19(2), $\gamma$ = 90.00(1)$^\circ$. $D_{\text{calc}}$ = 3.03 g/cm$^3$, $Z$ = 2. Cell dimensions are similar to those previously attributed to a monoclinic cell. The structural formula is Na$_{1.37}$(Na$_{0.97}$Ca$_{0.03}$)(Mg,Mn)$_{0.03}$Ti$_{0.03}$(Si, O)$_{0.03}$(PO$_4$)$_2$O$_{1.03}$F$_{1.03}$. The symmetry and formula are new. J.L.J.