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NEW MINERAL NAMES*

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Bystrite*

V.G. Ivanov, A.N. Sapozhnikov (1985) Lazurites of the USSR. Nauka, Novosibirsk, 1–172 (in Russian).

A.N. Sapozhnikov, V.G. Ivanov, L.F. Piskunova, A.A. Kashaev, L.E. Terentieva, E.A. Pobedimskaya (1991) Bystrite $Ca(Na,K)_7(Si_6Al_6O_{24})(S_3)_{1.5}\cdot H_2O$—A new cancrinite-like mineral. Zapiski Vses. Mineral. Obshch., 120(3), 97–100 (in Russian).

E.A. Pobedimskaya, L.E. Terentieva, A.N. Sapozhnikov, A.A. Kashaev, G.I. Dorokhova (1991) Crystal structure of bystrite. Doklady Akad. Nauk SSR, 319(4), 873–878 (in Russian).

Microprobe analysis combined with coulometry (H_2O) and various traditional techniques (total and sulfidic sulfur) gave SiO_2 33.37, Al_2O_3 26.74, CaO 5.10, Na_2O 14.42, K_2O 7.63, S 12.03, SO_3 0.50, CO_2 0.32, Cl 0.25, H_2O 1.62, $O \equiv S_3$ and Cl 2.06, sum 99.92 wt%, corresponding to $(Ca_{1.01}Na_{5.17}K_{1.80})_{\Sigma 7.98}(Si_{6.17}Al_{5.83})_{\Sigma 12.00}O_{24}(S_3)_{1.39}(SO_4)_{0.07}Cl_{0.08}(CO_3)_{0.08}\cdot 1H_2O$. Readily soluble in dilute acids, producing H_2S. After heating in air at 800 °C becomes dark green. Single-crystal X-ray structural study ($R = 0.078$) showed the mineral to have trigonal symmetry, space group *P*31*c*, $a = 12.855$, $c = 10.700$ Å. The strongest lines of the powder pattern (49 given) are: 4.824(70,102), 3.919(80,211), 3.720(100,300), 3.313(90,212), and 2.676(70,004). $D_{meas} = 2.43(1)$, $D_{calc} = 2.45$ g/cm³, $H = 5$, good $\{10\bar{1}0\}$ cleavage, weak pinacoidal cleavage or pinacoidal parting, vitreous luster. Yellow in thin section, optically uniaxial positive, $\omega = 1.584$, $\epsilon = 1.660$, pleochroic from dense yellow to almost transparent, $O > E$. Negative elongation.

The mineral occurs in the Malo-Bystrinskoe lazurite deposit, Pribaikal area, Russia, where it forms yellow, tabular crystals up to 5 mm long, closely intergrown with lazurite, calcite, and diopside; also occurs as irregular grains and aggregates. Type material is at the Fersman Mineralogical Museum, Moscow, Russia. **J.P.**

Kaluginite

V.I. Kydryashova, I.V. Rozhdestvenskaya (1991) New minerals XLV. Zapiski Vses. Mineral. Obshch., 120(4), 100–115 (in Russian).

Microprobe analysis gave Mn 10.07, Ca 4.76, Mg 5.92, Fe 11.95, Al 0.8, P 16.18, H_2O (by weight loss) 20.78 wt%, corresponding to $(Mn,Ca)MgFe^{3+}(PO_4)_2(OH)\cdot 4H_2O$. The mineral forms platy crystals up to 0.5–1 mm, flattened [100], slightly elongate [001], showing {001}, {100}, {010}, {111}, and {211}. Light yellowish green to greenish yellow, transparent to translucent, vitreous to greasy luster, white streak with a yellowish tint, brittle, uneven fracture, $H = 3.5$, imperfect {010} cleavage, $D_{meas} = 2.69$, $D_{calc} = 2.70$ g/cm³. Optically biaxial negative, $\alpha = 1.627$, $\beta = 1.642$, $\gamma = 1.658$, $2V_{meas} = 90°$, $X = b$, $Y = a$, $Z = c$, dispersion $r > v$; distinctly pleochroic, Z = greenish yellow, X and Y almost colorless. Orthorhombic symmetry, $a = 15.05$, $b = 37.37$, $c = 7.18$ Å, space group *Ccca*, $Z = 16$. Strongest lines of the X-ray pattern are 9.38(100,040), 5.00(70,221), 3.52(70,022), 2.84(90,082), and 2.60(80,420). The mineral occurs in a granitic pegmatite vein in Ilmenskij National Park, Urals, Russia, and is associated with products of decomposition of triplite, francolite, ushkovite, matveevite (which see), and iron and manganese hydroxides. The name is for mineralogist A.V. Kalugin.

Discussion. Data are from the abstract by Kydryashova and Rozhdestvenskaya. The original paper by B.V. Chesnokov, V.A. Vilisov, V.O. Polakov, and A.F. Bushmakin, published in the book *Mineraly i mineralnoe syre gorno-promyshlennykh rajonov Urala,* could not be obtained. The mineral was submitted to the CNMMN in 1983, but the vote was suspended and the name has not been approved. See also the abstract for matveevite. **J.P.**

[The original paper has since been obtained and data from it are incorporated in the above abstract—*Ed.*]

Luberoite*

J. Jedwab, B. Cervelle, G. Gouet, X. Hubaut, P. Piret (1992) The new platinum selenide luberoite Pt_5Se_4 from the Lubero region (Kivu Province, Zaire). Eur. J. Mineral., 4, 683–692.

Electron microprobe analysis gave Pt 75.76, Se 24.24 wt%, and that of a $PtSe_{0.8}$ standard gave Pt 75.54, Se 24.46 wt%, corresponding well to Pt_5Se_4. Occurs as dark bronze, metallic, idiomorphic crystals, and fragments up to 0.5 mm, and as round to irregular grains in Pt. Some grains are prismatic, polysynthetically twinned; cleavage parallel to {001}, $VHN_{15} = 461$ (322–620), polishing hardness near that of Pt, $D_{meas} = 10.68$–12.78, $D_{calc} =$

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* Before publication, minerals marked with an asterisk were approved by the Commission on New Minerals and Mineral Names, International Mineralogical Association.

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13.02, D_{meas} (synthetic) = 13.02 g/cm^3. In reflected light, white with a greenish yellow hue, weak pleochroism, strong bireflectance and anisotropism. Reflectance percentages are given in 10-nm steps in air and oil; values for R_{max} and R_{min} in air and in oil for the four standard wavelengths are, respectively, 470 48.6, 42.6 (38.3, 32.5); 546 53.0, 46.7 (42.7, 36.8); 589 55.0, 48.6 (44.5, 38.2); 650 58.0, 51.5 (47.4, 40.8); in air x = 0.3243, 0.3254, y = 0.3289, 0.3298, Y% = 53.48, 47.14, λ_d = 579.1, 579.3, P_e = 7.23, 7.76. X-ray single-crystal study indicated monoclinic symmetry, space group $P2_1/c$, a = 6.584(5), b = 4.602(3), c = 11.10(1) Å, β = 101.6(1)°, Z = 2. Strongest lines of the powder pattern (114.6-mm Debye-Scherrer, Cu$K\alpha$ radiation) are 5.45(60,002), 3.27(60,$\bar{1}12$), 2.93(80,112), 2.78(60,$\bar{1}13$), 2.648(60B,210), 2.465-(60,113), 1.875(100B, $\bar{2}21$, $\bar{3}04$, 302), and 1.812(70,006). Known as a synthetic compound, for which the crystal structure has been determined.

The mineral was found in museum-preserved placer concentrates from the Lubero region, Kivu Province, Zaire. The main constituent of the concentrates is native Pt. The new name is for the locality. Type material is in the Institut royal des Sciences naturelles de Belgique, Brussels. **J.L.J.**

Matveevite

V.I. Kydryashova, I.V. Rozhdestvenskaya (1991) New minerals XLV. Zapiski Vses. Mineral. Obshch., 120(4), 100–115 (in Russian).

The average of two electron microprobe analyses gave MgO 3.51, MnO 8.06, P_2O_5 29.37, Al_2O_3 4.25, Fe_2O_3 9.21, TiO_2 8.54, K_2O 2.11, H_2O (by difference) 34.95, sum 100 wt%, corresponding to $(K,H_3O)Ti(Mn,Mg)_2(Fe^{3+},Al)_2(PO_4)_4(OH)_3 \cdot 15H_2O$. Isometric or thick platy crystals up to 0.1–0.2 mm are white to almost colorless, also yellowish, showing {010}, {100}, {111}. Transparent to translucent, white streak, luster vitreous, pearly on (010). Perfect {010} cleavage, brittle, uneven fracture, H = 2.5, D_{meas} = 2.32, D_{calc} = 2.40 g/cm^3. Optically biaxial positive, α = 1.574, β = 1.580, γ = 1.618, $2V_{calc}$ = 44°, $X = \beta$, $Y = \alpha$, $Z = \gamma$. Orthorhombic symmetry, a = 12.42, b = 20.52, c = 10.52 Å, space group $Pnam$ or $Pna2_1$. Strongest lines of the X-ray pattern are 10.40(90,020), 7.50(80,111), 6.23(100,200), 3.15(90,152,242), and 2.86(40,062). The mineral occurs in a granitic pegmatite vein in Ilmenskij National Park, Urals, Russia, and is associated with products of decomposition of triplite, francolite, ushkovite, kaluginite, and iron and manganese hydroxides. The name is for mineralogist K.K. Matveev (1875–1954).

Discussion. Data are from the abstract by Kydryashova and Rozhdestvenskaya because the original paper by B.V. Chesnokov, V.A. Vilisov, V.O. Polakov, and A.F. Bushmakin, published in the book *Mineraly i mineralnoe syre gorno-promyshlennykh rajonov Urala,* could not be obtained. The proposed new mineral and name were submitted to the CNMMN in 1986 and were not approved. Possibly related to paulkerrite. **J.P.**

Olekminskite*

A.A. Konev, E.I. Vorobev, L.F. Piskunova, Z.F. Ushchapovskaya, G.A. Tichonova (1991) Olekminskite $Sr(Sr,Ca,Ba)(CO_3)_2$—A new mineral and the new isomorphous series olekminskite-paralstonite. Zapiski Vses. Mineral. Obshch., 120(3), 89–96 (in Russian).

Microprobe analyses (CO_2 calculated, five crystals analyzed, 17 analyses given) gave SrO 49.86, CaO 6.68, BaO 11.23, La_2O_3 0.21, Ce_2O_3 0.56, CO_2 29.94, sum 98.48 wt%, corresponding to $Sr_{1.414}Ca_{0.350}Ba_{0.215}La_{0.004}Ce_{0.010}(CO_3)_2$. Small amounts of FeO (0.00–0.27), MnO (0.04–0.19), and MgO (0.00–0.02 wt%) were found. The mineral forms needlelike crystals, 0.005–0.010 mm thick, occurring in spherulitic aggregates 0.10–0.15 mm in radius. The crystals are round to hexagonal in cross section; their centers are enriched in Ca and Ba, and the rims in Sr. Transparent, brittle, H = 3, luster vitreous, D_{meas} = 3.70(2), D_{calc} = 3.650–3.682 g/cm^3. In thin section, transparent, straight extinction, uniaxial negative, ω = 1.670(2), ϵ = 1.527(2), negative elongation. There exists a range of compositions between the new mineral and paralstonite. Hexagonal symmetry and space group $P321$ were assumed by analogy with paralstonite. X-ray powder study gave a = 8.66(2), c = 6.08(2) Å; strongest lines (20 given) are 3.50(100), 2.49(90), 2.03(90), and 1.305(70, diffuse).

The mineral occurs in barytocalcite-quartz veins of 5–10 cm width that cut intrusive breccias accompanying the alkaline Kedrovyj massif, Aldan Shield, Siberia, Russia, located close to the Murunskij alkaline complex. Associated minerals are calcite, barite, and ankerite that replaced barytocalcite. The name is for the city Olekminsk, the administration center of the Murunskij alkaline complex. The repository for type material was not given. **J.P.**

Padmaite*

Yu.S. Polekhovskij, A.V. Voloshin, I.P. Tarasova, S.A. Nikitin, Ya.A. Pakhomovskij, Yu.P. Menshikov, Yu.L. Kretzer, T.I. Kolytscheva (1991) Padmaite PdBiSe—A new selenide of palladium and bismuth from metasomatites of the southern Karelia. Zapiski Vses. Mineral. Obshch., 120(3), 85–88 (in Russian).

Microprobe analysis (30 given, nine samples analyzed) gave Pd 25.70, Pt 1.20, Bi 53.60, Ag 0.80, Au 0.00, Se 18.80, S 0.20, sum 100.30 wt%, corresponding to $Pd_{0.96}Pt_{0.02}Bi_{1.02}Ag_{0.03}Se_{0.94}S_{0.02}$, ideally PdBiSe. Occurs as isometric, irregular grains up to 0.2 mm in diameter, and as symplectic intergrowths with palladium sulfides up to 0.01–0.02 mm. Light yellow color, metallic luster, H = 3–4, microhardness 260–272 kg/mm^2 (20-g load), imperfect cleavage in two perpendicular directions, D_{calc} = 9.86 g/cm^3 with Z = 4. Pinkish yellow in reflected light, isotropic, no internal reflection. Reflectance measurements (in air, 20-nm intervals from 400 to 700 nm, %): 46.5, 45.4, 44.9, 46.6, 47.5, 48.0, 48.0, 49.0, 48.6, 48.3, 47.7, 46.8, 46.8, 46.0, 45.4, 45.3, 45.6, 45.6, 48.7, 51.4. X-ray powder study showed the mineral to be cubic, a = 6.448(3) Å, space group (by analogy with synthetic PdBiSe) $P4_132$ or $P4_332$. Strongest lines of the powder pattern (19 given) are 2.89(100,210), 2.63(90,211), 1.943(90,311), 1.724(50,321), and 1.376(40,332).

The mineral occurs in metasomatic rocks formed in shungite-bearing metashales of Lower Proterozoic age, Padma River, southern Karelia, Russia. Associated minerals are clausthalite, paraguanajuatite, bohdanowiczite, sobolevskite, froodite, hematite, native Bi and Au, roscoelite, chromium phengite, dolomite, and quartz. The new name is for the locality. Type material is at the Mining Museum of the Leningrad Mining Institute, Russia. **J.P.**

Paranite-(Y)

F. Demartin, C.M. Gramaccioli, T. Pilati (1992) Structure of a new natural tungstate arsenate, $[Ca_2Y(AsO_4)(WO_4)_2]$, structurally related to scheelite. Acta Crystallogr., C48, 1357–1359.

The mineral occurs as creamy yellow crystals of elongate dipyramidal habit, to 3 mm, in a single specimen collected from the Alpe Devero–Ossola Valley area, on the Italian side of the Pizzo Cervandone region, Central Alps. Single-crystal X-ray structural study (R = 0.024) gave tetragonal symmetry, space group $I4_1/a$, a = 5.135(1), c = 33.882(5) Å, D_{calc} = 5.975 g/cm³ with Z = 4. Cell parameters are similar to those of scheelite, but with c tripled in paranite-(Y). The mineral has a scheelite-type structure and consists of layers of composition $YAsO_4$ and $CaWO_4$ stacked in an orderly manner along [001] in a molar ratio 1:2.

Discussion. The new name appears in a footnote stating that the mineral has been submitted to the IMA for approval. **J.L.J.**

Reppiaite*

R. Basso, G. Lucchetti, L. Zefiro, A. Palenzona (1992) Reppiaite, $Mn_5(OH)_4(VO_4)_2$, a new mineral from Val Graveglia (Northern Apennines, Italy). Zeits. Kristallogr., 201, 223–234.

Electron microprobe analysis gave MnO 61.17, V_2O_5 25.79, As_2O_5 6.87, sum 93.83 wt% [H_2O by difference, 16.17 wt%], corresponding to $Mn_{5.01}(OH)_{3.98}(V_{1.65}As_{0.35})O_{8.02}$, ideally $Mn_5(OH)_4(VO_4)_2$. Occurs as aggregates of minute tabular crystals, flattened {100} and striated, up to 300 μm in diameter and 50 μm thick. Orange-red color, orange-yellow streak, vitreous luster, transparent, nonfluorescent, no cleavage, VHN_{15} = 90–110 on (100) face, D_{meas} = 3.92, D_{calc} = 3.91 g/cm³ with Z = 2. Optically biaxial negative, $2V$ large, with α' = 1.803(2), γ' = 1.810(5), and weak pleochroism from light yellow-orange to deep orange as measured on the (100) face; medium dispersion. X-ray single-crystal refinement (R = 0.038) indicated monoclinic symmetry, space group $C2/m$, a = 9.604(2), b = 9.558(2), c = 5.393(1) Å, β = 98.45(1)°. Strongest lines of the powder pattern (Fe$K\alpha$ radiation, Gandolfi camera, calculated intensities) are 4.76(81,200), 3.37(38,220), 3.00(34,310)(26,$22\bar{1}$), 2.680(100,$13\bar{1}$), 2.656(50,002), 2.155(50,$33\bar{1}$), 1.565(39,$13\bar{3}$), and 1.510(33,531).

The mineral occurs in fractures in manganiferous cherts at the Gambatesa mine, Val Graveglia, eastern Liguria, Italy. The new name is after Reppia, a village near the mine. Type material is in the Mineralogy Section, Department of Earth Sciences, University of Genoa, Italy. **J.L.J.**

Simferite*

O.V. Yakubovich, V.V. Bairakov, M.A. Simonov (1989) Crystal structure of simferite. Doklady Akad. Nauk SSSR, 307(5), 1119–1122 (in Russian).

The mineral occurs at the contact of REE-bearing pegmatite and phlogopitized tremolite rock as dark red aggregates up to 3 mm. Individual crystals are up to 0.1 mm in size and are commonly twinned. Optical properties and chemical composition vary: α = 1.690–1.704, β = 1.702–1.716, γ = 1.712–1.726. D_{meas} = 3.22–3.25, D_{calc} = 3.25 g/cm³ with Z = 4. X-ray data show the mineral to be orthorhombic, a = 4.7468(7), b = 10.101(2), c = 5.8992(7) Å, space group $Pbnm$ or $Pbn2_1$. The chemical formula is given as $Li_{0.5}(Mg_{0.5}Fe^{3+}_{0.03}Mn^{3+}_{0.2})[PO_4]_3$.

Discussion. An approved name, but an incomplete description. **J.P.**

Tinnunculite

B.V. Chesnokov, L.F. Bazhenova, E.P. Shcherbakova, T.A. Michal, T.N. Deriabina (1988) New minerals from the burned dumps of the Chelyabinsk coal basin. In Mineralogy, technogenesis, and mineral-resource complexes of the Urals, 5–31. Akad. Nauk SSSR-Ural Otdel. (in Russian).

Chemical analysis gave O 33.20, C 30.70, N 29.00, H 3.24, K 2.25, Na 0.18, S 0.25, ash 1.24, sum 100.06 wt%, corresponding to $C_{5.2}H_{6.4}N_{4.2}O_{4.2}$ (K, Na, S, and ash assumed to be admixed). Mass, paramagnetic resonance, and infrared spectrometric results suggest that the mineral is a product of dimer condensation of uric acid with low-temperature separation of a low-molecular part during oxidation; thus the formula is $C_{10}H_{12}N_8O_8$. In a closed tube yields H_2O, later rich black and white deposits. X-ray and electron-diffraction studies showed the mineral to be orthorhombic, a = 15.08(1), b = 12.56(1), c = 34.64(10) Å, Z = 18, D_{calc} = 1.695, D_{meas} = 1.73(1) g/cm³. Strongest lines of the X-ray pattern are 4.24(20,026), 3.77(10,400), 3.21(100,420), 1.774(20,822), and 1.608(30,840). Strongest lines of the electron diffraction polycrystalline pattern are 5.00(40,024), 4.78(40,221), 3.22(100,420), and 3.14(80,040). Occurs as plates up to 0.4 × 3 × 4 cm that consist of very fine-grained particles shown by SEM to be platy crystals with a perfect cleavage parallel to the plates. Yellowish white color, yellowish white streak, dull luster, earthy to conchoidal fracture. Refractive index close to 1.523; X parallels the longer edge of the rectangular plates, Y parallels the shorter edge, and Z is perpendicular to the flattening and cleavage. Occurs in the burned dump in the Chelyabinsk coal basin, Russia. The name is for *Falco tinnunculus,* the Latin term for kestrel (a European falcon). The mineral formed as a product of hot gases from a burning coal dump reacting with excrement from *Falco tinnunculus.*

Discussion. The mineral and name were submitted to the CNMMN and were not approved. **J.P.**

(Zn,Cu,Fe)S

Yunfen Lei, Yueying Lin, Dequan Zhang, Jing Yu (1991) An unnamed sulfide mineral—(Zn,Cu,Fe)S. Acta Mineralogica Sinica, 11(1), 78–82 (in Chinese, English abstract).

Ten electron microprobe analyses gave an average and (range) of Zn 54.29 (53.40–55.60), Fe 6.56 (6.17–6.86), Cu 6.46 (6.17–6.78), Pb 0.31 (0.02–0.66), Cd 0.20 (0.00–0.38), Co 0.02 (0.00–0.04), S 32.32 (31.42–32.95), sum [100.16] (98.85–101.50) wt%, corresponding to $(Zn_{0.84}Fe_{0.11}Cu_{0.09})_{\Sigma 1.04}S$, ideally (Zn,Cu,Fe)S. Analysis of coexisting sphalerite gave Zn 57.23, Fe 8.78, Cu 0.05, Cd 0.311, Co 0.032, In 0.34, Mn 0.24, Bi 0.011, As <0.21, S 29.87, sum 97.10 [97.074] wt%, corresponding to $(Zn_{0.93}Fe_{0.16})_{\Sigma 1.09}S$. Color black, metallic luster, opaque, nonmagnetic, H = 165–214 kg/mm^2 (Mohs 3.5–4), harder than sphalerite. In reflected light, gray with a slight bluish tint and slightly yellowish brown relative to sphalerite; weakly anisotropic with polarization colors from dark gray to gray with a weak bluish tint to brown. Reflectance percentages (SiC standard) gave R' 19.80 (405 nm), 19.65 (436), 19.01 (480), 18.85 (526), 18.23 (546), 17.80 (589), 17.31 (644), and 16.10 (656); the dispersion curve is similar to that of sphalerite but is slightly higher (by <2%); R_{vis} 18.21, $x = 0.3243$, $y = 0.3273$, $\lambda_d = 483$ nm, $P_e = 0.035$. The X-ray powder pattern (six lines listed, Cu radiation) was indexed on a cubic cell analogous to that of sphalerite to yield $a = 5.4084(6)$ Å; diffraction lines are 3.1080(100,111), 1.9060(50,220), 1.628(30,311), 1.240 (20,331), 1.103(20,422), and 1.040(20,511). Backscattered electron X-ray images indicate that the elements, including Cu, are homogeneously distributed.

The mineral occurs sparingly and intermittently as aggregates of anhedral grains in interstices between chalcopyrite-sphalerite aggregates and along chalcopyrite-sphalerite grain boundaries that occur in veinlets 2–3 cm wide and of variable length. The veinlets are in a sphalerite-galena-chalcopyrite skarn orebody near Huang Gan Ling, Inner Mongolia.

Discussion. For comparison the authors give their X-ray data for an Fe-bearing sphalerite (8.78 wt% Fe); diffraction lines at 2.693(10,200) and 1.5603(10,222) for sphalerite are not present in the Cu-rich phase, but the authors do not make an issue of this. Determination of the cell dimensions and symmetry by single-crystal X-ray study or another direct method is needed to prove that the mineral is new. **J.L.J.**

$Fe_2(OH)_3Cl$

B. Saini-Eidukat, H. Kucha (1991) An iron chloride hydroxide from the Duluth Complex, Minnesota, with implications for metal mobility in hydrothermal systems. In Source, Transport and Deposition of Metals (M. Pagel, J.L. Leroy, eds.); A.A. Balkema Publishers, Brookfield, VT, 127–130.

The mineral was found in partly serpentinized troctolites in several drill cores from the Duluth Complex, where it occurs as vein fillings up to 700 μm long and 100 μm wide. Megascopically visible on the surface of the drill core as a rusty red alteration thought to have formed by reaction with the atmosphere. Colorless in transmitted light, but increasingly yellow-reddish with oxidation; n = 1.6–1.7, one distinct parting or cleavage, soluble in H_2O or alcohol. Bireflectant in reflected light, showing bubbles formed by exposure to atmospheric moisture. Electron microprobe analyses of five samples gave Fe 49.05, Mn 1.77, Mg 2.54, Si 0.10, Al 0.01, Cl 16.87, OH (by difference) 30.71, sum 100 wt%, corresponding to $Fe_{0.879}Mn_{0.012}Mg_{0.015}Si_{0.004}Cl_{0.477}(OH)_{1.810}$, possibly $(Fe,Mg)_2Cl_2(OH)_3$.

Discussion. Corresponds to the unnamed mineral abstracted previously in *Am. Mineral.* 75, 712 (1990), and *Am. Mineral.* 77, 672 (1992). **J.L.J.**

$Mg[(UO_2)(AsO_4)]_2 \cdot 4H_2O$

B. Bachet, C. Brassy, A. Cousson (1991) Structure of $Mg[(UO_2)(AsO_4)]_2 \cdot 4H_2O$. Acta Crystallogr., C47, 2013–2015 (in French).

The mineral occurs as yellow plates, flattened [001], that appear as acicular groups in cavities in nickeline at the Talmessi Cu mine, Anarak, Iran. Single-crystal X-ray structural study ($R = 0.063$) gave monoclinic symmetry, space group $C2/m$, $a = 18.207(5)$, $b = 7.062(3)$, $c = 6.661(3)$ Å, $\beta = 99.65(5)°$, $Z = 2$, $D_{calc} = 3.60$ g/cm^3.

Discussion. No mention is made of the mineralogical relationships, but this may be the monoclinic polymorph of metanovacekite, which is tetragonal. **J.L.J.**

New Data

Ferrocarpholite

G. Ferraris, G. Ivaldi, B. Goffé (1992) Structural study of a magnesian ferrocarpholite: Are carpholites monoclinic? Neues Jahrb. Mineral. Mon., 337–347.

Carpholite of composition $(Fe_{0.76}Mg_{0.24})_2Al_4Si_4O_{12}(OH)_8$ was structurally refined ($R = 0.025$) by the single-crystal X-ray method: $a = 13.797(9)$, $b = 20.20(2)$, $c = 5.116(5)$ Å, orthorhombic space group *Ccca.* A few weak reflections violate the space group, the mineral has optically inclined extinction, and the Raman spectrum has three (rather than two) OH stretching bands, indicating that the true symmetry is monoclinic, probable space group *P2/c* or *Pc.* It is concluded that order-disorder involving H atoms, and cation or anion impurities in two large cavities in the structure can produce a lower symmetry, which is negligible for X-ray diffraction but is sufficient to alter optical and spectroscopic properties. **J.L.J.**

Klyuchevskite

M.G. Gorskaya, S.K. Filatov, I.V. Rozhdestvenskaya, L.P. Vergasova (1992) The crystal structure of klyuchevskite, $K_3Cu_3(Fe,Al)O_2(SO_4)_4$, a new mineral from Kamchatka volcanic sublimates. Mineral. Mag., 56, 411–416.

Electron microprobe redetermination of the composition of klyuchevskite (Abs., *Am. Mineral.* 75, 1210–1211, 1990) gave the formula $K_{3.00}(Cu_{3.05}Pb_{0.02})_{\Sigma 3.07}(Fe^{3+}_{0.77}$-$Al_{0.21})_{\Sigma 0.98}O_2(S_{3.98}O_{16})$. Single-crystal X-ray structural study ($R = 0.12$) gave monoclinic symmetry, space group *I*2, $D_{calc} = 2.98$ g/cm³. The space group is newly specified, as is the presence of Al rather than Cu in the trivalent position. Klyuchevskite is structurally related to piypite. **J.L.J.**

Komkovite

E.V. Sokolova, A.V. Araktscheeva, A.V. Voloshin (1991) Crystal structure of komkovite. Doklady Akad. Nauk SSSR, 320(6), 1384–1388 (in Russian).

Single-crystal X-ray structural refinement of komkovite showed its (new) space group to be *R*32, chemical formula $BaZr[Si_3O_9]\cdot 2.4H_2O$; $D_{calc} = 3.31$ g/cm³, identical to the previously reported measured value (*Am. Mineral.* 77, 207–208, 1992). **J.P.**

Laumontite

A. Yamazaki, T. Shiraki, H. Nishido, R. Otsuka (1991) Phase change of laumontite under relative humidity-controlled conditions. Clay Science, 8, 79–86.

T. Armbruster, T. Kohler (1992) Re- and dehydration of laumontite: A single-crystal study at 100 K. Neues Jahrb. Mineral. Mon., 385–397.

X-ray powder diffractometry of laumontite from Menashidomari, Hokkaido, Japan, showed that the number of H_2O molecules per formula unit changes from $12H_2O$ at 0–5% relative humidity, to $14H_2O$ at 10–70% relative humidity, to 16–18 H_2O at 80–100% relative humidity. Calculated cell parameters at $12H_2O$ are $a = 14.71(1)$, $b = 13.09(1)$, $c = 7.46(1)$ Å, $\beta = 112.1(1)°$; at $14H_2O$ $a = 14.77(2)$, $b = 13.09(2)$, $c = 7.58(2)$, $\beta = 112.0(1)°$; at 16–18 H_2O cell parameters vary from $a = 14.85–14.90$, $b = 13.19–13.19$, $c = 7.55–7.55$, $\beta = 110.7–110.2°$. X-ray powder data are tabulated for the mineral at 0, 50, and 100% relative humidity.

The above H_2O contents relate to a cell containing 48 O atoms, and for a cell with 12 O atoms ($Z = 4$) the corresponding H_2O contents are 3.0, 3.5, and 4.0–4.5. X-ray single-crystal structural study by Armbruster and Kohler showed that fully hydrated laumontite has 4.5 H_2O pfu. Structural refinements for a sample in which content was varied from 4.3, 3.6, 2.9, and 2.7 H_2O showed a decrease in cell volume and an increase in β angle. Dehydration occurs initially with the release of H_2O linked only by H bonds to the tetrahedral framework and to additional H_2O; subsequently, small amounts of Ca-bonded H_2O are also expelled. At the intermediate stage (3.6 H_2O) the structure has partly occupied H_2O sites proposed to be related to long-range ordering of H_2O. **J.L.J.**

Russellite

K.S. Knight (1992) The crystal structure of russellite: A re-determination using neutron powder diffraction of synthetic Bi_2WO_6. Mineral Mag., 56, 399–409.

Neutron powder diffraction and Rietveld refinement of synthetic Bi_2WO_6, corresponding to the mineral russellite, indicate orthorhombic symmetry, space group $Pca2_1$, $a = 5.43726(2)$, $b = 16.430185(5)$, $c = 5.45842(20)$ Å, $D_{calc} = 9.50$ g/cm³. Strongest lines of the X-ray powder pattern (diffractometer, Cu*Kα* radiation) are 3.151(100,131), 2.738(29,060), 2.729(22,002), 2.719(22,200), 1.926(19,202), 1.650(20,191), 1.646(21,133), and 1.575(21,262). Russellite is isostructural with koechlinite, Bi_2MoO_6. The symmetry, cell parameters, and space group of russellite are new. **J.L.J.**

Discredited Mineral

Katayamalite, Baratovite

W.H. Baur, D. Kassner (1992) Katayamalite and baratovite are structurally identical. Eur. J. Mineral., 4, 839–841.

Baratovite, named in 1975, has been described as monoclinic, space group *C2/c,* composition KLi_3Ca_7-$(Ti,Zr)_2(Si_6O_{18})_2F_2$. Katayamalite, named in 1983, was described as triclinic, composition $(K_{0.89}Na_{0.11})Li_3Ca_7$-$(Ti_{1.95}Fe_{0.05})(Si_6O_{18})_2(OH_{1.76}F_{0.24})$. The centrosymmetrical triclinic cell for katayamalite, $a = 9.721$, $b = 16.923$, $c = 19.942$ Å, $\alpha = 91.43$, $\beta = 104.15$, $\gamma = 89.84°$, can be transposed to a monoclinic *C2/c* cell to yield $a = 16.923$, $b = 9.721$, $c = 20.909$ Å, $\alpha = 89.98$, $\beta = 112.40$, $\gamma = 89.94°$, in good agreement with the cell for baratovite: *a*

= 16.941, b = 9.746, c = 20.907 Å, α = 90, β = 112.50, γ = 90°. The crystal structures of katayamalite and baratovite are identical within experimental error. The only available chemical analysis of baratovite indicates that insufficient F is present to justify two atoms of F in the originally proposed ideal formula $KLi_3Ca_7(Ti,Zr)_2(Si_6O_{18})_2F_2$, and it is concluded that the ideal formula of baratovite should be $KLi_3Ca_7(Ti,Zr)_2(Si_6O_{18})_2(OH,F)_2$, which is the same as the formula for katayamalite.

Discussion. It is not suggested which of the two minerals should be discredited, and a proposal has not been submitted to the CNMMN. **J.L.J.**