

New Mineral Names*

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Bradaczekite*

S.K. Filatov, L.P. Vergasova, M.G. Gorskaya, S.V. Krivovichev, P.C. Burns, V.V. Ananiev (2001) Bradaczekite, NaCu₄(AsO₄)₃, a new mineral species from the Tolbachik volcano, Kamchatka Peninsula, Russia. *Can. Mineral.*, 39, 1115–1119.

The mineral forms aggregates of dark blue grains, each about 0.2 mm long and up to 0.2 mm across. Electron microprobe analysis gave Na₂O 5.17, K₂O 0.35, CuO 43.13, Zn 0.79, Fe₂O₃ 0.38, As₂O₅ 49.62, V₂O₅ 0.13, sum 99.55 wt%, corresponding to (Na_{1.16}K_{0.05})_{Σ1.21}(Cu_{3.74}Zn_{0.07}Fe_{0.03}³⁺)_{Σ3.84}(As_{3.00}V_{0.01})_{Σ3.01}O₁₂, ideally NaCu₄(AsO₄)₃. Crystals are elongate [102], showing mainly {010}, {311}, {111}, and {112}, with numerous additional forms. Adamantine luster, transparent, light blue to white streak, no cleavage, [H = ?], nonfluorescent, $D_{\text{calc}} = 4.77(1)$ g/cm³ for the empirical formula and Z = 4. Optically biaxial negative, $\alpha = 1.76(1)$, $\beta = 1.92(1)$, $\gamma = 1.96(1)$, $2V_{\text{calc}} = 50^\circ$, $Z = b$, $X \wedge c = 23^\circ$; strongly pleochroic, X = violet red, Y = green, Z = greenish blue. Single-crystal X-ray structure study indicated monoclinic symmetry, space group *C2/m*, $a = 12.051(1)$, $b = 12.434(1)$, $c = 7.2662(7)$ Å, $\beta = 117.942(1)^\circ$ as refined from a diffractometer pattern (CuK α radiation) with strongest lines of 3.60(21, 202, 131), 3.43(100, 112, 310), 3.21(35,002), 2.791(24, 402), and 2.683(30,240).

The mineral, which is a member of the alluadite group and has been synthesized, is a fumarolic product associated with hematite, tenorite, lammerite, urusovite, orthoclase, and johillerite at the North Breach of the Tolbachik Great fissure eruption, Kamchatka Peninsula, Russia. The new mineral name is for crystallographer Hans Bradaczek (b. 1940) of the Free University of Berlin. Type material is in the Mining Museum of the Mining Institute, Saint Petersburg, Russia. **J.L.J.**

Felbertalite*

D. Topa, E. Makovicky, A.J. Criddle, W.H. Paar, T. Balič-Zunič (2001) Felbertalite, Cu₂Pb₆Bi₈S₁₉, a new mineral species from Felbertal, Salzburg Province, Austria. *Eur. J. Mineral.*, 13, 961–972.

Electron microprobe and unit-cell results were abstracted previously (*Am. Mineral.*, 86, p. 199, 2001). The mineral occurs as crystals up to 0.5 mm long and 0.2 mm across. Opaque,

metallic luster, grayish black streak, brittle, uneven fracture, perfect {001} cleavage, $VHN_{25} = 197\text{--}216$. White in reflected light, perceptible bireflectance, slight grayish white to creamy white pleochroism, distinct anisotropy, brown to grayish brown rotation tints. Reflectance percentages in air and in oil are given in 20 nm steps from 400 to 700 nm. A Gandolfi powder pattern (114 mm, Cu radiation) has observed strong lines of 3.78, 3.51, 3.38, 2.320, 2.096, 2.062, and 2.031 Å. The mineral, which is a homologue of junoite, is invariably in contact with lillianite and a junoite-like mineral; other associates are cosalite, galenobismutite, bismuthinite-aikinite members, galena, bismuth, and chalcopyrite. The new name is for the valley of Felbertal in Austria, where the mineral occurs in currently mined quartz-scheelite discordant veins. Type material is in the Geological Institute at the University of Copenhagen, Denmark, in the National History Museum, London, U.K., and in the Mineralogical Institute, University of Salzburg, Austria. **J.L.J.**

Fencooperite*

A.C. Roberts, J.D. Grice, G.E. Dunning, K.E. Venance (2001) Fencooperite, Ba₆Fe₃³⁺Si₈O₂₃(CO₃)₂Cl₃·H₂O, a new mineral species from Trumbull Peak, Mariposa County, California. *Can. Mineral.*, 39, 1059–1064.

J.D. Grice (2001) The crystal structure of fencooperite: unique [Fe₃³⁺O₁₃] pinwheels cross-connected by [Si₈O₂₂] islands. *Can. Mineral.*, 39, 1065–1071.

The mineral occurs as black, anhedral to platy grains, each to 100 μm across, that form aggregates up to 2 mm in diameter. Electron microprobe analysis gave BaO 50.51, Fe₂O₃ 12.77, MnO 0.15, Al₂O₃ 1.35, SiO₂ 27.38, P₂O₅ 0.16, Cl 3.23, CO₂ (calc.) 4.81, H₂O (calc.) 0.98, O ≡ Cl 0.73, sum 100.61 wt%, corresponding to Ba_{5.89}(Fe_{2.86}Mn_{0.04}²⁺)_{Σ2.90}(Si_{8.14}Al_{0.47}P_{0.04})_{Σ8.65}O_{23.18}(CO₃)_{1.95}(Cl_{1.63}O_{1.37})_{Σ3.00}·0.97H₂O, simplified as Ba₆Fe₃Si₈O₂₃(CO₃)₂Cl₃·H₂O. Jet-black to gray-brown color, brittle, grayish black streak, vitreous to adamantine luster, opaque except at thin edges, uneven to subconchoidal fracture, $H = 4\frac{1}{2}\text{--}5$, nonfluorescent, $D_{\text{calc}} = 4.212$ and 4.338 g/cm³ for Z = 1 and the empirical and ideal formulas, respectively. Optically uniaxial negative, $\omega = 1.723(4)$, $\epsilon = 1.711(2)$, strong pleochroism, O = blue black, E = light greenish gray. Single-crystal X-ray structure study ($R = 0.038$) indicated trigonal symmetry, space group *P3m1*; $a = 10.727(5)$, $c = 7.085(3)$ Å as refined from a 114 mm Debye–Scherrer powder pattern (CuK α radiation) with strongest lines of 3.892(100,201), 3.148(40,211), 2.820(90,202), 2.685(80,220), 2.208(40,401), and 2.136(40,222).

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

The mineral, also known to be present at the Esquire no. 7 claim in Fresno County, California, occurs in gillespite-rich zones within sanbornite-quartz lenses at Trumbull Peak, near El Portal, Mariposa County, California. Other associated minerals are titantaramellite, anandite, kinoshitalite, celsian, alforsite, barite, diopside, and pyrrhotite. The new mineral name is for mineral collector Joseph Fenimore Cooper, Jr. (b. 1937), of Santa Cruz, California. Type material is in the National Mineral Collection at the Geological Survey of Canada, Ottawa. **J.L.J.**

Hydroxylcarbonate-(Nd), hydroxylcarbonate-(La)

G. Pantó, Z. Maksimović (2001) Two new rare earth minerals in an unusual mineralization of the Nissi bauxite deposit, Greece. *Acta Geol. Hung.*, 44(1), 81–93.

The minerals occur as irregular segregations, veinlets, and as grains up to $70 \times 100 \mu\text{m}$ within black Mn-oxide concentrations at the Nissi bauxite deposit in the Lokris area northwest of Athens, Greece.

Hydroxylcarbonate-(Nd). One of five listed electron microprobe analyses has La_2O_3 17.9, Pr_2O_3 7.2, Nd_2O_3 32.5, Sm_2O_3 6.1, Eu_2O_3 1.4, Gd_2O_3 2.6, Dy_2O_3 0.3, Y_2O_3 0.3, CaO 5.5, F 0.4, CO_2 22.1 (calc.), H_2O (by difference) 3.8, $\text{O} = \text{F}$ 0.1, sum 100 wt%, corresponding to $(\text{Nd}_{0.39}\text{La}_{0.22}\text{Pr}_{0.09}\text{Sm}_{0.07}\text{Gd}_{0.03}\text{Eu}_{0.02}\text{Ca}_{0.20})_{\Sigma 1.02}(\text{CO}_3)_{1.03}(\text{OH})_{0.86}\text{F}_{0.04}$ for $(\text{O},\text{OH},\text{F}) = 4$.

Hydroxylcarbonate-(La). One of two listed electron microprobe analyses has La_2O_3 35.3, Pr_2O_3 7.8, Nd_2O_3 28.0, Sm_2O_3 2.8, Eu_2O_3 0.7, Gd_2O_3 1.2, Y_2O_3 0.1, F not detected, CO_2 (calc.) 20.1, H_2O (by difference) 4.0, sum 100 wt%, corresponding to $(\text{La}_{0.48}\text{Nd}_{0.36}\text{Pr}_{0.10}\text{Sm}_{0.04}\text{Eu}_{0.01}\text{Gd}_{0.01})_{\Sigma 1.00}(\text{CO}_3)(\text{OH})_{0.98}$.

Discussion. The respective compositions correspond to those of hydroxylbastnaesite-(Nd) and hydroxylbastnaesite-(La). The new names seem to have been introduced unnecessarily to signify the OH end-members. **J.L.J.**

Kampfite*

L.C. Basciano, L.A. Groat, A.C. Roberts, J.D. Grice, G.E. Dunning, E.E. Foord, I.M. Kjarsgaard, R.E. Walstrom (2001) Kampfite, a new barium silicate carbonate mineral species from Fresno County, California. *Can. Mineral.* 39, 1053–1058.

Electron microprobe analysis gave Na_2O 0.08, CaO 0.06, BaO 57.72, SiO_2 20.14, Al_2O_3 7.76, CO_2 (calc.) 5.69, H_2O (calc.) 1.16, Cl 5.60, $\text{O} = \text{Cl}$ 1.26, sum 96.95 wt%, corresponding to $(\text{Ba}_{5.83}\text{Na}_{0.04}\text{Ca}_{0.02})_{\Sigma 5.89}(\text{Si}_{15.18}\text{Al}_{2.36})_{\Sigma 7.54}\text{O}_{15.08}(\text{CO}_3)_2\text{Cl}_2[(\text{H}_2\text{O})\text{Cl}_{0.45}]_{\Sigma 1.45}$, ideally $\text{Ba}_6[(\text{Si},\text{Al})\text{O}_2]_8(\text{CO}_3)_2\text{Cl}_2(\text{Cl},\text{H}_2\text{O})_2$. The presence of H_2O and CO_3 was confirmed by infrared spectroscopy. The mineral occurs as light blue-gray, irregular masses to 1 cm; vitreous luster, translucent, brittle, white streak, $H = 3$, uneven fracture, perfect {001} cleavage, nonfluorescent, $D_{\text{calc}} = 3.51 \text{ g/cm}^3$ for the empirical formula and $Z = 1$. Optically uniaxial negative, $\omega = 1.642(2)$, $\varepsilon = 1.594(2)$, nonpleochroic. Single-crystal X-ray study indicated hexagonal symmetry, possibly space group $P6_3mc$; $a = 5.244(2)$, $c = 29.83(1) \text{ \AA}$ as refined from a 114 Debye–Scherrer powder pattern ($\text{CuK}\alpha$ radiation) with strongest lines of 14.67(100,002), 3.883(100,104), 3.357(50,106), 2.988(60,0.0.10), 2.887(50,108), 2.616(70,110), and 1.969(50,1.1.10). The structure has simi-

larities to that of cymrite.

The new mineral occurs in a quartz-sanbornite outcrop at the Esquire no. 1 claim, Rush Creek, eastern Fresno County, California. Among the other associated minerals are celsian, fresnoite, macdonaldite, titantaramellite, traskite, witherite, and pyrrhotite. The new mineral, which also occurs sparingly at the Esquire no. 7 claim along Big Creek, Fresno County, is named for mineralogist Anthony Robert Kampf (b. 1948) of the Los Angeles County Museum of Natural History. Type material is in the M.Y. Williams Museum at the University of British Columbia, Vancouver, and in the national Mineral Collection at the Geological Survey of Canada, Ottawa.

Discussion. The last term in the ideal formula is given as $(\text{Cl},\text{H}_2\text{O})_2$, but the empirical formula indicates that H_2O is predominant, i.e., $(\text{H}_2\text{O},\text{Cl})_2$. **J.L.J.**

Lukrahnite*

W. Krause, G. Blass, H.-J. Bernhardt, H. Effenberger (2001) Lukrahnite, $\text{CaCuFe}^{3+}(\text{AsO}_4)_2[(\text{H}_2\text{O})(\text{OH})]$, the calcium analogue of gartrellite. *Neues Jahrb. Mineral., Mon.*, 481–492.

The mineral forms yellow spherical aggregates, up to 0.5 mm across, in which individual grains are $<30 \mu\text{m}$. Electron microprobe analysis gave CaO 11.42, NiO 0.50, CoO 0.15, CuO 10.00, ZnO 8.19, PbO 0.69, Al_2O_3 0.37, Fe_2O_3 13.75, Bi_2O_3 <0.05 , P_2O_5 0.16, V_2O_5 <0.05 , As_2O_5 47.72, SO_3 0.09, H_2O (calc.) 5.98, sum 98.57 wt%, corresponding to $(\text{Ca}_{0.98}\text{Pb}_{0.02})_{\Sigma 1.00}(\text{Cu}_{0.60}\text{Zn}_{0.37}\text{Co}_{0.01})_{\Sigma 0.98}(\text{Fe}_{0.83}\text{Ni}_{0.11}\text{Al}_{0.04})_{\Sigma 0.98}[(\text{AsO}_4)_{1.99}(\text{PO}_4)_{0.01}(\text{SO}_4)_{0.01}]_{\Sigma 2.01}[(\text{H}_2\text{O})_{1.22}(\text{OH})_{0.74}]_{\Sigma 1.96}$, simplified as $\text{Ca}(\text{Cu},\text{Zn})(\text{Fe},\text{Zn})(\text{AsO}_4)_2(\text{H}_2\text{O},\text{OH})_2$. Luster varies from dull for aggregates to subadamantine on fracture surfaces, transparent, brittle, light yellow streak, $H = 5$, nonfluorescent, slowly soluble in warm dilute HCl, $D_{\text{calc}} = 4.18 \text{ g/cm}^3$ for $Z = 1$. The IR spectrum is similar to that of gartrellite. Optically biaxial positive, $\alpha = 1.83(1)$, $\beta_{\text{calc}} = 1.834$, $\gamma = 1.89(2)$, $2V = 30(5)^\circ$, moderate pleochroism, $X = \text{yellow}$, $Y, Z = \text{pale yellow}$. Indexing of the X-ray powder pattern (diffractometer, $\text{CuK}\alpha$ radiation) on the basis of similarity to the patterns for gartrellite-type minerals gave triclinic symmetry, space group $P\bar{1}$ (by analogy with gartrellite), $a = 5.457(3)$, $b = 5.539(4)$, $c = 7.399(6) \text{ \AA}$, $\alpha = 68.43(5)$, $\beta = 68.90(4)$, $\gamma = 69.44(5)^\circ$. Strongest lines are 3.416(100,112), 3.186(40,012,102), 2.927(64, 11 $\bar{1}$), 2.700(30,211), and 2.533(30,201,212).

The mineral, which is the Ca analog of gartrellite in the tsumcorite group, is associated with beudantite, adamite, conichalcite, wulfenite, chalcocite, and quartz in specimens from the Tsumeb mine, Namibia. Microprobe analyses also indicate the probable presence of the new mineral as overgrowths, $<10 \mu\text{m}$ thick, on the Ni analog of lotharmeyerite (IMA mineral 99-008) from the Pucher shaft, Schneeberg, Saxony, Germany. The new mineral name is for geologist Ludger Krahn (b. 1957), who provided the initial specimen for study. Type material is in the Mineralogical Institute, University of Bochum, Germany. **J.L.J.**

Polyakovite-(Ce)*

V.A. Popov, L.A. Pautov, E. Sokolova, F.C. Hawthorne, C. McCammon, L.F. Bazhenova (2001) Polyakovite-(Ce),

(REE,Ca)₄(Mg,Fe²⁺)(Cr³⁺,Fe³⁺)₂(Ti,Nb)₂Si₄O₂₂, a new metamict mineral species from the Ilmen Mountains, southern Urals, Russia: mineral description and crystal chemistry. *Can. Mineral.*, 39, 1095–1104.

One wet-chemical and three electron microprobe analyses averaged SiO₂ 19.08, TiO₂ 9.49, FeO 1.09, Fe₂O₃ 4.30 (partitioned by Mössbauer spectroscopy), MnO 0.05, MgO 2.61, CaO 1.06, Cr₂O₃ 7.42, Nb₂O₅ 3.98, ThO₂ 2.79, UO₂ 0.03, Y₂O₃ 0.38, Ce₂O₃ 24.24, La₂O₃ 15.94, Nd₂O₃ 4.76, Pr₂O₃ 2.01, Sm₂O₃ 0.38, H₂O 0.14, sum 99.75 wt%, corresponding to (Ce_{1.87}La_{1.24}Nd_{0.36}Pr_{0.15}Sm_{0.03}Y_{0.04}Ca_{0.24}Th_{0.13})_{Σ4.06}(Mg_{0.82}Fe_{0.19}Mn_{0.01})_{Σ1.02}(Cr_{1.23}Fe_{0.68})_{Σ1.91}(Ti_{1.50}Nb_{0.38})_{Σ1.89}Si_{4.01}O₂₂, with Ce₂MgCr₂Ti₂Si₄O₂₂ as the ideal end-member formula. The mineral occurs as equant anhedral grains, to 2.5 cm across, and as euhedral crystals, elongate [010] to 2 mm, showing {100}, {001}, {201}, { $\bar{2}01$ }, {110}, { $\bar{1}11$ }, { $\bar{1}11$ }, {112}, { $\bar{1}12$ }, and { $\bar{3}02$ }, almost identical to the forms for chevkinite. Black color, vitreous luster, brittle, light brown streak, translucent in thin fragments, conchoidal fracture, $H = 5\frac{1}{2}$ –6, $D_{\text{meas}} = 4.75(7)$, $D_{\text{calc}} = 5.05$ g/cm³ for annealed material. Morphological axial ratios are $a:b:c = 2.320:1:1.922$, $\beta = \sim 100^\circ$. The IR spectrum is almost identical to those of chevkinite-group minerals. Optically isotropic, gray in reflected light, $1.931 < n < 1.935$. X-ray amorphous; single-crystal X-ray structure study ($R = 0.046$) of a grain annealed in air gave monoclinic symmetry, space group $C2/m$, $a = 13.398(1)$, $b = 5.6974(5)$, $c = 11.042(2)$ Å, $\beta = 100.539(2)^\circ$. Strongest lines of the powder pattern (diffractometer, FeK α radiation) are 5.44(40,002), 3.18(50,311), 3.15(40, $\bar{3}12$), 2.849(40,020), 2.715(100,004), and 2.160(45, $\bar{4}21$). The prevalence of Mg over Fe²⁺, and of Cr over Fe³⁺, distinguishes the mineral from chevkinite-(Ce).

The new mineral is associated with calcite, dolomite, fluororichterite, phlogopite, forsterite, monazite-(Ce), clinohumite, chromite, and thorianite in a carbonatite vein and in phlogopite-fluororichterite rock at the N97 mine, Ilmen Natural Reserve, southern Urals, Russia. The new name is for mineralogist Vladislav O. Polyakov (1950–1993). Type material is in the Museum of the Ilmen Natural Reserve at Miass, and in the Fersman Mineralogical Museum, Moscow. **J.L.J.**

Eudialyte analog

R.K. Rastsvetaeva, A.P. Khomyakov (2001) Modular structure of a sodium-rich analogue of eudialyte with the doubled c -parameter and $R3$ symmetry. *Crystallogr. Reports*, 46, 752–757.

The mineral occurs as pink spherical grains, to 1 cm in diameter, in pegmatites at Eveslogchorr Mountain, Khibiny alkaline massif, Kola Peninsula, Russia. Single-crystal X-ray structure study ($R = 0.054$) indicated trigonal symmetry, space group $R3$, $a = 14.239(1)$, $c = 60.733(7)$ Å, $D_{\text{meas}} = 2.88$, $D_{\text{calc}} = 2.87$ g/cm³, $Z = 3$, idealized formula (Na,Sr,K)₃₅Ca₁₂Fe₃Zr₆Ti₅₁O₁₄₄(O,OH,H₂O)₉Cl₃. Lowering of the symmetry is caused mainly by ordering of Ca and systematic displacement of alkali cations from the m plane. **J.L.J.**

Monoclinic uranophane

A.V. Barinova, R.K. Rastsvetaeva, G.A. Sidorenko, D.Yu. Pushcharovskii (2001) Crystal structure of highly symmetrical α -uranophane. *Doklady Akad. Nauk*, 378(2), 201–203 (in Russian).

Single-crystal X-ray structure study ($R = 0.034$) of uranophane from the oxidation zone of a hydrothermal deposit in the Strel'tsov ore field of Transbaykal, Russia, gave monoclinic symmetry, space group $P2_1/b$, $a = 6.670(4)$, $b = 15.92(2)$, $c = 6.985(3)$ Å, $\alpha = 97.3^\circ$, $D_{\text{calc}} = 3.86$ g/cm³ for $Z = 2$. The mineral is concluded to be a polymorph of Ca(UO₂)₂(SiO₃OH)₂·5H₂O, distinct from uranophane and uranophane-beta. **J.L.J.**

Na-Mg pyroxene

M.T. Hutchison, M.B. Hursthouse, M.E. Light (2001) Mineral inclusions in diamonds: associations and chemical distinctions around the 670 km discontinuity. *Contrib. Mineral. Petrol.*, 142, 119–126.

One of two listed electron microprobe analyses has Na₂O 6.21, CaO 5.07, MgO 16.13, MnO 0.47, FeO 3.18, NiO 0.01, Al₂O₃ 8.34, Cr₂O₃ 3.14, TiO₂ 0.01, SiO₂ 57.07, sum 99.63 wt%, corresponding to (Na_{0.422}Mg_{0.368}Ca_{0.190}Mn_{0.014})_{Σ0.994}(Mg_{0.475}Al_{0.345}Cr_{0.087}Fe_{0.070}Fe_{0.020})_{Σ1.000}Si₂O₆. Single-crystal X-ray structure study ($R = 0.056$) indicated monoclinic symmetry, space group $C2/c$, $a = 9.587(4)$, $b = 8.699(6)$, $c = 5.247(4)$ Å, $\beta = 108.33(4)^\circ$, $D_{\text{calc}} = 3.344$ g/cm³ for $Z = 4$. The mineral occurs as inclusions in diamonds from the alluvial deposits of the Juina district in the state of Mato Grosso, Brazil. **J.L.J.**

Sadanagaite series

S.N. Nikandrov, Yu.S. Kobyashev, P.M. Valizer (2001) Sadanagaite series in the Il'menogorsky alkaline complex (Urals, Russia). *Zap. Vseross. Mineral. Obshch.*, 130(1), 95–99 (in Russian, English abs.).

An examination of published chemical analyses for sadanagaite-series amphiboles from worldwide localities indicates that several new members of the series are present. Fifteen analyses are listed, eight of which have $K > Na$; formula Mg/(Mg + Fe) is >0.5 in some analyses and <0.5 in others, and some have $Al > Fe^{3+}$. Various new names with prefixes to the root "sadanagaite" are introduced.

Discussion. Even if the IMA nomenclature system for amphiboles is followed, the introduction of new names still requires CNMMN approval for the species and names. In this regard, there is some confusion insofar as the IMA system defines sadanagaite (*sensu stricto*) as a mineral with $Na > K$, $Fe^{2+} > Mg$, and $Fe^{3+} > Al$; because of the composition of the holotype material, however, the *Glossary of Mineral Species* (1999) defines sadanagaite as having $Na > K$, $Fe^{2+} > Mg$, and $Al > Fe^{3+}$. Presumably, therefore, the mineral with $Fe^{3+} > Al$ would be "ferrisadanagaite," which would be in accord with the IMA-approved name potassic-ferrisadanagaite for the K analog, i.e., $K > Na$, $Fe^{2+} > Mg$, $Fe^{3+} > Al$. **J.L.J.**

NEW DATA

Haiweeite

P.C. Burns (2001) A new uranyl silicate sheet in the structure of haiweeite and comparison to other uranyl silicates. *Can. Mineral.*, 39, 1153–1160.

Single-crystal X-ray structure study ($R=0.042$) of haiweeite from Teofilo Otoni, Minas Gerais, Brazil, gave orthorhombic symmetry, space group $Cmcm$, $a = 7.125(1)$, $b = 17.937(2)$, $c = 18.342(2)$ Å, $D_{\text{calc}} = 2.835$ g/cm³ for $Z = 4$ and the formula $\text{Ca}[(\text{UO}_2)_2\text{Si}_5\text{O}_{12}(\text{OH})_2](\text{H}_2\text{O})_3$. Previous structure results differ (*Am. Mineral.*, 84, 197–198, 1999) but were obtained from a complex grain that may have been twinned. **J.L.J.**

Kupletskite

P.C. Piilonen, A.M. McDonald, A.E. Lalonde (2001) Kupletskite polytypes from the Lovozero massif, Kola Peninsula, Russia: Kupletskite-1A and Kupletskite-Ma2b2c. *Eur. J. Mineral.*, 13, 973–984.

Single-crystal X-ray structure study of holotype kupletskite from Mount Kuivchorr, Lovozero alkaline massif, Kola Peninsula, Russia, confirmed the triclinic symmetry, space group $P\bar{1}$ (*Am. Mineral.*, 84, p. 993, 1999). Single-crystal X-ray structure study ($R = 0.0355$) of kupletskite from Mount Lephke-Nelm, Lovozero massif, showed it to be monoclinic, space group $C2/c$, $a = 5.4022(2)$, $b = 23.226(1)$, $c = 21.1782(9)$ Å, $\beta = 95.246(1)^\circ$, $Z = 4$. The triclinic and monoclinic varieties have a polytypic relationship and are designated kupletskite-1A and kupletskite-Ma2b2c, respectively. The polytypes are distinguishable by X-ray powder patterns. **J.L.J.**

Nacaphite

E. Sokolova, F. C. Hawthorne (2001) The crystal chemistry of the $[M_3\phi_{11-14}]$ trimeric structures: from hyperagpaitic complexes to saline lakes. *Can. Mineral.*, 39, 1275–1294.

Single-crystal X-ray structure study ($R = 0.056$) of holotype nacaphite led to a recognition of twinning and a revision of the unit cell to triclinic, space group $P\bar{1}$, $a = 5.3232(2)$, $b = 12.2103(4)$, $c = 7.0961(2)$ Å, $\alpha = 90.002(1)$, $\beta = 89.998(1)$, $\gamma = 89.965(1)^\circ$, formula $\text{Na}(\text{Na,Ca})_2(\text{PO}_4)\text{F}$, $Z = 4$. **J.L.J.**

Uranopilite

P.C. Burns (2001) A new uranyl sulfate chain in the structure of uranopilite. *Can. Mineral.*, 39, 1139–1146.

Single-crystal X-ray structure study ($R=0.07$) of uranopilite from Joachimsthal, Bohemia, gave triclinic symmetry, space group $P\bar{1}$, $a = 8.896(2)$, $b = 14.029(3)$, $c = 14.339(3)$ Å, $\alpha = 96.610(4)$, $\beta = 98.472(4)$, $\gamma = 99.802(4)^\circ$, $D_{\text{calc}} = 4.045$ g/cm³ for $Z = 2$ and the structural formula $[(\text{UO}_2)_6(\text{SO}_4)\text{O}_2(\text{OH})_6(\text{H}_2\text{O})_6](\text{H}_2\text{O})_8$. The unit cell and formula are new. **J.L.J.**

ERRATUM

In the unbalanced formula for kapitsaite-(Y) referred to in *Am. Mineral.*, 86, p. 1535 (2001), the omission of Na from the authors' crystal-chemical formula was done solely for the purposes of discussing the features of the structure refinement. The abstracted empirical and simplified formulas correctly represent the composition of the mineral.