

New Mineral Names*

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DIVERSILITE-(Ce)*

A.P. Khomyakov, G.N. Nechelyustov, R.K. Rastsvetaeva, Ma Zhesheng (2003) Diversilite-(Ce), Na₂(Ba,K)₆Ce₂Fe²⁺Ti₃[Si₃O₉]₃[SiO₃OH]₃(OH,H₂O)₉—a new silicate with heterogeneous tetrahedral complexes from the Khibiny alkaline massif, Kola Peninsula, Russia. *Zapiski Vseross. Mineral. Obshch.*, 132(5), 34–39 (in Russian, English abs.).

The mineral occurs as a yellowish orange fan-shaped intergrowth, up to 3 mm, in which the crystals are subhedral, up to 2 mm across, and platy on (001). Transparent to translucent, vitreous luster, white streak, brittle, conchoidal fracture, $H = 5$, $D_{\text{meas}} = 3.68(2)$, $D_{\text{calc}} = 3.72 \text{ g/cm}^3$ for $Z = 6$. Optically uniaxial to slightly biaxial, positive, $\omega = 1.705(2)$, $\varepsilon = 1.708(2)$, pleochroism strong, $O = \text{pale yellow}$, $E = \text{yellowish orange}$. Electron microprobe analysis gave Na₂O 2.76, K₂O 5.81, CaO 0.10, SrO 0.42, BaO 24.85, MnO 1.09, FeO 3.10, La₂O₃ 4.84, Ce₂O₃ 6.72, Pr₂O₃ 0.74, Nd₂O₃ 1.21, Sm₂O₃ 0.16, SiO₂ 32.46, TiO₂ 9.17, Nb₂O₅ 1.62, H₂O (Penfield method) 6.15, sum 101.20 wt%, corresponding to Na_{1.98}(Ba_{3.60}K_{2.74})_{Σ6.34}(REE_{1.85}Mn_{0.12}Sr_{0.09}Ca_{0.04})_{Σ2.10}(Fe_{0.96}Mn_{0.04})_{Σ1.00}(Ti_{2.55}Nb_{0.27}Mn_{0.18})_{Σ3.00}Si₁₂O₃₆[(OH)_{7.88}(H₂O)_{3.74}]_{Σ11.62} for Si = 12 and wherein REE = Ce_{0.91}La_{0.66}Nd_{0.16}Pr_{0.10}Sm_{0.02}. The simplified formula is as in the title. Single-crystal X-ray structure study (*Doklady Chem.*, 388, 9–13, 2003) indicated trigonal symmetry, space group $R\bar{3}$; $a = 10.710(2)$, $c = 60.80(2)$ Å as refined from a powder diffractogram (CuK α radiation) with strongest lines of 10.12(27,006), 3.236(100,1.1.15), 2.654(38,223), 2.642(44,3.0.12), and 2.026(61,0.0.30,410).

The mineral, which is compositionally and structurally similar to ilimaussite-(Ce) but has Ti > Nb and K > Na, is associated with nepheline, sodalite, K-feldspar, natrolite, pectolite, aegirine, and others in pegmatite dump material at Mt. Yukspor, Khibiny alkaline massif, Kola Peninsula, Russia. The new mineral name is derived from the Latin *diversus* (heterogeneous) and *silicate*, thus alluding to the compositional diversity and structural complexity of the mineral. Type material is in the Fersman Mineralogical Museum, Moscow, Russia. J.L.J.

HAINEAULTITE*

A.M. McDonald, G.Y. Chao (2004) Haineaultite, a new hydrated sodium calcium titanosilicate from Mont Saint-Hilaire, Quebec: description, structure determination and genetic implications. *Can. Mineral.*, 42, 769–780.

Electron microprobe analysis gave Na₂O 4.70, K₂O 2.09, MgO 0.07, CaO 9.99, MnO 0.25, FeO 0.49, SiO₂ 42.70, TiO₂ 18.86, ZrO₂ 0.31, Nb₂O₅ 5.56, SO₃ 2.60, F 0.17, H₂O (calc.) 10.11, O \equiv F 0.07, sum 97.83 wt%, corresponding to (Na_{2.41}Ca_{1.83}K_{0.71})_{Σ4.95}Ca(Ti_{3.76}Nb_{0.67}Fe_{0.11}Mn_{0.06}Zr_{0.04}Mg_{0.03})_{Σ4.67}(Si_{11.30}S_{0.52})_{Σ11.82}O₃₄(OH_{7.86}F_{0.14})_{Σ8.00}·5H₂O, ideally (Na, Ca)₅Ca(Ti, Nb)₅(Si, S)₁₂O₃₄(OH, F)₈·5H₂O. The mineral occurs as fan-like aggregates of tabular to bladed crystals or as isolated prismatic crystals, elongate [001] to 6 mm, variably showing {100}, {010}, {001}, and {011}. Pale orange, lemon-yellow, less commonly tan or off-white color, transparent to translucent, vitreous luster, brittle, white streak, $H = 3-4$, blocky to splintery fracture, distinct to good cleavages on {100}, {010}, and {001}, nonfluorescent, $D_{\text{calc}} = 2.28 \text{ g/cm}^3$ for $Z = 1$. Optically biaxial positive, $\alpha = 1.599(1)$, $\beta = 1.610(1)$, $\gamma = 1.696(1)$, $2V_{\text{meas}} = 38(1)$, $2V_{\text{calc}} = 41(1)^\circ$, no dispersion, non-pleochroic, orientation $X = b$, $Y = c$, $Z = a$. Single-crystal X-ray structure study ($R = 0.0541$) indicated orthorhombic symmetry, space group $C222$, $a = 7.204(4)$, $b = 23.155(5)$, $c = 6.953(2)$ Å. Strongest lines of a Debye–Scherrer powder pattern (114 mm, CuK α radiation) are 11.564(100,020), 6.932(90,001,110), 5.258(40,130), 4.446(40,041), 3.052(75,240), 2.977(70,042), and 2.582(40,152,062). The titanosilicate framework is like that in zorite.

The mineral occurs predominantly in altered marble xenoliths in association with quartz, a labuntsovite-group mineral, calcite, sodic amphibole, pectolite, fluorapophyllite, vesuvianite, tainiolite, albite, fluorite, microcline, aegirine, and others at the Poudrette quarry, Mont Saint-Hilaire, Rouville County, Quebec. The new mineral name is Gilles Haineault (b. 1946) of St-Mathieu de Beloeil, Quebec, a collector and dealer of minerals from Mont Saint-Hilaire. Type material is in the Canadian Museum of Nature, Ottawa. J.L.J.

KAPUSTINITE*

I.V. Pekov, N.V. Chukanov, N.A. Yamnova, Yu.K. Egorov-Tismenko, A.E. Zadov (2003) Kapustinite, Na_{5.5}Mn_{0.25}ZrSi₆O₁₆(OH)₂, a new mineral from the Lovozero massif (Kola Peninsula) and new data on the genetic crystallochemistry

* 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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of the Lovozerite group. Zapiski Vseross. Mineral. Obshch., 132(6), 1–14 (in Russian, English abs.).

N.A. Yamnova, Yu.K. Egorov-Tismenko, I.V. Pekov, L.V. Shchegol'kova (2004) Crystal structure of kapustinite $\text{Na}_{5.5}\text{Mn}_{0.25}\text{Zr}[\text{Si}_6\text{O}_{16}(\text{OH})_2]$, a new mineral of the lovozerite group. Doklady Akad. Nauk, 396, 680–685 (in Russian).

The mineral occurs as dark cherry-colored, equant grains up to 4 cm across, and as clusters to 8 cm. Electron microprobe analysis gave Na_2O 24.42, K_2O 0.02, MgO 0.02, CaO 0.18, MnO 2.36, ZnO 0.05, Fe_2O_3 0.36, Y_2O_3 0.17, Ce_2O_3 0.20, Nd_2O_3 0.24, SiO_2 52.82, TiO_2 0.54, ZrO_2 16.38, UO_2 0.28, H_2O (Penfield method) 2.80, sum 100.84 wt%, corresponding to $\text{Na}_{5.38}\text{Y}_{0.01}\text{Ce}_{0.01}\text{Nd}_{0.01}\text{U}_{0.01}\text{Ca}_{0.02}\text{Mn}_{0.23}\text{Fe}_{0.03}\text{Ti}_{0.05}\text{Zr}_{0.91}\text{Si}_6\text{O}_{15.91}(\text{OH})_{2.12}$ for $\text{Si}=6$, simplified as $\text{Na}_{5.5}\text{Mn}_{0.25}\text{ZrSi}_6\text{O}_{16}(\text{OH})_2$. Transparent to translucent, vitreous luster, brittle, pale lilac streak, conchoidal fracture, no cleavage, $H=6$, nonfluorescent, $D_{\text{meas}}=2.78(1)$, $D_{\text{calc}}=2.815$ g/cm^3 for $Z=2$. Optically biaxial negative, $\alpha=1.585(2)$, β and $\gamma=1.589(2)$, $2V_{\text{meas}}<5$, $2V_{\text{calc}}=0^\circ$, nonpleochroic. Single-crystal X-ray structure study ($R=0.075$) indicated monoclinic symmetry, space group $C2/m$, $a=10.693$, $b=10.299(4)$, $c=7.373(4)$ Å, $\beta=91.91(5)^\circ$ as refined from a powder pattern (diffractometer, $\text{CoK}\alpha$ radiation) with strongest lines of 5.313(51,200,11 $\bar{1}$), 3.690(43,220,002), 3.342(84,22 $\bar{1}$, 11 $\bar{2}$), 3.270(92,221,112,130), 2.651(100,400,22 $\bar{2}$), and 2.580(91,222,040).

The mineral, which is in the lovozerite group, is associated with microcline, aegirine, kakovite, sodalite, analcime, natrosilite, villiamite, and others in a hyperagpaitic pegmatite at Kedykverpakhk Mountain, Lovozero alkaline massif, Kola Peninsula, Russia. The new mineral name is for mineralogist Yu. L. Kapustin (1933–2002), who extensively studied alkaline massifs. Type material is in the Fersman Mineralogical Museum, Moscow, Russia. **J.L.J.**

LEOGANGITE*

C.L. Lengauer, G. Giester, E. Kirchner (2004) Leogangite, $\text{Cu}_{10}(\text{AsO}_4)_4(\text{SO}_4)(\text{OH})_6\cdot 8\text{H}_2\text{O}$, a new mineral from the Leogang mining district, Salzburg province, Austria. Mineral. Petrology, 81, 187–201.

The mean of five listed electron microprobe analyses is CuO 51.1, As_2O_5 29.7, SO_3 5.1, SiO_2 0.2, H_2O (by difference) 13.9, sum 100 wt%, corresponding to $\text{Cu}_{9.94}(\text{As}_{0.99}\text{Si}_{0.01}\text{O}_4)_4(\text{S}_{0.99}\text{O}_4)(\text{OH})_6\cdot 8.89\text{H}_2\text{O}$, ideally $\text{Cu}_{10}(\text{AsO}_4)_4(\text{SO}_4)(\text{OH})_6\cdot 8\text{H}_2\text{O}$. The mineral occurs as aggregates of platelets that are flattened on {100}, elongate [010], and up to $100 \times 50 \times <10$ μm . Green color with a bluish tint, vitreous luster, transparent, brittle, light green streak, partings parallel to (010) and (001), perfect {100} cleavage, H uncertain, no twinning, nonfluorescent, $D_{\text{calc}}=3.55$ g/cm^3 for $Z=4$. Optically biaxial negative, $\alpha=1.590(2)$, $\beta=1.740(2)$, $\gamma=1.744(2)$, $2V_{\text{meas}}=18(2)$, $2V_{\text{calc}}=17.3^\circ$, orientation $X=a^*$, $Y=b$, $Z=c$, weak dispersion $r>v$, pleochroism X = blue-green, Y,Z = pale green. Single-crystal X-ray structure study ($R_1=0.095$) indicated monoclinic symmetry, space group $C2/c$; $a=21.770(7)$, $b=12.327(4)$, $c=10.720(3)$ Å, $\beta=92.85(1)^\circ$ as refined from a Gandolfi pattern (114 mm, $\text{CuK}\alpha$ radiation) with strongest lines of 10.85(100,200), 5.44(50,400), 3.625(50,600), 3.090(40,023),

and 2.630(60,513,20 $\bar{4}$).

The mineral occurs as intergrowths with olivenite and malachite that coat small voids within limonitic dolomite breccia whose fragments are coated by pyrite and by galena-bearing tennantite. The holotype mineral was collected from the dump material of the Danielstollen mining area, and a cotype was found in dump material of the Inschlagalm area, both of which are in Schwarzleo Valley, about 10 km from Leogang, Salzburg Province, Austria. The new mineral name is for the locality. Holotype material is in the Naturhistorisches Museum Wien, Austria. **J.L.J.**

MALEEVITE*, PEKOVITE*

L.A. Pautov, A.A. Agakhanov, E. Sokolova, F.C. Hawthorne (2004) Maleevite, $\text{BaB}_2\text{Si}_2\text{O}_8$, and pekovite $\text{SrB}_2\text{Si}_2\text{O}_8$, new mineral species from the Dara-i-Pioz alkaline massif, northern Tajikistan: description and crystal structure. Can. Mineral., 42, 107–119.

The two new minerals occur as anhedral, equant, white to colorless grains up to 2 mm across (maleevite) or 0.2 mm (pekovite). Vitreous luster, transparent to translucent, white streak, brittle, uneven fracture, no cleavage. Orthorhombic, space group $Pnma$, $Z=4$.

Maleevite

One of four listed electron microprobe analyses has BaO 43.64, PbO 0.42, B_2O_3 19.91, SiO_2 34.86, sum 98.84 wt%, corresponding to $(\text{Ba}_{0.99}\text{Pb}_{0.01})_{\Sigma 1.00}\text{B}_{1.99}\text{Si}_{2.01}\text{O}_8$, ideally $\text{BaB}_2\text{Si}_2\text{O}_8$. Formula Pb in the analyses ranges from 0.01 to 0.26. $H=7$, $D_{\text{meas}}=3.78(1)$, $D_{\text{calc}}=3.79$ g/cm^3 , bright blue fluorescence in short-wave ultraviolet light. Optically biaxial negative, $\alpha=1.649(2)$, $\beta=1.656(2)$, $\gamma=1.656(2)$, $2V_{\text{meas}}=5(3)$, $2V_{\text{calc}}=0^\circ$. Single-crystal X-ray structure study ($R=0.031$) gave $a=8.141(2)$, $b=8.176(2)$, $c=9.038(2)$ Å; strongest line of the powder pattern (114 mm Debye–Scherrer, $\text{FeK}\alpha$ radiation) are 6.07(60,011), 3.62(100,210), 3.39(60,121), 2.83(50,013), and 2.021(70,033).

Pekovite

An electron microprobe analysis gave CaO 0.38, SrO 34.15, B_2O_3 23.39, SiO_2 41.56, sum 99.48 wt%, corresponding to $(\text{Sr}_{0.97}\text{Ca}_{0.02})_{\Sigma 0.99}\text{B}_{1.97}\text{Si}_{2.02}\text{O}_8$, ideally $\text{SrB}_2\text{Si}_2\text{O}_8$. $H=6\frac{1}{2}$ –7, nonfluorescent, $D_{\text{meas}}=3.35(2)$, $D_{\text{calc}}=3.36$ g/cm^3 . Optically biaxial negative, $\alpha=1.597(2)$, $\beta_{\text{calc}}=1.627(2)$, $\gamma=1.632(2)$, $2V_{\text{meas}}=43(3)^\circ$, moderate dispersion $v>r$; lath-like, in subparallel intergrowths with straight extinction. Single-crystal X-ray structure study ($R=0.046$) gave $a=8.155(2)$, $b=7.919(1)$, $c=8.921(1)$ Å; strongest lines of the powder pattern (114 mm Debye–Scherrer, $\text{FeK}\alpha$ radiation) are 3.62(100,210), 3.51(90,112), 3.31(80,121), 2.786(90,103,013), and 1.982(70B,232,040).

The minerals, which are the Ba- and the Sr-dominant analogs of danburite, occur within boulders in the moraine of the Dara-i-Pioz glacier, Alai mountain range, Tien Shan, northern Tajikistan. The new mineral names are for Bulgarian mineralogist Mikhael N. Maleev (b. 1940), and for Russian mineralogist Igor V. Pekov (b. 1967). Maleevite was found in pegmatite consisting mainly of quartz, microcline, and aegirine, with subordinate arfvedsonite,

polyolithionite, reedmergnerite, cesium-kupletskite, hyalotekite, albite, and others. Pekovite occurs within a block of quartz, wherein it is also commonly intergrown with pectolite, fluorite, and aegirine. Type specimens of both new minerals are in the Fersman Mineralogical Museum, Moscow, Russia. **J.L.J.**

PETEWILLIAMSITE*

A.C. Roberts, P.C. Burns, R.A. Gault, A.J. Criddle, M.N. Feingolos (2004) Petewilliamsite, $(\text{Ni},\text{Co})_{30}(\text{As}_2\text{O}_7)_{15}$, a new mineral from Johanngeorgenstadt, Saxony, Germany: description and crystal structure. *Mineral. Mag.*, 68, 231–240.

The mineral forms dark violet-red to dark brownish red aggregates of millimetric size in which the crystals are subhedral, equant, and up to 0.5 mm across. Electron microprobe analysis gave NiO 19.45, CoO 19.39, CuO 3.40, CaO 0.17, FeO 0.04, As_2O_5 60.32, sum 101.77 wt%, corresponding to $(\text{Ni}_{14.66}\text{Co}_{13.82}\text{Cu}_{2.41}\text{Ca}_{0.17}\text{Fe}_{0.03})_{\Sigma 31.09}(\text{As}^{5+}_{1.97}\text{O}_7)_{15}$, simplified as $(\text{Ni},\text{Co})_{30}(\text{As}_2\text{O}_7)_{15}$. Vitreous luster, translucent, brittle, uneven fracture, no cleavage, pale reddish brown to purplish brown streak, H uncertain (<5), nonfluorescent, $D_{\text{calc}} = 4.904 \text{ g/cm}^3$ for the empirical formula and $Z = 2$. In reflected light, dark gray, no birefractance or anisotropy, nonpleochroic, orange to multicolored internal reflections; representative reflectance values (SiC standard, air) are 9.59 (470 nm), 9.32 (546), 9.27 (589), and 9.33 (650). Single-crystal X-ray structure study ($R_1 = 0.0768$) indicated monoclinic symmetry, space group $C2$, pronounced subcell with $1/5 a$ and $1/3 c$; $a = 33.264$, $b = 8.473$, $c = 14.160 \text{ \AA}$, $\beta = 104.15^\circ$ as refined from a Debye–Scherrer powder pattern (114 mm, $\text{CuK}\alpha$ radiation) with strongest lines of 4.235(30,020), 3.118(100,513,023), 3.005(60,10.0.3), 2.567(50,10.2.0), 1.637(50,536), and 1.507(30B,553,15.3.3, 20.0.6). The structure is closely related to those of synthetic $\text{Ni}_2(\text{As}_2\text{O}_7)$ and $\text{Co}_2(\text{As}_2\text{O}_7)$.

The mineral occurs on the holotype specimen of paganoite and probably originated by oxidation of the nickeline veinlets that cut the quartz host. The specimen, $4 \times 5 \times 7 \text{ cm}$, was probably mined in the mid-1800s at Johanngeorgenstadt, Saxony, Germany. Other associated minerals are native bismuth, bunsenite, aerugite, xanthosite, and rooseveltite. The new mineral name is for geochemist–crystallographer Peter A. Williams (b. 1950) of the University of Western Sydney, Australia. Type material is in the Systematic Reference Series at the Geological Survey of Canada, Ottawa, and in the Natural History Museum, London, U.K. **J.L.J.**

TARKIANITE*

K.K. Kojonen, A.C. Roberts, O.-P. Isomäki, V.F. Knauf, B. Johanson, L. Pakkanen (2004) Tarkianite, $(\text{Cu},\text{Fe})(\text{Re},\text{Mo})_4\text{S}_8$, a new mineral species from the Hitura mine, Nivala, Finland. *Can. Mineral.*, 42, 539–544.

Electron microprobe analysis gave Fe 0.59, Ni 0.09, Co 0.08, Cu 5.48, Mo 12.32, Re 53.61, Os 0.84, S 26.77 wt%, corresponding to $(\text{Cu}_{0.83}\text{Fe}_{0.10}\text{Ni}_{0.02}\text{Co}_{0.01})_{\Sigma 0.96}(\text{Re}_{2.79}\text{Mo}_{1.22}\text{Os}_{0.04})_{\Sigma 4.03}\text{S}_{8.01}$, simplified as $(\text{Cu},\text{Fe})(\text{Re},\text{Mo})_4\text{S}_8$. Black color, metallic luster, opaque, black streak, brittle, irregular fracture, $H = 5\frac{1}{2}$ –6, grain size $<75 \mu\text{m}$, $D_{\text{calc}} = 7.30 \text{ g/cm}^3$ for the empirical formula and $Z =$

4. Light gray in reflected light in air, brown-gray in oil, isotropic. Representative reflection percentages (WTiC standard) in air and in oil are 38.02, 20.91 (470 nm), 38.87, 21.76 (546), 39.18, 21.84 (589), and 39.30, 22.12 (650). The crystal structure of the synthetic analog is known to be cubic, space group $F\bar{4}3m$; for the mineral, $a = 9.563(1) \text{ \AA}$ was obtained from a Debye–Scherrer powder pattern ($\text{CuK}\alpha$ radiation) with strongest lines of 5.531(100,111), 2.885(90,311), 2.389(90,400), 1.841(90,511), and 1.690(80,440).

The mineral occurs in a sulfide concentrate containing pentlandite, chromite, pyrrhotite, sperrylite, michenerite, froodite, and other PGM from the Hitura mine, Nivala, west-central Finland. The new mineral name is for Prof. Mahmud Tarkian (b. 1941) of the University of Hamburg, Germany, who earlier described an occurrence of the mineral in the Stillwater complex, Montana. Other reported occurrences are in the Coldwell complex (Ontario, Canada), the Lukkulaivaara complex (Karelia, Russia), Ekojoki (Finland), Monchegorsk (Kola Peninsula, Russia) and at two localities in Sweden. The Nivala type material is in the Finnish Museum of Natural History, University of Helsinki, Finland. **J.L.J.**

TRATTNERITE*

W. Postl, F. Walter, K. Ettinger, C. Hauzenberger, H.-P. Bojar (2004) Trattnerite, $(\text{Fe},\text{Mg})_2(\text{Mg},\text{Fe})_3[\text{Si}_{12}\text{O}_{30}]$, a new mineral of the milarite group: mineral data and crystal structure. *Eur. J. Mineral.*, 16, 375–380.

The mineral occurs as deep blue to yellowish green crystals, euhedral to subhedral, typically short prismatic to tabular and rarely long prismatic to 1 mm, showing $\{100\}$, $\{001\}$, $\{101\}$, and $\{111\}$. Vitreous luster, translucent, white streak, brittle, good $\{001\}$ and poor $\{100\}$ cleavages, H not determinable, $D_{\text{calc}} = 2.68 \text{ g/cm}^3$ for $Z = 2$ and the empirical formula. Optically uniaxial negative, $\omega = 1.589(1)$, $\epsilon = 1.586(1)$, strong pleochroism, $O =$ deep blue, $E =$ yellowish green. Electron microprobe analysis gave Na_2O 0.03, K_2O 0.33, CaO 0.02, MgO 9.75, MnO 0.56, ZnO 0.36 Al_2O_3 0.21, Fe_2O_3 17.93, TiO_2 0.07, SiO_2 70.80, sum 100.06 wt%, which for $\text{Si} = 12$ and $\text{Fe}^{2+}/\text{Fe}^{3+}$ charge-balanced for 30 O corresponds to $(\text{K}_{0.07}\text{Na}_{0.01})_{\Sigma 0.08}(\text{Mg}_{2.46}\text{Fe}_{1.99}^{3+}\text{Fe}_{0.30}^{2+}\text{Mn}_{0.08}\text{Zn}_{0.05}\text{Al}_{0.04}\text{Ti}_{0.01})_{\Sigma 4.93}[\text{Si}_{12}\text{O}_{30}]$. No H_2O content was detected by IR. The Mg and Fe distribution, as in the simplified formula in the title, was determined by single-crystal X-ray structure study ($R = 0.025$), which indicated hexagonal symmetry, space group $P6/mcc$; $a = 10.050(1)$, $c = 14.338(2) \text{ \AA}$ by refinement from a powder pattern (diffractometer, $\text{CuK}\alpha$ radiation) with strongest lines of 8.7(97,100), 7.17(100,002), 5.535(96,102), 5.026(61,110), 4.352(53,200), 3.207(85,211), and 2.767(38,204). The mineral is a member of the milarite (osumilite) group and is distinct in its small content of K.

The mineral occurs in small cavities within a Si-rich xenolith from the Stradner Kogel haüyne–nephelinite quarry near Bad Gleichenberg, eastern Styria, Austria. Associated minerals are sanidine, plagioclase, quartz, tridymite, hematite, orthopyroxene, clinopyroxene, and clinoamphibole. The new mineral name is for mineral collector Walter Trattner, who found the specimen. Type material is in the Landesmuseum Joanneum Graz and in

the Natural History Museum Vienna, Austria. **J.L.J.**

KONDERITE, FE-DOMINANT ANALOG

A.Y. Barkov, M.E. Fleet, R.F. Martin, T.A.A. Halkoaho (2004) A potentially new konderite-like sulfide of Fe, Pb, Cu, Rh, Pd, and Ir from the Penikat layered complex, Finland. *Can. Mineral.*, 42, 499–513.

The mineral is associated with thiospinels of the cuprorhodsite–ferroiridite–cuproiridite series in the Kirakkajuppura PGE deposit within the Penikat complex, Finland. The largest grain is about $100 \times 150 \mu\text{m}$. Cream-colored in reflected light, weakly anisotropic. Numerous electron microprobe analyses indicate $(\text{Cu} + \text{Fe} + \text{Pb} + \text{Ni}) : (\text{Rh} + \text{Ir} + \text{Pd} + \text{Pt} + \text{Co}) : \text{S} = 1:2:4$, i.e., 4:8:16 relative to the formula of konderite, which is hexagonal $(\text{Cu}, \text{Ni}, \text{Fe})_3\text{Pb}(\text{Rh}, \text{Pt}, \text{Ir})_8\text{S}_{16}$. Relative to Pb = 1 in konderite, listed compositions indicate that Pb in the Penikat mineral ranges from 0.85 to 0.37; the latter corresponds to $(\text{Cu}_{2.50}\text{Fe}_{0.44}\text{Ni}_{0.06})_{\Sigma 3.00}(\text{Fe}_{0.78}\text{Pb}_{0.37})_{\Sigma 1.15}(\text{Rh}_{6.08}\text{Ir}_{1.00}\text{Pt}_{0.55}\text{Co}_{0.13}\text{Pt}_{0.01})_{\Sigma 7.77}\text{S}_{16.10}$, which may be the Fe-dominant analog (Fe > Pb) of konderite. **J.L.J.**

OULANKAITE, AG-DOMINANT ANALOG

A.Y. Barkov, M.E. Fleet, R.F. Martin, M. Tarkian (2004) Compositional variations in oulankaite and a new series of argentian oulankaite from the Lukkulaivaara layered intrusion, northern Russian Karelia. *Can. Mineral.*, 42, 439–453.

Numerous electron microprobe analyses of 25 grains of oulankaite from the Lukkulaivaara intrusion (type locality) have shown that there are covariations in $(\text{Pd} + \text{Pt})$ and $(\text{Cu} + \text{Fe} + \text{Ag})$; the suggested generalized formula of the mineral is $(\text{Pd}, \text{Pt})_{5+x}(\text{Cu}, \text{Fe}, \text{Ag})_{4-x}\text{SnTe}_2\text{S}_2$, wherein $0 \leq x < 1$. Compositions extend from Ag-free to Ag-dominant, and one of 10 listed analyses for which Ag predominates in $(\text{Cu} + \text{Fe} + \text{Ag})$ has Pd 42.01, Pt 2.41, Cu 6.00, Fe 2.62, Ag 12.15, Sn 9.05, Te 19.83, S 4.72, sum 98.79 wt%, corresponding to $(\text{Pd}_{5.31}\text{Pt}_{0.17})_{\Sigma 5.48}(\text{Ag}_{1.52}\text{Cu}_{1.27}\text{Fe}_{0.63})_{\Sigma 3.42}\text{Sn}_{1.03}\text{Te}_{2.09}\text{S}_{1.98}$. **J.L.J.**

(Pd,Ni)₂Te₂Sb

G.R. Olivo, P. Theyer (2004) Platinum-group minerals from the McBratney PGE–Au prospect in the Flin Flon greenstone belt, Manitoba, Canada. *Can. Mineral.*, 42, 667–681.

One of 11 listed electron microprobe analyses has Pd 31.93, Ni 2.40, Fe 0.38, Bi 0.36, As 0.23, Sb 21.38, Te 43.48, sum 100.16 wt%, corresponding to $(\text{Pd}_{1.73}\text{Ni}_{0.24}\text{Fe}_{0.04})_{\Sigma 2.01}(\text{Te}_{1.96}\text{Sb}_{1.01}\text{As}_{0.02}\text{Bi}_{0.01})_{\Sigma 3.00}$. The mineral occurs as euhedral grains of unstated form and size, but a photomicrograph of a composite grain indicates at least $20 \times 40 \mu\text{m}$. Creamy white in reflected light, strongly anisotropic with rotation tints of greenish gray, pink, and brownish orange. The mineral occurs mainly within pyrite, less commonly in dolomite or at the contact between pyrite and chalcopyrite, and in association with sperrylite. **J.L.J.**

CS-DOMINANT ANALOG OF POLYLITHIONITE

Ru Cheng Wang, Huan Hu, Ai Cheng Zhang, Xiao Long Huang, Pei Ni (2004) Pollucite and the cesium-dominant analogue

of polyolithionite as expressions of extreme Cs enrichment in the Yichun topaz–lepidolite granite, southern China. *Can. Mineral.*, 42, 883–896.

One of numerous listed electron microprobe analyses has Cs_2O 22.25, Rb_2O 0.44, K_2O 2.26, Li_2O (empirical estimate) 4.00, MnO 0.14, Al_2O_3 17.41, SiO_2 47.21, F 5.88, O = F 2.47, sum 97.12 wt%, corresponding to $(\text{Cs}_{0.75}\text{K}_{0.23}\text{Rb}_{0.02})_{\Sigma 1.00}(\text{Al}_{1.33}\text{Li}_{1.27}\text{Mn}_{0.01})_{\Sigma 2.61}(\text{Si}_{3.72}\text{Al}_{0.28})_{\Sigma 4.00}\text{F}_{1.46}(\text{OH})_{0.54}$ for 11 O and OH = 2–F. The compositions plot in the Cs-dominant polyolithionite field and show a K-for-Cs series. The Raman spectrum is similar to that of lepidolite. The mineral occurs as narrow rims, several micrometers wide, on lepidolite in the pollucite-bearing facies of the Yichun topaz–lepidolite granite, southeast of Nanchang, Jiangxi Province, southern China. **J.L.J.**

NEW DATA

ASISITE

M.D. Welch (2004) Pb–Si ordering in sheet-oxychloride minerals: the super-structure of asisite, nominally $\text{Pb}_7\text{SiO}_8\text{Cl}_2$. *Mineral Mag.*, 68, 247–254.

The nominal formula of asisite is $\text{Pb}_7\text{SiO}_8\text{Cl}_2$ and the subcell is tetragonal, space group $I4/mmm$, $a = 3.8932(6)$, $c = 22.803(4)$ Å. Electron diffraction patterns of type asisite have shown the presence of a metrically tetragonal supercell of $14 \times 14 \times 23$ Å, which is attributed to strong ordering of Si within the PbO sheet structure, i.e., a Pb_{12}Si cation stoichiometry. The proposed new formula for asisite, taking into account the superstructure, is $\text{Pb}_{12}(\text{SiO}_4)\text{O}_8\text{Cl}_4$ with $Z = 8$. **J.L.J.**

EPISTOLITE

E. Sokolova, F. C. Hawthorne (2004) The crystal chemistry of epistolite. *Can. Mineral.*, 42, 797–806.

Single-crystal X-ray structure study of epistolite from the Ilimaussaq alkaline complex, South Greenland, gave triclinic symmetry, space group $P\bar{1}$, $a = 5.460(1)$, $b = 7.170(1)$, $c = 12.041(2)$ Å, $\alpha = 103.63(3)$, $\beta = 96.01(3)$, $\gamma = 89.98(3)^\circ$, $D_{\text{calc}} = 2.987 \text{ g/cm}^3$ for $Z = 1$. Electron microprobe analysis gave Na_2O 14.45, K_2O 0.27, CaO 1.89, MnO 0.34, Fe_2O_3 0.35, TiO_2 10.24, Nb_2O_5 31.43, P_2O_5 0.36, SiO_2 29.59, H_2O (calc.) 10.46, F 1.32, sum 100.43 wt%, which corresponds to $(\text{Na}_{3.79}\text{Ca}_{0.27}\text{Mn}_{0.04})_{\Sigma 4.06}(\text{Nb}_{1.92}\text{Ti}_{1.04}\text{Fe}_{0.04})_{\Sigma 3.00}(\text{Si}_2\text{O}_7)_2\text{O}_2(\text{OH}_{1.44}\text{F}_{0.56})(\text{H}_2\text{O})_4$ for Si = 4 and with K and P attributed to a contaminant mineral. The new ideal formula is $\text{Na}_4\text{Nb}_2\text{Ti}(\text{Si}_2\text{O}_7)_2\text{O}_2(\text{OH})_2(\text{H}_2\text{O})_4$. Epistolite and murmanite, the latter ideally $\text{Na}_4\text{Ti}_4(\text{Si}_2\text{O}_7)_2\text{O}_4(\text{H}_2\text{O})_4$, are not isostructural. **J.L.J.**

ILÍMAUSSITE-(Ce)

G. Ferraris, A. Gula, N.V. Zubkova, D.Yu. Pushcharovsky, E.R. Gobetchiya, I.V. Pekov (2004) The crystal structure of ilimaussite-(Ce), $(\text{Ba}, \text{Na})_{10}\text{K}_3\text{Na}_{4.5}\text{Ce}_5(\text{Nb}, \text{Ti})_6[\text{Si}_{12}\text{O}_{36}][\text{Si}_9\text{O}_{18}(\text{O}, \text{OH})_{24}]\text{O}_6$, and the “ilimaussite” problem. *Can. Mineral.*, 42, 787–795.

Electron microprobe analyses and a single-crystal X-ray structure study ($R = 0.11$) of ilimaussite-(Ce) from the type local-

ity, which is the Ilimaussaq alkaline complex, South Greenland, gave the new unit cell $a = 10.770(3)$, $c = 61.05(2)$ Å, space group $R32$, $Z = 3$. The ideal formula is as given in the title; it is suggested that the diversity in “ilimaussite-like” minerals may be related to compositions in which $21 \leq \text{Si} \leq 24$ atoms per formula unit, and to polytypism related to disorder in one of the layers of silicate sheets that make up the structure. **J.L.J.**

TURANITE

E. Sokolova, F.C. Hawthorne, V.V. Karpenko, A.A. Agakhanov, L.A. Pautov (2004) Turanite, $\text{Cu}^{2+}_5(\text{V}^{5+}\text{O}_4)_2(\text{OH})_4$, from the

Tyuya–Muyun radium–uranium deposit, Osh district, Kyrgyzstan: a new structure for an old mineral. *Can. Mineral.*, 42, 731–739.

Electron microprobe analysis of the holotype specimen confirmed the formula, and single-crystal X-ray structure study ($R_1 = 0.022$) established the symmetry as triclinic, space group $P\bar{1}$, $a = 5.3834(2)$, $b = 6.2736(3)$, $c = 6.8454(3)$ Å, $\alpha = 86.169(1)$, $\beta = 91.681(1)$, $\gamma = 92.425(1)^\circ$, $D_{\text{calc}} = 4.898$ g/cm³ for $Z = 1$. **J.L.J.**