

New Mineral Names*

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BURYATITE*

S.V. Malinko, N.V. Chukanov, V.T. Dubinchuk, A.E. Zadov, E.V. Koporulina (2001) Buryatite, $\text{Ca}_3(\text{Si}, \text{Fe}^{3+}, \text{Al})[\text{SO}_4][\text{B}(\text{OH})_4](\text{OH})_5 \cdot 12\text{H}_2\text{O}$, a new mineral. Zap. Vseross. Mineral. Obshch., 130(2), 72–78 (in Russian, English abs.).

The mineral forms lenticular and streaky segregations, up to 3×10 mm, of finely dispersed particles, iridescent platelets, and rare tabular crystals up to 10 μm across. Dominant forms are {001} and {100}. Electron microprobe analysis gave CaO 25.88, SiO₂ 5.60, B₂O₃ (atomic emission spectroscopy) 5.7, Fe₂O₃ 2.20, Al₂O₃ 0.75, MnO₂ 0.27, MgO 0.38, SO₃ 12.52, H₂O (LOI) 45.8, sum 99.10 wt%, corresponding to $\text{Ca}_{6.00}(\text{Si}_{1.21}\text{Fe}_{0.75}^{3+}\text{Al}_{0.19}\text{Mg}_{0.12}\text{Mn}_{0.04}^{4+})_{\Sigma=1.92}[\text{SO}_4]_{2.03}[\text{B}(\text{OH})_4]_{2.13}[(\text{OH})_{11.30}\text{O}_{0.70}]:23.13\text{H}_2\text{O}$ for $\text{Ca} = 6$ ($Z = 2$), ideally $\text{Ca}_3(\text{Si}, \text{Fe}^{3+}, \text{Al})[\text{SO}_4][\text{B}(\text{OH})_4][\text{OH}]_6 \cdot 12\text{H}_2\text{O}$ for $Z = 1$. Two analyses by SEM (normalized to 100%, same B and H₂O) gave CaO 25.33, 24.97, SiO₂ 4.98, 4.56, Fe₂O₃ 1.39, 1.72, Al₂O₃ nf (not found), 0.75, MnO₂ 1.48, 1.58, SO₃ 15.32, 14.5, Cl nf, 1.00, O \equiv Cl 0, 0.23, sum 100, 100 wt%. Light gray with a lilac tint, dull luster, white streak, perfect {100} cleavage, $H = 2\frac{1}{2}$, $D_{\text{calc}} = 1.895(10)$ g/cm³ for $Z = 4$, soluble in dilute HCl and H₂SO₄. Optically uniaxial negative, colorless, $\omega = 1.532(3)$, $\epsilon = 1.523(3)$. Weak light-blue fluorescence in short-wave ultraviolet light. The infrared spectrum includes diagnostic features for $[\text{B}(\text{OH})_4]^-$ groups at 1235, 1190, 999, and 956 cm⁻¹. Electron diffractograms and analogy with charlesite gave hexagonal symmetry, space group possibly *P31c*; X-ray powder data gave $a = 11.14(1)$, $c = 20.99(5)$, $V = 2256(7)$ Å³. Strongest lines of the powder pattern (44 lines given, 114 mm Debye–Scherrer camera, FeK α radiation, Si standard): 9.70(80,100), 2.736(60,304), 2.596(100,312), 2.374(60,134), 2.121(90,136), 1.833(60,332), and 1.498(70,248).

The mineral occurs in drill core of kurchatovite-sakhaite ore in the Solongo deposit, Buryatiya, Russia, where it is intimately intergrown with up to 30% calcite; 0.2–0.3% magnetite, brucite, and fluoborite are also present in the segregations, which are associated with frolovite veinlets containing vimsite, solongoite, pentahydroborite, and hexahydroborite. Fed-

rovskite, ludwigite, turneaureite, sphalerite, magnetite and calcite are present in the kurchatovite-sakhaite ore hosting the segregations. The new mineral name is for the type locality. The type specimen is in the Fersman Mineralogical Museum, Moscow.

Discussion. The mineral is the Si-dominant analog of charlesite and sturmanite (ettringite group). E.S.G.

BUSSENITE*

A.P. Khomyakov, Yu.P. Men'shikov, G.N. Nechelyustov, Huyun Zhou (2001) Bussenite, $\text{Na}_2\text{Ba}_2\text{Fe}^{2+}\text{TiSi}_2\text{O}_7(\text{CO}_3)(\text{OH})_3\text{F}$, a new mica-like titanosiicate from the Khibiny alkaline massif (Kola Peninsula). Zap. Vseross. Mineral. Obshch., 130(3), 50–55 (in Russian, English abs.).

The mineral occurs as an aggregate of yellow-brown curved plates, 2–5 cm wide and 0.5 mm thick, that macroscopically and microscopically resemble lamprophyllite. Electron microprobe analysis gave Na₂O 8.98, K₂O 0.65, CaO 1.56, SrO 6.78, BaO 28.79, FeO 6.77, MnO 4.68, SiO₂ 18.01, TiO₂ 11.57, Nb₂O₅ 1.04, H₂O 3.90 (Penfield method), CO₂ (calc.) 5.76, F 2.79, O \equiv F 1.17, sum 100.11 wt%, corresponding to $(\text{Na}_{1.94}\text{K}_{0.09})_{\Sigma 2.03}(\text{Ba}_{1.25}\text{Sr}_{0.44}\text{Ca}_{0.19})_{\Sigma 1.88}(\text{Fe}_{0.63}^{2+}\text{Mn}_{0.44})_{\Sigma 1.07}(\text{Ti}_{0.97}\text{Nb}_{0.05})_{\Sigma 1.02}\text{Si}_{2.00}\text{O}_{7.27}(\text{CO}_3)_{0.87}(\text{OH})_{2.89}\text{F}_{0.98}$, ideally $\text{Na}_2\text{Ba}_2\text{Fe}^{2+}\text{TiSi}_2\text{O}_7(\text{CO}_3)(\text{OH})_3\text{F}$. Transparent to translucent, vitreous luster, brittle, white streak, perfect {001} and moderate {110} and $\{\bar{1}10\}$ cleavages, stepped fracture, $H = 4$, $D_{\text{meas}} = 3.63(2)$, $D_{\text{calc}} = 3.65$ g/cm³ for the empirical formula and $Z = 2$. Optically biaxial positive, $a = 1.671(2)$, $\beta = 1.694(2)$, $\gamma = 1.734(3)$, $2V = 71(1)^\circ$, strong dispersion $r > v$, strong pleochroism, X, Z = pale yellow, Y = brownish orange, orientation $Y \approx a$, $c \wedge X \approx 5^\circ$ in obtuse α . Single-crystal X-ray structure study indicated triclinic symmetry, space group *P1*; cell dimensions refined from the powder pattern (diffractometer, CuK α radiation) are $a = 5.419(2)$, $b = 7.042(2)$, $c = 16.334(5)$ Å, $\alpha = 102.45(1)$, $\beta = 93.20(5)$, $\gamma = 90.00(1)^\circ$. Strongest lines are 3.910(44, $1\bar{1}2, 10\bar{3}$), 3.186(100, $1\bar{1}\bar{3}, 11\bar{4}, 005$), 3.055(38, $11\bar{4}, 113$), 2.738(62, $1\bar{2}3, 121$), 2.695(32, $200, 20\bar{1}$), and 2.613(32, $1\bar{2}2, 12\bar{4}$).

The mineral, which has a bafertsite-like crystal structure, occurs in a sodalite-natrolite-calcite veinlet that cuts urtite at Mount Kukisvumchorr, Khibiny alkaline massif, Kola Peninsula, Russia. The new mineral name is for Russian petrologist Irina V. Bussen (b. 1915). Type material is in the Fersman Mineralogical Museum, Moscow. J.L.J.

* 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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CRONUSITE*

S.N. Britvin, X.Y. Guo, V.D. Kolomensky, M.M. Boldyreva, Yu.L. Kretser, M.A. Yagovkina (2001) Cronusite, $\text{Ca}_{0.2}(\text{H}_2\text{O})_2\text{CrS}_2$, a new mineral from the Norton County enstatite achondrite. Zap. Vseross. Mineral. Obshch., 130(30), 29–36 (in Russian, English abs.).

Electron microprobe analysis gave K 0.6, Ca 4.2, Cr 33.7, S 39.1, O 21, H (calc.) 2.65, sum 101.25 wt%, corresponding to $\text{Ca}_{0.17}\text{K}_{0.02}(\text{H}_2\text{O})_{2.14}\text{Cr}_{1.04}\text{S}_{1.96}$ for Cr + S = 3, simplified as $\text{Ca}_{0.2}(\text{H}_2\text{O})_2\text{CrS}_2$. The mineral occurs as black grains, to 1 mm, that are disseminated in enstatite. Opaque, submetallic luster, black streak, $H = 1\frac{1}{2}$, $VHN_{10} = 98$ (82–109), perfect {001} cleavage, $D_{\text{meas}} = 2.51(3)$, $D_{\text{calc}} = 2.55(1)$ g/cm³ for the empirical formula and $Z = 3$. Gray in reflected light, no internal reflection, strong birefractance, pleochroic in gray colors, strong anisotropy with gray polarization colors. Representative reflectance percentages for R_1 and R_2 , given in 20 nm steps from 440 to 700 nm in air, Si standard, are 14.4, 15.8 (460), 15.7, 17.6 (540), 16.2 18.2 (580), and 16.6, 18.6 (640). Single crystals are deformed; indexing of the X-ray powder pattern (six observed lines, diffractometer, $\text{CuK}\alpha_1$ radiation) is in accord with trigonal symmetry, space group $R\bar{3}m$, $R3m$, or $R32$, $a = 3.326(2)$, $c = 33.29(2)$ Å; observed diffraction lines are 11.1(100,003), 5.56(10,006), 3.700(4,009), 2.179(5,104), 2.464(4,107), and 2.180(4,1.0.10), in good agreement with data for synthetic material.

The mineral is associated with enstatite, alabandite, troilite, daubreelite, and Fe oxyhydroxide in the Norton County meteorite. The new mineral name is derived from the Greek name Kronos, one of the Titans in Greek mythology, and alludes to the combined meteor–terrestrial origin in which cronusite is interpreted to have formed by terrestrial weathering of caswellsilverite, NaCrS_2 . Type material is in the Mining Museum of the Mining Institute, Saint Petersburg, Russia. **J.L.J.**

FERRONORDITE-(La)*

I.V. Pekov, N.V. Chukanov, A.G. Turchkova, V.G. Grishin (2001) Ferronordite-(La), $\text{Na}_3\text{Sr}(\text{La,Ce})\text{FeSi}_6\text{O}_{17}$, a new mineral of the nordite group from the Lovozero massif, Kola Peninsula. Zap. Vseross. Mineral. Obshch., 130(2), 53–58 (in Russian, English abs.).

The mineral forms colorless to pale brown spherulites, up to $1\frac{1}{2}$ cm across, and crystals up to $1 \times 5 \times 8$ mm, showing mainly {100}. Electron microprobe analysis gave Na_2O 11.23, CaO 0.53, SrO 12.69, BaO 0.36, MgO 0.30, MnO 2.50, FeO 3.75, ZnO 2.29, La_2O_3 11.36, Ce_2O_3 8.21, Pr_2O_3 1.00, Nd_2O_3 0.89, Al_2O_3 0.14, SiO_2 44.06, sum 99.31 wt%, corresponding to $(\text{Na}_{2.92}\text{Ca}_{0.08})_{\Sigma 3.00}(\text{Sr}_{0.99}\text{Ba}_{0.02})_{\Sigma 1.01}(\text{La}_{0.57}\text{Ce}_{0.41}\text{Pr}_{0.05}\text{Nd}_{0.04})_{\Sigma 1.07}(\text{Fe}_{0.43}\text{Mn}_{0.29}\text{Zn}_{0.23}\text{Mg}_{0.06})_{\Sigma 1.01}(\text{Si}_{5.92}\text{Al}_{0.02})_{\Sigma 5.94}\text{O}_{17}$, ideally $\text{Na}_3\text{Sr}(\text{La,Ce})\text{FeSi}_6\text{O}_{17}$. Transparent, vitreous to greasy luster, white streak, uneven fracture, perfect {100} cleavage, $H = 5$, $D_{\text{meas}} = 3.54(2)$, $D_{\text{calc}} = 3.62(1)$ g/cm³ for $Z = 4$. Optically biaxial negative, $a = 1.624(1)$, $\beta = 1.637(1)$, $\gamma = 1.644(1)$, $2V_{\text{meas}} = 60(15)$, $2V_{\text{calc}} = 72(12)^\circ$, weak dispersion $r > v$, orientation $X = a$, $Z = b$, $Y = c$. Orthorhombic symmetry, space group $Pcca$ by analogy with other members of the nordite group; cell di-

mensions calculated from the X-ray powder pattern (diffractometer, $\text{CoK}\alpha$ radiation) are $a = 14.440(5)$, $b = 5.191(2)$, $c = 19.86(1)$ Å, and strongest lines are 4.21(100,210), 3.323(82,312), 2.964(88,410), 2.873(99,314), and 2.595(58,020).

The mineral, which is the La-dominant analog of ferronordite-(Ce) and is named accordingly, is associated with aegirine, epistolite, steenstrupine-(Ce), serandite, and sphalerite in hyperagpaitic pegmatites at Bol'shoi Punkaruaiiv Mountain, Lovozero alkaline massif, Kola Peninsula, Russia. Type material is in the Fersman Mineralogical Museum, Moscow. **J.L.J.**

GMELINITE-K*

A.P. Khomyakov, L.I. Polezhaeva, Yu.A. Malinovsky (2001) Gmelinite-K, $(\text{K,Na,Ca})_6[\text{Al}_7\text{Si}_{17}\text{O}_{48}] \cdot 22\text{H}_2\text{O}$, a new zeolite mineral from the Lovozero alkaline massif, Kola Peninsula, Russia. Zap. Vseross. Mineral. Obshch., 130(3), 65–71 (in Russian, English abs.).

The mineral occurs as colorless to brownish granular and radial aggregates in which the crystals are columnar to acicular, up to 0.1×3 mm, and commonly have a hexagonal outline, showing {100}, {101}, and {001}. Electron microprobe analysis gave Na_2O 2.94, K_2O 8.44, CaO 1.75, Al_2O_3 20.74, SiO_2 56.56, sum 90.43 wt%. TGA showed a rapid water loss that commenced immediately upon heating. Recalculation of the analysis to 100 wt% requires Na_2O 2.63, K_2O 7.54, CaO 1.56, Al_2O_3 18.53, SiO_2 50.54, H_2O 19.20, corresponding to $(\text{K}_{3.23}\text{Na}_{1.71}\text{Ca}_{0.56})_{\Sigma 5.50}(\text{Al}_{7.34}\text{Si}_{16.98})_{\Sigma 24.32}\text{O}_{48} \cdot 21.51\text{H}_2\text{O}$, simplified as $(\text{K,Na})\text{AlSi}_2\text{O}_6 \cdot 3\text{H}_2\text{O}$. Transparent, vitreous luster, brittle, white streak, conchoidal fracture, $VHN_{30} = 258$ (247–280), $H = 4$, $D_{\text{meas}} = 2.00(2)$, $D_{\text{calc}} = 2.01$ g/cm³ for the empirical formula and $Z = 1$; readily soluble in 10% HCl at room temperature. Optically uniaxial negative, $\omega = 1.477(1)$, $\epsilon = 1.471(1)$. Single-crystal X-ray structure study indicated hexagonal symmetry, space group $P6_3/mmc$; $a = 13.715(2)$, $c = 10.256(2)$ Å as refined from a powder pattern (114 mm Debye–Scherrer, $\text{CrK}\alpha$ radiation) with strongest lines of 11.9(80,010), 5.16(70,021,002), 4.11(100,121,112), 3.27(70,130,013), 2.971(80,040), 2.852(80,041,222), and 2.719(100,123).

The mineral occurs as drusy aggregates in cavities within brecciated pegmatite containing K-feldspar, nepheline, sodalite, cancrinite, amphibole, pyroxene, and other minerals at Mount Alluaiv, Lovozero alkaline massif, Kola Peninsula, Russia. The new mineral name recognizes the predominance of K in the gmelinite series; the Lovozero occurrence is newly designated as the type locality. Type material is in the Fersman Mineralogical Museum, Moscow. **J.L.J.**

KURGANTAITE*

I.V. Pekov, E.V. Lovskaya, N.V. Chukanov, A.E. Zadov, V.N. Apollonov, D.Yu. Pushcharovsky, O. Ferro, S.A. Vinogradova (2001) Kurgantaite, $\text{CaSr}[\text{B}_5\text{O}_9]\text{Cl} \cdot \text{H}_2\text{O}$, revalidation of the mineral species and new data. Zap. Vseross. Mineral. Obshch., 130(3), 71–79 (in Russian, English abs.).

The mineral forms white, fine-grained nodules up to 4 cm across (Kargan-tau), colorless spherulites up to 0.7 mm in diameter consisting of individuals with a pyramidal or with

wedge-shaped terminations (Chelkar), and poorly formed, obliquely triangular platelets up to 0.5 mm (Nepskoye). Two electron microprobe analyses (H₂O calculated on basis of structural refinement) gave for Kargan-tau and Nepskoye, respectively, CaO 14.69, 15.06, SrO 26.43, 26.34, B₂O₃ 45.31, 44.93, Cl 9.58, 9.22, H₂O 4.69, 4.65, Cl ≡ O 2.16, 2.08, sum 98.54, 98.12 wt%, corresponding to Ca_{1.01}Sr_{0.98}[B_{5.02}O₉]Cl_{1.04}·H₂O and Ca_{1.04}Sr_{0.98}[B_{4.99}O₉]Cl_{1.01}·H₂O (for O = 9), ideally CaSr[B₅O₉]Cl·H₂O. Transparent, colorless, white streak, vitreous luster, brittle, medium cleavages in two directions, uneven fracture, $H = 6-6\frac{1}{2}$, $D_{\text{meas}} = 2.99(1)$, $D_{\text{calc}} = 3.07(1)$ g/cm³ for $Z = 1$. Optically biaxial positive, $\alpha = 1.637(1)$, $\beta = 1.638(1)$, $\gamma = 1.675(1)$, $2V_{\text{meas}} < 10$, $2V_{\text{calc}} = 19 \pm 19^\circ$, dispersion not observed. The infrared spectrum includes diagnostic features at 3350, 1645 and 1580 cm⁻¹. X-ray structure study of the sample from Nepskoye (*Crystallogr. Rep.*, 45, p. 410–415, 2000, under the name “strontium hilgardite”) gave triclinic symmetry, space group $P1$, $a = 6.573(1)$, $b = 6.445(1)$, $c = 6.369(1)$ Å, $\alpha = 60.995(2)$, $\beta = 61.257(2)$, $\gamma = 77.191(2)^\circ$, $V = 206.9(1)$ Å³, 1A-polytype. Strongest lines of the powder pattern (27 lines listed, 57.3 mm camera, Cr radiation for Chelkar sample): 5.69(80,100,010), 3.22(90,112,111), 201), 3.13(70,211,011), 121), 2.92(100,200), 2.84(90,020), 2.79(80,102,122), 2.14(70,211, 312,201), and 2.07(70,113,223).

Four neotype specimens were studied. The two nodules contain admixed anhydrite and gypsum, are cut by gypsum veinlets, and are enclosed in gray gypsum-anhydrite rock from western Kargan-tau, Inder uplift (a salt dome), northern Caspian area, western Kazakhstan (original type locality). The spherulites were recovered from the insoluble residue of rock salt from Chelkar, another salt dome in the Caspian area of Kazakhstan. The platelets were recovered from the insoluble residue of “sylvinitite” rock in a core from the Nepskoye potash deposit, near Ust'-Kut, Irkutsk district, Russia. Associated are sylvite, halite, boracite, anhydrite, magnesite, and quartz. The name is for the original type locality. The neotype specimens are in the Fersman Mineralogical Museum, Moscow.

Discussion. The mineral was originally discovered in 1952 by Ya.Ya. Yarzhevskiy (*Am. Mineral.* 40, p. 941, 1955), but was subsequently discredited by von Hodenberg and Kühn (see *Am. Mineral.* 69, p. 214, 1984, and *Mineral. Mag.*, 46, p. 514, 1982). The revalidation was approved by the CNMMN. **E.S.G.**

MIASSITE*

S.N. Britvin, N.S. Rudashevsky, A.N. Bogdanova, D.K. Shcherbachev (2001) Miassite Rh₁₇S₁₅, a new mineral from a placer of the Miass River, Urals. *Zap. Vseross. Mineral. Obshch.*, 130(2), 41–45 (in Russian, English abs.).

The average of five listed electron microprobe analyses is Ru 0.4, Rh 59.3, Pd 6.4, Os 0.3, Ir 0.5, Pt 6.8, Fe 1.4, Ni 1.9, Cu 1.8, S 21.0, sum 99.8 wt%, corresponding to (Rh_{12.98}Pd_{1.36}Pt_{0.79}Ni_{0.73}Cu_{0.64}Fe_{0.56}Ru_{0.09}Ir_{0.06}Os_{0.04})S_{17.26}S_{14.76}, ideally Rh₁₇S₁₅, which is known as a synthetic phase and is isostructural with palladseite, Pd₁₇Se₁₅. Grains are up to 70 × 100 μm, light gray in reflected light, isotropic, no internal reflection, $VHN_{10} = 730$ (724–736), brittle, no cleavage or parting, $D_{\text{calc}} = 7.42$ g/cm³ for $Z = 2$. Representative reflectance percentages (Si standard,

air) are 38.3 (460), 39.0 (500), 39.0 (540), 39.1 (580), and 38.8 (660). Indexing of the X-ray powder pattern (114 mm Debye–Scherrer, FeK α radiation) gave $a = 10.024(5)$ Å, probable space group $Pm3m$; strongest lines are 3.19(70,310), 3.02(90,311), 2.68(50,321), 2.24(90,420), 1.931(80,333,511), and 1.774(100,440).

The mineral occurs as inclusions in isoferroplatinum and is associated with cuprorhodsite, bowieite, vasilite, cooperite, and keithconite in a heavy-mineral concentrate from a small placer located at the upper part of the Miass River, southern Urals, Russia. The new mineral name is for the locality. Type material is in the Mining Museum of the Saint Petersburg Mining Institute, Russia.

Discussion. The authors recognized this to be the same mineral as prassoite, but the premise was that prassoite had never been approved by the CNMMN. However, according to L.J. Cabri (written comm., 2002), prassoite was approved by the CNMMN in April 1971, and type material is in the Natural History Museum, London, U.K. **J.L.J.**

NOVGORODOVAITE*

N.V. Chukanov, D.I. Belakovskii, R.K. Rastsvetaeva, O.V. Karimova, A.E. Zadov (2001) Novgorodovaite, Ca₂(C₂O₄)Cl₂·2H₂O, a new mineral. *Zap. Vseross. Mineral. Obshch.*, 130(4), 32–35 (in Russian, English abs.).

R.K. Rastsvetaeva, N.V. Chukanov, Yu.V. Nekrasov (2001) Crystal structure of novgorodovaite Ca₂(C₂O₄)Cl₂·2H₂O. *Doklady Akad. Nauk*, 381(3), 353–355 (in Russian).

The mineral occurs as aggregates in which the grains are up to 7 mm. Chemical analysis gave C 8.53, H 1.67, and microprobe analysis gave Ca 29.43, Cl 24.56 wt%, corresponding to Ca_{2.00}(C₂O₄)_{0.97}Cl_{1.89}(OH)_{0.17}·2.17H₂O. The ideal formula Ca₂(C₂O₄)Cl₂·2H₂O requires Ca 29.14, C 8.73, Cl 25.77, H 1.47, O 34.89 wt%. Transparent, colorless, brittle, $H = 2\frac{1}{2}$, good {100} and {010} cleavages, $D_{\text{meas}} = 2.38(1)$, $D_{\text{calc}} = 2.40(2)$ g/cm³ for $Z = 2$. Optically biaxial negative, $\alpha = 1.565(2)$, $\beta = 1.645(2)$, $\gamma = 1.725(4)$, $2V_{\text{meas}} = 88(10)$, $2V_{\text{calc}} = 87(3)^\circ$. Single-crystal X-ray structure study ($R = 0.029$) indicated monoclinic symmetry, space group $I2/m$, $a = 6.936(3)$, $b = 7.382(3)$, $c = 7.443(3)$ Å, $\beta = 94.3(1)^\circ$. Strongest lines of the powder pattern (Guinier camera, CuK α_1 radiation) are 5.062(70,110), 4.323(70B,111), 4.063(70B,111), 2.956(80,211), and 2.917(100,112).

The mineral, also known as a synthetic compound, is associated with anhydrite, gypsum, halite, bischofite, magnesite, and hilgardite in a drill-core intersection of evaporite rocks at 850–900 m depth in the Chelkar salt dome, western Kazakhstan. The new mineral name is for mineralogist Margarita Ivanovna Novgorodova (b. 1938), director of the Fersman Mineralogical Museum, Moscow, wherein the type material has been deposited. **J.L.J.**

THOMSONITE-Sr*

I.V. Pekov, E.V. Lovskaya, A.G. Turchkova, N.V. Chukanov, A.E. Zadov, R.K. Rastsvetaeva, N.N. Kononkova (2001) Thomsonite-Sr, (Sr,Ca)₂Na[Al₅Si₅O₂₀]·6–7H₂O, a new min-

eral from the Khibiny massif (Kola Peninsula), and thomsonite-Ca, an isomorphous series. Zap. Vseross. Mineral. Obshch., 130(4), 46–55 (in Russian, English abs.).

Electron microprobe analysis gave Na₂O 3.22, K₂O 0.14, CaO 3.85, SrO 16.27, BaO 0.24, Fe₂O₃ 0.03, Al₂O₃ 27.65, SiO₂ 33.51, H₂O (TGA) 14.1, sum 99.01 wt%, corresponding to (Sr_{1.42}Ca_{0.62}Ba_{0.01})Σ_{2.05}(Na_{0.94}K_{0.03})Σ_{0.97}[Si_{5.05}Al_{4.91}O₂₀]·7.09H₂O, ideally (Sr,Ca)₂Na[Al₅Si₅O₂₀]·6–7H₂O. The mineral occurs as prismatic crystals, up to 0.2 × 0.2 × 1 mm, showing {100}, {010}, {001}, and {110}, some modified by {101} {011}, and {111}. Colorless, vitreous luster, transparent, white streak, brittle, $H = 5$, perfect {100} and good {010} cleavages, $D_{\text{meas}} = 2.47(2)$, $D_{\text{calc}} = 2.61 \text{ g/cm}^3$ for $Z = 4$. Optically biaxial positive, $\alpha = 1.528(2)$, $\beta = 1.532(2)$, $\gamma = 1.540(2)$, $2V_{\text{meas}} = 62(12)$, $2V_{\text{calc}} = 71(5)^\circ$, weak dispersion $r > v$, orientation $X = a$, $Y = c$, $Z = b$. Single-crystal X-ray structure study ($R = 0.039$) indicated orthorhombic symmetry, space group $Pcnn$, $a = 13.050(2)$, $b = 13.123(2)$, $c = 13.241(2) \text{ \AA}$. Strongest lines of the powder pattern (57 mm Debye–Scherrer, FeK α radiation) are 4.66 (80,022,220), 3.49(90,312,321), 3.19(80,223,232,322), 2.960(100,024,204,042), 2.860(100,142,241,412), and 2.691(100,242).

The mineral, for which partial data were abstracted in *Am. Mineral.*, 86, p. 1115 (2001), is associated with microcline, aegirine, annite, astrophyllite, magnetite, fluorapatite, pyrophanite, thomsonite-Ca, and other minerals in hydrothermal veinlets that cut the natrolite-bearing core of a pegmatite at Rasvumchorr Mountain, Khibiny alkaline massif, Kola Peninsula, Russia. The mineral also occurs as zones, up to 0.02 mm wide, in crystals of thomsonite-Ca associated with calcite, tobermorite, fluorapophyllite, thaumasite, and barite in a veinlet at Yuksporn Mountain, Khibiny massif. The new mineral name alludes to the predominance of Sr rather than Ca; consequently, the Ca-dominant mineral is renamed thomsonite-Ca, whereas the Sr-dominant mineral is thomsonite-Sr. Type material of thomsonite-Sr is in the Fersman Mineralogical Museum, Moscow. **J.L.J.**

VANADIUMDRAVITE*

L.Z. Reznitsky, E.V. Sklyarov, Z.F. Ushchapovskaya, N.V. Nartova, A.A. Kashaev, N.S. Karmanov, S.V. Kanakin, A.S. Smolin, E.A. Nekrasova (2001) Vanadiumdravite, NaMg₃V₆[Si₆O₁₈][BO₃]₃(OH)₄, a new mineral of the tourmaline group. Zap. Vseross. Mineral. Obshch., 130(2), 59–72 (in Russian, English abs.).

The mineral forms prismatic crystals, typically 0.15–0.2 mm across and up to 0.5 × 2 mm, that are dominantly subhedral to euhedral. The prism faces {100} and {110} are well expressed; undetermined pyramidal faces may be {101} and {021}. Two electron microprobe analyses of grains richest in V (B, H calc., F by ion-sensitive electrode on a bulk dravite–vanadiumdravite sample; Cl below detection of 0.01–0.03 wt%) gave SiO₂ 31.93, 32.36, TiO₂ 0.11, 0.50, Al₂O₃ 2.52, 4.38, Cr₂O₃ 3.24, 1.87, V₂O₅ 38.98, 39.35, MnO 0.06, 0.00, MgO 8.40, 7.23, CaO 0.03, 0.00, Na₂O 2.58, 2.68, K₂O 0.31, 0.31, H₂O 2.66, 2.29, F 0.24, 0.24, B₂O₃ 9.43, 9.47, sum 100.49, 100.68 wt%, correspond-

ing to Na_{0.92}K_{0.07}Ca_{0.01}Mg_{2.31}Mn_{0.01}Ti_{0.02}Al_{0.55}Cr_{0.47}V_{5.76}[Si_{5.89}O₁₈][BO₃]₃F_{0.14}(OH)_{3.27} and Na_{0.95}K_{0.07}Mg_{1.98}Ti_{0.07}Al_{0.95}Cr_{0.27}V_{5.79}[Si_{5.94}O₁₈][BO₃]₃F_{0.14}(OH)_{2.80}, ideally NaMg₃V₆[Si₆O₁₈][BO₃]₃(OH)₄. Black color, green streak with a yellow-brown tint, resinous luster, brittle, conchoidal fracture, possibly imperfect {101} and {110} cleavages, $H = \sim 7^{1/2}$, $VHN_{50} = 1417$ (1210–1530), $D_{\text{meas}} = 3.32(2)$, $D_{\text{calc}} = 3.35(1) \text{ g/cm}^3$ for $Z = 3$, insoluble in HCl and HNO₃. Optically uniaxial negative, $\omega = 1.786(5)$, $\epsilon = 1.729(4)$, strongly dichroic, $O =$ deep brownish green, $E =$ yellowish green, $O > E$. Single-crystal X-ray structure study gave hexagonal symmetry, space group $R3m$, $a = 16.12(1)$, $c = 7.39(1)$, $V = 1662(3) \text{ \AA}^3$. Strongest lines of the powder pattern (18 lines given, 57.3 mm camera, FeK α radiation, also 22 lines for a sample containing less V): 6.54(90,101), 4.04(80,220), 3.57(70,012), 3.04(90,410), 2.62(100,051), 2.07(90,152), and 1.951(50,342).

Tourmaline, predominantly V-Al, but with Cr, and including near-end-member V-dominant, occurs as an accessory mineral in metamorphic rocks consisting dominantly of quartz, Cr-V-containing diopside, calcite, and secondary tremolite in the Slyudyanka crystalline complex, southern Lake Baikal area, Russia. Associated minerals include Cr-V micas, karelianite, chromite-coulsonite-magnetite, uvarovite-goldmanite, natalyite, pyrite, barite, and V-bearing titanite; a few grains of V-bearing anatase, CuCr₂S₄, and two Ti-V oxides are also present. The name is for the composition and relationship to dravite (tourmaline group). Type specimens are in the Fersman Mineralogical Museum, Moscow. **E.S.G.**

Pd₁₁(Pb,Hg)₂As₂

N.S. Rudashevsky, Yu.L. Kretser, A.G. Bulakh, N.I. Krasnova, V.N. Rudashevsky, P.I. Karchevsky (2001) Platinum, palladium, gold and silver mineralization in carbonatite ores of the Loolekop deposit (Palabora massif, South Africa). Zap. Vseross. Mineral. Obshch., 130(5), 21–35 (in Russian, English abs.).

Electron microprobe analysis of an anhedral grain, about 39 μm across, gave Pd 66.7, As 9.0, Pb 13.8, Hg 9.0, sum 98.5 wt%, corresponding to Pd_{10.95}As_{2.10}(Pb_{1.16}Hg_{0.79})Σ_{1.95}, simplified as Pd₁₁(Pb,Hg)₂As₂. The mineral occurs with sperrylite, cabriite, taimyrite, atokite, majakite, arsenopalladinite, froodite, and mertieite II in carbonatites at the Loolekop deposit, Palabora complex, South Africa. **J.L.J.**

New Data

BORNEMANITE

G. Ferraris, E. Belluso, A. Gula, S.V. Soboleva, O.A. Ageeva, B.E. Borutskii (2001) A structural model of the layer titanosilicate bornemanite based on seidozerite and lomonosovite modules. Can. Mineral., 39, 1665–1673.

Electron microprobe analysis of bornemanite from the Yubileynaya pegmatite, Mount Karnasurt, Lovozero massif, Kola Peninsula, Russia, gave SiO₂ 26.42, Al₂O₃ 0.15, CaO 0.26, SrO 0.72, BaO 12.02, MnO 2.37, FeO 0.22, Nb₂O₅ 10.13, TiO₂ 19.94, ZrO₂ 0.06, K₂O 0.61, Na₂O 18.64, MgO 0.02, F 1.29,

Cl 0.03, P₂O₅ 6.44, H₂O (literature TGA value) 0.7, O ≡ F, Cl 0.55, sum 99.47 wt%, corresponding to (Na_{2.83}Ba_{0.71}K_{0.12}Sr_{0.06}Ca_{0.04}Mg_{0.01})_{Σ3.77}{(Na_{2.64}Ti_{1.00}Mn_{0.30}Fe_{0.03}Al_{0.03})_{Σ4.00}[(Ti_{1.27}Nb_{0.69}Zr_{0.01})_{Σ1.97}O₂Si₄O₁₄] (O_{0.38}(OH)_{0.71}F_{0.62}Cl_{0.01})_{Σ1.72}}(PO₄)_{0.82}, ideally BaNa₃{(Na, Ti)₄[(Ti, Nb)₂O₂Si₄O₁₄](F, OH)₂}PO₄. Electron diffraction patterns indicated monoclinic symmetry, space group *I*11*b*, *a* = 5.498(4), *b* = 7.120(6), *c* = 47.95(4) Å, γ = 88.4(1)°, *D*_{calc} = 3.203 g/cm³ for the empirical formula and *Z* = 4. The unit cell and formula are new. **J.L.J.**

DAOMANITE, HONGSHIITE

Zuxiang Yu (2001) New data of daomanite and hongshiite. *Acta Geol. Sinica*, 75(4), 458–466.

Data are given for daomanite from the villages of Sandao and Tiema, and occurrences are reported to be distributed in a zone extending from Chiching to Qinglong, Yanshan Mountains, Hebei Province, China. Daomanite occurs with sperrylite, cooperite, moncheite, and other Pt minerals within chalcopyrite-bornite veins in hornblende pyroxenite and its contact zones. Various data for daomanite are summarized [see *Am. Mineral.*, 61, p. 184 (1976), and 65, p. 409 (1980)], and reflectance percentages parallel to *a*, *b*, and *c* are given in 10 nm steps from 400 to 700 nm. Orthorhombic, *a* = 5.852, *b* = 15.876, *c* = 3.756 Å, formula type ABCX₂, ideally CuPtAsS₂. Strongest lines of a Debye–Scherrer powder pattern (114 mm, CuK α radiation, 50 lines listed; also with a photographic print) are 7.95(50,020), 3.29(60,140), 2.93(100,200), 2.72(40,131), 1.73(50,122), 1.63(50,142), 1.28(40,342), 1.00(50,193), 0.989(40,522), and 0.930(50,562).

Hongshiite (CuPt) occurs in apatite-bearing actinolitized

diopside at the village of Hongshi, Fengning County, Hebei Province, China, and is also present in a contact-metasomatic deposit at Sandao (see above). Electron diffraction patterns have confirmed the previously reported unit cell (*Am. Mineral.*, 69, 411–412, 1984). Electron microprobe analysis gave Cu 24.8, Rh 0.02, Os 0.2, Pt 75.2, Pb 0.3, sum 100.7 wt%, corresponding to Cu_{1.003}Pt_{0.992}Os_{0.003}Rh_{0.005}.

Discussion. The ABCX₂-type formula for daomanite was reported by Kinshou Ding et al. (*Chinese Sci. Bull.*, 26, 554–557, 1981). In that single-crystal X-ray structure study, however, daomanite was concluded to be monoclinic, with the orthogonal cell dimensions given above and $\beta = 90^\circ$; the high *R* value of 0.36 suggests that confirmation of the formula type is needed. In a subsequent study by Nicheng Shi and Zhesheng Ma (IMA Meeting Abstracts, 1990, p. 341–342), the symmetry was concluded to be orthorhombic and *R* was reduced to 0.25. Written communications by L.J. Cabri, J.D. Grice, J.A. Mandarino, and E.H. Nickel (2002) indicate that neither daomanite nor hongshiite has been approved by the CNMMN. **J.L.J.**

XILINGOLITE

P. Berlepsch, T. Armbruster, E. Makovicky, C. Hejny, D. Topa, S. Graeser (2001) The crystal structure of (001) twinned xilingolite, Pb₃Bi₂S₆, from Mittal–Hohnten, Valais, Switzerland. *Can. Mineral.*, 39, 1653–1663.

Single-crystal X-ray structure study (*R* = 0.0865) of xilingolite gave monoclinic symmetry, *a* = 13.511(3), *b* = 4.0850(11), *c* = 20.649(2) Å, $\beta = 92.15(2)^\circ$. In addition to establishing the space group as *C*2/*m*, the study revealed that the mineral is dimorphous with lillianite, Pb₃Bi₂S₆. **J.L.J.**