

## Thirty-fourth list of new mineral names

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THE present list contains 181 entries. Of these 148 are valid species, most of which have been approved by the IMA Commission on New Minerals and Mineral Names, 17 are misspellings or erroneous transliterations, 9 are names published without IMA approval, 4 are variety names, 2 are spelling corrections, and one is a name applied to gem material. As in previous lists, contractions are used for the names of frequently cited journals and other publications are abbreviated in *italic*.

**Abhurite.** J. J. Matzko, H. T. Evans Jr., M. E. Mrose, and P. Aruscavage, 1985. *C.M.* **23**, 233. At a depth *c.* 35 m, in an arm of the Red Sea, known as Sharm Abhur, *c.* 30 km north of Jiddah, Saudi Arabia, as blister-like protuberances on the surface of tin ingots, forming thin colourless, fragile, 6-sided plates about 1.2 mm in dia., twinned on {0001}. Rhombohedral,  $R\bar{3}m$ ,  $R3m$ , or  $R32$ , *a* 10.0175(3), *c* 44.014(2) Å;  $D_{obs.}$  4.29,  $D_{calc.}$  4.34; uniaxial positive, R.I. 2.06; Composition,  $Sn_3O(OH)_2Cl_2$ . Synthetic material gives nearly identical X-ray powder pattern but is hexagonal. Named for locality.

**Agardite-(La)** and **Agardite-(Ce).** T. Fehr and R. Hochleitner, 1984. *Lapis*, p. 22 and p. 37 [in German]. Both in the oxidation zone at Kamariza mining district nr. Laurion, Greece, as spherical aggregates or rosettes, from colourless, yellow-green to intense bluish green, unrelated to composition. Although the name agardite-(La) was approved by IMA no formal description has yet appeared and agardite-(Ce) was never even submitted to IMA. [*A.M.* **70**, 871.]

**Aeschnyite-(Nd).** P. Zhang and K. Tao, 1982. *Sci. Geol. Sinica*, **10**, 424 [Chinese with English summary]. At Beyun-Obo, Central Mongolia, China, as a radioactive, non-magnetic, partly amorphous, brown or brownish black mass, adamantine lustre, yellow-brown streak, H 5-6, associated with aegirine, fluorite, magnetite, dolomite, and baryte. Orthorhombic, R.I. 2.1-2.4, brittle,  $D_{obs.}$  4.60-5.04. Composition (Nd,Ce,Ca,Th)(Ti,Nb)<sub>2</sub>(O,OH)<sub>6</sub>. Named for composition in accordance with IMA ruling. [*Zap.* **113**, 370.]

**Alacranite.** V. I. Popova, V. A. Popov, A. Clark, V. O. Polyakov, and S. E. Borisovskii, 1986. *Zap.* **115**, 360. First found at Alacran, Pampa Larga, Chile by A. H. Clark in 1970 (rejected by IMA because of insufficient data), then in 1980 at the caldera of Uzon volcano, Kamchatka, USSR, as yellowish orange equant crystals up to 0.5 mm, sometimes flattened on {100} with {100}, {111},  $\{\bar{1}11\}$ , and {110} faces, adamantine to greasy lustre, poor {100} cleavage, brittle, H  $1\frac{1}{2}$ . Monoclinic,  $P2/c$ , *a* 9.89(2), *b* 9.73(2), *c* 9.13(1) Å,  $\beta$  101.84(5)°,  $Z = 2$ ;  $D_{obs.}$  3.43(5),  $D_{calc.}$  3.43; reflectances and microhardness given. Optically biaxial positive,  $\alpha$  2.39(1),  $\gamma$  2.52(2). Composition,  $As_8S_9$ , X-ray powder pattern identical with  $\alpha$ -AsS or  $As_2S_2$ . Named for locality.

**Alumofarmacosiderite.** Italian spelling of aluminopharmacosiderite [33rd List], 1983. *Riv. Min. Ital.* **7**, 119.

**Ammolite.** W. F. Boyd and W. Wight, 1983. *J. Gemmol.* **18**, 551. Formerly known as calcantite or korite, from S. Alberta, Canada, iridescent ammonite material, from a mollusc distantly related to modern Nautilus, is described and illustrated.

**Arsenogoyazite.** K. Walenta and P. J. Dunn, 1984. *Schweiz. Min. Pet. Mitt.* **64**, 11. At the Clara mine, nr. Oberwolfach, central Black Forest, W. Germany, as white, yellowish or greenish reniform crusts with occasional crystal faces, on quartz and baryte, associated with malachite, brochantite, olivenite, barium-pharmacosiderite, and sulphate-free weilerite; translucent, vitreous lustre, conchoidal fracture, H. 4. Hexagonal,  $R\bar{3}m$  or  $R3m$ , *a* 7.10, *c* 17.16 Å,  $Z = 3$ ;  $a_{ph}$  7.04 Å,  $\alpha$  60.60°,  $Z = 1$ ;  $D_{obs.}$  3.35(5),  $D_{calc.}$  3.33; Optically isotropic or weakly birefringent, mean R.I. 1.64. Composition, ideally,  $SrAl_3H(AsO_4)_2(OH)_6$ , the arsenate analogue of goyazite, also close to kemmlitzite [26th List] which contains sulphate as well. Crandallite group. Named for composition.

**Arzakite.** V. Vasil'ev, N. A. Pal'chik, and O. K. Grechishchev, 1984. *Geologiya i fizika*, pt. 7, 54. [Арзакит.] In mercury ores from Arzak,

- Tuva, associated with rhyolite-dacite porphyries, nearly colourless to dirty yellow, somewhat darker than lavrentievite [this List], with milky kaolinite, cinnabar, and other mercury minerals. Monoclinic,  $P2_1/m$ ,  $P2$ , or  $Pm$ ,  $a$  8.99(4),  $b$  5.24,  $c$  18.45(8) Å,  $\beta$  92.28(15)°,  $Z = 5$ ;  $D_{\text{calc.}}$  7.64, R.I.s  $> 2$ ; possible triclinic cell also given. Composition, ideally,  $\text{Hg}_3\text{S}_3(\text{Br},\text{Cl})_2$  only 1.18 at. % Br found so far. Forms series with lavrentievite (this List). Not submitted to IMA. Names for locality. [A.M. 70, 783.]
- Baghdadite.** H. M. Al-Hermezi, D. McKie, and A. J. Hall, 1986. M.M. 50, 119. At Dupezeh mtn., nr. Hero Town (420 m, 44° west of south), Qaladizeh region, NE Iraq, in melilite skarn in contact with banded diorite, as colourless grains or stumpy prismatic crystals, a contact twin was noted; vitreous lustre, no cleavage, associated with perovskite, calcite, wollastonite, melilite. Monoclinic,  $P2_1/a$ ,  $a$  10.42(2),  $b$  10.16(2),  $c$  7.36(1) Å,  $\beta$  91.1°,  $Z = 4$ ;  $D_{\text{obs.}}$  3.46 (synth.  $\text{Ca}_3\text{ZrSi}_2\text{O}_9$ ),  $D_{\text{calc.}}$  3.48. Optically biaxial positive,  $2V \sim 72^\circ$ ,  $\alpha$  1.652,  $\beta$  1.658,  $\gamma$  1.670. Dispersion not discernible.  $\gamma = c$ ,  $\alpha // b$ ,  $\beta = \alpha$ ;  $\text{VHN}_{50}$  725–783 kg/mm<sup>2</sup>;  $H$  6. Composition ideally,  $\text{Ca}_3\text{Zr}[\text{O}_2]\text{Si}_2\text{O}_7$ . Named for Baghdad, capital of Iraq.
- Benleonardite.** C. J. Stanley, A. J. Criddle, and J. E. Chisholm, 1986. M.M. 50, 681. At the dumps of the disused Bambolla mine, Moctezuma, Sonora, Mexico, as monomineralic crusts (<1 mm across) around hessite and partially altered acanthite, it is intergrown with these and an unnamed  $\text{Ag}_4\text{TeS}$  phase; opaque grains < 40  $\mu\text{m}$ , weakly birefractant in plane polarized reflected light, from pale blue–slightly darker blue; not pleochroic; reflectances and microhardness given. Tetragonal,  $a$  6.603(5),  $c$  12.726(6) Å,  $Z = 2$ ;  $D_{\text{calc.}}$  7.79. Composition ideally  $\text{Ag}_8(\text{Sb}, \text{As})\text{Te}_2\text{S}_3$ . Named for Dr Benjamin F. Leonard (1921–), US Geological Survey, Denver, Colorado, vice-chairman of the IMA commission of ore microscopy.
- Bessmertnovite.** Error for Bezmertnovite (Безмертновит) [32nd List] *Riv. Min. Ital.* 1983, 7, 119.
- Bowieite.** G. A. Desborough and A. J. Criddle, 1984. C.M. 22, 543. At Salmon River, Goodnews Bay, Alaska, in three platinum nuggets, as anhydrous grains 60–400  $\mu\text{m}$ . Microhardness and reflectances given. Orthorhombic,  $Pnca$ ,  $a$  8.454–8.473,  $b$  5.995–6.002,  $c$  6.143–6.121 Å,  $Z = 4$ ;  $D_{\text{calc.}}$  6.91–6.96. X-ray powder pattern close to that of kashinite [this List]. Composition  $(\text{Rh},\text{Ir},\text{Pt})_2\text{S}_3$ . Named for Dr S. H. U. Bowie, IGS, London.
- Bulachite.** K. Walenta, 1983. *Der Aufschluss*, 34, 445. At Neubulach on old mining dumps, northern Black Forest, W. Germany, as white to pale green radial, acicular, aggregates on quartz with arsenocrandallite [33rd List], malachite, and azurite, with no cleavage,  $H \sim 2$ ; slightly translucent, silky lustre. Orthorhombic,  $Pmm$ ,  $P2_1 22_1$ ,  $Pma2$ , or  $Pmn2_1$ ,  $a$  15.53,  $b$  17.78,  $c$  7.03 Å;  $Z = 10$ ;  $D_{\text{obs.}}$  2.60,  $D_{\text{calc.}}$  2.55; optically biaxial negative,  $\alpha$  1.540(2),  $\gamma$  1.548(2),  $2V_{\text{ca}}$  66°,  $r > v$ . Composition, ideally,  $\text{Al}_2\text{AsO}_4(\text{OH})_3 \cdot 3\text{H}_2\text{O}$ . Named for the locality.
- Bulaiinite or Bulayinite.** I. V. Nikolaeva, 1977. *Nauka*, p. 46 (Novosibirsk). Mg,  $\text{Fe}^{2+}$  end member of glauconite group. At Bulay suite, E. Siberia. Not approved by IMA. Named for occurrence. [A.M. 70, 871.]
- Calcentite.** See ammolite [this List].
- Cameronite.** A. C. Roberts, D. C. Harris, A. J. Criddle, and W. W. Pinch, 1986. C.M. 24, 379. On three museum specimens of Te-bearing ore from the Good Hope mine, Vulcan, Colorado, USA, as grey metallic, opaque, anhedral grains in masses up to  $2 \times 2$  mm; brittle, subconchoidal fracture, black streak,  $H$  3½. Tetragonal,  $P4_2 m m c$ ,  $P4_2 m c$ , or  $P4_2 m c$ ,  $a$  12.695(2),  $c$  42.186(6) Å,  $Z = 16$ , with a prominent pseudocell of  $a' = a/3 = 4.322$ ,  $c' = c/7 = 6.027$  Å; slightly birefractant in reflected light, pleochroic, pale grey–brownish grey, anisotropic; microhardness and reflectances given. Named for Dr E. N. Cameron, Professor Emeritus of Geology, University of Wisconsin, Madison, Wisconsin, USA, who in 1961 first realized that the mineral was a new species.
- Caminite.** R. M. Haymon and M. Kastner, 1986. A.M. 71, 819. Intergrown with anhydrite in the wall of a black-smoker chimney precipitated around hydrothermal fluids discharging on the East Pacific Rise axis at 21° N. latitude, soft and colourless,  $H$  2½. Tetragonal,  $I4_1/amd$ ,  $a$  5.239,  $c$  12.988 Å; optically uniaxial negative,  $\omega$  1.534,  $\varepsilon$  1.532. Composition  $\text{MgSO}_4 \cdot 0.4\text{Mg}(\text{OH})_2 \cdot 0.2\text{H}_2\text{O}$ . Named for Latin *caminus* meaning chimney.
- Carlosturanite.** R. Compagnoni, G. Ferraris, and M. Mellini, 1985. A.M. 70, 767. In veins cross-cutting the antigorite serpentinite of Sampeyre, in the Monviso ophiolite, Piemonte, Italy, as light brown asbestiform fibres [010], together with fibrous diopside and chrysotile. The mineral dehydrates upon heating to hermatite and chrysotile at 400 °C and to ferromatite at 700 °C. Monoclinic,  $Cm$ ,  $a$  36.70,  $b$  9.41,  $c$  7.29 Å,  $\beta$  101.1°,  $Z = 2$ ;  $D_{\text{obs.}}$  2.63,  $D_{\text{calc.}}$  2.606; R.I. along the fibre 1.605, across it 1.600. Composition, ideally,  $M_{21}(\text{Si},\text{Al})_{12}\text{O}_{28}(\text{OH})_4(\text{OH})_{30} \cdot \text{H}_2\text{O}$  according to a structure model. The mineral or phases like it may develop in serpentinites under low-grade metamorphic conditions. Named for Carlo

- Sturani [1938-76] Professor of Geology at Turin University.
- Chenite.** W. H. Paar, K. Mereiter, R. S. W. Braithwaite, P. Keller, and P. J. Dunn, 1986. *M.M.* **50**, 129. On specimens of oxidized galena with chalcopyrite from the Leadhills area, Scotland, as minute, transparent to translucent, sky-blue, singly terminated crystals from 0.1 to over 1 mm long, elongated approximately along [032]; good {100} cleavage, weakly pleochroic,  $H$   $2\frac{1}{2}$ ; associated with caledonite, linarite, leadhillite, susannite, etc. Triclinic,  $P1$  or  $P\bar{1}$ , with  $a$  5.59(1),  $b$  7.940(1),  $c$  7.976(1) Å,  $\alpha$  112.02(1),  $\beta$  97.37(1),  $\gamma$  100.45(1)°,  $Z = 1$ ,  $V$  326.0 Å<sup>3</sup>;  $D_{\text{obs.}}$  5.98,  $D_{\text{calc.}}$  6.044; biaxial negative,  $2V_{\text{meas.}}$  67(1),  $2V_{\text{calc.}}$  68,  $\lambda(\text{Na})$ ;  $\alpha$  1.871(5),  $\beta$  1.907(5),  $\gamma$  1.927(5); strong dispersion  $r \gg v$ . Composition ideally  $\text{Pb}_4\text{Cu}(\text{SO}_4)_2(\text{OH})_6$ . Infra-red trace showed no  $\text{H}_2\text{O}$ . Named for Dr T. T. Chen, mineralogist at CANMET.
- Cherepanovite.** N. S. Rudashevskii, A. G. Mochalov, N. V. Trubkin, N. I. Shumskaya, V. I. Shkurskii, and T. L. Evstigneeva, 1985. *Zap.* **114**, 464 [Черепановит]. In the Koryak-Kamchatka ultrabasic belt, NE USSR, as 2-3 mm granular intergrowths of Pt minerals, with ferronickel-platinum [33rd List]. Orthorhombic,  $Pnma$  (synth.),  $a$  5.70(2),  $b$  3.59(1),  $c$  6.00(1) Å,  $Z = 4$ ;  $D_{\text{calc.}}$  9.72; microhardness given. Composition ideally RhAs. Names for V. A. Cherepanov (1927-1983), Russian mineralogist and geologist.
- Chiavenite.** Error for chiavennite (33rd List). V. I. Kudryashova, 1985. *Zap.* **114**, 483 [New Mins. XXXIX].
- Chromferide.** M. I. Novgorodova, A. I. Gorshkov, N. V. Trubkin, A. I. Tsepin, and M. T. Dmitrieva, 1986. *Zap.* **115**, 355. [Хромферид.] In the Kumak region, southern Urals, USSR, in gold-quartz veins cutting amphibolites, intergrown with native iron and iron-bearing Cr, as very thin platy inclusions 0.2-0.3 mm, in angular or spherical heterogenic aggregates of 5-7 mm of complex iron silicides and chromides. Opaque. Cubic,  $Pm\bar{3}m$ ,  $a$  2.859(5) Å,  $Z = 1$ ;  $D_{\text{calc.}}$  6.69. In reflected light white and isotropic. Composition  $\text{Fe}_{1.5}\text{Cr}_{0.5-x}$ . Named for composition.
- Chursinite.** V. I. Vasil'ev, Yu. G. Lavrent'ev, and N. A. Pal'chik, 1984. *Zap.* **113**, 341. [Чурсинит.] At Khaidarkan, Kirgizia, in intensely oxidized Sb-As-Hg ores, together with calomel, eglestonite, terlinguaite, corderoite, montroydite, kuznetsovite, shakhovite, poyarkovite, native Hg etc., as light brown or orange-brown, small, equant < 0.2 mm grains or shiny rosettes, occasionally as short prisms; when fresh very close to kuznetsovite; powder sulphur yellow; strong, nearly adamantine lustre, thin flakes are transparent; uneven fracture perpendicular to parting, brittle. Mean microhardness 219 kg/mm<sup>2</sup>, pale grey in reflected light with bluish tinge; reflectances given. Monoclinic,  $P2_1/c$ , with  $a$  8.71(2),  $b$  5.08(2),  $c$  15.66(2) Å,  $\beta$  128.27(11)°,  $Z = 2$ ;  $D_{\text{calc.}}$  9.06. Optically strongly anisotropic. Composition  $(\text{Hg}_2)_3(\text{AsO}_4)_2$ . Named for Russian artist L. A. Chursina. [A.M. **70**, 871.]
- Chvaleticeite.** J. Pašava, K. Breiter, M. Huka, and J. Korecký, 1986. *N. Jb. Min. Mh.* 121. At Chvaletice, eastern Bohemia, in the oxidation zone of pyrite-manganese ores as white fine grained aggregates or pinkish-yellowish green loose coatings, translucent-transparent, vitreous lustre,  $H$   $1\frac{1}{2}$ ; associated with melanterite. Monoclinic,  $C2/c$ ,  $a$  10.05(2),  $b$  7.24(2),  $c$  24.3(1) Å,  $\beta$  98.0(2)°,  $Z = 8$ ;  $D_{\text{obs.}}$  1.84,  $D_{\text{calc.}}$  1.84. Refractive indices  $\alpha$  1.456,  $\gamma$  1.506. Composition  $(\text{Mn,Mg})\text{SO}_4 \cdot 6\text{H}_2\text{O}$ , the Mn-dominant member of the hexahydrate group. Formed by the dehydration of Mg-mallardite and dehydrates rapidly to Mg-jokokutite [31st List], hence unstable and scarce. Named for locality.
- Clairite.** J. E. J. Martini, 1983. *Ann. Geol. Surv. S. Afr.* **17**, 29. At Lone Creek Fall Cave, near Sabie, E. Transvaal, S. Africa, a supergene oxidation product as yellow crystals with perfect {001} cleavage, // extinction. Triclinic,  $a$  9.368,  $b$  9.150,  $c$  52.610 Å,  $\alpha$  88.15°,  $\beta$  90°,  $\gamma$  118.36°,  $Z = 8$ ;  $D_{\text{obs.}}$  2.31,  $D_{\text{calc.}}$  2.32; birefringent,  $\alpha$  1.595,  $\gamma$  1.607. Composition ideally  $(\text{NH}_4)_2\text{Fe}_3(\text{SO}_4)(\text{OH})_3 \cdot 3\text{H}_2\text{O}$ . See also loncreekite and sabieite [both this List]. Named for Mrs Claire Martini, the author's wife. [A.M. **71**, 229.]
- Colquirite.** Error for colquiriite [32nd List], 1983. *Riv. Min. Ital.*, pt. 4, 121.
- Cualstibite.** K. Walenta, 1984. *Chem. d. Erde*, **43**, 255. At the Clara mine, near Oberwolfach, central Black Forest, W. Germany, as bluish-green crusts on baryte and quartz, associated with arsenogoyazite, cornwallite, and goethite; can be massive or in trigonal crystals or pseudomorphous after an unknown mineral with prominent {10 $\bar{1}$ 0} and {0001} faces, bluish-white streak, vitreous lustre, conchoidal fracture,  $H \sim 2$ , transparent-translucent. Trigonal with  $a$  9.20,  $c$  9.73 Å,  $Z = 1$ ;  $D_{\text{obs.}}$  3.18(5),  $D_{\text{calc.}}$  3.25; optically uniaxial or weakly biaxial negative,  $\omega$  1.672(2),  $\epsilon$  1.644(2), colourless. Composition ideally  $\text{Cu}_6\text{Al}_3\text{Sb}_3\text{O}_{18} \cdot 16\text{H}_2\text{O}$  or  $\text{Cu}_6\text{Al}_3(\text{SbO}_4)_3(\text{OH})_{12} \cdot 10\text{H}_2\text{O}$ , contains the same constituents as cyanophyllite [31st List], whose formula is being revised. Named for chemical composition (*cuprum aluminium stibium*). [A.M. **70**, 1329.]
- Cupalite.** L. V. Razin, N. S. Rudashevskii, and L. N. Vyal'sov, 1985. *Zap.* **114**, 90. [Купалит.] In

- alluvial deposits of the Khatyr massif, near the Khatyrka river, NE USSR, in ultrabasic serpentinites, as minute steel-yellow opaque grains with metallic lustre. Orthorhombic,  $a$  6.948,  $b$  4.12,  $c$  10.14 Å,  $Z = 10$  [the unit cell does not fit the powder data well];  $D_{\text{calc.}}$  5.17; microhardness and reflectances given. Composition ideally  $(\text{Cu,Zn})\text{Al}$ , with  $\text{Cu} \gg \text{Zn}$ . Named for chemical composition.
- Cuprofaustite.** A. Kunov, M. Velinova, L. Punev, and V. Dragostinova, 1982. *Geokhim. miner. i petrol. (Bolg. A.N.)*, **16**, 55 [Купрофаустит] (in Bulgarian). At Spakhievo(?), E. Rhodope mts., Bulgaria, as white spherules with bluish tinge, silky lustre, in latite-andesites, together with variscite, wavellite, and kaolinite. Composition  $(\text{Zn,Cu})(\text{Al,Fe})_6(\text{PO}_4)_4(\text{OH})_8$ , in turquoise group. Named for composition. Not approved by IMA.
- Cuproiridsite.** N. S. Rudashevskii, Yu. P. Men'shikov, A. G. Mochalov, N. V. Trubkin, N. I. Shumskaya, and V. V. Zhdanov, 1985. *Zap.* **114**, 187 [Купроиридсит]. At the Kondër massif, Inagli, and at Chad, Aldan shield, Far Eastern USSR, as small grains in ultrabasic rocks. Cubic,  $Fd\bar{3}m$ ,  $a$  9.92 Å,  $Z = 8$ ;  $D_{\text{calc.}}$  7.98; physical properties close to malanite and cuprorhodsite [this List]; microhardness and reflectances given. Composition variable within  $(\text{Cu,Fe})\text{Rh}_2\text{S}_4 - (\text{Cu,Fe})\text{Ir}_2\text{S}_4 - (\text{Cu,Fe})(\text{Pt,Ir,Rh})_2\text{S}_4$ , structurally related to thiospinels. Named for composition.
- Cuprorhodsite.** N. S. Rudashevskii, Yu. P. Men'shikov, A. G. Mochalov, N. V. Trubkin, N. I. Shumskaya, and V. V. Zhdanov, 1985. *Zap.* **114**, 187 [Купрородсит]. At the Kondër massif, Inagli, and at Chad, Aldan shield, Far Eastern USSR, as small grains in ultrabasic rocks. Cubic,  $Fd\bar{3}m$ ,  $a$  9.88 Å,  $Z = 8$ ;  $D_{\text{calc.}}$  6.74; physical properties close to malanite and to cuproiridsite [this List]; microhardness and reflectances given. Composition variable within  $(\text{Cu,Fe})\text{Rh}_2\text{S}_4 - (\text{Cu,Fe})\text{Ir}_2\text{S}_4 - (\text{Cu,Fe})(\text{Pt,Ir,Rh})_2\text{S}_4$ , structurally related to thiospinels. Named for composition.
- Danbaite.** Y. Shuqin, W. Wenying, L. Jinding, and C. Dianfen, 1983. *Kehue Tongbao*, **22**(1), 383. At Danba, Sichung, China, in a Pt-bearing Cu-Ni deposit in an intensely altered ultramafic intrusion, as silver-white botryoidal or spherulitic aggregates reaching 0.15 mm, with strong metallic lustre, no cleavage, forming rims around native Cr. Cubic,  $a$  7.762 Å,  $Z = 32$ ; microhardness and reflectances given; in polished section white with weakly bluish tinge and pale yellowish compared with associated native Cr. Composition  $\text{CuZn}_2$ . Named for locality. [A.M. **69**, 566.]
- Daqingshanite.** R. Yingchen, X. Lulu, and P. Zhizhong, 1983. *Geochemistry (China)*, **2**, 180. In the footwall zone of the Bayan Obo iron ore deposit, in veins cutting dolomite, as minute, pale yellow rhombohedral crystals with rounded edges up to 0.05 mm; greasy-vitreous lustre, perfect  $\{10\bar{1}0\}$  cleavage, conchoidal fracture; associated with huntite, benstonite, strontianite, monazite, phlogopite, and pyrite. Hexagonal with  $a$  10.058(3),  $c$  9.225(3) Å, ( $a_{\text{rh}}$  6.570(3) Å,  $\alpha$  99.87(3)°),  $Z = 3$ ;  $D_{\text{obs.}}$  3.81,  $D_{\text{calc.}}$  3.71; optically uniaxial negative,  $\varepsilon$  1.609,  $\omega$  1.708. Composition ideally  $(\text{Sr,Ca,Ba})_3\text{RE}(\text{PO}_4)\text{CO}_3 - x(\text{OH,F})$ , where  $x = 0.8$ . Named for mountain near the ore deposit. [A.M. **69**, 811.]
- Denisovite.** Yu. P. Men'shikov, 1984. *Zap.* **113**, 718. [Денисовит.] At Mounts Eveslogchorr and Yukspor, Khibin massif, Kola peninsula, USSR, in gneisses near their contact with cataclastic, recrystallized foyaites, forming independent thick veins, as well as being present in pectolite or yuksporite veins as fan-shaped aggregates up to 15 cm in diameter. Associated minerals include K-feldspar, nepheline, aegirine, fluorite, tiny grains of apatite, some biotite and yuksporite [10th List]. Grey with greyish hue, colourless in thin section, silky lustre, splintery fracture, H 4-5. Monoclinic,  $a$  30.92(7),  $b$  7.20(3),  $c$  18.27(5) Å,  $\beta$  95°,  $Z = 10$ ;  $D_{\text{obs.}}$  2.76(2),  $D_{\text{calc.}}$  2.81. Composition  $\text{Ca}_4(\text{K}_{1.4}\text{Ca}_{0.6})_2\text{Si}_6\text{O}_{16}(\text{F,OH})_2$ , close to that of pectolite. Named for A. P. Denisov of the Geological Institute, Kola peninsula. [A.M. **70**, 1329.]
- Denisowite.** T. Fehr, 1986. *Lapis*, **11**, pt. 3, 21. Erroneous transliteration of denisovite [this List].
- Donpeacorite.** E. U. Petersen, L. M. Anovitz, and E. J. Essene, A.M. **69**, 472. At Balmat, New York area, USA, in a manganiferous pod in marble, as 1-3 mm yellow-orange interlocking grains, making up over 50% of a coarse-grained rock; vitreous lustre, perfect  $\{110\}$  cleavage, H 5-6. Orthorhombic,  $a$  18.384(11),  $b$  8.878(7),  $c$  5.226(3) Å,  $Z = 8$ ;  $D_{\text{obs.}}$  3.36(1); optically biaxial negative,  $2V_x$  88°,  $Z // c$ ,  $\alpha$  1.677(2),  $\beta$  1.684(2),  $\gamma$  1.692(2). Composition  $(\text{Mn,Mg})\text{MgSi}_2\text{O}_6$ , a new orthopyroxene. Named for Donald R. Peacor for his work on pyroxenes.
- Doyleite.** G. Y. Chao, J. Baker, A. P. Sabina, and A. C. Roberts, 1985. C.M. **23**, 21. At Mont St Hilaire, Quebec, in albitite veins with calcite and pyrite; at the Francon quarry, Montreal, Quebec, in silicocarbonatite sills with weloganite, cryolite, calcite, quartz, and other minerals; translucent, creamy white or bluish white rosettes, or crystals, tabular on  $\{010\}$ , with faces  $\{010\}$ ,  $\{101\}$  and  $\{10\bar{1}\}$ . H 2½-3, with vitreous, pearly or dull lustre, perfect  $\{010\}$  cleavage. Triclinic,  $P\bar{1}$ ,  $a$  5.002(1),  $b$  5.175(1),  $c$  4.980(2) Å,

- $\alpha$  97.50(1)°,  $\beta$  118.60(1)°,  $\gamma$  104.74(1)°,  $Z = 2$ ;  $D_{\text{obs.}}$  2.48(1),  $D_{\text{calc.}}$  2.48(2); optically biaxial positive,  $\alpha$  1.545(1),  $\beta$  1.553(1),  $\gamma$  1.566(1),  $2V$  77°. Composition  $\text{Al}(\text{OH})_3$ , a new polymorph of bayerite, gibbsite, and nordstrandite. Named for E. J. Doyle of Ottawa, Ontario, who first found the mineral.
- Earlshannonite.** D. R. Peacor, P. J. Dunn, W. B. Simmons, 1984. C.M. **22**, 471. At the Foote Mineral Company spodumene mine, near Kings Mountain, N. Carolina, USA, as euhedral, reddish brown crystals in radial aggregates with rockbridgeite, laueite, mitridatite, and at the Hagendorf pegmatite mine, Bavaria, W. Germany, as radial aggregates of bright yellow crystals coating rockbridgeite-frondelite; two poor cleavages,  $H$  3-4, Monoclinic,  $P2_1/c$ ,  $a$  9.910(13),  $b$  9.669(8),  $c$  5.455 Å,  $\beta$  93.95°,  $Z = 2$ ;  $D_{\text{obs.}}$  2.90(4),  $D_{\text{calc.}}$  2.92; optically biaxial negative  $2V$  64(4)°,  $\alpha$  1.696(4),  $\beta$  1.745(4),  $\gamma$  1.765(4), moderately pleochroic,  $Z = c$ . Composition ideally  $\text{MnFe}_2^+(\text{PO}_4)_2(\text{OH})_2 \cdot 4\text{H}_2\text{O}$ , the Mn analogue of whitmoreite (29th List). Named for Earl V. Shannon, former mineralogist, chemist, curator at the US National Museum. [A.M. **70**, 871.]
- Ehrleite.** G. W. Robinson, J. D. Grice, and J. van Velthuizen, 1985. C.M. **23**, 507. At the Tip Top mine, Black Hills, Custer, S. Dakota, USA, as colourless to white, thick tabular glassy crystals on a matrix of beryl and quartz, with mitridatite, roscherite, hydroxyl-herderite, and goyazite-crandallite. Tabular on {001}, with uneven or conchoidal fracture, traces of a parting on {001}.  $H$   $3\frac{1}{2}$  Triclinic,  $a$  7.32(7),  $b$  7.54(1),  $c$  12.42(4) Å,  $\alpha$  91.19(44),  $\beta$  99.94(82),  $\gamma$  98.64(47)°,  $Z = 1$ ;  $D_{\text{obs.}}$  2.64(2),  $D_{\text{calc.}}$  2.62; biaxial positive,  $\alpha$  1.556(2),  $\beta$  1.560(1),  $\gamma$  1.580(1), for  $\lambda$  589 nm;  $2V_{\text{obs.}}$  62°,  $2V_{\text{calc.}}$  49°. Composition ideally  $\text{Ca}_4\text{Be}_3\text{Zn}_2(\text{PO}_4)_6 \cdot 9\text{H}_2\text{O}$ . Named for H. Ehrle who found the type specimen.
- Eifelite.** K. Abraham, W. Gerbert, O. Medenbach, and W. Schreyer, 1983. *Contr. Min. Petr.* **82**, 252. At Bellerberg, 2 km north of Mayen, Eifel, W. Germany, in vesicles of basement xenoliths ejected with leucite tephrite lava together with roedderite, as colourless or very pale yellow or greenish euhedral hexagonal crystals up to 1 mm long, platy to prismatic, vitreous lustre, no cleavage, white streak. Dominant faces {10 $\bar{1}$ 0}, {0001}, sometimes with {11 $\bar{2}$ 0} and {10 $\bar{1}$ 2}. Hexagonal,  $P6/mcc$ ,  $a$  10.137-10.150,  $c$  14.2223(6) Å,  $Z = 2$ ;  $D_{\text{calc.}}$  2.67; optically uniaxial positive,  $\omega$  1.5445(5),  $\epsilon$  1.5458; not pleochroic. Composition ideally  $\text{KNa}_3\text{Mg}_4\text{Si}_{12}\text{O}_{30}$ , in osumilite group close to roedderite but with more Na. Named for locality.
- Ellenbergerite.** Ch. Chopin, R. Klaska, O. Medenbach, and D. Dron, 1986. *Contr. Min. Petr.* **92**, 316. At Parigi, nr. Martiniana Po, Dora Maira crystalline massif, W. Alps, Italy, in the phengite quartz layer within 10 cm pyropes, as purple mm-sized grains or rarely as elongated hexagonal prisms up to 10 mm long, with talc, kyanite, clinocllore, rutile, and zircon; strongly pleochroic, colourless to deep lilac, with colour zoning.  $H$  6 $\frac{1}{2}$ . Hexagonal,  $a$  12.255(8),  $c$  4.932(4) Å,  $Z = 1$ ;  $D_{\text{obs.}}$  3.15-3.22,  $D_{\text{calc.}}$  3.10 (for Ti rich), 3.17 (for Zr rich). Composition  $\text{Mg}_{6.71}\text{Fe}_{0.03}\text{Ti}_{0.61}\text{Al}_6\text{Si}_{7.92}\text{P}_{0.08}\text{O}_{28}(\text{OH})_{10}$  or structurally  $(\text{Mg,Ti,Zr},\square)_2\text{Mg}_6(\text{Al,Mg})_6(\text{Si,P})_2\text{Si}_6\text{O}_{28}(\text{OH})_{10}$ . Named for Prof. F. Ellenberger of Paris, France.
- Erlianite.** X. Feng and R. Yang, 1986. M.M. **50**, 285. In the Harhada iron deposit, along the Jining-Erlian railway, Inner Mongolia, China, as black fibres, flakes or lathlike aggregates up to 1-2 cm on fracture surfaces, silky lustre, brownish streak, perfect {001} and {100} cleavage,  $H$  3.7. Associated with quartz, magnetite, siderite, albite, stilpnomelane, minnesotaite, deerite, etc. Orthorhombic,  $a$  23.20,  $b$  9.20,  $c$  13.18 Å,  $Z = 1$ ;  $D_{\text{obs.}}$  3.11,  $D_{\text{calc.}}$  3.11; optically biaxial negative,  $2V$  56-59°,  $\alpha$  1.667,  $\beta$  1.674,  $\gamma$  1.679; absorption  $Z = Y > X$ , weak dispersion  $r < v$ ; most sections have straight extinction, but angles up to 29° have been measured. Composition (for 138 oxygens per unit cell)
- $$\begin{array}{l} (\text{Fe}_{19.96}^{2+}\text{Fe}_{2.19}^{3+}\text{Mg}_{1.33}\text{Mn}_{0.42})\Sigma_{23.90} \\ (\text{Fe}_{11.32}\text{V}_{0.68}\Sigma_{12}(\text{Si}_{34.73}\text{Ti}_{0.26} \\ \text{Al}_{0.20}\text{Fe}_{0.81}^{3+})\Sigma_{36}\text{O}_{90}(\text{OH},\text{O})_{48}. \end{array}$$
- DTA and TGA data given. Named for occurrence.
- Ferchromide.** M. I. Novgorodova, A. I. Gorshkov, N. V. Trubkin, A. I. Tsepina, and M. T. Dmitrieva, 1986. *Zap.* **115**, 355. [Ферхромиид.] In the Kumak region, southern Urals, USSR, in gold-quartz veins cutting amphibolites, intergrown with native iron and iron-bearing Cr, as very thin platy inclusions 0.2-0.3 mm, in angular or spherical heterogenic aggregates of 5-7 mm of complex iron silicides and chromides. Opaque. Cubic,  $Pm\bar{3}m$ ,  $a$  2.882(5) Å,  $Z = 1$ ;  $D_{\text{calc.}}$  6.18. In reflected light white and isotropic. Composition  $\text{Cr}_{1.5}\text{Fe}_{0.5-x}$ . Named for composition.
- $\beta$ -Fergusonite-(Nd). Error for fergusonite-beta(Nd) [33rd List]. V. I. Kudryashova, 1985. *Zap.* **114**, 474.
- Ferri-annite.** T. Miyano and S. Miyano, 1982. A.M. **67**, 1179. In the very low-grade banded formation of the Dales Gorge Member of the Hammersley group, Wittencoom area, W. Australia, as reddish brown flaky or tabular

- grains or flaky aggregates, near or within a riebeckite-rich zone, with perfect {001} cleavage, frequently twinned. Coexists with hematite, magnetite, quartz, ankerite, stilpnomelane and riebeckite. Monoclinic,  $a$  5.402(6),  $b$  9.237(4),  $c$  10.306(7) Å,  $\beta$  99° 16';  $\alpha$  1.653–1.677,  $\gamma$  1.691–1.721,  $2V_x$  small. Composition  $K_2Fe_6^{2+}Fe_3^{3+}Si_6O_{20}(OH)_4$ , in the annite-phlogopite-ferri-annite-ferriphlogopite four-component system. Named for composition. According to V. I. Kudryashova (1985. Zap. **114**, 383) not approved by IMA.
- Ferrostrunzite.** D. R. Peacor, P. J. Dunn, and W. B. Simmons, 1983. *N. Jb. Min. Mh.* 524. In Cretaceous sediments along Raccoon Creek, near Mullica Hill, New Jersey, USA, replacing fossil belemnites, as radiating sprays of fibrous, light brown prisms up to 0.5 mm long, elongated along [001] and flattened // {100}, H 4; vitreous lustre, very brittle. Triclinic,  $P\bar{1}$  or  $P1$ , with  $a$  10.23(2),  $b$  9.77(3),  $c$  7.37(1) Å,  $\alpha$  89.65(16)°,  $\beta$  98.28(12)°,  $\gamma$  117.26(16)°,  $V$  646 Å<sup>3</sup>,  $Z = 2$ ;  $D_{obs.}$  2.50,  $D_{calc.}$  2.57; optically biaxial negative,  $\alpha$  1.628(2),  $\beta$  1.682( $_{calc.}$ ),  $\gamma$  1.723(4),  $2V$  80(5)°,  $Z : c$  3–4°. Pleochroic, X pale yellow-green Z pale red-yellow. Composition ideally  $Fe^{2+}Fe_3^{3+}(PO_4)_2 \cdot 6H_2O$ . Named for analogy with strunzite [21st List].
- Ferrotapiolite = common tapiolite. V. I. Kudryashova, 1985. Zap. **114**, 474 (New Mins., XXXIX). See also manganotapiolite [this List].
- Ferrotychite. Error for Fe-tychite [32nd List], 1983. *Riv. Min. Ital.*, pt. 4, 121.
- Fingerite.** J. M. Hughes and C. G. Hadidiacos, 1985. A.M. **70**, 193. In the summit crater of Izalco volcano, El Salvador, Central America, in fumaroles as black grains up to 150  $\mu$ m with reddish brown streak; associated with thenardite and euchlorine,  $(Na,K)_7Cu_{10}(SO_4)_{10}(OH)_7 \cdot 10H_2O$ , [different from E. Scacchi's or Rammelsberg's formula in 2nd List]. Triclinic,  $P1$  or  $P\bar{1}$ ,  $a$  8.1576(6),  $b$  8.2691(5),  $c$  8.0437(7) Å,  $\alpha$  107.144(5)°,  $\beta$  91.389(7)°,  $\gamma$  106.441(5)°,  $V$  494 Å<sup>3</sup>,  $Z = 1$ ;  $D_{calc.}$  4.776(1). Mean calc. R.I. 2.124. Composition ideally  $Cu_{11}O_2(VO_4)_6$ , the fourth V mineral formed by sublimation. Named for Dr L. W. Finger, Geophysical Laboratory, Carnegie Inst., Washington DC, USA.
- Freedite.** P. J. Dunn and R. C. Rouse, 1985. A.M. **70**, 845. At the Långban mine, Värmland, Sweden, as greenish yellow slightly radial aggregates, intimately associated with calcite, ecdemite, lead, copper, and finnemanite on andradite/magnetite ore, with vitreous lustre, {100} cleavage; weakly pleochroic, does not fluoresce. Monoclinic,  $a$  13.569(5),  $b$  20.085(4),  $c$  7.463 Å,  $\beta$  105.75(5)°,  $Z = 2$ ;  $D_{obs.}$  7.0,  $D_{calc.}$  7.22; biaxial, R.I. > 1.90. Composition ideally  $Pb_{15}(Cu,Fe^{2+})_3As_4^{3+}O_{19}Cl_{10}$ , related to thoriokosite [this List] and to other Bi oxyhalides, such as nadorite, perite, blixite. Named for Dr R. L. Freed of Trinity University.
- Fredrikssonite.** P. J. Dunn, D. R. Peacor, W. B. Simmons, and D. Newbury, 1983. *Geol. Fören. Stockholm Förhandl.* **105**, 335. At the Långban mine, Värmland, Sweden, as reddish brown fragments, nearly opaque in one direction, associated with brucite or, in another assemblage, with clinohumite, calcite, jacobsonite; vitreous lustre, cleavage only observed in one fragment, H 6. Orthorhombic,  $Pbam$  or  $Pba2$ ,  $a$  9.18(1),  $b$  12.555(6),  $c$  2.954(2) Å,  $Z = 4$ ;  $D_{obs.}$  3.84(5),  $D_{calc.}$  3.80; optically biaxial positive,  $\alpha$  1.82(2),  $\beta$  1.86,  $\gamma$  1.99, strongly pleochroic, strong dispersion  $r > v$ ,  $Z = c$ . Composition ideally  $Mg_2Mn_{0.87}^{3+}Fe_{0.13}^{3+}Al_{0.07}BO_3O_2$ , a member of the pinakolite group (ludwigite). Named for K. A. Fredriksson of the Smithsonian Institution, Washington DC, USA. [A.M. **71**, 227.]
- Genèveite.** H. Sarp and J. Deferne, 1983. *Arch. Sc. Genève*, **36**, 163. In the Tyrol, Austria, as blue to blue-green botryoidal aggregates up to 0.3 mm dia. with vitreous lustre and basal cleavage. Hexagonal,  $P6mm$ , with  $a$  8.26,  $c$  14.70 Å,  $Z = 2$ ;  $D_{obs.}$  3.45,  $D_{calc.}$  4.19. Optically biaxial negative,  $\omega$  1.790,  $\epsilon$  1.770. Composition ideally  $(Cu,Zn)_9As_2O_{14} \cdot 8H_2O$  or  $(Cu,Zn)_9(AsO_4)_2(OH)_{12} \cdot 2H_2O$ , very similar to theisite [32nd List],  $Cu_5Zn_5[(As,Sb)O_4](OH)_{14}$ , which was thought to be orthorhombic although its powder data could be indexed on a hexagonal cell. Rejected by IMA in 1981, suggesting further work was necessary. Named for the Genève museum collection.
- Georgechaoite.** R. C. Boggs and S. Ghose, 1985. C.M. **23**, 1. At Wind Mountain, Otero Co., New Mexico, in nepheline syenite, as colourless to white crystals up to 1 mm long. H 5; conchoidal fracture. Orthorhombic,  $P2_1nb$ ,  $a$  11.386(4),  $b$  12.940(6),  $c$  6.735(4) Å,  $Z = 4$ ;  $D_{obs.}$  2.70(2),  $D_{calc.}$  2.689; optically biaxial negative,  $\alpha$  1.578(1),  $\beta$  1.597(1),  $\gamma$  1.606(1),  $2V_{meas.}$  67°; structure determined. Composition ideally  $NaKZr_3O_9 \cdot 2H_2O$ , the K-bearing analogue of gaidonnayite [28th List]. Named for Professor G. Chao, Carleton University, Ottawa, Canada, in recognition of his work on Zr silicates. [A.M. **71**, 227.]
- Gerdtrammelite.** K. Schmetzer and O. Medenbach, 1985. *N. Jb. Min. Mh.* 1. At Tsumeb, Namibia, a secondary mineral as yellowish brown to dark brown spherulitic aggregates of tabular crystals up to 3  $\mu$ m, transparent with adamantine lustre; associated with hematite, quartz, scorodite, powellite, betpakdalite [22nd List], and kaolinite. Triclinic,  $a$  5.169(5),  $b$  13.038(9),  $c$  4.931(4) Å,

- $\alpha$  98.78(7)°,  $\beta$  100.80(6)°,  $\gamma$  78.73(6)°,  $Z = 2$ ;  $D_{\text{calc.}}$  3.66. Mean R.I. 1.73–1.74, high birefringence. Composition ideally  $(\text{Zn,Fe})(\text{Al,Fe})_2\text{AsO}_4(\text{OH})_5$ . Named for Dr Gerd Tremmel, who first recognized the mineral.
- $\gamma$ -Gold amalgam.** Chen Kegiao, Yan Huifang, Ma Letian, and Peng Zhizhong, 1981. *Dizhi Pinglun*, 27, 107. At Hongshila, Hebei, China, as brass yellow, finely granular aggregates in Pt-bearing ultrabasic stock. Cubic,  $Im\bar{3}m$ ,  $a$  10.01 Å. Composition  $(\text{Au,Ag})\text{Hg}$ . Named for composition.
- Grishunite.** S. Graeser, H. Schwander, and B. Suhner, 1984. *Schweiz. Min. Pet. Mitt.* 64, 1. At the Mn-deposit near Falotta, Oberhalbstein, Grison (Graubünden), Switzerland, as dark red-brown crystals up to 1 mm, partly as euhedral grains, partly as well developed laths elongated along  $b$ . Perfect {010} cleavage, vitreous lustre, yellowish streak, pleochroic,  $H \sim 5$ . Orthorhombic,  $Pcab$ ,  $a$  12.913(6),  $b$  13.48(1),  $c$  12.076(6) Å,  $Z = 12$ ;  $D_{\text{obs.}}$  3.8(2),  $D_{\text{calc.}}$  3.99; optically biaxial,  $\alpha$  1.784,  $\beta$  1.785,  $\gamma$  1.790;  $2V_z$  40–50°; dispersion  $r \leq v$ . Composition ideally  $(\text{Ca,Na})(\text{Mn,Fe})_2(\text{AsO}_4)_2$ . Named for Grischun, the Romanche [Rhaeto-Roman] name of canton Grison. [A.M. 71, 727.]
- Gupeite.** Yu Zuziang, 1984. *Acta Petr. Min. Anal.* 3, 231 [Chinese with English abstract]. In cosmic dusts from Yanshan, China, as steel-grey grains with metallic lustre, black streak, brittle and strongly magnetic. Cubic,  $Fm\bar{3}m$ ,  $a$  5.670(5) Å,  $Z = 4$ ;  $D_{\text{calc.}}$  7.15. Microhardness and reflectances given. Composition ideally  $\text{Fe}_3\text{Si}$ , data match those of  $\alpha'$ - $\text{Fe}_3\text{Si}$  well. Often associated with hongquiiite [29th List]. Named for Gupeikon, an eastern passageway of the Great Wall. See also xifengite [this List]. [A.M. 71, 228.]
- Gysinite.** H. Sarp and J. Bertrand, 1985. A.M. 70, 1314. On a single specimen, labelled schuilingite [18th List], from Shinkolobwe, Shaba, Zaïre, in the mineral collection at Geneva Natural History Museum (Switzerland), as pale to reddish pink pseudo-octahedral crystals up to 1 mm with prominent {111} and {110} faces, sometimes twinned, white to pale pink streak, brittle, no cleavage. Orthorhombic,  $Pm\bar{c}n$ ,  $a$  5.0028(8),  $b$  8.555(1),  $c$  7.2392(8) Å,  $Z = 2$ ;  $D_{\text{calc.}}$  4.82; optically biaxial negative,  $2V_x$  70°,  $XV_{\text{calc.}}$  72.4°;  $\alpha$  1.745,  $\beta$  1.805,  $\gamma$  1.840;  $r < v$ ;  $a = c$ ,  $\beta = a$ ,  $\gamma = b$ . Composition  $\text{Pb}(\text{Nd,La})(\text{CO}_3)_2(\text{OH}) \cdot \text{H}_2\text{O}$ , the Pb–Nd analogue of ancylite [2nd List]. Named for the late M. Gysin, professor at the University of Geneva, Switzerland.
- Hotsonite.** G. J. Beukes, A. E. Schoch, W. A. van der Westhuizen, L. D. C. Bok, and H. de Bruijn, 1984. A.M. 69, 979. At a sillimanite quarry on the Hotson farm, 65 km west of Pofadder, Bushmanland, NW Cape Province, South Africa, as compact white masses of tabular microcrystals, with dull to silky lustre, earthy fracture,  $H$  2½; closely associated with zaherite [30th List]. Triclinic,  $a$  11.23,  $b$  11.66,  $c$  10.55 Å,  $\alpha$  112° 32',  $\beta$  107° 32',  $\gamma$  64° 27';  $D_{\text{obs.}}$  2.06. Anisotropic with low birefringence,  $\alpha$  1.519,  $\gamma$  1.521. Composition provisionally  $\text{Al}_{11}(\text{PO}_4)_2(\text{SO}_4)_3(\text{OH})_{21} \cdot 16\text{H}_2\text{O}$ . Named for the farm, Hotson 42, near the occurrence. (Natroalunite–zaherite–hotsonite paragenesis discussed, 1985. C.M. 29, 29.)
- Hydroxyl-bastnäsite-(Nd).** Z. Maksimović and G. Pantó, 1985. M.M. 49, 717. In red karstic bauxites near Nikšić, Montenegro, Yugoslavia, as whitish irregular aggregates of crystals 100–2000  $\mu\text{m}$  across, but some as clusters 1–5 mm dia. Hexagonal,  $a$  7.191(1),  $c$  9.921(2) Å,  $Z = 6$ ;  $D_{\text{calc.}}$  4.89; uniaxial positive,  $\omega$  1.715,  $\varepsilon$  1.81. Composition ideally  $(\text{Nd,La})\text{CO}_3(\text{OH,F})$ , with  $\text{Nd} > \text{La}$  and  $\text{OH} > \text{F}$ , the Nd- and OH-dominant member of the bastnäsite group. Named in accordance with Levinson's rule.
- Idrobobomkulite.** Error for Hydrobobomkulite, 1983. *Riv. Min. Ital.* pt. 4, 121.
- Imiterite.** J.-J. Guillou, J. Monthel, P. Picot, F. Pillard, J. Protas, and J.-C. Samama, 1985. *Bull.* 108, 457; K. Walenta and H. Hess, 1985. *Der Aufschluss*, 36, 209. Originally found at the Imiter mine, Jbel Sarhro, Anti-Atlas, Morocco, as inclusions in galena, then at Ramsbeck, Sauerland, W. Germany, hydrothermal vein deposit, as steel-grey, opaque, tabular crystals up to 0.5 mm, striated // [001]; metallic lustre, conchoidal fracture,  $H$  2½. Monoclinic,  $P2_1/c$ ,  $a$  4.0394(8),  $b$  8.0050(6),  $c$  6.5812(8) Å,  $\beta$  107.12(2)°,  $Z = 2$ ;  $D_{\text{obs.}}$  > 4.03,  $D_{\text{calc.}}$  7.82; light grey in reflected light, with strong birefringence and anisotropism. Composition ideally  $\text{Ag}_2\text{HgS}_2$ . Named for Moroccan occurrence, found in 1983 and submitted to IMA just before the German one.
- Inaglyite.** N. S. Rudashevskii, A. G. Mochalov, V. D. Begizov, Yu. P. Men'shikov, and N. I. Shumskaya, 1984. *Zap.* 113, 12. [ИНАГЛИИТ.] At the Inagly ultramafic alkali massif, Yakutia, USSR, as an inclusion in dunite, in two specimens within isoferroplatinum [29th List], and as irregular grains up to 120  $\mu\text{m}$  at the Nizhne Tagil' massif, Urals, intergrown with platiniridium containing native osmium and kashinite [this List]; steel grey with metallic lustre; weakly anisotropic with no internal reflections; two cleavages, brittle. Hexagonal,  $a$  7.03(1),  $c$  16.44(1) Å; reflectances given. Composition ideally  $\text{Cu}_3\text{Pb}(\text{Ir,Pt})_8\text{S}_{16}$ , very close to kondërite [this List], should not have been divided into two species. Named for occurrence. [A.M. 71, 228.]

- Iquiqueite.** G. E. Ericksen, M. E. Mrose, J. W. Marinenko, and J. J. McGee, 1986. *A.M.* **71**, 30. Particularly abundant in the vicinity of Zapiga, Tarapaca province, N. Chile, in the nitrate fields, in nitrate ore, as disseminated thin yellow hexagonal platelets, 5–50  $\mu\text{m}$  across, with perfect  $\{0001\}$  cleavage,  $\{0001\}$  and  $\{1\bar{0}10\}$  faces or as vermiform aggregates of nearly parallel platelets, associated with nitratine, halite, nitre, darapskite, blöndite, glauberite, dietzeite, brüngenite, ulexite, and gypsum. Hexagonal,  $P31c$ ,  $a$  11.6369(14),  $c$  30.158(7) Å,  $Z = 3$ ;  $D_{\text{obs.}}$  2.05(9),  $D_{\text{calc.}}$  2.05; uniaxial negative,  $\omega$  1.502(2),  $\varepsilon$  1.447(2). Composition  $\text{Na}_4\text{K}_3\text{CrO}_4\text{B}_{24}\text{O}_{39}(\text{OH}) \cdot 12\text{H}_2\text{O}$ . Named for the city of Iquique, Chile, formerly a major port for nitrate exports.
- Irtyshte.** A. V. Voloshin, Ya. A. Pakhomovskii, L. V. Bulgak, G. A. Perlina, 1985. *Min. Zh.* **7**, 83. [ИРТЫШИТ.] In E. Kazakhstan granite pegmatites associated with thoreaulite, lithiotantite [33rd List], manganotantalite, and cassiterite, as veins or colourless, transparent, irregular grains at the contact of lithiotantite with ixiolite, with adamantine lustre, no noticeable cleavage or parting, uneven fracture. Hexagonal,  $P6_3/m$  or  $P6_3$ ,  $a$  6.231,  $c$  36.77 Å,  $Z = 6$ ;  $D_{\text{calc.}}$  7.03. Composition ideally  $\text{Na}_2(\text{Ti},\text{Nb})(\text{Ta},\text{Nb})_4\text{O}_{11}$ , powder data indexed by analogy with  $\text{Ca}(\text{Ti},\text{Nb})_4\text{O}_{11}$ . Named for Irtys river, E. Kazakhstan, near the occurrence.
- Izoklakeite.** D. C. Harris, A. C. Roberts, and A. J. Criddle, 1986. *C.M.* **24**, 1; M. Zakrzewski and E. Makovicky, 1985. *Ibid.* p. 7. At Izok Lake, NW Territories, Canada, in the Zn–Cu–Pb sulphide deposit, as lead grey acicular aggregates a few mm in size, associated with galena, pyrite, and pyrrhotite in a drill hole; metallic lustre, grey-black streak, good cleavage //  $c$ , distinctive conchoidal fracture. Microhardness, reflectances and colour values given. Orthorhombic,  $Pnmm$ , or  $Pnn2$ ,  $a$  33.88(2),  $b$  38.02(2),  $c$  4.070(2) Å,  $Z = 2$ ;  $D_{\text{obs.}}$  6.47,  $D_{\text{calc.}}$  6.501. Composition ideally  $(\text{Cu},\text{Fe})_2\text{Pb}_{27}(\text{Sb},\text{Bi})_{19}\text{S}_{57}$ . In the kobellite homologous series interpreted by Flink as Sb-kobellite, closely related to giessenite [23rd List]. Named for occurrence. Also found at the Vena Cu–Co mine almost at the same time, intergrown with jaskolskite [this List], native Bi, galena, pyromorphite, and native Sb.
- Jaskolskite.** M. A. Zakrzewski, 1984. *C.M.* **22**, 481 and D. C. Harris, A. C. Roberts, and A. J. Criddle, 1984. *Ibid.* p. 87 (2nd occurrence). At Bergslagen metallogenic province, central Sweden, in the Vena Cu–Co fahlband-type deposit, as lead-grey aggregates intergrown with another Pb–Cu–Sb–Bi sulphosalt, native bismuth, galena, pyrrhotite, and rarely antimony. Reflectances in air given; and at Izok Lake, NW Territories, Canada, in the massive Zn–Cu–Pb sulphide deposit. Orthorhombic,  $Pbnm$ ,  $a$  11.331(1),  $b$  19.871(2),  $c$  4.100(1) Å,  $Z = 4$ ;  $D_{\text{calc.}}$  6.50. Composition ideally  $\text{Pb}_{2+x}\text{Cu}_x(\text{Sb},\text{Bi})_{2-x}\text{S}_5$  where  $\text{Sb} > \text{Bi}$ , and  $x \approx 0.2$ , practically identical with synth.  $\text{Pb}_2\text{Sb}_2\text{S}_5$  of Wang 1973 (*N. Jb. Min. Mh.* 79) and is a homologue of meneghinite. Named for S. Jaskolski (1896–1981), professor at the Mining Academy of Krakow, Poland. [*A.M.* **70**, 872.]
- Jeffreyite.** J. D. Grice and G. W. Robinson, 1984. *C.M.* **22**, 443. At the Jeffrey mine, Asbestos, Shipton Township, Richmond Co., Quebec, Canada, as clear colourless pseudotetragonal plates up to  $1.2 \times 1.2 \times 0.002$  mm, perfect  $\{100\}$  and  $\{110\}$  cleavages,  $H$  5; associated with grossular. Orthorhombic,  $Ccc2$ , with  $a$  14.90(1),  $b$  14.90(1),  $c$  40.41(8) Å,  $Z = 64$ ;  $D_{\text{obs.}}$  2.99(2),  $D_{\text{calc.}}$  2.98; optically biaxial negative,  $\alpha$  1.625(2),  $\beta$  1.641(2),  $\gamma$  1.643(2);  $2V_x$  obs.  $40(2)^\circ$ ,  $2V_x$  calc.  $39^\circ$  with  $X // c$ ,  $Y // a$ . Composition ideally  $(\text{Ca},\text{Na})_2(\text{Be},\text{Al})\text{Si}_2(\text{O},\text{OH})_7$ , melilite group. Named for the mine. [*A.M.* **70**, 872.]
- Jerrygibbsite.** P. J. Dunn, D. R. Peacor, W. B. Simmons, and E. J. Essene, 1984. *A.M.* **69**, 546. At Franklin, New Jersey, USA, as violet-pink intergrown grains associated with leucophoenicite,  $H$   $5\frac{1}{2}$ . Orthorhombic,  $Pbnm$  or  $Pbn2_1$ ,  $a$  4.85(1),  $b$  10.70(1),  $c$  28.17(3) Å,  $Z = 4$ ;  $D_{\text{obs.}}$  4.00(2),  $D_{\text{calc.}}$  4.045; optically biaxial negative,  $2V$   $72^\circ$ ,  $\alpha$  1.772(4),  $\beta$  1.784(4),  $\gamma$  1.789(4). Composition ideally  $\text{Mn}_9(\text{SiO}_4)_4(\text{OH})_2$ , polymorphous with manganhumite, sonolite, probably belongs to leucophoenicite group. Named for Gerald V. Gibbs, professor at Virginia Polytechnic Institute and State University, USA.
- Jinyunite** = mordenite + clinoptilolite. P. Wu and Y. H. Ma, 1982. *Amer. Inst. Chem. Engin. Symp. Ser.* **78**, N219, p. 90 (English); and Z. Zhao *et al.*, 1978. *Natural Zeolites of China*. [ЧЖИНЫЮНИТ.] Natural coarse-grained mordenite, in tuffs and rhyolites around Chzhin'yun, Szichuan province, China, with montmorillonite, quartz, etc. Named for locality in 1972 but not approved by IMA. 'A mixture of mordenite and clinoptilolite' an unnecessary name. [*Zap.* **113**, 381, *A.M.* **70**, 873.]
- Johninnesite.** P. J. Dunn, Sh.-Ch. Su, J. A. Nelen, and O. v. Knorring, 1986. *M.M.* **50**, 667. At the Kombat mine, Otavi valley, 37 km east of Otavi, 49 km south of Tsumeb, Namibia, as pale yellowish brown fibrous aggregates, up to 2 cm long, of minute tabular crystals, with vitreous lustre, very friable, good  $\{100\}$  and poor  $\{010\}$  cleavage; associated with rhodonite, kentrolite, and richterite. Triclinic,  $P1$  or  $P\bar{1}$ ,  $a$  10.44(2),  $b$  11.064(6),  $c$  9.62(1) Å,  $\alpha$  107.43(7),  $\beta$  82.7(1),  $\gamma$  111.6(1)°,  $V$  984(2) Å<sup>3</sup>,  $Z = 1$ ;  $D_{\text{obs.}}$  3.48,  $D_{\text{calc.}}$



- 3.51; colourless in thin section, optically biaxial negative,  $2V_x$  41.9°,  $\alpha$  1.674(2),  $\beta$  1.6968(3),  $\gamma$  1.6999(3); distinct dispersion  $r > v$ . Composition ideally  $\text{Na}_2\text{Mg}_4\text{Mn}_{12}\text{As}_2^5+\text{Si}_{12}\text{O}_{43}(\text{OH})_6$ . Named for John Innes, senior mineralogist at Tsumeb Corporation, who preserved the mineral found in 1975 for investigation.
- Johnwalkite.** P. J. Dunn, D. R. Peacor, D. B. Sturman, R. A. Ramik, W. L. Roberts, and J. A. Nelen, 1986. *N. Jb. Min. Mh.* 115. At the Champion mine, SE of Keystone, Pennington Co., S. Dakota, USA, as a shiny dark brown radiating prism with good {001} and {100} cleavages, vitreous lustre, associated with amorphous Mn-oxides, goethite, and several secondary phosphate minerals, crystals flattened on {001}, elongated // *b*, *H* 4. Orthorhombic,  $Pb2_1m$ , *a* 7.516(4), *b* 10.023(8), *c* 6.502(4) Å, *Z* = 1;  $D_{\text{obs}}$ . 3.40,  $D_{\text{calc}}$ . 3.44; biaxial positive,  $\alpha$  1.748(5),  $\beta$  1.763(5),  $\gamma$  1.84(1), strongly pleochroic. Composition ideally  $\text{K}_2(\text{Mn}, \text{Fe}^{3+}, \text{Fe}^{2+})_4(\text{Nb}, \text{Ta})_4(\text{PO}_4)_2\text{O}_4(\text{H}_2\text{O}, \text{OH})_4$ , the Mn analogue of olmsteadite [29th List]. Named for R. Johnson and F. Walkup, sample preparators.
- Kalininite.** L. Z. Rezitskii, E. V. Sklyarov, and Z. F. Ushcharovskaya, 1985. *Zap.* 114, 622. [Калининит.] At Slydanka Precambrian crystalline complex, southern Lake Baikal area, USSR, in metamorphic quartz-diopside rocks, as black, very fine-grained aggregates, associated with garnets, tremolite, karelianite-eskolaite, pyrite, zircon, and apatite. Cubic,  $Fd3m$ , *a* 9.988(3) Å, *Z* = 8;  $D_{\text{calc}}$ . 4.05; microhardness and reflectance curves given. Composition ideally  $\text{ZnCr}_2\text{S}_4$ , a thiospinel close to daubréelite, with which it forms a complete isomorphic series. Named for Prof. P. V. Kalinin, Russian mineralogist-petrologist, who studied rocks in the area.
- Kashinite.** V. D. Begizov, E. N. Zav'yalov, N. S. Rudashevskii, and L. N. Vyal'sov, 1985. *Zap.* 114, 617. [Кашинит.] In the platinum mineralization at Nizhne Tagil', Urals, ultrabasic massif and with Pt minerals from Quaternary deposits in the far eastern USSR, as elongated or equant grains, intergrown with platinum group minerals, greyish black, metallic lustre, conchoidal fracture, non-magnetic. Pale grey in reflected light, nearly isotropic. Orthorhombic,  $?Pbcn$ , *a* 8.450, *b* 6.001, *c* 6.145 Å, *Z* = 4;  $D_{\text{calc}}$ . 9.10; microhardness given. Composition  $(\text{Ir}, \text{Rh})_2\text{S}_3$ . Named for Prof. S. A. Kashin, an expert on deposits in the Urals.
- Katayamalite.** N. Murakami, T. Kato, and F. Hirowatari, 1983. *Min. J. [Japan]*, 11, 261. In aegirine-syenite at Iwagi Islet, SW Japan, as white granular aggregates, or as tabular crystals, sometimes twinned, perfect {001} cleavage, brilliant bluish white short wave fluorescence, *H* 3½–4. Triclinic, *C1*, *a* 9.721, *b* 16.923, *c* 19.942 Å,  $\alpha$  91.43°,  $\beta$  104.15°,  $\gamma$  89.94°, *Z* = 4; (alternative cell in *P1* is given);  $D_{\text{obs}}$ . 2.91(2),  $D_{\text{calc}}$ . 2.899; optically biaxial,  $\alpha$  1.670,  $\beta$  1.671,  $\gamma$  1.677,  $\gamma - \alpha$  0.007,  $2V(+)$   $\approx$  32°, strong dispersion,  $r > v$ . Composition ideally  $(\text{K}, \text{Na})\text{Li}_3\text{Ca}_7(\text{Ti}, \text{Fe}^{3+}, \text{Mn})_2(\text{Si}_6\text{O}_{18})_2(\text{OH}, \text{F})_2$ , related to baratovite [29th List], but lacks Zr, and has  $\text{OH} > \text{F}$ . Named for N. Katayama, Japanese mineralogist.
- Katoite.** E. Passaglia and R. Rinaldi, 1984. *Bull.* 107, 605. At the Campomorto quarry, Pietramassa, near Montalto di Castro, Viterbo, Italy, among metamorphosed inclusions in the top of a lava flow, together with tobermorite, ettringite, and vertumnite [30th List], as rounded microcrystals 0.1–0.3 mm across, forming a thin milky-white crust. Cubic,  $Ia3d$ , *a* 12.379 Å, (refined to 12.358 Å);  $D_{\text{calc}}$ . 2.76; R.I. 1.632(1), with very weak and diffuse birefringence. Composition ideally  $\text{Ca}_3\text{Al}_2\text{SiO}_4(\text{OH})_8$  or  $\text{Ca}_3\text{Al}_2[\text{Si}(4\text{H})_2]\text{O}_{12}$ , a member of the hydrogrossular group, for which a nomenclature is proposed. Named for Dr A. Kato of the National Science Museum, Tokyo, former chairman of the IMA commission of new minerals and mineral names, the last mineral approved under his chairmanship. [*A.M.* 70, 873.]
- Keiviite-(Y).** A. V. Voloshin, Ya. A. Pakhomovskii, and F. N. Tyusheva, 1985. *Min. Zh.* 7, pt. 6, 79. (Кейвиит-[Y].) In amazonite pegmatites of the Kola peninsula, USSR, associated with thalenite, xenotime, and bastnäsite, in late-stage veins of fluorite and quartz as very thin prisms up to 1 mm long and 0.15 mm or less thick, colourless or white, transparent. Monoclinic,  $C2/m$ , *a* 6.845(5), *b* 8.960(5), *c* 4.735(3) Å,  $\beta$  101.65(5)°, *Z* = 2;  $D_{\text{obs}}$ . 4.45,  $D_{\text{calc}}$ . 4.48; biaxial negative,  $\alpha$  1.713,  $\beta$  1.748,  $\gamma$  1.758;  $2V_{\text{obs}}$ . 56(2)°,  $2V_{\text{calc}}$ . 55°,  $X \wedge c$  4°. Composition ideally  $(\text{Y}, \text{Yb})_2\text{Si}_2\text{O}_7$ , see also keiviite [33rd List], the Yb-rich analogue.
- Keivyite-(Y) = error for keiviite-(Y) [this List]. A. V. Voloshin, Ya. A. Pakhomovskii, and F. N. Tyusheva, 1985. *Min. Zh.* 7, pt. 6, 93.
- Khamrabaevite.** M. I. Novgorodova, R. G. Yusupov, M. T. Dmitrieva, A. I. Tsepin, A. V. Sivtsov, and A. I. Gorshkov, 1984. *Zap.* 113, 697 [Хамрабаевит]. In basalt on the southern slopes of Chatkal' ridge, Arashan mts, as inclusions in suessite [32nd List], with graphite, and in granodiorite veins at the Chinorsa(i) massif, central part of Zeravshan ridge, as inclusions in native iron and magnetite (both localities in central Asia); dark grey, irregular fracture; reflectances given. Cubic,  $Fm3m$ , *a* 4.319(5) Å, *Z* = 8;  $D_{\text{calc}}$ . 10.01 (from empirical formula), 9.87 (for ideal

- TiC). Composition (Ti,V,Fe)C. Named for I. Kh. Khamrabaev (1920– ), Russian geologist. [A.M. **70**, 1329.]
- Kharaelakhite.** A. D. Genkin, T. L. Evstigneeva, L. N. Vyal'sov, and I. P. Laputina, 1985. *Min. Zh.* **7**, 78. [Хараелахит.] At the Talnakh ore deposit Krasnoyarsk, USSR, as fibres in chalcopyrite ores bordering a grain of cooperite, intergrown with braggite, associated with bornite and millerite. In reflected light, greyish with brownish lilac tinge. Orthorhombic,  $a$  9.71,  $b$  8.33,  $c$  14.52 Å; optically anisotropic, pinkish grey to bluish; reflectances given. Composition (Pt,Cu,Pb,Fe, Ni)<sub>6</sub>S<sub>8</sub>, possibly related to the pentlandite group, but  $Me:S$  ratio could be 8:8. Insufficient data. Named for Kharaelakh plateau, near the Talnakh deposit.
- Khatyrkite.** L. V. Razin, N. S. Rudashevskii, and L. N. Vyal'sov, 1985. *Zap.* **114**, 90. [Хатыркит.] In the Khatyr massif, in alluvial deposits of the Khatyrka river, NE USSR, in ultrabasic serpentinites, as yellowish-steel grey opaque grains 0.1–0.4 mm dia. with one distinct cleavage. Tetragonal,  $P4/mcm$ ,  $a$  6.07(1),  $c$  4.89(1) Å,  $Z = 4$ ;  $D_{calc.}$  4.37, strongly pleochroic, blue-cream, strong anisotropy, grey-yellow-brown red. Microhardness and reflectances given. Composition ideally (Cu,Zn)Al<sub>2</sub>. Named for Khatyrka river, near the occurrence.
- Kimrobinsonite.** E. H. Nickel and B. W. Robinson, 1985. C.M. **23**, 573. Near Mt Holland, Western Australia, as part of a white friable mass, intergrown with cesstibantite [32nd List] in weathered pegmatite, largely montmorillonite clay. Cubic, primitive,  $a$  3.812 Å,  $Z = 1$ ;  $D_{calc.}$  6.865; R.I. (calc.) 2.23. Composition ideally Cs<sub>0.3</sub>(Sb,Na)(Ta,Nb)<sub>2</sub>(O,OH)<sub>6</sub>. Named for Kim Robinson who discovered the mineral.
- Kipushite.** P. Piret, M. Deliens, and J. Piret-Meunier, 1985. C.M. **23**, 35. In the oxidation zone of the Kipushi deposit, 30 km SW of Lubumbashi, southern Shaba, Zaïre, near Zambian border, associated with other secondary Cu, Zn, Pb minerals, as emerald green aggregates of subparallel prisms, or rarely as isolated {111} pyramids elongated along [10 $\bar{1}$ ], transparent or translucent. Monoclinic,  $P2_1/c$ ,  $a$  12.197(2),  $b$  9.156(2),  $c$  10.667(2) Å,  $\beta$  96.77(2)°;  $Z = 4$ ;  $D_{obs.}$  3.80,  $D_{calc.}$  3.904; optically biaxial negative,  $\alpha$  1.693(2),  $\beta$  1.738(2),  $\gamma$  1.740(2),  $2V_{calc.}$  23°. Structure determined. Composition 6[(Cu, Zn)O] · P<sub>2</sub>O<sub>5</sub> · 4H<sub>2</sub>O from chemical analysis, but the structural formula is (Cu,Zn)<sub>3</sub>Zn(OH)<sub>6</sub>(PO<sub>4</sub>)<sub>2</sub> · H<sub>2</sub>O. Named for deposit. [A.M. **71**, 228.]
- Kirkiite.** Y. Moëlo, E. Oudin, E. Makovicky, S. Karup-Møller, F. Pillard, M. Bornuat, and E. Evangelou, 1985. *Bull.* **108**, 667. At the Pb-Zn deposit of Aghios Philippos, near Kirki, Thracia, Greece, in a matrix of sphalerite and pyrite, as pale grey, euhedral, metallic crystals up to 600 μm across, associated with cosalite, bismuthinite, Bi-jordanite, galena, and seligmannite. Faintly isotropic in reflected light with polysynthetic twinning. Microhardness and reflectances given. Hexagonal,  $P6_322$ ,  $a$  8.69,  $c$  26.06 Å,  $Z = 2$ ;  $D_{calc.}$  6.82; two sub-cells were noted. X-ray powder pattern identical with Walia and Chang's (1973, C.M. **12**, 113) phase A. Composition ideally Pb<sub>10</sub>Bi<sub>3</sub>As<sub>3</sub>S<sub>19</sub>, analogous to jordanite. Named for locality.
- Kolarite.** A. D. Genkin, Yu. G. Safonov, V. N. Vasudev, B. K. Rao, V. A. Boronikhin, L. N. Vyal'sov, A. I. Gorshkov, and A. V. Mokhov, 1985. C.M. **23**, 501. At the Kolar gold deposit, India, in a quartz vein, as minute grey grains intergrown with altaite, as inclusions in galena, and with radhakrishnaite [this List]. Orthorhombic,  $a$  5.93(5),  $b$  3.25(5),  $c$  3.89(5) Å,  $Z = 1$ ;  $D_{calc.}$  9.14; grey in reflected light; microhardness and reflectances given. Composition PbTeCl<sub>2</sub>. Named for deposit.
- Kondërite.** [Konderite in A.M.]. N. S. Rudashevskii, A. G. Mochalov, N. V. Trubkin, A. I. Gorshkov, Yu. P. Men'shikov, and N. I. Shumskaya, 1984. *Zap.* **113**, 703. [Кондëрит.] At the Kondër ultrabasic alkali massif, Aldan shield, Siberia, USSR, as anhedral grains 0.03–0.10 mm, opaque, metallic lustre, greyish white in reflected light, weakly anisotropic, associated with isoferroplatinum [29th List], iridosmine, erlichmanite, and chromite. Hexagonal,  $a$  7.02(2),  $c$  16.48(2) Å; for  $Z = 3$ ,  $D_{calc.}$  15.44. Composition ideally Cu<sub>3</sub>Pb(Rh,Pt,Ir)<sub>8</sub>S<sub>16</sub>, the Rh analogue of inaglyite [this List]. Named for locality. [A.M. **71**, 229.]
- Korite. See ammolite [this List].
- Kuliokite.** A. V. Voloshin, Y. A. Pakhomovskii, F. N. Tyusheva, E. V. Sokolova, and Yu. K. Egorov-Tismenko, 1986. *Min. Zh.* **8**(2), 94. At the Kola peninsula, in amazonite pegmatites, as colourless, transparent, thin platy (up to 0.5 mm) inclusions in purple fluorite, with adamantine lustre, poor {010} cleavage, H 4–5. Triclinic,  $P1$ ,  $a$  8.606,  $b$  8.672,  $c$  4.317 Å,  $\alpha$  102.79°,  $\beta$  97.94°,  $\gamma$  116.66°,  $Z = 1$ ,  $V$  270.1 Å<sup>3</sup>; optically biaxial negative,  $\alpha$  1.656,  $\beta$  1.700,  $\gamma$  1.703, good dispersion,  $r > v$ . Composition ideally Y<sub>4</sub>Al(SiO<sub>4</sub>)<sub>2</sub>(OH)<sub>2</sub>F<sub>5</sub>. Named for the Kuliok river near the occurrence.
- Laphamite.** P. J. Dunn, D. R. Peacor, A. J. Criddle, and R. B. Finkelman, 1986. M.M. **50**, 279. At a burning coal waste-dump, Burnside Northumberland Co., Pennsylvania, USA, as up

- to 5 mm long dark red crystals, tabular on (010) and elongated along [100]; red-orange streak, resinous lustre, perfect {010} cleavage, flexible but not elastic, soft; larger crystals nearly opaque. Associated with arsenolite, orpiment and massive black platy crystals of  $\text{NH}_4\text{AlF}_4$ . Monoclinic,  $P2_1/n$ ,  $a$  11.86(1),  $b$  9.756(9),  $c$  4.265 Å,  $\beta$  90.17°,  $Z = 4$ ;  $D_{\text{obs.}}$  4.5(1),  $D_{\text{calc.}}$  4.60; in reflected light moderately anisotropic with grey rotation tints, fiery red internal reflections and golden yellow reflections along scratches. Reflectances and colour values given. Composition ideally  $\text{As}_2(\text{Se},\text{S})_3$ , the Se-rich analogue of orpiment. Named for Dr D. M. Lapham (1931–74) chief mineralogist of Pennsylvania Geol. Survey.
- Lapicite.** D. C. Harris, A. C. Roberts, R. I. Thorpe, and I. R. Jonasson, 1984. *C.M.*, **22**, 561. At the Lapie river, Yukon Territory, Canada, in a metamorphic glacial erratic, as subhedral grains 150  $\mu\text{m}$  in length, opaque with metallic lustre, moderately pleochroic, strongly anisotropic with pale blue–intense yellowish pink rotation tints,  $H$  4½–5. Reflectances and colour values given. Associated with Ni-rich pyrite, gersdorffite, polydymite, millerite, tetrahedrite, marcasite, and chalcopyrite. Orthorhombic,  $P2_12_12_1$ ,  $a$  7.422(2),  $b$  12.508(3),  $c$  4.900(1) Å,  $Z = 4$ ;  $D_{\text{calc.}}$  4.966. Composition ideally  $\text{CuNiSbS}_3$ . Named for locality. [A.M. **70**, 1329.]
- Lavrentievite.** V. I. Vasil'ev, N. A. Pal'chik, and O. Grechishchev, 1984. *Geologiya i Geofizika*, pt. 7. 54. [Лаврентьевит.] In mercury ores from Arzak and Kadyrel, Tuva, USSR, in calcite veins after partial or complete replacement of sulphides, in rhyolite–dacite porphyries as colourless to pale olive green or dirty yellow grains, up to 0.1 mm, colour dependent on Br content; thin slivers transparent,  $H$  2–2½; with cinnabar, corderoite, and others. Monoclinic,  $a$  8.94(2),  $b$  5.19(4),  $c$  18.33(4) Å,  $\beta$  92.44(8)°,  $Z = 5$ ;  $D_{\text{calc.}}$  7.26–7.51, for 1.29 and 8.44% Br respectively; a possible triclinic cell is also given. R.I.s  $\gg 2$ , reflectances in reflected light given. Composition ideally  $\text{Hg}_3\text{S}_2(\text{Cl},\text{Br})_2$  with  $\text{Cl} > \text{Br}$  (with  $\text{Cl}$  1.310–1.911), see arzakitite [this List] for Br 1.18 or greater. Mineral differs from artificial compounds of similar formulae. Named for M. A. Lavrent'ev, founder and first president of Siberian division of USSR Academy of Sciences. [A.M. **70**, 783.]
- Lawrentjewite.** T. Fehr, 1986. *Lapis*, **11**, pt. 3, 21. German transliteration of Lavrentievite [this List].
- Lead amalgam.** Chen Kegiao, Yan Huifang, Ma Letian, and Peng Zhizhong, 1981. *Dizhi Pinglun*, **27**, 107. In the Pt-bearing Cu–Ni deposit at Shiaonanshan, Inner Mongolia, China, as a single, silver-white grain. Tetragonal,  $I4/mmm$ ,  $a$  3.545(16),  $c$  4.525(20) Å. Microhardness and reflectances given. Named for composition,  $\text{Pb}_2\text{Hg}$ .
- Lonecreekite.** J. E. J. Martini, 1983. *Ann. Geol. Surv. S. Africa*, **17**, 29. At Lone Creek, Fall Cave, near Sabie, E. Transvaal, S. Africa, a supergene oxidation product, as colourless transparent crystals with vitreous lustre. Cubic,  $Pa\bar{3}$ ,  $a$  12.302 Å,  $Z = 4$ ;  $D_{\text{obs.}}$  1.693,  $D_{\text{calc.}}$  1.691; isotropic, R.I. 1.483. Composition ideally  $\text{NH}_4\text{Fe}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$ , see also sabieite and clairite [both this List]. Named for locality. [A.M. **71**, 229.]
- Macaulayite.** M. J. Wilson, J. D. Russell, J. M. Tait, D. R. Clark, and A. R. Frazer, 1984. *M.M.* **48**, 127. In NE Scotland, in the  $< 2 \mu\text{m}$  fraction of bright red patches of a deeply weathered granite outcrop, as yellow or pale red subangular platy particles; R.I.  $> 1.734$ . Monoclinic,  $C$ -centred, with  $a$  5.038,  $b$  8.726,  $c$  36.342 Å,  $\beta$  92°,  $Z = 2$ ;  $D_{\text{calc.}}$  4.41. Composition  $(\text{Fe}_{4.4}^{3+}, \text{Al}_{3.38}\text{Si}_{1.98}\text{O}_{8.6}(\text{OH})_4)$ , structurally a double hematite unit, bonded on both sides by silicate sheets. Named for the Macaulay Inst. of Soil Research, Craigiebuckler, Aberdeen, Scotland. [A.M. **70**, 1330.]
- Magnesioclhoritoid.** Ch. Chopin, 1983. *Bull.* **106**, 715. The Mg end member,  $\text{Mg}_2\text{Al}_4\text{Si}_2\text{O}_{10}(\text{OH})$ , of chloritoid (name should not have been used). A key mineral for the petrogenesis of high-grade pelitic blueschists.
- Magnesiosadanagaite.** H. Shimazaki, M. Bunno, and T. Ozawa, 1984. *A.M.* **69**, 465. In Al, Ti, and Fe-rich skarns in recrystallized limestone beds at two separate localities, Yuge and Myojin islands, Japan, as dark brown to black crystals with vitreous lustre, very light brown streak, perfect {110} cleavage and  $H$  6. Monoclinic,  $a$  9.964(2),  $b$  18.008(3),  $c$  5.352(9) Å,  $\beta$  105.55(2)°,  $Z = 2$ ;  $D_{\text{calc.}}$  3.27; optically biaxial positive,  $\alpha$  1.674(2),  $\beta$  1.686(2),  $\gamma$  1.699(2),  $2V_{\text{obs.}}$  90°,  $2V_{\text{calc.}}$  88°, pleochroic. Composition  $(\text{K},\text{Na})\text{Ca}_2(\text{Fe}^{2+}, \text{Mg}, \text{Al}, \text{Fe}^{3+}, \text{Ti})_5(\text{Si}, \text{Al})_8\text{O}_{22}(\text{OH})_2$  with  $\text{Fe}^{2+} < \text{Mg}$ . An  $\text{SiO}_2$ -poor amphibole extending the composition of the edenite–pargasite series. See sadanagaite [this List]. Named for Prof. R. Sadanaga, Japan.
- Mammothite.** D. R. Peacor, P. J. Dunn, G. Schnorrer-Köhler, and R. A. Bideaux, 1985. *Min. Rec.* **16**, 117. At Tiger, Arizona, USA, with anglesite and phosgenite, and at Laurium, Attica, Greece with cerussite and phosgenite, as blue crystals with {010} cleavage, vitreous lustre, moderate pleochroism. Monoclinic,  $a$  18.89(3),  $b$  7.22(1),  $c$  11.31(2) Å,  $\beta$  112.43(18)°,  $Z = 2$ ;  $D_{\text{calc.}}$  5.25; biaxial positive,  $\alpha$  1.868,  $\beta$  1.892,  $\gamma$  1.928,  $2V$  80°. Composition ideally  $\text{AlCu}_4\text{Pb}_6\text{Sb}(\text{SO}_4)_2\text{Cl}_4(\text{OH})_{18}$ . Named both for the Mammoth vein,

- Tiger, Arizona, and the town of Mammoth, Arizona.
- Manganotapiolite.** S. I. Lahti, B. Johanson, and M. Virkkunen, 1983. *Bull. Geol. Soc. Finl.* **55**, 101. At the Eräjärvi area, Orivesi, S. Finland, in a narrow Li-pegmatite dyke, as small dark brown crystals. Only certain sections of the crystal contained enough Mn to justify the name; really ferrotapiolite. Tetragonal,  $P4_2/mnm$ ,  $a$  4.762,  $c$  9.272 Å,  $Z = 2$ ;  $D_{\text{calc.}}$  7.72. Named for composition.
- Mannardite.** J. D. Scott and G. R. Peatfield, 1984. *Geol. Assoc. Can./Min. Assoc. Can. Program w. abstr.* **9**, 104. Full paper 1986. *C.M.* **24**, 55 and J. Szymanski, 1986. *Ibid.* p. 67 (structure detn.). On the Rough Claims, Sifton Pass, northern British Columbia, Canada, as mm-sized black crystals in quartz-carbonate veins, associated with baryto-calcite, norsethite, and sulvanite. Tetragonal,  $I4_1/a$ ,  $a$  14.356(4),  $c$  5.911(3) Å,  $Z = 4$ ;  $D_{\text{obs.}}$  4.12,  $C_{\text{calc.}}$  4.28; opaque, in reflected light pale reddish brown, reflectances given. Composition  $\text{Ba}_x(\text{Ti}_6\text{V}_2^3)\text{O}_{16}$ , hollandite-type structure, isostructural with redlegite [23rd List], the Ca analogue. Named for Dr G. W. Mannard (1932–1982), President of Kidd Creek Mines Ltd. [*A.M.* **71**, 230.]
- Mantiennéite.** A. M. Franolet, P. Oustrière, F. Fontan, and F. Pillard, 1984. *Bull.* **107**, 737. In the vivianite deposit at Anloua, Cameroun, W. Africa, intercalated with black shales, as very shiny, honey-coloured radiating spherules, with perfect {001} and imperfect {010} cleavages, fragile, faintly pleochroic, associated with quartz, siderite, and kaolinite. Orthorhombic, probably  $Pbca$ , with  $a$  12.38(8),  $b$  20.46(4),  $c$  10.46(6) Å;  $D_{\text{obs.}}$  2.31(1),  $D_{\text{calc.}}$  2.25; optically biaxial negative,  $2V_{\text{obs.}}$  50–60°;  $\alpha$  1.564,  $\gamma$  1.598; distinct dispersion  $r > v$ . Composition ideally  $(\text{K}_{0.5}\square_{0.5})(\text{Mg}_{1.5}\text{Fe}_{0.5}^3\text{Al}_2\text{Ti}(\text{PO}_4)_4(\text{OH})_3 \cdot 15\text{H}_2\text{O}$ , the Al analogue of paulkerrite [this List]. Named for Dr Mantienné, BRGM, Orleans, France. [*A.M.* **70**, 1330.]
- Mathewrogersite.** P. Keller and P. J. Dunn, 1986. *N. Jb. Min. Mh.* 203. At the Tsumeb mine, Namibia, in cavities of corroded Pb–Zn ores, as colourless to white or pale greenish yellow euhedral hexagonal plates up to 1 mm across, and radiating masses, with perfect {0001} cleavage, adamantine or pearly lustre,  $H$  2, associated with queitite [31st List], alamosite, melanotekite, kegelite, larsenite, schaurteite, anglesite, willemite, and leadhillite. Hexagonal,  $a$  8.457(2),  $c$  45.970(22) Å,  $Z = 3$ ,  $D_{\text{obs.}}$  4.7,  $D_{\text{calc.}}$  4.76; optically uniaxial negative,  $\omega$  1.819(4),  $\epsilon$  1.745(3). Composition ideally  $\text{Pb}_7(\text{Fe,Cu})\text{GeAl}_3\text{Si}_{12}\text{O}_{36}(\text{OH},\text{H}_2\text{O},\square)_6$ . Named for Mathew Rogers, the first prospector at Tsumeb.
- Mendozavilite.** S. A. Williams, 1986. *Bol. de Min.* **2**(1), 13. In the oxide zone of the Cumobabi molybdenum deposit, nr. Cumpas, Sonora, Mexico, on quartz gangue or coating bleached biotite, as yellow to orange crystals, with bright yellow streak, vitreous lustre, pleochroic,  $H$  1½; resembles beudantite in thin section. Prob. monoclinic,  $D_{\text{obs.}}$  3.85; optically biaxial positive,  $2E$  5–15°,  $\alpha$  1.762,  $\beta$  1.763,  $\gamma$  1.766, very strong dispersion,  $r > v$ . Composition  $\text{Na}(\text{Ca},\text{Mg})_2[\text{Fe}_6(\text{PO}_4)_2(\text{PMo}_{0.11}\text{O}_{3.9})(\text{OH},\text{Cl})_{10}] \cdot 33\text{H}_2\text{O}$ , not a molybdate but contains a hetero-polyacid P/Mo radical. Named for H. Mendoza Avila, Phelps Dodge geologist who found the first specimen.
- Metavanmeersscheite.** P. Piret and M. Deliens, 1982. *Bull.* **105**, 125. The correct spelling of metavanmeersscheite [32nd List].
- Minamite.** Error for minamiite [32nd List], 1983. *Riv. Min. Ital.*, pt. 4, 121.
- Minasgeraisite.** E. E. Foord, R. V. Gaines, J. G. Crock, W. B. Simmons Jr., and C. P. Barbosa, 1986. *A.M.* **71**, 603. At the Jaguaracu pegmatite, Minas Gerais state, Brazil, in small druses, as lavender to lilac purple zoned rosettes, 0.2–1 mm across, with medium purple rims and pale purple cores, with excellent {100} and good {001} cleavage, coating and/or intergrown with milarite; associated with amazonite, almandine-spessartite garnet, magnetite, and churchite,  $H$  6–7. Monoclinic,  $P2_1/a$ ,  $a$  9.833(2),  $b$  7.562(1),  $c$  4.702(1) Å,  $\beta$  90.46(06)°,  $Z = 2$ ;  $D_{\text{obs.}}$  > 4.25;  $D_{\text{calc.}}$  4.90; biaxial positive,  $\alpha$  1.740(4),  $\beta$  1.754(4),  $\gamma$  1.786(4),  $2V_x$  obs. 68° (average),  $2V_x$  calc. 68°. Composition ideally  $\text{Y}_2\text{CaBe}_2\text{Si}_2\text{O}_{10}$ , a new member of the gadolinite group with a high Ca content. Named for the Brazilian state where it occurs.
- Minehillite.** P. J. Dunn, D. R. Peacor, P. B. Leavens, and F. J. Wicks, 1984. *A.M.* **69**, 1150. At Franklin, Sussex Co., New Jersey, USA, as colourless crystals, or white massive aggregates with perfect {0001} cleavage,  $H$  4, pearly lustre on cleavages. Fluoresces violet under UV; associated with diopside, calcite, grossular, vesuvianite, wollastonite, and microlite in varied assemblages. Similar in appearance to margarosanite, which lacks fluorescence. Hexagonal,  $P6_3/mmc$ ,  $P6_3mc$ , or  $P6c2$ , with  $a$  9.77(2),  $c$  33.01(7) Å,  $Z = 1$ ;  $D_{\text{obs.}}$  2.93,  $D_{\text{calc.}}$  2.94; optically uniaxial negative,  $\omega$  1.607(2),  $\epsilon$  1.604(2). Composition, based on the analogy to reyerite:  $(\text{K},\text{Na})_{2-3}(\text{Ca},\text{Mn},\text{Fe},\text{Mg},\text{Zn})_{28}[\text{Zn}_4\text{Al}_4\text{Si}_{40}\text{O}_{112}(\text{OH})_4](\text{OH})_{12}$ ; structurally related to reyerite, gyrolite, truscottite. Named for Mine Hill, the original outcrop of the Franklin deposit, and beneath which the

- mines were later consolidated as the Franklin mine.
- Moganite.** O. W. Flörke and U. Giese, 1984. *N. Jb. Min. Abh.* **149**, 325. In ignimbrite flows near Mogan, S. Gran Canaria, the principal localities being Barrancá de Tauro, Barranco de los Frailes, and Barranco Taurito, where it occurs detritally as pebbles or as platy masses or nodules in gravel-sand floors of the valleys, and as primary deposits in ignimbrites; in paragenesis with chalcedony at northern end of road tunnel between Puerto Rico and La Playa de Mogan at km 14. Monoclinic,  $a$  4.934(5),  $b$  10.76(10),  $c$  8.533(8) Å,  $\beta$  92.29(10)°,  $Z = 12$ ;  $D_{\text{obs.}}$  2.56 (with 2% H<sub>2</sub>O),  $D_{\text{calc.}}$  2.64, microcrystalline. Composition essentially SiO<sub>2</sub> with 0.5% non-volatile impurities, ~ 2% H<sub>2</sub>O, 0.5% CO<sub>2</sub>, (formerly known as SiO<sub>2</sub>-G). Named for locality. Not approved by IMA prior to publication. [A.M. **70**, 784.]
- Mongolite.** N. V. Vladykin, V. A. Drits, V. I. Kovalenko, M. D. Dorfman, V. S. Malov, and A. I. Gorshkov, 1985. *Zap.* **114**, 374. [Монголит.] To the north of the Khan [Han]-Bogdin massif, Gobi, Mongolia, 5 km south of Han-Bogd, in apatite-rich alkali granites, as pale lilac or greyish lilac micaceous aggregates, silky lustre, H 2. Tetragonal,  $a$  7.00(5),  $c$  29.0(1) Å,  $Z = 2$ ;  $D_{\text{obs.}}$  3.147; uniaxial negative,  $\omega$  1.80,  $\epsilon$  1.74. Composition ideally Ca<sub>4</sub>Nb<sub>6</sub>[Si<sub>5</sub>O<sub>20</sub>]O<sub>4</sub>(OH)<sub>10</sub> ·  $n$ H<sub>2</sub>O. Named for locality.
- Moolooite.** R. M. Clarke and I. R. Williams, 1986. *M.M.* **50**, 295. 12 km East of Mooloo Downs station homestead (25° 01' 30" S., 116° 06' 30" E.), Western Australia, in a sulphur-bearing quartz outcrop, as turquoise green micro-concretionary crusts and powder, in cracks and solution cavities with opaline silica, secondary copper minerals, gypsum and whewellite, with dull or waxy lustre. Orthorhombic,  $a$  5.35,  $b$  5.63,  $c$  2.56 Å,  $Z = 1$ ;  $D_{\text{calc.}}$  3.43; optically biaxial,  $\alpha$  1.57,  $\gamma$  1.95. Composition CuC<sub>2</sub>O<sub>4.0</sub> · 44H<sub>2</sub>O. Named for locality.
- Mopungite.** S. A. Williams, 1985. *Min. Rec.* **16**, 73. At the Mopung Hills, Nevada, an oxidation product of stibnite, as colourless to milky white encrustations of small cubic crystals 0.2–0.3 mm long, rarely acicular, associated with stibiconite, senarmontite, romeite, and tripuhyite; vitreous lustre, dull frosted crystal faces, no cleavage, H 3. Tetragonal,  $P4_2/n$ ,  $a$  7.994,  $c$  7.859 Å;  $D_{\text{obs.}}$  3.21;  $D_{\text{calc.}}$  3.264. Composition ideally Na(Sb(OH))<sub>6</sub>, belongs to stottite [22nd List] group. Named for locality. [A.M. **70**, 1330.]
- Moreauite.** M. Deliens and P. Piret, 1985. *Bull.* **108**, 9. At Kobokobo, Kivu, Zaïre, as greenish yellow nodules and books of plates flattened on {100}, sometimes elongated along  $b$ , up to 2 mm, with good {100} cleavage; associated with furongite, ranunculite, and phosphosiderite. Monoclinic,  $P2_1/c$ ,  $a$  23.41(6),  $b$  21.44,  $c$  18.34(3) Å,  $\beta$  92.0(1)°,  $Z = 16$ ;  $D_{\text{obs.}}$  2.64,  $D_{\text{calc.}}$  2.61; biaxial negative,  $\alpha$  1.540(3),  $\beta$  1.552(2),  $\gamma$  1.558(2),  $2V_{\text{calc.}}$  70°. Composition ideally Al<sub>3</sub>UO<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub>(OH)<sub>2</sub> · 13H<sub>2</sub>O. Named for J. Moreau, Professor of Mineralogy at the Catholic University of Louvain, Belgium.
- Mushistonite.** N. K. Marshukova, A. B. Pavlovskii, and G. A. Sidorenko, 1984. *Zap.* **113**, 612. [Мушистонит.] At the Mushiston tin ore deposit, Tadzhikistan, central Asia, USSR, intimately intergrown with varlamoffite and some grains of stannite, as yellowish brown aggregate-like masses, with high dispersion. In reflected light grey, nearly colourless in thin section; reflectances given. Cubic,  $Pn3m$ ,  $a$  7.735 Å for material with Zn > Fe, and 7.705 Å for material with Fe > Zn; R.I. 1.745 and 1.740 respectively. Composition (Cu,Zn,Fe)Sn(OH)<sub>6</sub>, isostructural with wickmannite [25th List] and smirnovite [21st List]. Named for ore deposit. [A.M. **70**, 1331.]
- Nanekeveite.** K. Chikhara, M. Komatsu, and T. Mizota, 1978. *Abstr. 11th Congr. IMA, Novosibirsk, USSR*, **1**, 62. [Нанекевейт.] In magnesioriebeckite – quartz – phlogopite – albite dykes cutting serpentinites, near Ohmi, Niigata pref., Japan, as yellow aggregates, lenticles (< 3 cm), or irregular crystals (< 2 cm), perfect {001} cleavage, H 5½; associated with ohmilitite [33rd List], benitoite, and leucosphenite. Orthorhombic,  $Pcam$ , or  $Pca2_1$ ,  $a$  9.777,  $b$  10.517,  $c$  22.392 Å;  $D_{\text{obs.}}$  3.62,  $D_{\text{calc.}}$  3.87; biaxial positive, weakly pleochroic,  $\alpha$  1.707,  $\gamma$  1.778,  $2V$  42–48°. Composition near (Na,K)(Ba,Sr,Na,RE,Fe<sup>3+</sup>)<sub>4</sub>(Fe<sup>3+</sup>,Nb,Ti)Ti(Si,Al)<sub>8</sub>O<sub>25</sub>(OH)<sub>3</sub>, similar to joaquinite [5th List]. Etymology not known. Not approved by IMA. [Zap. **113**, 378.]
- Natalyite.** L. Z. Reznitskii, E. V. Sklyarov, and Z. F. Ushchapochkaya, 1985. *Zap.* **114**, 630. [Наталийт.] At the Slyudanka Precambrian complex, southern Lake Baikal area, in metamorphic rocks, as dark grey crystals elongated along [001], 0.3–1.0 mm, either singly or intergrown with quartz and karelianite-eskolaite; prismatic or tabular, sometimes fibrous, with typical pyroxene cleavage of 87–88°. Monoclinic,  $a$  9.58(1),  $b$  8.72(1),  $c$  5.27(1) Å,  $\beta$  107.16°;  $D_{\text{calc.}}$  3.55; optically biaxial negative,  $\alpha$  1.741(2),  $\gamma$  1.762(3),  $2V$  8–12°; the unit cell is close to that of ureyite [24th List]. Composition Na(V,Cr)Si<sub>2</sub>O<sub>6</sub>, a vanadium chromium pyroxene. Named for Natalya V. F. Frolovaya (1907–1960), Russian geologist who studied the area.
- Neodymian goyazite.** Z. Maksimović and G.

- Pantó, 1985. *Tscherm. Min. Pet. Mitt.* **34**, 159. At Nazda bauxite deposit with highest RE content, Vlasenica bauxite region, Yugoslavia. The mineral is in the goyazite-florencite-crandallite triangle with composition  $Gz_{4.3}Fe_{3.3}Cn_{2.4}$ . First analyses published.
- Nevskite.** G. N. Nchelyustov, N. I. Chistyakova, and E. N. Zav'yalov, 1984. *Zap.* **113**, 351. [Невский.] In quartz-cassiterite veins at Nevsk, NE USSR, with wolframite, cassiterite, nathanite, laitakarite, Se-bearing cosalite, weibullite, guanajuatite, and seleniferous bismuthinite, as lead-grey irregular grains up to 1-2 mm, with strong metallic lustre, perfect {0001} cleavage, white in reflected light; resembles laitakarite. Microhardness given. Trigonal, probably primitive,  $a$  4.197,  $c$  22.80 Å,  $Z = 6$ ;  $D_{calc.}$  7.85. Composition ideally  $Bi(Se,S)$ , identical with artificial material. Named for locality. [A.M. **70**, 784.]
- Nevskite.** T. Fehr, 1986. *Lapis*, **11**, pt. 3, 21. German transliteration of Nevskite [this List].
- Obradovicite.** J. J. Finney, S. A. Williams, and R. D. Hamilton, 1986. *M.M.* **50**, 283. At Chuquicamata, Chile, as dense pea-green clusters of platy crystals up to 0.1 mm, on vein quartz or on crusts or earthy tan jarosite together with tiny wulfenite crystals, no distinct cleavage, prominent {100}, {110} and {011} faces, no twinning,  $H$  2½. Orthorhombic, *Pcmm*,  $a$  15.046,  $b$  14.848,  $c$  11.056 Å,  $Z = 4$ ;  $D_{obs.}$  3.55,  $D_{calc.}$  3.68; optically biaxial positive,  $\alpha$  1.790,  $\beta$  1.798,  $\gamma$  1.811,  $2V_z$  81°, with pale yellow pleochroism and strong dispersion. Composition ideally  $H_4(K,Na)CuFe_2AsO_4(MoO_4)_5 \cdot 12H_2O$ , the Cu,K analogue of betpakdalite and sodium betpakdalite [22nd List]. Named for M. T. Obradovic, who provided type material.
- Olenite.** P. B. Sokolov, M. G. Gorskaya, V. V. Gordienko, M. G. Petrova, Yu. L. Kretser, and V. A. Frank-Kamenetskii, 1986. *Zap.* **115**, 119. [Оленит.] In Precambrian rocks of the USSR, in rare metal veins in meta-diabase, as pink acicular crystals up to 3 mm long, with vitreous lustre associated with quartz, albite, and K-feldspar. Trigonal, *R3m*,  $a$  15.803(3),  $c$  7.086(1) Å,  $Z = 3$ ;  $D_{obs.}$  3.010(2),  $D_{calc.}$  3.12; uniaxial negative,  $\omega$  1.654,  $\varepsilon$  1.635. Composition ideally  $Na_{1-x}Al_3Al_6B_3Si_6O_{27}(O,OH)_4$ , where  $x = 0-1$ , the Li-free analogue of elbaite, tourmaline group. Named for occurrence.
- Oyelite.** I. Kusachi, C. Henmi, and K. Henmi, 1984. *J. Japan Assoc. Min. Pet. Econ. Geol.* **79**, 267. At Fuka, nr. the town of Bitchu, Okayama pref. Japan, in a vein as white nearly parallel aggregates of 1-3 mm acicular crystals, vitreous lustre,  $H$  5; associated with bultfonteinite, scawtite, xonotlite, and calcite. ?Orthorhombic,  $a$  11.25,  $b$  7.25,  $c$  20.46 Å;  $D_{obs.}$  2.62; biaxial,  $\alpha$  1.602,  $\beta$  1.606,  $\gamma$  1.613. Empirical formula  $0.99CaO \cdot 0.10B_2O_3 \cdot 0.80SiO_2 \cdot 1.25H_2O$ . Oyelite was previously reported and described as 10 Å tobermorite [Heller and Taylor, 1956. *Crystallographic Data for the Calcium Silicates*, HMSO, London, 38; Kusachi *et al.*, 1980. *J. Min. Soc. Japan*, **14**, 314]. [A.M. **71**, 230.]
- Padëraite.** W. G. Mumme and L. Žák, 1985. *N. Jb. Min. Mh.* **557**. At Băita Bihorului, Romania (formerly Rézbánya, Hungary) in a specimen of 'rézbányite' microscopically intergrown with bismuthinite, steel grey on fresh fractures, turning black or brown when weathered. Monoclinic, *P2<sub>1</sub>/m*,  $a$  28.44,  $b$  3.95,  $c$  17.55 Å,  $\beta$  106.1°,  $Z = 2$ ;  $D_{calc.}$  6.91. Composition  $Cu_{5.9}Ag_{1.3}Pb_{1.6}Bi_{11.2}S_{22}$ , in cuprobismutite-hodrushite group. Named for Dr K. Padëra, Charles University, Prague, Czechoslovakia, who first studied the mineral in 1874.
- Paramendozavilite.** S. A. Williams, 1986. *Bol. de Miner.* **2**(1), 13. In the oxide zone of the Cumobabi molybdenum deposit, SW of Cumpas, Sonora, Mexico, in biotite-rich pegmatite gangue, as pale yellow prisms coating bleached biotite, with vitreous lustre, pale yellow streak, one perfect cleavage, extinction oblique to it, pleochroic,  $H$  1. Possibly monoclinic or lower symmetry,  $D_{obs.}$  3.35; optically biaxial negative,  $\alpha$  1.686,  $\beta$  1.710,  $\gamma$  1.720,  $2E$  60°. Composition  $NaAl_4[Fe_7(PO_4)_5(PMo_{12}O_{40})(OH)_{16}] \cdot 56H_2O$ ; not a molybdate but evidently contains a heteropolyacid P/Mo radical. Named for similarity to mendozavilite [this List].
- Paulkerrite.** D. R. Peacor, P. J. Dunn, and W. B. Simmons, 1984. *Min. Rec.* **15**, 303. At the 7U7 ranch, c.40 km west of Hillside, Yavapai Co., Arizona, USA, as colourless to light yellowish brown, transparent, euhedral 0.2 mm crystals, equant or flattened on {010}, elongated // [001], with perfect {100} cleavage. Orthorhombic, *Pbca*,  $a$  10.49(7),  $b$  20.75(13),  $c$  12.44(2) Å,  $Z = 4$ ;  $D_{obs.}$  2.36(4),  $D_{calc.}$  2.36; optically biaxial negative,  $2V$  80°,  $\alpha$  1.598(4),  $\beta$  1.624(calc.),  $\gamma$  1.643(4), strong dispersion  $r > v$ . Composition ideally  $KTi(Mg, Mn)_2(Fe^{3+}, Al, Ti, Mg)_2(PO_4)_4(OH)_3 \cdot 15H_2O$ , isostructural with mantiennéite (this List). Identical with Hurlbut's (1936, A.M. **21**, 656) unidentified phosphate mineral associated with bermanite. Paulkerrite has been found on several bermanite specimens. Named for the late Paul Kerr, professor at Columbia University, USA. [A.M. **70**, 785.]
- Penginite.** L. I. Bocek, S. M. Sandomirskaya, N. G. Chuvikina, and V. P. Khvorostov, 1984. *Zap.* **113**, 356. [Пенжинит.] Near the Penzhina

- river, N. Kamchatka, USSR, in superficial Au-Ag-Cu ore deposits, as minute creamy yellow or greenish white grains, 0.005-0.007 mm; greyish white in reflected light; microhardness and reflectances given. Hexagonal,  $P6_322$ ,  $a$  13.779,  $c$  16.980 Å,  $Z = 18$ ;  $D_{\text{calc.}}$  8.35. Composition ideally  $(\text{Ag,Cu})_4\text{Au}(\text{S,Se})_4$ . Named for Pengina (Penzhina in Times Atlas) river. [A.M. 70, 785.]
- Perlielite.** Yu. P. Men'shikov, 1984. Zap. 113, 607. At Eveslogchorr and Yukspor mountains, Khibin massif, Kola peninsula, USSR, as white, fine-grained aggregates in nepheline-microcline veins with some pectolite, nepheline-feldspar, and sodalite-microcline pegmatites; pearly lustre,  $H$  5. Hexagonal,  $P6/mmm$ ,  $a$  18.49(3),  $c$  7.51(1) Å,  $D_{\text{obs.}}$  2.14(5),  $D_{\text{calc.}}$  2.15; optically uniaxial positive,  $\omega$  1.483(2),  $\gamma$  1.488(2). X-ray powder pattern close to that of zeolite L of Breck. Composition ideally  $\text{K}_9\text{Na}(\text{Ca,Sr})\text{Al}_{12}\text{Si}_{24}\text{O}_{72} \cdot 15\text{H}_2\text{O}$ , a new K zeolite. Named for the baptism [Перекрест] of Liliya Alekseevna, teacher at the Kirov mining academy.
- Petrovskaité.** G. V. Nesterenko, A. I. Kuznetsova, N. A. Pal'chik, and Yu. G. Lavrent'ev, 1984. Zap. 113, 602. [Петровскит.] At the Maikan 'S' Au-bearing sulphide deposit, central Kazakhstan, at a depth of 60-65 m in baryte-quartz debris, with native sulphur and secondary sulphides, as a rim or very fine-grained aggregate, opaque, non-magnetic, dark grey to black, dull metallic lustre, brittle and soft,  $H \sim 2\frac{1}{2}$ ; associated with chlorargyrite. Monoclinic,  $a$  4.943(9),  $b$  6.670(9),  $c$  7.221(9) Å,  $\beta$  95.68(7)°,  $Z = 4$ ;  $D_{\text{calc.}}$  9.5. Composition AuAg(S,Se). Named for Nina V. Petrovskaya, Russian mineralogist. [A.M. 70, 1331 gives name as Petrovskaya in error.]
- Philipsburgite.** D. R. Peacor, P. J. Dunn, R. A. Ramik, B. D. Sturman, and L. G. Zeihen, 1985. C.M. 23, 255. At the Black Pine mine, Flint Creek valley, John Long mts, ~ 14.5 km NW of Philipsburg, Montana, as bright emerald green late-stage druses on bayldonite, mimetite, and quartz, with vitreous lustre, no cleavage or parting,  $H$  3-4. Monoclinic,  $P2_1/c$ ,  $a$  12.33(8),  $b$  9.20(4),  $c$  10.69(3) Å,  $\beta$  96.92(35)°,  $Z = 4$ ;  $D_{\text{obs.}}$  4.07(10),  $D_{\text{calc.}}$  4.04; optically biaxial negative,  $2V_x$  16(2)°,  $\alpha$  1.729(2),  $\beta$  1.774(2),  $\gamma$  1.775(2),  $2V_x$  calc. 17°,  $c$ ;  $Y$  7°. Composition  $(\text{Cu,Zn})_6(\text{AsO}_4/\text{PO}_4)_2(\text{OH})_6 \cdot \text{H}_2\text{O}$ , isostructural with kipushite [11th List = arakawaite]. Named for locality.
- Phyllotungstite.** K. Walenta, 1984. N. Jb. Min. Mh. 529. At the Clara mine near Oberwolfach, central Black Forest, as yellowish micaceous crusts of tabular crystals, up to 0.25 mm, on quartz, associated with ferritungstite, scheelite, and pyrite; translucent, pearly lustre, perfect {001} cleavage, irregular fracture,  $H \sim 2$ . Orthorhombic,  $a$  7.29,  $b$  12.59,  $c$  19.55 Å,  $Z = 3$  [unlikely for an orthorhombic mineral];  $D_{\text{obs.}}$  > 4.03 (Cleric sol.),  $D_{\text{calc.}}$  5.26; space group uncertain; optically uniaxial or weakly biaxial negative,  $\alpha$  2.10(1),  $\gamma$  2.185(1),  $2V_{\text{max.}}$  18°,  $r \ll v$ ,  $Z = c$ . Composition still in doubt, could be  $(\text{W,Fe})_{16}(\text{O,OH})_{48}$  or  $(\text{W,Fe})(\text{O,OH})_3$  with a little Ca, Pb, and  $\text{H}_2\text{O}$ . Named for micaceous appearance [phyllon ( $\phi\upsilon\lambda\lambda\omicron\nu$ ) Greek for leaf] and composition.
- P-ourayite.** E. Makovicky and S. Karup-Møller, 1984. C.M. 22, 565. At Ivigtut cryolite deposit, Greenland, as very fine {100} exsolution lamellae in a matrix of B-centred ourayite [30th List] which in turn is associated with berryite, aikinite, galena, matildite, and others. Orthorhombic,  $Pbnm$  or  $Pbn2_1$ ,  $a$  13.15(2),  $b$  44.17(4),  $c$  4.05(2) Å. Composition  $\text{Pb}_{2.8}\text{Ag}_{3.6}\text{Bi}_{5.6}\text{S}_{13}$ , a Ag-Pb-Bi sulphide of the lillianite homologous series. Although intended only as a 'working name' to distinguish it from B-centred ourayite, it was not approved by IMA and should, therefore, not have been published. [A.M. 70, 1332.]
- Protasite.** M. K. Pagoaga, D. E. Appleman, and J. M. Stewart, 1986. M.M. 50, 125. At the Shinkolobwe mine, Shaba province, Zaïre, as bright orange hexagonal platelets 0.1-0.5 mm wide and up to 0.1 mm thick, flattened on {010}. Monoclinic,  $Pn$ , with  $a$  12.295(2),  $b$  7.221(1),  $c$  6.9558(8) Å,  $\beta$  90.40(2)°,  $Z = 2$ ;  $D_{\text{calc.}}$  5.827; biaxial negative,  $2V \sim 60-65$ °,  $\beta$  and  $\gamma$  1.79-1.83,  $X = b$ , sector twinning common. Composition  $\text{Ba}(\text{UO}_2)_3\text{O}_3(\text{OH})_2 \cdot 3\text{H}_2\text{O}$ ; structure shows it to be the simplest model structure of all hydrated uranyl oxides. Named for Jean Protas (1931- ), professor at the University of Nancy, France.
- Protojoseite.** E. M. Zavyalov and V. D. Begizov, 1983. Zap. 112, 589. A third sulphotelluride was found in two samples at Rézbánya, Hungary (now Romania), and in another two at the Malishevskii Izumrudnye pit, Urals, USSR. The X-ray powder pattern of josite-B is similar but protojoseite shows splits and displacements. Single crystal study is possible and should be undertaken. Composition  $\text{Bi}_3\text{TeS}$  to  $\text{Bi}_{3+x}\text{Te}_{1-x}\text{S}_{1-y}$ , where  $x = -0.02$  to 0.14 and  $y = -0.05$  to 0.17. Substitution of Pb and Bi and Se for S is minor.
- Qandilite.** H. M. Al-Hermezi, 1985. M.M. 49, 739. From the Qala-Dizeh region, NE Iraq, in a forsterite skarn in contact with a kaersutite-rich banded diorite, as a black interstitial matrix between coarse idioblastic grains of forsterite, closely associated with Mg-Al spinel and geikielite, and perovskite; metallic lustre, strongly

- magnetic, black streak, even fracture, and perfect {111} cleavage,  $H 7$ . Cubic,  $Fd\bar{3}m$ ,  $a 8.4033(14) \text{ \AA}$ ,  $Z = 8$ ;  $D_{\text{obs.}} 4.03$ ,  $D_{\text{calc.}} 4.04$ . In reflected light grey with pinkish tint. Reflectances, microhardness, and colour values given. Composition ideally  $\text{Mg}_2\text{TiO}_4$ , a new member of the spinel group, with 63.8  $\text{Mg}_2\text{TiO}_4$ , 12.8  $\text{MgFe}_2\text{O}_4$  and 23.4  $\text{FeFe}_2\text{O}_4$  mole %. Named for the Qandil group of metamorphic rocks at Dupezeh mtn.
- Qingheite.** M. Zhesheng, S. Nicheng, and P. Zhizhong, 1983, *Scientia Sinica B*, **26**, 876. From NW Qinghe county, Altay pref., Uygur autonomous region of Xinjiang, China, in muscovite pegmatite with braunite, as jade green to pale yellowish green irregular brittle grains, occasionally as short prismatic even tabular crystals up to 4 mm long, with vitreous lustre, conchoidal fracture, imperfect {010} cleavage,  $H 5\frac{1}{2}$ . Monoclinic,  $P2_1/n$ ,  $a 11.856(3)$ ,  $b 12.411(3)$ ,  $c 6.421(1) \text{ \AA}$ ,  $\beta 114.45^\circ$ ,  $Z = 2$ ;  $D_{\text{obs.}} 3.718$ ,  $D_{\text{calc.}} 3.610$ , optically biaxial positive,  $2V 79^\circ 36'$ ,  $\alpha 1.6776$ ,  $\beta 1.6836$ ,  $\gamma 1.6913$ , strongly pleochroic. Composition  $\text{Na}_2\text{NaMnMn}_2\text{Mg}_2(\text{Al,Fe})_2(\text{PO}_4)_6$ , the Mg end member of the wylieite group. Named for locality.
- Radhakrishnaite.** A. D. Genkin, Yu. G. Safonov, V. N. Vasudev, B. K. Rao, V. A. Boronikhin, L. N. Vyal'sov, A. I. Gorshkov, and A. V. Mokhov, 1985. C.M. **23**, 501. At the Kolar gold deposits, India, in quartz veins, as fine grains intergrown with kolarite (this List) as veinlet and rim replacement of altaite, with a distinct rose brown tint. Tetragonal,  $a 5.71(5)$ ,  $c 3.77(5) \text{ \AA}$ ,  $Z = 1$ ;  $D_{\text{calc.}} 8.89$ ; electron diffraction pattern and reflectances given. Composition ideally  $\text{PbTe}_3(\text{Cl}_2)_2$ . Named for B. P. Radhakrishna, Indian geologist.
- Ramsbeckite.** R. v. Hodenberg, W. Krause, G. Schnorrer-Köhler, and H. Täuber, 1985. *N. Jb. Min. Mh.* **550**. On specimens from the Bastenberg mine, near Ramsbeck, W. Germany, and from four other German localities, on quartz, chalcopryrite, slate and slag, as green equant crystals up to 2 mm, associated with other secondary Cu-Zn minerals.  $D_{\text{obs.}} 3.39$ ,  $D_{\text{calc.}} 3.37$ ; optically biaxial negative,  $\alpha 1.635$ ,  $\beta 1.675$ ,  $\gamma 1.680$ . Composition ideally  $(\text{Cu,Zn})_7(\text{SO}_4)_2(\text{OH})_{10} \cdot 5\text{H}_2\text{O}$ , the fourth known basic Cu-Zn sulphate mineral. Named for Ramsbeck, town near occurrence.
- Rankachite.** K. Walenta and P. J. Dunn, 1984. *N. Jb. Min. Mh.* **289**. At the Clara mine, near Oberwolfach, central Black Forest, W. Germany, a secondary mineral, as dark brown to yellowish brown aggregates of radiating needles or laths forming crusts on quartz with pyrite, marcasite, and scheelite, elongated along  $c$ , flattened on {100} or {010}; translucent to opaque, resinous-subadamantine lustre, some cleavage // plane of flattening, uneven fracture,  $H 2\frac{1}{2}$ . Orthorhombic, probably  $Pm\bar{m}n$ ,  $a 8.17$ ,  $b 42.02$ ,  $c 5.45 \text{ \AA}$ ,  $Z = 4$ ;  $D_{\text{obs.}} > 4.03$ ,  $D_{\text{calc.}} 4.50$ ; optically biaxial negative,  $\alpha 1.770(5)$ ,  $\beta 1.925(5)$ ,  $\gamma 1.970(5)$ ,  $2V 58^\circ$ , dispersion  $r < v$ , pleochroic X, Y yellow brown, Z red brown to opaque,  $Z = c$ . Composition ideally  $(\text{CaO})_{0.5}(\text{FeO})_{0.5} \cdot \text{V}_2\text{O}_5 \cdot 4\text{WO}_3 \cdot 6\text{H}_2\text{O}$ . Named for Rankach valley [Rankachtal] where the mine is situated. [A.M. **70**, 786.]
- Rapidcreekite.** A. C. Roberts, H. G. Ansell, I. R. Jonasson, J. D. Grice, and R. A. Ramik, 1986. C.M. **24**, 51. At Cross Cut Creek ( $68^\circ 33' 45'' \text{ N.}$ ,  $136^\circ 47' 30'' \text{ W.}$ ), Rapid Creek-Big Fish river area, northern Yukon Territory, on bedding planes and joint surfaces of a quartz-rich iron formation, as coatings and radiating sprays of white to colourless acicular crystals, elongated // [001], transparent, perfect {010} and good {100} cleavage, vitreous lustre, splintery fracture,  $H 2$ . Orthorhombic,  $Pcnb$ ,  $a 15.49(1)$ ,  $b 19.18(1)$ ,  $c 6.157(4) \text{ \AA}$ ,  $Z = 8$ ;  $D_{\text{obs.}} 2.21(1)$ ,  $D_{\text{calc.}} 2.239$ ; optically biaxial positive,  $\alpha 1.516(1)$ ,  $\beta 1.518(1)$ ,  $\gamma 1.531(1)$ ,  $2V_x \text{ obs. } 45(3)^\circ$ ,  $2V_x \text{ calc. } 43^\circ$ . Composition ideally  $\text{Ca}_2\text{SO}_4\text{CO}_3 \cdot 4\text{H}_2\text{O}$ . X-ray powder pattern said to be very similar to that of the unnamed calcium arsenate (PDF. 29-294) described by Walenta (1972), *Aufschl.* **23**, 279) from the Johann mine, Wittichen, W. Germany. Optical properties too are very close. Named for locality.
- Reinardbraunsite.** Error for reinhardbraunsite [33rd List] 1985, *Riv. Min. Ital.* **8**, 110.
- Sabieite.** J. E. J. Martini, 1983. *Ann. Geol. Surv. S. Africa.* **17**, 29. At Lone Creek Fall cave, near Sabie, E. Transvaal, S. Africa, a supergene oxidation product, as a white powder of very thin platelets with // extinction. Trigonal, possibly  $P321$ ,  $a 4.822$ ,  $c 8.1696 \text{ \AA}$ ,  $Z = 1$ . Composition ideally  $\text{NH}_4\text{Fe}(\text{SO}_4)_2$ . Named for town nearest occurrence. See also loncreekite and clairite [both this List]. [A.M. **71**, 229.]
- Sadanagaite.** H. Shimazaki, M. Bunno, and T. Ozawa, 1984. A.M. **69**, 465. In Al, Ti, and Fe-rich skarns in recrystallized limestone beds at two separate localities, Yuge and Myojin islands, Japan, as dark brown to black crystals with vitreous lustre, very light brown streak, perfect {110} cleavage,  $H 6$ . Monoclinic,  $a 9.922(10)$ ,  $b 18.03(2)$ ,  $c 5.352(9) \text{ \AA}$ ,  $\beta 105.30(10)^\circ$ ,  $Z = 2$ ;  $D_{\text{calc.}} 3.30$ ; biaxial positive,  $\alpha 1.673(2)$ ,  $\beta 1.684(2)$ ,  $\gamma 1.697(2)$ ,  $2V_{\text{obs.}} 80-90^\circ$ ,  $2V_{\text{calc.}} 86^\circ$ .  $(\text{K,Na})\text{Ca}_2(\text{Fe}^{2+}, \text{Mg, Al, Fe}^{3+}, \text{Ti})_5(\text{Si, Al}_8\text{O}_{22}(\text{OH})_2)$ , with  $\text{Fe}^{2+} \geq \text{Mg, Al} \geq \text{Fe}^{3+}$ , and  $\text{Si} < 5.5$ . Extremely  $\text{SiO}_2$ -poor amphibole extending to the composition of the edenite-pargasite series. See also



- magnesiosadanagaite [this List]. Named for Prof. R. Sadanaga, Japan. [M.A. 85M-0848.]
- Schöllhornite.** A. Okada, K. Keil, B. F. Leonard, and I. D. Hutcheon, 1985. *A.M.* **70**, 638. In the Norton Country enstatite-chondrite meteorite, as thin bands a few  $\mu\text{m}$  wide in caswellsilverite,  $\text{NaCrS}_2$ , [32nd List], and as individual grains up to 250  $\mu\text{m}$ ; associated with daubr elite, titanian troilite, ferromagnesian alabandite, oldhamite, kamacite, and perryite. Has distinct reflection pleochroism, brownish grey in air and bluish grey in oil; uniaxial negative, at 546 nm  $R$  19.3,  $R_E$  16.0%. Rhombohedral,  $a$  3.32,  $c$  26.6  $\text{Å}$ ;  $D_{\text{obs}}$  2.70(synth.),  $D_{\text{calc}}$  2.74. Composition  $\text{Na}_{0.3}(\text{H}_2\text{O})\text{CrS}_2$ . Named for Dr R. Sch llhorn, Professor of Inorganic Chemistry at M nster, W. Germany.
- Selenostephanite.** M. M. Botova, S. M. Sandomirskaya, and N. G. Chuvikina, 1985. *Zap.* **114**, 627. [Селеностефанит.] In central Chukhotka, USSR, in a near-surface Au-Ag deposit, as greyish white metallic subtabular grains up to 0.08 mm across, associated with gold, miargyrite, clausthalite, and others; olive tints in reflected light. Orthorhombic,  $P2_12_12_1$ ,  $a$  7.86,  $b$  11.84,  $c$  8.92  $\text{Å}$ ,  $Z = 4$ ;  $D_{\text{calc}}$  7.5; microhardness and reflectances given. Composition  $\text{Ag}_5\text{Sb}(\text{Se},\text{S})_4$ . Named for composition.
- Shigaite.** D. R. Peacor, P. J. Dunn, A. Kato, and F. J. Wicks, 1985. *N. Jb. Min. Mh.* 453. At the Ioi mine, Shiga pref., Japan, in veinlets cutting altered manganosite-rhodochrosite-sonolite ores, as yellow tabular hexagonal crystals with perfect {0001} cleavage,  $H$  2. Hexagonal,  $R3$  or  $R\bar{3}$ ,  $a$  9.51(1),  $c$  32.83(10)  $\text{Å}$  (with a marked pseudocell of  $a' = a/3$ ,  $c' = c/3$ )  $Z = 3$ ;  $D_{\text{obs}}$  2.32,  $D_{\text{calc}}$  2.35; optically uniaxial negative,  $\omega$  1.546,  $\epsilon$  (not det.), distinct pleochroism. Composition ideally  $\text{Al}_4\text{Mn}_7(\text{SO}_4)_2(\text{OH})_{22} \cdot 8\text{H}_2\text{O}$ , may be structurally related to lawsonbauerite [31st List] and mooreite [12th List]. Named for locality.
- Sidwillite.** F. Cesbron and G. Ginderow, 1985. *Bull.* **108**, 813. At Lake Como, Colorado, USA, in a quartz vein, as an oxidation product of jordisite, as canary yellow tabular (on {010}) crystals with pseudo-hexagonal outline and perfect [010] cleavage, resinous to adamantine lustre, pale yellow streak,  $H$  2½. Monoclinic,  $P2_1/n$ ,  $a$  10.618(5),  $b$  13.825(7),  $c$  10.482(5)  $\text{Å}$ ,  $\beta$  91.61(4),  $Z = 16$ ;  $D_{\text{obs}}$  3.12,  $D_{\text{calc}}$  3.11; optically biaxial negative,  $\alpha$  1.70(1),  $\beta$  2.21,  $\gamma$  2.38,  $2V_{\text{calc}}$  48°; strongly pleochroic, colourless to yellow. Composition  $\text{MoO}_3 \cdot 2\text{H}_2\text{O}$ ; structure determined. Named for Dr S. A. Williams, mineralogist, formerly of the Phelps Dodge Mining Corporation.
- Silver-rhodostannite. H. J. Bernhardt, B. Coira, and M. K. de Brodtkorb, 1984. *N. Jb. Min. Abh.* **150**, 25. In G. Moh's sulphosalts: observations and mineral descriptions, experiments and applications. In a Tertiary stratiform volcanic complex, Jujuy province, Argentina. Composition near  $\text{AgCuFeSn}_3\text{S}_8$ , whereas rhodostannite [26th List] is  $\text{Cu}_2\text{FeSn}_3\text{S}_8$ . Was partially described earlier by Johan and Picot [Bull. **105**, 239] but not named. Not submitted to IMA.
- Simonkollite.** K. Schmetzer, G. Schnorrrer-K hler, and O. Medenbach, 1985. *N. Jb. Min. Mh.* 145. At Richelsdorf, Hesse, W. Germany a natural weathering product of Zn-bearing slags, as colourless, transparent to translucent tabular to lamellar hexagonal crystals up to 1 mm across, with perfect {0001} cleavage, vitreous lustre,  $H$  1½. Hexagonal,  $R\bar{3}m$ ,  $a$  6.334(2),  $c$  23.58(1)  $\text{Å}$ ,  $Z = 3$  (by analogy with synth. material);  $D_{\text{obs}}$  3.20(5),  $D_{\text{calc}}$  3.35; optically uniaxial positive,  $\omega$  1.657(1),  $\epsilon$  1.700(1). Composition  $\text{Zn}_5(\text{OH})_8\text{Cl}_2 \cdot \text{H}_2\text{O}$ . Named for W. Simon and K. Kolle of Cornberg, near Richelsdorf, mineral collectors.
- Smirnite.** E. M. Spiridonov, L. A. Demina, V. A. Dolgikh, G. M. Antonina, A. D. Rakcheev, L. V. Bulgak, S. I. Lebedeva, and T. N. Chvileva, 1984. *Dokl.* **278**, 199. [Смирнит.] At an old burnt mine, Zod deposit, Armenia, then recognized in the 'Northern Aksu' (Kazakhstan) and 'Zakarpatiya' deposits, as colourless, pale grey, or pale yellow, transparent or translucent tabular crystals up to 2 mm, or as crusts on quartz and tellurides, with perfect basal cleavage and other distinct cleavages, brittle, strongly birefringent, similar to titanite. Orthorhombic,  $Cm2a$ ,  $a$  16.447(19),  $b$  5.513(3),  $c$  11.579(15)  $\text{Å}$ ,  $Z = 8$ ;  $D_{\text{obs}}$  7.78,  $D_{\text{calc}}$  7.72; optically biaxial positive,  $\alpha$  2.35,  $\beta$  2.36,  $\gamma$  2.46 ( $\lambda$  579 nm),  $2V$  35-40°. Microhardness and reflectances given. Composition ( $\text{Bi}_{1.84}, \text{Pb}, \text{Sb}, \text{Fe}, \text{Cu}, \text{Ag}$ ) $_{\Sigma 2.06}\text{Te}_{1.02}\text{O}_{4.92}$ , ideally  $\text{Bi}_2\text{TeO}_5$ . Named for V. I. Smirnov, Russian geologist. [A.M. **70**, 876.]
- Sodium-pharmacosiderite.** D. R. Peacor and P. J. Dunn, 1985. *Min. Rec.* **16**, 121. At Marda, Western Australia, pale green with uneven fracture and very imperfect {001} cleavage,  $H$  3, together with yellow pharmacosiderite, scorodite, jarosite group min., etc. Cubic,  $P\bar{4}3m$ ,  $a$  8.01(2);  $D_{\text{obs}}$  2.79(4),  $D_{\text{calc}}$  2.90; isotropic, R.I. 1.705(4). Composition ideally  $\text{Na}_2(\text{OH})\text{Fe}^{3+}(\text{AsO}_4)_3(\text{OH})_4 \cdot 7\text{H}_2\text{O}$ . Named for composition. [A.M. **71**, 230.]
- Spheniscidite.** M. J. Wilson and D. C. Bain, 1986. *M.M.* **50**, 291. At Elephant Island, South Shetland islands, British Antarctic Territory, as very fine-grained brown aggregates in an ornithogenic soil (associated with a penguin rookery) derived from chloritic phyllites. Ortho-

- rhombic,  $P2_1/n$ ,  $a$  9.75(1),  $b$  9.63(2),  $c$  9.70(1) Å,  $\beta$  102° 34',  $Z = 4$ ; data very close to the synthetic K analogue and to leucophosphate. Composition  $(\text{NH}_4, \text{K})(\text{Fe}^{3+}, \text{Al})_2(\text{PO}_4)_2(\text{OH}) \cdot 2\text{H}_2\text{O}$ , the  $\text{NH}_4$ -dominant analogue of leucophosphate. Named for *sphenisciformes*, order name for penguins.
- Srebrodol'skite.** B. V. Chesnokov and L. F. Bazhenova, 1985. *Zap.* **114**, 195. [Сребродольскит.] Discovered in 1982 at the Kopeiska shaft of the Chelyabin coal basin, southern Urals, USSR, as scorched nut-like pieces of fossilized wood, usually 20 × 30 cm but can be over 50 cm, common in the region. On the surface these patches are yellowish, on fractures dark brown. Can be pseudomorphous after calcite or ankerite, or mixed with bituminous material, aggregates usually porous, black, finely granular; grains and crystals < 0.1 mm; streak yellowish brown, adamantine lustre, uneven fracture,  $H$  5½. Noticeable  $\{h0l\}$  cleavage, weakly magnetic. Orthorhombic,  $Pnma$ ,  $a$  5.420(3),  $b$  14.752(3),  $c$  5.594(3) Å,  $Z = 4$ ;  $D_{\text{obs}}$  4.04,  $D_{\text{calc}}$  4.03; nearly square tablets under the microscope,  $\alpha$  2.24,  $\beta$  2.25,  $\gamma$  2.27, in good agreement with synthetic material. Composition ideally  $\text{Ca}_2\text{Fe}_2\text{O}_5$ ; belongs to brownmillerite group. Named for B. I. Srebrodol'skii (1927– ), Ukrainian mineralogist.
- Straczekite.** H. T. Evans Jr., G. Nord, J. Marinenko, and C. Milton, 1984. *M.M.* **48**, 289. In ore at the Union Carbide vanadium mine, Wilson Springs (formerly Potash Sulfur Springs), Garland Co., Arkansas, USA; a rare secondary mineral as dark greenish black, very soft thin laths up to 0.5 mm long forming foliated masses in argillaceous gangue. Opaque but very thin flakes are greenish yellow; greasy lustre, greenish streak, perfect  $\{100\}$  cleavage. Monoclinic,  $a$  11.679(2),  $b$  3.6608(4),  $c$  10.636(2) Å,  $\beta$  100.53(4)°,  $Z = 1$ ;  $D_{\text{obs}}$  3.09 and 3.29,  $D_{\text{calc}}$  3.21. Composition  $(\text{Ca}_{0.33}\text{Ba}_{0.39}\text{K}_{0.31}\text{Na}_{0.16})(\text{V}_{1.59}^{4+}\text{V}_{6.31}^{5+}\text{Fe}_{0.10}^{3+})\text{O}_{20.02}(\text{H}_2\text{O})_{2.9}$ , similar to a number of V bronzes, represents a new series of vanadate minerals with  $M_x\text{V}_6\text{O}_{16} \cdot y\text{H}_2\text{O}$  layers, but distinct from the hewettite series,  $M_x\text{V}_6\text{O}_{16} \cdot y\text{H}_2\text{O}$ . Named for J. A. Straczek, Chief Geologist at Union Carbide Corporation.
- Strontio-chevkinite.** S. E. Haggerty and A. N. Mariano, 1983. *Contr. Min. Petr.* **84**, 365. At Srambi, Paraguay, in the Parana basin carbonatites, as rounded opaque grains up to 1.5 mm dia., grey in reflected light, strongly anisotropic in shades of grey with characteristic flesh-red colour, submetallic lustre and twinned in thick parallel lamellae or as interpenetration twins. Monoclinic,  $P2_1/a$ , with  $a$  13.56,  $b$  5.70,  $c$  11.70 Å,  $\beta$  100.32°,  $D_{\text{calc}}$  5.44. Composition  $[\text{Sr}_2(\text{La}, \text{Ce})_{1.5}\text{Ca}_{0.5}]_{\Sigma 4.0}(\text{Fe}_{0.5}^{2+}\text{Fe}_{0.5}^{3+})(\text{Ti}, \text{Zr})_2\text{Ti}_2\text{Si}_{14}\text{O}_{22}$ , the strontium analogue of chevkinite. Named for analogy.
- Sverigeite.** P. J. Dunn, D. R. Peacor, W. B. Simmons, and R. V. Gaines, 1984. *Geol. För. Stockh. Förh.* **106**, 175. On the dumps at Långban mine, Värmland, Sweden, as yellow, irregular platy segregations up to 10 mm in calcite matrix, perfect  $\{010\}$  cleavage, moderately pleochroic,  $H$  6½, associated with mimetite, jacobsonite, manganian calcite, and amphibole. Orthorhombic,  $Ibmm$  or  $Ibm2$ ,  $a$  6.818,  $b$  13.273,  $c$  10.815 Å,  $Z = 4$ ;  $D_{\text{obs}}$  3.60,  $D_{\text{calc}}$  3.61; optically biaxial positive,  $2V_\gamma$  67°,  $\alpha$  1.678,  $\beta$  1.684,  $\gamma$  1.699, strong dispersion  $r > v$ ; absorption  $\alpha > \beta \sim \gamma$ ;  $\gamma = b$ . Composition  $\text{NaMgMnBe}_2\text{SnSi}_3\text{O}_{12}(\text{OH})$ . Named for Swedish spelling of Sweden. [M.A. 86M-0885, A.M. **70**, 1332.]
- Svyazhinite.** B. V. Chesnokov, L. F. Bahenova, I. E. Kamentsev, V. O. Polyakov, and A. F. Bushmakina, 1984. *Zap.* **113**, 347. [СВЯЖИНИТ.] At the edge of the 'black vein', among old rubble of the quarry near Miass, on the western slopes of the Ilmen mts, southern Urals, USSR; as yellowish lumps in cavities 2–3 cm across, in fractures filling crevices in the rock 2–7 cm wide cutting amphibole-pyroxene phenites; associated with gypsum, Mn-pickeringite, melanterite, copiapite, epsomite, jarosite, and limonite. In wet weather these sulphates are washed out. Individual crystals are lozenge shaped, colourless or as yellowish aggregates with pinkish tinge, vitreous lustre,  $H$  2, medium  $\{010\}$  cleavage. Triclinic,  $a$  6.217,  $b$  13.306,  $c$  6.255 Å,  $\alpha$  90° 09',  $\beta$  93° 50',  $\gamma$  82° 05',  $V$  511.4 Å<sup>3</sup>,  $Z = 1$ ;  $D_{\text{obs}}$  1.67,  $D_{\text{calc}}$  1.69. Composition  $(\text{Mg}, \text{Mn}, \text{Ca})(\text{Al}, \text{Fe}^{3+})(\text{SO}_4)_2\text{F} \cdot 14\text{H}_2\text{O}$ , and Cu, F analogue of aubertite [31st List]. Named for N. V. Svyazhin (1927–67) mineralogist, expert on Ilmen and Vishnev mts alkali complexes.
- Swjaschinite.** T. Fehr, *Lapis*, **11**, pt. 3, 21. German transliteration for svyazhinite [this List].
- Taikanite.** V. V. Kalinin, A. B. Dauletkulov, A. I. Gorshokov, and N. V. Troneva, 1985. *Zap.* **114**, 635. [ТайканиТ.] Dzhavodi and Zaoblachnyi series of the Taikan ridge ore deposit, far eastern USSR, as scattered black grains up to 1.5 mm dia. with perfect  $\{001\}$  cleavage, and aggregates, with braunite, Mn-amphibole, and other Mn–Ba–Sr silicates, strongly pleochroic in reflected light. Monoclinic,  $a$  7.82(3),  $b$  14.60(3),  $c$  5.15(4) Å,  $\beta$  92.50°,  $Z = 2$ ;  $D_{\text{obs}}$  4.72,  $D_{\text{calc}}$  4.81, optically biaxial positive, optic axial plane  $\{010\}$ ,  $\alpha$  1.775,  $\beta$  1.792,  $\gamma$  1.814,  $2V_{\text{obs}}$  74–80°. Composition ideally  $\text{Sr}_3\text{BaMn}_2\text{Si}_4\text{O}_{14}$  or  $(\text{Sr}, \text{Ba})_5\text{Mn}_3\text{Si}_5\text{O}_{18}$ . Named for occurrence.

- Terenzite.** P. Orlandi (priv. comm.), 1985. *Riv. Min. Ital.* **8**, 69. At the Pereta antimony mine, Grosseto, Tuscany, Italy, as tiny, milky white balls with klebelsbergite [12th List], peretaite [32nd List], or on antimony needles. Triclinic. Named for the late L. Terenzi, a Florence collector.
- Thometzekite.** K. Schmetzer, B. Nuber, and O. Medenbach, 1985. *N. Jb. Min. Mh.* 446. At Tsumeb, Namibia, as bluish green to green, small tabular crystals on massive gypsum; earthy lustre. Mean R.I. 1.855. Probably triclinic by comparison with cells of helmetwinklerite [31st List] and of tsumcorite [27th List] (no cell dimensions given). Composition  $\text{Pb}(\text{Cu,Zn})_2(\text{AsO}_4)_2 \cdot 2\text{H}_2\text{O}$ , with  $\text{Cu} > \text{Zn}$ , the Cu analogue of tsumcorite-helmetwinklerite. Named for W. Thometzek, director of the Tsumeb mine 1912–1922.
- Thorikosite.** P. J. Dunn and R. C. Rouse, 1985. *A.M.* **70**, 845. In the slags of Laurion, Greece, as pale yellow, turbid prisms, tabular on {001}, with perfect {001} cleavage, vitreous lustre, associated with hydrocerussite, paralaurionite, sphalerite, and calcite. Tetragonal, with  $a$  3.919(1),  $c$  12.854(5) Å,  $Z = 1$ ;  $D_{\text{calc.}}$  7.24. Composition  $(\text{Pb}_3\text{Sb}_{0.6}\text{Al}_{0.4})\text{O}_3(\text{OH})\text{Cl}_2$ , structure refinement in press. X-ray powder pattern differs only for  $d$ -spacings  $< 1.75$  Å from related phases. See freedite [this List] and other lead oxyhalides. Named for the ancient Greek town Thorikos (*θορικός*), near the Laurion mines.
- Tiptopite.** J. D. Grice, D. R. Peacor, G. W. Robinson, J. van Velthuisen, W. L. Roberts, T. J. Campbell, and P. J. Dunn, 1985. *C.M.* **23**, 43. At the Tip Top pegmatite mine, near Custer, S. Dakota, USA, on massive beryl, as a secondary mineral associated with roscherite, fransoletite [33rd List], montgomeryite, and englishite, forming clear, colourless, shiny and brittle, radial aggregates of slender hexagonal prisms,  $0.1 \times 0.1 \times 2.0$  mm with uneven fracture. Hexagonal,  $P6_3$  or  $P6_3/m$ ,  $a$  11.655(5),  $c$  4.692(2) Å,  $Z = 1$ ;  $D_{\text{obs.}}$  2.65(2); optically uniaxial positive,  $\omega$  1.551(1),  $\epsilon$  1.559(1). Composition ideally  $(\text{Li,K,Na,Ca},\square)_3\text{Be}_6(\text{PO}_4)_6(\text{OH})_4$  based on the observed  $D$ . Similar to cancrinite; structure determination in progress. Named for occurrence. [*A.M.* **71**, 232.]
- Tokkoite.** K. A. Lazebnik, L. V. Nikishova, and Yu. A. Lazebnik 1986. *Min. Zh.* **8**, pt. 3, 85. At the southern part of the Murum alkali massif, S. Yakutia, USSR, in charoitites, as bright yellow radial aggregates with vitreous lustre, H 4–5, associated with charoite, tinaksite, miserite, aegirine, and K-feldspar. Triclinic,  $a$  10.37(3),  $b$  25.39(5),  $c$  7.27(1) Å,  $\alpha$  91.67°,  $\beta$  100.66°,  $\gamma$  92.09°,  $V$  1878 Å<sup>3</sup>,  $Z = 4$ ;  $D_{\text{obs.}}$  2.76; optically biaxial positive,  $\alpha$  1.570,  $\gamma$  1.577,  $2V$  38°, weak dispersion,  $r < v$ . Composition  $\text{K}_2\text{Ca}_4\text{Si}_7\text{O}_{17}(\text{O},\text{OH},\text{F})_4$ . Named for the Tokko river, S. Yakutia, near occurrence.
- Tuperssuatsiaite.** S. Karup-Møller and O. V. Petersen, 1984. *N. Jb. Min. Mh.* 501. From the bay of Tuperssuatsiait within the Ilimaussaq intrusion, S. Greenland, and at two other localities nearby, as fibrous and dark red-brown aggregates up to 1 cm in size, in cavities of albite-natrolite bodies; slightly pleochroic. Monoclinic,  $C2/m$ , with  $a$  13.729(30),  $b$  18.000(10),  $c$  4.828(30) Å,  $\beta$  104.28(10)°,  $Z = 2$ ; optically biaxial positive,  $\gamma // c$ ,  $2V$  large,  $\alpha$  1.54,  $\beta$  1.56,  $\gamma$  1.58. Composition  $\text{NaFe}_3\text{Si}_8\text{O}_{20}(\text{OH})_4 \cdot \text{H}_2\text{O}$ , the Na, Fe analogue of palygorskite. Named for locality. [*A.M.* **70**, 1332.]
- Turneaurite.** P. J. Dunn, E. U. Petersen, and D. R. Peacor, 1985. *O.M.* **23**, 251. At Franklin, New Jersey; Långban, Sweden (holotype), and at Balmat, New York, associated with andradite at first two localities, and with donpeacorite [this List], tirodite, braunite, and tourmaline at Balmat; colourless, vitreous or slightly greasy lustre, H 5; bright orange fluorescence under short wave UV. Hexagonal,  $P6_3/m$  or  $P6_3$ ,  $a$  9.810(4),  $c$  6.868(4) Å;  $D_{\text{obs.}}$  3.60(5),  $D_{\text{calc.}}$  3.63; optically uniaxial negative,  $\omega$  1.708(3),  $\epsilon$  1.700(3). Composition ideally  $\text{Ca}_5(\text{AsO}_4)_3\text{Cl}$ , the Cl analogue of svabite,  $\text{Ca}_5(\text{AsO}_4)_3\text{F}$ , and johnbaumite [32nd List],  $\text{Ca}_5(\text{AsO}_4)_3(\text{OH})$ , the As analogue of chlorapatite, and the Ca analogue of morelandite,  $\text{Ba}_5(\text{AsO}_4)_3\text{Cl}$ , and of mimetite. Apatite group. Named for Dr F. S. Turneaur, emeritus professor of the University of Michigan.
- Uchucchacuaite.** Y. Moëlo, E. Oudin, P. Picot, and R. Caye, 1984. *Bull.* **107**, 597. At Uchuc-Chacua deposit, Peru, as black and grey grains with irregular polysynthetic twinning in reflected light, max. and min. reflectances and microhardness given; associated with benavidesite [32nd List], galena, alabandite, sphalerite, pyrite and pyromorphite. Pseudo-orthorhombic (probably monoclinic),  $a$  12.67,  $b$  19.32,  $c$  4.38 Å,  $Z = 2$ ;  $D_{\text{calc.}}$  5.61. Composition ideally  $\text{AgMnPb}_3\text{Sb}_5\text{S}_{12}$ , a low substituted ( $\text{And}_{50}$ ) member of the andorite series. Named for deposit.
- Ungursaitite.** A. V. Voloshin, Ya. A. Pakhomovskii, L. V. Bulgak, and G. A. Perlina, 1985. *Min. Zh.* **7**, 88. [Унгурсаит.] In granite pegmatites of eastern Kazakhstan, as colourless, transparent, thin plates up to 0.05 mm, adamantine lustre, no cleavage, intimately intergrown with thoreaulite, associated with manganotantalite, lithiotantite [33rd List], simpsonite, tantite [33rd List], and microlite. Also found in Zaïre (Katanga) and on

- the Kola peninsula. Hexagonal,  $P6_3/m$  or  $P6_3$ ,  $a$  6.218,  $c$  3.580 Å,  $Z = 1$ ;  $D_{\text{calc.}}$  7.23; microhardness and reflectances given. X-ray powder pattern compared with that of calciotantite [32nd List]. Composition ideally  $\text{Ca}_5\text{NaTa}_{24}\text{O}_{65}\text{OH}$ . Named for the locality Ungursai, eastern Kazakhstan, USSR. Note that Voloshin and Pakhomovskii, in a letter to the editors [1986. *Min. Zh.* 8(3), 98 (in Russian)] ask that the mineral name ungursaitite no longer be used, in accordance with the IMA decision, as the mineral is a Na-rich variety of calciotantite.
- Uranotungstite.** K. Walenta, 1985. *Tscherm. Min. Pet. Mitt.* 34, 25. At the uranium deposit of Menzenschwand, southern Black Forest, and at the Clara mine, Oberwolfach, central Black Forest, W. Germany, as yellow, orange, or brownish spherulitic aggregates up to 0.3 mm dia. or as crusts on quartz, metauranocircite, and metaheinrichite, associated with bergenite [22nd List], metatorbernite, metazeunerite, and schoepite. Individual crystals are lathlike, flattened on {010}, translucent, with dull lustre, somewhat pearly, perfect {010} cleavage, irregular fracture,  $H \sim 2$ . Orthorhombic,  $a$  9.22,  $b$  13.81,  $c$  7.17 Å,  $Z = 2$ ;  $D_{\text{obs.}} > 4.03$  (Clerici),  $D_{\text{calc.}}$  4.27; optically biaxial negative,  $\alpha$  1.682(5),  $\beta$  1.845(5),  $\gamma$  1.855(5),  $2V$  42°,  $r > v$ . Composition ideally  $(\text{Fe,Ba,Pb})(\text{UO}_2)_2\text{WO}_4(\text{OH})_4 \cdot 12\text{H}_2\text{O}$ , the first naturally occurring uranyl tungstate. Named for composition.
- Uzonite.** V. I. Popova, and V. O. Polyakov, 1985. *Zap.* 114, 369. [УЗОНИТ.] At the central area of the Uzon caldera, Kamchatka, together with realgar,  $\alpha$ -sulphide of As, sometimes intergrown, 10–40 cm beneath the surface, as yellow, transparent, prismatic crystals up to 0.2–0.5 mm, elongated along [001], at first mistaken for orpiment. Monoclinic,  $P2_1/m$ ,  $a$  7.94(2),  $b$  8.08(2),  $c$  7.10(2) Å,  $\beta$  100.1(1)°,  $Z = 2$ ; from single crystal data, these are in good agreement with those refined from X-ray powder data;  $D_{\text{obs.}}$  3.37(2),  $D_{\text{calc.}}$  3.385; optically biaxial positive,  $\alpha$  2.38(1),  $\gamma$  2.68(1). Composition  $\text{As}_4\text{S}_5$ . Named for occurrence.
- Vanmeersscheite.** P. Piret, and M. Deliens, 1982. *Bull.* 105, 125. The correct spelling of vanmeersscheite. [32nd List]. [Incorrectly spelled vanmeersschite in *Bull.* 105 index.]
- Villyaellenite.** H. Sarp, 1984. *Schweiz. Min. Petr. Mitt.* 64, 323. At Sainte Marie aux Mines, France, as colourless or bright pink euhedral tabular crystals up to 0.3 mm, with fluckite [31st List], picropharmacolite, arsenic, and pharmacolite. Monoclinic,  $C2/c$ ,  $a$  18.55,  $b$  9.52,  $c$  10.01 Å,  $\beta$  97°,  $Z = 4$ ;  $D_{\text{obs.}}$  3.20,  $D_{\text{calc.}}$  3.24; optically biaxial negative,  $\alpha$  1.660(2),  $\beta$  1.670(2),  $\gamma$  1.676(2),  $2V_{\text{obs.}}$  75.6°,  $2V_{\text{calc.}}$  76.0°,  $X = b$ ,  $Y \wedge c$  30° in the obtuse angle  $\beta$ . Composition ideally  $\text{H}_2(\text{Mn,Ca})_5(\text{AsO}_4)_4 \cdot 4\text{H}_2\text{O}$ , the Mn-dominant analogue of sainfeldite. Named for Dr Villy Aellen, Director of the Nat. Hist. Mus., Geneva, Switzerland.
- Vinciennite.** F. Cesbron, R. Girault, P. Picot, and F. Pilliard, 1985. *Bull.* 108, 447. At the Chizeuil pyrite deposits, Saône et Loire, France, in a gangue of quartz and baryte as tiny orange grains (< 1 mm) with metallic lustre, brittle, conchoidal fracture. Microhardness and reflectances given. Has also been found at Huaron, Peru. Tetragonal (pseudocubic), with  $a = b = c$  10.697(6) Å,  $Z = 2$ ;  $D_{\text{calc.}}$  4.29; weakly anisotropic in polarized light, purplish blue to greenish yellow, occasionally twinned. Composition ideally  $\text{Cu}_{10}\text{Fe}_4\text{Sn}(\text{As,Sb})\text{S}_{16}$ . Named for Prof. H. Vincienne (1898–1965) who first called attention to the mineral. [M.A. 86M-0888.]
- Vyacheslavite.** L. N. Belova, A. I. Borshkov, O. A. Ivanova, A. V. Sivtsov, L. I. Lizorkina, and V. A. Boronikhin, 1984. *Zap.* 113, 360. [Вячеславит.] A secondary mineral of  $\text{U}^{4+}$  sometimes associated with octahedral pyrite. No locality given in paper [Uzbekistan in IMA 83-17], as green to dark green compact aggregates with matt lustre, no fluorescence. Orthorhombic,  $a$  6.96(1),  $b$  9.10(1),  $c$  12.38(1) Å,  $Z = 6$ ;  $D_{\text{obs.}}$  5.00,  $D_{\text{calc.}}$  5.02; optically biaxial negative,  $\alpha$  1.700,  $\alpha$  1.726–1.729,  $\gamma$  1.729–1.731,  $2V$  small. Composition  $\text{U}^{4+}(\text{PO}_4)(\text{OH}) \cdot n\text{H}_2\text{O}$ , where  $n = 0-3$ . Named for Vyacheslav G. Melkov, discoverer of minerals with  $\text{U}^{4+}$ .
- Vyuntskhkrite.** V. I. Kudryashova, 1985. *Zap.* 114, 483 [New Minerals XXXIX]. Printing error for vyuntspakhkrite (Бюндпакхит) [33rd List].
- Vyuntspakhkrite.** P. J. Dunn *et al.* *New Min. Names*, A.M. 69, 1193 (abstr.) Error for vyuntspakhkrite (Бюндпакхит) [33rd List].
- Wülfingite.** K. Schmetzer, G. Schnorrer-Köhler, and O. Medenbach, 1985. *N. Jb. Min. Mh.* 145. At Richelsdorf, Hesse, W. Germany, as a natural weathering product of zinc-bearing slags; colourless to whitish fine-grained incrustation on native Zn and ZnO or tiny crystals up to 200  $\mu\text{m}$ , with waxy lustre, no cleavage, associated with native Zn, hydrocerussite, diaboelite, zincite, hydrozincite, and simonkolleite [this List]. Orthorhombic,  $P2_12_12_1$ , (synth.)  $a$  8.490,  $b$  5.162,  $c$  4.917 Å,  $Z = 4$ ;  $D_{\text{obs.}}$  3.05,  $D_{\text{calc.}}$  3.06; optically biaxial,  $\alpha$  1.5277(3),  $\beta$  1.5781(3),  $\gamma$  1.5801(3),  $2V_x$  60°. Composition  $\text{Zn}(\text{OH})_2$ , synthetic compound well known as  $\epsilon$ - $\text{Zn}(\text{OH})_2$ . Named for E. A. Wülfing (1860–1930), Professor of Mineralogy and Petrology at Heidelberg, W. Germany, 1908–26.
- Xifengite.** Yu Xuxiang, 1984. *Acta Petr. Min. Anal.*

- 3, 231.** In cosmic dust from Yanshan, China, as steel grey, 0.1–0.5 mm grains with black streak and metallic lustre, brittle and strongly magnetic. Indexed on hexagonal cell for  $\text{Mn}_3\text{Si}_3$  ( $P6_3/mcm$ ,  $a$  6.759,  $c$  4.720 Å,  $Z = 2$ );  $D_{\text{calc}}$ . 6.45; microhardness and reflectances given. Composition ideally  $\text{Fe}_5\text{Si}_3$ ; see also gupeite [this List]. Named for Xifengkon, an eastern passageway of the Great Wall. [A.M. **71**, 228.]
- Xitieshanite.** L. Xilin, Z. Jingliang, and L. Jiaju, 1983. *Geochemistry (China)*, **2**, 261. In the middle or lower parts of the oxidation zone of the Xitieshan Pb–Zn deposit, Qaidam basin, Qinghai province, China, as bright green rectangular crystals or massive aggregates up to  $2 \times 2$  cm, with yellow tinge, translucent to nearly transparent, yellow streak, imperfect cleavage, uneven conchoidal fracture,  $H$  2.7. Monoclinic,  $P2_1/a$ , with  $a$  14.102,  $b$  6.908,  $c$  10.673 Å,  $\beta$  111.266°,  $Z = 4$ ;  $D_{\text{obs}}$ . 1.98,  $D_{\text{calc}}$ . 2.02; optically biaxial negative,  $\alpha$  1.536,  $\beta$  1.570,  $\gamma$  1.628,  $r > v$ . Composition ideally  $\text{Fe}^{3+}\text{SO}_4(\text{OH}) \cdot 7\text{H}_2\text{O}$ . [Not compared with other iron sulphate minerals.] Named for deposit.
- Yimengite.** D. Zhenxin, Zh. Jianxiong, L. Qi, and P. Zhizhong, 1983. *Kexue Tongbao*, **15**, 932 [in Chinese] (A.M. **70**, 218, abst.); P. Zhizhong and L. Qi, 1985. *Sci. Sinica B*, **28**, 882 [in English, structure]. At Yimeng mtn, Shandong, China, in a kimberlite dyke, as black grains with metallic lustre, brown streak; associated with olivine, phlogopite, pyrope, chromite, ilmenite, chromian diopside, apatite, zircon, moissanite, and perovskite. Hexagonal,  $P6_3/mmc$ ,  $a$  5.8570,  $c$  22.9403 Å,  $Z = 2$ ;  $D_{\text{obs}}$ . 4.34,  $D_{\text{calc}}$ . 4.35. In polished section grey to greyish white, weakly pleochroic. Microhardness and reflectances given. Composition ideally  $\text{K}(\text{Cr}, \text{Ti}, \text{Fe}, \text{Mg})_{12}\text{O}_{19}$ ; X-ray powder data close to those of hibonite. Named for locality.
- Yushkinite.** (Jushkinite in text). A. B. Makeev, T. L. Evstigneeva, N. N. Troneva, L. N. Vyal'sov, A. I. Gorshkov, and N. V. Trubkin, 1984. *Min. Zh.* **6**, 91. [Юшкинит.] At the Paikhoi [Pay Khoi, Times Atlas] anticline, north tip of polar Urals, in quartz–calcite hydrothermal–metasomatic veins, as thin, soft, rosy-violet aggregates with good {0001} cleavage,  $H < 1$ . Unit-cell derived by analogy with valleriite. Composition ideally  $\text{V}_{1-x}\text{S} \cdot n[(\text{Mg}, \text{Al})(\text{OH})_2]$ . Named for N. P. Yushkin, Russian mineralogist and expert on area.
- Zimbabweite.** E. E. Foord, J. E. Taggart Jr., R. V. Gaines, P. L. C. Grubb, and R. Kristiansen, 1986. *Bull.* **109**, 331. At the St Anns pegmatite mine, Karoi (formerly Urungwe) district, 7 km south of Miami, Zimbabwe, as large deep honey-coloured crystals up to  $1 \times 1 \times 2$  cm, pale yellow in thin fragments, excellent {010} cleavage, adamantine lustre, brittle, white streak, does not fluoresce,  $H$  5–5½. Orthorhombic,  $Ccma$  or  $Cc2a$ ,  $a$  12.233(2),  $b$  15.292(2),  $c$  8.665(2) Å,  $Z = 4$ ;  $D_{\text{obs}}$ . 6.20(3),  $D_{\text{calc}}$ . 6.16; optically biaxial positive,  $2V \sim 80^\circ$ , reflectances given, R.I. 2.10. Composition ideally  $(\text{Na}, \text{K})_2\text{PbAs}_4(\text{Ta}, \text{Nb}, \text{Ti})_4\text{O}_{18}$ , not, apparently, related to any other tantalate mineral. Named for the African country.
- Zoubekite.** L. Megarskaya, D. Rykl, and Z. Táborský, 1986. *N. Jb. Min. Mh.* 1. On two old specimens from the Přeborn, Czechoslovakia, in hydrothermal veins, as long, irregular, steel grey, lath-shaped grains,  $0.02 \times 0.2 \times 0.5$  mm, closely associated and intergrown with boulangerite and galena. Microhardness and reflectances given. Orthorhombic,  $a$  18.986(8),  $b$  6.492(3),  $c$  4.577(1) Å,  $Z = 1$ ;  $D_{\text{calc}}$ . 5.15. Composition ideally  $\text{AgPb}_4\text{Sb}_4\text{S}_{10}$ . Named for V. Zoubek, former director of the Geol. Survey and Inst. of the Czechoslovak Acad. Sci. Prague.