

## ENCYCLOPEDIA OF MINERAL NAMES: FIRST UPDATE

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We are pleased to present the first update to the *Encyclopedia of Mineral Names (The Canadian Mineralogist, Special Publication 1)*. The entries listed below largely consist of new species of minerals that have appeared in the literature since mid-1997, the date of publication of the *Encyclopedia*. A copy of this update will be supplied free of charge on demand to those who already own the *Encyclopedia*, and will be included with all copies of the first edition of the *Encyclopedia* sold henceforth.

The information presented below is presented in five separate lists. First is the listing of new mineral species discovered since the *Encyclopedia* appeared two years ago. The second list shows the new species defined as a result of decisions summarized in the IMA report on micas (*Can. Mineral.* **36**, 905, 1998). Thirdly, we present the listing of new species defined as a result of decisions summarized in the IMA report on zeolite-group minerals (*Can. Mineral.* **35**, 1571, 1997). Fourthly, we present a short list of mineral species discovered long ago that were omitted from the first edition of the *Encyclopedia*. Lastly, we present minerals already in the *Encyclopedia* that have been discredited as valid species since 1997, or that were misspelled.

We acknowledge the assistance of many readers who took the trouble to offer corrections, not only to the names of mineral species, but also to names of localities. All these corrections have been made on the master listing, and will be reflected in the next edition.

## MINERAL SPECIES DESCRIBED SINCE THE PUBLICATION OF THE ENCYCLOPEDIA

**Akimotoite**

(Mg,Fe)SiO<sub>3</sub>, trig., R@3.

A member of the *Ilmenite* group. Dimorphic relationship with **enstatite** and **clinoenstatite**.

Named after Syun-iti Akimoto (b. 1925), of the Institute of Geophysics and Solid State Physics, University of Tokyo, specialist in high-pressure research, especially on phase relationships in the system  $(\text{Mg,Fe})_2\text{SiO}_4$  at mantle conditions. Found in fragments within veins of shock-induced melt in the Tenham chondritic meteorite, which fell in 1879 in South Gregory, Queensland, Australia.

Tomioka, N. & Fujino, K. (1999): *Am. Mineral.* **84**, 267.

#### **Ancylite-(La)**

$\text{Sr}(\text{La,Ce})(\text{CO}_3)_2\text{OH}\cdot\text{H}_2\text{O}$ , orth., *Pmcn*.

Forms a series with **ancylite-(Ce)**.

Named as the La analogue of **ancylite-(Ce)**. Marchenko Peak, next to Mount Kukisvumschorr, Khibina alkaline complex, Kola Peninsula, northwestern Russia.

Yakovenchuk, V.N. *et al.* (1997): *Zap. Vser. Mineral. Obshchest.* **126**(1), 96. Puziewicz, J. (1998): *Am. Mineral.* **83**, 652.

#### **Androsite-(La)**

$(\text{Mn,Ca})(\text{La,Ce,Ca,Nd})\text{AlMn}^{3+}\text{Mn}^{2+}(\text{SiO}_4)(\text{Si}_2\text{O}_7)\text{O}(\text{OH})$ , mon., *P2<sub>1</sub>/m*.

Forms a series with **piemontite**.

Named after its discovery locality. Found in a manganese-rich silicate–carbonate rock, Petalon Mountain, Andros Island, Cyclades, Greece.

Bonazzi, P. *et al.* (1996): *Am. Mineral.* **81**, 735.

#### **Andyrobertsite**

$\text{KCdCu}_5(\text{AsO}_4)_4[\text{As}(\text{OH})_2\text{O}_2](\text{H}_2\text{O})_2$ , mon., *P2<sub>1</sub>/m*.

Forms a series with **calcio-andyrobertsite**.

Named after Andrew C. Roberts (b. 1950), mineralogist, Geological Survey of Canada, specialist in documentation of new mineral species, in particular from low-temperature secondary parageneses. Found at the Tsumeb mine, Namibia.

Cooper, M.A. *et al.* (1999): *Mineral. Rec.* **30**, 181.

#### **Averievite**

$\text{Cu}^{2+}_5\text{O}_2(\text{VO}_4)_2\cdot n\text{MX}$ , trig., *P3*.

In the formula, *MX* refers to particles dependent on the environment of formation, and can be  $\text{CuCl}$ ,  $\text{CuCl}_2$ , or  $(\text{K,Rb,Cs})\text{Cl}$ .

Named after V.V. Averiev (1929–1968), Russian volcanologist. Second cone, North Fracture, Main Tolbachik fissure eruption (1975–1976), Kamchatka Peninsula, Russia.

Vergasova, L.P. *et al.* (1997): *Dokl. Akad. Nauk* **359**(6), 804. Starova, G.L. *et al.* (1997): *Mineral. Mag.* **61**, 441-446.

### **Baksanite**

$\text{Bi}_6(\text{Te}_2\text{S}_3)$ , trig.,  $P@3m1$ .

Named after the discovery locality. Found in garnet–magnetite skarn, Tyrngauz deposit, Baksan River valley, northern Caucasus, Russia.

Pekov, I.V. *et al.* (1996): *Dokl. Akad. Nauk* **347**, 787. Pertsev, N.N. (1997): *Am. Mineral.* **82**, 1038.

### **Bamfordite**

$\text{Fe}^{3+}\text{Mo}_2\text{O}_6(\text{OH})_3 \cdot \text{H}_2\text{O}$ , tric.,  $P1$ .

Named after its discovery locality. Found at the Bamford Hill W–Mo–Bi deposits near Cairns, northern Queensland, Australia, and formed by the oxidation of molybdenite.

Birch, W.D. *et al.* (1998): *Am. Mineral.* **83**, 172.

### **Barquillite**

$\text{Cu}_2(\text{Cd,Fe})\text{GeS}_4$ , tet.,  $I@42m$ .

The Cd-dominant analogue of **briartite**. A member of the *Stannite* group.

Named after Barquilla, a village near the discovery locality. Found in altered impure limestone in the Fuentes Villanas mine, Barquilla Sn–Ge–Cd–Cu–Fe vein-type deposit, southwestern Salamanca, Spain.

Murciego, A. *et al.* (1999): *Eur. J. Mineral.* **11**, 111. Jambor, J.L. (1999): *Am. Mineral.* **84**, 1464.

### **Berezanskite**

$\text{KLi}_3\text{Ti}_2\text{Si}_{12}\text{O}_{30}$ , hex.,  $P6/mcc$  (?).

Structurally related to **brannockite**.

Named after Anatolyi Vladimirovich Berezanskii (b. 1948), who mapped the geology of remote areas of the Turkestan–Alai range, in Tajikistan. Found in a block of peralkaline pegmatite in the moraine of the Dara-i-Pioz glacier, in the Garm region, Pamir Mountains, Tajikistan.

Pautov, L.A. & Agakhanov, A.A. (1997): *Zap. Vser. Mineral. Obshchest.* **126**(4), 75. Pertsev,

N.N. (1998): *Am. Mineral.* **83**, 907.

### **Blatonite**

$\text{UO}_2\text{CO}_3 \cdot \text{H}_2\text{O}$ , hex. (?).

Named after Norbert Blaton (b. 1945), of the Universiteit van Leuven, Belgium, crystallographer specializing in the structure of uranium minerals. Found by Patrick Haynes in seams of gypsum in siltstone of the Shinarump Formation, Jomac uranium mine, Brown's Rim, San Juan County, Utah, U.S.A.

Vochten, R. & Deliens, M. (1998): *Can. Mineral.* **36**, 1077.

### **Boralsilite**

$\text{Al}_{16}\text{B}_6\text{Si}_2\text{O}_{37}$ , mon.,  $C2/m$ .

The name reflects its composition, with boron, aluminum and silicon as the only cations. Found in a tourmaline – quartz intergrowth in granitic pegmatite cutting granulite-facies metapelitic rocks, Larsemann Hills, Stornes Peninsula, Prydz Bay, eastern Antarctica, and in the Rogaland intrusive complex, southwestern Norway.

Grew, E.S. *et al.* (1998): *Am. Mineral.* **83**, 638. Peacor, D.R. *et al.* (1999): *Am. Mineral.* **84**, 1152.

### **Brendelite**

$(\text{Bi}^{3+}, \text{Pb})_2(\text{Fe}^{3+}, \text{Fe}^{2+})\text{O}_2(\text{OH})(\text{PO}_4)$ , mon.,  $C2/m$ .

Named after Christian Friedrich Brendel (1776-1861) in recognition of his development and application of mechanized mining technology. Found in dumps of the ancient (16th century) Guldener Falk silver mine near Schneeberg, Saxony, Germany.

Krause, W. *et al.* (1998): *Mineral. Petrol.* **63**, 263. Jambor, J.L. (1999): *Am. Mineral.* **84**, 1195.

### **Calcio-andyrobetsite**

$\text{KCaCu}_5(\text{AsO}_4)_4[\text{As}(\text{OH})_2\text{O}_2](\text{H}_2\text{O})_2$ , mon.,  $P2_1/m$ .

Forms a series with **andyrobetsite**.

The name recalls its composition and relationship to **andyrobetsite**. Found at the Tsumeb mine, Namibia.

Cooper, M.A. *et al.* (1999): *Mineral. Rec.* **30**, 181.

### **Caoxite**

$\text{Ca}(\text{H}_2\text{O})_3(\text{C}_2\text{O}_4)$ , tric.,  $P@1$ .

The name reflects its composition, a calcium oxalate. It also is an acronym of Centennial Anniversary of X rays; the mineral was studied during 1995, the 100th anniversary of Röntgen's discovery of X rays, an event that allowed the development of structural mineralogy. Found in the Cerchiara mine, near Faggiona, Val di Vara, La Spezia, eastern Liguria, Italy.

Basso, R. *et al.* (1997): *Neues Jahrb. Mineral., Monatsh.*, 84. Blom, N.S. *et al.* (1981): *Cryst. Struct. Commun.* **10**, 1283. Deganello, S. *et al.* (1981): *Am. Mineral.* **66**, 859.

### **Caresite-3T**

$(\text{Fe}^{2+}, \text{Mg})_4\text{Al}_2(\text{OH})_{12}\text{CO}_3 \cdot 3\text{H}_2\text{O}$ , trig.,  $P3_112$  or  $P3_212$ .

Related to **charmarite-2H**, **charmarite-3T**, **quintinite-2H** and **quintinite-3T**.

Named after Stephen (b. 1909) and Janet (b. 1921) Cares, amateur mineralogists from Sudbury, Massachusetts, who discovered the species. Found in the Poudrette quarry, Mont Saint-Hilaire, Rouville County, Quebec, as well as in the Corporation quarry, Montreal, Quebec, Canada.

Chao, G.Y. & Gault, R.A. (1997): *Can. Mineral.* **35**, 1541.

### **Chadwickite**

$(\text{UO}_2)\text{H}(\text{AsO}_3)$ , tet., (?).

Named after Sir James Chadwick (1891-1974), physicist at the Cavendish Laboratory, University of Cambridge, U.K., 1935 Nobel Prize winner for his discovery of the neutron. Found in granite in dump material at the Sophia mine, Wittichen, central Black Forest, Germany.

Walenta, K. (1998): *Aufschluss* **49**, 253. Jambor, J.L. (1999): *Am. Mineral.* **84**, 1195.

### **Changchengite**

$\text{IrBiS}$ , cub.,  $P2_13$ .

The sulfur-dominant analogue of **mayingite**, but with a different space-group.

Named after the discovery locality, near the Great Wall (Changcheng in Chinese). Found in chromite orebodies in dunite and in placer deposits at a branch of the Luanhe River, about 200 km northeast of Beijing, Hebei Province, People's Republic of China.

Yu, Zuxiang (1997): *Acta Mineral. Sinica* **71**(4), 336; *Acta Geol. Sinica* **71**(4), 486-490. Jambor, J.L. (1998): *Am. Mineral.* **83**, 907.

### **Changoite**

$\text{Na}_2\text{Zn}(\text{SO}_4)_2 \cdot 4\text{H}_2\text{O}$ , mon.,  $P2_1/a$ .

The zinc-dominant analogue of **blödite** and **nickelblödite**.

Named after the changos, the early former inhabitants of northern Chile. Found as a product of

oxidation in an old mining area about 2 km west of Sierra Gorda, northeast of Antofagasta, northern Chile.

Schlüter, J. *et al.* (1999): *Neues Jahrb. Mineral., Monatsh.*, 97-103.

### **Charmarite-2H**

$\text{Mn}^{2+}_4\text{Al}_2(\text{OH})_{12}\text{CO}_3 \cdot 3\text{H}_2\text{O}$ , hex.,  $P6_322$ .

Found with **charmrite-3T**, trig.,  $P3_112$  or  $P3_212$ . Related to **caresite-2H**, **quintinite-2H** and **quintinite-3T**.

Named after Charles H. (b. 1917) and Marcelle (b. 1918) Weber, amateur mineralogists from Guilford, Connecticut, who discovered the species. Found in the Demix quarry, Mont Saint-Hilaire, Rouville County, Quebec, Canada.

Chao, G.Y. & Gault, R.A. (1997): *Can. Mineral.* **35**, 1541.

### **Chlorartinite**

$\text{Mg}_2(\text{CO}_3)\text{ClOH} \cdot 3\text{H}_2\text{O}$ , trig.,  $R3c$  (?).

The name alludes to the chlorine content and the similarity to **artinite**. Found in volcanic exhalations at the third cone of the North Breach, Main Tolbachik fissure eruption of 1975–1976, Kamchatka Peninsula, Russia.

Vergasova, L.P. *et al.* (1998): *Zap. Vser. Mineral. Obshchest.* **127**(2), 55. Pertsev, N.N. (1999): *Am. Mineral.* **84**, 1195.

### **Chloromenite**

$\text{Cu}_9\text{O}_2(\text{SeO}_3)_4\text{Cl}_6$ , mon.,  $I2/m$ .

The name comes from *chloros*, green, and *mene*, moon, referring to the presence of essential selenium. Found in a fumarole in the Northern Breach of the Great Fissure Tolbachik eruption, Kamchatka Peninsula, Russia.

Vergasova, L. *et al.* (1999): *Eur. J. Mineral.* **11**, 119. Krivovichev, S.V. *et al.* (1998): *Z. Kristallogr.* **213**, 645. Jambor, J.L. (1999): *Am. Mineral.* **84**, 1464.

### **Chrisstanleyite**

$\text{Ag}_2\text{Pd}_3\text{Se}_4$ , mon.,  $P2_1/m$  or  $P2$ .

Named after Christopher John Stanley (b. 1954), Natural History Museum, London, U.K., specialist of ore mineralogy. Found in a calcite vein in Devonian limestone at Hope's Nose, Torquay, Devon, U.K.

Paar, W.H. *et al.* (1998): *Mineral. Mag.* **62**, 257.

### **Chromphyllite**

$\text{KCr}_2\text{GaSi}_3\text{O}_{10}(\text{OH},\text{F})_2$ , mon., *C2/c*.

Forms a solid solution with **muscovite**.

The name alludes to its chromium content and its perfect {001} cleavage. Found in quartzite, Kaber pit, Pokhabikha River valley, Sludyanka district, southern Lake Baikal region, Siberia, Russia.

Reznitsky, L.Z. *et al.* (1997): *Zap. Vser. Mineral. Obshchest.* **126**(2), 110. Puziewicz, J. (1998): *Am. Mineral.* **83**, 652. Rieder, M. *et al.* (1998): *Can. Mineral.* **36**, 905.

### **Clinocervantite**

$\beta\text{-Sb}^{3+}\text{Sb}^{5+}\text{O}_4$ , mon., *C2/c*.

Dimorphic relationship with **cervantite**.

The name reflects its symmetry and relationship to **cervantite**. Found in cavities at the Cetine di Cotorniano mine, Siena, central Tuscany, Italy.

Basso, R. *et al.* (1999): *Eur. J. Mineral.* **11**, 95. Jambor, J.L. (1999): *Am. Mineral.* **84**, 1464.

### **Coparsite**

$\text{Cu}_4\text{O}_2[(\text{As},\text{V})\text{O}_4]\text{Cl}$ , orth., *Pbcm*.

The name recalls the mineral's constituents: copper and arsenic. Found in the Yadovitaya (= poisonous) fumarole in the North Breach of the Main Tolbachik fissure eruption of 1975-1976, Kamchatka Peninsula, Russia.

Vergasova, L.P. *et al.* (1999): *Can. Mineral.* **37**, 911. Starova, G.L. *et al.* (1998): *Z. Kristallogr.* **213**, 650.

### **Coskrenite**

$(\text{Ce},\text{Nd},\text{La})_2(\text{SO}_4)_2(\text{C}_2\text{O}_4)\cdot 8\text{H}_2\text{O}$ , tric., *P@1*.

Named after T. Denis Coskren, geochemist and mineralogist, who discovered the mineral. Found in the soil and on the ceiling of a rock shelter, a product of weathering of pyritic phyllite, Alum Cave Bluff, Great Smoky Mountains, Tennessee, U.S.A.

Peacor, D.R. *et al.* (1999): *Can. Mineral.* **37**, 1453.

### **Cuboargyrite**

$\text{AgSbS}_2$ , cub., *Fm3m*.

Dimorphic relationship with **miargyrite**.

The name alludes to the crystal system and polymorphic relationship with **miargyrite**. Found in a hydrothermal quartz-arsenopyrite assemblage at Baberast, near Haslach, central Black Forest, Germany.

Walenta, K. (1998): *Lapis* **23**(11), 21. Jambor, J.L. (1999): *Am. Mineral.* **84**, 1196.

### **Damiaoite**

PtIn<sub>2</sub>, cub., *Fm3m*.

Named after the discovery locality. Found in a Pt-bearing vein in garnet- and amphibole-bearing pyroxenite near the village of Damiao and the Yixun River, about 270 km north of Beijing, People's Republic of China.

Yu, Zuxiang (1997): *Acta Geol. Sinica* **71**(4), 328. Jambor, J.L. (1998): *Am. Mineral.* **83**, 653.

### **Dessauite**

(Sr,Pb)(Y,U)(Ti,Fe<sup>3+</sup>)<sub>20</sub>O<sub>38</sub>, trig., *R@3*.

A member of the *Crichtonite* group.

Named after Gabor Dessau (1907–1983), Professor of Ore Mineralogy, University of Pisa, Italy. Found in calcite veins at the Buca della Vena mine, Apuan Alps, Tuscany, Italy.

Orlandi, P. *et al.* (1997): *Am. Mineral.* **82**, 807.

### **Dusmatovite**

K(K,Na,**G**)(Mn<sup>2+</sup>,Y,Zr)<sub>2</sub>(Zn,Li)<sub>3</sub>Si<sub>12</sub>O<sub>30</sub>, hex., *P6/mcc*.

A member of the *Osumilite* group.

Named after Vyacheslav Dzhuraevich Dusmatov (b. 1936), mineralogist, Institute of Geology, Dushanbe, Tajikistan, for his geological and mineralogical studies on the Dara-i-Pioz alkaline complex, the discovery locality. Found in the moraine of the Dara-Pioz glacier, Alai Range, Tien Shan, Tajikistan.

Pautov, L.A. *et al.* (1996): *Vestnik Moscow University, Ser. 4 (Geol.)* **2**, 54. Sokolova, E.V. & Pautov, L.A. (1995): *Dokl. Akad. Nauk* **344**(5), 607.

### **Edgarite**

FeNb<sub>3</sub>S<sub>6</sub>, hex., *P6<sub>3</sub>22* (?)

The mineral is named after Alan D. Edgar (1935–1998), Professor of Petrology, University of Western Ontario, London, Ontario, Canada, in recognition of his contributions to the study of



alkaline rocks and synthetic equivalents. Khibina alkaline complex, Kola Peninsula, northwestern Russia; coexists with Ti-enriched pyrrhotite in a fenitized xenolith in nepheline syenite.

Barkov, A.Y. *et al.* (2000): *Contrib. Mineral. Petrol.* (in press).

### Esperanzaite

$\text{NaCa}_2\text{Al}_2(\text{As}^{5+}\text{O}_4)_2\text{F}_4(\text{OH})\cdot 2\text{H}_2\text{O}$ , mon.,  $P2_1/m$ .

Named after the discovery locality. Found as a secondary phase on mineralized rhyolite at the La Esperanza mine, Zaragosa mining district, near Madero, State of Durango, Mexico.

Foord, E.E. *et al.* (1999): *Can. Mineral.* **37**, 67.

### Feinglosite

$\text{Pb}_2(\text{Zn},\text{Fe}^{2+})[\text{As},\text{S}]\text{O}_4]_2\cdot\text{H}_2\text{O}$ , mon.,  $P2_1$  (?).

The Zn-dominant analogue of **arsenbrackebuschite**.

Named after Mark N. Feinglos (b. 1948), Professor at the Duke University Medical Center, Durham, North Carolina, U.S.A., who discovered the mineral. Tsumeb mine, Tsumeb, Namibia.

Clark, A.M. *et al.* (1997): *Mineral. Mag.* **61**, 285.

### Ferrokinoshitalite

$\text{Ba}(\text{Fe}^{2+},\text{Mg})_3(\text{Si}_2\text{Al}_2)\text{O}_{10}(\text{OH},\text{F})_2$ , mon.,  $C2/m$ .

The polytype in the type material is  $1M$ . A member of the *Brittle Mica* group.

The name reflects the mineral's iron content and relationship to **kinoshitalite**. Found in metamorphosed exhalative sedimentary rocks (banded iron-formations) enclosing the massive Pb-Zn-Cu-Ag sulfide orebodies at Broken Hill mine, near Aggeneys, northern Cape Province, South Africa.

Guggenheim, S. & Frimmel, H.E. (1999): *Can. Mineral.* **37**, 1445.

### Ferronordite-(Ce)

$\text{Na}_3\text{SrCeFe}^{2+}\text{Si}_6\text{O}_{17}$ , orth.,  $Pcca$ .

The ferrous-iron analogue of **nordite-(Ce)** and **manganonordite-(Ce)**.

The name reflects the composition and similarity to **nordite-(Ce)**. Found in ussingite-bearing pegmatites, Chinglusuai River and Karnasurt mine, Mount Karnasurt, Lovozero alkaline complex, Kola Peninsula, Russia.

Pekov, I.V. *et al.* (1998): *Zap. Vser. Mineral. Obshchest.* **127**(1), 32. Puziewicz, J. (1999): *Am. Mineral.* **99**, 685.

**Ferrotitanowodginite**

$(\text{Fe}^{2+}, \text{Mn}^{2+})(\text{Ti}, \text{Sn}^{4+}, \text{Ta}, \text{Fe}^{3+})(\text{Ta}, \text{Nb})_2\text{O}_8$ , mon.,  $C2/c$ .

A member of the *Wodginite* group.

The name reflects its composition and relationship to **wodginite**. Found in the southern quarry, San Elías granitic pegmatite, Sierra de la Estanzuela, departamento de Chacabuco, San Luis province, Argentina.

Galliski, M.A. *et al.* (1999): *Am. Mineral.* **84**, 773.

**Fluorcaphite**

$\text{Ca}(\text{Sr}, \text{Na}, \text{Ca})(\text{Ca}, \text{Sr}, \text{Ce})_3(\text{PO}_4)_3\text{F}$ , hex.,  $P6_3$ .

Isostructural with **fluorapatite**; the Ca-dominant analogue of **strontium-apatite**.

The name reflects the principal elements in its chemical formula. Found in a hyperagpaitic pegmatite in ijolite-urtite at Mount Koashva, Khibina alkaline complex, Kola Peninsula, Russia.

Khomyakov, A.P. *et al.* (1997): *Zap. Vser. Mineral. Obshchest.* **126**(3), 87. Pertsev, N.N. (1998): *Am. Mineral.* **83**, 907.

**Fluorthalénite-(Y)**

$\text{Y}_3\text{Si}_3\text{O}_{10}\text{F}$ , mon.,  $P2_1/n$ .

The fluorine-dominant analogue of **thalénite-(Y)**.

The name reflects the relationship with **thalénite-(Y)**. Found in amazonitic-microcline-bearing granitic pegmatites at Ploskaya Mountain, western Keivy, Kola Peninsula, Russia.

Voloshin, A.V. & Pakhomovskii, Ya.A. (1997): *Dokl. Akad. Nauk* **354**(1), 77. Pertsev, N.N. (1998): *Am. Mineral.* **83**, 908.

**Galileiite**

$(\text{Na}, \text{K})_2(\text{Fe}, \text{Mn}, \text{Cr})_8(\text{PO}_4)_6$ , trig.,  $R@3$ .

Named after astronomer Galileo Galilei (1564–1642). Found in troilite nodules in the Grant IIIB and four other IIIAB iron meteorites. The Grant meteorite was found (1929) in the Zuni Mountains, Cibola County, New Mexico, U.S.A.

Olsen, E.J. & Steele, I.M. (1997): *Meteoritics Planet. Sci.* **32**, A155. Jambor, J.L. (1998): *Am. Mineral.* **83**, 185.

Graham, A.L. *et al.* (1985): *Catalogue of Meteorites* (4th ed.). British Museum (Natural History), London, U.K.

**Georgeericksenite**

$\text{Na}_6\text{CaMg}(\text{IO}_3)_6(\text{CrO}_4)_2(\text{H}_2\text{O})_{12}$ , mon., *C2/c*.

Named after George Edward Ericksen (1920–1996), of Reston, Virginia (*Am. Mineral.* **82**, 1046), noted economic geologist with the U.S. Geological Survey, who documented the nitrate deposits of Chile. Oficina Chacabuco, Chile, where it coexists with halite, nitratine and niter.

Cooper, M.A. *et al.* (1998): *Am. Mineral.* **83**, 390.

### **Gerenite-(Y)**

$(\text{Ca},\text{Na})_2(\text{Y},\text{REE})_3\text{Si}_6\text{O}_{18}\cdot 2\text{H}_2\text{O}$ , tric., *P@1*.

Named after Richard Geren (b. 1917), of Oromocto, New Brunswick, Canada, who was instrumental, as executive vice-president of the Iron Ore Company of Canada, in initiating the exploration program that led to the discovery of the Strange Lake deposit. Found in a pegmatite–aplite lens, Strange Lake peralkaline granitic complex, Quebec–Labrador boundary, Canada.

Jambor, J.L. *et al.* (1998): *Can. Mineral.* **36**, 793. Groat, L.A. (1998): *Can. Mineral.* **36**, 801.

### **Gordaite**

$\text{NaZn}_4(\text{SO}_4)(\text{OH})_6\text{Cl}\cdot 6\text{H}_2\text{O}$ , trig., *P@3*.

Named after its discovery locality. Found in oxidized vein material in an old mining area about 2 km west of Sierra Gorda, Antofagasta, Chile.

Schlüter, J. *et al.* (1997): *Neues Jahrb. Mineral., Monatsh.*, 155. Jambor, J.L. (1998): *Am. Mineral.* **83**, 185. Adiwidjaja, G. *et al.* (1997): *Z. Kristallogr.* **212**, 704. Nasdala, L. *et al.* (1998): *Am. Mineral.* **83**, 1111.

### **Graeserite**

$\text{Fe}^{3+}_4\text{Ti}_3\text{As}^{3+}\text{O}_{13}(\text{OH})$ , mon., *A2/m*.

A member of the *Derbylite* group.

Named after Stefan Graeser (b. 1935), of the Mineralogical-Petrographic Institute, University of Basel, Switzerland, involved throughout his career in research on oxides and sulfosalts of arsenic in the Binntal region of the Monte Leone nappe. Found in veins cutting paragneiss at Lärcheltini, Binntal region, Monte Leone nappe, Western Alps, Switzerland.

Krzemnicki, M.S. & Reusser, E. (1998): *Can. Mineral.* **36**, 1083. Berlepsch, P. & Armbruster, T. (1998): *Schweiz. Mineral. Petrogr. Mitt.* **78**, 1.

### **Grattarolaite**

$\text{Fe}_3\text{O}_3(\text{PO}_4)$ , trig., *R3m*.

Named after Giuseppe Grattarola (1844–1907), professor of mineralogy, University of Florence, Italy, specialist in the mineralogy of Elba. Found in earthy nodules in a brick-like matrix, Santa Barbara lignite mine, Upper Arno River valley, 30 km southeast of Florence, Italy.

Cipriani, C. *et al.* (1997): *Eur. J. Mineral.* **9**, 1101. Modaresi, A. *et al.* (1983): *J. Solid State Chem.* **47**, 245.

### **Grumiplucite**

$\text{HgBi}_2\text{S}_4$ , mon.,  $C2/m$ .

Named after the amateur mineralogical organization *Gruppo Mineralogico e Paleontologico Lucchese*, members of which provided the specimens for study. With this name, the authors recall the key role of amateur mineralogists the world over. Found in the Levigliani mercury mine in the Apuan Alps, Tuscany, Italy.

Orlandi, P. *et al.* (1998): *Can. Mineral.* **36**, 1321. Mumme, W.G. & Watts, J.A. (1980): *Acta Crystallogr.* **B36**, 1300.

### **Gwihabaite**

$(\text{NH}_4, \text{K})\text{NO}_3$ , orth.,  $Pbnm$ .

Named after its discovery locality. Found in the Gwihaba Cave, in which the mineral formed by bacterial decay of bat guano, Kalahari basin, 280 km west of Maun, northwestern Botswana.

Martini, J.E.J. (1996): *Bull. S. Afr. Speleol. Assoc.* **36**, 19. Jambor, J.L. (1999): *Am. Mineral.* **84**, 194.

### **Haggertyite**

$(\text{Ba}, \text{K})[\text{Ti}_5\text{Fe}^{2+}_4\text{Fe}^{3+}_2\text{Mg}]\text{O}_{19}$ , hex.,  $P6_3/mmc$ .

Isostructural with **hawthorneite** and **yimengite**. A member of the *Magnetoplumbite* group.

Named after Stephen E. Haggerty (b. 1938), of the University of Massachusetts, Amherst, Massachusetts, U.S.A., in recognition of his important studies of titanate minerals in the Earth's mantle, and of oxide minerals in general. Found in the Prairie Creek lamproite, Crater of Diamonds State Park, near Murfreesboro, Pike County, Arkansas.

Grey, I.E. *et al.* (1998): *Am. Mineral.* **83**, 1323.

### **Hechtsbergite**

$\text{Bi}_2\text{O}(\text{OH})(\text{VO}_4)$ , mon.,  $P2_1/c$ .

The vanadium-dominant analogue of **atelestite** and, probably, **smrkovecite**.

Named after its discovery locality. Found in cavities in gneiss in the Hechtsberg quarry, near Hausach, Black Forest, Germany.

Krause, W. *et al.* (1997): *Neues Jahrb. Mineral., Monatsh.*, 271.

### **Hiärneite**

$(\text{Ca}, \text{Mn}^{2+}, \text{Na})_2(\text{Zr}, \text{Mn}^{3+})_5(\text{Sb}^{5+}, \text{Ti}, \text{Fe}^{3+})_2\text{O}_{16}$ , tet.,  $I4_1/acd$ .

Isostructural with **calzirtite**.

Named after Urban Hiärne (1641–1724), pioneer in studies of the geology of Sweden. Found in the Långban Fe–Mn deposit, Filipstad district, Värmland, Sweden. The hiärneite resulted from metasomatic reactions affecting a felsic volcanic rock, followed by high-grade metamorphism in an environment of high  $f(\text{O}_2)$  and silica undersaturation.

Holtstam, D. (1997): *Eur. J. Mineral.* **9**, 843.

### **Hydrowoodwardite**

$[(\text{Cu}_{1-x}\text{Al}_x(\text{OH})_2)][(\text{SO}_4)_{x/2}(\text{H}_2\text{O})_n]$ , with  $x < 0.67$  and  $n > \sim 3x/2$ , trig.,  $R@3m$  (?).

Member of the *Hydrotalcite* group. The copper analogue of **glaucozerinite** and **carrboydite**.

Named as the higher hydrated analogue of **woodwardite**. Found at the St. Briccius Cu, Ag, Sn mine, Königswalde, near Annaberg, Saxony, Germany.

Witzke, T. (1999): *Neues Jahrb. Mineral., Monatsh.*, 75. Jambor, J.L. (1999): *Am. Mineral.* **84**, 1465.

### **Ilinskite**

$\text{NaCu}_5\text{O}_2(\text{SeO}_3)_2\text{Cl}_3$ , orth., *Pbnm*.

Named after Georgii Alekseevich Il'inskii (1927–1996), mineralogist at the University of St. Petersburg, specialist in the physical properties of minerals. Found as a product of fumarole activity at the Tolbachik Main fissure eruption, Kamchatka Peninsula, Russia.

Vergasova, L.P. *et al.* (1997): *Dokl. Akad. Nauk* **353**(5), 641. Grew, E.S. (1997): *Am. Mineral.* **83**, 186.

### **Isolueshite**

$(\text{Na}, \text{La}, \text{Ca})(\text{Nb}, \text{Ti})\text{O}_3$ , cub., *Pm3m*.

The name reflects its isometric habit, optical isotropism and compositional similarity to its orthorhombic polymorph, **lueshite**. Found in an altered pegmatite vein at the Kukisvumschorr apatite mine, southern Khibina alkaline complex, Kola Peninsula, Russia.

Chakhmouradian, A. *et al.* (1997): *Eur. J. Mineral.* **9**, 483. Jambor, J.L. (1998): *Am. Mineral.* **83**, 186.

**Jedwabite**

$\text{Fe}_7(\text{Ta,Nb})_3$ , hex.,  $P6_3mmc$  (?).

The mineral is named after Jacques Jedwab, Université Libre de Bruxelles, Belgique, in recognition of his meticulous investigations of the mineralogy of placers and of carbides in natural environments. Discovered in platiniferous placers in the Nizhnetagilsky District in the Middle Urals, in a collection made by P. Walther at the beginning of the 20th century, in association with **niobocarbide** and a tantalum carbide.

Novgorodova, M.I. *et al.* (1997): *Zap. Vser. Mineral. Obshchestva* **126**(2), 100.

**Jentschite**

$\text{TlPbAs}_2\text{SbS}_6$ , mon.,  $P2_1/n$ .

Named after Franz Jentsch (1868–1908), head of the Binn syndicate that worked the sulfosalt deposit at the Lengenbach quarry, the discovery locality. Lengenbach, Binntal, Switzerland.

Berlepsch, P. (1996): *Schweiz. Mineral. Petrogr. Mitt.* **76**, 147. Jambor, J.L. (1997): *Am. Mineral.* **82**, 431. Graeser, S. & Edenharter, A. (1997): *Mineral. Mag.* **61**, 131.

**Juabite**

$\text{Cu}_5(\text{Te}^{6+}\text{O}_4)_2(\text{As}^{5+}\text{O}_4)_2 \cdot 3\text{H}_2\text{O}$ , tric.,  $P1$  or  $P\bar{1}$ .

Named after its discovery locality. Found in the Centennial Eureka mine, Juab County, Utah, U.S.A.

Roberts, A.C. *et al.* (1997): *Mineral. Mag.* **61**, 139.

**Juonniite**

$\text{CaMgSc}(\text{PO}_4)_2(\text{OH}) \cdot 4\text{H}_2\text{O}$ , orth.,  $Pbca$ .

Isostructural with **segelerite** and with **overite**.

Named after the Juonni River, which drains the area near the Kovdor deposit. Found in calcite–dolomite carbonatite veins that cross-cut rocks and ores of the Kovdor ultramafic alkaline complex, Kola Peninsula, Russia.

Liferovich, R.P. *et al.* (1997): *Zap. Vser. Mineral. Obshchest.* **126**(4), 80. Pertsev, N.N. (1998): *Am. Mineral.* **83**, 908.

**Kalifersite**

$(\text{K,Na})_5\text{Fe}^{3+}_7\text{Si}_{20}\text{O}_{50}(\text{OH})_6 \cdot 12\text{H}_2\text{O}$ , tric.,  $P@1$ .

The name alludes to the chemical composition (*kalium, ferrum, silicium*). Found in a

hydrothermally altered agpaitic pegmatite at Mt. Kukisvumchorr, Khibina alkaline complex, Kola Peninsula, Russia.

Ferraris, G. *et al.* (1998): *Eur. J. Mineral.* **10**, 865. Jambor, J.L. (1999): *Am. Mineral.* **84**, 991.

### **Kastningite**

$(\text{Mn}^{2+}, \text{Fe}^{2+}, \text{Mg})\text{Al}_2(\text{PO}_4)_2(\text{OH})_2 \cdot 8\text{H}_2\text{O}$ , tric.,  $P@1$ .

Dimorphic relationship with **mangangordonite**, and the Al-dominant analogue of **stewartite**.

Named after Jürgen Kastning (b. 1932), from Reinbeck bei Hamburg, Germany, amateur mineralogist specializing in phosphate minerals, who discovered the mineral. Found in the aplitic zone of a zoned P-bearing granitic pegmatite exploited for feldspar for the ceramics industry, Silbergrube quarry, Waidhaus, Upper Palatinate (Oberpfälzer Wald), Bavaria, Germany.

Schlüter, J. *et al.* (1999): *Neues Jahrb. Mineral., Monatsh.*, 40. Jambor, J.L. (1999): *Am. Mineral.* **84**, 1465.

### **Kenhsuite**

$\gamma\text{-Hg}_3\text{S}_2\text{Cl}_2$ , orth., *Ammm* (?).

Polymorphic relationship with **corderoite** and **lavrentievite**.

Named after Kenneth Jinghwa Hsu (b. 1929), Professor Emeritus, Swiss Federal Institute of Technology (E.T.H.), Zurich, Switzerland, in recognition of numerous contributions to many fields in the earth sciences. McDermitt mercury mine, Humboldt County, Nevada, U.S.A.

McCormack, J.K. & Dickson, F.W. (1998): *Can. Mineral.* **36**, 201. Ďurovič, S. (1968): *Acta Crystallogr.* **B24**, 1661.

### **Khaidarkanite**

$\text{Cu}_4\text{Al}_3(\text{OH})_{14}\text{F}_3 \cdot 2\text{H}_2\text{O}$ , mon.,  $C2/m$ .

Named after the discovery locality. Found in the oxidation zone of the Khaidarkan antimony–mercury deposit, Kyrgyzstan.

Chukanov, N.V. *et al.* (1999): *Zap. Vser. Mineral. Obshchest.* **128**(3), 58.

### **Khomyakovite**

$\text{Na}_{12}\text{Sr}_3\text{Ca}_6\text{Fe}_3\text{Zr}_3\text{W}(\text{Si}_{25}\text{O}_{73})(\text{O}, \text{OH}, \text{H}_2\text{O})_3(\text{OH}, \text{Cl})_2$ , trig.,  $R3m$ .

Forms a solid solution with **manganokhomyakovite**. A member of the *Eudialyte* group.

Named after Alexander Petrovich Khomyakov (b. 1933), of the Institute of Mineralogy, Geochemistry and Crystal Chemistry of Rare Elements, Moscow, Russia, for his extensive contributions to the mineralogy and geochemistry of alkaline rocks, in particular those of

hyperagpaitic character. Author of *Mineralogy of Hyperagpaitic Alkaline Rocks* (1995). Found in a miarolitic cavity in nepheline syenite in the Poudrette quarry, Mont Saint-Hilaire, Rouville County, Quebec, Canada.

Johnsen, O. *et al.* (1999): *Can. Mineral.* **37**, 893.

### **Koragoite**

$(\text{Mn}^{2+}, \text{Mn}^{3+}, \text{Fe}^{2+})_3(\text{Nb}, \text{Ta}, \text{Ti})_3(\text{Nb}, \text{Mn})_2(\text{W}, \text{Ta})_2\text{O}_{20}$ , mon.,  $P2_1$ .

Named after Aleksei Aleksandrovich Korago (1942–1993), geologist who investigated the formation of river pearls in the Arkhangel'sk district of Russia, and the origin of amber. Found in granitic pegmatites in the Vez-Dara River valley, Shakh dara Range, in the southwestern Pamir Mountains, Tajikistan.

Voloshin, A.V. *et al.* (1997): *Dokl. Akad. Nauk* **353**(4), 516. Grew, E.S. (1998): *Am. Mineral.* **83**, 186. Yamnova, N.A. *et al.* (1995): *Kristallografiya* **40**, 469.

### **Korobitsynite**

$\text{Na}_{3-x}(\text{Ti}, \text{Nb})_2[\text{Si}_4\text{O}_{12}](\text{OH}, \text{O})_2 \cdot 3-4\text{H}_2\text{O}$ , orth., *Pbam*.

The Ti-dominant analog of **nenadkevichite**.

Named after Mikhail Fedorovich Korobitsyn (1928-1996), amateur mineralogist and collector who made significant contributions to mineralogical investigations of the Lovozero alkaline complex. Found in hydrothermally affected agpaitic rocks at Alluaiv and Karnasurt Mountains, Lovozero alkaline complex, Kola Peninsula, Russia.

Pekov, I.V. *et al.* (1999): *Zap. Vser. Mineral. Obshchest.* **128**(3), 72.

### **Kuzelite**

$[\text{Ca}_4\text{Al}_2(\text{OH})_{12}][(\text{SO}_4 \cdot 6\text{H}_2\text{O})]$ , trig.,  $R@3$  (?).

Related to **hydrocalumite**.

Named after Prof. Hans-Jürgen Kuzel (1932–1997), Universität Erlangen, Germany (*Eur. J. Mineral.* **9**, 1107), specialist in experimental and applied mineralogy, who first synthesized the compound. Found in carbonaceous xenoliths in a Tertiary basalt exposed in the Zeilberg quarry, Maroldsweisach, northern Bavaria, Germany.

Pöllmann, H. *et al.* (1997): *Neues Jahrb. Mineral., Monatsh.*, 423. Jambor, J.L. (1998): *Am. Mineral.* **83**, 909.

### **Kuzmenkoite**

$\text{K}_4\text{G}_4[(\text{Mn}, \text{Fe})_2(\text{H}_2\text{O})_4][(\text{Ti}, \text{Nb})_8(\text{OH}, \text{O})_8][\text{Si}_4\text{O}_{12}]_4 \cdot n\text{H}_2\text{O}$ , mon.,  $C2/m$ .

Structurally related to **labuntsovite**.



Named after  
Found in

Chukanov, N.V. *et al.* (1999): *Zap. Vser. Mineral. Obshchest.* **128**(3), ????. Golovina, N.I. *et al.* (1998): *Dokl. Ross. Akad. Nauk* **362**(3), 350.

### **Lesukite**

$\text{Al}_2(\text{OH})_5\text{Cl}\cdot 2\text{H}_2\text{O}$ , cub., *Im3m*.

Named after Grigorii Ivanovich Lesuke (1935–1995), technical worker in the Department of Crystallography, University of St. Petersburg, Russia. Product of fumarolic activity associated with the Tobalchik Main Fissure eruption, Kamchatka Peninsula, Russia.

Vergasova, L.P. *et al.* (1997): *Zap. Vser. Mineral. Obshchestva* **126**(2), 104. Puziewicz, J. (1968): *Am. Mineral.* **83**, 654.

### **Lukechangite-(Ce)**

$\text{Na}_3(\text{Ce,La,Nd})_2(\text{CO}_3)_4\text{F}$ , hex., *P6<sub>3</sub>/mmc*.

Named after Luke L.Y. Chang (b. 1934), Professor of Geology, University of Maryland, College Park, Maryland, U.S.A., in recognition of his contributions to the study of carbonate-group minerals. Coauthor of *Rock-Forming Minerals. 5B. Non-Silicates* (second edition, 1995). Found in a pegmatite dike in nepheline syenite in the Poudrette quarry, Mont Saint-Hilaire alkaline complex, Rouville County, Quebec, Canada.

Grice, J.D. & Chao, G.Y. (1997): *Am. Mineral.* **82**, 1255.

### **Magnesiofoitite**

$\text{G}(\text{Mg}_2\text{Al})\text{Al}_6(\text{Si}_6\text{O}_{18})(\text{BO}_3)_3(\text{OH})_4$ , trig., *R3m*.

A member of the *Tourmaline* group. The Mg analogue of **foitite**.

The name recalls its composition and relationship to **foitite**. Found in a hydrothermally altered quartz-phenocryst-bearing porphyry from Kyonosawa, Mitomi-mura, Higashi-Yamanashi-gun, Yamanashi-ken Prefecture, Honshu, Japan.

Hawthorne, F.C. *et al.* (1999): *Can. Mineral.* **37**, 1439.

### **Mahnertite**

$(\text{Na,Ca,K})\text{Cu}_3(\text{AsO}_4)_2\text{Cl}\cdot 5\text{H}_2\text{O}$ , tet., *P4<sub>2</sub>2<sub>1</sub>2*.

Named after Volker Mahnert (b. 1943), zoologist, director of the Muséum d'Histoire Naturelle, Geneva, Switzerland. Found in a zone of secondary alteration, Cap Garonne mine, Var, France.

Sarp, H. (1996): *Arch. Sci. Genève* **49**, 119.

### **Manganokhomyakovite**

$\text{Na}_{12}\text{Sr}_3\text{Ca}_6\text{Mn}_3\text{Zr}_3\text{W}(\text{Si}_{25}\text{O}_{73})(\text{O},\text{OH},\text{H}_2\text{O})_3(\text{OH},\text{Cl})_2$ , trig., *R3m*.

Forms a solid solution with **khomyakovite**. A member of the *Eudialyte* group.

The name reflects the composition and similarity to **khomyakovite**. Found in a miarolitic cavity in nepheline syenite in the Poudrette quarry, Mont Saint-Hilaire, Rouville County, Quebec, Canada.

Johnsen, O. *et al.* (1999): *Can. Mineral.* **37**, 893.

### **Manganonordite-(Ce)**

$\text{Na}_3\text{SrCeMn}^{2+}\text{Si}_6\text{O}_{17}$ , orth., *Pcca*.

The manganese analogue of **nordite-(Ce)** and **ferronordite-(Ce)**.

The name reflects the composition and similarity to **nordite-(Ce)**. Found in ussingite-bearing pegmatites, Mount Karnasurt and Karnasurt mine, Lovozero alkaline complex, Kola Peninsula, Russia.

Pekov, I.V. *et al.* (1998): *Zap. Vser. Mineral. Obshchest.* **127**(1), 32. Puziewicz, J. (1999): *Am. Mineral.* **99**, 685.

### **Mereheadite**

$\text{Pb}_2\text{O}(\text{OH})\text{Cl}$ , mon., *C2/c*.

Named after its discovery locality. Found in veins of Mn and Fe oxide minerals that cut dolomitic limestone at Merehead quarry, Cranmore, Somerset, U.K.

Welch, M.D. *et al.* (1998): *Mineral. Mag.* **62**, 389.

### **Mitryaevaite**

$\text{Al}_{10}[(\text{PO}_4)_{8.7}(\text{SO}_3\text{OH})_{1.3}]_{\Sigma 10}\text{AlF}_3 \cdot 30\text{H}_2\text{O}$ , tric., *P1* or  $P\bar{1}$ .

Named after Nonna Mikhailovna Mitryaeva (b. 1920), long associated with the Satpaev Institute of Geological Sciences in Almaty, Kazakhstan, distinguished contributor to the mineralogy of Kazakhstan. Discovered in carbonaceous concretions in weathered black shale, northwestern Karatau Range and the Zhabagly Mountains, in the southern part of Kazakhstan.

Ankinovich, E.A. *et al.* (1997): *Can. Mineral.* **35**, 1415.

### **Mutinaite**

$\text{Na}_3\text{Ca}_4[\text{Al}_{11}\text{Si}_{85}\text{O}_{192}] \cdot 60\text{H}_2\text{O}$ , orth., *Pnma*.

A member of the *Zeolite* group.

Named after Mutina, the ancient Latin name for Modena, Italy, a major site of zeolite research. Found in cavities in Jurassic Ferrar basalt, Mount Adamson, Northern Victoria Land, Antarctica.

Galli, E. *et al.* (1997): *Zeolites* **19**, 318. Vezzalini, G. *et al.* (1997): *Zeolites* **19**, 323. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571. Jambor, J.L. (1998): *Am. Mineral.* **83**, 909.

### **Nepskoeite**

$\text{Mg}_4\text{Cl}(\text{OH})_7 \cdot 6\text{H}_2\text{O}$ , orth., *Pcmm* (?).

Named after its discovery locality. Found in Cambrian salt beds at the Nepskoe salt deposit, eastern Siberia, Russia.

Apollonov, V.N. (1998): *Zap. Vser. Mineral. Obshchest.* **127**(1), 41. Puziewicz, J. (1999): *Am. Mineral.* **99**, 686.

### **Nickelphosphide**

$(\text{Ni,Fe})_3\text{P}$ , tet., *I@4*.

The nickel-dominant analog of **schreibersite**.

The name reflects its composition. Found in the Butler iron meteorite, Bates County, Missouri, U.S.A., which fell in 1874, and a number of other iron meteorites.

Britvin, S.N. *et al.* (1999): *Zap. Vser. Mineral. Obshchest.* **128**(3), 64.

### **Niedermayrite**

$\text{Cu}_4\text{Cd}(\text{SO}_4)_2(\text{OH})_6 \cdot 4\text{H}_2\text{O}$ , mon., *P2<sub>1</sub>/m*.

Named after Gerhard Niedermayr (b. 1941), mineralogist and geologist, Naturhistorisches Museum, Vienna, Austria, compiler of the regional mineralogy of the eastern Alps. Found in brecciated marble in an abandoned adit, Lavrion mining district, Attica Peninsula, Greece.

Giester, G. *et al.* (1998): *Mineral. Petrol.* **63**, 19. Jambor, J.L. (1999): *Am. Mineral.* **84**, 686.

### **Niobocarbide**

$(\text{Nb,Ta})\text{C}$ , cub., *Fm3m*.

Forms a solid solution with **tantalcabide**.

The name alludes to its composition. The mineral was discovered in platiniferous placers in the Nizhnetagilsky District in the Middle Urals, Russia, in a collection made by P. Walther at the beginning of the 20th century.

Novgorodova, M.I. *et al.* (1997): *Zap. Vser. Mineral. Obshchest.* **126**(1), 76. Kovalenker, V.A. (1998): *Am. Mineral.* **83**, 1117.

**Normandite**

$\text{NaCa}(\text{Mn}^{2+}, \text{Fe}^{2+})(\text{Ti}, \text{Nb}, \text{Zr})\text{Si}_2\text{O}_7\text{OF}$ , mon.,  $P2_1/a$ .  
The Ti-analogue of **låvenite**.

Named after Charles Normand (b. 1963), of Montreal, Quebec, Canada, who discovered the mineral. Found in miarolitic cavities in nepheline syenite at the Poudrette quarry, Mont Saint-Hilaire, Rouville County, Quebec, Canada.

Chao, G.Y. & Gault, R.A. (1997): *Can. Mineral.* **35**, 1035.

**Oenite**

$\text{CoSbAs}$ , orth., (?).

Named after Ing Soen Oen (1928–1996), Professor of Petrology, Mineralogy and Ore Geology at the Vrije Universiteit, Amsterdam, The Netherlands, in recognition of his contributions to the mineralogy and geology of ore deposits (*Am. Mineral.* **83**, 1136). Found in felsic metatuffaceous rocks in Cu–Co skarns associated with the Tunaberg polymetallic sulfide deposits, Bergslagen metallogenic province, south-central Sweden.

Dobbe, R.T.M. & Zakrzewski, M.A. (1998): *Can. Mineral.* **36**, 855.

**Okayamalite**

$\text{Ca}_2\text{B}_2\text{SiO}_7$ , tet.,  $P@421m$ .  
The boron analogue of **gehlenite**.

Named after the discovery locality. Found in a vein-like skarn developed in the Fuka limestone mine, Bicchu-cho, Okayama Prefecture, Japan.

Matsubara, S. *et al.* (1998): *Mineral. Mag.* **62**, 703.

**O'Neillite**

$\text{Na}_{15}\text{Ca}_3\text{Mn}_3\text{Fe}^{2+}_3\text{Zr}_3\text{Nb}(\text{Si}_{25}\text{O}_{73})(\text{O}, \text{OH}, \text{H}_2\text{O})_3(\text{OH}, \text{Cl})_2$ , trig.,  $R3$ .  
A member of the *Eudialyte* group.

Named after John Johnston O'Neill (1886–1966), geologist with the Geological Survey of Canada, Ottawa, and later, Professor of geology, Dean of Science and Dean of Engineering at McGill University, Montreal, Canada, the first to describe the geology of Mont Saint-Hilaire and to recognize the occurrence there of alkaline accessory minerals like **eudialyte**. Found in nepheline syenite, Poudrette quarry, Mont Saint-Hilaire, Rouville County, Quebec, Canada.

Johnsen, O. *et al.* (1999): *Can. Mineral.* **37**, 1295.

**Parascorodite**

$\text{FeAsO}_4 \cdot 2\text{H}_2\text{O}$ , hex. (?).

From Gk. *para*, near, and **scorodite**, with which it has a dimorphic relationship. Formed as a product of dissolution of **arsenopyrite** on medieval dumps of the Kaňk silver mine in the Kutná Hora ore district, central Bohemia, Czech Republic.

Ondruš, P. *et al.* (1999): *Am. Mineral.* **84**, 1439.

### **Parasibirskite**

$\text{Ca}_2\text{B}_2\text{O}_5 \cdot \text{H}_2\text{O}$ , mon.,  $P2_1/m$ .

From Gk. *para*, near, and **sibirskite**, with which it has a dimorphic relationship. Found in a vein in gehlenite–spurrite skarns, Fuka limestone mine, Okayama Prefecture, Japan.

Kusachi, I. *et al.* (1998): *Mineral. Mag.* **62**, 521.

### **Philolithite**

$\text{Pb}_{12}\text{O}_6\text{Mn}(\text{Mg},\text{Mn})_2(\text{Mn},\text{Mg})_4(\text{SO}_4)(\text{CO}_3)_4\text{Cl}_4(\text{OH})_{12}$ , tet.,  $P4_2/nmm$ .

Named in honor of the Friends of Mineralogy, from the Gk. *philos*, loving, and *lithos*, stone. A late-stage fissure mineral in a skarn assemblage, Långban mine, Filipstad District, Värmland, Sweden.

Kampf, A.R. *et al.* (1998): *Mineral. Rec.* **29**, 201. Jambor, J.L. (1999): *Am. Mineral.* **84**, 686.

### **Phosphoellenbergerite**

$\text{Mg}_{14}(\text{PO}_4)_6(\text{PO}_3\text{OH},\text{CO}_3)_2(\text{OH})_6$ , hex.,  $P6_3mc$ .

Named as the phosphate end-member of a series with **ellenbergerite**. Found in very high-pressure assemblages in the Dora–Maira massif, near San Giacomo, Vallone di Gilba, Val Varaita, in the Western Alps, Italy, Piemonte, Italy.

Chopin, C. & Sobolev, N. (1995): *In* Ultrahigh-Pressure Metamorphism (R.G. Coleman & X. Wang, eds.). Cambridge University Press, Cambridge, U.K. (97-131). Raade, G. *et al.* (1998): *Mineral. Petrol.* **62**, 89. Brunet, F. *et al.* (1998): *Contrib. Mineral. Petrol.* **131**, 54. Jambor, J.L. (1999): *Am. Mineral.* **84**, 1196.

### **Phosphogartrellite**

$\text{PbCuFe}(\text{PO}_4)_2(\text{OH}) \cdot \text{H}_2\text{O}$ , tric.,  $P@1$ .

A member of the *Tsumcorite* group.

Named after its composition and relationship to **gartrellite**. Found as a product of oxidation on veins of silicified barite at Hohenstein, near Reichenbach (type locality) and Odenwald, Germany.

Krause, W. *et al.* (1998): *Neues Jahrb. Mineral., Monatsh.*, 111. Jambor, J.L. (1998): *Am. Mineral.* **83**, 1117.

### **Phosphovanadylite**

$(\text{Ba,Ca,K,Na})_x[(\text{V}^{4+},\text{Al})_4\text{P}_2(\text{O,OH})_{16}] \cdot 12\text{H}_2\text{O}$ , cub.,  $I\bar{4}3m$ .

The name reflects its composition, in particular the presence of vanadyl groups and phosphorus. Found in the Meade Peak Member of the Phosphoria Formation (Permian) at the Enoch Valley mine, Soda Springs, Idaho, in phosphatic organic-matter-rich mudstone.

Medrano, M.D. *et al.* (1998): *Am. Mineral.* **83**, 889.

### **Polkanovite**

$\text{Rh}_{12}\text{As}_7$ , hex.,  $P6_3/m$ .

Named after Yuri Aleksandrovich Polkanov (b. 1935), Academician, Institute of Mineral Resources, Academy of Technical Sciences of Ukraine, known for his studies of the mineralogy and ore deposits of the Crimean Peninsula, and particularly of placers. Found in a placer deposit in the upper reaches of the Miass River, southern Urals, Russia.

Britvin, S.N. *et al.* (1998): *Zap. Vser. Mineral. Obshchest.* **127**(2), 60. Lambert-Andron, B. *et al.* (1985): *J. Less-Common Metals* **108**, 353. Jambor, J.L. (1999): *Am. Mineral.* **84**, 195.

### **Potassicpargasite**

$(\text{K,Na})\text{Ca}_2(\text{Mg,Fe}^{2+},\text{Al,Fe}^{3+})_5(\text{Si,Al})_8\text{O}_{22}(\text{OH,F})_2$ , mon.,  $C2/m$ .

A member of the *Amphibole* group.

The name reflects its bulk composition, a potassium-dominant pargasite. Found at Pargas, Turku-Pori, Finland, with calcite in a metasomatic or skarn-type deposit.

Robinson, G.W. *et al.* (1997): *Can. Mineral.* **35**, 1535.

### **Pretulite**

$\text{ScPO}_4$ , tet.,  $I4_1/amd$ .

The Sc-dominant analogue of **xenotime**.

Named after the discovery locality, Höllkogel, Pretul Mountain, Fischbacher Alpen, Styria, Austria. Found in phyllite–schist-hosted lazulite – quartz veins in the Lower Austroalpine Grobgnais complex, in the Eastern Alps, eastern Austria.

Bernhard, F. *et al.* (1998): *Am. Mineral.* **83**, 625.

### **Protoferro-anthophyllite**

$(\text{Fe,Mn})_2(\text{Fe,Mn})_5\text{Si}_8\text{O}_{22}(\text{OH})_2$ , orth., *Pnmm*.

A member of the *Amphibole* group.

The name alludes to its structural relationship to the proto-amphiboles and its chemical relationship to **anthophyllite**. Found in granitic pegmatites, Cheyenne Mountain area, El Paso County, Colorado, U.S.A. and Hirukawa Village, Gifu Prefecture, Japan.

Sueno, S. *et al.* (1998): *Phys. Chem. Minerals* **25**, 366. Jambor, J.L. (1999): *Am. Mineral.* **84**, 196.

### **Protomangano-ferro-anthophyllite**

$(\text{Mn,Fe})_2(\text{Mn,Fe})_5\text{Si}_8\text{O}_{22}(\text{OH})_2$ , orth., *Pnmm*.

A member of the *Amphibole* group.

The name alludes to its structural relationship to the proto-amphiboles and its chemical relationship to **anthophyllite**. Found in bedded Mn deposits at Yokoneyama, Tochigi Prefecture, Japan, and also in a pegmatite at Suishoyame, Fukushima Prefecture, Japan.

Sueno, S. *et al.* (1998): *Phys. Chem. Minerals* **25**, 366. Jambor, J.L. (1999): *Am. Mineral.* **84**, 196.

### **Pseudosinhalite**

$(\text{Mg,Fe}^{2+})_2\text{Al}_3\text{B}_2\text{O}_9(\text{OH})$ , mon., *P2<sub>1</sub>/c*.

From Gk. *pseudos*, false, and **sinhalite**; the name alludes to the optical, chemical and structural similarity to **sinhalite**. Found as a product of replacement of sinhalite in metasomatized marble in the Tayozhnoye Fe-B skarn, Aldan Shield, southern Sakha – Yakutia Republic, Russian Federation.

Schreyer, W. *et al.* (1998): *Contrib. Mineral. Petrol.* **133**, 382. Daniels, P. *et al.* (1997): *Contrib. Mineral. Petrol.* **128**, 261. Jambor, J.L. (1999): *Am. Mineral.* **84**, 1196.

### **Pushcharovskite**

$\text{Cu}(\text{AsO}_3\text{OH})\cdot\text{H}_2\text{O}$ , tric., *P1* (?).

Polymorphic relationship with **geminite**.

Named after Dmitry Yurievich Pushcharovsky (b. 1944), crystallographer, Moscow State University, Russia. Cap Garonne mine, Var, France. Sarp, H. & Sanz-Gysler, J. (1997): *Arch. Sci. Genève* **50**, 177. Jambor, J.L. (1999): *Am. Mineral.* **84**, 196.

### **Quadratite**

$\text{Ag}(\text{Cd,Pb})(\text{As,Sb})\text{S}_3$ , tet., *I4/amd*.

The name is derived from the conspicuous quadratic shape of the mineral. Found in small vugs in dolomitic rock, Lengenbach, Binntal, Switzerland.

Graeser, S. *et al.* (1998): *Schweiz. Mineral. Petrogr. Mitt.* **78**, 489.

### **Quintinite-2H**

$(\text{Mg,Fe}^{2+})_4\text{Al}_2(\text{OH})_{12}\text{CO}_3 \cdot 3\text{H}_2\text{O}$ , hex.,  $P6_322$ .

Related to **caresite-2H**, **charmarite-2H** and **charmarite-3T**.

Named after Quintin Wight (b. 1935), of Ottawa, Ontario, Canada, significant contributor to mineral studies at Mont Saint-Hilaire, and author of *The Complete Book of Micromounting* (1993). Found in the Jacupiranga mine, São Paulo, Brazil.

Chao, G.Y. & Gault, R.A. (1997): *Can. Mineral.* **35**, 1541. Arakcheeva, A.V. *et al.* (1996): *Crystallogr. Rep.* **41**, 972.

### **Quintinite-3T**

$(\text{Mg,Fe}^{2+})_4\text{Al}_2(\text{OH})_{12}\text{CO}_3 \cdot 3\text{H}_2\text{O}$ , trig.,  $P3_112$  or  $P3_212$ .

Related to **caresite-2H**, **charmarite-2H** and **charmarite-3T**.

See **quintinite-2H**. Found in the Demix quarry, Mont Saint-Hilaire, Quebec, Canada.

Chao, G.Y. & Gault, R.A. (1997): *Can. Mineral.* **35**, 1541.

### **Rambergite**

ggg-MnS, hex.,  $P6_3mc$ .

Dimorphic relationship with **alabandite**.

Named after Hans Ramberg (1917-1998), Professor of Mineralogy and Petrology at the University of Chicago, then at the University of Uppsala, Sweden. Specialist in the thermodynamics and kinetics of mineral-forming reactions in metamorphic terranes, author of *The Origin of Metamorphic and Metasomatic Rocks* (1952). Found in anoxic laminated sediments rich in organic matter, Gotland Deep, Baltic Sea, off the coast of Sweden. Also found in a skarn in the Garpenberg area, Dalarna, Sweden.

Kalinowski, M.P. (1996): *Geol. Fören. Stockholm Förh.* **118**, A53. Böttcher, M.E. & Huckriede, H. (1997): *Marine Geol.* **137**, 201. Jambor, J.L. (1998): *Am. Mineral.* **83**, 1117.

### **Rhodarsenide**

$(\text{Rh,Pd})_2\text{As}$ , orth.,  $Pnma$  (?).

The name alludes to its rhodium and arsenic content. Found in a placer deposit in the Srebrnica River, near Veluce, in central Serbia.



Tarkian, M. *et al.* (1997): *Eur. J. Mineral.* **9**, 1321. Jambor, J.L. (1998): *Am. Mineral.* **83**, 909.

### **Rodolicoite**

$\text{Fe}^{3+}\text{PO}_4$ , trig.,  $P3_121$ .

Isostructural with **berlinite**; polymorphic relationship with **heterosite**.

Named after Francesco Rodolico (1905–1988), professor of mineralogy, University of Florence, Italy, specialist of the history of geology and of building and ornamental materials, author of *Le pietre delle città d'Italia*. Found in earthy nodules in a brick-like matrix, Santa Barbara lignite mine, Upper Arno River valley, 30 km southeast of Florence, Italy.

Cipriani, C. *et al.* (1997): *Eur. J. Mineral.* **9**, 1101. Arnold, H. (1986): *Z. Kristallogr.* **177**, 139. Jambor, J.L. (1998): *Am. Mineral.* **83**, 654.

### **Rossmannite**

$\text{G}(\text{LiAl}_2)\text{Al}_6(\text{Si}_6\text{O}_{18})(\text{BO}_3)_3(\text{OH})_4$ , trig.,  $R3m$ .

Named after George R. Rossman (b. 1945), Professor of Mineralogy, California Institute of Technology, Pasadena, California, U.S.A., in recognition of his work on the spectroscopy of tourmaline-group minerals, and his wide-ranging contributions in the application of spectroscopic techniques to minerals. Found in the Hradisko quarry, in the Rožná lepidolite subtype of granitic pegmatite, northeastern part of the Strážek Moldanubicum, Czech Republic.

Selway, J.B. *et al.* (1998): *Am. Mineral.* **83**, 896.

### **Rubicline**

$(\text{Rb},\text{K})\text{AlSi}_3\text{O}_8$ , tric.,  $P@1$  (?).

The name reflects its compositional and structural attributes as the rubidium analogue of **microcline**. Found in a veinlet of rubidian microcline cutting pollucite in a rare-element-bearing granitic pegmatite at San Piero in Campo, Elba, Italy.

Teertstra, D.K. *et al.* (1998): *Am. Mineral.* **83**, 1335.

### **Saddlebackite**

$\text{Pb}_2\text{Bi}_2\text{Te}_2\text{S}_3$ , hex., (?).

Named after the discovery locality. Found in a lateritic orebody at the Boddington gold deposit, in the Saddleback greenstone belt (Archean), near Mount Saddleback, approximately 100 km southeast of Perth, Western Australia, Australia.

Clarke, R.M. (1997): *Aust. J. Mineral.* **3**, 119. Jambor, J.L. (1998): *Am. Mineral.* **83**, 1118.

**Scandiobabingtonite**

$\text{Ca}_2(\text{Fe}^{2+}, \text{Mn})\text{ScSi}_5\text{O}_{14}(\text{OH})$ , tric.,  $P@1$  (?).

Forms a solid-solution series with **babingtonite**.

The name reflects its composition, as the scandium analogue of **babingtonite**. Found in a miarolitic cavity in the Montecatini quarry in the Baveno granite, near Novara, Piedmont, Italy.

Orlandi, P. *et al.* (1998): *Am. Mineral.* **83**, 1330.

**Schäferite**

$\text{NaCa}_2\text{Mg}_2(\text{VO}_4)_3$ , cub.,  $Ia@3d$ .

A member of the *Garnet* group.

Named after Helmut Schäfer (b. 1931), amateur mineralogist from Mayen-Kürrenberg, specialist in the minerals of the Eifel volcanic area, who discovered the mineral. Found in a silicate-rich xenolith in leucite tephrite lava, Bellberg volcano, near Mayen, Laacher See district, Eifel, Germany.

Krause, W. *et al.* (1999): *Neues Jahrb. Mineral., Monatsh.*, 123.

**Seidite-(Ce)**

$\text{Na}_4\text{SrCeTiSi}_8\text{O}_{22}\text{F}\cdot 5\text{H}_2\text{O}$ , mon.,  $C2/c$ .

Named after Seidozero, literally Lake Seid, the central lake in the Lovozero complex. Found in the Jubileinaya hyperagpaitic pegmatites at Mount Karnasurt, Lovozero alkaline complex, Kola Peninsula, Russia.

Khomyakov, A.P. *et al.* (1998): *Zap. Vser. Mineral. Obshchest.* **127**(4), 94.

**Shibkovite**

$\text{K}(\text{Ca}, \text{Mn}, \text{Na})_2(\text{K}_{2-x}\text{G}_x)_2\text{Zn}_3\text{Si}_{12}\text{O}_{30}$ , hex.,  $P6/mcc$ .

A member of the *Milarite* group.

Named after two prominent Russian geologists, Viktor Sergeevitch Shibkov (1926-1992) and Nikolai Viktorovitch Shibkov (1951-1991), who both spent their professional life working on the geology of Soviet Asia. Found in a boulder of peralkaline granitic pegmatite in moraine, Dara-i-Pioz glacier, Garmsky District, northern Tajikistan.

Pautov, L.A. *et al.* (1998): *Zap. Vser. Mineral. Obshchest.* **127**(4), 89.

**Sidpietersite**

$\text{Pb}^{2+}_4(\text{S}^{6+}\text{O}_3\text{S}^{2-})\text{O}_2(\text{OH})_2$ , tric.,  $P@1$ .

Named after Sidney Pieters (b. 1920), of Windhoek, Namibia [*Mineral. Rec.* **8**(3), 54], for his outstanding contributions to Namibian mineralogy. Found at the Tsumeb mine, Tsumeb, Namibia.

Roberts, A.C. *et al.* (1999): *Can. Mineral.* **37**, 1269. Cooper, M.A. & Hawthorne, F.C. (1999): *Can. Mineral.* **37**, 1275.

### **Simmonsite**

$\text{Na}_2\text{LiAlF}_6$ , mon.,  $P2_1$  (?).

Named after William B. "Skip" Simmons (b. 1943), University of New Orleans, New Orleans, Louisiana, U.S.A., specialist in the mineralogy and petrology of granitic pegmatites, especially those of Colorado and of NYF type. Found in a late-stage breccia pipe that cuts the Zapot amazonitic microcline – topaz – zinnwaldite granitic pegmatite in the Gillis Range, Mineral County, Nevada, U.S.A.

Foord, E.E. *et al.* (1999): *Am. Mineral.* **84**, 769.

### **Sodic-ferri-clinoferroholmquistite**

$\text{GLi}_2(\text{Fe}^{2+}, \text{Mg})_3\text{Fe}^{3+}_2\text{Si}_8\text{O}_{22}(\text{OH})_2$ , mon.,  $C2/m$ .

A member of the *Amphibole* group.

The name reflects its composition:

Found in episyenite in the Arroyo de la Yedra Valley, in the eastern part of the Yedra Massif, Sierra de Guadarrama, Spanish Central System, Spain.

Caballero, J.M. *et al.* (1998): *Am. Mineral.* **83**, 167.

### **Sorosite**

$\text{Cu}(\text{Sn}, \text{Sb})$ , hex.,  $P6_3/mmc$  (?).

Named after George Soros (b. 1930), of New York, financier, author and philanthopist, in recognition of his important support to scientific activity in the former Soviet Union, among other countries, and his efforts to promote open societies throughout the world. Found in the Baimka gold - platinum-group mineral placer deposit, in the River Bolshoy Anyuy, which drains ophiolitic complexes, western Chukotka, Russian Far East.

Barkov, A.Y., *et al.* (1998): *Am. Mineral.* **83**, 901.

### **Stan kite**

$\text{Fe}^{3+}(\text{Mn}, \text{Fe}^{2+}, \text{Mg})(\text{PO}_4)\text{O}$ , mon.,  $P2_1/a$ .

Named after Josef Stan k (1928–1995), Professor of Mineralogy, Masarykov University, Brno, Czech Republic, a specialist in phosphate mineralogy. Clementine II granitic pegmatite,

Okatjimukuju farm, Karibib, Namibia.

Keller, P. *et al.* (1997): *Eur. J. Mineral.* **9**, 475. Jambor, J.L. (1998): *Am. Mineral.* **83**, 187.

### **Stoppaniite**

$(\text{Fe,Al,Mg})_4[\text{Be}_6\text{Si}_{12}\text{O}_{36}] \cdot (\text{H}_2\text{O})_2(\text{Na,G})_2$ , hex., *P6/mcc*.

A member of the *Beryl* group.

Named after

Vico, Latium, Italy

Ferraris, G. *et al.* (1998): *Eur. J. Mineral.* **10**, 491.

### **Strontiomelane**

$\text{SrMn}^{4+}_6\text{Mn}^{3+}_2\text{O}_{16}$ , mon., *P2<sub>1</sub>/n*.

A member of the *Cryptomelane* group.

The name reflects the presence of strontium and the black color, *melanos* in Greek. Found at the Praborna manganese mine, near Saint-Marcel, Aosta Valley, Italian Alps, in a post-Alpine stage of veining.

Meisser, N. *et al.* (1999): *Can. Mineral.* **37**, 673.

### **Sudovikovite**

$\text{PtSe}_2$ , trig., *P@3m1*.

Named after N.G. Sudovikov (1903-1966), noted Russian petrologist. Found in metasomatic assemblage at the Srednaya Palma U-V deposit 30 km north of Kizhy Island, in southern Karelia, Russia.

Polekhovskii, Yu.S. *et al.* (1997): *Dokl. Akad. Nauk* **354**(1), 82. Kovalenker, V.A. (1998): *Am. Mineral.* **83**, 1118.

### **Tantalcarbide**

$(\text{Ta,Nb})\text{C}$ , cub., *Fm3m*.

Forms a solid solution with **niobocarbide**.

The name reflects its composition: tantalum and carbon. The mineral was discovered in platiniferous placers in the Nizhnetagilsky District in the Middle Urals, Russia, in a collection made by P. Walther at the beginning of the 20th century.

Novgorodova, M.I. *et al.* (1997): *Zap. Vser. Mineral. Obshchest.* **126**(1), 76. Kovalenker, V.A. (1998): *Am. Mineral.* **83**, 1117.

**Ternesite**

$\text{Ca}_5(\text{SiO}_4)_2\text{SO}_4$ , orth., *Pnma*.

Named after Bernd Ternes (b. 1955), of the Rhineland – Palatinate Department of Agriculture, Mayen, Germany, specialist of the mineralogy of the Eifel area and discoverer of the mineral. Found in Ca-rich xenoliths in the Quaternary leucite tephrite lava of the Ettringer Bellerberg volcano, Eifel district, Germany.

Iran, E. *et al.* (1997): *Mineral. Petrol.* **60**, 121. Jambor, J.L. (1998): *Am. Mineral.* **83**, 655.

**Ternovite**

$(\text{Mg,Ca})\text{Nb}_4\text{O}_{11} \cdot n\text{H}_2\text{O}$  ( $8 < n < 10$ ), mon., *P2/m* (?).

The Mg-dominant analogue of **hochelagaite** and **franconite**.

Named after Vladimir Ivanovich Ternovoi (1928–1980), economic geologist, a pioneer in studies of the Kovdor deposit. Found in zones of hydrothermal alteration in dolomite–calcite carbonatite, Vuorijarvi alkaline ultrabasic complex, northern Karelia, Kola Peninsula, Russia.

Subbotin, V.V. *et al.* (1997): *Neues Jahrb. Mineral., Monatsh.*, 49. Subbotin, V.V. *et al.* (1997): *Zap. Vser. Mineral. Obshchest.* **126**(3), 98. Jambor, J.L. (1998): *Am. Mineral.* **83**, 187.

**Terranovaite**

$\text{NaCaAl}_3\text{Si}_{17}\text{O}_{40} \cdot >7\text{H}_2\text{O}$ , orth., *Cmcm*.

A member of the *Zeolite* group.

Named after its discovery locality. Found near the Italian Antarctic Station at Terranova Bay, Antarctica.

Galli, E. *et al.* (1997): *Am. Mineral.* **82**, 423. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

**Thomasclarkite-(Y)**

$\text{Na}(\text{Y,REE})(\text{HCO}_3)(\text{OH})_3 \cdot 4\text{H}_2\text{O}$ , mon., *P2*.

Named after Thomas Henry Clark (1893-1996), McGill University, Montreal, Quebec, Canada, noted for his studies of the geology of the St. Lawrence Lowlands. Coauthor of *The Geological Evolution of North America* (1960). Occurs as a late hydrothermal phase in alkaline pegmatite dikes in nepheline syenite, Poudrette quarry, Mont Saint-Hilaire, Quebec, Canada.

Grice, J.D. & Gault, R.A. (1998): *Can. Mineral.* **36**, 1293.

**Tschörtnerite**

$\text{Ca}_4(\text{K,Ca,Sr,Ba})_3\text{Cu}_3(\text{OH})_8[\text{Al}_{12}\text{Si}_{12}\text{O}_{48}] \cdot n\text{H}_2\text{O}$ ,  $n \geq 20$ , cub., *Fm@3m*.

A member of the *Zeolite* group.

Named after Jochen Tschörtner (b. 1941), pharmacist and mineral collector from Cologne, Germany, who discovered the mineral. Found in Ca-rich xenolith in leucite tephrite lava at the Bellberg volcano, near Mayen, Laacher See area, Eifel, Germany.

Krause, W. *et al.* (1997): *Ber. Deutsch. Mineral. Ges.* **1**, 205. Effenberger, H. *et al.* (1998): *Am. Mineral.* **83**, 607. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### **Turkestanite**

$\text{Th}(\text{Ca},\text{Na})_2(\text{K}_{1-x}\text{G}_x)\text{Si}_8\text{O}_{20} \cdot n\text{H}_2\text{O}$ , tet., *P4/mcc*.

Isostructural with **steacyite**.

Named after the discovery locality, along the Turkestan Ridge. Found in the albitized exocontact zone at the Djelisu and Dara-Pioz alkaline complexes, located 40 km apart north and south, respectively, of the Turkestan – Tadjikistan border.

Pautov, L.A. *et al.* (1997): *Zap. Vser. Mineral. Obshchest.* **126**(6), 45. Grew, E.S. (1998): *Am. Mineral.* **83**, 1348.

### **Tsugaruite**

$\text{Pb}_4\text{As}_2\text{S}_7$ , orth., *Pnn2* or *Pnnm*.

Named after the discovery locality. Found in a veinlet of barite at the Yunosawa mine in the Minami-Tsugara-gun provincial unit of the Aomori Prefecture in northern Japan.

Shimizu, M. *et al.* (1998): *Mineral. Mag.* **62**, 793.

### **Utahite**

$\text{Cu}_5\text{Zn}_3(\text{Te}^{6+}\text{O}_4)_4(\text{OH})_8 \cdot 7\text{H}_2\text{O}$ , tric., *P1* or *P@1*.

Named after its discovery locality. Found as a product of oxidation at the Centennial Eureka mine, Tintic District, Juab County, Utah, U.S.A.

Roberts, A.C. *et al.* (1997): *Mineral. Rec.* **28**, 175. Jambor, J.L. (1998): *Am. Mineral.* **83**, 187.

### **Velikite**

$\text{Cu}_2\text{HgSnS}_4$ , tet., *I@42m*.

Mercurian member of the *Stannite* group. Structurally related to **kësterite**.

Named after A.S. Velikiy (1913–1970), investigator of ore deposits in Soviet central Asia. Found in veins cutting black schist and limestone in the Khaidarkan Hg deposit, about 60 km south of Fergana, Kirgizia.

Kaplunnik, L.N. *et al.* (1977): *Kristallografiya* **22**, 175. Gruzdev, V.S. *et al.* (1988): *Dokl. Akad. Nauk SSSR* **300**, 432. Grew, E.S. (1990): *Am. Mineral.* **75**, 933. Gruzdev, V.S. *et al.* (1997): *Zap. Vser. Mineral. Obshchest.* **126**(4), 71.

### Vergasovaite

$\text{Cu}_3\text{O}[(\text{Mo},\text{S})\text{O}_4\text{SO}_4]$ , orth., *Pnma*.

Named after Lidiya Pavlovna Vergasova (b. 1941), of the Institute of Volcanology, Russian Academy of Sciences, Petropavlovsk, Russia, who contributed significantly to the mineralogy of volcanic exhalites of Kamchatka, and of the volcano Tolbachik, in particular. Found in a fumarole along the North Breach of the Main Tolbachik fissure eruption, Kamchatka Peninsula, Russia.

Bykova, E.Y. *et al.* (1998): *Schweiz. Mineral. Petrogr. Mitt.* **78**, 479. Berlepsch, P. *et al.* (1999): *Eur. J. Mineral.* **11**, 101.

### Vuoriyarvite

$(\text{K},\text{Na})_2(\text{Nb},\text{Ti})_2\text{Si}_4\text{O}_{12}(\text{O},\text{OH})_2 \cdot 4\text{H}_2\text{O}$ , mon., *Cm*.

The name reflects the discovery locality, Lake Vuoriyarvi and the Vuoriyarvi complex. Found in veins of dolomite-calcite carbonatite that cut pyroxenites of the Vuoriyarvi alkali-ultramafic complex, Kola Peninsula, Russia. The mineral formed by the hydrothermal alteration of pyrochlore.

Subbotin, V.V. *et al.* (1998): *Dokl. Akad. Nauk* **358**(4), 517. Grew, E.S. (1998): *Am. Mineral.* **83**, 1349. Rastsvetaeva, R.K. *et al.* (1994): *Eur. J. Mineral.* **6**, 503.

### Walfordite

$(\text{Fe}^{3+},\text{Te}^{6+})\text{Te}^{4+}_3\text{O}_8$ , cub.,  $I2_1/a@3$ .

The  $\text{Fe}^{3+}$  analogue of **winstanleyite**.

Named after Phillip Walford (b. 1945), of Toronto, Ontario, Canada, Vice-President and Chief Geologist of LAC Minerals, Ltd., at the time that mining company held the mining rights to the discovery locality. Found in brecciated silicified rhyolitic and dacitic pyroclastic rocks, Wendy open pit of the Tambo mine, El Indio – Tambo mining property, 160 km east of La Serena, Cquimbo Province, northern Chile.

Back, M.E. *et al.* (1999): *Can. Mineral.* **37**, 1261.

### Wilhelmkleinite

$\text{ZnFe}^{3+}_2(\text{AsO}_4)_2(\text{OH})_2$ , mon.,  $P2_1/n$ .

Named after Wilhelm Klein (1889-1939), manager of the OMEG mines in Namibia from 1916 until 1939, who made the first systematic collection of minerals from the Tsumeb mine. Found in the third oxidation zone, Tsumeb mine, Namibia.

Schlüter, J. *et al.* (1998): *Neues Jahrb. Mineral., Monatsh.*, 558. Jambor, J.L. (1999): *Am. Mineral.* **84**, 1197.

### **Wiluite**

$\text{Ca}_{19}(\text{Al,Mg,Fe,Ti})_{13}(\text{B,Al,G})_5\text{Si}_{18}\text{O}_{68}(\text{O,OH})_{10}$ , tet., *P4/nnc*.

Isostructural with **vesuvianite**.

Named after the discovery locality. Found with grossular and serpentine-group minerals in a serpentinized skarn, Wilui River, Yakutia, Russia.

Groat, L.A. *et al.* (1998): *Can. Mineral.* **36**, 1301. Groat, L.A. *et al.* (1994): *Can. Mineral.* **32**, 505.

### **Wooldridgeite**

$\text{Na}_2\text{CaCu}^{2+}_2(\text{P}_2\text{O}_7)_2(\text{H}_2\text{O})_{10}$ , orth., *Fdd2*.

Named after James Wooldridge (1923-1995), keen amateur mineralogist, micromounter and gemologist from Fernhill Heath, Worcestershire, U.K., who discovered the mineral. Found in the Judkins quarry, Nuneaton, Warwickshire, U.K., along fractures in Cambrian sedimentary rocks above an unconformity.

Hawthorne, F.C. *et al.* (1999): *Mineral. Mag.* **63**, 13. Cooper, M.A. & Hawthorne, F.C. (1999): *Can. Mineral.* **37**, 73.

### **Xenotime-(Yb)**

$\text{YbPO}_4$ , tet., *I4<sub>1</sub>/amd*.

Forms a series with **xenotime-(Y)**.

Named after its composition and relationship with **xenotime-(Y)**. Found in the saccharoidal albite unit of a granitic pegmatite of the Shatford Lake pegmatite group, near the margin of the Lac du Bonnet batholith, southeastern Manitoba.

Buck, H.M. *et al.* (1999): *Can. Mineral.* **37**, 1303.

### **Yixunite**

$\text{Pt}_3\text{In}$ , cub., *Pm3m*.

Named after the discovery locality. Found in a Pt-bearing vein in contact-metamorphosed garnet–amphibole-bearing pyroxenite near the village of Damiao and the Yixun River, about 270 km north of Beijing, People's Republic of China.

Yu, Zuxiang (1997): *Acta Geol. Sinica* **71**(4), 332. Jambor, J.L. (1998): *Am. Mineral.* **83**, 655.



**Yvonite**

$\text{Cu}(\text{AsO}_3\text{OH})(\text{H}_2\text{O})_2$ , tric.,  $P@1$ .

Structurally related to **geminite** and **fluckite**.

Named after Klaus Yvon (b. 1943), Professor of Crystallography at the University of Geneva, Switzerland. Found as a supergene mineral at the Salsigne gold mine, Montagne Noire, Aude, France.

Sarp, H. & erný, R. (1998): *Am. Mineral.* **83**, 383.

**Zincohögbomite**

$\text{Zn}_{2-2x}\text{Ti}_x\text{Al}_4\text{O}_8$ , hex.,  $P6_3mc$  (likely).

The Zn-dominant analogue of **högbomite**, found as the  $8H$  and  $16H$  polytypes. Forms a solid-solution series with the ferrous-iron analogue of **högbomite** and with **högbomite**. Formed by breakdown of **gahnite** in metabauxites, Kerketefs Mountain (Mount Kerkis), Samos, Greece.

Ockenga, E. *et al.* (1998): *Eur. J. Mineral.* **10**, 1361. Armbruster, T. (1998): *Schweiz. Mineral. Petrogr. Mitt.* **78**, 461. Armbruster, T. *et al.* (1998): *Schweiz. Mineral. Petrogr. Mitt.* **78**, 469. Jambor, J.L. (1999): *Am. Mineral.* **84**, 1197.

NEW MINERAL SPECIES DEFINED AS A RESULT OF DECISIONS  
SUMMARIZED IN THE IMA REPORT ON MICAS

**Aluminoceladonite**

$\text{KAl}(\text{Mg},\text{Fe}^{2+})\text{GSi}_4\text{O}_{10}(\text{OH})_2$ , mon.,  $C2/m$ .

Forms a series with **ferro-aluminoceladonite** and **celadonite**.

The name reflects its composition: it is an aluminous analog of **celadonite**. Similar to leucophyllite of Starkl (1883), which is alkali-deficient and discredited.

Rieder, M. *et al.* (1998): *Can. Mineral.* **36**, 905.

**Aspidolite**

$(\text{Na},\text{K})\text{Mg}_3\text{AlSi}_3\text{O}_{10}(\text{OH})_2$ , mon.,  $C2/m$ .

The name is from the Gr. *aspisidos*, like a shield, alluding to the appearance of its crystals.

von Kobell, F. (1869): *K. Akad. Münch.* **1**, 364. Schreyer, W. *et al.* (1980): *Contrib. Mineral. Petrol.* **74**, 223. Rieder, M. *et al.* (1998): *Can. Mineral.* **36**, 905.

**Eastonite**

$\text{KMg}_2\text{AlAl}_2\text{Si}_2\text{O}_{10}(\text{OH})_2$ , mon.,  $C2/c$  (?).

Forms a solid solution with **siderophyllite** and other members of the *biotite* series.

Named after its discovery locality. Easton, Pennsylvania, U.S.A.

Rieder, M. *et al.* (1998): *Can. Mineral.* **36**, 905.

### **Ferro-aluminoceladonite**

$\text{K}(\text{Fe}^{2+}, \text{Mg})\text{GSi}_4\text{O}_{10}(\text{OH})_2$ , mon.,  $C2/m$ .

Forms a series with **ferroceladonite** and **aluminoceladonite**.

The name reflects its composition: it is an aluminum- and ferrous-iron-rich derivative of **celadonite**. Found in altered crystal-vitric tuff at Hokonui Hills, Southland, New Zealand.

Li, Gejing *et al.* (1997): *Am. Mineral.* **82**, 503. Rieder, M. *et al.* (1998): *Can. Mineral.* **36**, 905.

### **Ferroceladonite**

$\text{KFe}^{3+}(\text{Fe}^{2+}, \text{Mg})\text{GSi}_4\text{O}_{10}(\text{OH})_2$ , mon.,  $C2/m$ .

Forms a series with **celadonite** and **ferro-aluminoceladonite**.

The name reflects its composition: it is a ferrous-iron-rich derivative of **celadonite**. Found in altered crystal-vitric tuff at Hokonui Hills, Southland, New Zealand.

Li, Gejing *et al.* (1997): *Am. Mineral.* **82**, 503. Rieder, M. *et al.* (1998): *Can. Mineral.* **36**, 905.

### **Tetra-ferri-annite**

$\text{KFe}^{2+}_3\text{Fe}^{3+}\text{Si}_3\text{O}_{10}(\text{OH})_2$ , mon.,  $C2/m$ .

The name reflects its composition: it is the ferric-iron-dominant equivalent of **annite**, with  $\text{Fe}^{3+}$  in tetrahedral coordination.

Rieder, M. *et al.* (1998): *Can. Mineral.* **36**, 905. Donnay, G. *et al.* (1964): *Acta Crystallogr.* **17**, 1369.

### **Tetra-ferriphlogopite**

$\text{KMg}_3\text{Fe}^{3+}\text{Si}_3\text{O}_{10}(\text{OH})_2$ , mon.,  $C2/m$ .

The name reflects its composition: it is the ferric-iron-dominant equivalent of **phlogopite**, with  $\text{Fe}^{3+}$  in tetrahedral coordination.

Rieder, M. *et al.* (1998): *Can. Mineral.* **36**, 905.

### **Trilithionite**

$\text{KLi}_{1.5}\text{Al}_{1.5}\text{AlSi}_3\text{O}_{10}\text{F}_2$ , mon.,  $C2/c$  (?).

The species as defined is not an end member.

The name reflects the composition; it is a trioctahedral lithium-rich mica.

Rieder, M. *et al.* (1998): *Can. Mineral.* **36**, 905.

NEW MINERAL SPECIES DEFINED AS A RESULT OF DECISIONS  
SUMMARIZED IN THE IMA REPORT ON ZEOLITES

**Brewsterite-Ba**

$(\text{Ba,Sr})[\text{Al}_2\text{Si}_6\text{O}_{16}] \cdot 5\text{H}_2\text{O}$ , mon.,  $P2_1/m$  (?).

See **brewsterite-Sr**. The Ba-dominant member of the **brewsterite** series. Discovered at the No. 4 wollastonite mine of the Gouverneur Talc Co., near Harrisville, Lewis County, New York, U.S.A.

Robinson, G.W. & Grice, J.D. (1993): *Can. Mineral.* **31**, 687. Cabella, R. *et al.* (1993): *Eur. J. Mineral.* **5**, 353. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

**Brewsterite-Sr**

$(\text{Sr,Ba,Ca})[\text{Al}_2\text{Si}_6\text{O}_{16}] \cdot 5\text{H}_2\text{O}$ , mon.,  $P2_1/m$ .

Also triclinic,  $P@1$ .

Named after Sir David Brewster (1781–1868), Scottish physicist who studied the optical properties of crystals. Whitesmith mine, Strontian, Argyllshire, Scotland, U.K.

Brooke, H.J. (1822): *Edinburgh Phil. J.* **6**, 112. Artioli, G. *et al.* (1985): *Acta Crystallogr.* **C41**, 492. Akizuki, M. (1987): *Am. Mineral.* **72**, 645. Akizuki, M. *et al.* (1996): *Am. Mineral.* **81**, 1501. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

**Chabazite-Ca**

$(\text{Ca,K,Na,G})_{22}[\text{Al}_2\text{Si}_4\text{O}_{12}] \cdot 6\text{H}_2\text{O}$ , trig.,  $R@3m$ .

From Gk. *chabazios*, tune or melody, one of twenty stones named in the poem *Peri lithos*, which extolled the virtues of minerals. The poem is ascribed to Orpheus, legendary founder of the Orphic cult, which flourished in Greece in the early centuries CE. Zweibrücken, Germany.

Bosc d'Antic, L. (1788): *J. d'Histoire Naturelle* **2**, 181. Calligaris, M. *et al.* (1982): *Acta Crystallogr.* **B38**, 602. Gottardi, G. & Galli, E. (1985): *Natural Zeolites*, Springer-Verlag, Berlin, 175. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

**Chabazite-K**

(K,Na,Ca,**G**)<sub>Σ2</sub>[Al<sub>2</sub>Si<sub>4</sub>O<sub>12</sub>]•6H<sub>2</sub>O, trig., *R@3m*.

See **chabazite-Ca**. The K-dominant member of the **chabazite** series. Tufo Ercolano, Naples, Italy.

De Gennaro, M. & Franco, E. (1976): *Rend. Accad. Naz. Lincei* **40**, 490. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

#### **Chabazite-Na**

(Na,K,Ca,**G**)<sub>Σ2</sub>[Al<sub>2</sub>Si<sub>4</sub>O<sub>12</sub>]•6H<sub>2</sub>O, trig., *R@3m*.

See **chabazite-Ca**. The Na-dominant member of the **chabazite** series. Biggest “Faraglione” facing Aci Trezza, Sicily, Italy.

Passaglia (1970): *Am. Mineral.* **55**, 1278. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

#### **Clinoptilolite-Ca**

(Ca,Na,K,**G**)<sub>Σ3</sub>[Al<sub>3</sub>Si<sub>15</sub>O<sub>36</sub>]•~10H<sub>2</sub>O, mon., *C2/m* (?).

See **clinoptilolite-K**. The Ca-dominant member of the **clinoptilolite** series. Kuruma Pass, Fukushima Prefecture, Japan.

Koyama, K. & Takéuchi, Y. (1977): *Z. Kristallogr.* **145**, 216. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

#### **Clinoptilolite-K**

(K,Na,Ca,**G**)<sub>Σ3</sub>[Al<sub>3</sub>Si<sub>15</sub>O<sub>36</sub>]•~10H<sub>2</sub>O, mon., *C2/m* (?).

Named as the monoclinic dimorph of “ptilolite” (**mordenite**). Hoodoo Mountains, Wyoming, U.S.A., in decomposed basalt.

Pirsson, L.V. (1890): *Am. J. Sci.* **140**, 232. Schaller, W.T. (1923): *Am. Mineral.* **8**, 93. Mason, B. & Sand, L.B. (1960): *Am. Mineral.* **45**, 341. Koyama, K. & Takéuchi, Y. (1977): *Z. Kristallogr.* **145**, 216. Petrov, O.E. *et al.* (1984): *C.R. Acad. Sci. Bulgare* **37**, 785. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

#### **Clinoptilolite-Na**

(Na,K,Ca,**G**)<sub>Σ3</sub>[Al<sub>3</sub>Si<sub>15</sub>O<sub>36</sub>]•~10H<sub>2</sub>O, mon., *C2/m* (?).

See **clinoptilolite-K**. The Na-dominant member of the **clinoptilolite** series. Barstow Formation, Owl Canyon, San Bernardino County, California, U.S.A.

Sheppard, R.A. & Gude, A.J., 3d (1969): *U.S. Geol. Surv., Prof. Pap.* **634**. Coombs, D.S. *et al.*

(1997): *Can. Mineral.* **35**, 1571.

### Dachiardite-Ca

(Ca,Na,K,**G**)<sub>Σ4-5</sub>[Al<sub>4-5</sub>Si<sub>20-19</sub>O<sub>48</sub>]•~13H<sub>2</sub>O, mon., C2/m.

Named after Antonio D'Achiardi (1839–1902), Professor of Mineralogy, Università di Pisa, Italy, who first described the mineral discovered by his son in a granitic pegmatite. Author of *I Metalli, loro Minerali e Miniere* (1883). Found in a granitic pegmatite at Filone della Speranza, Monte Capanne, San Piero di Campo, island of Elba, Tuscany, Italy.

D'Achiardi, G. (1906): *Atti Soc. Toscana Sci. Nat.* **22**, 150. Vezzalini, G. (1984): *Z. Kristallogr.* **166**, 63. Quartieri, S. *et al.* (1990): *Eur. J. Mineral.* **2**, 187. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### Dachiardite-Na

(Na,K,Ca,**G**)<sub>Σ4-5</sub>[Al<sub>4-5</sub>Si<sub>20-19</sub>O<sub>48</sub>]•~13H<sub>2</sub>O, mon., C2/m.

See **dachiardite-Ca**. The Na-dominant member of the **dachiardite** series. Alpe di Siusi, Bolzano, Italy.

Alberti, A. (1975): *Contrib. Mineral. Petrol.* **49**, 63. Bonardi, M. *et al.* (1981): *Can. Mineral.* **19**, 285. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### Erionite-Ca

K(Ca,Na,**G**)<sub>4</sub>[Al<sub>5</sub>Si<sub>13</sub>O<sub>36</sub>]•~15H<sub>2</sub>O, hex., P6<sub>3</sub>/mmc.

See **erionite-Na**. The Ca-dominant member of the **erionite** series. Found in amydgules in altered basalt, Mazé, Niigata Prefecture, Japan.

Harada, K. *et al.* (1967): *Am. Mineral.* **52**, 1785. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### Erionite-K

K(K,Na,Ca,**G**)<sub>4</sub>[Al<sub>5</sub>Si<sub>13</sub>O<sub>36</sub>]•~15H<sub>2</sub>O, hex., P6<sub>3</sub>/mmc.

See **erionite-Na**. The K-dominant member of the **erionite** series. Rome, Oregon, U.S.A.

Eberly, P.E., Jr. (1964): *Am. Mineral.* **49**, 30. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571. Passaglia, E. *et al.* (1998): *Am. Mineral.* **83**, 577.

### Erionite-Na

K(Na,Ca,**G**)<sub>4</sub>[Al<sub>5</sub>Si<sub>13</sub>O<sub>36</sub>]•~15H<sub>2</sub>O, hex., P6<sub>3</sub>/mmc.

From Gk. *erion*, wool, alluding to its white, wool-like, crinkly appearance. Discovered in welded rhyolitic ash-flow tuff at Durkee, Baker County, Oregon, U.S.A.; proposed new type-example: Cady Mountains, California.

Eakle, A.S. (1898): *Am. J. Sci.* **156**, 66. Kawahara, A. & Curien, H. (1969): *Bull. Soc. fr. Minéral. Cristallogr.* **92**, 250. Sheppard, R.A. *et al.* (1965): *Am. Mineral.* **50**, 244. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571. Gualtieri, A. *et al.* (1998): *Am. Mineral.* **83**, 590.

### Faujasite-Ca

(Ca,Na,Mg,K,**G**)<sub>x</sub>[Al<sub>x</sub>Si<sub>12-x</sub>O<sub>24</sub>]•16H<sub>2</sub>O, 3.2 < x < 4.4, cub., *Fd3m*.

See **faujasite-Na**. The Ca-dominant member of the **faujasite** series. Found in drill core from Haselborn, near Ilbeshausen, Vogelsberg, Hessen, Germany.

Wise, W.S. (1982): *Am. Mineral.* **67**, 794. Ibrahim, K. & Hall, A. (1995): *Eur. J. Mineral.* **7**, 1129. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### Faujasite-Mg

(Mg,Ca,Na,K,**G**)<sub>x</sub>[Al<sub>x</sub>Si<sub>12-x</sub>O<sub>24</sub>]•16H<sub>2</sub>O, 3.2 < x < 4.4, cub., *Fd3m*.

See **faujasite-Na**. The Mg-dominant member of the **faujasite** series. Sasbach, Kaiserstuhl, Germany.

Rinaldi, R. *et al.* (1975): *Neues Jahrb. Mineral., Monatsh.*, 433. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### Faujasite-Na

(Na,Ca,Mg,K,**G**)<sub>x</sub>[Al<sub>x</sub>Si<sub>12-x</sub>O<sub>24</sub>]•16H<sub>2</sub>O, 3.2 < x < 4.4, cub., *Fd3m*.

Named after Barthélémy Faujas de Saint Fond (1741–1819), French geologist and student of volcanism. Sasbach, Kaiserstuhl, Germany.

Damour, A. (1842): *Ann. des Mines* **1**, 395. Bauer, W.H. (1964): *Am. Mineral.* **49**, 697. Ibrahim, K. & Hall, A. (1995): *Eur. J. Mineral.* **7**, 1129. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### Ferrierite-K

(K,Na,Mg,Ca,**G**)<sub>Σ3</sub>[Al<sub>3</sub>Si<sub>15</sub>O<sub>36</sub>]•4H<sub>2</sub>O, orth., *Pnnm*.

See **ferrierite-Mg**. The K-dominant member of the **ferrierite** series. Santa Monica Mountains, California, U.S.A.

Wise, W.S. & Tschernich, R.W. (1976): *Am. Mineral.* **61**, 60. Coombs, D.S. *et al.* (1997): *Can.*

*Mineral.* **35**, 1571.

### **Ferrierite-Mg**

(Mg,K,Na,Ca,**G**)<sub>Σ3</sub>[Al<sub>3</sub>Si<sub>15</sub>O<sub>36</sub>]•4H<sub>2</sub>O, orth., *Pnmm*. Also mon., *P2<sub>1</sub>/n*.

Named after Walter Frederick Ferrier (1865–1950), Canadian mining engineer and geologist, at one time associated with the Geological Survey of Canada. Kamloops Lake, British Columbia, Canada.

Graham, R.P.D. (1918): *R. Soc. Can., Trans.* **12**, 185. Wherry, E.T. (1919): *Am. Mineral.* **4**, 90. Gramlich-Meier, R. *et al.* (1985): *Am. Mineral.* **70**, 619. Alberti, A. & Sabelli, C. (1987): *Z. Kristallogr.* **178**, 249. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### **Ferrierite-Na**

(Na,K,Mg,**G**)<sub>Σ3</sub>[Al<sub>3</sub>Si<sub>15</sub>O<sub>36</sub>]•4H<sub>2</sub>O, mon., *P2<sub>1</sub>/n*.

See **ferrierite-Mg**. The Na-dominant member of the **ferrierite** series. Altoona, Washington, U.S.A.

Wise, W.S. & Tschernich, R.W. (1976): *Am. Mineral.* **61**, 60. Gramlich-Meier, R. *et al.* (1985): *Am. Mineral.* **70**, 619. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### **Gmelinite-Ca**

(Ca,Sr,Na,K,**G**)<sub>Σ2</sub>[Al<sub>4</sub>Si<sub>8</sub>O<sub>24</sub>]•11H<sub>2</sub>O, hex., *P6<sub>3</sub>/mmc*.

See **gmelinite-Na**. The Ca-dominant member of the **gmelinite** series. Montecchio Maggiore, Vicenza, Italy.

Galli, E. *et al.* (1982): *Neues Jahrb. Mineral., Monatsh.*, 145. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### **Gmelinite-K**

(K,Ca,Sr,Na,**G**)<sub>Σ2</sub>[Al<sub>4</sub>Si<sub>8</sub>O<sub>24</sub>]•11H<sub>2</sub>O, hex., *P6<sub>3</sub>/mmc*.

See **gmelinite-Na**. The K-dominant member of the **gmelinite** series. Fara Vicentina, Vicenza, Italy.

Vezzalini, G. *et al.* (1990): *Neues Jahrb. Mineral., Monatsh.*, 504. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### **Gmelinite-Na**

(Na,Ca,K,**G**)<sub>Σ2</sub>[Al<sub>4</sub>Si<sub>8</sub>O<sub>24</sub>]•11H<sub>2</sub>O, hex., *P6<sub>3</sub>/mmc*.

Named after Christian Gottlob Gmelin (1792–1860), Professor of Chemistry, University of Tübingen, Germany. Montecchio Maggiore, Vicenza, Italy.

Brewster, D. (1825): *Edinburgh J. Sci.* **2**, 262. Fischer, K. (1966): *Neues Jahrb. Mineral., Monatsh.*, 1. Galli, E. *et al.* (1982): *Neues Jahrb. Mineral., Monatsh.*, 145. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### Heulandite-Ca

(Ca,Na,K,**G**)<sub>Σ9</sub>[Al<sub>9</sub>Si<sub>27</sub>O<sub>72</sub>]**•**~24H<sub>2</sub>O, mon., C2/m (?).

Named after John Henry Heuland (1778–1856), British mineral collector (*Mineral. Mag.* **29**, 255). No type locality; the name was given to the more distinctly monoclinic mineral previously known as stilbite.

Brooke, H.J. (1822): *Edinburgh Phil. J.* **6**, 112. Merkle, A.B. & Slaughter, M. (1968): *Am. Mineral.* **53**, 1120. Alberti, A. & Vezzalini, G. (1983): *Tschermaks Mineral. Petrogr. Mitt.* **31**, 259. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### Heulandite-K

(K,Ca,Na,Mg,Sr,Ba,**G**)<sub>Σ9</sub>[Al<sub>9</sub>Si<sub>27</sub>O<sub>72</sub>]**•**~24H<sub>2</sub>O, mon., C2/m (?).

See **heulandite-Ca**. The K-dominant member of the **heulandite** series. Albero Bassi, Vicenza, Italy.

Passaglia, E. (1969): *Per. Mineral.* **38**, 237. Nørnberg, P. (1990): *Mineral. Mag.* **54**, 91. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### Heulandite-Na

(Na,Ca,K,**G**)<sub>Σ9</sub>[Al<sub>9</sub>Si<sub>27</sub>O<sub>72</sub>]**•**~24H<sub>2</sub>O, mon., C2/m (?).

See **heulandite-Ca**. The Na-dominant member of the **heulandite** series. Challis, Custer County, Idaho, U.S.A.

Ross, C.S. & Shannon, E.V. (1924): *Proc. U.S. Nat. Museum* **64**(19), 1. Boles, J.R. (1972): *Am. Mineral.* **57**, 1463. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### Heulandite-Sr

(Sr,Ca,Na,K,Ba,**G**)<sub>Σ9</sub>[Al<sub>9</sub>Si<sub>27</sub>O<sub>72</sub>]**•**~24H<sub>2</sub>O, mon., C2/m (?).

See **heulandite-Ca**. The Sr-dominant member of the **heulandite** series. Campegli, eastern Ligurian ophiolites, Italy.

Lucchetti, G. *et al.* (1982): *Neues Jahrb. Mineral., Monatsh.*, 541. Coombs, D.S. *et al.* (1997):



*Can. Mineral.* **35**, 1571.

### Levyne-Ca

(Ca,Na,K,**G**)<sub>Σ6</sub>[Al<sub>6</sub>Si<sub>12</sub>O<sub>36</sub>]•17H<sub>2</sub>O, trig., *R@3m*.

Named after Serve-Dieu Abailard (Armand) Lévy (1795–1841), mathematician and crystallographer, Université de Liège, and later École Normale Supérieure, Paris. Dalsnipa, Sandoy, Faroë Islands.

Brewster, D. (1825): *Edinburgh J. Sci.* **2**, 332. Merlino, S. *et al.* (1975): *Tschermaks Mineral. Petrogr. Mitt.* **22**, 117. Galli, E. *et al.* (1981): *Zeolites* **1**, 157. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### Levyne-Na

(Na,Ca,K,**G**)<sub>Σ6</sub>[Al<sub>6</sub>Si<sub>12</sub>O<sub>36</sub>]•17H<sub>2</sub>O, trig., *R@3m*.

See **levyne-Ca**. The Na-dominant member of the **levyne** series. Chojabaru, Nagasaki Prefecture, Japan.

Mizota, T. *et al.* (1974): *Geol. Soc. Japan, Mem.* **11**, 283. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### Paulingite-Ca

(K,Ca,Na,Ba,**G**)<sub>10</sub>[Al<sub>10</sub>Si<sub>32</sub>O<sub>84</sub>]•27–44H<sub>2</sub>O, cub., *Im@3m*.

See **paulingite-K**. The Ca-dominant member of the **paulingite** series. Ritter, Oregon, U.S.A.

Tschernich, R.W. & Wise, W.S. (1982): *Am. Mineral.* **67**, 799. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### Paulingite-K

(Ca,K,Na,Ba,**G**)<sub>10</sub>[Al<sub>10</sub>Si<sub>32</sub>O<sub>84</sub>]•27–44H<sub>2</sub>O, cub., *Im@3m*

Named after Linus Carol Pauling (1901–1994), chemist and physicist, Linus Pauling Institute of Science and Medicine, Menlo Park, California; Nobel Laureate for his work on chemical bonding. Rock Island Dam, Columbia River, Wenatchee, Douglas County, Washington, U.S.A.

Kamb, W.B. & Oke, W.C. (1960): *Am. Mineral.* **45**, 79. Tschernich, R.W. & Wise, W.S. (1982): *Am. Mineral.* **67**, 799. Bieniok, A. *et al.* (1996): *Neues Jahrb. Mineral., Abh.* **171**, 119. Lengauer, C.L. *et al.* (1997): *Mineral. Mag.* **61**, 591. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### Phillipsite-Ca

$(\text{Ca}, \text{K}, \text{Na}, \text{Ba})_x [\text{Al}_x \text{Si}_{16-x} \text{O}_{32}] \cdot 12\text{H}_2\text{O}$ ,  $x$  in the range 4–7, mon.,  $P2_1$  (?).

Shows solid solution toward **harmotome**.

See **phillipsite-Na**. The Ca-dominant member of the **phillipsite** series. Lower Salt Lake Tuff, Puuloa Road near junction with Moanalua Road, Oahu, Hawaii.

Iijima, A. & Harada, K. (1969): *Am. Mineral.* **54**, 182. Passaglia *et al.* (1990): *Eur. J. Mineral.* **2**, 827. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### **Phillipsite-K**

$(\text{K}, \text{Ca}, \text{Na}, \text{Ba})_x [\text{Al}_x \text{Si}_{16-x} \text{O}_{32}] \cdot 12\text{H}_2\text{O}$ ,  $x$  in the range 4–7, mon.,  $P2_1$  (?).

Shows solid solution toward **harmotome**.

See **phillipsite-Na**. The K-dominant member of the **phillipsite** series. Capo di Bove, Rome, Italy.

Hintze, C. (1897): *Handbuch der Mineralogie* **2**. Von Veit, Leipzig, Germany. Galli, E. & Loschi Ghittoni, A.G. (1972): *Am. Mineral.* **57**, 1125. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### **Phillipsite-Na**

$(\text{Na}, \text{K}, \text{Ca}, \text{Ba})_x [\text{Al}_x \text{Si}_{16-x} \text{O}_{32}] \cdot 12\text{H}_2\text{O}$ ,  $x$  in the range 4–7, mon.,  $P2_1$  (?).

Named after William Phillips (1775–1828), printer and book seller of London, England, eminent mineralogist and geologist; a founder of the Geological Society of London. Aci Castello, on the slopes of Mount Etna, Sicily, Italy.

Lévy, A. (1825): *Ann. Phil.* **10**, 362. Galli, E. & Loschi Ghittoni, A.G. (1972): *Am. Mineral.* **57**, 1125. Rinaldi, R. *et al.* (1974): *Acta Crystallogr.* **B30**, 2426. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### **Stilbite-Ca**

$(\text{Ca}, \text{Na}, \text{K}, \text{G})_9 [\text{Al}_9 \text{Si}_{27} \text{O}_{72}] \cdot 28\text{H}_2\text{O}$ , mon.,  $C2/m$ .

From Gk. *stilbein*, to glitter or shine, or *stilbe*, a mirror, alluding to its pearly or vitreous luster. Häüy mentioned occurrences in Iceland, Andreasberg in Harz, Alpes Dauphinoises and Norway, but no clear type-locality.

Häüy, R.-J. (1796): *J. des Mines* **5**, 276. Galli, E. (1971): *Acta Crystallogr.* **B27**, 833. Passaglia, E. *et al.* (1978): *Bull. Minéral.* **101**, 368. Akizuki, M. *et al.* (1993): *Eur. J. Mineral.* **5**, 839. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

### **Stilbite-Na**

$(\text{Na}, \text{Ca}, \text{K}, \text{G})_9 [\text{Al}_9 \text{Si}_{27} \text{O}_{72}] \cdot 28\text{H}_2\text{O}$ , mon.,  $C2/m$ .

See **stilbite-Ca**. The Ba-dominant member of the **stilbite** series. Capo Pula, Cagliari, Sardinia, Italy.

Passaglia, E. *et al.* (1978): *Bull. Minéral.* **101**, 368. Di Renzo, F. & Gabelica, Z. (1997): *Can. Mineral.* **35**, 691. Coombs, D.S. *et al.* (1997): *Can. Mineral.* **35**, 1571.

#### ESTABLISHED MINERALS LEFT OUT OF THE ENCYCLOPEDIA

##### **Delvauxite**

$\text{CaFe}^{3+}_4(\text{PO}_4, \text{SO}_4)_2(\text{OH})_8 \cdot 4-6\text{H}_2\text{O}$ , amorphous.

Named after J.S.P.J. Delvaux de Feuffe (1782-1863), Belgian chemist who first described and analyzed the mineral. Berneau, near Visé, Liège, Belgium.

Dumont, A.H. (1838): *Acad. Belg.* **5**, 296. Lech, F. & Povondra, P. (1979): *Tschermaks Mineral. Petrogr. Mitt.* **26**, 79. Pabst, A. (1980): *Am. Mineral.* **65**, 813.

##### **Dienerite**

$\text{Ni}_3\text{As}$ , cub., (?).

Named after Karl Diener (1862–1928), Austrian paleontologist from Vienna who discovered the mineral. Near Radstadt, Salzburg, Austria.

Doelter, C. (1926): *Handbuch der Mineralchemie* **4**, 718. Foshag, W.F. (1927): *Am. Mineral.* **12**, 96. Palache, C. *et al.* (1944): *Dana's System of Mineralogie*, 7th ed., New York **1**, 175. Anthony, J.W. *et al.* (1990): *Handbook of Mineralogy* **I**, 133.

##### **Douglasite**

$\text{K}_2\text{Fe}^{2+}\text{Cl}_4 \cdot 2\text{H}_2\text{O}$ , mon., (?).

Named after its discovery locality. Found at Douglasschall, northwest of Stassfurt, Germany.

Precht, H. (1880): *Deutsch. Chem. Ges. Berlin* **13**, 2327. Palache, C. *et al.* (1952): *Dana's System of Mineralogy* (7th ed.), New York **2**, 100. Strunz, H. (1978): *Mineralogische Tabellen* (7th ed.), Leipzig and Dresden, 164.

#### MINERALS LISTED IN THE ENCYCLOPEDIA THAT HAVE BEEN DISCREDITED OR WERE MISSPELLED

Ashanite = a mixture of **Ixiolite**, **Samarskite-(Y)** and **Uranmicrolite** (*Am. Mineral.* **84**, 688)  
 Baiyuneboite-(Ce) = **Cordylite-(Ce)**

Bel'kovite = **Belkovite** (misspelled)  
 Bilinite = **Bílinite** (misspelled)  
 D'Ansite = **D'ansite** (misspelled)  
 Diabolite = **Diaboléite** (misspelled)  
 Fenakskite = **Fenaksite** (misspelled)  
 Feroxhyte = **Feroxyhyte** (misspelled)  
 Ferri-annite = **Tetra-ferri-annite** (*Can. Mineral.* **36**, 910).  
 Herschelite = **Chabazite-Na** (*Can. Mineral.* **35**, 1593)  
 Hodrušhite = **Hodrušite** (misspelled)  
 Kankite = **Kaňkite** (misspelled)  
 Krutaite = **Kru aite** (misspelled)  
 Kutínaite = **Kutinaite** (misspelled)  
 Lardarellite = **Larderellite** (misspelled)  
 Lusungite = **Benauite** (*Mineral. Mag.* **59**, 143)  
 N'Chwaningite = **N'chwaningite** (IMA convention)

Nováčekite = **Nováčekite** (misspelled)  
 O'Danielite = **O'danielite** (IMA convention)  
 Offrétite = **Offretite** (misspelled)  
 Platynite = **Laitakarite** + selenian **Galena** (*Can. Mineral.* **37**, 1313).  
 Tadzhikite-(Y) = **Tadkhikite** (*Can. Mineral.* **36**, 817).  
 Taeniolite = **Tainiolite** (decision of IMA Mica Subcommittee)  
 Zdenekite = **Zden kite** (misspelled)  
 Teinite = **Teineite** (misspelled)  
 Tetranatrolite = **Gonnardite** (*Am. Mineral.* **84**, 1445).  
 Wellsite = barian **Phillipsite-Ca**, calcian **Harmotome** (*Can. Mineral.* **35**, 1594).