I am pleased to present the third update to the Encyclopedia of Mineral Names (The Canadian Mineralogist, Special Publication 1). The entries listed below describe new species of minerals that have appeared in the literature since mid-2001. A copy of this update will be supplied free of charge on demand. It can also be downloaded from the MAC’s website, www.mineralogicalassociation.ca. The information is presented as in the Encyclopedia, with a focus on the origin of the name of the mineral. Please do not hesitate to contact me to report any correction or addendum.

**Allabogdanite**
\[(\text{Fe,Ni})_2\text{P}, \text{orthorhombic, Pnma}\]
Dimorphic relationship with **barringerite**

Named after Alla Nikolaevna Bogdanova (b. 1947), crystallographer from the Geological Institute, Kola Science Center of the Russian Academy of Sciences, Apatity, Kola Peninsula, Russia. Found in the Onello iron meteorite, a unique nickel-rich ataxite found in 1997 in alluvium of the Bol'shoy Dolguchan River, Onello River basin, Aldan Shield, Sakha–Yakutia, Russia, in recognition of her work on new mineral species.


**Alsakharovite-Zn**
\[\text{Na}_2\text{SrKZn}(\text{Ti},\text{Nb})_4[\text{Si}_4\text{O}_{12}]_2(\text{O},\text{OH})_4\cdot 7\text{H}_2\text{O}, \text{monoclinic, Cm}\]
A member of the **Gutkovaite subgroup of the Labuntsovite group**


**Anorthominasragrite**
\[\text{V}^{4+}\text{O}(\text{SO}_4)(\text{H}_2\text{O})_5, \text{triclinic, P\i}\]
Shares a polymorphic relationship with **orthominasragrite** (orthorhombic) and **minasragrite** (monoclinic)

The name denotes its relation to **minasragrite**: it is the triclinic ("anorthic") polymorph. Found in the fossilized remains of a Triassic silicified tree in the Shinarump conglomerate member of the Chinle Formation, Temple Mountain, Emery County, Utah, U.S.A.

Artsmithite

\[ \text{Hg}_{1+4x} \text{Al}(\text{PO}_4)_{2-x}(\text{OH})_{1+3x} \ (x = 0.26), \text{monoclinic, C 2/c} \]

Named after Arthur (“Art”) E. Smith, Jr. (b. 1935), a petroleum geologist from Houston, Texas, who collected the sample, an avid mineral collector and micromounter since 1956, who specializes in Arkansas and Texas minerals; author of Collecting Arkansas Minerals: a Reference and Guide (1995). Found as a secondary mineral at the Funderburk Hg-bearing prospect, on the flank of Skeleton Mountain, along Lake Greeson, Pike County, Arkansas, U.S.A.


Baumstarkite

\[ \text{AgSbS}_2, \text{triclinic, P1} \]

Trimorphic relationship with miargyrite and cuboargyrite

Named after Manfred Baumstark (b. 1954), mineral dealer of Buhl/Baden, Germany, who provided the crystals and noted their triclinic symmetry. Found coating miargyrite at the San Genaro mine, Huancavelica Department, Peru.


Bobjonesite

\[ \text{V}_4^+\text{O}(\text{SO}_4)(\text{H}_2\text{O})_3, \text{monoclinic, P2}_1/\text{n} \]

Named after Robert (Bob) Jones (b. 1926), of Cave Creek, Arizona, for his enormous contributions to the mineralogical community through writing, lecturing and editing books on mineral occurrences. Found in fossil trees of Triassic age in the Temple Mountain region, Emery County, Utah.


Bobkingite

\[ \text{Cu}^{2+}\text{Cl}_2(\text{OH})_8(\text{H}_2\text{O})_2, \text{monoclinic, C 2/m} \]

Named after Robert King (b. 1923), Professor of Mineralogy at Leicester University, Leicester, U.K., a prominent collector of minerals and a founding member of the Russell Society. Found as a secondary phase on copper minerals in veins in an altered diorite, New Cliff Hilly quarry, Stanton-upon-Bardon, Leicestershire, U.K.


Borocookeite

\[ \text{Li}_{1+3x}\text{Al}_{4-x}(\text{BSi}_3\text{O})_{10}(\text{OH,F})_8, \ 0 < x < 0.33, \text{monoclinic, C 1 (pseudo C 2/m)} \]

A member of the Chlorite group

The name reflects its composition as a boron-dominant analogue of cookeite. Found as a late-stage pocket mineral in the Sosedka and Mokhovaya granitic pegmatites, Malkhan gem tourmaline deposit, Chikoy District, Chita region, Russia.


Brinrobertsite

\[ (\text{Na,K,Ca})_{x}(\text{Al,Mg,Fe})_8(\text{Si,Al})_8\text{O}_{20}(\text{OH})_4\cdot 3.5\text{H}_2\text{O}, \ x = 0.35, \text{monoclinic, C-centered cell} \]

Named after Brin Roberts, geologist, of the University of London, London, U.K. Found as a major constituent of mudstone (metabentonite) near Bangor, northern Wales.

**Brodtkorbite**

Cu$_2$HgSe$_2$, monoclinic, $P2_1/n$

Named after Milka Kronegold de Brodtkorb (b. 1932), Professor at the universities of Buenos Aires and La Plata, Argentina, in recognition of her fundamental and numerous contributions to the economic geology and mineralogy of Argentina. Found in a telethermal selenide vein-type assemblage at the Tuminico Ia selenium deposit, Sierra de Cacho (Sierra de U mango) district, southwest to Bajo Jagüe, La Rioja, Argentina.


**Burnsite**

KCdCu$_7$O$_2$(SeO$_3$)$_2$Cl$_9$, hexagonal, $P6_3/mmc$

Named after Peter Carman Burns (b. 1966), Professor of Crystallography at the University of Notre Dame, Notre Dame, Indiana, U.S.A., in recognition of his contributions to structural mineralogy and, in particular, to knowledge about the structures of Cu$^{2+}$ oxysalt minerals. Found in a fumarole in the North Breach of the great fissure Tolbachik eruption, Kamchatka Peninsula, Russia.


**Buryatite**

Ca$_3$(Si,Fe$^{3+}$,Al)[SO$_4$][B(OH)$_4$](OH)$_5$O•12H$_2$O, hexagonal, $P31c$ (?)

Named after the discovery locality. Found in drill core of kurchatovite–sakhaite ore, Solongo deposit, Buryatiya, Russia.


**Bushmakinite**

Pb$_2$Al(PO$_4$)(VO$_4$)(OH), monoclinic, $P2_1/m$

A member of the Brackebuschite group

Named after Anatolii Filippovich Bushakin (1947–1999), X-ray crystallographer of the Institute of Mineralogy of the Urals section of the Russian Academy of Science, Miass, Russia, who made significant contributions to the mineralogy of the oxidized zone of the Berezovskoye deposit. Found in the oxidized zone of the Berezovskoye gold deposit, middle Urals, Russia.


**Bussenite**

Na$_2$Ba$_2$Fe$^{2+}$Ti$_2$O$_7$(CO$_3$)(OH)$_3$F, triclinic, $P1$

Named after Irina Vladislavovna Bussen (b. 1915), mineralogist and petrologist, St. Petersburg, Russia, specialist in the petrology and mineralogy of the Khibina–Lovozero alkaline complex, long associated with the Geological Institute of the Kolva Branch of the Russian Academy of Sciences in Apatity. Found in a hydrothermal vein cutting urtite, Kukisvumchorr Mountain, Khibina alkaline complex, Kola Peninsula, Russia.

Carraraite
\[ \text{Ca}_3\text{Ge}(\text{OH})_6(\text{SO}_4)_{1.08}(\text{CO}_3)_{0.92}\cdot 12\text{H}_2\text{O}, \text{hexagonal, P} \bar{6}_{3}/\text{m} \]
A member of the Ettringite group
Named after the discovery locality, in the Carrara region. Found in cavities within marble, Gioia quarry, Colonnata Valley, Carrara region, Apuan Alps, Italy.

Cattiite
\[ \text{Mg}_3(\text{PO}_4)_{2}\cdot 22\text{H}_2\text{O}, \text{triclinic, P} \bar{1} \]
Named after Michele Catti (b. 1945), Professor of Physical Chemistry, Department of Material Sciences, University of Milano Bicocca, Milano, Italy. Found in a dolomite carbonatite vein, Zhelezny iron mine, Kovdor carbonatite complex, Kola Peninsula, Russia.

Čejkaite
\[ \text{Na}_4(\text{UO}_2)(\text{CO}_3)_3, \text{triclinic, P} \bar{1} (?) \]
Named after Jiří Čejka (b. 1929), formerly Director of the Museum of Natural History of the National Museum in Prague, Czech Republic, in recognition of his contributions to the crystal chemistry of uranium minerals. Found in the Geschiever vein of the Svornost mine, Jáchymov, southern slope of the Krušné hory Mountains, 20 km north of Karlovy Vary, northwestern Bohemia, Czech Republic.

Cerite-(La)
\[ (\text{La}, \text{Ca})_9(\text{Fe}, \text{Ca}, \text{Mg})(\text{SiO}_4)_3[\text{SiO}_3(\text{OH})]_3(\text{OH})_3, \text{trigonal, R}3\text{c} \]
The name reflects its composition and relationship to cerite-(Ce); it is its La-dominant analogue. Found in an aegirine – natrolite – microcline vein in foyaite on Mount Yuksporr, Khibina alkaline complex, Kola Peninsula, Russia.

Ciprianiite
\[ ^7\text{XCa}_4[(\text{Th}, \text{U})(\text{REE})](\text{Si}_4\text{B}_4\text{O}_{22})][\text{Si}_3\text{O}_7(\text{OH}, \text{F})_2], \text{monoclinic, P}2/\alpha \]
A member of the helandite group
Named after Curzio Cipriani (b. 1927), Professor of Mineralogy and head of the Museum of Natural History at the University of Firenze, in Florence, Italy, in recognition of his work on the systematics of minerals. Found in alkali syenite ejectum, Vico volcanic complex, Tre Croci, near Vetralla, Viterbo Province, Italy.

Clinobarylite
\[ \text{BaBe}_2\text{Si}_2\text{O}_7, \text{monoclinic, Pm} \]
The name alludes to its dimorphic relationship with barylite. Found in alkaline pegmatite veins, Yukspor Mountain, Khibina alkaline complex, Kola Peninsula, Russia.
**Cobaltarthurite**

\[ \text{Co}^{2+}\text{Fe}^{3+}\text{(AsO}_4\text{)}_2\text{(OH)}_2\cdot4\text{H}_2\text{O} \], monoclinic, \( \text{P}_2/\text{c} \)

A member of the Arthurite group

The name reflects the composition; it is the cobalt-dominant analogue of arthurite. Found in an oxidized zone at the Dolores showing, near Pasrana, a village about 10 km east of Mazarrón in the Province of Murcia, southeastern Spain.


**Cobaltkieserite**

\[ \text{CoSO}_4\cdot\text{H}_2\text{O} \], monoclinic, \( \text{C}_2/\text{c} \)

A member of the Kieserite group

The name reflects its composition and relationship with kieserite. Found in quartzite, Bastnäs, Skinnskatteberg, Sweden.


**Cobaltneustädtelite**

\[ \text{Bi}_2\text{Fe}^{2+}\text{Co}^{2+}\text{O}(\text{OH})_3(\text{AsO}_4)_2 \], triclinic, \( \text{P}\overline{1} \)

A member of the Medenbachite group

Named as the Co-dominant analogue of neustädtelite. Found on the dumps of the Gündener Falk mine near Schneeberg-Neustädtel, Schneeberg area, Saxony, Germany.


**Cobalttsumcorite**

\[ \text{Pb(Co,Fe}^{3+}\text{)}_2(\text{AsO}_4)_2(\text{H}_2\text{O,OH})_2 \], monoclinic, \( \text{C}_2/m \)

A member of the Tsumcorite group

The name reflects its composition as the Co-dominant analogue of tsumcorite. Found in dump material from an oxidation zone in the “Am Roten Berg” mining area, 4.8 km southwest of Schneeberg, Germany.


**Cronusite**

\[ \text{Ca}_0.2(\text{H}_2\text{O})_2\text{CrS}_2 \], trigonal, \( \text{R}\overline{3m} \) (?)

Named after Cronus, one of the Titans in Greek mythology, the son of Uranus and Gaea, the name referring to its mixed meteoritic and terrestrial origin. Found as a product of the terrestrial alteration of caswellislerite in the Norton County enstatite achondrite, which fell in 1948 in Norton County, Kansas, and also in Nebraska, U.S.A.


**Decrespignyite-(Y)**

\[ (\text{Y,REE})_4\text{Cu}_(\text{CO}_3)_4\text{Cl(OH)}_5\cdot2\text{H}_2\text{O} \], monoclinic, \( \text{P}_2 \)

Named after Robert James Champion de Crespigny (b. 1950), executive chairman of Normandy Mining Limited, Chancellor of the University of Adelaide, Chairman of the South Australian Museum in Adelaide, in recognition of his contributions to the mining industry and education in South
Dickthomssenite

Mg(V₂O₆) • 7H₂O, monoclinic, C 2/c

Named after Richard W. Thomssen (b. 1933), consulting geologist from Dayton, Nevada, U.S.A., who has had a long and distinguished career in mineral exploration and ore deposit geology, and since 1994, has been editor of the International Micromounter’s Journal. Found near log fragments in sandstone at the Firefly–Pigmy uranium–vanadium mine, 16 km east of La Sal, southeastern San Juan County, Utah.


Ekatiite

(Fe³⁺,Fe²⁺,Zn)₁₂(OH)₆[AsO₃]₆[AsO₃,H₂SiO₃]₂, hexagonal, P6₃mc


Emilite

Cu₁₀₋₇Pb₁₀₋₆Bi₂₁₋₃S₄₈, orthorhombic, Pmc₂₁

A 45 Å derivative of the bismuthinite–aikinite solid-solution series

Named after Emil Makovicky (b. 1941), Professor of Mineralogy, University of Copenhagen, Denmark, specialist of the crystal chemistry of sulfosalts. Found in the metamorphosed Felbertal scheelite deposit, Tauern Window, Austria.


Eveslogite

(Ca,K,Na,Sr,Ba)₄₈[(Ti,Nb,Fe,Mn)₁₂(OH)₁₂Si₄₈O₄₄]₄(F,OH,Cl)₁₄, monoclinic, P2/m (?)

A layered structure with similarities to astrophyllite-group minerals

Named after its discovery locality. Found in a veinlet cutting nepheline syenite, Mount Eveslogchorr, Khibina alkaline complex, Kola Peninsula, Russia.


Feklichevite

Na₁₁Ca₉(Fe³⁺,Fe²⁺)₂Zr₉Nb[Si₂₅O₇₃](OH,OH₂O,Cl,O)₅, trigonal, R 3m

A member of the eudialyte group

Named after Vladimir Georgevich Feklichev (1933–1999), mineralogist and crystallographer with the Institute of Mineralogy, Geochemistry, and Crystallography of RAE Elements, Russian Academy of Sciences, Moscow, author of Beryl – Morphology, Composition and Structure of Crystals (1964) and Diagnostic Constants of Minerals (1992). Found in a pegmatitic vein of cancrinite syenite, Kovdor phlogopite mine, Kovdor alkaline-ultrabasic complex, Kola Peninsula, Russia.

**Ferrapedrizite**

\[ \text{NaLi}_2(\text{Fe}^{3+}_2\text{Mg}_2\text{Li})\text{Si}_8\text{O}_{22}(\text{OH})_2, \text{monoclinic, C 2/m} \]

A member of the amphibole group

Named as the Fe\(^{3+}\)-dominant, Na-poor analogue of sodic-ferrapedrizite. Found in episyenitic rocks of the Eastern Pedriza Massif, Madrid, Spain.


**Ferrohögbomite-2N 2S**

\[ (\text{Fe}^{2+}_3\text{ZnMg} \text{Al})_{26}(\text{Al}_{14}\text{Fe}^{3+}_3\text{Ti})_{16}\text{O}_{30}(\text{OH})_2, \text{hexagonal, P 6}_3\text{mc} \]

Named as the Fe-dominant member of the Högbomite polysomatic series. Found in an erratic block at Aïn Taïba, Grand Erg Oriental, Sahara Desert, Algeria.


**Ferrokentbrooksite**

\[ \text{Na}_15\text{Ca}_6(\text{Fe},\text{Mn})_3\text{Zr}_3\text{Si}_{25}\text{O}_{73}(\text{O,OH,H}_2\text{O})_3(\text{Cl,F.OH})_2, \text{trigonal, R 3m} \]

A member of the Eudialyte group

The name reflects its composition: it is the ferrous-iron-dominant analogue of kentbrooksite. Found in a nepheline syenite dyke in the Poudrette quarry, Mont Saint-Hilaire, Rouville County, Quebec.


**Ferronordite-(La)**

\[ \text{Na}_3\text{Sr(La,Ce)}\text{FeSi}_6\text{O}_{17}, \text{orthorhombic, P cca} \]

The La-dominant analogue of ferronordite-(Ce). A member of the Nordite group.

The name reflects its composition and relationship to nordite-(La). Found in the ussingite core of hyperagpaitic pegmatite, Mount Bol'shoi Punktaruaiv, Lovozero alkaline complex, Kola Peninsula, Russia.


**Ferrosaponite**

\[ \text{Ca}_0.3(\text{Fe}^{2+}_2\text{Mg}_{6}\text{Fe}^{3+}_3)_{3}\cdot(\text{Si,Al})_4\text{O}_{10}(\text{OH})_2 \cdot 4\text{H}_2\text{O}, \text{monoclinic, P lattice} \]

A member of the Smectite group

The name alludes to its composition; it is the ferrous-iron-dominant analogue of saponite. Found as a hydrothermal mineral related to basaltic pillow lavas, Levoberezhye Iceland spar deposit, Nizhnyaya Tunguska River, Evenkiiya, Siberia, Russia.


**Fluoro-edenite**

\[ \text{NaCa}_2\text{Mg}_5(\text{Si}_7\text{Al})\text{O}_{22}\text{F}_2, \text{monoclinic, C 2/m} \]

A member of the A amphibole group

Named as the fluorine-dominant analogue of edenite. Found in altered benmoreitic lava associated with the Etna volcanic complex at Biancavilla, Catania, Italy.

**Gatelite-(Ce)**
\[(Ca\text{REE}_3)_{24}[\text{Al}_2(\text{Mg,Fe})_2\text{Mg,Fe,Al}_1]_3\text{Si}_2\text{O}_7(\text{Si}_4\text{O}_{12})(\text{O,F})_3(\text{OH,O})_2, \text{monoclinic, P2}_1/\text{a}\]


**Gjerdingenite-Fe**
\[K_2[\text{H}_2\text{O}]_3(\text{Fe,Mn})\text{[(Nb,Ti)]}_4(\text{Si}_4\text{O}_{12})_2(\text{OH,O})_4] \cdot 4\text{H}_2\text{O}, \text{monoclinic, C 2/m}\]

Named after the discovery locality. Found in miarolitic cavities of a sodic granite (“ekerite”) at Gjerdingaælva, Lunner, Oppland, O s l o region, Norway.


**Glagolevite**
\[\text{NaMg}_6[\text{Si}_3\text{AlO}_{10}](\text{OH,O})_8 \cdot \text{H}_2\text{O}, \text{triclinic, C 1}\]

The mineral has affinities with the Chlorite group.

Named after A.A. Glagolev, specialist of ultramafic-alkaline complexes and carbonatites. Found in the Kovdor ultramafic-alkaline complex, Kola Peninsula, Russia.


**Gmelinite-K**
\[(\text{K,Na,Ca})_6[\text{Al}_7\text{Si}_{17}\text{O}_{48}] \cdot 22\text{H}_2\text{O}, \text{hexagonal, P6}_3/\text{mmc}\]

A member of the Zeolite group.


**Goldquarryite**
\[\text{CuCd}_2\text{Al}_3(\text{PO}_4)_4\text{F}_2(\text{H}_2\text{O})_{10}(\text{H}_2\text{O})_2, \text{triclinic, P1}\]

Named after the discovery locality, the Gold Quarry mine. Found as a supergene mineral between fragments in a sample of jasperoid breccia, Gold Quarry Au mine, near Carlin, Eureka County, Ne-vada.


**Graulichite-(Ce)**
\[\text{CeFe}^{3+}_4(\text{AsO}_4)_2(\text{OH})_6, \text{trigonal, R3m}\]

The Fe-dominant analogue of arsenoflorencite-(Ce).

A member of the Crandalite group and of the Alunite supergroup.

Named after Jean-Marie Graulich (1920–2001), mining engineer and Director of the Geological Survey of Belgium, in recognition of his investigations of the Stavelot Massif. Found as brown to green coatings in quartzite, Hourt quarry, near Vielsalm, southeastern Stavelot Massif, Belgium.

**Greifensteinite**

\[ \text{Ca}_2\text{Be}_4(\text{Fe}^{2+},\text{Mn})_5(\text{PO}_4)_6(\text{OH})_4 \cdot 6\text{H}_2\text{O}, \text{ monoclinic, } \text{C } 2/c \]

The Fe-dominant analogue of *roscherite* and *zanazziite*

Named after the discovery locality. Found in miarolitic cavities in Li-rich granitic pegmatite at Greifenstein, Saxony, Germany.


**Gutkovaite-Mn**

\[ \text{Ca}_2\text{K}_4\text{Mn}_2\text{Ti}_8(\text{Si}_4\text{O}_{12})_4\text{O}_8 \cdot n\text{H}_2\text{O} , n \approx 10, \text{ monoclinic, } \text{Cm} \]

A member of the Gutkovaite subgroup of the Labuntsovite group

Named after N.N. Gutkova (1896–1960?), who intensively studied the Khibina–Lovozero alkaline complex; the suffix denotes the dominance of Mn at the D site. Found at Mount Malysakh, Khibina alkaline complex, Kola Peninsula, Russia.


**Hillite**

\[ \text{Ca}_2(\text{Zn},\text{Mg})[\text{PO}_4]_2 \cdot 2\text{H}_2\text{O}, \text{ triclinic, } \text{P } \bar{1} \]

A member of the Fairfieldite group

Named after Roderick Hill (b. 1949), crystallographer (X-ray and neutron diffraction) and solid-state chemist, who rose to become Chief of Mineral Research Division, CSIRO, Melbourne, Australia, and who first described the mineral and recognized it as a potentially new species. Found associated with collinsite in gossan covering argillaceous siltstone of the Lower Cambrian Parachilna Formation, Reaphook Hill, South Australia, Australia.


**Hoganite**

\[ \text{C}_4\text{H}_8\text{O}_5\text{Cu} \text{ or } \text{Cu}(\text{CH}_3\text{COO})_2 \cdot \text{H}_2\text{O}, \text{ monoclinic, } \text{C } 2/c \]

Named after Graham Paul Hogan (b. 1957), of Broken Hill, New South Wales, Australia, a miner and well-known collector of Broken Hill minerals, who discovered the mineral. Found in ferruginous gossan near a mass of decomposing leaves, Potosi A-g-Pb-Zn deposit, 2 km northeast of Broken Hill, New South Wales, Australia.


**Hubeite**

\[ \text{Ca}_2\text{Mn}^{2+}\text{Fe}^{3+}[\text{Si}_4\text{O}_{12}(\text{OH})](\text{H}_2\text{O})_2, \text{ triclinic, } \text{P } \bar{1} \]


**Kanonerovite**

\[ \text{Mn}\text{Na}_3\text{P}_3\text{O}_{10} \cdot 12\text{H}_2\text{O}, \text{ monoclinic, } \text{P } 2_1/n \]

Named after Aleksandr Anatol'evich Kanonerov (b. 1955), mining historian at the Nizhnii Tagil Museum of Mining Industry of the Middle Urals, and mineral collector who first collected the mineral...
in 1995. Found in cavities of a muscovite-bearing granitic pegmatite, Kazennitsa pegmatite vein, Alabashka pegmatite field, Middle Urals, Russia.


**Karupmøllerite-Ca**

\[(Na, Ca, K)_4Ca_2Nb_8(Si_4O_{12})_4(O, OH)_8 \cdot 14H_2O\], monoclinic, \(C2/m\)

Named after Sven Karup-Møller (b. 1936), Professor of Mineralogy at the Technical University of Denmark, Lyngby, Denmark, in recognition of his contributions to the mineralogy of the Ilímaussaq complex; the suffix denotes the dominance of Ca at the \(D\) site. Found in naujaite pegmatite, Mellemelv stream valley, Kangerluarsuk area, Ilímaussaq alkaline complex, South Greenland.


**Keilite**

\((Fe, Mg)S\), cubic, \(Fm3m\)

The Fe-dominant analogue of niningerite, \((Mg, Fe)S\)

Named after Klaus Keil (b. 1934), Hawaii Institute of Geophysics and Planetology, University of Hawaii, Honolulu, Hawaii, USA, in recognition of his investigations of the mineralogy and petrography of chondritic meteorites. Found in the Abee enstatite chondrite meteorite found near Abee, Alberta, Canada, and also present in the following meteorites: Adhi-Kot, Saint-Sauveur, LEW 88180, RKP A 80259, LEW 87119, LEW 88714, Y–791790, Y–791811, Y–86760 and Y8404.


**Kochite**

\(Na_2(Na, Ca)Ca_4(Mn, Ca)Zr_2Ti_2(Si_2O_7)\alpha(O, F)_4F_4\), triclinic, \(P1\)

The Mn- and Ti-dominant analogue of rosenbuschite


**Kristiansenite**

\(Ca_2ScSn(Si_2O_7)(Si_2O_6OH)\), triclinic, \(C1\)

Named after Roy Kristiansen (b. 1943), of the Fredrikstad area, Norway, amateur mineralogist who discovered the mineral, amateur mycologist honored by the species Entoloma kristiansenii Noodeloos (1987) and Lamprospora kristiansenii Benkert (1990), and quality-control manager in the detergent-surfactant industry. Found in vugs in a granitic pegmatite containing amazonitic K-feldspar at Høftetjern, Tørdal, Telemark, Norway.


**Kupčíkite**

\(Cu_3Fe_0.6Bi_1S_{10}\), monoclinic, \(C2/m\)

A member of the Cuprobismutite homologous series (\(N = 1\))
Named after Vladimir Kupšík (1934–1990), Professor of Mineralogy at the University of Bratislava, Slovakia, and the University of Göttingen, Germany, in recognition of his contributions to the crystal chemistry of sulfosalts, and in particular the Cu–Bi sulfosalts. Found in the K7 and K8 orebodies of the Felbertal scheelite deposit, Tauern Window, in the Austrian Alps.


**Kurgantaite**

Ca$_{3}$Sr$_{4}$[B$_{5}$O$_{9}$]Cl•H$_{2}$O, triclinic, P1
A cation-ordered Ca,Sr-dominant member of the hilgardite family, revalidated (formerly "strontiohilgardite")

Named after its type locality. Found on the surface of the Inder salt dome, in the Kurgan-Tau Hills, situated on the Inder Upland, near Inder Lake, 20 km east of Inderborskiy, on the lower reaches of the Ural River, in western Kazakhstan. Neotype specimens are defined from the Inder and Chelkar boron deposits in western Kazakhstan and the Nepskoe potassium deposit, Siberia, Russia.


Kuzmenkoite-Zn

K$_{4}$Zn$_{2}$Ti$_{6}$Si$_{4}$O$_{12}$·nH$_{2}$O, 12 < n < 14, monoclinic, Cm
A member of the Kuzmenkoite subgroup of the Labuntsovite group


Labuntsovite-Fe

Na$_{4}$Fe$_{x}$(Ba,K)$_{2}$Fe$_{1+x}$Mg$_{2}$Ti$_{8}$(Si$_{4}$O$_{12}$)$_{4}$(O$_{2}$O,H)$_{8}$·10H$_{2}$O, monoclinic, C 2/m
A member of the Labuntsovite group. Forms a solid-solution series with labuntsovite-Mg


Labuntsovite-Mg

Na$_{4}$Fe$_{x}$Mg$_{2}$Ti$_{8}$(Si$_{4}$O$_{12}$)$_{4}$(OH)$_{8}$·nH$_{2}$O (10 < n < 12), monoclinic, C 2/m
Forms a solid-solution series with labuntsovite-Fe. A member of the Labuntsovite subgroup of the Labuntsovite group


Laflammeite

\( \text{Pd}_3\text{Pb}_2\text{S}_2 \), monoclinic, \( \text{C}2/\text{m} \)

Named after Joseph Hector Gilles Laflamme (b. 1947), of the Mining and Mineral Sciences Laboratories, Canada Centre for Mineral and Energy Technology, Ottawa, Canada, specialist in the microanalysis of platinum-group minerals. Found in altered pyroxenite in the Kirakkajuppura PGE deposit in the Penikat layered complex, Finland.


Lanmuchangite

\( \text{TIA}(\text{SO}_4)_{2}\cdot12\text{H}_2\text{O} \), cubic, \( \text{Pa}3 \)

The Tl-dominant equivalent of Potassium alum

Named after the discovery locality. Found at the Lanmuchang thallium (mercury) deposit, Xinren County, Guizhou Province, People’s Republic of China.


Lemmleinite-Ba

\( \text{Na}_4\text{K}_4\text{Ba}_{2+x}\text{Ti}_8(\text{Si}_4\text{O}_{12})_4(\text{O},\text{OH})_8\cdot8\text{H}_2\text{O} \), monoclinic, \( \text{C}2/\text{m} \)

A member of the Lemmleinite subgroup of the Labuntsovite group

The name reflects its composition, as the barium-dominant analogue of lemmleinite-K. Found in alkaline pegmatites at Kukisvumchorr Mountain, Khibina Complex, and at Karnasurt and Onkaraic mountains, Lovozero Complex, Kola Peninsula, Russia.


Lukrahnite

\( \text{CaCuFe}^{3+}\text{(AsO}_4\text{)}_2[(\text{H}_2\text{O})(\text{OH})_] \), triclinic, \( \text{P}1 \)

The Ca-dominant analogue of gartrellite. A member of the Tsumcorite group

Named after Ludger Krahn, who submitted the discovery specimen for study. Found in the zone of secondary oxidation, Tsumeb mine, Namibia.


Magnesiostaurolite

\( \text{A}^{2+}\text{Mg}^{2+}\text{C}_4\text{A}_8\text{P}(\text{A}_2\text{O}_3)\text{T}\text{Si}_8\text{O}_{40}\text{[(OH)}_2\text{O}_6 \), monoclinic, \( \text{C}2/\text{m} \)

A member of the Staurolite group; shows solid-solution toward staurolite

The name reflects its composition: it is the magnesium-dominant analogue of staurolite. Found as inclusions in pyrope megablasts in the high-pressure Dora-Maira massif, Vallone di Galba, Val Varaita, Western Alps, Italy.


Magnesiobaltalapite

\( \text{(M}_{2+}\text{Fe})_{2}\text{O}_6 \), orthorhombic, \( \text{Pbcn} \)

A member of the columbite-tantalite group; forms a solid solution with ferrotantalite, manganotantalite, and magnesiocolumbite

**Manganlotharmeyerite**

Ca[Mn3+,□,Mg]2{AsO4,[AsO2(OH)2]}2(OH,H2O)2, monoclinic, C 2/m

A member of the Tsumcorite group


**Manganvesuvianite**

Ca8Mn n3+(Al, Mn n3+,Fe3+)10(Mg,Mn2+)2Si8O69(OH)9, tetragonal, P 4/n

The name reflects its composition (Mn3+ occupying the V'Y' site) and relationship to vesuvianite. Found in veins and vugs in the Wessels and N’Chwaning II mine, Kalahari manganese fields, Republic of South Africa. Armbruster, T. et al. (2002): Mineral. Mag. 66, 137-150.

**Marecottite**

Mg3(H2O)18[(UO2)4O3(OH)(SO4)2]2(H2O)10, triclinic, P ̅1

Named after its type locality, the La Creusaz uranium prospect near Les M arécottes, Canton Valais, Western Alps, Switzerland. Found in hydrothermal breccia veins at the contact between the pre-V ariscan gneissic basement of the A iguilles Rouges massif and the C arboniferous V allorcin granite. Brugger, J. et al. (2003): Am. Mineral. 88, 676.

**Matsubaraite**

Sr4Ti5(Si2O7)2O8, monoclinic, P 21/a (pseudo C 2/m)

The Sr–Ti analogue of perrierite


**Megakalsilite**

KAlSiO4, hexagonal, P63

Polymorphic relationship with kalsilite, trikalasilite, panunzite and kaliophilite


**Menshikovite**

Pd3Ni2A S8, hexagonal, P63m (?)

Named after Yurii Pavlovich M en'shikov (b. 1934), Geological Institute of the Kola Science Center, Russian A cademy of Sciences, A patty, Russia, in recognition of his important contributions to the
mineralogy of alkaline felsic and ultrabasic suites of the Kola Peninsula. Found in an altered gabbronorite in the Vostok deposit, Lakkulaisvaara layered complex, northern Karelia, Russia, and in metasomatized sandstone, Chiney layered lopolith in the Kodar–Udokan horst, western Aldan Shield, Chita region, Siberia.


**Miasite**

\( \text{Rh}_{17}\text{S}_{15}, \text{cubic, Pm3m} \)

Miasite supersedes "prassoite", a name already approved by the IMA

Named after the discovery locality. Found as inclusions in isoferroplatinum in a heavy-mineral concentrate from a small placer located at the upper part of the Miass River, southern Urals, Russia.


**Micheelsenite**

\( \text{(Ca,Y)}_3\text{Al(PO}_3\text{OH,CO}_3)(\text{CO}_3)(\text{OH})_6\cdot 12\text{H}_2\text{O}, \text{hexagonal, P6} \)

A member of the Ettringite group

Named after Harry Ingvar Micheelsen (b. 1931), Professor Emeritus of Mineralogy, University of Copenhagen, Denmark, specialist in mineral optics and the structure of flint, who discovered the Nanna pegmatite in 1963. Found in pegmatite and hornfels in the Poudrette quarry, Mont Saint-Hilaire, Rouville County, Quebec, Canada and the Nanna sodalite syenite pegmatite, Narsaarsuup Qaava, South Greenland.


**Moëloite**

\( \text{Pb}_6\text{Sb}_6\text{S}_{14}(\text{S}_3), \text{orthorhombic, P2}_1\text{2}_1\text{1} \)

Named after Yves Moëlo (b. 1949), of the Université de Nantes, France, specialist in the study of lead-bearing sulfosalts, who first synthesized this phase. Found in cavities in marble at the Ceragiola marble quarry, near Seravezza, Versilia, along the southern rim of the Apuan Alps, northern Tuscany, Italy.


**Monazite-(Sm)**

\( \text{(Sm,Gd,Ce)}\text{PO}_4, \text{monoclinic, P2} \text{1/n} \)

A member of the Monazite group

See monazite-(Ce). Found in the Annie Claim #3 granitic pegmatite, on the southwestern margin of the Greer Lake granite, 1.2 km northwest of Greer Lake, southeastern Manitoba.


**Mottanaite-(Ce)**

\( \text{XCa}_2\text{I}(\text{CeCa})^2\text{Al}^7\text{Be}_2(\text{Si}_4\text{B}_3\text{O}_{22})^\text{W}\text{O}_2, \text{monoclinic, P2/a} \)

A member of the hellandite group

Named after Annibale Mottana (b. 1940), Professor of Mineralogy at the Università di Roma Tre, Rome, Italy, in recognition of his work on the mineralogy of Latium. Found in feldspatoid-bearing alkali syenite ejectum, Sabatini volcanic complex, Monte Cavalluccio, Sacrofano, north of Rome, Italy.

Nabesite
Na₂BeSi₄O₁₀•4H₂O, orthorhombic, P₂₁₂₁₂₁
The name reflects its composition: sodium (Lat. natrium), beryllium and silicate. Found in cavities in tugtupite-bearing albites on the Kvanefjeld Plateau, northwesternmost part of the Ilímaussaq alkaline complex, South Greenland.

Natrolemoynite
Na₄Zr₂Si₁₀O₂₆•9H₂O, monoclinic, C 2/m
The name reflects its relationship to lemoynite as an Na-dominant polymorph of that species. Found in nepheline syenite pegmatites at the Poudrette quarry, Mont Saint-Hilaire, Rouville County, Quebec, Canada.

Nickellotharmeyerite
Ca(Ni,Fe³⁺)₂(AsO₄)₂(H₂O,OH)₂, monoclinic, C 2/m
A member of the Tsumcorite group
The name reflects its composition as the Ni-dominant analogue of lotharmeyerite. Found in dump material from an oxidation zone in the “A m Roten Berg” mining area, 4.8 km southwest of Schneeberg, Germany.

Nickelschneebergite
BiNi₂(AsO₄)₂[(H₂O)(OH)], monoclinic, C 2/m
A member of the T sumcorite group. Shows solid solution toward schneebergite, cobaltlotharmeyerite and nickellotharmeyerite
The name reflects its composition as the nickel-dominant analogue of schneebergite. Found on dumps in the A m Roten Berg mining area, Schneeberg, Saxony, Germany.

Nikischerite
NaFe²⁺₆Al₃(SO₄)₂(OH)₁₈(H₂O)₁₂, rhombohedral, R ³
The iron-dominant analogue of shigaite
Named after Anthony John Nikischer (b. 1949), of P, New York, mineral dealer (Excalibur Mineral Company), who discovered the mineral, and who has supplied the academic mineralogical community with rare minerals for scientific study. Found in the Huanuni tin mine, Dalence Province, Oruro Department, Bolivia.

Novgorodovaite
Ca₂(C₂O₄)Cl₂•2H₂O, monoclinic, 12/m
Named after Margarita Ivanovna Novgorodova (b. 1938), well-known mineralogist and director of the Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia. Found in an evaporitic sequence, Chelkar salt dome, western Kazakhstan.
Ominelite

\[(\text{Fe}^{2+},\text{Mg})\text{Al}_3\text{BSiO}_9\], orthorhombic, \text{Pbnm}

Named after the discovery locality. Found in an andalusite–sekaninaite–biotite porphyritic granite from the Misen pluton, Omine Mountains, and exposed along the Misen River, Tenkawa, Yoshino, Nara Prefecture, Japan.


Organovaite-Mn

\[\text{K}_8\text{M}_n\text{A}_4(\text{Nb,Ti})_{16}\text{Si}_4\text{O}_{12}\text{O}_{16} \cdot n\text{H}_2\text{O} \ (20 < n < 28), \text{monoclinic, C2/m}\]

A member of the Organovaite subgroup of the Labuntsovite group

Named after Natalia Ivanovna Organova (b. 1929), structural crystallographer, Institute of Geology of Ore Deposits, Petrology, Mineralogy and Geochemistry, Russian Academy of Sciences (IGEM RAS), Moscow, specialist in the study of modulated structures and exsolution in minerals. Found at Mount Karnasurt, Lovozero alkaline complex, Kola Peninsula, Russia.


Organovaite-Zn

\[\text{K}_8\text{Zn}_n\text{A}_4(\text{Nb,Ti})_{16}\text{Si}_4\text{O}_{12}\text{O}_{16} \cdot n\text{H}_2\text{O} \ (20 < n < 28), \text{monoclinic, C2/m}\]

A member of the Organovaite subgroup of the Labuntsovite group

The name reflects its composition as the Zn-dominant analogue of organovaite-Mn. Found in an alkaline pegmatite on Mount Karnasurt, Lovozero alkaline complex, Kola Peninsula, Russia.


Orthominasragrite

\[\text{V}^{4+}\text{O(SO}_4\text{)(H}_2\text{O})_5\], orthorhombic, \text{Pmn2}_1

Named as the orthorhombic dimorph of minasragrite. Found in a silicified tree at the North Mesa mine group, Temple Mountain, Emery County, Utah.


Oswaldpeetersite

\[\text{(UO}_2\text{)}_2\text{CO}_3(\text{OH})_2 \cdot 4\text{H}_2\text{O}, \text{monoclinic, P2}_1/\text{c}\]

Named after Oswald Maurice Peeters (b. 1945), University of Leuven, Belgium, structural crystallographer specializing in the study of uranium minerals. Found in the Jomac uranium mine, in conglomerate of the Shinarump Member of the Triassic Chinle Formation, at Brown’s Rim, San Juan County, Utah, U.S.A.


Paceite

\[\text{C}_9\text{H}_{20}\text{O}_{14}\text{CaCu or CaCu(CH}_3\text{CO}_3\text{O})_4 \cdot 6\text{H}_2\text{O}, \text{tetragonal, 14/m}\]
Named after Frank Lewis Pace (b. 1948), of Broken Hill, New South Wales, Australia, a miner and well-known collector of Broken Hill minerals. Found in ferruginous gossan near a mass of decomposing leaves, Potosi Ag–Pb–Zn deposit, 2 km northeast of Broken Hill, New South Wales, Australia.


Parakuzmenkoite-Fe

\[(K,Ba)_{3}Fe_{4}(Ti,Nb)_{16}[Si_{4}O_{12}]_{8}(O,OH)_{16} \cdot nH_{2}O\], 20 < n < 28, monoclinic, C2/m

A member of the Organovaite subgroup of the Labuntsovite group

From Gk. para, near, and kuzmenkoite; named as an analogue of kuzmenkoite-Mn having Fe > Mn and a doubled c parameter. Found in an alkaline pegmatite at Mount Kedyverpakhk, Lovozaro alkaline complex, Kola Peninsula, Russia.


Paralabuntsovite-Mg

\[Na_{2}K_{3}Mg_{9}Ti_{16}[Si_{12}O_{36}]_{8}(O,OH)_{16} \cdot nH_{2}O\] (20 < n < 24), monoclinic, 12/m

A member of the Paralabuntsovite subgroup of the Labuntsovite group

From Gk. para, near, and labuntsovite-Mg; named as an analogue of the latter having a doubled c parameter, possibly owing to ordering. Found at the Trona mine, Sweetwater County, Wyoming, U.S.A.


Pararsenolamprite

A s, orthorhombic, Pmn21 (?)

Trimorphic relationship with arsenolamprite and arsenic

From Gk. para, near, and arsenolamprite, to which it is similar. Found in quartz veins in altered andesite at the Mukuno Sb–As–Ag–Au mine, Yamaga-cho, Oita Prefecture, Japan.


Paravinogradovite

\[(Na,\square)_{2}[\square^{4}I^{4+},Fe^{3+}]_{4}[Si_{2}O_{5}]_{2}[Si_{3}AlO_{10}]_{2}(OH)_{4}]H_{2}O\], triclinic, P1

From Gk. para, near, and vinogradovite, which it resembles compositionally and structurally.

Found in a pegmatite in contact with a corundum-bearing hornfels and foyaite, in mienarolitic cavities, central part of the Khibina alkaline complex, Russia.


Percleveite-(Ce)

\[(Ce,La,Nd)_{2}Si_{2}O_{7}\], tetragonal, P41

Named after Per Theodor Cleve (1840–1905), Professor of Organic and Inorganic Chemistry at Uppsala University, Sweden, and discoverer of the elements holmium and thulium. Found in the Bastnäs Fe–Cu–REE deposit in the Skinnskatteberg District, Västmanland, Sweden.

**Potassic-chloropargasite**

\[(\text{K, Na})\text{Ca}_2(\text{Fe}^{2+}, \text{Mg})_4\text{A} l(\text{Si}_6\text{A}_2\text{O}_{22})(\text{Cl, OH})_2\] monoclinic, \(C2/m\)

A member of the Amphibole group

The name reflects its bulk composition, a K- and Cl-dominant analogue of *pargasite*. Found in granulite-facies rocks at Mount Elgoras, Sal'nye Tundry, Kola Peninsula, Russia.


**Potassicleakeite**

\[\text{KNa}_2\text{Mg}_2\text{Fe}^{3+}_2\text{LiSi}_8\text{O}_{22}(\text{OH})_2\] monoclinic, \(C2/m\)

A member of the Amphibole group

The name reflects its bulk composition; it is the K-dominant analogue of *leakeite*. Found in pegmatite-like veinlets in a manganese deposit, Tanohata mine, Iwate Prefecture, Japan.


**Radovanite**

\[\text{Cu}_2\text{Fe}^{3+}(\text{AsO}_4)(\text{As}_{3+}\text{O}_2\text{OH})_2\cdot\text{H}_2\text{O}\] orthorhombic, \(Pnma\)

Named after Radovan Černý (b. 1957), crystallographer at the University of Geneva, Geneva, Switzerland. Found in a gangue assemblage in the Roua copper deposits, upper Var valley (the Daluis gorge), at the western margin of the Barrot Dome, Alpes-Maritimes, France.


**Reidite**

\[(\text{Zr, Hf})\text{SiO}_4\] tetragonal, \(I4_1/a\)

Dimorphic relationship with *zircon*


**Rinmanite**

\[\text{Zn}_2\text{Sb}^{3+}_2\text{Mg}_2\text{Fe}^{3+}_4\text{O}_{12}(\text{OH})_2\] hexagonal, \(P6_3mc\)

Isotectroic with *nolanite*

Named after Sven Rinman (1720–1792), of Stockholm, Sweden, mining scientist, metallurgist and chemist, member of the Bergskollegium (the Board of Mines), considered the father of the Swedish mineral industry. Found in a skarn assemblage within dolomite marble, Garpenberg Norra mine, Hedemora, Dalarna, Sweden.


**Ronneburgite**

\[\text{K}_2\text{MnV}_4\text{O}_{12}\] monoclinic, \(P2_1/n\)

Named after the discovery locality. Found on the mine dump of the Lichtenberg open-cast pit, Ronneburg uranium deposit, near Gera, Thuringia, Germany.

**Rouaite**

\[ \text{Cu}_2(\text{NO}_3)(\text{OH})_3, \text{monoclinic, P2}_1 \]

It has a dimorphic relationship with gerhardtite

Named after the discovery locality. Found in cavities in cuprite at the old copper mines at Roua, Alpes Maritimes, France.


**Sailaufite**

\[ (\text{Ca}, \text{Na}, \text{H})_2\text{Mn}_3\text{O}_2(\text{AsO}_4)_2(\text{CO}_3) \cdot 3\text{H}_2\text{O}, \text{monoclinic, Cm} \]

Named after the discovery locality. Found in veins in manganese ore in rhyolite, Hartkoppe Hill, north of Ober-Sailauf, Spessart Mountains, Bavaria, Germany.


**Sewardite**

\[ \text{CaFe}^{2+}_2(\text{AsO}_4)_2(\text{OH})_2, \text{orthorhombic, Cccm} \]

The Ca-dominant analogue of carminite

Named after Terry Maxwell Seward (b. 1940), Professor of Geochemistry, Eidgenössische Technische Hochschule (ETH), Zürich, Switzerland, a specialist in the speciation of ore-forming constituents in solution. A dual citizen of Canada and New Zealand, he collected the mineral specimen and recognized its potential as a new species. Found in a cavity in gangue at the 31st level of the Tsumeb mine, Tsumeb, Namibia.


**Shirokshinite**

\[ \text{K(NaMg}_2\text{Si}_4\text{O}_{10}\text{F}_2, \text{monoclinic, C2/m}} \]

A member of the Mica group; this is the 1M polytype

Named after Nikolay Vasilievich Shirokshin (1809–?), Captain in the Russian Mining Corps, who was the first investigator of the Khibina alkaline complex, with observations of geology, petrology and geomorphology published in 1835. Found as a late hydrothermal mineral in a small peralkaline pegmatite cutting rischorrite in the Kirovskii apatite mine, Kukisvumchorr Mountain, southern part of the Khibina alkaline complex, Kola Peninsula, Russia.


**Sicherite**

\[ \text{TlA}_2(\text{AsSb})_3\text{S}_6, \text{orthorhombic, Pnmb} \]

Named after Valentin Sicher (b. 1925), of Gurtnellen, Canton Uri, Switzerland, specialist of major construction projects in the Alps, active member of the Lengenbach syndicates, set up to ensure the recovery of minerals at Lengenbach for research and collectors, and avid collector of Swiss minerals. Found in Triassic dolomite in the Lengenbach quarry in Binntal, Valais Canton, Switzerland.


**Sphaerobertrandite**

\[ \text{Be}_2\text{SiO}_4(\text{OH})_2, \text{monoclinic, P2}_1/c \]

The name recalls the spherulitic morphology of its aggregates, and its overall similarity to bertrandite in terms of its main constituents. Found in alkaline pegmatites at Mannepakhk Mountain and
Sengischorr Mountain, Lovozero alkaline complex, Kola Peninsula, Russia, and in the Tuften quarry, Tvedalen, southern Norway.


**Spriggite**

\[
Pb_3[(UO_2)_6O_8(OH)_2] \cdot 3H_2O
\]

Named after Reg C. Sprigg (1919–1994), formerly Government geologist in South Australia, coauthor of Uranium Deposits of South Australia (1954), and founder of the popular Arkaroola Resort. Found at the No. 2 workings, exploiting a lens of hematite rich in U, REE and Nb minerals, Mount Painter uranium field, northern part of the Flinders Ranges, South Australia, Austraila.


**Surkhobite**

\[(Ca,Na)(Ba,K)(Fe^{2+},Mn)_4(Ti_2(Si_4O_14)O_2(F,O,H,O))_3,\] monoclinic, \(\text{C}2\)

Named after the Surkhob River, which drains the area of the discovery locality. Found in a rare-metal-enriched syenite pegmatite, Dara-Pioz alkaline complex, Alaia Range, Tajikistan.


**Tedhadleyite**

\[Hg^{2+}Hg^{1+}O_4I_2(Cl,Br)_2,\] triclinic, \(\text{A}1\)

Named after Ted Alan Hadley (b. 1961), of Sunnyvale, California, software engineer in the field of cryptography, avid collector who helped collect the mineral, and dedicated amateur who has written software to support mineral collecting and optical mineralogy. Found in a vug in quartz-magnesite rock, Clear Creek Claim, San Benito County, California.


**Theoparacelsite**

\[\text{Cu}_3(OH)_2As_2O_7,\] orthorhombic, \(\text{Pmna}\)

Named after Philippus Aureolus Bombastus von Hohenheim (1493–1541), called Paracelse, which is a Greco-Roman translation of Hohenheim meaning “close to the sky”. Paracelse was an important physician, chemist, alchemist and doctor who also worked in mineralogy (De Mineralibus, De Elemento Aquae & Fructibus eius). He is known in toxicology for having said “All is poison, nothing is poison, it is the dosage which makes the poison”. Found in the old copper mines of Roua (North and South group) in the upper part of the Var Valley (the Daluis Gorge) at the western margin of the Barrot dome, Aipes-Martimes area, about 50 km from Nice, France.


**Thomsonite-Sr**

\[(Sr,Ca)_2Na[Al_5Si_5O_{20}](\text{H}_2\text{O})_6\cdot 7\text{H}_2\text{O},\] orthorhombic, \(\text{Pcnn}\)

A member of the Zeolite group. Forms a solid-solution series with thomsonite-Ca.

The strontium-dominant analogue of thomsonite-Ca. Found in hydrothermally altered rocks at Rasvumchorr Mountain (veinlets cutting the natrolite core of rischorite pegmatite) and at Mt. Uyksor (zones in crystals of thomsonite-Ca in veinlets cutting urtite), Khibina alkaline complex, Kola Peninsula, Russia.

Tischendorfite

\[ \text{Pd}_8\text{H}_3\text{Se}_9, \text{orthorhombic, Pmmn} \]

Named after Gerhard Tischendorf (b. 1927), formerly at GeoForschungsZentrum, Potsdam, Germany, for his many contributions to the mineralogy, geochemistry, and genesis of selenide deposits of the Harz Mountains, Germany. Found in the selenide deposit at Eskaborner Stollen (Eskeborn adit), Eskaborn Berg (Eskeborn Hill), Tilkerode, Harz Mountains, Germany.


T sepinite-K

\[ \text{(K, Ba, Na)}_2\text{(Ti, Nb)}_2\text{(Si}_4\text{O}_{12})\text{(OH, O)}_2\cdot 3\text{H}_2\text{O}, \text{monoclinic, Cm} \]

The Ti-dominant equivalent of vuoriyarvite-K. A member of the Vuoriyarvite subgroup of the Labuntsovite group.

The name reflects the composition: it is the K-dominant analogue of tsepinite-Na. Found in alkaline pegmatites of Mount Karnasurt, Lovozero Complex, and Mount Eveslogchorr and Mount Kuksivumchorr, Khibina Complex, Kola Peninsula, Russia.


T sepinite-Na

\[ \text{(Na, H}_3\text{O, K, Sr, Ba)}_{12-2x}\text{Ti}_6\text{(Si}_4\text{O}_{12})_4\text{(OH, O)}_8\cdot n\text{H}_2\text{O} \] (0 < x < 6, 12 < n < 16), monoclinic, Cm

The Na-Ti-dominant equivalent of vuoriyarvite-K. A member of the Vuoriyarvite subgroup of the Labuntsovite group.


Turtmannite

\[ \text{(Mn, Mg)}_{22.5}\text{Mg}_{3-2x}\text{[(V, As)O}_4\text{]_3[Si}_3\text{O}_4\text{]_2[As}_2\text{O}_3\text{]_5S}_x\text{O}_5\cdot 5\text{OH} \cdot 20+4x}, \text{trigonal, R} \bar{3}c \]

Named after the discovery locality. Found in jacobsite-rich Fe-Mn ore in paleokarst pockets in Triassic marble of the Barrhorn Unit under the suspended Pipjigletscher in the Central Alps, Turtmanntal River, Valais, Switzerland.


Tweddillite

\[ \text{CaSr(Mn}^{3+},\text{Fe}^{3+})\text{A Li[Si}_3\text{O}_{12}]\text{OH}, \text{monoclinic, P2}_1/m \]

A member of the Epidote group.


Vajdakite
\[ [(\text{Mo}^{6+}O_2)_2(H_2O)_2A\text{s}^{3+}O_3]^+H_2O \], monoclinic, \( \text{P} \text{2}_1/\text{c} \)

Named after Josef Vajdak (b. 1930), mineral dealer of Massapequa, New York, who first drew attention to the species, in recognition of his significant contributions to mineralogical research on the ore assemblages at Jáchymov. Found as a product of secondary oxidation in the Svornost mine, Jáchymov Ag–As–Co–Ni–Bi–U deposit, Jáchymov (St. Joachimstal), southern slope of the Kruňe hory Mountains (Erzgebirge), 20 km north of Karlovy Vary, northwestern Bohemia, Czech Republic.


Verbeekite
\[ \text{PdSe}_2 \], monoclinic, \( \text{C} \text{2}/\text{m} \)

Named after Théodore Verbeek (1927–1991), of Union Minière du Haut-Katanga, Jadotville, Democratic Republic of Congo, and later with Union Minière Exploration and Mining Corp., in Toronto, Canada, the first geoscientist to study the Se-bearing mineralization at Musonoi, and who early on documented the existence of palladium selenides. Found in dump material at the Musonoi Cu–Co mine, near Kolwezi, western portion of Shaba Province, Democratic Republic of Congo.


Walkerite
\[ \text{Ca}_{16}(\text{Mg,Li})_{2854}\text{[B}_{13}\text{O}_{17}(\text{OH})_{12}]\text{Cl}_{8}+28\text{H}_2\text{O} \], orthorhombic, \( \text{Pba}_2 \)

Named after Thomas Leonard Walker (1867–1942), Professor of Mineralogy and Petrography, University of Toronto, Toronto, Canada, in recognition of his contributions to mineralogy in general, and to the study of borates from the Minas Basin, Nova Scotia, in particular. He established the journal Contributions to Canadian Mineralogy, predecessor of The Canadian Mineralogist. Found in a core sample recovered from the Upper Halite Member of the Windsor Group, in the deposit exploited by the Potash Corporation of Saskatchewan (New Brunswick Division), 5 km east of Penobsquis, Sussex area, Cardwell Parish, Kings County, New Brunswick.


Zaccagnaite
\[ \text{Zn}_4\text{Al}_{2}(\text{OH})_{12}\text{(CO}_3)^{\cdot}3\text{H}_2\text{O} \], hexagonal, \( \text{P} \text{6}_3/\text{mmc} \)

A member of the Hydrotalcite group

Named after Domenico Zaccagna (1851–1940), scholar who published the first geological map of the Apuan Alps and collected minerals from the Carrara marble. Found in cavities in calcite veins in the Calagio quarry, Colonnata Valley, Carrara region, Apuan Alps, Italy.


Zincostaurolite
\[ \text{A}^4\text{Zn}_4\text{C}_2\text{A}_{16}\text{P}(\text{A}_{12}\text{C}_2\text{Si}_8\text{O}_{40})(\text{OH})_{2}\text{O}_4 \], monoclinic, \( \text{C} \text{2}/\text{m} \)

A member of the Staurolite group; forms a solid-solution series with staurolite

The name reflects its composition: it is the zinc-dominant analogue of staurolite. Found in metabauxite in the Barrhorn series, near the Turtmannfletscher, Zermatt Valley, Western Alps, Switzerland.