

NEW MINERAL NAMES

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Ewaldite (also new data on mackelveyite)

GABRIELLE DONNAY AND J. D. H. DONNAY (1971) Ewaldite, a new barium calcium carbonate. I. Occurrence of ewaldite in syntactic intergrowth with mackelveyite. (with analysis by M. H. Hey) *Tschermaks Mineral. Petrogr. Mitt.* **15**, 185-200.

GABRIELLE DONNAY AND H. PRESTON (1971) Ewaldite, a new barium calcium carbonate. II. Its crystal structure. *Tschermaks Mineral. Petrogr. Mitt.* **15**, 201-212.

Mackelveyite [Milton *et al.* *Amer. Mineral.* **50**, 593-612, (1965)] type specimens from the Green River Formation, Wyoming, turn out to be polycrystals consisting of two phases in syntactic intergrowth. One phase, for which the name mackelveyite is retained, is lime yellow, but usually black owing to amorphous carbonaceous inclusions. It is hexagonal with the dimensions originally reported but its space group is $P31m$. The other phase, to be called ewaldite, is the major constituent of the polycrystals studied by Desautels (*Amer. Mineral.* **52**, 860-864, [1967] under the name mackelveyite. It is bluish green and crystallizes in $P6_3mc$ with a 5.284 ± 0.007 , and c 12.78 ± 0.01 Å.

Microprobe examination of four individuals consisting of about equal parts of ewaldite and mackelveyite showed the elements Ba, Ca, Y, and Na to be uniformly distributed, indicating that ewaldite and mackelveyite are a dimorphous pair, "except for possibly different water content." (The water content reported for mackelveyite, 4.8 or 5.0% had been determined "by difference.") The results of microchemical analysis of selected ewaldite crystals, supplemented by determination of the structure, lead to the formula $Ba_{1.00}(Ca_{0.48}RE_{0.20}Na_{0.13}K_{0.11}Sr_{0.03}U_{0.02}\square_{0.01})(CO_3)_2$, with $Z=2$ and density (calc.) 3.37 g/cm³ (meas.) 3.25 ± 0.05 g/cm³.

The optical properties of ewaldite, determined on a polycrystal showing only a minimal amount of mackelveyite, are: $\omega(Na) = 1.646 \pm 0.003$, $\epsilon \leq 1.572$, maximum birefringence thus at least 0.074, pleochroic, O dark bluish green, E pale yellowish green.

The name, approved by the Commission on New Minerals and Mineral Names, IMA, is for Professor P. P. Ewald. Specimens of ewaldite are deposited at the U. S. National Museum under No. 121, 683.

A. PABST

Thorgadolinite

L. B. ZUBKOV, V. I. PARIBOK, AND A. B. CHERNYAKHOVSKII (1970) First find of gadolinite in the crystalline basement of the Russian Platform. *Dokl. Akad. Nauk SSSR* **192**, 633-636 (in Russian).

A complete chem. analysis is given of metamict gadolinite that contains RE_2O_3 49.00 (Y predominant), ThO_2 4.65, U_3O_8 0.34%. It is suggested that this be called thorgadolinite.

DISCUSSION.—An unnecessary name for thorian gadolinite. Published analyses show up to 9.93% ThO_2 .

Udokanite (= Antlerite?)

Miropolskite (= Bassanite?)

G. A. YURGENSON, N. G. SMIRNOVA, AND L. A. KARENINA (1970) Features of the mineralogy of the zone of oxidation of the Ukokan copper deposits. *Vestnik. Nauch. Inform. Zabaikal. Filial Geogr. SSSR*, **1968**, 3-10 [Abstract by E. M. Bohnstedt-Kupletskaya in *Zap. Vses. Mineral. Obshch.* **99**, 78]

The name udokanite is given to a copper sulfate, formula $\text{Cu}_3(\text{SO}_4)_3(\text{OH})_{10}$. Analysis gave CuO 64.86, SO_3 24.00, H_2O 11.14%. DTA shows an endothermic peak at 165°. The strongest X-ray lines (intensities not given) are 6.5, 4.99, 3.79, 1.516, 1.107 Å. Sp. gr. 3.78, $n_s \alpha$ 1.716, β 1.736, γ 1.783. Occurs in the Udokan copper deposit, Transbaikal, with malachite, chrysocolla, antlerite, brochantite, and chalcantinite. The name is for the deposit.

The name miropolskite is given to β - $\text{CaSO}_4 \cdot 1/2\text{H}_2\text{O}$ from the same deposit, no data are given.

DISCUSSION.—The abstractor considers that udokanite has not been proved to be different from antlerite and that the name miropolskite should not have been used. I agree.

Ericssonite, Orthoericssonite

PAUL B. MOORE (1971) Ericssonite and orthoericssonite, two new members of the lamprophyllite group, from Långban, Sweden. *Lithos* 4, 137–145.

Analysis of material containing both phases was made by C. R. Knowles (electron microprobe) with chemical determination of oxidation grade and of water by Alexander Parwel. This gave SiO_2 20.83, As_2O_5 1.23, BaO 29.81, PbO 1.40, MnO 24.38, Fe_2O_3 14.47, H_2O 1.52, sum 93.64%, suggesting the ideal formula $\text{BaMn}_2(\text{Fe}^{3+}\text{O})\text{Si}_2\text{O}_7(\text{OH})$. Nearly insoluble in warm 1:1 HCl solution.

Rotation and Weissenberg photographs showed that two phases were present: Orthoericssonite is orthorhombic, $Pnmm$, a 20.37, b 7.03, c 5.34 Å., $Z=4$, ericssonite is monoclinic, $C2/m$, a 20.46, b 7.03, c 5.34 Å., β 95°30', $Z=4$. The X-ray pattern of a sample containing both phases (orthoericssonite predominant) gave strongest lines (39 given): 10.12 (6)(200) (o, e), 5.08 (5)(400) (o, e), 3.510 (10)(510, 020)(o, e), 3.398 (5)(600)(o, e), 2.780 (6b)(221) (e), 2.687 (7b)(321, o, 710, e, o), 2.132 (7)(131)(o), 2.028 (5)(530, 10.0.0)(o, e), 1.752 (6)(040(o, e), 1.597 (6).

The minerals occur as plates up to 2 cm., thick tabular parallel {100}. Color deep red-dish-black, streak rich brown. Cleavages {100} perfect, {011} fair. H. 4½, very brittle. ρ 4.21. Weakly magnetic. The minerals are indistinguishable optically. Orthoericssonite is biaxial, positive, $n_s \alpha$ 1.807 ± 0.005, β 1.833 ± 0.005, γ 1.89 ± 0.01, $2V$ 43°. Pleochroic with X pale greenish-tan, Y red-brown, Z deep brown, absorption $Z > Y > X$, $r > v$ perceptible, $X = b$, $Y = c$.

The minerals occur on two specimens from Långban, Sweden, in a schefferite zone in banded tephroite-rhodonite-schafferite skarn. Quartz and several unknown minerals are present.

The names are for the Swedish and American inventor and engineer John E. Ericsson (1803–1889), designer of the iron-clad ship "Monitor", who was born at Långban. The minerals and names were approved in advance of publication by the Commission on New Minerals and Mineral Names, IMA.

DISCUSSION.—The minerals are closely related to lamprophyllite, orthorhombic lamprophyllite, and barytolamprophyllite [*Amer Mineral.* 51, 1549 (1966)] and to yoshimuraite (*ibid* 46, 1515).

Julgoldite

PAUL B. MOORE (1971) Julgoldite, the Fe^{+2} – Fe^{+3} -dominant pumpellyite, a new mineral from Långban, Sweden. *Lithos* 4, 93–99.

Spectrographic analysis by Benita Rajandi, with chemical determinations of FeO and H_2O by PBM gave: SiO_2 34.0, TiO_2 0.1, Al_2O_3 1.3, Fe_2O_3 29.6, FeO 8.7, MgO 0.2, MnO 0.2,

BaO 0.01, H₂O 4.69, sum 100.7%. This gives for the unit cell—(Ca_{8.8}Mn_{0.1})(Fe_{2.7}²⁺Fe_{1.2}³⁺Mg_{0.1}) · (Fe_{7.2}³⁺Al_{0.6})Si_{12.7}O_{44.7}(OH)_{11.7}. The ideal formula is Ca₂Fe²⁺Fe³⁺₂(SiO₄)(Si₂O₇)(OH)₂ · H₂O, Z=4. This is therefore the Fe²⁺-Fe³⁺ analogue of the Mg-Al mineral pumpellyite. Insoluble in cold (1+1)HCl, rapidly dissolved by hot (1+1)HCl giving a gel.

X-ray study shows the mineral to be monoclinic, space group *A2/m*, *a* 8.92 ± 0.01, *b* 6.09 ± 0.01, *c* 19.37 ± 0.02 Å, β 97°30' ± 5', ρ (calc.) 3.605, measured 3.602. Goniometric measurements show predominant forms *a* {100} and *σ* {111}, also *c* {001}, *X* {102}, *Z* {101}, and *p* {111}, commonly striated parallel to *b* [010]. The crystals are usually twinned, often repeatedly, with *c* {001} as the twin plane. The strongest X-ray lines (42 given) are 4.80 (7)(004), 3.84 (8)(202), 2.950 (10)(300), 2.778 (6)(122), 2.568 (7)(024), 2.385 (5)(222), 1.622(5½), 1.517(5½).

The mineral occurs as flat prismatic to bladed crystals *p* to 2 mm. in greatest dimension, elongated parallel to *b* and flattened parallel to *a*. Cleavage good on *a*. Color deep lustrous black, luster almost submetallic, small fragments are greenish-black to green, streak greenish-olive with a bluish tinge. H. 4½. Optically biaxial, neg., α 1.776, β 1.814, γ 1.836 (all ± 0.004), 2*V* 50–70° (73° calcd.), strongly pleochroic, *X* pale brown, *Y* pale brownish-green, *Z* deep emerald-green, absorption *Z* >> *Y* > *X*, *Y* = *b*.

The mineral occurs filling cavities and embedded in large plates of apophyllite and minor barite, which constitute a fissure filling in granular hematite-magnetite ore from the "Amerika" stope, Långban, Sweden. Two unidentified minerals are also present.

Type materials is in the Flink collection of the Swedish Natural History museum and specimens are also in the Harvard Museum. The name is for Julian R. Goldsmith, Univ. of Chicago. The mineral and name were approved before publication by the Commission on New Minerals and Mineral Names, IMA.

**Ferropumpellyite, Oxyferropumpellyite
Ferripumpellyite, Oxyjulgoldite**

PAUL B. MOORE (1971) Julgoldite, the Fe²⁺-Fe³⁺-dominant pumpellyite, a new mineral from Långban, Sweden. *Lithos* 4, 93–99.

Moore points out that the discovery of julgoldite (preceding abstract) poses some problems of nomenclature. If the group formula is written: Ca₂X²⁺Y³⁺₂(SiO₄)(Si₂O₇)(OH)₂ · H₂O, he proposes the following names:

	X (> 50 mole %)	Y (> 50 mole %)	Name
1.	Mg ²⁺	Al ³⁺	pumpellyite
2.	Fe ²⁺	Al ³⁺	ferropumpellyite
3.	Fe ^{3+*}	Al ³⁺	oxyferropumpellyite
4.	Mg ²⁺	Fe ³⁺	ferripumpellyite
5.	Fe ²⁺	Fe ³⁺	julgoldite
6.	Fe ^{3+*}	Fe ³⁺	oxyjulgoldite

* These require valence adjustment of the formula by corresponding replacement of hydroxyl by oxygen.

DISCUSSION.—The four new names proposed had not been submitted to the IMA Commission. Two published analyses correspond to ferropumpellyite and the name can be accepted, the other three have not yet been found and the names are premature.

NEW DATA

Talnakhite

L. J. CABRI AND D. C. HARRIS (1971) New compositional data for talnakhite, $\text{Cu}_{18}(\text{Fe}, \text{Ni})_{16}\text{S}_{32}$. *Econ. Geol.* **66**, 673-675.

Five new electron microprobe analyses from the Talnakh Mine, Noril'sk gave, (av.) Cu 37.15, Fe 29.10, Ni 0.75, S 33.31, sum 100.31%, corresponding to $\text{Cu}_{17.9}(\text{Fe}_{15.9}\text{Ni}_{0.4})\text{S}_{31.8}$ in good agreement with probe analyses of 3 synthetic preparations. The formula is therefore $\text{Cu}_{18}(\text{Fe}, \text{Ni})_{16}\text{S}_{32}$ (compare *Amer. Mineral.* **55**, 2135 [1970]; this is verified by single-crystal structural analysis by S. R. Hall and E. J. Gabe [in preparation]).