

PROCEDURES INVOLVING THE IMA COMMISSION ON NEW MINERALS AND MINERAL NAMES, AND GUIDELINES ON MINERAL NOMENCLATURE

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INTRODUCTION

The Commission on New Minerals and Mineral Names (hereafter abbreviated as CNMMN) of the International Mineralogical Association was established in 1959 for the purpose of controlling mineral nomenclature. All proposals for introducing new minerals, changing mineralogical nomenclature, and discrediting or redefining existing minerals and mineral names should be submitted to the CNMMN for approval before publication. If approval is withheld, the proposal should not be published.

This report incorporates material from previous reports on mineral nomenclature and procedures of the CNMMN (Fleischer 1970, Donnay & Fleischer 1970, Embrey & Hey 1970, Hey & Gottardi 1980, Mandarino *et al.* 1984), and represents an attempt to consolidate this information and to present a comprehensive summary of the subject. Where there are differences between this report and the earlier ones, this version is to be regarded as the correct one.

SUBMISSION OF PROPOSALS

a) If the proposal deals with a new mineral, it should be sent directly to the chairman of the CNMMN. In countries that require a prior review by their national committee, the proposals should first be submitted to the national committee, and subsequently to the CNMMN.

b) All proposals to redefine or discredit existing minerals or mineral names, or to revalidate obsolete names, must be submitted to the vice-chairman of the CNMMN, with a copy to the chairman.

c) If the proposal deals with mineral groups, it should be sent to the secretary of the CNMMN, with a copy to the chairman (the current Secretary is Dr. C.E.S. Arps, National Museum of Geology and Mineralogy, Hooglandse Kerkgracht 17, 2312 HS Leiden, The Netherlands.)

NATURE OF THE PROPOSAL

A proposal should include as many data as possible so that the CNMMN can adequately judge the validity of the proposal. Ideally, a new-mineral proposal should contain the following information:
Proposed name and reason for its selection

Description of the occurrence (geographic and geological occurrence, paragenesis, and a list of associated minerals, particularly those in apparent equilibrium with the new mineral)

Chemical composition and method of analysis

Chemical formula: empirical and simplified

Crystallography: crystal system, crystal class, space group, unit-cell parameters, unit-cell volume, number of formula units per unit cell, X-ray powder data, morphology and crystal structure

General appearance and physical properties: grain or crystal size, type of aggregate, color, streak, lustre, transparency, hardness, tenacity, cleavage, parting, fracture, density (calculated and measured)

Optical properties

a) Nonmetallic minerals: optical character (isotropic or anisotropic; uniaxial or biaxial), optical sign, indices of refraction, 2V, dispersion, orientation, pleochroism and absorption

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b) Metallic minerals: color in reflected light, internal reflections, anisotropy, birefractance, pleochroism and reflectivity

Type material (museum where it is deposited)

Relationship to other species

Any other data that will clarify difficult parts of the description.

It is recognized that it may not always be possible to obtain all the above data; in such cases the author should give reasons for the omissions. To assist potential authors of new-mineral proposals, a check-list should be submitted as part of the proposal. Copies of an official check-list can be obtained from the chairman of the CNMMN or from one of the national representatives. Guideline on some aspects of mineral proposals are given below.

CRITERIA FOR A NEW MINERAL NAME

General considerations

A mineral is generally accepted as being a crystalline substance with defined compositional limits, and which has been formed as the result of geological processes. The essential components in the definition of a mineral are its chemical composition and its crystallographic properties. If a mineral is found whose composition or crystallographic properties (or both) are substantially different from those of any existing mineral, a new name, if needed, must be proposed to the CNMMN. It is probably not desirable to formulate rigid rules to define whether or not a compositional or crystallographic difference is sufficiently large to require a new mineral name, and each new-mineral proposal must be considered on its own merits. However, a general guideline for compositional criteria is that at least one major structural site should be occupied by a different chemical component than that which occurs in the equivalent site in an existing mineral. But if the presence of an element occurring in a relatively minor amount stabilizes the structure, or if its presence in an occupied site effects a structural change due to charge or size difference, then consideration may be given to a proposal to create a new name for such a mineral. Generally speaking, a crystallographic difference sufficiently large to justify the creation of a new mineral name is one in which the structure of the mineral is topologically different from that of an existing one.

Example: Hydroxyl-apatite and fluorapatite both crystallize in the hexagonal system, with the same space group, and have similar unit-cell parameters. They are considered as separate minerals because the relevant structural site is predominantly occupied by OH in hydroxyl-apatite, and by F in fluorapatite.

Example: Sphalerite (ZnS) and "marmatite" ([Zn,Fe]S) are both cubic, with the same space group and similar unit-cell parameters, but they are not regarded as separate minerals because the structural site of the metal is predominantly occupied by Zn in both cases. Marmatite is regarded as a ferroan variety of sphalerite.

Example: Graphite and diamond both have the same composition, but their structures are topologically different, and therefore minerals such as these deserve separate names.

Polymorphs

Polymorphic minerals are those that have essentially the same chemical compositions, but different crystal structures. Polymorphs are regarded as distinct species and warrant separate mineral names. If the structures of the polymorphs are topologically similar, it is preferable to give the new polymorph a name that is related to that of the existing polymorph (see "Selection of a Mineral Name", below) rather than giving it a trivial name.

Polytypes

Polytypes have been defined as substances that occur in several different structural modifications, each of which may be regarded as built up by the stacking of layers of (nearly) identical structure and composition, and with the modifications differing only in their stacking sequence (Guinier *et al.* 1984). Polytypes do not merit new names, but can be distinguished by appropriate suffixes. The modified Gard notation recommended by the International Union of Crystallography (Guinier *et al.* 1984) is probably more detailed than is necessary for mineral nomenclature since it is generally necessary only to distinguish between polytypes, not to specify them accurately. Consequently, a simplified nomenclature that consists of an italicized suffix comprising an alphabetical character to indicate crystal system, and a numerical symbol to indicate multiplicity of the structural unit, first proposed by Ramsdell (1947), is commonly used. The alpha-

betical characters recommended by the International Union of Crystallography (Guinier *et al.* 1984), and now by the CNMMN, are as follows:

cubic	=	<i>C</i>
hexagonal	=	<i>H</i>
rhombohedral	=	<i>R</i>
trigonal	=	<i>T</i>
tetragonal	=	<i>Q</i> (quadratic)
orthorhombic	=	<i>O</i>
monoclinic	=	<i>M</i>
triclinic	=	<i>A</i> (anorthic)

Example: Wurtzite-4*H* is a hexagonal polytype with a periodicity of 4 times the *c* dimension of the wurtzite parent; wurtzite-15*R* is a rhombohedral polytype with a 15-times periodicity.

Although polytypes are not regarded as mineral species, authors are advised to consult with officers of the CNMMN before introducing new polytype names for minerals into the literature.

Regular interstratifications

New names can be given to regular interstratifications where the kinds of layers, their relative proportions, chemical compositions, and regularity of interstratification have been well documented. For detailed criteria that determine whether the interstratification is sufficiently regular to warrant a species name, the reader is referred to Bailey (1981). However, any proposed new name must be submitted to the CNMMN. *Example:* The name *aliettite* has been given to a 1:1 regular interstratification of talc and trioctahedral smectite.

TYPE SPECIMENS

When a new mineral is described, or an existing one redefined, the author should exercise care in defining its type designation, and should ensure that a type specimen is held as permanent reference-material by at least one major museum or a nationally recognized mineral collection.

TREATMENT OF A NEW-MINERAL PROPOSAL

When the chairman of the CNMMN receives a new-mineral proposal, he is authorized to write to the author asking for more data if he considers this desirable, or he may point out possible objections either to the mineral or to the name. If the author so desires, the chairman is required to submit a proposal to the CNMMN whether or not he approves of it. In such cases, the chairman will inform the author that he will give his reasons as to the unsuitability of the proposal under "Chairman's Remarks". The chairman's abstract of a proposal is sent by air mail to each member of the CNMMN, and approximately 60 days are allowed for receipt of voting papers.

Member of the CNMMN are urged, not only to vote, but also to comment in detail. The chairman is authorized to suspend voting on a proposal to enable more information to be obtained, or he may call for a second vote on a proposal if, in his opinion, important comments made by a member should be seen by all the members. Second votes have the same voting periods (about 60 days) and require the same majorities as those for original proposals (see below). Any member of the CNMMN who objects to a proposal may ask the chairman to suspend voting or to call for a new vote, but the final decision to do so rests with the chairman.

Abstracts of proposals dealing with "ore" minerals may be sent to some members of the IMA's Commission on Ore Mineralogy, at the discretion of the Chairman. Similarly, the chairman may submit abstracts of any proposals to other specialists for advisory opinions. Such advisors do not vote, but their comments are considered by the chairman. Serious objections raised by any advisors are to be treated by the chairman as specified above.

Proposals dealing with minerals belonging to mineral groups for which subcommittees have been organized by the CNMMN may be sent to the appropriate subcommittee chairman for circulation among the subcommittee members if the CNMMN chairman thinks that such action is advisable. Subcommittee members are invited to submit opinions, and serious objections raised by them are to be treated as specified above.

If two or more proposals for the same new mineral are received by the chairman, the proposal that arrived first in the chairman's office will have priority.

A proposed new mineral will be considered approved if more than half ($\frac{1}{2}$) of the members of the CNMMN vote on the proposal, and if more than two-thirds ($\frac{2}{3}$) of these members have voted 'yes'. A proposed name will be considered approved if more than one-half ($\frac{1}{2}$) of the members who vote on the proposal vote 'yes'. In assessing the voting results, an abstention is treated as a negative vote. After the voting on a proposal is completed, the chairman sends the results to the CNMMN members and to the author of the proposal. He includes the comments of the voting members, but the votes of individual members are not disclosed. Reconsideration of adverse votes can be requested by an author at any time if *significant new data or new interpretations* are obtained. If a mineral is approved, but not the name, a new name should be requested by the chairman when he notifies the author of the voting results. In cases of repeat voting, approvals of the mineral and the name require the same majorities as in the original voting.

Authors who have described new minerals without names do not have any priority rights on the subsequent naming of such minerals. Any names proposed subsequently have to be approved by the CNMMN, as do the minerals for which the names are proposed.

The publication of non-approved names or the names of non-approved minerals is not condoned. Non-approved minerals for which descriptions have been published should be treated as *unnamed minerals* and fall under the provisions of the preceding paragraph.

REDEFINITION, DISCREDITATION OR REVALIDATION OF MINERALS

Wherever possible, the redefinition or discreditation of a mineral should be based on a study of type material. If a type specimen exists and if the original description, though faulty, represents a reasonable approximation to material on the specimen, the mineral is to be defined by reference to the type material rather than to the original description. This means that errors in the original description cannot be held to discredit a mineral unless the original description was so grossly inaccurate that, in the words of J.D. Dana (1868) "a recognition of the mineral by means of it is impossible". If type material cannot be obtained for study, the investigator may propose a neotype to the CNMMN, clearly stating the efforts made to seek the original type-specimen. Both the acceptance of the neotype and approval of the proposal are within the authority of the CNMMN.

If a mineral is shown to be a mixture and one of the components is otherwise new, the name should usually be transferred to the new phase; a proposal to do this must also be approved by the CNMMN before publication.

If the original authors of the mineral to be discredited or redefined are alive, the author of the discreditation or redefinition proposal should write to the original authors asking them to comment on the proposal; these comments should accompany the submission to the CNMMN. The vice-chairman may also choose to contact the original authors independently.

Minor modifications to the definition of a particular mineral do not need to be referred to the CNMMN, but substantial ones do. In general, a redefinition that requires approval by the CNMMN is a) one that adds or deletes one or more chemical components essential to the definition of the mineral, b) proposes a new compositional limit to a member of a solid-solution series, or c) proposes important changes in the structure of the mineral. In case of doubt, the redefinition proposal should be sent to the vice-chairman of the CNMMN for a ruling.

A mineral name may be discredited if it can be shown that the mineral is identical to another one that has priority, or if the name is misleading. All such cases must be submitted to the vice-chairman of the CNMMN for approval.

Example: A case similar to that of johachidolite (*Amer. Mineral.* **62**, 327), in which the elements H, Na and F were found not to be essential to the mineral, requires approval.

Example: A case similar to that of sarcolite (*Mineral. Mag* **48**, 107), in which it was shown that F is essential to the mineral, requires approval.

Example: A case similar to that of hauchecornite (*Mineral. Mag.* **43**, 873) in which it was shown that ordering of Bi, As, Sb and Te on two structural sites warranted redefinition of the original name and the introduction of three new mineral names for end members, requires approval.

Example: A case similar to that of minerals in the amphibole group, in which compositional limits to members of solid-solution series were proposed (*Amer. Mineral.* **63**, 1023), requires approval.

Example: A case similar to that of pierrotite (*Z. Krist.* **165**, 209), in which one S atom was subtracted from the formula, does not require approval because no essential elements are added or deleted, only their proportion has changed. However, if this change had also been accompanied by a change in symmetry of the mineral, then approval would have been required.

Example: A case similar to that of onoratoite, originally described as triclinic, but later found to be monoclinic (*Acta Cryst.* C40, 1506), requires approval.

Example: A case similar to that of mohsite, which was discredited (*Can. Mineral.* 17, 635) because re-examination of a type specimen showed that it is essentially similar to crichtonite, which has priority over mohsite, requires approval.

Example: A case similar to that of ferroschallerite, which was discredited because re-examination of type material showed that it was not the Fe analogue of schallerite and that it did not have the schallerite structure (*Mineral. Mag.* 48, 271) requires approval.

A discredited name (a list is provided in Appendix 1) should not be used in the literature except to report its discreditation. However, if there is evidence that a previously discredited mineral is valid, a proposal to revalidate the name should be submitted to the CNMMN for consideration.

The treatment of proposals for redefinition, discreditation or revalidation is analogous to that for the introduction of a new mineral name, and more than a two-thirds majority is required to approve such proposals.

SELECTION OF A MINERAL NAME

Adjectival modifiers

In mineralogical nomenclature, it is important to distinguish the name proper from adjectival modifiers that may precede the name and are not connected to it. An adjectival modifier is not considered to be part of the mineral name, and is normally used to indicate a compositional variant, *e.g.*, *ferroan* manganotantalite, where *ferroan* is the adjectival modifier that indicates the presence of some ferrous iron, and manganotantalite is the name proper. The adjectival modifiers recommended by Schaller (1930) have generally been used in papers published in the English language, but with the greatly increased information about valence states that has become available since that time, it seems appropriate to draw up a new list.

A complete consensus could not be reached by members of the CNMMN on several adjectival modifiers. Although the CNMMN generally recommends that Latin-derived prefixes should be used wherever possible (Hey & Gottardi 1980), a substantial number of members feel more comfortable with prefixes derived from common English names of chemical elements, *e.g.*, sodium *versus* natrium and potassium *versus* kalium. In such cases, either version is regarded as acceptable. Following is a list of adjectival modifiers approved by the CNMMN:

Ag	argentian		
Al	aluminian		
As ³⁺	arsenoan	As ⁵⁺ arsenian (AsO ₄) ³⁻ arsenatian	(AsO ₃) ³⁻ arsenitian
Au	aurian		
B	borian	(BO ₃) ³⁻ boratoan	(BO ₄) ⁵⁻ boratian
Ba	barian		
Be	beryllinan		
Bi ³⁺	bismuthoan	Bi ⁵⁺ bismuthian (BrO ₃) ⁻ bromatian	(BiO ₄) ⁵⁻ bismuthatian
Br	bromian	(CO ₃) ²⁻ carbonatian	
C	carbonian		
Ca	calcian		
Cd	cadmian		
Ce ³⁺	ceroan	Ce ⁴⁺ cerian	
Cl	chlorian	(ClO ₂) ⁻ chloratian	
Co ²⁺	cobaltoan	Co ³⁺ cobaltian	
Cr	chromian	(CrO ₄) ²⁻ chromatian	
Cs	caesian or cesian		
Cu ⁺	cuproan	Cu ²⁺ cuprian	
Dy	dysprosian		
Er	erbian		
Eu ²⁺	europoan	Eu ³⁺ europian	
F	fluorian		
Fe ²⁺	ferroan	Fe ³⁺ ferrian	
Fr	francian		
Ga	gallian		
Gd	gadolinian		
Ge	germanian	(GeO ₄) ⁴⁻ germanatian	

H	hydrogenian	(OH) ⁻ hydroxylian (H ₃ O) ⁺ hydronian or oxonian H ₂ O hydrated or hydrous	
Hf	hafnian		
Hg ⁺	mercuroan	Hg ²⁺ mercurian	
Ho	holmian		
I	iodian	(IO ₃) ⁻ iodatian	
In	indian		
Ir	iridian		
K	kalian or potassian		
La	lanthanian		
Li	lithian		
Lu	lutecian		
Mg	magnesian		
Mn ²⁺	manganoan	Mn ³⁺ or Mn ⁴⁺ manganian	
Mo	molybdian	(MoO ₄) ²⁻ molybdatian	
N	nitrian	(NO ₃) ⁻ nitratian	
NH ₄	ammonian		
Na	natrion or sodian		
Nb	niobian	(NbO ₄) ³⁻ niobatian	
Nd	neodymian		
Ni ²⁺	nickeloan	Ni ³⁺ nickelian	
O	oxygenian		
Os	osmian		
P	phosphorian	(PO ₄) ³⁻ phosphatian	
Pb ²⁺	plumboan	Pb ⁴⁺ plumbian	
Pd ²⁺	palladoan	Pd ⁴⁺ palladian	
Pr	praseodymian		
Pt ²⁺	platinoan	Pt ⁴⁺ platinian	
Ra	radian		
Rb	rubidian		
Re	rhenian		
Rh	rhodian		
Ru	ruthenian		
S	sulphurian or sulfurian;	(SO ₄) ²⁻ sulphatian or sulfatian;	(SO ₃) ²⁻ sulphitian or sulfitian
Sb ³⁺	antimonoan or stiboan	Sb ⁵⁺ antimonian or stibian	(SbO ₄) ³⁻ antimonatian or stibatian
Sc	scandian		
Se	selenian	(SeO ₄) ²⁻ selenatian	(SeO ₃) ²⁻ selinitian
Si	silician	(SiO ₄) ⁴⁻ silicatian	
Sm	samarian		
Sn ²⁺	stannoan	Sn ⁴⁺ stannian	
Sr	strontian		
Ta	tantalian		
Tb	terbian		
Te	tellurian	(TeO ₄) ²⁻ telluratian	(TeO ₃) ²⁻ telluritian
Th	thorian		
Ti ³⁺	titanoan	Ti ⁴⁺ titanian	
Tl ⁺	thalloan	Tl ³⁺ thallian	
Tm	thulian		
U ⁴⁺	uranoan	U ⁶⁺ uranian	(UO ₂) ²⁺ uranylian
V ²⁺	vanadoan	V ⁵⁺ vanadian (VO) ²⁺ vanadylian (WO ₄) ²⁻ wolframatian or tungstatian	(VO ₄) ³⁻ vanadatian
W	wolframian or tungstenian		
Y	yttrian		
Yb	ytterbian		
Zn	zincian		
Zr	zirconian		

In constructing an adjectival modifier that is not in the above list, the ending *oan* is to be used for the ion with the lower valency, and *ian* for the higher. If the valency of an element in a particular mineral is not known, the adjectival modifier derived from the more likely, or more common, valence state of the element should be used.

An adjectival modifier is an adjective that gives some information on the chemistry of the mineral, and is not considered to be a part of the mineral name. Adjectival modifiers should therefore be ignored in the preparation of alphabetical indexes. In some papers, an adjectival modifier is given in the form of a hyphenated chemical prefix, *e.g.*, Li-tosudite, rather than lithian tosudite or lithium-bearing tosudite. Such usage is *incorrect and should be avoided*.

Group and varietal names

A mineral name may be used for a group of minerals, *e.g.*, mica, or for a mineral species, *e.g.*, muscovite. Sometimes the species name is also used as a group name, *e.g.*, the pyrite species is a member of the pyrite group. In the past, varieties of minerals have been given special names (*e.g.*, kunzite, a variety of spodumene), but this practice is not approved.

Selection of a name

Naming a new mineral is the prerogative and responsibility of the senior author of the proposal submitted to the CNMMN for approval, but the choice of a new name is governed by the following guidelines:

The name must be sufficiently different from existing ones to prevent confusion, both in the author's language and in others. Existing mineral nomenclature already displays a number of examples of unfortunate names that are easily confused; names such as celadonite and caledonite, or mallardite and mallardite can easily be mis-spelled; names such as rhodosite, rhodizite and rhodusite are euphonicly very similar. Introduction of new names that can create similar problems must be avoided.

If the new mineral is related to an existing one, it is desirable that this relationship be indicated by the new name, *e.g.*, clinoenstatite for the monoclinic dimorph of enstatite, or magnesiocopiapite for the Mg analogue of copiapite. Such a name should consist of one word only (*e.g.*, magnesiocopiapite, *not* magnesium copiapite).

Efforts should be made to choose a simple name rather than an excessively complicated one that may be difficult to read or pronounce.

The use of excessively long names should be avoided, as these may cause difficulties in pronunciation, tabulations, and computer data-bases.

The name of a mineral with essential rare-earth elements (or the chemically related elements Y or Sc) must have a suffix indicating the dominant rare-earth element, *e.g.*, bastnäsité-(Ce), and if a new mineral with the same structure and analogous composition, but with a different dominant rare-earth element, is discovered, it should be given a name that is analogous to that of the existing mineral, *e.g.*, bastnäsité-(Y). A suffix of this type is known as a 'Levinson modifier' after the author who introduced this procedure (Levinson 1966). The CNMMN recently decided that the names of all minerals containing essential rare-earth elements, including those introduced into the literature before the publication of Levinson's paper should be changed into the approved format. A list of these mineral names is given as Appendix 2.

In a few cases, a similar procedure has been used for minerals that do not contain rare-earth elements, and which can contain different substituting elements in one or more structural sites, *e.g.*, jahnsité-(CaMnMg). In general, this type of nomenclature is acceptable in cases where only one substituting element is suffixed, but suffixes consisting of multiple elements are conditionally acceptable in cases where the structure is complex, and use of such suffixes simplifies the nomenclature.

Suffixes can also be used to indicate crystallographic relationships. This usage has already been noted in the case of polytypes, but it has also recently been extended to minerals that are not polytypes according to the rigorous definition, *e.g.*, hilgardite-3Tc (Ghose 1985).

Relationships to other minerals can also be indicated by the use of prefixes, *e.g.*, clinoenstatite, the monoclinic dimorph of enstatite, or magnesiochromite, the Mg analogue of chromite. The use of a hyphen to distinguish the prefix from the root name is to be discouraged, but where an unhyphenated name is awkward, and a hyphen assists in deciphering the name, it may be used, *e.g.*, hydroxyl-bastnäsité-(Ce).

Where a chemical prefix is used, Latin-derived prefixes should be used wherever possible, *e.g.*, "ferro" instead of "iron", "plumbo" instead of "blei", *etc.* (Hey & Gottardi 1980).

The prefix is an integral part of the mineral name, and should generally be treated as such in the

preparation of alphabetical indexes; however, an exception can be made in the case of prefixed symbols such as Greek letters of their spelled-out Latin equivalents. A recent decision by the CNMMN permits their positioning after the main name; *e.g.*, β -roselite may be written as roselite- β or roselite-beta.

If the mineral is named after a person with a space or a capital letter in the name, the name should be modified to eliminate them (*e.g.*, mcnearite, *not* mcNearite; joesmithite, *not* joe smithite). Otherwise, the original spelling of the person's name should be retained. If the mineral is to be named after a living person, that person's permission must be obtained by the author, and this should be done prior to the submission of the proposal to the CNMMN. When deciding to name a mineral after a person, it is well to recall J.D. Dana's (1854) precept: "It should be remembered that the use of names of persons eminent in other sciences, or of such as are ignorant of all science, is wholly at variance with good usage and propriety; moreover, an attempted flattery of the politically distinguished is degrading to science, and cannot be too strongly discountenanced".

Although the CNMMN does not have a fixed policy on the use of compounded personal names, some members feel strongly that they should be discouraged, particularly where they become cumbersome or cacophonous, or where they unnecessarily distort the true names of the individual who is supposedly being honored.

If the mineral is to be named after a geographical occurrence, care must be taken to ensure that the spelling conforms to that in use at the locality; it should not be taken from translations.

Mineral names proposed in languages that use other than the Latin alphabet shall be transliterated into the Latin alphabet according to the prevalent system operative in the country of origin. In the case of Cyrillic names, transliteration shall follow the British Standard System, which has been adopted by the CNMMN.

Diacritical marks must be retained wherever possible, but it is recognized that not all printing establishments have the necessary facilities for printing all types of diacritical marks; in such cases diacritical marks may be omitted.

Re-use of a discredited or obsolete name for a new or redefined mineral is to be discouraged, except when the new mineral is a component of a mixture originally described as a single mineral; in such a case, the original name may be transferred to the new phase. Re-use of a discredited name may also be permitted if there is a good reason why the discredited name is particularly appropriate for the mineral in question, and the discredited or obsolete name has not appeared in the active literature (except for the report of its discreditation) for *fifty years*. A proposal to re-use an obsolete name must be accompanied or preceded by a proposal to discredit the obsolete name. If the CNMMN does not approve a proposal to re-use a discredited name, the author of the proposal has no priority for the use of the discredited name, although he is free to propose the name again at a future time.

The re-use of an obsolete or discredited name will not be permitted if the name has been used outside the field of mineralogy (*e.g.*, in petrography, metallurgy, paleontology, *etc.*), or to indicate two or more minerals.

If an artificial substance has been given a name, and a mineral corresponding to that substance is subsequently discovered, the name given to the artificial substance does not necessarily have to be applied to the mineral.

PUBLICATION OF THE DESCRIPTIONS OF APPROVED MINERALS

Authors of approved proposals should publish descriptions of the minerals covered by these proposals within *two* years of being notified of the approval by the chairman or vice-chairman. If new-mineral descriptions, discreditations, redefinitions or revalidations are not published within that time, the proposals are no longer considered as approved. Any extensions of this deadline must be approved by the chairman or vice-chairman, as appropriate.

ADVICE TO EDITORS

Editors of mineralogical and geological journals will do a service to the earth sciences if they cooperate fully with the CNMMN. All aspects of the nomenclature in submitted manuscripts should be evaluated according to the guidelines given here, and assurances should be sought from authors that they have submitted all matters dealing with mineral nomenclature to the CNMMN, and that their proposals have been approved. Unless they have definite proof of approval, editors should consult with their national representatives, or with members of the CNMMN executive. Editors should be particularly cautious about the final acceptance of a paper bearing phrases like "has been submitted" or "will be submitted" to the

CNMMN. Acceptance of such papers should be delayed until evidence is produced that the nomenclature *has been approved* by the CNMMN.

In the case of new minerals, editors should insist on evidence that a type specimen of the new mineral has been lodged in at least one major museum or a nationally recognized mineral collection.

It would be appreciated if all journals that publish mineralogical papers included the following statement in their instructions to authors: "This journal follows the rules of the Commission on New Minerals and Mineral Names of the IMA in all matters concerning mineral names and nomenclature."

ACKNOWLEDGEMENTS

National representatives on the CNMMN made substantial contributions to this document by their comments and suggestions during its preparation. The authors are also grateful for helpful suggestions made by Dr. P. Bayliss, editor of the JCPDS Mineral Powder Diffraction File.

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Received April 2, 1987.

APPENDIX 1. DISCREDITED MINERAL NAMES

Following is a list of mineral names discredited by the CNMMN. The names in the 'Discredited Name' column should not appear in publications; where there is a name in the "Approved Name" column, that should be used instead.

<i>Discredited Name</i>	<i>Approved Name</i>	<i>Reference</i>
Abkhazite	Tremolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Abriachanite	Riebeckite	<i>Amer. Mineral.</i> 63 (1978), 1023
Absite	Brannerite	<i>Amer. Mineral.</i> 48 (1963), 1419
Abukumalite	Britholite-(Y)	<i>Amer. Mineral.</i> 51 (1966), 152
Achrematite	Mixture	<i>Amer. Mineral.</i> 62 (1977), 170
Achromaite	Hornblende	<i>Amer. Mineral.</i> 63 (1978), 1023
Actinote	Actinolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Actynolin	Actinolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Actynolite	Actinolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Adelpholite	Samarskite-(Y)	<i>Amer. Mineral.</i> 51 (1966), 1553
Aktinolitischer tschermakite	Magnesian- or ferro-hornblende	<i>Amer. Mineral.</i> 63 (1978), 1023
Alaskaite	Mixture	<i>Amer. Mineral.</i> 58 (1973), 349
Alazanite		<i>Mineral. Mag.</i> 43 (1980), 1055
Albrittonite		<i>Amer. Mineral.</i> 67 (1982), 156
Aldzhanite		<i>Mineral. Mag.</i> 43 (1980), 1055
Alkali-femaghastingsite	Sodian potassian magnesian hastingsite	<i>Amer. Mineral.</i> 63 (1978), 1023
Alkali-ferrohastingsite	Sodian potassian hastingsite	<i>Amer. Mineral.</i> 63 (1978), 1023
Alkali-hastingsite	Sodian potassian (hastingsite to magnesian hastingsite)	<i>Amer. Mineral.</i> 63 (1978), 1023
Allcharite	Goethite	<i>Bull. Minéral.</i> 92, (1969), 99
Allemontite	Stibarsen	<i>Mineral. Mag.</i> 46 (1982), 513
Alleverdite	Rectonite	<i>Amer. Mineral.</i> 49 (1964), 446
Allopalladium	Stibiopalladinite	<i>Amer. Mineral.</i> 63 (1978), 796
Almbosite		this paper
Almeriite	Natroalunite	<i>Mineral. Mag.</i> 33 (1962), 353
Alpha-catapleite	Gaidonnayite	<i>Can. Mineral.</i> 16 (1978), 195
Altmarkite		<i>Mineral. Mag.</i> 43 (1980), 1055
Aluminobetafite		<i>Mineral. Mag.</i> 36 (1967), 133
Alumobritholite		<i>Mineral. Mag.</i> 36 (1967), 133
Alumocobaltomelane		<i>Mineral. Mag.</i> 33 (1962), 261
Alumoferroascharite	Mixture	<i>Amer. Mineral.</i> 49 (1964), 1501
Ameletite	Nepheline & mixture	<i>Mineral. Mag.</i> 36 (1968), 438
Amiant(h)	Asbestos	<i>Amer. Mineral.</i> 63 (1978), 1023
Amianthinite	Asbestos	<i>Amer. Mineral.</i> 63 (1978), 1023
Amianthoide	Asbestos	<i>Amer. Mineral.</i> 63 (1978), 1023
Amianthus	Asbestos	<i>Amer. Mineral.</i> 63 (1978), 1023
Amosite	Asbestiform grunerite or anthophyllite pre 1948	<i>Amer. Mineral.</i> 63 (1978), 1023
Ampangabeite	Samarskite-(Y)	<i>Mineral. Mag.</i> 33 (1962), 262
Amphibole-anthophyllite	Cumingtonite	<i>Amer. Mineral.</i> 63 (1978), 1023
Amphibolite	Hornblende	<i>Amer. Mineral.</i> 63 (1978), 1023
Analcite	Analcime	<i>Mineral. Mag.</i> 43 (1980), 1053
Anarakite		<i>Mineral. Mag.</i> 43 (1980), 1055
Anauxite	Kaolinite	<i>Amer. Mineral.</i> 54 (1969), 206
Anophorite	Titanian calcian magnesian-arfvedsonite	<i>Amer. Mineral.</i> 63 (1978), 1023
Anthogrammatite	Anthophyllite	<i>Amer. Mineral.</i> 63 (1978), 1023
Anthogrammite	Anthophyllite	<i>Amer. Mineral.</i> 63 (1978), 1023
Antholite	Anthophyllite and cumingtonite	<i>Amer. Mineral.</i> 63 (1978), 1023
Antholith	Anthophyllite	<i>Amer. Mineral.</i> 63 (1978), 1023
Anthophylline	Anthophyllite	<i>Amer. Mineral.</i> 63 (1978), 1023
Anthophyllite rayonnée	Anthophyllite	<i>Amer. Mineral.</i> 63 (1978), 1023
Antiglaucophane	Glaucophane or crossite	<i>Amer. Mineral.</i> 63 (1978), 1023
Arfvedsonite	Arfvedsonite	<i>Amer. Mineral.</i> 63 (1978), 1023

Argentocuproaurite		<i>Mineral. Mag.</i> 43 (1980), 1055
Arsenate-belovite	Talmessite	this paper
Arsenodialytite		<i>Bull. Minéral.</i> 97 , (1974), 520
Asbeferrite	Asbestos	<i>Amer. Mineral.</i> 63 (1978), 1023
Asbestinite	Asbestos	<i>Amer. Mineral.</i> 63 (1978), 1023
Asbestoïde	Asbestos	<i>Amer. Mineral.</i> 63 (1978), 1023
Asbestus	Asbestos	<i>Amer. Mineral.</i> 63 (1978), 1023
Asharite	Szajbelyite	this paper
Ashtonite	Strontian mordenite	<i>Mineral. Mag.</i> 38 (1971), 383
Astochite	Manganoan richterite	<i>Amer. Mineral.</i> 63 (1978), 1023
Astorit(e)	Richterite	<i>Amer. Mineral.</i> 63 (1978), 1023
Astrakanite	Blödite	this paper
Astrolite	Muscovite	<i>Amer. Mineral.</i> 57 (1972), 993
Aurocuprite		<i>Mineral. Mag.</i> 43 (1980), 1055
Azorpyrrhite		<i>Amer. Mineral.</i> 62 (1977), 403
Bababudanite	Magnesio-riebeckite	<i>Amer. Mineral.</i> 63 (1978), 1023
Badenite	Mixture	<i>Mineral. Mag.</i> 47 (1983), 411
Balavinskite		<i>Mineral. Mag.</i> 38 (1971), 103
Bärceñite	Cinnabar + romeite	<i>Can. Mineral.</i> 24 (1986) 591
Barium alumopharmacosiderite		<i>Mineral. Mag.</i> 38 (1971), 103
Barium pharmacosiderite		<i>Mineral. Mag.</i> 38 (1971), 103
Barkevicite	Ferroan or ferro- pargasitic hornblende	<i>Amer. Mineral.</i> 63 (1978), 1023
Barkevikite	Ferroan or ferro- pargasitic hornblende	<i>Amer. Mineral.</i> 63 (1978), 1023
Barsanovite	Eucolite	<i>Amer. Mineral.</i> 54 (1969), 1499
Basaltic hornblende	An oxyhornblende, often ferri- or ferrian titanian (magnesio- or magnesian hastingsite)	<i>Amer. Mineral.</i> 63 (1978), 1023
Basaltine	Oxyhornblende + augite	<i>Amer. Mineral.</i> 63 (1978), 1023
Basiliite	Hausmannite + feiknechite	<i>Amer. Mineral.</i> 58 (1973), 562
Bedenite	Ferrian actinolitic hornblende	<i>Amer. Mineral.</i> 63 (1978), 1023
Belovite (of Nefedov)	Talmessite	this paper
Bergamaschite	Hastingsite	<i>Amer. Mineral.</i> 63 (1978), 1023
Bergamaskite	Hastingsite	<i>Amer. Mineral.</i> 63 (1978), 1023
Bergflachs	Asbestos	<i>Amer. Mineral.</i> 63 (1978), 1023
Bergfleisch	Asbestos	<i>Amer. Mineral.</i> 63 (1978), 1023
Berghaar	Asbestos	<i>Amer. Mineral.</i> 63 (1978), 1023
Berghaut	Asbestos	<i>Amer. Mineral.</i> 63 (1978), 1023
Bergholz	Asbestos	<i>Amer. Mineral.</i> 63 (1978), 1023
Bergkork	Asbestos	<i>Amer. Mineral.</i> 63 (1978), 1023
Bergpapier	Asbestos	<i>Amer. Mineral.</i> 63 (1978), 1023
Bergwolle	Asbestos	<i>Amer. Mineral.</i> 63 (1978), 1023
Beryllium sodalite	Tugtupite	<i>Amer. Mineral.</i> 48 (1963), 1178
Beryllsodalite	Tugtupite	<i>Amer. Mineral.</i> 46 (1961), 241
Beta-alumohydrocalcite		<i>Mineral. Mag.</i> 36 (1967), 133
Beta-brocenite		<i>Mineral. Mag.</i> 43 (1980), 1055
Beta-lomonosovite		<i>Mineral. Mag.</i> 36 (1967), 133
Bialite	Wavellite	<i>Mineral. Mag.</i> 37 (1969), 123
Bidalotite	Gedrite	<i>Amer. Mineral.</i> 63 (1978), 1023
Bisbeeite	Chrysocolla	<i>Mineral. Mag.</i> 43 (1980), 1054
Biteplapalladite	Merenskyite	this paper
Biteplatinitite	Moncheite	this paper
Blanchardite	Brochantite	<i>Amer. Mineral.</i> 58 (1973), 562
Blende	Sphalerite	<i>Mineral. Mag.</i> 43 (1980), 1053
Bloedite	Blödite	<i>Mineral. Mag.</i> 33 (1962), 263
Blomstrandite	Uranpyrochlore	<i>Amer. Mineral.</i> 62 (1977), 403
Boleslavite		<i>Mineral. Mag.</i> 36 (1967), 133

- Boodtite
 Borgniezite
 Bořickýite
 Breadalbanite
 Brocenite
 Bromyrite
 Brostenite
 Buryktalskite
 Byssolite
 Cacoclasite
 Calafatite
 Calamine
 Calamite
 Calciosamaraskite
 Calciotantalite
 Calcium-larsenite
 Calcium-rinkite
 Calciumhilgardite-2M(Cc)
 Calciumhilgardite-3Tc
 Carinthine
 Carnevallite
 Carphosiderite
 Carystine
 Castaingite
 Cataforite
 Cataphorite
 Catophorite
 Celestite
 Cerargyrite
 Cerolite
 Cerphosphorhuttonite
 Ceruranopyrochlore
 Chalcolumprite
 Chalcolite
 Challantite
 Chalybite
 Chengbolite
 Chernyshevite
 Chessylite
 Chiklite
 Chile-loweite
 Chlorarsenian
 Chlorhastingsite
 Chloropal
 Chlorotile
 Chromdisthene
 Chrome-tremolite
 Chromephlogopite
 Chrominium
 Chromsteigerite
 Cl-Tyretskite
 Clino-anthophyllite
 Clinoeulite
 Clinokupfferite
 Clinostrengite
 Clinovariscite
 Cobalt-frohbergite
 Heterogenite
 Sodian amphibole
 Hornblende
 Fergusonite-beta-(Ce)
 Bromargyrite
 Birnessite + todorokite
 Asbestos
 Mixture
 Alunite
 Hemimorphite
 Tremolite
 Uranian yttrropyrochlore
 Mixture
 Esperite
 Gotzenite
 Hornblende
 Hydronium jarosite
 Asbestos
 Katophorite
 Katophorite
 Katophorite
 Celestine
 Chlorargyrite
 Serpentine + stevensite
 Cerian pyrochlore
 Impure pyrochlore
 Torbernite
 Ferricopiapite
 Siderite
 Moncheite
 Sodium amphibole
 Azurite
 Manganooan ferri-ferro-richterite
 Humberstonite
 Allactite
 Nontronite
 Agardite-(Y)
 Tremolite or actinolite
 Phlogopite
 Phoenicochroite
 Hilgardite-1Tc
 Magnesio-cummingtonite
 Clinoferrosillite
 Cummingtonite
 Phosphosiderite
 Metavariscite
 Frohbergite
Mineral. Mag. 33 (1962), 253
Amer. Mineral. 63 (1978), 1023
 this paper
Amer. Mineral. 63 (1978), 1023
Mineral. Mag. 43 (1980), 1055
Mineral. Mag. 43 (1980), 1053
Mineral. Abstr. 74 -3408
Mineral. Mag. 33 (1962), 261
Amer. Mineral. 63 (1978), 1023
Amer. Mineral. 52 (1967), 929
Amer. Mineral. 48 (1963), 1184
Mineral. Mag. 43 (1980), 1053
Amer. Mineral. 63 (1978), 1023
Amer. Mineral. 62 (1977), 403
Mineral. Mag. 38 (1972), 765
Amer. Mineral. 50 (1965), 1170
Mineral. Mag. 33 (1962), 262
Mineral. Mag. 33 (1962), 261
Amer. Mineral. 63 (1978), 1023
Mineral. Mag. 43 (1980), 1055
 this paper
Amer. Mineral. 63 (1978), 1023
Mineral. Mag. 36 (1967), 133
Amer. Mineral. 63 (1978), 1023
Amer. Mineral. 63 (1978), 1023
Amer. Mineral. 63 (1978), 1023
Mineral. Mag. 43 (1980), 1053
Mineral. Mag. 43 (1980), 1053
Amer. Mineral. 50 (1965), 2111
Mineral. Mag. 36 (1968), 1144
Amer. Mineral. 62 (1977), 403
Amer. Mineral. 62 (1977), 403
Mineral. Mag. 43 (1980), 1053
Can. Mineral. 23 (1985), 53
Mineral. Mag. 43 (1980), 1053
Mineral. Mag. 43 (1980), 1055
Amer. Mineral. 63 (1978), 1023
Mineral. Mag. 43 (1980), 1053
Amer. Mineral. 63 (1978), 1023
Mineral. Abstr. 70-1634
Amer. Mineral. 58 (1973), 562
Mineral. Mag. 38 (1971), 103
Mineral. Mag. 43 (1980), 1053
Mineral. Mag. 37 (1970), 954
Mineral. Mag. 38 (1971), 103
Amer. Mineral. 63 (1978), 1023
Mineral. Mag. 43 (1980), 1055
Bull. Minéral. 95, (1972), 427
Mineral. Mag. 36 (1967), 133
Amer. Mineral. 70 (1985), 636
Amer. Mineral. 63 (1978), 1023
 this paper
Amer. Mineral. 63 (1978), 1023
Mineral. Mag. 43 (1980), 1053
Mineral. Mag. 43 (1980), 1053
 this paper

Cobaltocalcite	Sphero-cobaltite	<i>Mineral. Mag.</i> 43 (1980), 1053
Cobaltomelane		<i>Mineral. Mag.</i> 33 (1962), 261
Cocinerite	Mixture	<i>Amer. Mineral.</i> 52 (1967), 1214
Columbomicrolite	Pyrochlore	<i>Amer. Mineral.</i> 62 (1977), 403
Cossyrite	Aenigmatite	<i>Amer. Mineral.</i> 49 (1964), 821
Craigite		<i>Mineral. Mag.</i> 43 (1980), 1055
Crocidolite	Asbestiform riebeckite	<i>Amer. Mineral.</i> 63 (1978), 1023
Cryptonickel-melane		<i>Mineral. Mag.</i> 33 (1962), 261
Cuproartinite		<i>Amer. Mineral.</i> 67 (1982), 156
Cuprohydromagnesite		<i>Amer. Mineral.</i> 67 (1982), 156
Cuprouranite	Torbernite	<i>Mineral. Mag.</i> 43 (1980), 1053
Cyclo-wollastonite		<i>Mineral. Mag.</i> 43 (1980), 1055
Daschkesanit	Chlor potassian hastingsite	<i>Amer. Mineral.</i> 63 (1978), 1023
Dashke(s)sanit	Chlor potassian hastingsite	<i>Amer. Mineral.</i> 63 (1978), 1023
Dayingite		<i>Mineral. Mag.</i> 43 (1980), 1055
Dehrnite	Carbonatian fluorapatite	<i>Mineral. Mag.</i> 42 (1978), 282
Delatorreite	Todorokite	<i>Mineral. Mag.</i> 33 (1962), 262
Delorenzite	Tanteuxenite	<i>Mineral. Mag.</i> 33 (1962), 262
Deltaite	Mixture	<i>Mineral. Mag.</i> 33 (1962), 262
Desmine	Stilbite	<i>Mineral. Mag.</i> 43 (1980), 1053
Devillite	Devilleine	<i>Mineral. Mag.</i> 43 (1980), 1053
Deweylite	Mixture	<i>Amer. Mineral.</i> 47 (1962), 811
Dhanrasite		<i>Mineral. Mag.</i> 38 (1971), 103
Dialogite	Rhodochrosite	<i>Mineral. Mag.</i> 43 (1980), 1053
Diastatite	Hornblende	<i>Amer. Mineral.</i> 63 (1978), 1023
Didymolite	Plagioclase	<i>Amer. Mineral.</i> 50 (1965), 2111
Dillnite	Zunyite	<i>Amer. Mineral.</i> 46 (1961), 1519
Disthène	Cyanite/kyanite	this paper
Dixeyite		<i>Mineral. Mag.</i> 33 (1962), 261
Djalmaite	Uranmicrolite	<i>Amer. Mineral.</i> 62 (1977), 403
Dosulite		<i>Mineral. Mag.</i> 43 (1980), 1055
Doverite		<i>Mineral. Mag.</i> 33 (1962), 261
Doverite	Synchysite-(Y)	<i>Amer. Mineral.</i> 51 (1966), 152
Droogmansite	Kasolite	<i>Bull. Minéral.</i> 101 , (1978), 56
Dzhezkazganite		<i>Mineral. Mag.</i> 36 (1967), 133
Eardleyite	Takovite	<i>Amer. Mineral.</i> 62 (1977), 458
Ebelmenite	Cryptomelane	<i>Mineral. Mag.</i> 46 (1982), 513
Eckrite	Winchite	<i>Amer. Mineral.</i> 63 (1978), 1023
Eggonite	Kolbeckite	this paper
Eisenrichterite	Ferro-richterite	<i>Amer. Mineral.</i> 63 (1978), 1023
Ektropite	Caryopillite	<i>Amer. Mineral.</i> 49 (1964), 446
Ellsworthite	Uranpyrochlore	<i>Amer. Mineral.</i> 62 (1977), 403
Ellweilerite		<i>Mineral. Mag.</i> 33 (1962), 261
Elroquite	Mixture	<i>Amer. Mineral.</i> 48 (1963), 1421
Endeolite	Impure pyrochlore	<i>Amer. Mineral.</i> 62 (1977), 403
Epidesmine	Stilbite	<i>Amer. Mineral.</i> 53 (1968), 1066
Epigenite	Mixture	<i>Mineral. Mag.</i> 47 (1983), 411
Epilanthinite	Schoepite	<i>Mineral. Mag.</i> 33 (1962), 262
Erubescite	Bornite	<i>Mineral. Mag.</i> 43 (1980), 1053
Exitèle	Valentinite	<i>Mineral. Mag.</i> 43 (1980), 1053
Fahlerz	Tetrahedrite	<i>Mineral. Mag.</i> 43 (1980), 1053
Fairbanksite		<i>Mineral. Mag.</i> 36 (1968), 1144
Fasciculite	Hornblende	<i>Amer. Mineral.</i> 63 (1978), 1023
Feldspath	Feldspar	<i>Mineral. Mag.</i> 43 (1980), 1053
Felspar	Feldspar	<i>Mineral. Mag.</i> 43 (1980), 1053
Femaghastingsite	Magnesian hastingsite	<i>Amer. Mineral.</i> 63 (1978), 1023
Femolite		<i>Mineral. Mag.</i> 36 (1967), 133
Fenghuanglite		<i>Mineral. Mag.</i> 33 (1962), 261

Fengluanite	Isomertieite	<i>Amer. Mineral.</i> 65 (1980), 408
Feranthophyllite	Ferro-anthophyllite	<i>Amer. Mineral.</i> 63 (1978), 1023
Ferri-edenite	Ferro-edenite	<i>Amer. Mineral.</i> 63 (1978), 1023
Ferri-tremolite	Ferri-ferro-actinolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Ferrian pargasite	Sodian manganooan magnesio-hastingsite	<i>Amer. Mineral.</i> 63 (1978), 1023
Ferriglaucophane	Magnesio-riebeckite	<i>Amer. Mineral.</i> 63 (1978), 1023
Ferrihedrite	Ferri-gedrite	<i>Amer. Mineral.</i> 63 (1978), 1023
Ferripumpellyite	Julgoldite-(Mg)	<i>Can. Mineral.</i> 12 (1973), 219
Ferririchterite	Manganooan magnesio- arfvedsonite	<i>Amer. Mineral.</i> 63 (1978), 1023
Ferro-tremolite	Ferro-actinolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Ferroalunite		<i>Mineral. Mag.</i> 36 (1968), 1144
Ferrobabingtonite		<i>Mineral. Mag.</i> 38 (1971), 103
Ferrofillowite	Johnsomervilleite	this paper
Ferrohalotrichite		<i>Mineral. Mag.</i> 43 (1980), 1055
Ferrohastingsite	Hastingsite	<i>Amer. Mineral.</i> 63 (1978), 1023
Ferrolizardite		<i>Mineral. Mag.</i> 36 (1968), 1144
Ferroplatinum	Pt-Fe alloy	<i>Can. Mineral.</i> 13 (1975), 117
Ferropumpellyite	Pumpellyite-(Fe ²⁺)	<i>Can. Mineral.</i> 12 (1973), 219
Ferrostibian	Langbanite	<i>Amer. Mineral.</i> 53 (1968), 1779
Ferutite	Davidite-(La)	<i>Amer. Mineral.</i> 49 (1964), 447
Feuermineral		<i>Mineral. Mag.</i> 43 (1980), 1055
Fluochlore	Pyrochlore	<i>Amer. Mineral.</i> 62 (1977), 403
Forbesite	Cobaltoan annabergite + arsenolite	<i>Can. Mineral.</i> 14 (1976), 414
Foresite	Mixture	<i>Mineral. Mag.</i> 33 (1962), 262
Foucherite		this paper
Freyalite	Mixture	<i>Amer. Mineral.</i> 70 (1985), 1059
Frigidite	Mixture	<i>Mineral. Mag.</i> 43 (1979), 99
Gajite	Calcite + brucite	<i>Mineral. Mag.</i> 33 (1962), 262
Galenobornite		<i>Mineral. Mag.</i> 36 (1967), 133
Gamsigradite	Manganooan (magnesio- hornblende or edenite)	<i>Amer. Mineral.</i> 63 (1978), 1023
Gastaldite	Glaucophane	<i>Amer. Mineral.</i> 63 (1978), 1023
Gearksite	Gearksutite	<i>Mineral. Mag.</i> 33 (1962), 262
Gelzircon		<i>Mineral. Mag.</i> 36 (1967), 133
Gentnerite		<i>Mineral. Mag.</i> 36 (1968), 1144
Gersbyite	Lazulite	<i>Amer. Mineral.</i> 49 (1964), 1778
Giobertite	Magnesite	<i>Mineral. Mag.</i> 43 (1980), 1053
Girnarite	Subsilicic titanian sodian magnesian hastingsite	<i>Amer. Mineral.</i> 63 (1978), 1023
Glockerite	Lepidocrocite	<i>Amer. Mineral.</i> 62 (1977), 599
Glottalite	Chabazite	<i>Mineral. Mag.</i> 33 (1962), 262
Goongarrite	Cosalite + galena	<i>Amer. Mineral.</i> 49 (1964), 1501
Gouréite	Narsarsukite	<i>Amer. Mineral.</i> 46 (1961), 1520
Grammatit-strahlstein	Tremolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Grammatite	Tremolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Griqualandite	Crocidolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Grossularite	Grossular	<i>Mineral. Mag.</i> 43 (1980), 1053
Grothine	Norbergite	<i>Mineral. Record</i> 12 (1981), 377
Grünerite	Grunerite	<i>Amer. Mineral.</i> 63 (1978), 1023
Grünlingite	Joseite A / Bismuthinite	<i>Amer. Mineral.</i> 67 (1982), 855
Guanglinite		<i>Mineral. Mag.</i> 43 (1980), 1055
Gutsevichite		<i>Mineral. Mag.</i> 33 (1962), 261
Haddamite	Microlite	<i>Amer. Mineral.</i> 62 (1977), 403
Haematite	Hematite	<i>Mineral. Mag.</i> 43 (1980), 1053
Hanleite	Uvarovite	<i>Mineral. Mag.</i> 33 (1963), 508

Hatchettolite	Uranpyrochlore	<i>Amer. Mineral.</i> 62 (1977), 403
Heikkolite	Crossite	<i>Amer. Mineral.</i> 63 (1978), 1023
Heikolite	Crossite	<i>Amer. Mineral.</i> 63 (1978), 1023
Henwoodite	Turquoise	<i>Amer. Mineral.</i> 46 (1961), 1520
Herregrundite	Devilline	<i>Mineral. Mag.</i> 43 (1980), 1053
Heterotype	Amphibole + pyroxene	<i>Amer. Mineral.</i> 63 (1978), 1023
Heubachite	Nickelian heterogenite	<i>Mineral. Mag.</i> 33 (1962), 253
Hexabolit	Oxyhornblende	<i>Amer. Mineral.</i> 63 (1978), 1023
Hexagonite	Manganoan tremolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Hexastibiopalladite	Sudburyite	<i>Mineral. Mag.</i> 43 (1980), 1055
Hillängsite	Dannemorite	<i>Amer. Mineral.</i> 63 (1978), 1023
Hoefnerite	Chapmanite	<i>Amer. Mineral.</i> 50 (1965), 2110
Hoepfnerite	Tremolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Hogtveitite	Thalenite-(Y)	<i>Mineral. Mag.</i> 38 (1971), 102
Holzasbest	Asbestos	<i>Amer. Mineral.</i> 63 (1978), 1023
Hongquilit		this paper
Hormites		<i>Mineral. Mag.</i> 33 (1962), 261
Hudsonite	Hastingsite	<i>Amer. Mineral.</i> 63 (1978), 1023
Hydrargillite	Gibbsite	<i>Mineral. Mag.</i> 43 (1980), 1053
Hydroaimesite		<i>Mineral. Mag.</i> 33 (1962), 261
Hydrocalcite (of Marschner)		<i>Mineral. Mag.</i> 43 (1980), 1055
Hydrocastorite	Mixture	<i>Mineral. Mag.</i> 33 (1962), 262
Hydrocatapleiite		<i>Mineral. Mag.</i> 36 (1967), 133
Hydrocerite		<i>Mineral. Mag.</i> 33 (1962), 261
Hydrochlore	Pyrochlore	<i>Amer. Mineral.</i> 62 (1977), 403
Hydrocyanite	Chalcocyanite	this paper
Hydrohalloysite		<i>Mineral. Mag.</i> 36 (1967), 133
Hydrokassite		<i>Mineral. Mag.</i> 36 (1968), 1144
Hydromolysite		<i>Mineral. Mag.</i> 36 (1968), 1144
Hydronaujakasite		<i>Mineral. Mag.</i> 38 (1971), 103
Hydropyrochlore	Altered pyrochlore	<i>Amer. Mineral.</i> 62 (1977), 403
Hydrorinkite		<i>Mineral. Mag.</i> 43 (1980), 1055
Hydrosericite		<i>Mineral. Mag.</i> 36 (1968), 1144
Hydrosodalite		<i>Mineral. Mag.</i> 33 (1962), 261
Hydrougrandite		<i>Mineral. Mag.</i> 36 (1967), 133
Hydroxyl-ascharite		<i>Mineral. Mag.</i> 36 (1968), 1144
Hydroxyl-szajbelyite		<i>Mineral. Mag.</i> 36 (1968), 1144
Idocrase	Vesuvianite	this paper
Igalikite	Analcime + muscovite	<i>Mineral. Mag.</i> 33 (1962), 262
Igdloite	Lueshite	<i>Mineral. Mag.</i> 33 (1962), 261
Imerinite	Magneso-arfvedsonite	<i>Amer. Mineral.</i> 63 (1978), 1023
Imgreite		<i>Mineral. Mag.</i> 36 (1967), 133
Iodyrite	Iodargyrite	<i>Mineral. Mag.</i> 43 (1980), 1053
Iron-anthophyllite	Ferro-anthophyllite	<i>Amer. Mineral.</i> 63 (1978), 1023
Iron-hornblende	Oxy-manganoan potassian ferrian ferro-hornblende	<i>Amer. Mineral.</i> 63 (1978), 1023
Iron-richterite	Ferro-richterite	<i>Amer. Mineral.</i> 63 (1978), 1023
Isabellite	Richterite	<i>Amer. Mineral.</i> 63 (1978), 1023
Ishiganeite	Cryptomelane + birnessite	<i>Amer. Mineral.</i> 49 (1964), 448
Isoplatinocopper		<i>Mineral. Mag.</i> 43 (1980), 1055
Isowölframite		<i>Mineral. Mag.</i> 43 (1980), 1055
Jenkinsite	Ferroan antigorite	<i>Amer. Mineral.</i> 47 (1962), 783
Ježekite	Morinite	<i>Amer. Mineral.</i> 47 (1962), 398
Jiningite		<i>Mineral. Mag.</i> 33 (1962), 261
Johnstonotite	Spessartine	<i>Amer. Mineral.</i> 53 (1968), 1065
Juddite	Manganoan magneso- arfvedsonite	<i>Amer. Mineral.</i> 63 (1978), 1023
Julgoldite	Julgoldite-(Fe ²⁺)	<i>Can. Mineral.</i> 12 (1973), 219

- Kalamite
 Kalio-magnesio-katophorit
 Kamarezite
 Kanaekanite
 Karinthin
 Karpinskyite
 Khlopinite
 Khuniite
 Kidney stone
 Kievite
 Killinite
 Kirwanite
 Kivuite
 Kleberite
 Klipsteinite
 Kmaite
 Knipovichite
 Kokscharovite
 Kokscharowit
 Kolskite
 Koppite
 Kozhanovite
 Krokidolite
 Krokydolith
 Kupfferite (Allen & Clement)
 Kupfferite (Herman)
 Kupfferite (Koksharov)
 Kurgantaite
 Kusuite
 Kyanophyllite
 Kymatine
 Labrador hornblende
 Lamprobolite
 Lamprostibian
 Laneite
 Lavrovite
 Lazarevičite
 Leonhardtite
 Lesserite
 Lewistonite
 Linosite
 Lithionglaukophan
 Lithium-amphibole
 Liujinyinite
 Lodochnikite
 Lorettoite
 Macrokaolinite
 Maganthophyllite
 Magnesia-arfvedsonite
 Magnesian glaucophane
 Tremolite
 Titanian potassian richterite
 Brochantite
 Hornblende, often
 pargasitic hornblende
 Mixture
 Samarskite-(Y)
 Iranite
 Actinolite
 Cummingtonite
 Hydromuscovite
 Impure altered hornblende
 Neotocite
 Alumohydrocalcite
 Edenitic amphibole
 Edenitic amphibole
 Lizardite + sepiolite
 Pyrochlore
 Karnasurtite
 Crocidolite
 Crocidolite
 Magnesio-anthophyllite
 Chromian anthophyllite
 Chromian anthophyllitic
 amphibole
 Strontian tyretskite + celestine
 Wakefieldite-(Ce)
 Paragonite + muscovite
 Asbestos
 Orthopyroxene
 Oxyhornblende
 Melanostibian
 Ferroan or ferro-
 pargasitic hornblende
 Chromian diopside
 Starkeyite
 Inderite
 Carbonatian fluorapatite
 Ferri- or ferrian oxy-kaersutite
 Holmquistite
 Lithian amphibole,
 holmquistite and
 clino-holmquistite
 Uytengbaardite
 Brannerite
 Magnesio-anthophyllite
 Magnesio-arfvedsonite
 Glaucophane
Amer. Mineral. **63** (1978), 1023
Amer. Mineral. **63** (1978), 1023
Amer. Mineral. **50** (1965), 1450
Mineral. Mag. **46** (1982), 514
Amer. Mineral. **63** (1978), 1023
Amer. Mineral. **57** (1972), 1006
Amer. Mineral. **57** (1972), 329
Amer. Mineral. **61** (1976), 186
Amer. Mineral. **63** (1978), 1023
Amer. Mineral. **63** (1978), 1023
Mineral. Mag. **48** (1984), 566
Amer. Mineral. **63** (1978), 1023
Mineral. Mag. **33** (1962), 261
 this paper
Mineral. Mag. **42** (1978), 279
Mineral. Mag. **36** (1967), 133
Amer. Mineral. **61** (1976), 341
Amer. Mineral. **63** (1978), 1023
Amer. Mineral. **63** (1978), 1023
Amer. Mineral. **59** (1974), 212
Amer. Mineral. **62** (1977), 403
Mineral. Mag. **33** (1962), 262
Amer. Mineral. **63** (1978), 1023
Amer. Mineral. **63** (1978), 1023
Amer. Mineral. **63** (1978), 1023
Amer. Mineral. **63** (1978), 1023
Amer. Mineral. **63** (1978), 1023
Mineral. Mag. **46** (1982), 514
Bull. Minéral. **109**, (1986), 30
Amer. Mineral. **58** (1973), 807
Amer. Mineral. **63** (1978), 1023
Amer. Mineral. **63** (1978), 1023
Amer. Mineral. **63** (1978), 1023
Amer. Mineral. **53** (1968), 1779
Amer. Mineral. **63** (1978), 1023
Neues Jahrb. Mineral. Monatsh.
 (1979), 189
Mineral. Mag. **33** (1962), 261
Mineral. Record **6** (1975), 144
Mineral. Mag. **33** (1962), 262
Mineral. Mag. **42** (1978), 282
Amer. Mineral. **63** (1978), 1023
Amer. Mineral. **63** (1978), 1023
Amer. Mineral. **63** (1978), 1023
 this paper
Amer. Mineral. **48** (1963), 1419
Amer. Mineral. **64** (1979), 1303
Mineral. Mag. **43** (1980), 1055
Amer. Mineral. **63** (1978), 1023
Amer. Mineral. **63** (1978), 1023
Amer. Mineral. **63** (1978), 1023

Magnesiolaumontite		<i>Mineral. Mag.</i> 36 (1967), 133
Magnesium anthophyllite	Magnesio-anthophyllite	<i>Amer. Mineral.</i> 63 (1978), 1023
Magnesium szomolnokite		<i>Mineral. Mag.</i> 33 (1962), 261
Magnetostibian	Jacobsite	<i>Amer. Mineral.</i> 58 (1973), 562
Magnioborite	Suanite	<i>Amer. Mineral.</i> 48 (1963), 915
Magnodravite		<i>Mineral. Mag.</i> 36 (1968), 1144
Magnophorite	Titanian potassian richterite	<i>Amer. Mineral.</i> 63 (1978), 1023
Maigruen		<i>Mineral. Mag.</i> 43 (1980), 1055
Mangan amphibole	Rhodonite	<i>Amer. Mineral.</i> 63 (1978), 1023
Manganandalusite	Manganoan andalusite	this paper
Mangan crocidolite	Manganoan riebeckite	<i>Amer. Mineral.</i> 63 (1978), 1023
Mangan krokidolith	Manganoan riebeckite	<i>Amer. Mineral.</i> 63 (1978), 1023
Mangan-actinolite	Manganoan actinolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Mangan-tremolite	Manganoan tremolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Mangano-anthophyllite	Tirodite	<i>Amer. Mineral.</i> 63 (1978), 1023
Manganomelane	Psilomelane	<i>Mineral. Mag.</i> 46 (1982), 513
Manganomossite	Manganocolumbite	<i>Mineral. Mag.</i> 33 (1962), 262
Manganosteenstrupine		<i>Mineral. Mag.</i> 33 (1962), 261
Manganseverginite		<i>Mineral. Mag.</i> 38 (1971), 103
Mangantapiolite	Manganotapiolite	<i>Amer. Mineral.</i> 70 (1985), 217
Manganuralite	Manganoan magnesio- arfvedsonite	<i>Amer. Mineral.</i> 63 (1978), 1023
Marignacite	Ceripyrochlore-(Ce)	<i>Amer. Mineral.</i> 62 (1977), 403
Marmairolite	Manganoan richterite	<i>Amer. Mineral.</i> 63 (1978), 1023
Matorolite		<i>Mineral. Mag.</i> 38 (1971), 103
Mboziite	Potassian taramite	<i>Amer. Mineral.</i> 63 (1978), 1023
Medmontite	Chrysocolla + mica	<i>Amer. Mineral.</i> 54 (1969), 994
Melaconite	Tenorite	<i>Mineral. Mag.</i> 43 (1980), 1053
Melnikovite	Greigite	<i>Mineral. Mag.</i> 46 (1982), 513
Mendelejevit	Betafite	<i>Amer. Mineral.</i> 62 (1977), 403
Mendelyevite	Betafite	<i>Amer. Mineral.</i> 62 (1977), 403
Metajennite		<i>Mineral. Mag.</i> 36 (1968), 1144
Metaliebigite		<i>Mineral. Mag.</i> 38 (1971), 103
Metalomonosovite	Beta-lomonosovite	<i>Amer. Mineral.</i> 48 (1963), 1413
Metamurmanite		<i>Mineral. Mag.</i> 36 (1967), 133
Metasimpsonite	Microlite	<i>Amer. Mineral.</i> 62 (1977), 403
Metastrengite	Phosphosiderite	<i>Mineral. Mag.</i> 43 (1980), 1053
Mindigite	Heterogenite	<i>Mineral. Mag.</i> 33 (1962), 253
Minguettite	Stilpnomelane	<i>Amer. Mineral.</i> 54 (1969), 1223
Miomirite		<i>Mineral. Mag.</i> 43 (1980), 1055
Miropolskite		<i>Mineral. Mag.</i> 43 (1980), 1055
Mispickel	Arsenopyrite	<i>Mineral. Mag.</i> 43 (1980), 1053
Miyashiroit		<i>Mineral. Mag.</i> 36 (1968), 1144
Mohsite	Crichtonite	<i>Can. Mineral.</i> 17 (1979), 635
Montasite	Asbestiform grunerite	<i>Amer. Mineral.</i> 63 (1978), 1023
Montdorite		this paper
Mossite	Tantalian ferrocolumbite	<i>Mineral. Mag.</i> 43 (1979), 553
Mountain wood	Asbestos	<i>Amer. Mineral.</i> 63 (1978), 1023
Mozambikite		<i>Mineral. Mag.</i> 33 (1962), 261
Mrazekite		<i>Mineral. Mag.</i> 43 (1980), 1055
Mumbite	Plumbomicrolite	<i>Amer. Mineral.</i> 62 (1977), 403
Munkforsite	Manganiferous apatite	<i>Amer. Mineral.</i> 49 (1964), 1778
Munkrudite	Cyanite/Kyanite	<i>Amer. Mineral.</i> 49 (1964), 1778
Murgocite		<i>Mineral. Mag.</i> 43 (1980), 1055
Nakaséite		<i>Mineral. Mag.</i> 33 (1962), 261
Namaqualite	Cyanotrichite	<i>Mineral. Mag.</i> 32 (1961), 737
Natrongrammatit	Richterite	<i>Amer. Mineral.</i> 63 (1978), 1023
Natronrichterite	Manganoan richterite	<i>Amer. Mineral.</i> 63 (1978), 1023

Naurodite	Alkali amphibole	<i>Amer. Mineral.</i> 63 (1978), 1023
Nenadkevite	Mixture	<i>Amer. Mineral.</i> 62 (1977), 1261
Neodigenite	Digenite	<i>Mineral. Mag.</i> 43 (1980), 1053
Neotantalite	Microlite	<i>Amer. Mineral.</i> 62 (1977), 403
Nephrite	Actinolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Niccolite	Nickeline	<i>Mineral. Mag.</i> 43 (1980), 1053
Nickelemelane		<i>Mineral. Mag.</i> 33 (1962), 261
Nickelite	Nickeline	<i>Mineral. Mag.</i> 43 (1980), 1053
Niobozirconolite	Zirkelite	<i>Amer. Mineral.</i> 62 (1977), 403
Niobpyrochlore	Pyrochlore	<i>Amer. Mineral.</i> 62 (1977), 403
Niobtantalpyrochlore	Pyrochlore/microlite	<i>Amer. Mineral.</i> 62 (1977), 403
Nitroglauberite	Darapskite	<i>Amer. Mineral.</i> 55 (1970), 776
Noonkanbahite		<i>Mineral. Mag.</i> 36 (1968), 1144
Noralite	Ferro-hornblende	<i>Amer. Mineral.</i> 63 (1978), 1023
Nordenskiöldite	Tremolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Nuolaite	Mixture	<i>Amer. Mineral.</i> 62 (1977), 403
Obruchevite	Yttropyrochlore	<i>Amer. Mineral.</i> 62 (1977), 403
Octahedrite	Anatase	<i>Mineral. Mag.</i> 43 (1980), 1053
Oligiste	Hematite	<i>Mineral. Mag.</i> 43 (1980), 1053
Olovotantalite		<i>Mineral. Mag.</i> 36 (1967), 133
Ondrejite	Huntite + magnesite	<i>Amer. Mineral.</i> 49 (1964), 1502
Opsimose	Neotocite	<i>Mineral. Mag.</i> 42 (1978), 279
Orizite	Epistilbite	<i>Amer. Mineral.</i> 57 (1972), 592
Orniblende	Hornblende	<i>Amer. Mineral.</i> 63 (1978), 1023
Orthite	Allanite	this paper
Ortho-armalcolite		<i>Mineral. Mag.</i> 43 (1980), 1055
Ortholomonosovite	Lemonosovite	<i>Amer. Mineral.</i> 48 (1963), 1413
Orthorhombic lamprophyllite		<i>Mineral. Mag.</i> 36 (1968), 1144
Orthorhombic lävenite		<i>Mineral. Mag.</i> 36 (1968), 1144
Orthoriebeckite	Riebeckite	<i>Amer. Mineral.</i> 63 (1978), 1023
Orthose	Orthoclase	<i>Mineral. Mag.</i> 43 (1980), 1053
Orthozoisite		<i>Mineral. Mag.</i> 38 (1971), 103
Oryzite	Epistilbite	<i>Amer. Mineral.</i> 57 (1972), 592
Osannite	Riebeckite	<i>Amer. Mineral.</i> 63 (1978), 1023
Osumilite-(K,Mg)		<i>Mineral. Mag.</i> 43 (1980), 1055
Oxyferropumpellyite	Pumpellyite-(Fe''')	<i>Can. Mineral.</i> 12 (1973), 219
Oxyjulgoldite	Julgoldite-(Fe''')	<i>Can. Mineral.</i> 12 (1973), 219
Palladiumarsenostannide		this paper
Panabase	Tetrahedrite	<i>Mineral. Mag.</i> 43 (1980), 1053
Pandaite	Bariopyrochlore	<i>Amer. Mineral.</i> 62 (1977), 403
Para-armalcolite		<i>Mineral. Mag.</i> 43 (1980), 1055
Para-boleite		<i>Mineral. Mag.</i> 43 (1980), 1055
Parahilgardite	Hilgardite-3Tc	<i>Amer. Mineral.</i> 70 (1985), 636
Parapectolite		<i>Mineral. Mag.</i> 43 (1980), 1055
Paraphane		<i>Mineral. Mag.</i> 36 (1968), 1144
Parastrengite		<i>Mineral. Mag.</i> 43 (1980), 1055
Paravariscite		<i>Mineral. Mag.</i> 43 (1980), 1055
Parawollastonite		<i>Mineral. Mag.</i> 33 (1962), 263
Paulite		<i>Mineral. Mag.</i> 33 (1962), 261
Pendletonite	Carpathite	<i>Amer. Mineral.</i> 54 (1969), 329
Penwithite	Neotocite	<i>Mineral. Mag.</i> 42 (1978), 279
Pharaonite	Davyne	<i>Mineral. Mag.</i> 43 (1980), 1055
Philipstadite	Ferrian ferro-hornblende	<i>Amer. Mineral.</i> 63 (1978), 1023
Phosphochromite	Ferrian variscite	<i>Amer. Mineral.</i> 48 (1963), 1421
Phosphothorogummite		<i>Mineral. Mag.</i> 38 (1971), 103
Pianlinite		this paper
Picroamosite	Ferrian anthophyllite	<i>Amer. Mineral.</i> 63 (1978), 1023
Piedmontite	Piemontite	<i>Mineral. Mag.</i> 43 (1980), 1053

Pilinite	Bavenite	<i>Mineral. Mag.</i> 33 (1962), 262
Pilite	Actinolite pseudomorph	<i>Amer. Mineral.</i> 63 (1978), 1023
Pleonectite	Hedyphane	<i>Amer. Mineral.</i> 58 (1973), 562
Pleurasite	Mixture	<i>Amer. Mineral.</i> 58 (1973), 562
Plinthite	Mixture	<i>Mineral. Mag.</i> 33 (1962), 262
Plumalsite		<i>Mineral. Mag.</i> 38 (1971), 103
Plumangite		<i>Mineral. Mag.</i> 43 (1980), 1055
Plumboallophe		<i>Mineral. Mag.</i> 43 (1980), 1055
Plumbozincocalcite		<i>Mineral. Mag.</i> 38 (1971), 103
Polianite	Pyrolusite	<i>Mineral. Mag.</i> 46 (1982), 513
Polyxene		<i>Can. Mineral.</i> 13 (1975), 117
Pravdite	Altered britholite	<i>Amer. Mineral.</i> 49 (1964), 1501
Priorite	Aeschynite-(Y)	<i>Amer. Mineral.</i> 51 (1966), 152
Prismatic schillerspar	Antophyllite	<i>Amer. Mineral.</i> 63 (1978), 1023
Proarizonite		<i>Mineral. Mag.</i> 36 (1967), 133
Protopartzite		<i>Mineral. Mag.</i> 38 (1971), 103
Pseudo-aenigmatite		<i>Mineral. Mag.</i> 36 (1968), 1144
Pseudoautunite		<i>Mineral. Mag.</i> 36 (1968), 1144
Pseudoglaucophane	Glaucophane or crossite	<i>Amer. Mineral.</i> 63 (1978), 1023
Pseudoixiolite	Ixiolite	<i>Can. Mineral.</i> 14 (1976), 540
Pseudomesolite	Mesolite	<i>Mineral. Mag.</i> 49 (1985), 103
Pseudonatrolite	Mordenite	<i>Mineral. Mag.</i> 33 (1962), 262
Psilomelane	Romanechite	<i>Mineral. Mag.</i> 46 (1982), 513
Pumpellyite	Pumpellyite-(Mg)	<i>Can. Mineral.</i> 12 (1973), 219
Pyrochlore-microlite	Pyrochlore or microlite	<i>Amer. Mineral.</i> 62 (1977), 403
Pyrochlore-wiikite	Mixture	<i>Amer. Mineral.</i> 62 (1977), 403
Pyrrhite		<i>Amer. Mineral.</i> 62 (1977), 403
Pyrrhoarsenite	Berzeliite	<i>Amer. Mineral.</i> 58 (1973), 562
Raphillite	Tremolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Raphisiderite	Hematite	<i>Amer. Mineral.</i> 53 (1968), 1060
Retinostibian		<i>Bull. Minéral.</i> 97 , (1974), 520
Revoredite		<i>Mineral. Mag.</i> 33 (1962), 262
Rezhikite	Magnesio-riebeckite or magnesio-arfvedsonite	<i>Mineral. Mag.</i> 33 (1962), 261
Rhenium		this paper
Rhodoarsenian	Rhodonite	<i>Amer. Mineral.</i> 58 (1973), 562
Rhodusite	Magnesio-riebeckite	<i>Amer. Mineral.</i> 63 (1978), 1023
Rhombomagnojacobsite		<i>Mineral. Mag.</i> 36 (1967), 133
Rijkeboerite	Bariomicrolite	<i>Amer. Mineral.</i> 62 (1977), 403
Rimpylite	Hornblende	<i>Amer. Mineral.</i> 63 (1978), 1023
Rogersite	Churchite	<i>Amer. Mineral.</i> 48 (1963), 1168
Roseite		<i>Mineral. Mag.</i> 38 (1971), 103
Royite	Alpha-quartz	<i>Amer. Mineral.</i> 47 (1962), 1223
Rutherfordite	Rutherfordine	<i>Mineral. Mag.</i> 43 (1980), 1053
Salmonsite	Hureaultite + jahnsite	<i>Mineral. Mag.</i> 42 (1978), 309
Samiresite	Plumbian uranpyrochlore	<i>Amer. Mineral.</i> 62 (1977), 403
Sangarite		<i>Mineral. Mag.</i> 36 (1967), 133
Scheibeite (of Mücke)	Phoenicochroite	<i>Amer. Mineral.</i> 56 (1971), 359
Schotelgite		<i>Amer. Mineral.</i> 62 (1977), 403
Schmeiderite	Schmiederite	<i>Mineral. Mag.</i> 43 (1980), 1054
Schoenite	Picromerite	this paper
Schönite	Picromerite	this paper
Schuchardtite	Vermiculite-chlorite	<i>Amer. Mineral.</i> 64 (1979), 1334
Schulzenite	Cuprian heterogenite	<i>Mineral. Mag.</i> 33 (1962), 253
Sebesite	Tremolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Selenjoseite	Laitakarite	<i>Amer. Mineral.</i> 48 (1963), 1421
Septetalc-chlorite	Baumite	<i>Amer. Mineral.</i> 61 (1976), 174
Schachialite		this paper

Shentulite		<i>Mineral. Mag.</i> 33 (1962), 261
Silbölite	Actinolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Silfbergite	Dannemorite	<i>Amer. Mineral.</i> 63 (1978), 1023
Silicate-wiikite	Mixture	<i>Amer. Mineral.</i> 62 (1977), 403
Silicomanganberzeliite		<i>Mineral. Mag.</i> 36 (1968), 1144
Silicomonazite		<i>Mineral. Mag.</i> 43 (1980), 1055
Silicorhabdophane		<i>Mineral. Mag.</i> 36 (1967), 133
Sillbölite	Actinolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Simpsonite	Titanian potassian richterite	<i>Amer. Mineral.</i> 63 (1978), 1023
Sjögrufvite	Caryinite	<i>Amer. Mineral.</i> 58 (1973), 562
Slavyanskite	Tunisie	<i>Zap. Vses. Mineral. Obshchest.</i> 110 (1981), 96
		<i>Amer. Mineral.</i> 63 (1978), 1023
Smaragdite	Actinolite or hornblende	<i>Amer. Mineral.</i> 63 (1978), 1023
Smaragditic grammatite	Tremolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Smaragditic tschermakite	Tschermakite or tschermakitic hornblende	<i>Amer. Mineral.</i> 63 (1978), 1023
	Saponite	this paper
Sobotkite	Natron	<i>Mineral. Mag.</i> 43 (1980), 1053
Soda	Magnesio-arfvedsonite	<i>Amer. Mineral.</i> 63 (1978), 1023
Soda asbestos	Arfvedsonite	<i>Amer. Mineral.</i> 63 (1978), 1023
Soda hornblende	Nitratine	<i>Mineral. Mag.</i> 43 (1980), 1053
Soda niter	Nitratine	<i>Mineral. Mag.</i> 43 (1980), 1053
Soda nitre	Manganoan richterite	<i>Amer. Mineral.</i> 63 (1978), 1023
Soda richterite	Richterite	<i>Amer. Mineral.</i> 63 (1978), 1023
Soda tremolite		this paper
Sodium phlogopite		<i>Mineral. Mag.</i> 33 (1962), 261
Sokolovite	Magnesian hastingsite	<i>Amer. Mineral.</i> 63 (1978), 1023
Soretite	Tritomite-(Y)	<i>Amer. Mineral.</i> 51 (1966), 152
Spencite	Spessartine	<i>Mineral. Mag.</i> 43 (1980), 1053
Spessartite	Hornblende	<i>Amer. Mineral.</i> 63 (1978), 1023
Speziatite	Sphero-cobaltite	<i>Mineral. Mag.</i> 43 (1980), 1053
Sphaerocobaltite	Titanite	<i>Mineral. Mag.</i> 46 (1982), 513
Sphene		<i>Mineral. Mag.</i> 36 (1967), 133
Stannoluzonite	Kolbeckite	this paper
Sterretite		<i>Mineral. Mag.</i> 38 (1971), 103
Stibiodufrenoysite	Mixture	<i>Amer. Mineral.</i> 62 (1977), 403
Stibiomicrolite	Antimonpearceite	this paper
Stibiopearceite		<i>Mineral. Mag.</i> 36 (1967), 133
Stipoverite	Actinolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Strahlstein	Neotocite	<i>Mineral. Mag.</i> 42 (1978), 279
Stratopeite	Actinolite or anthophyllite	<i>Amer. Mineral.</i> 63 (1978), 1023
Strelite	Strontian tyretskite	<i>Mineral. Mag.</i> 46 (1982), 514
Strontiohilgardite		<i>Mineral. Mag.</i> 33 (1962), 261
Strontiohilgardite - 1Tc		<i>Mineral. Mag.</i> 36 (1968), 1144
Strontium thomsonite	Crossite	<i>Amer. Mineral.</i> 63 (1978), 1023
Subglaucophane	Stannomicrolite	<i>Amer. Mineral.</i> 62 (1977), 403
Sukulaite		<i>Mineral. Mag.</i> 36 (1967), 133
Sulphate-monazite		<i>Mineral. Mag.</i> 33 (1962), 261
Sulunite		<i>Mineral. Mag.</i> 36 (1968), 1144
Sundiusite	Lizardite + sepiolite	<i>Amer. Mineral.</i> 59 (1974), 212
Sungulite	Oxy magnesio-riebeckite	<i>Amer. Mineral.</i> 63 (1978), 1023
Svidneite	Celadonite	<i>Amer. Mineral.</i> 63 (1978), 796
Svitalskite	Titanian hastingsite	<i>Amer. Mineral.</i> 63 (1978), 1023
Syntagmatite (Troger 1952)	Richterite	<i>Amer. Mineral.</i> 63 (1978), 1023
Szechenyiite	Richterite	<i>Amer. Mineral.</i> 63 (1978), 1023
Szechonyit	Musgravite	<i>Amer. Mineral.</i> 69 (1984), 215
Taaffeite-9R	Aeschynite-(Y)	<i>Mineral. Mag.</i> 43 (1980), 1055
Taiyite	Redondite	<i>Amer. Mineral.</i> 49 (1964), 445
Tangaite		

Tangenite		<i>Amer. Mineral.</i> 62 (1977), 403
Tantalbetafite	Betafite	<i>Amer. Mineral.</i> 62 (1977), 403
Tantalhatchettolite	Uranmicrolite	<i>Amer. Mineral.</i> 62 (1977), 403
Tantalo-obruchevite		<i>Amer. Mineral.</i> 62 (1979), 403
Tantalpyrochlore	Microlite	<i>Amer. Mineral.</i> 62 (1977), 403
Tantalum		<i>Amer. Mineral.</i> 47 (1962), 786
Tanzanite		<i>Mineral. Mag.</i> 43 (1980), 1055
Taprobanite	Taaffeite	<i>Mineral. Mag.</i> 46 (1982), 514
Tarasovite		<i>Amer. Mineral.</i> 67 (1982), 394
Tatarkaite	Ripidolite	<i>Amer. Mineral.</i> 50 (1965), 2111
Tavistockite	Apatite	<i>Mineral. Mag.</i> 37 (1969), 123
Taylorite	Ammonian arcanite	<i>Can. Mineral.</i> 23 (1985), 259
Teremkovite		<i>Mineral. Mag.</i> 38 (1971), 103
Ternovskite	Magnesio-riebeckite	<i>Amer. Mineral.</i> 63 (1978), 1023
Tetrakalsilite	Panunzite	<i>Neues Jahrb. Mineral. Monatsh.</i> (1985), H7, 322
Texasite		<i>Amer. Mineral.</i> 67 (1982), 156
Thalackerite	Anthophyllite	<i>Amer. Mineral.</i> 63 (1978), 1023
Thierschite	Whewellite	<i>Amer. Mineral.</i> 47 (1962), 786
Thorgadolinite		<i>Mineral. Mag.</i> 43 (1980), 1055
Thoroaeschynite		<i>Mineral. Mag.</i> 36 (1968), 1144
Tibergite	Manganooan sodian magnesio-hastingsite	<i>Amer. Mineral.</i> 63 (1978), 1023
Tin-tantalite		<i>Mineral. Mag.</i> 36 (1967), 133
Titanbetafite	Betafite	<i>Amer. Mineral.</i> 62 (1977), 403
Titanhornblende	Aenigmatite	<i>Amer. Mineral.</i> 63 (1978), 1023
Titanmicrolite		<i>Amer. Mineral.</i> 62 (1977), 403
Titano-aeschynite		<i>Mineral. Mag.</i> 36 (1967), 133
Titano-obruchevite	Yttrobetafite-(Y)	<i>Amer. Mineral.</i> 62 (1977), 403
Titanopyrochlore	Mixture	<i>Amer. Mineral.</i> 62 (1977), 403
Titanorhabdophane		<i>Mineral. Mag.</i> 36 (1967), 133
Toddite	Columbite + samarskite	<i>Amer. Mineral.</i> 47 (1962), 1363
Tonerdehaltiger strahlstein	Tremolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Torendrikite	Magnesio-riebeckite	<i>Amer. Mineral.</i> 63 (1978), 1023
Tozalite		<i>Mineral. Mag.</i> 43 (1980), 1055
Transvaalite	Heterogenite	<i>Mineral. Mag.</i> 33 (1962), 253
Tremolite-glaucophane	Richterite	<i>Amer. Mineral.</i> 63 (1978), 1023
Triphane	Spodumene	<i>Mineral. Mag.</i> 43 (1980), 1053
Trudellite	Natroalunite + chloraluminite	<i>Amer. Mineral.</i> 57 (1972), 1317
Tsavolite	Grossular	this paper
Tschernischewit	Sodium amphibole	<i>Amer. Mineral.</i> 63 (1978), 1023
Tucanite		<i>Mineral. Mag.</i> 36 (1968), 1144
Turite		<i>Mineral. Mag.</i> 36 (1968), 1144
Tynite		<i>Mineral. Mag.</i> 36 (1967), 133
Tyretskite	Tyretskite-1Tc	<i>Amer. Mineral.</i> 70 (1985), 636
Udokanite		<i>Mineral. Mag.</i> 43 (1980), 1055
Udumelinite		<i>Mineral. Mag.</i> 39 (1974), 929
Ufertite	Davidite-(La)	<i>Amer. Mineral.</i> 49 (1964), 447
Ugite	Thomsonite + gyrolite	<i>Mineral. Mag.</i> 33 (1962), 262
Uralite	Actinolite pseudomorph	<i>Amer. Mineral.</i> 63 (1978), 1023
Uranglimmer	Uranite	<i>Mineral. Mag.</i> 43 (1980), 1053
Uranmica	Uranite	<i>Mineral. Mag.</i> 43 (1980), 1053
Uranoanatase		<i>Mineral. Mag.</i> 36 (1968), 1144
Ureyite	Kosmochlor	this paper
Uzbekite	Volborthite	<i>Amer. Mineral.</i> 50 (1965), 2111
Vallachite		<i>Mineral. Mag.</i> 38 (1971), 103
Valleite	Calcian manganooan anthophyllite	<i>Amer. Mineral.</i> 63 (1978), 1023

Vanuranylite		<i>Mineral. Mag.</i> 36 (1968), 1144
Velikite		<i>Mineral. Mag.</i> 43 (1980), 1055
Vernadskite	Antlerite	<i>Amer. Mineral.</i> 46 (1961), 146
Viridine	Manganoan andalusite	<i>Z. Krist.</i> 155 , (1981), 8
Waldheimite	Richterite	<i>Amer. Mineral.</i> 63 (1978), 1023
Wallerian	Hornblende	<i>Amer. Mineral.</i> 63 (1978), 1023
Warthaite	Cosalite + galena	<i>Amer. Mineral.</i> 49 (1964), 1501
Wathlingite	Kieserite	<i>Amer. Mineral.</i> 47 (1962), 811
Wehrlite	Mixture	<i>Amer. Mineral.</i> 69 (1984), 215
Weibyeite	Bastnäsite + ancylite	<i>Amer. Mineral.</i> 49 (1964), 1154
Weilerite		<i>Mineral. Mag.</i> 36 (1967), 133
Weinschenkite (of Laubman)	Churchite-(Y)	<i>Mineral. Mag.</i> 46 (1982), 513
Weinschenkite (of Murgoci)	Ferri-magnesio- hornblende or magnesio-hastingsite	<i>Amer. Mineral.</i> 63 (1978), 1023
Westgrenite	Bismutomicrolite	<i>Amer. Mineral.</i> 62 (1977), 403
Wiikite	Mixture	<i>Amer. Mineral.</i> 62 (1977), 403
Wilkeite	Apatite/fluorellestadite	<i>Mineral. Mag.</i> 46 (1982), 514
Wittingite	Neotocite	<i>Mineral. Mag.</i> 42 (1978), 279
Wolframoixiolite		<i>Mineral. Mag.</i> 43 (1980), 1055
Woodfordite	Ettringite	<i>Mineral. Mag.</i> 33 (1962), 262
Yamatoite		<i>Mineral. Mag.</i> 36 (1967), 133
Yanzhongite	Kotulskite	<i>Mineral. Mag.</i> 43 (1980), 1055
Yenshanite	Vysotskite	<i>Mineral. Mag.</i> 43 (1980), 1055
Yftsite		this paper
Yokosukaite	Nsutite	<i>Amer. Mineral.</i> 49 (1964), 448
Yttrohatchettolite	Yttrropyrochlore-(Y)	<i>Amer. Mineral.</i> 62 (1977), 403
Yttromicrolite		<i>Amer. Mineral.</i> 67 (1982), 156
Zeiringite	Aragonite + aurichalcite	<i>Amer. Mineral.</i> 48 (1963), 1184
Zeyringite	Aragonite + aurichalcite	<i>Amer. Mineral.</i> 48 (1963), 1184
Zillerite	Actinolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Zillerthite	Actinolite	<i>Amer. Mineral.</i> 63 (1978), 1023
Zinc-manganese-cummingtonite		<i>Amer. Mineral.</i> 63 (1978), 1023
Zincalunite		<i>Mineral. Mag.</i> 36 (1967), 133
Zincblende	Sphalerite	<i>Mineral. Mag.</i> 43 (1980), 1053
Zirconolite	Zirkelite	<i>Amer. Mineral.</i> 62 (1977), 403
Zirlite	Gibbsite	<i>Amer. Mineral.</i> 47 (1962), 1223
Zirsite		<i>Mineral. Mag.</i> 36 (1967), 133

APPENDIX 2. REVISED NOMENCLATURE FOR RARE-EARTH MINERALS

<i>Original Name</i>	<i>Revised Name</i>
Aeschnite	Aeschnite-(Ce)
Aeschnite-(Nd)	
Agardite	Agardite-(Y)
Agardite-(La)	
Allanite	Allanite-(Ce)
Allanite	Allanite-(La)
Allanite-(Y)	
Ancylite	Ancylite-(Ce)
Ashcroftine	Ashcroftine-(Y)
Bastnäsite	Bastnäsite-(Ce)

Bastnäsité-(La)	
Bastnäsité-(Y)	
Bijvoetite	Bijvoetite-(Y)
Braitschite	Braitschite-(Ce)
Britholite	Britholite-(Ce)
Britholite-(Y)	
Calcioancylite	Calcioancylite-(Ce)
Calkinsite	Calkinsite-(Ce)
Cappelenite	Cappelenite-(Y)
Caysichite	Caysichite-(Y)
Cebaite	Cebaite-(Ce)
Cerianite	Cerianite-(Ce)
Ceripyrochlore	Ceripyrochlore-(Ce)
Cerite	Cerite-(Ce)
Cerotungstite	Yttrotungstite-(Ce)
Chernovite	Chernovite-(Y)
Chevkinite	Chevkinite-(Ce)
Chukhrovite	Chukhrovite-(Y)
Chukhrovite-(Ce)	
Churchite	Churchite-(Y)
Cordylite	Cordylite-(Ce)
Daqingshanite	Daqingshanite-(Ce)
Davidite	Davidite-(Ce)
Davidite	Davidite-(Y)
Davidite	Davidite-(La)
Donnayite	Donnayite-(Y)
Euxenite	Euxenite-(Y)
Ewaldite	Ewaldite-(Y)
Fergusonite	Fergusonite-(Y)
Fergusonite-beta	Fergusonite-beta-(Y)
Fergusonite-beta-(Ce)	
Fergusonite-beta-(Nd)	
Florencite	Florencite-(Ce)
Florencite-(La)	
Florencite-(Nd)	
Fluocerite	Fluocerite-(Ce)
Fluocerite-(La)	
Formanite	Formanite-(Y)
Gadolinite	Gadolinite-(Y)
Gadolinite-(Ce)	
Gagarinite	Gagarinite-(Y)
Gysinite	Gysinite-(Nd)
Hellandite	Hellandite-(Y)
Hingganite	Hingganite-(Y)
Hingganite-(Yb)	
Huanghoite	Huanghoite-(Ce)
Hydroxyl-bastnäsité	Hydroxyl-bastnäsité-(Ce)
Hydroxyl-bastnäsité-(Nd)	
Iimoriite	Iimoriite-(Y)
Ilimaussite	Ilimaussite-(Ce)
Joaquinite	Joaquinite-(Ce)
Kainosite	Kainosite-(Y)
Karnasurtite	Karnasurtite-(Ce)
Keivyite	Keivyite-(Yb)
Kimuraite-(Y)	
Kobeite	Kobeite-(Y)
Kusuïte	Kusuïte-(Ce)
Lanthanite	Lanthanite-(La)

Lanthanite-(Ce)	
Lanthanite-(Nd)	
Laplandite	Laplandite-(Ce)
Lepersonnite	Lepersonnite-(Gd)
Lokkaite	Lokkaite-(Y)
Loparite	Loparite-(Ce)
Loranskite	Loranskite-(Y)
Mckelveyite	Mckelveyite-(Y)
Melanocerite	Melanocerite-(Ce)
Minasgeraisite	Minasgeraisite-(Y)
Monazite	Monazite-(Ce)
Monazite-(La)	
Monazite-(Nd)	
Monteregianite	Monteregianite-(Y)
Moydite	Moydite-(Y)
Neodymium churchite	Churchite-(Nd)
Nioboaeschynite-(Ce)	
Nordite	Nordite-(La)
Nordite-(Ce)	
Okanaganite	Okanaganite-(Y)
Orthojoaquinite	Orthojoaquinite-(Ce)
Parisite	Parisite-(Ce)
Perrierite	Perrierite-(Ce)
Petersite	Petersite-(Y)
Polycrase	Polycrase-(Y)
Retzian	Retzian-(Ce)
Retzian-(La)	
Retzian-(Nd)	
Rhabdophane-(Ce)	
Rhabdophane-(La)	
Rhabdophane	Rhabdophane-(Nd)
Rontgenite	Rontgenite-(Ce)
Rowlandite	Rowlandite-(Y)
Sahamalite	Sahamalite-(Ce)
Samarskite	Samarskite-(Y)
Saryarkite	Saryarkite-(Y)
Sazhinite	Sazhinite-(Ce)
Schuilिंगite	Schuilिंगite-(Nd)
Steenstrupine	Steenstrupine-(Ce)
Stillwellite	Stillwellite-(Ce)
Synchysite	Synchysite-(Ce)
Synchysite-(Nd)	
Synchysite-(Y)	
Tadzhikite	Tadzhikite-(Ce)
Tantaloeschynite-(Y)	
Tanteuxenite	Tanteuxenite-(Y)
Tengerite	Tengerite-(Y)
Thalenite	Thalenite-(Y)
Tombarthite	Tombarthite-(Y)
Törnebohmite	Törnebohmite-(Ce)
Törnebohmite	Törnebohmite-(La)
Tritomite	Tritomite-(Ce)
Tritomite-(Y)	
Tundrite	Tundrite-(Ce)
Tundrite-(Nd)	
Tveitite	Tveitite-(Y)
Vitusite	Vitusite-(Ce)
Vyuntspakhkrite	Vyuntspakhkrite-(Y)

Wakefieldite	Wakefieldite-(Y)
Xenotime	Xenotime-(Y)
Yttrialite	Yttrialite-(Y)
Yttrobetafite	Yttrobetafite-(Y)
Yttrocolumbite	Yttrocolumbite-(Y)
Yttrocrasite	Yttrocrasite-(Y)
Yttropyrochlore	Yttropyrochlore-(Y)
Yttrotantalite	Yttrotantalite-(Y)
Yttrotungstite	Yttrotungstite-(Y)
Zhonghuacerite	Zhonghuacerite-(Ce)