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THE CHECK-LIST FOR SUBMISSION OF PROPOSALS FOR NEW MINERALS TO THE COMMISSION ON NEW MINERALS AND MINERAL NAMES, INTERNATIONAL MINERALOGICAL ASSOCIATION

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ABSTRACT

A check-list for new mineral proposals has been devised by the Chairman of the Commission on New Minerals and Mineral Names, I.M.A. It contains all the data necessary to characterize and describe a new species, serves as a reminder of these data to the proposer and assists the Chairman in handling proposals and preparing abstracts.

Keywords: new minerals, check-list, proposals, Commission on New Minerals and Mineral Names.

SOMMAIRE

On présente une fiche de vérification à utiliser pour toutes soumissions à la Commission des nouveaux minéraux et des noms de minéraux de l'Association Internationale de Minéralogie; elle a été conçue par son président. Dûment remplie, cette fiche contient toutes les données nécessaires pour caractériser et décrire une espèce nouvelle. Elle sert aussi d'aide-mémoire pour le soumissionnaire et aide le président dans la vérification des soumissions et la préparation des sommaires.

(Traduit par la Rédaction)

Mots-clés: nouvelle espèce minérale, fiche de vérification, Commission des nouveaux minéraux et des noms de minéraux.

INTRODUCTION

The author began his tenure as Chairman of the Commission on New Minerals and Mineral Names (CNMMN) of the International Mineralogical Association (IMA) on 1 January 1983. During the following six months, it became apparent that proposals for new minerals were not only submitted in great numbers, but in many different forms. It was not unusual to receive proposals that ranged from a simple letter (with practically no data) asking that a proposed mineral be approved, to manuscripts of 100 pages or more. Experimentation with various methods of handling and evaluating the information that arrived in his mail led the author to decide that the first and best place for standardization was at the source, *i.e.*, with the proposers themselves. This led to the development of a check-list (Mandarino 1985), which continues to evolve. The six-page version described and illustrated here is the fourth one (version 870801) and differs from the last one (version 850501) primarily in the fact that separate pages for metallic and non-metallic minerals in the earlier version have been combined in this one. Some sections have been changed to reflect additional information requested by some members of the CNMMN and by advisors from the Commission on Ore Mineralogy (COM). Repeated deficiencies in certain data over the past two years have resulted in amplification and clarification of the instructions. Some of these are explained in the next section. Proposers of new mineral species are advised to read the "procedures" paper by Nickel & Mandarino (1987).

DETAILS OF THE CHECK-LIST

Although the check-list, accompanied by its covering letter, is designed to stand alone, a few words of explanation for each of the pages may be useful. These are given in the following paragraphs.

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Page 1. General Information

The first part of this page is a summary of the proposal and consists of the name, chemical formula and crystallographic data. This is followed by a section that asks for the authors' names and complete addresses.

Details on the occurrence are expected to be specific. To use a fictitious example, "western Canada" is not acceptable. Where a locality is an isolated one, the authors are asked to supply latitude and longitude. A complete list of associated minerals is also required. Proposers are asked to supply information on the way in which the mineral may have formed.

Page 2. Appearance and Physical Properties

A short description of the general appearance of the mineral, such as "aggregates (up to 2 mm in diameter) of bladed crystals (up to 1 × 0.5 × 0.1 mm)" or "anhedral grains up to 20 μm but usually 2 to 5 μm", is requested. This information is followed by a list of the usual physical properties. Occasionally, proposers ignore this information, stating that only the chemical formula and unit-cell data are important. However, it should be remembered that a visual examination of a mineral usually is the first step taken in order to identify it. Therefore, its physical properties are of great value before turning to more advanced techniques. Many mineralogists leave the streak entry blank, stating that they could not observe it. They have forgotten that the color of the powder used to produce the X-ray powder diffraction pattern *gives* the streak. Space is also available for other data, such as thermal, infrared absorption, *etc.*

Page 3. Optical Properties

The first part of this page consists of a summary of the optical properties for nonmetallic minerals. This is followed by the optical information required for metallic minerals. In the latter section, recommendations of the Commission on Ore Mineralogy (COM) have been incorporated.

Page 4. Chemical Data

The kind of chemical analysis and the analytical results are the first data requested. In the case of multiple analyses, ranges or standard deviations (or both) of the data also are desirable. Where the mineral has been analyzed by the electron microprobe, the standards used for each constituent should be indicated. The practice of "determining" certain constituents by difference or by stoichiometry is to be avoided. If, for example, H_2O or CO_2 cannot be determined, the reasons should be stated. The proposer is asked to present the empirical formula derived from the analytical data and to give the basis of the calculation used to derive it. Space is also available for the simplified formula and chemical tests.

Page 5. Crystallography

The kind of single-crystal X-ray study is to be indicated. If none has been done, reasons are to be given. Whether or not the cell parameters have been refined from the powder data is requested. The crystal system, space group (or point group if the space group cannot be determined), cell parameters (including volume) and Z should be given, as should the errors associated with the cell parameters and volume. Information on the powder data are requested, and the *complete* data are to be provided on a separate sheet of paper in the indicated format. If the crystal structure has been determined, its details (including the R factor) should be summarized. Morphological data are requested.

Page 6. Miscellaneous Data

The reason for selecting the name is to be given. It is generally accepted that minerals are not named for the proposers or any of their relatives. If named for a person, information about him or her should be supplied, including the reason the name is appropriate for the mineral. Names transliterated from the Cyrillic alphabet are to be presented in the original Cyrillic as well as in the Latin alphabet.

The disposition of the type material is considered extremely important. Type specimens should not remain in private collections; only professionally curated museums are considered acceptable repositories for type material.

Any relationships between the mineral and others should be stated. It is particularly important to compare the essential data of any related minerals with those of the proposed new mineral. An indication of where the mineral fits into a mineral classification is desirable. All pertinent references should be stated.

The compatibility index (see Mandarino 1979, 1981) should be calculated for nonmetallic minerals. If it falls into the fair or poor categories, an explanation should be given.

The authors are encouraged to add anything under "Authors' Remarks" that will clarify the proposal.

REFERENCES

MANDARINO, J.A. (1979): The Gladstone–Dale relationship: Part III. Some general applications. *Can. Mineral.* **17,** 71-76.

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NICKEL, E.H. & MANDARINO, J.A. (1987): Procedures involving the IMA Commission on New Minerals and Mineral Names, and guidelines on mineral nomenclature. *Can. Mineral.* **25,** 353-377.

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CHECK-LIST FOR NEW MINERAL PROPOSALS Page 1 (870801)

NOTE:
Wherever numerical data are to be entered, the spaces are followed by brackets. Please give estimated errors or estimated standard deviations in the brackets. For example, a 12.345(9) Å.

GENERAL INFORMATION

NAME: .....

CHEMICAL FORMULA: .....

CRYSTAL SYSTEM: ..... SPACE GROUP: .....

POINT GROUP: .....
(if space group is unknown)

a .....( )Å b .....( )Å c .....( )Å

α .....( )° β .....( )° γ .....( )°

V .....( )Å^3 Z .....

AUTHORS' NAMES AND COMPLETE ADDRESSES:

OCCURRENCE: Give specific details on the geographic locality. In cases of isolated localities, please give latitude and longitude.

ASSOCIATED MINERALS: Give the complete list.

ORIGIN OF THE MINERAL: Give any information on how the mineral was formed.

APPEARANCE AND PHYSICAL PROPERTIES Page 2 (870801)

GENERAL APPEARANCE: Give a short description including the kind of crystals or grains, the kind of aggregates, the size of individual grains or crystals (in metric units) and the size of aggregates.

PHYSICAL PROPERTIES

COLOUR(megascopic):.....

STREAK: .....(colour of the powder)

LUSTRE: vitreous.... adamantine.... metallic.... other.....specify.....

OPAQUE.... TRANSLUCENT.... TRANSPARENT....

FLUORESCENCE: .....(give colours and wavelengths of excitation).....

HARDNESS:

Mohs : .....

Micro-indentation: VHN load .....g mean ..... range .....

CLEAVAGE: .....(directions and perfection).....

PARTING: .....(directions and perfection).....

TENACITY: ..... FRACTURE .....

DENSITY(meas.): .....( )g/cm^3 DENSITY(calc.): .....( )g/cm^3

Method used to measure density: .....

OTHER DATA: (Use other pages, if necessary)

THERMAL:

INFRA RED:

OTHER:

OPTICAL PROPERTIES Page 3 (870801)

NONMETALLIC MINERALS: (Give estimated errors). WAVELENGTH = ...

ISOTROPIC: n .....( )

UNIAXIAL (+)(-): ω .....( ) ε .....( )

BIAXIAL (+)(-): α .....( ) β .....( ) γ .....( )

2V(meas.): .....( )° 2V(calc.): .....( )°

DISPERSION: r > v or r < v, strong, medium, weak

ORIENTATION: (As complete as possible)

PLEOCHROISM:

METALLIC MINERALS

COLOUR: .....

INTERNAL REFLECTIONS: .....

ANISOTROPY: .....

BIREFLECTANCE: .....

PLEOCHROISM: .....

REFLECTANCE VALUES (Measurements at the four wavelengths marked COM, below, are the minimum requirements):

Standard: ..... (It should be one of those recommended by the Commission on Ore Mineralogy, I.M.A.).
Measured in air? yes.... no....
Measured in oil? yes.... no.... (refractive index of oil: .....)

..... 400nm	.....560nm
.....420nm	.....580nm
.....440nm	.....589nm(COM)
.....460nm	.....600nm
.....470nm(COM)	.....620nm
.....480nm	.....640nm
.....500nm	.....650nm(COM)
.....520nm	.....660nm
.....540nm	.....680nm
.....546nm(COM)	.....700nm

OTHER OPTICAL DATA

CHEMICAL DATA Page 4 (870801)

TYPE OF ANALYSIS: (circle appropriate ones)

WET ELECTRON PROBE OTHER: .....

H_2O ANALYTICAL METHOD .....

CO_2 ANALYTICAL METHOD .....

NOTE: If H_2O (or CO_2) was not determined directly, give the reason.

ANALYTICAL RESULTS:

Number of analyses: ..... NOTE: For multiple analyses please give ranges and/or standard deviations of the data.

CONSTITUENT	WT. %	Range	Standard Deviation	Probe Standard
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
TOTAL	.....			

EMPIRICAL FORMULA:

(GIVE BASIS OF CALCULATION, SUCH AS NUMBER OF ANIONS, ETC.):

.....

SIMPLIFIED FORMULA:

CHEMICAL TESTS:

CRYSTALLOGRAPHY Page 5 (870801)

SINGLE-CRYSTAL STUDY:

METHOD: Precession... Weissenberg... 4-circle... Other.....

NOTE: If no single-crystal study was done, explain why.

CELL PARAMETERS REFINED FROM POWDER DATA? YES.... NO....

CRYSTAL SYSTEM: .....

SPACE GROUP: .....

POINT GROUP (if space group is unknown): .....

CELL PARAMETERS:

a	.....( )Å	α	.....( )°
b	.....( )Å	β	.....( )°
c	.....( )Å	γ	.....( )°
V	.....( )Å^3	Z	.....

POWDER DATA: (For CuKα, FeKα or .....) (Circle or insert wavelength)

Debye-Scherrer.... Gandolfi.... Diffractometer.... Guinier....

NOTE: ON A SEPARATE PAGE (no larger than 15.5 x 28 cm), PLEASE SUPPLY THE COMPLETE X-RAY POWDER DIFFRACTION DATA AS SHOWN BELOW. CIRCLE THE INTENSITIES OF THE STRONGEST LINES.

I	$d_{meas.}$	$d_{calc.}$	hkl
.....	.....	.....	.....

CRYSTAL STRUCTURE: (Summarize the details)

R = ...

MORPHOLOGY:

HABIT:

FORMS:

TWINNING:

OTHER DATA:

a:b:c: or c:a ..... (from morphology)

..... (from unit cell parameters)

MISCELLANEOUS DATA Page 6 (870801)

NAME: (If named for a living person, indicate his or her acceptance and year of birth. If named for a deceased person, please give years of birth and death. For names transliterated from the Cyrillic alphabet, please give the original Cyrillic spelling (typed).
Explain the reason for selecting the name.

TYPE MATERIAL: (Give the name of the MUSEUM where it is deposited. Only professionally curated museums are acceptable.)

RELATIONSHIP TO OTHER SPECIES: (Include, if possible, where the species fits into a mineral classification.)

If the mineral is similar to other minerals, please provide a table (on a separate page) comparing the following data for all the species involved: chemical formula, crystal system, space group, unit cell parameters, strongest lines in the powder pattern, optical data and any other data which will help to differentiate the species from the related species.

REFERENCES: (Please give full reference data to all pertinent material.)

COMPATIBILITY $1-(K_p/K_c)$ ..... If fair or poor, explain reason(s).

AUTHORS' REMARKS: Add anything which will clarify difficult parts of the description. If your remarks are long and you would like all the members of the Commission to see them, please type them single-spaced on no more than two pages. Material for each page should fit within an area of 15.5 x 28 cm.