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American Mineralogist: Instructions to Authors

Revised January, 1973

The American Mineralogist is established by the Mineralogical Society of America to publish the results of original scientific research in the general fields of mineralogy, crystallography, and petrology, including such areas as: descriptive mineralogy and properties of minerals, experimental mineralogy and petrology, geochemistry, isotope mineralogy, mineralogical apparatus and techniques, mineral occurrences and deposits, paragenesis, petrography and petrogenesis, and topographical mineralogy.

General Requirements

1. Manuscripts including illustrations must be submitted *in duplicate* to the Editor, F. Donald Bloss, The American Mineralogist, Department of Geological Sciences, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061. They must be typewritten, double-spaced (including references, figure captions, and all footnotes, except those to tables), with wide margins, on white paper about 8½ × 11 inches in size; standard-weight paper must be used for the first copy. Xerox or other clear photocopy is satisfactory. Footnotes should be typed at the bottom of the page, and should be numbered in sequence.

2. Only articles not previously published and not about to be published, wholly or in part, in either U.S. or foreign journals, will be considered. Authors should submit a statement affirming this requirement or explaining any overlap with previous or impending publication.

3. New mineral names, before publication, must be approved by the Commission on New Mineral Names of the International Mineralogical Association (Fleischer, 1970). For this purpose a copy of the manuscript should be simultaneously (or previously) sent to Dr. Michael Fleischer, U.S. Geological Survey, Washington, D. C. 20242. In general, manuscripts proposing new names for imperfectly or incompletely described minerals or new names for mere compositional varieties cannot be accepted. Writers naming new minerals should conform to the rules and principles set forth in Palache, Berman, and Frondel (1944, pp. 42–47) and Hey, *et al.* (1961). The suggestions of Donnay and Fleischer (1970) for the description of new minerals are recommended.

4. For crystallographic data, the recommendations of the Commission on Crystallographic Data, International Union of Crystallography (Kennard, Speakman, and Donnay, 1967) and of the NAS-NRC Committee on Chemical Crystallography are standard in this journal; copies are available from the Editor of *The American Mineralogist.* Powder diffraction data (d or Q, not 2θ) may be tabulated if *necessary* to characterize the mineral. They may be illustrated only if essential features cannot be tabulated. If the data are similar to some already published or listed in the X-ray Powder Data File, then a statement to that effect is usually sufficient without republishing either a table or a cut. Refinements to previously available powder data can be contributed directly to the XPDF without publication.[1] Powder patterns should be indexed, if at all possible, and cell parameters listed; if this is not possible, the reasons should be stated. If the space group is known or determined, a powder pattern whose extinctions are inconsistent with the space group should not be published without explanation of the inconsistent extinctions.

5. For thermal analysis data, the recommendations of a Committee on Standardization of the International Conference on Thermal Analysis (McAdie, 1967) are standard for this journal; copies are available from the Editor.

6. Manuscripts that will print as 2 pages or less may be published as Mineralogical Notes, on the same schedule as major papers. As an aid to abstracting journals, a brief abstract is required.

Reprints

Authors who pay page charges will be furnished 100 free reprints, without covers. On the form accompanying the galley proof, the author should indicate the total number of reprints desired, consolidating the orders from all co–authors and including the free reprints. This form should be sent to the Business Office of the Mineralogical Society at the same time that proof is returned to the Editor. The MSA Business Office will bill later; any purchase order forms required by the author's institution may be sent later to the Business Office of The Mineralogical Society of America, Sixth Floor, 1707 L Street, N.W., Washington, D. C. 20036.

Page Charges

Part of the publication cost will be billed, at the rate of $35 per published page, to the institution sponsoring the research. A form will be sent with the the galley proof, for the author to indicate where page charges are to be billed. A bill will not be sent if the author indicates that his sponsoring institution is unable to pay, but the name of the institution sponsoring the research should still be given on the form. Payment of page charges is *not* a condition for acceptance or for publication.

Title and Abstract

7. The increased application of computer systems for information retrieval requires that both title and abstract be as informative as possible, consistent with their respective lengths. Where feasible in the *title,* words should be sub-

[1] Address Professor L. G. Berry, Editor, Powder Diffraction File, Department of Geological Sciences, Queen's University, Kingston, Ontario, Canada.

stituted for chemical formulas, Greek letters, or other odd typography.

To facilitate identification in indexing and abstracting, it is recommended that the authors spell out one of their given names.

8. The abstract should state concisely, in 250 words or less, what was done and what was concluded; if possible, it should include important numbers (*e.g.*, temperature range, main X–ray lines, chemical composition). The UNESCO guides for the preparation of scientific papers and abstracts (American Institute of Physics, 1968) are recommended; copies are available from the Editor.

Style

9. In general, style follows the American Institute of Physics Style Manual, or where particularly pertinent, those of the U.S. Geological Survey, the American Chemical Society, the Conference of Biological Editors, or Chandly, Barrett, and Batey (1954). The text must be written concisely; a telegraphic style will be suitable for some data presentations. It is recommended that a writer not conversant with English get help from an English-speaking colleague before submitting his manuscript for consideration by the *American Mineralogist*. Verbose or ungrammatical manuscripts will be returned.

10. Use consistent Systeme International (SI) units of the Metric System, with appropriate prefixes, italicize (by underlining in manuscript) symbols for physical quantities; use abbreviations without periods for units unless ambiguous. Where 0, O, l, 1, Greek letters, or other typography is possibly ambiguous in the text, instruct the printer by writing in the margin: "zero", "oh", "el", "one", etc. A table of special symbols available at our press may be obtained from the Editor. Complicated subscripts and superscripts should be avoided; parenthetical designations can often be used, *e.g.*, *d*(calc), $G(O_2)$. Precision of measurement may be indicated as 1.782 ± 0.002, if 0.002 represents a subjective estimate of the measurement error. Where sufficient data permit calculation of the estimated standard deviation (*esd*), indicate it as 7.3012 *esd* 0.0002. To save space in tables, the shortened form 7.3012(2) or 7.3012(11) respectively indicates *esd*'s of 0.0002 or 0.0011. A footnote to the table should then explain that "parenthesized figures represent the estimated standard deviation (*esd*) in terms of least units cited for the value to their immediate left, thus 7.3012(11) indicates an *esd* of 0.0011."

For acceptable symbols and abbreviations, see Table 1.

Use of Headings

Heads. An article is more attractive when set in type, and easier to read, if it is divided into major sections which are distinguished by first order headings. These first order heads should show the basic organization of the paper, and might be, for example: **Introduction; Previous Work; Methods: Results; Discussion; Conclusions and Implications; Acknowledgments; References.** For a mineral–centered article they might be: **Introduction; Occurrence and Associations; X–ray Crystallography; Chemical Composition; Physical and Optical Properties; Thermal Study; Discussion; Conclusions; Acknowledgments; References.**

Subheads, or Second Order Heads. A major section of a paper may itself be divided into subsections, each distinguished by a subhead. For example, if some of the previously cited major sections in the paper on a mineral seem too brief, they may be grouped together as second order heads under a single first order head. Thus, under the first order head **Results,** there might be grouped the subheads: *X–ray Crystallography; Chemical Composition; Physical and Optical Properties.* The previous heading, "Use of Headings" represents style of a second order head.

Third Order Heads. The three paragraphs of this subsection on heads begin with "third order heads," which may be used when a further subdivision is needed. If, in the previous example, two or more minerals are being studied, under the second order heads, *e.g. Physical and Optical Properties,* the specific mineral names might be used as third order heads.

Tables

11. Tables should be submitted as camera-ready copy, which can be photographed and included in your article without being **set** in type. To avoid undue delays or the necessity of retyping, use an **electric typewriter** with a **carbon ribbon,** and type each table on a separate sheet of white paper. We recommend an IBM Selectric typewriter equipped with a Prestige Elite 72 (IBM 012) or an Adjutant (IBM 030) ball. Footnotes to the table may be typed with a Courier Italic ball; they should be single spaced and their first line should be indented. White correction fluid as well as light blue guide lines, which will not photograph, are permissible. The camera-ready set of tables (in its own separate envelope) should be accompanied by two xerox (or other type) copies for use by reviewers. Assuming a typewriter with elite type—or any other 12 pitch typewriter which types 12 characters per inch—table widths should be (A) $6\frac{1}{3}$ inches or 76 characters wide, (B) 13 inches or 156 characters wide, or (C) 17 inches or 204 characters wide. Maximum lengths, including the table's heading and all footnotes, should be 17 inches for (A) and (B), which generally equals 102 single-spaced typewritten lines. Tables of type (C), which are broadside or side-turn tables, must be no less than 11 and no more than 13 inches long.

Number the tables consecutively with Arabic numerals. Type the table's title single-spaced, centered above the table, and all in capitals (except for the second letters in the chemical symbols for the elements). About 3 mm below the title, use a smoothly writing black ball-point pen to rule a double horizontal line, the spacing between these two lines being about 2 mm. Immediately below the double line, type the individual column headings, capitalizing only the first letter of their first word. Draw a single horizontal line to separate the column heads from the data to follow below them. The material in the body of the table should be single-spaced, or, if the presence of subscripts or superscripts prevents this, it may be double spaced (or 1½ spaced if your typewriter has a ½ space ratchet). After every four or five lines of data within the single-spaced body of the table—or as the material demands to block together like with like—skip a line, to aid the eye to follow horizontally along a given line. Below the final data in the table draw a single horizontal line to signify termination of the table. If the table continues onto a following page

TABLE 1. WORDS, ABBREVIATIONS, AND SYMBOLS COMMONLY USED IN THE AMERICAN MINERALOGIST*

Physical Quantities	Standard Abbreviations for Common Title Words of Periodicals**		Words Not Abbreviated
in. = inches***	Abstr act	Geophys ical	Any single-
Pressure	Acad emy	Inorg anic	word title
bar	(Akad.,Accad.)††	Int ernational	Acta
kbar = kilobars	Advan ces	Inst itute	Arkansas
atm = atmospheres	Aeronaut ical	Instrum ent	Atti
Temperature	Amer ican	Invest igations	Austria
cal = calories	Anal ytical	J ournal	Brazil
kcal = kilocalories	Ann als	(Zh urnal)	Clay or Clays
K = degrees Kelvin	Annu al	Jahrb uch	Colloid
°C = degrees Centigrade	Appl ied	Kristallogr afia	Earth
length	Arch ives(Ark iv)	Lab oratory	Fluorine
m = meter; cm = 10^{-2}m	Ass ociation	Lect ures	hour
mm = 10^{-3}m; μm = 10^{-6}m	Astronaut ical	Magn etic	Initial
nm = 10^{-9}m	At omic	Mater ials	Interior
Å = angstrom	Aust ralia	Meet ing	Kemi
Volume	Beitr age	Mem oirs	Mass
ml = milliliters	Ber ichte	Mineral ogy	Methods
$Å^3$	Bibliogr aphy	Mitt eilungen	Mines
time	Brit ain, or	Mod ern	Mining
sec = seconds	G reat Brit ain	Mol ecular	mole
m.y. = million years***	Bull etin	Monatsch efte	Neue, Neues
frequency (or ν)	(Bol., Boll.)	Nat ional	Nippon
g = gram; kg = kilograms	Bur eau	Nauk ovi	Nord
μg = microgram	Can adian	Pap er	Pacific
ρ = density	Chem istry(Chim.)	Petrogr aphy	percent
ppm = parts per million	Circ ular	Petrol eum	Petrology
pH	Collect ion	Phys ical	Radio
sp gr = specific gravity	Colloq ium	Planet ary	Soil
Intensity	Comm ission	Proc eedings	space group
I/I = relative intensity	Commun ication	Prof essional	X-ray
d = interplanar spacing	C omptes R endus	Progr ess	Year Book
hkl = diffraction index	Conf erence	Publ ications	
(hkl) = Miller index	Congr ess	Quart erly	
{hkl} = form	Contrib utions	Rep ort	
[uvw] = line or zone	Crystallogr aphy	Res earch	
{[uvw]} = set of symmetry equivalent lines	Dep artment	Rev iew	
	Deut sche	Sb ornik (Zbirnik)	
$MoK\alpha_1$ = radiation type	Dokl ady	Schweiz erische	Other Abbreviations
unit cell	Ecol ogy	Sci ence	p. = page
a, b, c = edge-lengths	Econ omic	Sediment ary	pp. = pages
$\underset{\sim}{a}$, $\underset{\sim}{b}$, $\underset{\sim}{c}$ = vectors†	Elec trical	Soc iety	ca = circa
α, β, γ = angles	Electron ic	Spectrochem istry	calc = calculated
refr. ind. = refractive indices, or:	Eng ineering	Stand ards	meas = measured
n, ε, ω, α, β, γ	Exp erimental	Surv ey	obs = observed
principal vibrations:	Fed eral	Tech nical	vs = versus
E, O; or $\underset{\sim}{\varepsilon}$, $\underset{\sim}{\omega}$ †	Forsch ungen	Trans actions	
X,Y,Z; or α,β,γ	Fortschr itte	Z eitschrift	
2V = optic axial angle	Geochem istry	Zentralbl att	
r > v = dispersion	Geogr aphy	Zh urnal	
	Geol ogy		

*The table title should be typed entirely in caps, centered, and should be the only material above the table itself. Other explanatory information can be placed as a footnote at the conclusion of the table, as done here. Instead of Arabic numerals or letters, indicate footnotes by symbols such as *, **, ***, †, ††.

In this table the underlined portions of words indicate their standard abbreviations. However, the use of underlining in your manuscript instructs the printer to set the underlined material in italics. Fortunately, the abbreviations underlined above are customarily set in italics.

**These abbreviations end with periods. Check Access for words not listed. When in doubt, spell out the entire word in the List of References to your paper.

***A period is used only after an abbreviation which, by itself, represents a complete word.

†The wavy underlining calls for use of bold face type and is customarily used for vector quantities.

††In general, words with the same root have the same abbreviation. Related words in other languages usually have similar abbreviations, e.g., Academy, Akademie.

or column, reserve this line so as to draw it only below the last line of data. Below this final line of the table, type (single-spaced) all footnotes and general references; do not include such material in the table's title. For a lengthy table running several pages, the footnotes might better appear below the point where called for (or at the bottom of the first page of typing) rather than at the very end of the table. A concluding horizontal line should appear below the last footnote.

12. An extensive table which prints to more than one page and is likely to interest only a few readers (*e.g.*, individual hydrothermal runs, observed and calculated structure amplitudes, multiple chemical analyses), should be separated from the publishable manuscript and marked for deposit in the National Auxiliary Publications Service of the American Society for Information Science. Material should be on labeled sheets that will be readable when reduced to 8½ × 11 in. The material is deposited by the Editor and is then directly available to any reader as photocopy or microfiche, at a nominal fee. The author will be given 8 copies of the microfiche of the deposited material. Such tables may (but need not be) numbered, and must be referred to in the manuscript by a footnote such as the following:

To obtain a copy of this material, order NAPS Document 00000 from ASIS, c/o Microfiche Publications, Division of Microfiche Systems Corporation, 305 East 46th Street, New York, N. Y. 10017. Please remit in advance $1.50 for microfiche or $5.00 for photocopies up to 30 pages, 15¢ for each additional page. Please check the most recent issue of this journal for the current address and prices.

Illustrations

13. The principal criterion for accepting illustrations is the amount of important information they convey. The following types of illustrations can often be replaced by a short sentence in the text: location map, photograph of a massive mineral or a simply bedded outcrop, graph of a linear calibration, routine X-ray diffraction or differential thermal analysis results, previously published illustrations. On the other hand, a single line drawing can often be substituted for an extensive table.

14. Drawings and photographs will generally be reproduced at (A) 3 1/6" wide, (B) 6 1/3" wide, (C) 8 1/2" wide. For type (C), which are broadside or side-turn figures, the reproduced length should be between 5 1/2 to 6 1/2 inches. Figures of types (A) and (B) may be up to 8 1/2" long, including their captions. The originals of these drawings and photographs should be retained by the author until he is notified by the Editor that his manuscript has been accepted. Two sets of xerox or other type copies of the illustrations and figures should be included with each manuscript submitted.

When the manuscript is accepted, the illustrations (either originals or clear glossy prints at approximately 1½ × sizes A, B, or C) should be sent to the Editor's Office.

15. Lines less than 0.1 mm when reduced to published size, or lines that are not black enough, may be lost in reproduction. Shading reproduces badly; use stippling or cross hatching. Graph paper does not look well when reprinted: draft graphs with either no grid or a very open grid. Figures combining line cuts and half-tone reproductions of photographs are expensive to reproduce. On photomicrographs use a bar scale on the photograph (not outside of it), instead of a magnification factor in the legend.

16. Do not insert illustrations in the text. All illustrations are figures. Individual parts may be grouped as one figure having a single legend, providing they do not extend beyond one page. Letter parts of the figure, neatly for reproduction, in the corner of (rather than below) each part. All captions for figures should be typed double-spaced on a separate sheet, numbered consecutively with Arabic numerals, including a general legend for any group figures.

References

17. References should be cited in the text as: (Penfield, 1900), Towers and Chipman (1957), (Bowen *et al.*, 1933); they should not be listed by number. Only references mentioned in the text (or tables or figures) should be listed.

18. References should be arranged alphabetically by the last name of the senior author and placed at the end of the paper, as in reference list below. Place the names of authors *after the senior author* in normal order (first name first). For ease in typesetting, the list of references should be double-spaced. Abbreviations generally follow those published in *Access* and its supplements (*Chemical Abstracts*).When you are unsure of an abbreviation, please spell out the full title word. See Table 1 for abbreviations of title words of journals frequently cited in *The American Mineralogist.*

19. References to unpublished material (manuscripts, reports, computer programs, personal communications, and the like) should be made in the text or acknowledgments section parenthetically or by footnote (see example below) rather than in the list of references. Specify the source person sufficiently so that he can be identified, for instance by his institution.

A report qualifies as published, and may be included in the list of references, if it is generally available to the world public. Reports from U. S. Government or Government-sponsored research are most generally available through the U. S. Department of Commerce National Technical Information Service, and such a report should be referred to by the NTIS document number ("AD," "PB," *etc.*), as in Busing *et al.* (1962) in Appendix.

20. Manuscripts *accepted* for publication, but which have not yet appeared in print, may be included in the list of references. Those which have been submitted but not yet accepted, and those which are under review or in the process of revision, should *not* be listed, but may be cited in the text, as: Brown and Gibbs (in preparation).

21. Reference to a presentation at a meeting should be to the published abstract, and should be identified as such just after the title of the paper. See Louisnathan and Gibbs (1971) in Appendix.

22. Translations, whether individual or from a cover-to-cover translation journal, should be listed by the original source, followed by the translated source in brackets. See Urusov (1967) in Appendix.

References

AMERICAN CHEMICAL SOCIETY (1967) *Handbook for Authors.* Amer. Chem. Soc., Washington, D. C.

AMERICAN INSTITUTE OF PHYSICS (1965) *Style Manual, rev. ed.* Amer. Inst. Phys., New York.

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CHANDY, T. W., P. R. BARRETT, AND CHARLES BATEY (1954) *The Printing of Mathematics.* Oxford Univ. Press, London.

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DONNAY, GABRIELLE, AND MICHAEL FLEISCHER (1970) Suggested outline for new mineral descriptions. *Amer. Mineral.* **55,** 1017–1019.

FLEISCHER, MICHAEL (1970) Procedure of the International Mineralogical Association Commission on New Minerals and Mineral Names. *Amer. Mineral.* **55,** 1016–1017.

HEY, M. H., C. GUILLEMIN, F. PERMINGEAT, AND J. P. DE ROVER (1961) Sur la nomenclature minèralogique. *Bull. Soc. Franc. Mineral. Crystallogr.* **84,** 96–104.

KENNARD, O., J. C. SPEAKMAN, AND J. D. H. DONNAY (1967) Primary crystallographic data. *Acta Crystallogr.* **22,** 445–449.

MCADIE, H. G. (1967) Recommendations for reporting thermal analysis data. *Anal. Chem.* **39,** 543.

PALACHE, CHARLES, HARRY BREMAN, AND CLIFFORD FRONDEL (1944) *System of Mineralogy of . . . Dana, 7th ed.,* **1,** John Wiley and Sons, New York.

U. S. GEOLOGICAL SURVEY (1964) *Suggestions to Authors, rev. ed.* U. S. Government Printing Office, Washington, D. C.

Appendix: Sample Entries for List of References

Journals:

GRØNVOLD, F., AND H. HARALDSEN (1952) On the phase relations of synthetic and natural pyrrhotites ($Fe_{1-x}S$). *Acta Chem. Scand.,* **6,** 1452–1469.

PENFIELD, S. L. (1900) On graftonite, a new mineral from Grafton, New Hampshire, and its intergrowth with triphylite. *Amer. J. Sci.,* **9,** 20–32.

ROBIE, R. A. (1966) Thermodynamic properties of minerals. *Geol. Soc. Amer. Mem.* **97,** 437–458.

TOWERS, H., AND J. CHIPMAN (1957) Diffusion of calcium and silicon in a lime-alumina-silica slag. *Trans. AIME,* **209,** 769–773.

Translated Articles:

URUSOV, V. S. (1967) Chemical bonding in silica and silicates. *Geokhimiya,* **4,** 399–412. [transl. *Geochem. Int.* **4,** 350–362 (1967)].

Abstracts:

LOUISNATHAN, S. J., AND G. V. GIBBS (1971) A Comparison of Si–O distances in the olivines with the bond overlap populations predicted by the extended Hückel molecular orbital (EHMO) theory. [abstr.] *Geol. Soc. Amer. Abstr. Programs,* **3,** 636.

Reports:

BUSING, W. R., K. O. MARTIN, AND H. A. LEVY (1962) ORFLS, a Fortran crystallographic least-squares refinement program. *U. S. Nat. Tech. Infor. Serv.,* ORNL-TM-**305.**

Books:

DEER, W. A., R. A. WHITE, AND J. ZUSSMAN (1962) *Rock Forming Minerals. Vol. 1, Ortho- and Ring Silicates.* John Wiley and Sons, Inc., New York.

FRIEDEL, G. (1926) *Leçons de Crystallographie.* Berger-Levrault, Paris. 602 pp.

Articles in Books:

HILLIG, W. B. (1952) Sources of weakness and the ultimate strength of brittle amorphous solids. *In* J. D. MacKenzie, Ed., *Modern Aspects of the Vitreous State, Vol. 2.* Butterworth, Inc., Washington.

SHOEMAKER, E. M., C. H. ROACH, AND F. M. BYERS, JR. (1962) Diatremes and uranium deposits in the Hopi Buttes, Arizona. *In* A. E. J. Engel, H. L. James, and B. G. Leonard, Eds., *Petrologic Studies: A Volume in Honor of A. F. Buddington.* Geol. Soc. Amer., New York. pp. 327–355.

Dissertations and Theses:

HALL, H. T. (1965) *The Systems Ag–As–S, Ag–Sb–S: Phase Relations and Mineralogical Significance.* Ph.D. Thesis, Brown University, Providence, Rhode Island.

More than one entry for an author:

BOYD, F. R. (1968) Quantitative electron–probe analysis of pyroxenes. *Carnegie Inst. Washington Year Book,* **66,** 327–334.

——— (1970) Garnet peridotites and the system $CaSiO_3$–$MgSiO_3$–Al_2O_3. *Mineral. Soc. Amer. Spec. Pap.* **3,** 63–75.

———, AND J. F. SCHAIRER (1964) The system $MgSiO_3$–$CaMgSi_2O_6$. *J. Petrology,* **5,** 545–560.

If two authors are repeated:

BOWEN, N. L. (1914) The ternary system: Diopside-forsterite-silica. *Amer. J. Sci.* **38,** 207–264.

———, AND J. F. SCHAIRER (1929) The system: Leucite-diopside. *Amer. J. Sci.* **18,** 365–374.

———, ———, AND E. POSNJAK (1933) The system, CaO–Fe)–SiO_2. *Amer. J. Sci.* **26,** 193–284.