

1. Styling of manuscript

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1.1. Typing style

12 pt standard, line pitch 22 pt, 25 lines per page and about 75 letters per line are preferred.

1.2. Manuscript arrangement

(1) On the first page (cover page) the following should be typed: 1) Title, 2) Authors, 3) Affiliation, 4) English synopsis, 5) blank two lines and 6) Keywords. In the case that the title requires over 70 letters, an abridged title of within 70 letters, for use as a headline in the publication, should be specified elsewhere.

(2) From the second page onwards, the contents should be in the following order: 1) the main text and Acknowledgement, 2) Appendix, 3) List of References and 4) List of captions of Tables and Figures. Each part should be typed on separate sheets. Then 5) Tables and Figures should follow, on separate sheets.

1.3. Page numbering

· Page numbering should be made at the bottom center of each sheet from the cover page onwards, in the order: Main text, Acknowledgement, Appendix, List of References, List of captions Tables and Figures, Tables and Figures.

2. Manuscript-making

2.1. General

(1) Manuscript should be written in American English.

(2) Trade names should not be used.

(3) Description of element symbols

· When an element name is used as a symbol of material, the use of element symbols should be avoided and the name of the element should be fully spelled out.

· When the element name is used as chemical symbol or adjectively used, the element symbol can be used.

2.2. Title

(1) The title of the paper should be determined such that it reflects the contents most suitably and concisely.

(2) Abbreviated symbols, if not conventionally used, should be avoided.

(3) Expressions such as “Study on” or “On the” should be avoided as the start of the title.

(4) Definite articles and indefinite articles are used as less as possible.

(5) The first letter of a word other than prepositions, conjunctions and articles are all capital letters

including hyphen-connected words.

2.3. Description of authors

Both the first name and last name should be written out fully. Middle names can be abbreviated.

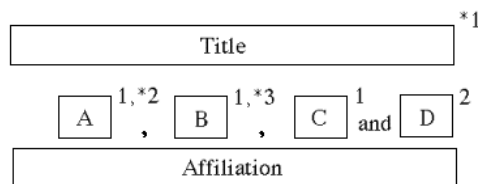
2.4. Description of affiliations

(1) When authors belong to different research organizations, each organization should be designated by superscript numbers, in the form 1, 2 etc. The name of the department, name of the organization, and the address should be fully written out and should be separated by commas. The postal zip code and country name should also be given.

(2) The name of the research organization should be given under the names of the authors.

(3) When an author's present affiliation is different from the name of the organization, in which the research was performed, it should be expressed as a footnote using an asterisk.

(4) For graduate students and undergraduate students, the affiliation should be expressed as a footnote using an asterisk.



1. Department of Materials Science, Faculty of Engineering, A University, Hitachi 316-0001, Japan
2. Corporate Research and Development Laboratory, B Co. Ltd., Sendai 980-0001, Japan

(Footnote) *1 Graduate Student, A University

*2 Graduate Student, A University. Present address: Corporate Research
and Development Laboratories, B Co. Ltd., Sendai 980-0001, Japan

2.5. English synopsis

Numeral equations and references cannot be designated by numbers.

2.6. Keywords

Except for proper nouns, all letters should be small letters.

(1) It is advisable to select keywords from the title and synopsis, since these contain important words. However, keywords can also be selected from other parts of the manuscript.

(2) Keywords should be selected so as to be concrete meaningful words with as narrow definition as possible.

Critical, Stress →critical stress

Life→tool life, fatigue life

(3) Use of keywords in noun form

Studied experimentally→ experimental study

(4) Name of elements, name of chemicals, name of compounds and so forth should be fully spelled out instead of using the symbol of the element.

CrMo steel→chromium molybdenum steel

E→Young's modulus, modulus of longitudinal elasticity

(5) Simplified symbols and abbreviated forms cannot be used.

ESR

(6) Use of compounded words and phrases is restricted to those that are commonly used.

(7) Be careful not to omit popular words.

(8) In the case that the authors have difficulties of whether to select or not, please select them as keywords.

2.7. Heading of body

large size heading: 1. 2. ...

middle size heading: 1.1 2.1...

small size heading: 1.1.1 2.1.1...

(1) (2)...

(a) (b)...

2.8. Tables and figures

Tables and Figures (photographs) are to be provided in one of the following file formats, and are to be submitted together with the manuscript. When the designated files are not available, completed figures are accepted for image processing. (No freehand drawings will be accepted.)

Adobe Illustrator (save as version 10)

PSD (All layers are combined)

EPS (PostScript level 1 compatibility)

PICT (Macintosh)

JPEG (high resolution, low compressed)

TIFF

PNG

GIF (not see-through, assign all colors)

Microsoft Word/ Excel/ PowerPoint

PDF (no down sampling and no compression, All fonts must be embedded)

2.8.1. Tables

(1) Each Table should be made on a separate sheet. Tables are set after the list of captions of Tables and Figures in submission. Tables should be numbered sequentially.

(2) Tables should be sequentially numbered in the following manner: Table 1, Table 2.

(3) The Table caption should be located at the top of the Table, starting with a capital letter and

ending with a period.

(4) Headings in the Table should begin with a capital letter.

(5) Size of Table: Same as the publication size.

Half width size figure: 70-80 mm in width, 12 point letter size, subscript 10 point size Full width size figure: 100-130 mm in width, 12 point letter size, subscript 10 point. The lines are of the same dense and their width is of 0.5 pt and up (0.18 mm and up).

The vertical line is not displayed as a general rule.

Example

Table 2 Thermal conductivities of some ceramics.

Thermal conductivity, $\kappa/W \cdot m^{-1} \cdot K^{-1}$	
TiB ₂	69.9(1300 K)
TiC	30.0(1773 K)
TiN	67.8(1773 K)
ZrB ₂	64.5(1300 K)

2.8.2. Figures including photographs

(1) General instructions

1) Each Figure should be drawn on each separate sheet.

2) Figures should be sequentially numbered in the following manner: Figure 1, Figure 2. If a figure is divided to several parts, each part should be labeled as follows: (a), (b), (c).

The locations of (a), (b), (c) are either of follows.



3) Figure caption is made under the figure, starting with a capital letter and ending with a period.

4) The original photograph should not be of a once-half-tone type. Clear contrast, and vivid lines and contours are required.

5) Color figures can be published with additional fee of 35,000 yen per printed page upon request of the author. The author should specify each figure whether it should be published in color or black/white.

(2) Drawing instruction

1) Specifies the necessary scale for the photographs.

2) Size of figure: Same as the publication size.

Half width size figure: 70-80 mm in width, 10 point letter size, subscript 8 point size

Full width size figure: 100-130 mm in width, 10 point letter size

3) Letters in the figure should be the same size.

4) Meshing consisting of thin, gray lines or very fine lines, and dense curve lines which may cause moire fringe phenomena, are not recommended.

5) The lines are of the same dense and their width is of 0.5 pt and up (0.18 mm and up).

The framework lines are made not by broken lines but solid lines.

(3) Graphical Abstract

1) Other than the text abstract, Graphical Abstract (hereafter GA) which best represents the contents of your paper can be displayed, but only on the J-STAGE Online Journal.

2) Authors who intend to submit GA should select a figure or a photograph for GA at the time of the submission of the paper. The appropriateness of GA will also be judged by the reviewer and the editor in the due course of reviewing process.

3) The same figure or photograph in the paper can be used for GA without modifications.

4) GA will be displayed in the same color as the figure published in the paper.

5) The phrases in the figure can be displayed.

6) The figure or the photograph of GA will be proofread by authors.

7) There is no additional charge for GA.

2.8.3. Expression of physical quantities in Figures and Tables

Expression of the quantity symbol is required.

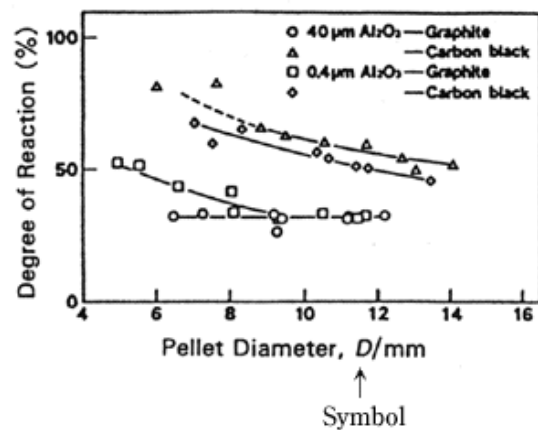
In the Figures and Tables, physical quantities should be expressed with use of the quantity symbol as shown in the following Figure.

The angle should be expressed as 10°, 20°...

Physical Quantity,	Symbol	/ Unit
(in Roman letter)	(in Italic)	(in Roman) In case of percentages or parts per million, write as examples instead of slash and unit.

- ex) Time, t / s
- Temperature, T / K
- Current Density, $I / A \cdot m^{-2}$
- Residual Stress, σ / MPa
- Strain, $\varepsilon (\%)$
- Silicon content, c (mass%)
- Silicon content, c (mass ppm)

Sample of Figure



2.9. Footnotes and References

(1) No footnotes are allowed in the main text. Comments and notes are to be shown in the

references.

(2) Oral presentation should not be shown in the footnotes. If it is needed, quote the abstracts or proceedings in REFERENCES.

(3) Citation of references should be made sequentially, in the form 1, 2) or 3-6). List of References should be attached.

(4) One reference number should correspond to one reference. Even if another reference of the same author is cited, allocate a different reference number and do not use the expression, "ibid".

(5) A reference is described in the order: names of authors (no need of comma before "and"), the abbreviated name of the journal, volume number (year), page. Volume number should be expressed in Gothic type, and the names of books in italics. The abbreviation of journals should follow the ISO standard.

[The Abbreviation of Journals](#)

(6) When authors are 15 or less, all of the names should be given, instead of using "et al".

Example of journal

1) S. R. Pati and M. Cohen: *Acta Metall.* **17** (1969) 189-200.

2) W. Köster, T. Gödecke and D. Heine: *Z. Metallk.* **63** (1972) 802-805.

Example of book

3) W. Hume-Rothery, R. E. Smallman and C. W. Haworth: *The Structure of Metals and Alloys*, (The Metals and Metallurgy Trust of the Institute of Metals and Institution of Metallurgists, London, 1969) pp. 336-342.

4) E. Houdremont: *Handbuch der Sonderstahlkunde*, 3. Aufl., 2. Bd., (Springer-Verlag, Berlin, 1956) pp. 934-939.

Example of Proceedings

5) C. Wagner: *Steelmaking, The Chipman Conference*, ed. by J. F. Elliott, (The M.I.T. Press, Cambridge, Massachusetts, 1965) pp. 19-25.

6) K. Abe and Y. Sato: *Proc. 4th Int. Conf. on Rapidly Quenched Metals*, ed. by T. Masumoto and K. Suzuki, (The Japan Inst. Metals, 1982) pp.19-25.

Example of footnotes

7) $1\text{eV}=1.60218\times 10^{-19}\text{J}$

Example of Annual meeting abstract

8) T. Yamada: *Collected Abstracts of the 1999 Autumn Meeting of the Japan Inst. Metals* (1999) pp. 101-102.

9) *Collected Abstracts of the 201x Spring (Autumn) Meeting of the Japan Inst. Metals 2011 No. xx* (DVD)

Example of Government report

10) A. Colloza and J.L. Dolce: NASA/TM2005-213427, (NASA Glenn Research Center 2005), p.22

(online)

Example of Webpage

11) "Grants.gov Application Guide SF424 (R&R)". U.S. Department of Health and Human Services. http://grants.nih.gov/grants/funding/424/SF424_RR_Guide_General_Adobe_VerC.pdf, (accessed 201x-04-28)

Example of Online database

12) MMDB-Entrez's Structure Database. National Library of Medicine, National Center of Biotechnology Information.

<http://www.ncbi.nlm.nih.gov/Structure/MMDB/mmdb.shtml>, (cited 201x-04-28).

2.10. Numerical equation

Numerical equations in the main text should be expressed as, for example, $x/3$, $a/(b + c)$ instead of $\frac{x}{3}$, $\frac{a}{b+c}$.

The exponential symbol should be expressed as "exp", if possible.

The expression of 4×10^{-2} is used instead of $4 \cdot 10^{-2}$.

2.11. Decimal point and thousand-unit comma

The decimal point for numerals should be put at the lower level of a numeral.

The thousand-unit comma should not be used to prevent confusion with decimal points.

2.12. SI Unit

(1) Usage of SI units should be, on the whole, based on Japanese Industrial Standards (JIS).

SI Units Conversion Table

(2) Among units which are not included in SI units but are permitted for combined usage in JIS, only the following units can be used.

(a) Units which can be used for combined usage because of their practical importance.

Time min, h, d

Plane angle ° , ' , "

Volume L

Mass t

(b) electron volt which can be used with SI units, in certain academic fields.

(However, it should be used only after the expression by J and be shown inside parentheses.)

(c) following units can be used

mass fraction in percentage mass%

mass fraction in parts per million mass ppm

atomic or molar fraction in percentage mol% (at% should not be used)

volume fraction in percentage vol%

NOTE : Celsius is a proper unit for temperature and is a SI unit

2.13. Material and alloy names

(1) Material names should be fully spelled out as shown in Table 1.

Table 1 Examples of material names.

Preferable expression	Should be avoided	Note
aluminum alloy	Al alloy	-
carbon nanotube	CNT	When CNT is defined as carbon nanotube in the first appearance in the text, CNT is acceptable afterwards.

(2) Alloy names

Alloy names consisting of two or more elements should be written as shown in Table 2.

Table 2 Examples of alloy names.

Preferable expression	Acceptable expression	Should be avoided
Al-Mg alloy	-	aluminum-magnesium alloy
Al-4mass%Cu-1mass%Mg alloy	Al-4Cu-1Mg alloy	Al-4wt%Cu-1wt%Mg alloy
Al-4%Cu-1%Mg alloy		
Ti-6mass%Al-4mass%V alloy	Ti-6Al-4V alloy	Ti6Al4V alloy
Ti-6%Al-4%V alloy		
Al-4mol%Cu-1mol%Mg alloy	-	Al-4at%Cu-1at%Mg alloy

(3) Alloy names or numbers defined in Industrial Standards

When alloys used in the manuscript were produced by certified companies' factories along with Industrial Standards such as JIS, AA, ASTM and so on, alloy names or numbers defined in the Standards can be correctly used as shown in Table 3. When alloy names or numbers are written in the title and the text in the first-appearance basis, the alloy names or numbers should be expressed together with fully spelled material names. Even if the alloy names or numbers are used, chemical compositions shown in the text or tables are preferable.

When alloys used in the manuscript were produced NOT by certified companies' factories BUT by use of laboratory-scale equipment, alloy names or numbers defined in the Standards should be avoided.

Authors should not name alloys as if the alloy names or numbers are seemed to be defined in Industrial Standards.

Table 3 Examples of alloy names or numbers defined in industrial Standards.

Preferable expression in the title and the text in the first-appearance basis	Acceptable expression in the text afterward	Should be avoided	Note
2024 aluminum alloy	2024	-	Industrial Standard by

	2024 alloy	-	Aluminum Association
AA2024 aluminum alloy	AA2024 AA2024 alloy	- -	Idiomatic expression for Industrial Standard by Aluminum Association
A2024S aluminum alloy extrusion	A2024S A2024S alloy	JIS 2024S JIS 2024S alloy	JIS
A2024 aluminum alloy	A2024 A2024 alloy	JIS 2024 JIS 2024 alloy	Idiomatic expression for JIS
AZ31B magnesium alloy	AZ31B AZ31B alloy	AZ31 AZ31 alloy	ASTM
MP1B magnesium alloy	MP1B MP1B alloy	MP1 MP1 alloy	JIS
Mg-8%Al-1%Zn alloy	-	AZ81 AZ81 alloy	AZ81 alloy is NOT defined in ASTM.

(4) Unalloyed or purified materials

As the word “pure” is understood differently by readers, authors should pay attention if they dare to use the word “pure” for material names. Table 4 shows preferable expressions for unalloyed or purified materials. When experimental results are affected by impurities in the materials, impurity contents should be shown in the text or tables in the manuscript.

Table 4 Preferable expressions for unalloyed or purified materials.

Preferable expression	Not preferable expression	Should be avoided	Note
1100 aluminum *1 aluminum *2 commercial-purity aluminum *3 high-purity aluminum *4	pure aluminum	-	*1 industrial Standards *2 equal and more than 99.00% purity *3 99.00-99.90% purity *4 equal and more than 99.90% purity
titanium *5 commercially pure titanium *6 highly pure titanium *7	pure titanium	-	*5 equal and more than 99% purity *6 99-99.9% purity *7 equal and more than 99.9% purity
-	-	high-purity Al-Mg alloy *8	*8 alloyed materials should not be named as “high-purity” even if high-purity raw materials are used in alloying.

2.14. Letters representing numeral values (quantity symbols)

Letters representing numeral values (quantity symbols) should be designated regardless of whether they are constants or variables, since they are printed in italic letters. Mathematical symbols are designated by Roman letters. Examples: quantity symbols:

length; *l*, area; *A*, *S*, volume; *V*, *v*, pressure; *P*, force; *F*, time; *t*, vector; *A*, *a*,

scientific constants; N , k

mathematical symbols exponential function; \exp
(when expressed by e , it is printed in italic letters)

natural logarithms; $\ln x$

general logarithms; $\log x$

sine; \sin

cosine; \cos

tangent; \tan

2.15. Acknowledgments

Acknowledgments should be made at the end of the manuscript, leaving an interval of one line after the body of the text. Financial assistance, the use of apparatus and the receipt of research funding and so on, should all be acknowledged in this section.

2.16. Appendix

Tables and Figures and equation numbers in the Appendix, should be numbered separately from the numbering in the main text, by writing: A1, A2, etc.

2.17. Approximation of printed page number

Title, authors, affiliation: about 40 lines in the body

English synopsis: one line in printed form of 16-20 words corresponds to about 40 words in the main text.

The main text: one page in printed form corresponds to about 1000 words or 6000 letters.