HELVETICA CHIMICA ACTA

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Contents of manuscripts submitted to *HCA* must not have been published previously, except in the form of a brief preliminary communication, nor have been submitted to another journal.

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2. Preparation of Manuscripts

2.1. ***General Considerations.*** Careful preparation of the manuscript and adherence to the format and conventions of *HCA* as laid down in these *Instructions for Authors* will facilitate rapid publication. Authors should consult recent issues of *HCA* for examples.

Manuscripts may be submitted in English, German, French, or Italian. Manuscripts must be prepared with a word processor and be printed *double-spaced* to allow for editorial markings. Authors are requested to reserve margins of at least 3 cm at the top and bottom of each page and at least 4 cm on the left-hand side. Copies made by a clearly legible duplication process are preferred.

Pages should be numbered consecutively beginning with the title page. References, tables, scheme and/or figure legends, formula collections, schemes, and figures ***must*** be grouped together ***in this order*** at the end of the manuscript and numbered accordingly. Original drawings of formulae, schemes, and figures should be furnished together with the manuscript.

A representative structural formula or scheme should be provided for the Table of Contents. The *maximum* available place for this graphical abstract is 3×10 cm.

Authors who are not fully fluent in English are strongly advised to seek assistance from a fluent colleague when preparing a manuscript. In all cases, it is wise to consult a standard manual of style (*e.g.*, 'The ACS Style Guide: A Manual for Authors and Editors', 2nd edn., Ed. J. S. Dodd, American Chemical Society, Washington, DC, 1997, or W. Strunk Jr., E. B. White, 'The Elements of Style', 4th edn., Prentice Hall, New York, 1999 (also found at *http://www.bartleby.com/141/index.html*)). Manuscripts containing grammatical and/or stylistic deficiencies are handicapped during the review and editorial processes, leading to *rejection* or *significantly longer publication times.*

Manuscripts should be kept to minimum length, and, for clarity, each work should be subdivided into labeled sections, *e.g.*, **Introduction**, **Results**, **Discussion**, **Experimental Part**.

Special types of print should be used as follows:

- Boldface: headings, designated numbers of chemical compounds.
- Italic: subheadings, configurational prefixes ((*R*)-, (*S*)-, *cis*-, *trans*-, *etc.*), Latin words or abbreviations, trade names of chemical compounds (first letter should be capitalized), names of authors if mentioned in the text.
- Small capital: symbols of molar and normal concentrations (M and N), D and L, the names of the discoverer in the nomenclature of genera, species, or varieties.
- Boldface italic: the italicized terms and prefixes in headings.

Special characters not available in the word-processing program should be clearly drawn in ink and explained unambiguously in the margin on first appearance.

2.2. *Title Page.* For the layout of the title page, a current issue of *HCA* should be consulted.

Attention is drawn to the following points:

a) The title of a manuscript, being of greatest importance for attracting readers' interest and for information retrieval, should clearly and accurately provide information on the content and emphasis of the work. The use of abbreviations, symbols, chemical formulae, and references in a title is strongly discouraged. First letters of nouns and adjectives are capitalized.

b) The authors' full first names, middle initials, and last names should be given, followed by the address(es) of the contributing laboratory or laboratories. The author to whom correspondence and/or inquiries should be directed should be indicated with an asterisk (*). Footnotes may be added to indicate the present mailing address(es) of the author(s). The corresponding author's mailing address, phone number, fax number, and e-mail address should also be included.

2.3. *Abstract.* The second page of the manuscript should be reserved for an abstract in English, independent of the language of the main text. If this is German, French, or Italian, the abstract should be preceded by an English translation of the title. ***The abstract, stating briefly the purpose of the research (if not clear from the title), the principal results, and major conclusions, should be self-explanatory and intelligible without reference to the text.*** References to structural formulae, *Tables*, *Schemes*, and *Figures*, by number, may be made in the abstract. For a typical contribution, an 80- to 200-word abstract is usually adequate.

2.4. *References.* References should be numbered sequentially in the order they are cited in the text. The numbers should be set in brackets, thus [2] or [3][14]. References, typed with double spacing, are to be collected in numerical order at the end of the main text. Titles of journals must be abbreviated according to *Chemical Abstracts* (*cf. Chemical Abstracts Service Source Index* (*CASSI*) and *Appendix I*).

Attention is drawn to the following conventions: *a*) Names of all authors of cited publications should be given. Use of '*et al.*' in the list of references is not accepted. *b*) Only the initials of first and middle names should be given. *c*) The name of the journal and volume number cited should be given in italics [1]. *d*) Composite references may be used, instead of a series of individual ones [2]. The use of the Latin terms *ibid.* and *idem* is no longer allowed, since these are not compatible with electronic information-retrieval systems [3]. When a part of a composite reference is cited individually in the text, the parts of the composite reference may be specified by a), b), *etc.* [4a][4b]. *e*) In references described as 'personal communications', an affiliation should follow the name(s) of the person(s) cited [5]. *f*) Descriptions such as 'for a review, see ...' should be included in the body of the text and not as part of the reference.

Examples of references to book chapters [6], books [7], patents [8], computer programs [9], and Ph.D. theses [10] are also given.

REFERENCES

[1] M. Barbero, I. Degani, S. Dughera, R. Fochi, L. Piscopo, *J. Chem. Soc., Perkins Trans. 1* **1996**, 289.

[2] S. R. Wilson, Y. Wu, *Chem. Commun.* **1993**, 784; F. Arias, Q. Yie, Y. Wu, Q. Lu, S. R. Wilson, L. Echegoyen, *J. Am. Chem. Soc.* **1994**, *116*, 6388.

[3] H. Voss, S. Schwager, U. Wirkner, J. Zimmermann, H. Erfle, N. A. Hewitt, T. Rupp, J. Stegemann, W. Ansorge, *Methods Mol. Biol.* **1991**, *3*, 1; H. Voss, S. Schwager, U. Wirkner, J. Zimmermann, H. Erfle, N. A. Hewitt, T. Rupp, J. Stegemann, W. Ansorge, *Methods Mol. Biol.* **1992**, *4*, 30.
[4] a) J.-P. Bourgeois, F. Diederich, E. Echegoyen, J.-F. Nierengarten, *Helv. Chim. Acta* **1998**, *81*, 1835; b) E. Dietel, A. Hirsch, E. Eichhorn, A. Rieker, S. Hackbarth, B. Röder, *Chem. Commun*. **1998**, 1981.
[5] H. Vančik (Faculty of Natural Sciences, University of Zagreb), personal communication.
[6] H. A. Krässig, in 'Cellulose Structure, Accessibility and Reactivity', Ed. M. B. Huglin, Gordon and Breach Science Publishers, Yverdon, 1992, Vol. 11, p. 6.
[7] J. D. Dunitz, 'X-Ray Analysis and the Structure of Organic Molecules', Verlag Helvetica Chimica Acta, Basel, and VCH, Weinheim, 1995.
[8] T. Kamata, N. Wasada, Jap. Pat. 2-204469, 1990, p. 381–384.
[9] G. M. Sheldrick, SHELXL97, Program for the Refinement of Crystal Structures, University of Göttingen, Germany, 1997.
[10] B. R. Peterson, Ph.D. Thesis, University of California at Los Angeles, 1994.

In the text, reference to author(s) of cited works should be made without giving initials, *e.g.*, '. . . as shown by *Kamata* and *Wasada* [8]'. If the reference carries the names of three or more authors it should be quoted as '*Barbero et al.* [1]', if *Barbero* is the first author, or as '*Piscopo* and co-workers [1]', if *Piscopo* is the senior author.

2.5. *Footnotes.* Footnotes, *i.e.*, explanations or comments on the text, should be kept to a minimum. Each one should be indicated in the manuscript by a superscripted number followed by a closing parenthesis, *e.g.*, '. . . is implied[1]), otherwise . . .', and numbered sequentially throughout the manuscript. Each footnote should be typed ***double-spaced*** at the bottom of the page of the manuscript in which it is first mentioned. Footnotes must not be included with the references.

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2.7. *Structural Formulae, Schemes, and Figures.* Laser printouts, line drawings, or sharp glossy photographs (no *Xerox* or similar copies) of the figures and structural formulae should be submitted with the manuscript. Copies must be included with each copy of the manuscript. Original drawings on A4 paper are preferred, and they must contain all necessary symbols and lettering, *i.e.*, they must be usable without additional artwork by the *HCA* printers.

Line thickness, line spacing, and, especially, the size of all the necessary symbols and lettering should be planned for optimal legibility after photoreduction to 12.5-cm width. All atom labels and text should be in 'plain' style (lightface), and compound numbers should be in boldface type. Computer-plotted drawings must satisfy the same criteria.

Original drawings or photographs should be identified with the author's name and numbered to agree with the figure legends.

Structural formulae will not be type-set and must, therefore, be provided by the authors ready for reproduction. They should be combined in suitable schemes to reduce

the cost of block-cutting. In general, only displayed formulae should be given boldface key numbers; compounds mentioned only in the text should be referred to by name.

Currently, the following chemical drawing packages are acceptable: *ChemDraw* up to version 10.0, *Isis/Draw* up to version 2.5, or *ACD/ChemSketch* up to version 10.0. For style files and drawing settings, please visit the following internet page: *http//www.helvchimacta.ch/chemicaldrawing.htm*.

For authors using the *ChemDraw* program, the following preferences should be selected: bond spacing 15% of length, 10-pt *Helvetica* or *Arial* font for atom labels, 12-pt *Helvetica* or *Arial* font for captions, fixed length 17 pt, bold width 2.0 pt, line width 0.6 pt, margin width 2.0 pt, hash spacing 2.0 pt. The page setup should be set to 100%. With appropriate margin settings, a maximum width of 18.0 cm should be created for structure blocks, schemes, and equations. Compound numbers should be in boldface type, but not atom labels or captions. Drawings should be labeled 'reduce to 70% of current size for publication'.

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3. Electronic Submission of Manuscripts

An electronic version of the manuscript should also be submitted. Submissions not provided in electronic form may face significant delays in publication. *The following word-processing packages are currently accepted*: PC: *MS Word* (up to version 2003); *Macintosh*: *MS Word* (up to version 2004). Publication of manuscripts prepared with these software packages may be facilitated, if the following guidelines are adhered to. Failure to adhere to these instructions may prevent all or part of the material supplied on disk from being used in production.

A hardcopy (in *triplicate*) of the manuscript is required for review. Electronically saved material should accompany the manuscript. The electronic version ***must*** exactly match the version of the hardcopy.

When preparing a manuscript, use the document mode or its equivalent in the word-processing program; *i.e.*, do not save files in 'Text Only' (ASCII) mode. If a non-Western version of the word-processing software was used to prepare the manuscript, save the file in Rich-Text Format (RTF). Do not include any page-layout instructions such as placement information for graphics in the file. The text should be left-justified,

and automatic end-of-line hyphenation should be turned off. Use carriage returns only to end headings and paragraphs, not to break lines of text. Do not insert spaces before punctuation. References must conform to the format described above and printed in the journal. Ensure that all characters are correctly represented throughout the manuscript: for example, 1 (one) and l (ell), 0 (zero) and O (Oh), X (ex) and × (times sign). Check the final copy carefully for consistent notation and correct spelling. Check the disk with a virus-detection program. Disks containing viruses will not be processed. Label the disk with the manuscript name and the name of corresponding author. Additionally, platform, version of software used, and file names should be provided.

All text (including the title page, abstract, all sections of the manuscript, figure captions, scheme or chart titles and footnotes, and references) and tabular material should be in one file, with the complete text first, followed by the tabular material. It is best to use the fonts '*Times*', '*Symbol*', and '*Arial*' or '*Helvetica*'. Some other fonts, particularly those that do not come bundled with the system software, may not translate properly. Ensure that all special characters (*e.g.*, Greek characters, math symbols, *etc.*) are present in the body of the text as characters and not as graphical representations. Tables created with a word processor's table format feature are preferred over those prepared in text mode. Ensure that each data entry is in its own table cell. If the text mode is used, separate columns with a single tab and use a line feed (return) at the end of each row.

Graphics, *e.g.*, figures, schemes, *etc.* should be provided on a separate diskette or CD in the original file format and as TIFF files at a resolution of at least 300 dpi. The file name for each image should be descriptive for the graphic. Since TIFF files are rather large, they may also be compressed (as zip files).

4. Nomenclature

All new compounds should be named in accordance with *IUPAC* rules (*cf. Appendix II*). As an additional guideline, the *Index Guide of Chemical Abstracts* should be consulted. The use of *ACD/Name* (version 9.0) is recommended. Some special conventions peculiar to *HCA* are:

For common solvents, reagents, or other compounds, the molecular formulae or accepted abbreviations may be used: *e.g.*, $CHCl_3$, NaCl, $SOCl_2$, MeOH, DMF, DMSO, THF, Py. An *ad hoc* abbreviation may be used for a name or formula that occurs repeatedly. This has to be clearly defined, *e.g.*, tetrahydrocannabinol (THC).

Different alkyl or arylalkyl radicals should be designated with superscripted numbers: R^1, R^2, R^3, *etc.* (Subscripts are used only to denote stoichiometry.) Aryl radicals should be designated by Ar^1, Ar^2, *etc.*, all others by X, Y, *etc.* (*e.g.*, X = O, Y = NH_2, Z = Br).

Individual atoms should be referred to as C(2), N(5) (not C-2 and N-5), *etc.* For 'hydrogen atom attached to carbon atom 4', *etc.*, *HCA* prefers the notation H–C(4).

Some symbols and abbreviations are listed in *Appendix III*.

5. Units and Their Symbols

SI Units are to be used, especially in contributions dealing with physical chemistry. However, some non-SI units listed in *Appendix IV* are acceptable.

6. Special Instructions Concerning Contributions Containing X-Ray Crystal-Structure Results

All contributions which report the results of a crystal-structure determination, even in a minor way, must adhere to the following instructions.

It is the results of crystal-structure determinations that are of prime interest to readers of *HCA*. A detailed description of the experiment is not usually necessary, and only the pertinent crystallographic data need to be summarized in the experimental section. However, the full crystallographic data must be deposited in one of the crystallographic databases (see *d* below) ***before*** the manuscript is submitted. In addition, authors must validate their crystallographic data (see *c* below) and include the Validation Report with their manuscript. The manuscript will not be distributed to the referees until the database deposition numbers and Validation Reports for the reported crystal structures have been provided.

a) *Information to be contained within the* Discussion *Section:*

A labeled view of the molecule with ***displacement ellipsoids, not arbitrary spheres***, will usually suffice, unless the authors specifically wish to discuss particular aspects of the structure or the experiment.

A brief description of the structure or any unusual features therein and a table of significant bond lengths, angles, or torsion angles may be given where appropriate to the discussion.

Full tables of refined atomic coordinates, bond lengths and angles, and related information will only be printed when *specifically* requested by the authors, and when the referees agree that the information is essential to the understanding of the discussion.

b) *Information which must be contained within the* Experimental Part:

A brief description of the procedures used for data collection, structure solution, and refinement. For routine analyses, this need not amount to more than a few sentences, but unusual parameters or procedures should be described. Crystallographic nomenclature and conventions should conform to the usage of *International Tables for Crystallography*. The following items should be given explicitly:

– Systematic name, *Chemical Abstracts* Reg. No., or other identifying name
– Source of material and solvent for crystallization
– Chemical formula
– Formula weight
– Crystal size
– Unit-cell dimensions and volume with standard uncertainties
– Crystal system and space group
– Number of molecules or formula units per unit cell
– Diffractometer used
– Radiation and wavelength
– Temperature and pressure of measurement (if different from 298 K and 1 atm)
– Calculated density D_x (and measured density, D_m, if applicable)
– Linear absorption coefficient
– Method of measuring intensities
– Max. value of $(\sin\theta)/\lambda$ or θ reached in intensity measurements

– Type of absorption correction applied (if applicable) and max. and min. values of correction
– Decay correction (if applicable) with maximum decay value
– Method used to solve and refine structure including treatment of H-atoms
– Use of F or F^2 magnitudes in least-squares refinement
– Number of measured, independent, and observed reflections
– Criterion for classifying reflections as observed [$I > n\sigma(I)$]
– Number of parameters refined
– Final values of $R(F)$ for the $I > n\sigma(I)$ reflections, wR (on F or F^2) for all reflections used in the refinement, and S (goodness-of-fit)
– Max. positive and max. negative electron density in final *Fourier* synthesis
– For polar structures, reason for choice of enantiomorph or method of testing absolute configuration
– All computer programs used

c) Validation of Crystallographic Data (to be done before submission of the manuscript)

In order to reduce the likelihood of incorrect or substandard crystal structures being reported, authors must test the validity of their crystal-structure determinations prior to submission of their manuscript. The CIF [3]) for each structure in the paper can be uploaded to the IUCr's CHECKCIF facility at *http://journals.iucr.org/services/cif/checking/checkform.html* or validated locally with the program PLATON (downloadable from *http://www.cryst.chem.uu.nl/platon/*). Both of these validation methods generate a Validation Report. Authors should examine the Validation Reports to ensure that no serious oversight has occurred with their crystal structure determinations (*e.g.*, incorrect space group, seriously deficient data quality or structural model) and take appropriate corrective action when required. A copy of the final Validation Report for each structure in the paper must be submitted with the manuscript, and any unresolved serious validation issues should be commented upon.

d) Deposition of Crystallographic Data (to be completed before submission of the manuscript)

Prior to submission of a manuscript, all crystallographic data must be deposited electronically in CIF format with the appropriate crystallographic database so that the referees can access the data.

The crystallographic data for ***organic and organometallic*** compounds should be deposited with the *Cambridge Crystallographic Data Centre* (*CCDC*) (see: *http://www.ccdc.cam.ac.uk)*. Send your data in CIF format (excluding structure factors) by e-mail to *deposit@ccdc.cam.ac.uk*. The *CCDC* will provide the authors with one deposition number for each structure by return e-mail. These deposition numbers should be included as a footnote in the manuscript by using the following standard text:

[3]) Details concerning the Crystallographic Information File (CIF) format are available from *Acta Crystallogr., Sect. A* **1991**, *47*, 655 or *http://www.iucr.org/iucr-top/cif/index.html.*

> 'CCDC-…… contains the supplementary crystallographic data for this paper. These data can be obtained free of charge *via* http://www.ccdc.cam.ac.uk/data_request/cif (or from the *Cambridge Crystallographic Data Centre*, 12 Union Road, Cambridge CB2 1EZ, UK; fax: +44 1223 336033; e-mail: deposit@ccdc.cam.ac.uk).'

The data for ***inorganic*** compounds should be deposited with the Fachinformationszentrum Karlsruhe (see: *http://www.fiz-informationsdienste.de/en/DB/icsd/depot.html*). Send your CIF by e-mail to *crysdata@fiz-karlsruhe.de*. A CSD number will be notified by return e-mail. The CSD number should be included as a footnote in the manuscript by using the following standard text:

> 'Further details of the crystal structure investigation(s) may be obtained from the Fachinformationszentrum Karlsruhe, Informationsdienste, Hermann-von-Helmholtz-Platz 1, D-76344 Eggenstein-Leopoldshafen, Germany, on quoting the depository number(s) CSD.…'

7. Proofs and Corrections

The corresponding authors will be provided with two sets of proofs, one of which should be corrected and returned together with the edited manuscript to the editor within the indicated deadline. The author is solely responsible for checking the proofs.

Standard correction marks should be used. Corrections of errors other than those due to the printers or editors, or addition of new text, will be charged.

The author(s) should complete the keyword form provided with the proofs.

> Keywords are entries in the annual subject index and will be published together with the Abstract on http://www.interscience.wiley.com/journal/hca. Well-chosen keywords will help a reader to find articles of potential interest. Individual keywords should consist of not more than three words. Very general words or phrases (*e.g.*, organic compounds, synthesis, instability, color, *etc.*) are clearly unsuitable as keywords.

A total of 30 reprints will be provided free of charge to the corresponding author. Additional reprints and/or a PDF file may be requested with the order form on the title page of the galley proof.

Appendix I. *Selected Journal Abbreviations*

A

Acc. Chem. Res.
Acta Chem. Scand., Ser. A/B
Acta Crystallogr., Sect. A/B/C/D
Adv. Mass Spectrom.
Adv. X-Ray Anal.
Agric. Biol. Chem.
Anal. Biochem.
Anal. Chem.
Anal. Chim. Acta
Angew. Chem.
Angew. Chem., Int. Ed.
Angew. Makromol. Chem.
Ann. Chem. (Fr.)
Ann. Chem. (Roma)
Arzneim.-Forsch.
Aust. J. Chem.

B

Ber. Bunsenges. Phys. Chem.
Ber. Dtsch. Chem. Ges.
Biochemistry
Biochem. Biophys. Res. Commun.
Biochem. J.
Biochem. Pharmacol.
Bull. Chem. Soc. Jpn.
Bull. Soc. Chim. Belg.
Bull. Soc. Chim. Fr.

C

Can. J. Biochem.
Can. J. Chem.
Carbohydr. Res.
Chem. Abstr.
Chem. Ber.
Chem. Biodiv.
Chem. Commun.
Chem. Eng. News
Chem. Eng. Sci.
Chem. Eng. (N. Y.)
Chem. – Eur. J.
Chem. Ind. (London)
Chem. Lett.
Chem. Pharm. Bull.
Chem. Phys.
Chem. Phys. Lett.
Chem. Rev.
Chem. Soc. Rev.
Chimia
Collect. Czech. Chem. Commun.
C. R. Acad. Sci., Ser. II/III

D

Dokl. Akad. Nauk SSSR

E

Electrochim. Acta
Eur. J. Biochem.
Eur. J. Inorg. Chem.
Eur. J. Org. Chem.
Eur. J. Pharmacol.
Experientia

F

Fresenius' J. Anal. Chem.

G

Gazz. Chim. Ital.

H

Helv. Chim. Acta
Heterocycles

I

Indian J. Chem., Sect. A/B
Inorg. Chem.
Inorg. Chim. Acta
Inorg. Nucl. Chem. Lett.
Int. J. Biochem.
Int. J. Chem. Kinet.
Int. J. Mass Spectrom. Ion Phys.
Int. J. Pept. Protein Res.
Int. J. Quantum Chem.
Izv. Akad. Nauk SSSR, Ser. Khim.

J

J. Am. Chem. Soc.
J. Antibiot.
J. Appl. Chem. Biotechnol.
J. Appl. Crystallogr.
J. Appl. Electrochem.
J. Biochem.
J. Biol. Chem.
J. Chem. Educ.
J. Chem. Phys.
J. Chem. Soc., Chem Commun.
J. Chem. Soc., Dalton Trans.
J. Chem. Soc., Faraday Trans. 1/2
J. Chem. Soc., Perkin Trans. 1/2
J. Chem. Thermodyn.
J. Chromatogr.
J. Chromatogr. Sci.
J. Electrochem. Soc.
J. Electron Spectrosc. Relat. Phenom.
J. Fluorine Chem.
J. Heterocycl. Chem.
J. Lipid Res.

J. Liq. Chromatogr.
J. Magn. Reson.
J. Med. Chem.
J. Mol. Spectrosc.
J. Organomet. Chem.
J. Org. Chem.
J. Pharm. Pharmacol.
J. Pharm. Sci.
J. Photochem.
J. Phys. Chem.
J. Prakt. Chem.
J. Radioanal. Chem.
J. Solid State Chem.
J. Solution Chem.
J. Steroid Biochem.
Jpn. J. Antibiot.
Jpn. J. Pharmacol.

K

Khim. Prir. Soedin.

L

Liebigs Ann. Chem.
Lipids

M

Microchem. J.
Microchim. Acta
Mol. Pharmacol.
Mol. Phys.
Monatsh. Chem.

N

Nature (London)
Naturwissenschaften
Nouv. J. Chim.
Nucleic Acids Res.

O

Org. Magn. Reson.
Org. Mass Spectrom.

P

Pharmacology
Pharmacol. Res. Commun.
Photochem. Photobiol.
Phytochemistry
Planta Med.
Polym. J.
Pol. J. Chem.
Proc. Anal. Div. Chem. Soc.
Proc. Natl. Acad. Sci. U.S.A.
Pure Appl. Chem.

R

Radiat. Phys. Chem.
Recl. Trav. Chim. Pays-Bas

S

Science
Spectrochim. Acta, Part A/B
Synthesis
Synth. Commun.
Synth. Lett.

T

Talanta
Tetrahedron
Tetrahedron Lett.
Theor. Chim. Acta
Topics Curr. Chem.

V

Vitamins

Y

Yakugaku Zasshi

Z

Z. Anorg. Allg. Chem.
Z. Kristallogr., Kristallogeom., Kristallphys., Kristallchem.
Z. Naturforsch., A/B/C
Z. Phys. Chem. (Leipzig)
Z. Phys. Chem. (Wiesbaden)
Zh. Neorg. Khim.
Zh. Obshch. Khim.
Zh. Org. Khim.

Appendix II. *IUPAC Recommendations on Nomenclature, Symbols, and Terminology*

I. Nomenclature of Organic Chemistry

1. 'Nomenclature of Organic Chemistry, Sections A, B, C, D, E, F, and H; 1979 Edition' (The 'Blue Book'), IUPAC, Pergamon Press, Oxford, 1979.
2. 'A Guide to IUPAC Nomenclature of Organic Compounds, Recommendations 1993', Blackwell Scientific Publications, Oxford – London – Edinburgh – Boston – Melbourne – Paris – Berlin – Vienna.
3. 'Extension of Rules A-1.1 and A-2.5 Concerning Numerical Terms Used in Organic Chemical Nomenclature (Provisional)', *Pure Appl. Chem.* **1983**, *55*, 1463.
4. 'Revision of the Extended *Hantzsch-Widman* System of Nomenclature for Heteromonocycles', *Pure Appl. Chem.* **1983**, *55*, 409.
5. 'Treatment of Variable Valence in Organic Nomenclature (Lambda Conventions) (Recommendations 1983)', *Pure Appl. Chem.* **1984**, *56*, 769.
6. 'Glossary of Terms Used in Physical Organic Chemistry', *Pure Appl. Chem*. **1983**, *55,* 1281.
7. 'Nomenclature for Straightforward Transformations (Provisional)', *Pure Appl. Chem*. **1981**, *53,* 305.
8. 'Extension of Rules A-1.1 and A-2.5 Concerning Numerical Terms Used in Organic Chemical Nomenclature', *Pure Appl. Chem*. **1986***, 58,* 1693.
9. 'Glossary of Terms Used in Photochemistry (Recommendations 1988)', *Pure. Appl. Chem*. **1988**, *60*, 1055.
10. 'Names for Hydrogen Atoms, Ions, and Groups, and Reactions Involving Them (Recommendations 1988)', *Pure Appl. Chem*. **1988**, *60*, 1115.
11. 'Nomenclature for Cyclic Organic Compounds with Contiguous Formal Double Bonds (the δ-Convention) (Recommendations 1988)', *Pure Appl. Chem*. **1988**, *60*, 1395.
12. 'System for Symbolic Respresentation of Reaction Mechanisms (Recommendations 1988)', *Pure Appl. Chem.* **1989**, *61*, 23.
13. 'Nomenclature for Organic Chemical Transformations (Recommendations 1988)', *Pure Appl. Chem.* **1989**, *61*, 725.
14. 'Biotransformation – a Useful Tool in Organic Chemistry', *Pure Appl. Chem.* **1990**, *62*, 753.
15. 'Revised Nomenclature for Radicals, Ions, Radical Ions, and Related Species (Recommendations 1993)', *Pure Appl. Chem.* **1993**, *65*, 1357.
16. 'Glossary of Terms Used in Physical Organic Chemistry (Recommendations 1994)', *Pure Appl. Chem.* **1994**, *66*, 1077.
17. 'Glossary of Class Names of Organic Compounds and Reactive Intermediates Based on Structure (Recommendations 1995)', *Pure Appl. Chem.* **1995**, *67*, 1307.
18. 'Nomenclature and Terminology of Fullerenes: A Preliminary Survey', *Pure Appl. Chem.* **1997***, 69*, 1411.
19. 'Nomenclature of Fused and Bridged Fused Ring Systems (Recommendations 1998)', *Pure Appl. Chem.* **1998***, 70*, 144.
20. 'Extension and Revision of the von Baeyer System for Naming Polycyclic Compounds (Including Bicyclic Compounds) (Recommendations 1999)', *Pure Appl. Chem.* **1999**, *71,* 513.
21. 'Extension and Revision of the Nomenclature for Spiro Compounds (Recommendations 1999)', *Pure Appl. Chem.* **1999**, *71*, 531.
22. 'Revised Section F: Natural Products and Related Compounds (Recommendations 1999)', *Pure Appl. Chem.* **1999**, *71*, 587.
23. 'Corrections to *A Guide to IUPAC Nomenclature of Organic Compounds* (Recommendations 1993)', *Pure Appl. Chem.* **1999**, *71*, 1327.
24. 'Glossary of Terms Used in Theoretical Organic Chemistry (Recommendations 1999)', *Pure Appl. Chem.* **1999**, *71*, 1919.
25. 'Nomenclature for the C_{60}-I_h and C_{70}-$D_{5h(6)}$ Fullerenes (Recommendations 2002)', *Pure Appl. Chem.* **2002**, *74*, 629.
26. 'Phane Nomenclature. Part I: Phane Parent Names (Recommendations 1998)', *Pure Appl. Chem.* **1998**, *70*, 1513.
27. 'Phane Nomenclature. Part II: Modification of the Degree of Hydrogenation and Substitution Derivatives of Phane Parent Hydrides (Recommendations 2002)', *Pure Appl. Chem.* **2002**, *74*, 809.
28. 'Errata. Revised Section F: Natural Products and Related Compounds (Recommendations 1999). Corrections and Modifications (2004)', *Pure Appl. Chem.* **2004**, *76*, 1283
29. 'Numbering of Fullerenes (Recommendations 2004)', *Pure Appl. Chem.* **2005**, *77*, 801.

II. Biochemical Nomenclature

1. 'Biochemical Nomenclature and Related Documents'; A Compendium, 2nd Edition, International Union of Biochemistry and Molecular Biology, Portland Press, London – Chapel Hill, 1992.

2. 'Nomenclature and Symbolism for Amino Acids Peptides (Recommendations 1983)', *Pure Appl. Chem.* **1984**, *56*, 595.
3. 'Abbreviated Nomenclature of Synthetic Polypeptides (Polymerized Amino Acids)', *Pure Appl. Chem.* **1973**, *33*, 437
4. 'Abbreviations and Symbols for Description of Conformation of Polypeptide Chains (Rules Approved 1974)', *Pure Appl. Chem.* **1974**, *40*, 291.
5. 'Nomenclature of Carbohydrates (Recommendations 1996)', *Pure Appl. Chem.* **1996**, *82*, 1919.
6. 'Nomenclature of Unsaturated Monosaccharides (Provisional)', *Pure Appl. Chem.* **1982**, *54*, 207.
7. 'Nomenclature of Branched-Chain Monosaccharides (Provisional)', *Pure Appl. Chem.* **1982,** *54,* 211.
8. 'Conformational Nomenclature for Five- and Six-Membered Ring Formes of Monosaccharides and their Derivatives (Provisional)', *Pure Appl. Chem.* **1982**, *53*, 1901.
9. 'Polysaccharide Nomenclature (Provisional)', *Pure Appl. Chem.* **1982**, *54*, 1517.
10. 'Abbreviated Terminology of Oligosaccharide Chains (Provisional)', *Pure Appl. Chem.* **1982***, 54*, 1517.
11. 'Symbols for Specifying the Conformation of Polysaccharide Chains (Provisional)', *Pure Appl. Chem.* **1983**, *55*, 1269.
12. 'Nomenclature of Cyclitols', *Pure Appl. Chem.* **1974**, *37,* 283.
13. 'Abbreviations and Symbols for Nucleic Acids, Polynucleotides, and their Constituents (Rules Approved 1974)', *Pure Appl. Chem.* **1974**, *40*, 277.
14. 'Abbreviations and Symbols for the Description of Conformations Polynucleotide Chains (Provisional)', *Pure Appl. Chem.* **1983**, *55*, 1296.
15. 'Nomenclature of Tetrapyrroles (Recommendations 1986)', *Pure Appl. Chem.* **1987**, *59*, 779.
16. 'Nomenclature of Corrinoids', *Pure Appl. Chem.* **1976**, *48*, 459.
17. 'Nomenclature of Steroids (Recommendations 1989)', *Pure Appl. Chem.* **1989**, *61*, 1783.
18. 'Nomenclature of Carotenoids (Rules Approved 1974)', *Pure Appl. Chem.* **1975**, *41*, 405.
19. 'Nomenclature of Retinoids (Provisional)', *Pure Appl. Chem.* **1983**, *55*, 721.
20. 'Nomenclature of Tocopherols and Related Compounds', *Pure Appl. Chem.* **1982**, *54,* 1507.
21. 'Nomenclature of Vitamin D (Provisional)', *Pure Appl. Chem.* **1982**, *54*, 1511.
22. 'Nomenclature of Quinones with Isoprenoid Side-Chains (Rules 1973)', *Pure Appl. Chem.* **1974**, *38*, 439.
23. 'Definitive Nomenclature for Vitamin B-6 and Related Compounds', *Pure Appl. Chem.* **1973**, *33*, 445.
24. 'Nomenclature of Iron-Sulfur Proteins (Recommendations 1978)', *Eur. J. Biochem.* **1979,** *93*, 427; Corrections, *ibid***. 1979**, *95*, 369 and *102*, 315.
25. 'Enzyme Nomenclature Recommendations 1978', Academic Press, New York, 1979; 'Supplement 1. Corrections and Additions', *Eur. J. Biochem.* **1980**, *104*, 1; 'Suppelment 2. Corrections and Additions'. *Eur. J. Biochem.* **1981**, *116*, 423.
26. 'Multienzyme Proteins', *Trends Biochem. Sci.* **1979**, *4*, N275.
27. 'The Nomenclature of Multiple Forms of Enzymes (Recommentations 1976)', *Eur. J. Biochem.* **1978**, *82*, 1.
28. 'Generic Descriptors and Trivial Names for Vitamins and Related Compounds (Recommendations 1976)' *Nutrition Abstr. and Revs.*, Series A: *Human and Experimental* **1978**, *48*, 831.
29. 'Nomenclature of Phosphorus-Containing Compounds of Biochemical Importance (Recommendations 1976)', *Eur. J. Biochem.* **1977**, *79*, 1.
30. 'Nomenclature of Peptide Hormones (Recommendations 1978)', *Biochemistry* **1975**, *14*, 2559.
31. 'The Nomenclature of Lipids (Recommendations 1976)', *Eur. J. Biochem.* **1977**, *79*, 11.
32. 'Nomenclatures and Symbols for Folic Acid and Related Compounds, Tentative Rules', *J. Biol. Chem.* **1966**, *241*, 2991.
33. 'Abbreviations and Symbols for Chemical Names of Special Interest in Biological Chemistry Revised Tentative Rules (1965)', *Biochemistry* **1966**, *5*, 1445.
34. 'Abbreviations and Symbols'. *Eur. J. Biochem.* **1977**, *79*, 11.
35. 'List of Symbols with Units Recommended for Use in Biotechnology (Provisional)', *Pure Appl. Chem.* **1982**, *54*, 1743.
36. 'Physicochemical Quantities and Units in Clinical Chemistry with Special Emphasis on Activities and Activity Coefficients (Recommendations 1986)', *Pure Appl. Chem.* **1984**, *56,* 567.
37. 'Nomenclature of Prenols (Recommendations 1986)', *Pure Appl. Chem.* **1987**, *59*, 683.
38. 'Nomenclature and Symbols for Folic Acid and Related Compounds (Recommendations 1986) *Pure Appl. Chem.* **1987**, *59*, 833.
39. 'Nomenclature of Glycoproteins, Glycoproteins and Peptidoglycans Recommendations 1985)', *Pure Appl. Chem.* **1988**, *60*, 1389.

40. 'Recommendations for Nomenclature and Tables in Biochemical Thermodynamics (Recommendations 1994)', *Pure Appl. Chem.* **1994**, *66*, 1641.
41. 'Nomenclature of Lignans and Neolignans (Recommendations 2000)', *Pure Appl. Chem.* **2000**, *72*, 1493.

III. Nomenclature of Inorganic Chemistry, Analytical Nomenclature, and Electrochemistry

Inorganic Chemistry

1. 'Nomenclature or Inorganic Chemistry, Recommendations 1990' (The 'Red Book'), Blackwell Scientific Publications, Oxford – London – Edinburgh – Boston – Melbourne, 1990.
2 'How to Name an Inorganic Substance. A Guide to the Use of Nomenclature of Inorganic Chemistry, 2nd ed., 1971' Pergamom Press, New York, 1977.
3. 'Nomenclature of Inorganic Chemistry, II. 1. Isotopically Modified Compounds (Recommendations 1981)', *Pure Appl. Chem.* **1981**, *53*, 1887.
4. 'Nomenclature of Inorganic Chemistry, II. 2. The Nomenclature of Hydrides of Nitrogen and Derived Cations, Anions and Ligands', *Pure Appl. Chem.* **1982**, *54*, 2545.
5. 'Nomenclature of Inorganic Boron Compounds', *Pure Appl. Chem.* **1972**, *30*, 681.
6. 'Recommendations for the Naming of Elements of Atomic Numbers Greater than 100', *Pure Appl. Chem.* **1979**, *51*, 381.
7. 'Element by Element Review of their Atomic Weights.', *Pure Appl. Chem.* **1984**, *56*, 695.
8. 'New Notations in the Periodic Table', *Pure Appl. Chem.* **1988**, *60*, 431.
9. 'Atomic Weights of the Elements 1993', *Pure Appl. Chem.* **1994**, *66*, 2423.
10. 'Glossary of Terms Used in Bioinorganic Chemistry (Recommendations 1997)', *Pure Appl. Chem.* **1997**, *69*, 1251.
11. 'Nomenclature of Inorganic Chains and Ring Compounds (Recommendation 1997)', *Pure Appl. Chem.* **1997**, *69*, 1659.
12. 'Isotopic Composition of the Elements', *Pure Appl. Chem.* **1998**, *70*, 217.
13. 'Names for Inorganic Radicals (Recommendations 2000)', *Pure Appl. Chem.* **2000**, *72*, 473.
14. 'Terminology for Compounds in the Si-Al-O-N System (Recommendations 1999)', *Pure Appl. Chem.* **1999**, *71*, 1765.
15. 'Naming of New Elements (Recommendations 2002)', *Pure Appl. Chem.* **2002**, *74*, 787.
16. 'Name and Symbol of the Element with Atomic Number 111 (Recommendations 2004)', *Pure Appl. Chem.* **2004**, *76*, 2101.

Analytical Nomenclature

1. 'Compendium of Analytical Nomenclature (Definitive Rules 1977)', IUPAC, Pergamon Press, Oxford, 1978.
2. 'Nomenclature for Thermal Analysis IV (Provisional)', *Pure Appl. Chem.* **1981**, *53*, 1597.
3. 'Recommendations for Publishing Manuscripts on Ion-Selective Electrodes', *Pure Appl. Chem.* **1981**, *53*, 1907.
4. 'Recommendation for Publication of Papers on Precipitation Methods of Gravimetric Analysis', *Pure Appl. Chem.* **1981**, *53*, 2303.
5. 'Nomenclature for Thermal Analysis II and III'; *Pure Appl. Chem.* **1980**, *52*, 2385.
6. 'Recommended Nomenclature for Scales of Working in Analysis', *Pure Appl. Chem.* **1979**, *51*, 43.
7. 'Guide to Trivial Names, Trade Names, and Synonyms for Substances Used in Analytical Nomenclature', *Pure Appl. Chem.* **1978**, *50*, 339.
8. 'Recommendations on the Usage of the Terms 'Equivalent' and 'Normal', *Pure Appl. Chem.* **1978**, *50*, 325.
9. 'Recommendations for Nomenclature of Ion-Selective Electrodes', *Pure Appl. Chem.* **1976**, *48*, 127.
10. 'Proposed Terminology and Symbols for the Transfer of Solutes from One Solvent to Another', *Pure Appl. Chem.* **1978**, *50*, 589.
11. 'Recommended Nomenclature for Titrimetric Analysis', *Pure Appl. Chem.* **1969**, *18*, 427.
12. 'Recommendations for the Presentation of the Results of Chemical Analysis', *Pure Appl. Chem.* **1969**, *18*, 437.
13. 'Recommended Symbols for Solution Equilibria', *Pure Appl. Chem.* **1969**, *18*, 457.
14. 'Recommended Nomenclature for Liquid-Liquid Distribution', *Pure Appl. Chem.* **1970**, *21*, 109.
15. 'Recommended Nomenclature for Automatic Analysis', *Pure Appl. Chem.* **1970**, *21*, 527.
16. 'Recommendations on Ion-Exchange Nomenclature', *Pure Appl. Chem.* **1972**, *29*, 617.
17. 'Nomenclature for Chromatography (Recommendations 1993)', *Pure Appl. Chem.* **1993**, *65*, 819.
18. 'Recommendations on Nomenclature for Contamination Phenomena in Precipitation from Aqueous Solutions', *Pure Appl. Chem.* **1974**, *37*, 463.
19. 'Recommendations on Nomenclature for Thermal Analysis (Rules 1972)', *Pure Appl. Chem.* **1974**, *37*, 439.
20. 'Recommendations for the Usage of Selective, Selectivity, and Related Terms in Analytical Chemistry', *Pure Appl. Chem.* **1984**, *55*, 553.

21. 'Recommendations on the Use of the Term Amplification Reactions', *Pure Appl. Chem.* **1982**, *54*, 2553.
22. 'Recommendations for Publication of Papers on a New Analytical Method Based on Ion Exchange or Ion-Exchange Chromatography', *Pure Appl. Chem.* **1980**, *52,* 2553.
23. 'Recommendations for Presentation of Data on Complexiметric Indicators, I. General', *Pure Appl. Chem.* **1979**, *51*, 1357.
24. 'Glossary of Terms Used in Nuclear Analytical Chemistry (Provisional)', *Pure Appl. Chem.* **1982**, *54*, 1533.
25. 'Nomenclature, Symbols, and Units Recommended for *in-situ* Microanalysis (Provisional)', *Pure Appl. Chem.* **1983**, *55*, 2023.
26. 'General Aspects of Trace Analytical Methods. IV. Recommendations for Nomenclature, Standard Procedures, and Reporting of Experimental Data for Surface Analysis Techniques', *Pure Appl. Chem.* **1979**, *51*, 2243.
27. 'Definition of pH Scales, Standard References Values, Measurement of pH and Related Technology (Recommendations 1984)', **1985**, *57,* 531.
28. 'Thermodynamic Functions of Transfer of Singles Ions from Water to Nonaqueous and Mixed Solvents. Part 2. Enthalpies and Entropies of Transfer to Nonaqueous Solvents', *Pure Appl. Chem.* **1985**, *57*, 1103.
29. 'Thermodynamic Functions of Transfer of Single Ions from Water to Nonaqueous and Mixed Solvents. Part 3. Standard Potentials of Selected Electrodes', *Pure Appl. Chem.* **1985***, 57*, 1129.
30. 'Definition and Determination of Response Time of Ion Selective Electrodes', *Pure Appl. Chem.* **1986**, *58*, 469.
31. 'Characteristics of Liquid Stationary Phases and Column Evaluation for Gas Chromatography', *Pure Appl. Chem.* **1986**, *58,* 1291.
32. 'Nomenclature for Automated and Mechanised Analysis (Recommandations 1989)', *Pure Appl. Chem.* **1989**, *61*, 1657.
33. 'Recommended Methods for the Purification of Solvents and Tests for Impurities: 1-Propanol, 2-Propanol, and 2-Methyl-2-propanol', *Pure Appl. Chem.* **1986**, *58*, 1411.
34. 'Recommended Methods for Purification of Solvents and Tests for Impurities: Actone', *Pure Appl. Chem.* **1986**, *58*, 1353.
35. 'Recommended Methods for Purification of Solvents and Tests for Impurities: Nitromethane', *Pure Appl. Chem.* **1986**, *58*, 1541.
36. 'Reference Materials for Fluorescence Measurements', *Pure Appl. Chem.* **1988**, 60, 1107.
37. 'Molecular Absorption Spectroscopy, Ultraviolet and Visible (UV/VIS) (Recommendations 1988)', *Pure Appl. Chem.* **1988**, *60*, 1449.
38. 'Nomenclature for Sampling and Analytical Chemistry (Recommendations 1990)', *Pure Appl. Chem.* **1990**, *62*, 1193.
39. 'Gibbs Energies of Transfer into Aqueous Alcohols', *Pure Appl. Chem.* **1990***, 62*, 899.
40. 'Total Half-lives for Selected Nuclides', *Pure Appl. Chem.* **1990**, *62*, 941.
41. 'Nomenclature of Kinetic Methods of Analysis (Recommendations 1993)', *Pure Appl. Chem.* **1993**, *65*, 2291.
42. 'Nomenclature in Evaluation of Analytical Methods Including Detection and Quantification Capabilities (Recommendations 1995)', *Pure Appl. Chem.* **1995**, *67*, 1699.
43. 'Nomenclature of Non-linear Chromatography (Recommendations 1996)', *Pure Appl. Chem.* **1996**, *82*, 1591.
44. 'Selectivity in Analytical Chemistry (Recommendations 2001)', *Pure Appl. Chem.* **2001**, *73*, 1381.

Electrochemistry

1. 'Eletrochemical Nomenclature', *Pure Appl. Chem.* **1974**, *37*, 499.
2. 'Recommendations on Reporting Electrode Potentials in Nonaqueous Solvents (Recommendations 1983)', *Pure Appl. Chem.* **1984**, *56*, 461.
3. 'Nomenclature for Transport Phenomena in Electrolytic Systems', *Pure Appl. Chem.* **1981**, *53*, 1827.
4. 'Electrode Reaction Orders, Transfer Coefficients, and Rate Constants. Amplification of Definitions and Recommendations for Publication of Parameters', *Pure Appl. Chem.* **1980**, *52*, 233.
5. 'Classification and Nomenclature of Electroanalytical Techniques', *Pure Appl. Chem.* **1976**, *45*, 81.
6. 'Recommendations for Sign Conventions and Plotting of Electrochemical Data', *Pure Appl. Chem.* **1976**, *45*, 131.
7. 'Recommended Terms, Symbols, and Definitions for Electroanalytical Chemistry (Recommendations 1985)', *Pure Appl. Chem.* **1985**, *57*, 1491.
8. 'Proposed Terminology and Symbols for the Quantity Representing the Transfer of Solutes from One Solvent to Another', *Pure Appl. Chem.* **1978**, *50*, 587.

9. 'Standard Potentials of Amalgam Electrodes in Aqueuos Solutions, Temperature Coefficients and Activity Coefficients of Metals in Mercury', *Pure Appl. Chem.* **1985**, *57*, 169.
10. 'Interphases in Systems of Conducting Phases (Recommendations 1985)', *Pure Appl. Chem.* **1986**, *58*, 437.
11. 'The Absolute Electrode Potential: An Explanatory Note (Recommendations 1986)', *Pure Appl. Chem.* **1986**, *58,* 955.
12. 'Electrochemical Corrosion Nomenclature (Recommendations 1988)', *Pure Appl. Chem.* **1989**, *61*, 19.
13. 'Terminology in Semiconductor Electrochemistry and Photoelectrochemical Energy Conversion (Recommandation 1991)', *Pure Appl. Chem.* **1991**, *63*, 569.
14. 'Terminology and Notations for Multistep Electrochemical Reaction Mechanisms (Recommendations 1994)', *Pure Appl. Chem.* **1994**, *66*, 2445.
15. 'Recommendations for Nomenclature of Ion-Selective Electrodes (Recommendations 1994)', *Pure Appl. Chem.* **1994**, *66*, 2527.

IV. Physical Chemistry

1. 'Manual of Symbols and Terminology for Physicochemical Quantities and Units (1979 Edition)', *Pure Appl. Chem.* **1979**, *51*, 1.
2. 'Manual of Symbols and Terminology for Physicochemical Quantities and Units. Appendix IV. Notation of States and Processes, Significance of the 'Standard' in Chemical Thermodynamics', and Remarks on Commonly Tabulated Forms of Thermodynamic Functions', *Pure Appl. Chem.* **1982**, *54*, 1239.
3. 'A Guide to Procedures for the Publication of Thermodynamic Data', *Pure Appl. Chem.* **1972**, *29*, 395.
4. 'Assignment and Presentation of Uncertainties of Numerial Results of Thermodynamic Measurements (Provisional)', *Pure Appl. Chem.* **1981**, *53*, 1805.
5. 'Calorimetric Measurements on Cellular Systems: Recommendations for Measurements and Presentation of Results (Provisional)', *Pure Appl. Chem.* **1982**, *54*, 671.
6. 'Manual of Symbols and Terminology for Physicochemical Quantities and Units. Appendix I. Definition of Activities and Related Quantities', *Pure Appl. Chem.* **1979**, *51*, 37.
7. 'Manual of Symbols and Terminology for Physicochemical Quantities and Units. Appendix V. Symbolism and Terminology in Chemical Kinetics (Provisional)', *Pure Appl. Chem.* **1981**, *53*, 753.
8. 'Manual of Symbols and Terminology for Physicochemical Quantities and Units. Appendix II. Definitions, Terminology, and Symbols in Colloid and Surface Chemistry, Part I', *Pure Appl. Chem.* **1972**, *31*, 577; Part II. Heterogeneous Catalysis (Rules Approved 1975)', *Pure Appl. Chem.* **1976**, *46,* 71.
9. 'Definitions, Terminology, and Symbols in Colloid and Surface Chemistry. Part 1.14: Light Scattering (Provisional),' *Pure Appl. Chem.* **1983**, 55, 931.
10. 'Reporting Experimental Pressure-Area Data with Film Balances (Recommendations 1984)', *Pure Appl. Chem.* **1985**, *57*, 621.
11. 'Reporting Physisorption Data for Gas/Solid Systems with Special Reference to the Determination of Surface Area and Porosity (Provisional)', *Pure Appl. Chem.* **1982**, *54*, 2201.
12. 'Reporting Experimental Data Dealing with Critical Micellization Concentrations (c.m.c.'s) of Aqueous Surfactant Systems', *Pure Appl. Chem.* **1979**, *51*, 1083.
13. 'Chemical Nomenclature and Formulation of Compositions and Synthetic and Natural Zeolites', *Pure Appl. Chem.* **1979**, *51*, 1091.
14. 'Manual of Symbols and Terminology Physicochemical Quantities and Units. Appendix II. Definitions, Terminology, and Symbols in Colloid and Surface Chemistry. Part 1.13. Selected Definitions, Terminology, and Symbols for Rheological Properties', *Pure Appl. Chem.* **1979**, *51*, 1213.
15. 'Expression of Results in Quantum Chemistry', *Pure Appl. Chem.* **1978**, *50*, 77.
16. 'Recommended Standards for Reporting Photochemical Data (Recommendations 1983)', *Pure Appl. Chem.* **1984**, *56*, 939.
17. 'Test Data for Normal Coordinate Calculations', *Pure Appl. Chem.* **1985**, *57*, 121.
18. 'Reporting Physisorption Data for Gas/Solid Systems with Special Reference to the Determination of Surface Area and Porosity (Recommendations 1984)', *Pure Appl. Chem.* **1985**, *57,* 603.
19. 'Presentation of Molecular Parameter Values for Infrared and Raman Spectroscopy (Recommendations 1988)', *Pure Appl. Chem.* **1988**, *60*, 1385.
20. 'Polarographic Half-Wave Potentials of Cations Nonaqueous Solvents', *Pure Appl. Chem.* **1990**, *62*, 1839.
21. 'A Glossary of Terms Used in Chemical Kinetics, Including Reactions Dynamics (Recommendations 1996)', *Pure Appl. Chem.* **1996**, *82*, 149.

22. 'Acronyms Used in Theoretical Chemistry', *Pure Appl. Chem.* **1996**, *82*, 387.
23. 'Nomenclature of Structural and Compositional Characteristics of Orderd Microporous and Mesoporous Materials with Inorganic Hosts (Recommendations 2001)', *Pure Appl. Chem.* **2001**, *73*, 381.

V. Spectroscopy

1. 'Recommendations for the Presentation of NMR Data for Publication in Chemical Journals', *Pure Appl. Chem.* **1972**, *29*, 625.
2. 'Presentation of NMR Data for Publication in Chemical Journals. B. Conventions Relating to Spectra from Nuclei Other than Protons', *Pure Appl. Chem.* **1967**, *45*, 217.
3. 'Recommendations for Publication of Papers on Methods of Molecular Absorption Spectrophotometry in Solution in betwen 200 and 800 nm', *Pure Appl. Chem.* **1978**, *50*, 237.
4. 'Recommendations for Nomenclature and Symbolism for Mass Spectroscopy (Recommendations 1991)', *Pure Appl. Chem.* **1991**, *63*, 1541.
5. 'Nomenclature and Conventions for Reporting *Mössbauer* Spectroscopy Data', *Pure Appl. Chem.* **1976**, *45*, 221.
6. 'Nomenclature and Spectral Presentation in Electron Spectroscopy Resulting by Excitation by Photons', *Pure Appl. Chem.* **1976**, *45*, 221.
7. 'Definitions and Symbolism of Molecular Constants', *Pure Appl. Chem.* **1978**, *50*, 1707.
8. 'Nomenclature, Symbols, Units, and their Usage in Spectrochemical Analysis. Part I: General Atomic Emission Spectroscopy', *Pure Appl. Chem.* **1972**, *30*, 651.
9. 'Nomenclature, Symbols, Units, and their Usage in Spectrochemical Analysis. Part II: Data Interpretation', *Pure Appl. Chem.* **1976**, *45*, 99.
10. 'Nomenclature, Symbols, Units, and their Usage in Spectrochemical Analysis. Part III: Analytical Flame Spectroscopy and Associated Non-Flame Procedures', *Pure Appl. Chem.* **1976**, *45*, 105.
11. 'Nomenclature, Symbols, Units, and their Usage in Spectrochemical Analysis. Part IV: Radiation Sources (Provisional)', *Pure Appl. Chem.* **1981**, *53*, 1913.
12. 'Nomenclature, Symbols, Units, and their Usage in Spectrochemical Analysis. Part V: Radiation Sources (Provisional)', *Pure Appl. Chem.* **1981**, *53*, 1913.
13. 'Nomenclature, Symbols, Units, and their Usage in Spectrochemical Analysis. Part VI: Molecular Luminescence Spectroscopy', *Pure Appl. Chem.* **1984**, *56,* 231.
14. 'Names, Symbols, Definitions and Units of Quantities in Optical Spectroscopy (Recommendations 1984)', *Pure Appl. Chem.* **1985**, *57*, 105.
15. 'Nomenclature, Symbols, Units, and their Usage in Spectrochemical Analysis – V. Radiation Sources (Recommendations 1985)', *Pure Appl. Chem.* **1985**, *57*, 1453.
16. 'Quantitative Characterization of Procedures Using Ultraviolet and Visible Molecular Absorption Spectrophotometry', *Pure Appl. Chem.* **1986**, *58*, 1015.
17. 'Nomenclature System for X-Ray Spectroscopy (Recommendations 1991)', *Pure Appl. Chem.* **1991**, *63*, 735.
18. 'English-Derived Abbreviations for Experimental Techniques in Surface Science and Chemical Spectroscopy (Recommendations 1991)', *Pure Appl. Chem.* **1991**, *63*, 887.
19. 'Guidelines on Nuclear Magnetic Computerized Databases (Recommendations 1995)', *Pure Appl. Chem.* **1995**, *67*, 593.
20. 'Instrumentation for the Spectral Dispersion and Isolation of Optical Radiations (Recommendations 1995)', *Pure Appl. Chem.* **1995**, *67*, 1725.
21. 'Detection of Radiation (Recommendations 1995)', *Pure Appl. Chem.* **1995**, *67*, 1745.
22. 'Laser-Based Molecular Spectroscopy for Chemical Analysis: Laser Fundamentals (Recommendations 1995)', *Pure Appl. Chem.* **1995**, *67*, 1913.
23. 'Symmetry, Selection Rules and Nomenclature Surface Spectroscopy (Recommendations 1996)', *Pure Appl. Chem.* **1996**, *82*, 457.
24. 'Nomenclature, Symbols, Units, and their Usage in Spectrochemical Analysis – XVI. Laser-Based Molecular Spectroscopy for Chemical Analysis – Luminescence (Recommendations 1997)', *Pure Appl. Chem.* **1997**, *69*, 1435.
25. 'Nomenclature, Symbols, Units, and their Usage in Spectrochemical Analysis – XVII. Laser-Based Molecular Spectroscopy for Chemical Analysis – Raman Scattering Processes (Recommendations 1997)', *Pure Appl. Chem.* **1997**, *69*, 1451.
26. 'Recommendations for the Presentation of NMR Structures of Proteins and Nucleic Acids (Recommendations 1998)', *Pure Appl. Chem.* **1998**, *70*, 117.

27. 'Nomenclature, Symbols, Units, and their Usage in Spectrochemical Analysis – XVI. Laser-Based Atomic Spectroscopy: A New Notation for Spectrochemical Processes (Recommendations 1997)', *Pure Appl. Chem.* **1998**, *70*, 517.
28. 'NMR Nomenclature. Nuclear Spin Properties and Conventions for Chemical Shifts (Recommendations 2001)', *Pure Appl. Chem.* **2001**, *73*, 1795.
29. 'Quantities, Terminology, and Symbols in Photothermal and Related Spectroscopies (Recommendations 2004)', *Pure Appl. Chem.* **2004**, *76*, 1083.

VI. Macromolecular Chemistry

1. 'Stereochemical Definitions and Notations Relating to Polymers (Recommendations 1980)', *Pure Appl. Chem.* **1981**, *53*, 733.
2. 'Nomenclature of Regular Single-Strand Organic Polymers (Rules Approved 1975)', *Pure Appl. Chem.* **1974**, *48*, 373..
3. 'List of Standard Abbreviations (Symbols) for Synthetic Polymers and Polymer Materials (1974)', *Pure Appl. Chem.* **1974**, *40*, 473.
4. 'Basic Definitions of Terms Relating Polymers (1974)', *Pure Appl. Chem.* **1974**, *40*, 477.
5. 'Recommendations for Abbreviations of Terms Relating to Plastics and Elastomers', *Pure Appl. Chem.* **1968**, *18*, 583.
6. 'Nomenclature for Regular Single-Strand and Quasi Single-Strand Inorganic and Coordination Polymers (Recommendations 1984)', *Pure Appl. Chem.* **1985**, *57*, 149.
7. 'Source-Base Nomenclature for Copolymers (Recommendations 1985)', *Pure Appl. Chem.* **1985**, *57*, 1427.
8. 'Use of Abbreviations for Names of Polymeric Substances (Recommendations 1986)', *Pure Appl. Chem.* **1987**, *59*, 691.
9. 'A Classification of Linear Single-Strand Polymers (Recommendations 1988)', *Pure Appl. Chem.* **1989**, *61*, 243.
10. 'Definitions of Terms Relating Individual Macromolecules, their Assemblies, and Dilute Polymer Solutions (Recommendations 1988)', *Pure Appl. Chem.* **1989**, *61*, 211.
11. 'Definitions of Terms Relating to Crystalline Polymers (Recommendations 1988)', *Pure Appl. Chem.* **1989**, *61*, 769.
12. 'The Study of Microstructures Poly(vinyl alcohol) by NMR', *Pure Appl. Chem.* **1990**, *62*, 2139.
13. 'Nomenclature of Regular Double-Strand (Ladder or Spiro) Organic Polymers (Recommendations 1993)', *Pure Appl. Chem.* **1993**, *65*, 1561.
14. 'Structure-Based Nomenclature for Irregular Single-Strand Organic Polymers (Recommendations 1994)', *Pure Appl. Chem.* **1994**, *66*, 873.
15. 'Graphic Representations (Chemical Formulae) of Macromolecules (Recommendations 1994)', *Pure Appl. Chem.* **1994**, *66*, 2469.
16. 'Basic Classification and Definitions of Polymerization Reactions (Recommendations 1994)', *Pure Appl. Chem.* **1994**, *66*, 2469.
17. 'Terminology for Membranes and Membrane Processes (Recommendations 1996)', *Pure Appl. Chem.* **1996**, *82*, 1479.
18. 'Definition of Terms Relating to the Non-ultimate Mechanical Properties of Polymers (Recommendations 1998)', *Pure Appl. Chem.* **1998**, *70*, 701.
19. 'Definitions of Basic Terms Relating to Low-Molecular-Mass and Polymer Liquid Crystals (Recommendations 2001)', *Pure Appl. Chem.* **2001**, *73*, 845.
20. 'Generic Source-Based Nomenclature for Polymers (Recommendations 2001)', *Pure Appl. Chem.* **2001**, *73*, 1511.
21. 'Definitions of Basic Terms Relating to Polymer Liquid Crystals (Recommendations 2001)', *Pure Appl. Chem.* **2002**, *74*, 493.
22. 'Definitions Relating to Stereochemically Asymmetric Polymerizations (Recommendations 2001)', *Pure Appl. Chem.* **2002**, *74*, 915.
23. 'Nomenclature of Regular Single-Strand Organic Polymers (Recommendations 2002)', *Pure Appl. Chem.* **2002**, *74*, 1921.
24. '*Errata* to Generic Source-Based Nomenclature for Polymers (Recommendations 2001)', *Pure Appl. Chem.* **2002**, *74*, 2019.
25. 'Definitions of Terms Relating to Reactions of Polymers and to Functional Polymeric Materials (Recommendations 2003)', *Pure Appl. Chem.* **2004**, *76*, 889.
26. 'Definition of Terms Related to Polymer Blends, Composites, and Multiphase Polymeric Materials (Recommendations 2004)', *Pure Appl. Chem.* **2004**, *76*, 1985.

VII. Miscellaneous

1. 'Use of Abbreviations in the Chemical Literature (Recommendations 1979)', *Pure Appl. Chem.* **1980**, *52*, 2229.
2. 'Glossary for Chemists of Terms Used in Biotechnology (Recommendations 1992)', *Pure Appl. Chem.* **1992**, *64*, 143.
3. 'Units for Use in Atmospheric Chemistry (Recommendations 1995)', *Pure Appl. Chem.* **1995**, *67*, 1377.
4. 'Compendium of Chemical Terminology (IUPAC Recommendations)', compiled by A. D. McNaught and A. Wilkinson, Blackwell Science, 1997.
5. 'Glossary of Terms Used in Medicinal Chemistry (Recommendations 1998)', *Pure Appl. Chem.* **1998**, *70*, 1129.
6. 'Graphical Representation of Stereochemical Configuration (Recommendations 2006)', *Pure Appl. Chem.* **2006**, *78*, 1897.

Appendix III. *Some Symbols and Abbreviations Used by HCA*

Designation	Symbol	Remarks
Amount-of-substance concentration or 'molarity' [a])	M	in mol/dm^3, *e.g.*, 1M NaOH
Molality [a])	*m*	in mol/kg; *e.g.*, 1 *m* HCl
Normality [a])	N	in equiv./dm^3; *e.g.*, 1N H_2S
Percentage by mass	%	*e.g.*, 15%
Percentage by volume	% (*v*/*v*)	*e.g.*, 20% (*v*/*v*)
Melting point	m.p.	*e.g.*, m.p. 157–158°
Boiling point	b.p.	*e.g.*, b.p. 111–112°
Boiling point under a certain pressure	b.p./Torr	*e.g.*, b.p. 65°/4 Torr
Freezing point	f.p.	*e.g.*, f.p. 3°
Refractive index	*n*	*e.g.*, $n_D^{20} = 1.643$
Relative density	*d*	*e.g.*, $d_4^{20} = 1.1811$
Optical rotation [b])	α	*e.g.*, $\alpha = 0.73$ ($l = 0.1$, neat)
Specific optical rotation [b])	$[\alpha]$	*e.g.*, $[\alpha]_D^{25} = 108$ ($c = 3.42$, $CHCl_3$)
Molecular optical rotation [b])	$[M]$	*e.g.*, $[M]_{598}^{23} = 380$ ($c = 1.52$, H_2O)
Thin-layer chromatography	TLC	
Gas-liquid chromatography	GLC	
Liquid chromatography	LC	
Column chromatography	CC	
High-pressure (performance) liquid chromatography	HPLC	
Paper chromatography	PC	
Ultraviolet	UV	
Visible	VIS	
Circular dichroism	CD	
Optical rotatory dispersion	ORD	
Infrared (absorption)	IR	
Nuclear magnetic resonance of ^{1}H	^{1}H-NMR	
Nuclear magnetic resonance of ^{13}C	^{13}C-NMR	
Electron paramagnetic resonance	EPR	
Electron spin resonance	ESR	
Mass spectrum	MS	
Photoelectron spectroscopy	PES	
X-Ray photoelectron spectroscopy	XPES, ESCA	
Shoulder	sh	
Broad	br.	
Strong IR absorption	*s*	
Medium IR absorption	*m*	
Weak IR absorption	*w*	
Singlet	*s*	
Doublet	*d*	
Triplet	*t*	
Quadruplet	*q*	
Quintuplet	*quint.*	
Sextuplet	*sext.*	
Septuplet	*sept.*	
Multiplet	*m*	

[a]) For a comprehensive discussion on the usage of the terms 'equivalent' and 'normal', see *Pure Appl. Chem.* **1978**, *50*, 325. [b]) The symbol *c* is used in connection with the specific optical rotation $[\alpha]$; it is defined as mass of substance (in g) in 100 ml of solution. The quantities *l* and *d* in $[\alpha] = 100 \cdot \alpha/l \cdot c$ or $[\alpha] = \alpha/l \cdot d$ are given in dm and g/ml (kg/m^3), respectively.

Appendix IV. *Some Acceptable Non-SI Units*

Physical quantity	Name of unit	Symbol of unit
Length	Ångström	Å
	Bohr radius	a_o
Volume	Liter	l
	Milliliter	ml
	Microliter	µl
Time	Minute	min
	Hour	h
	Day	d
Frequency	Hertz	Hz
	Megahertz	MHz
Mass	Gram	g
	Milligram	mg
	Microgram	µg
Pressure	Bar	bar
	Millibar	mbar
	Torr	Torr
Energy	Electronvolt	eV
	Hartree	H_a or E_a
Temperature	Degree Celsius	°C
Dipole moment	Debye	D