

# INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY

## INTERDIVISIONAL COMMITTEE ON NOMENCLATURE AND SYMBOLS\*

# USE OF ABBREVIATIONS IN THE CHEMICAL LITERATURE

(Recommendations 1979)

Prepared for publication by  
DAVID R. LIDE, Jr.

Office of Standard Reference Data, National Bureau of Standards,  
Washington, DC 20234, USA

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The initial suggestion for IUPAC guidelines on the use of abbreviations was made by  
Commission on Molecular Structure and Spectroscopy of Physical Chemistry Division.

Interdivisional Committee on Nomenclature and Symbols

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Abbreviations for techniques, compounds, and concepts have long been used in the scientific literature. Whereas this practice may have advantages for communication among scientists working in the same field as the user, it can contribute substantially to difficulties in communication between scientists working in different fields, as well as in teaching and abstracting. The proliferation of abbreviations composed of sequences of initial letters selected from the words, or from syllables, of frequently used terms has undesirable consequences and is therefore of concern to the International Union of Pure and Applied Chemistry (IUPAC).

In consequence, the Interdivisional Committee on Nomenclature and Symbols (IDCNS) makes the following recommendations concerning the introduction and use of such initialled abbreviations in the chemical literature.

- (1) IUPAC nomenclature commissions are encouraged to examine periodically the usage of abbreviations in their areas of responsibility and to compile appropriate recommendations. These recommendations should be considered by IDCNS.
- (2) Editors and authors should be urged by the appropriate nomenclature commissions to reduce the number of abbreviations introduced in primary publications and textbooks to a minimum. A particular effort should be made to avoid abbreviations that either (a) unnecessarily duplicate the recommended satisfactory abbreviations or symbols (cf. 7a below), or (b) are seriously ambiguous in their possible meanings, or (c) are based on incorrect use of language or grammar.
- (3) Since the style in which abbreviations are given (e.g., capital letters or small letters, with or without full stops) often depends upon well-established practices that vary widely from one journal to another, IUPAC does not recommend a specific style for general use. Abbreviations (symbols) for units are specified by the Système International (SI) and should never be altered. It is preferable not to abbreviate physical quantities; instead, the recommended symbol in italic type font should be used (e.g.,  $\rho$  instead of dens. for mass density).
- (4) IUPAC, through IDCNS, should recommend relatively few abbreviations, and these would normally be well-established ones.
- (5) The use of abbreviations in the titles and abstracts of papers should be strongly discouraged.
- (6) There are great advantages in defining all abbreviations, including those that are officially recommended by IUPAC or other bodies, in a single conspicuous place in each paper. This is preferably done near the beginning of the paper in a single list. In order to set an example, all IUPAC documents should follow this practice.
- (7) The following categories of abbreviations are suggested for formulating IUPAC recommendations:

(a) Recommended - those that are well established in the general chemical literature (e.g., DNA, NMR) and whose use without explanation is permissible. However, if other abbreviations in the paper must be explained, as recommended in (6), these should also be included.

(b) Acceptable - those that are useful in a given context but not well established in the general literature (even though they may be used frequently in specialized journals). These abbreviations should be defined as in (6) above. Examples are FT for Fourier transform, AAS for atomic absorption spectroscopy, and TMS for tetramethylsilane.

(c) Unacceptable - those that are considered to be unsuitable for reasons given in (2) above and whose use is to be discouraged by the appropriate IUPAC bodies.

Some current IUPAC recommendations regarding abbreviations may be found in the following documents:

IUPAC: Nomenclature of Inorganic Chemistry, 2nd Edition, Sec. 7.35, Butterworths, London (1970).

List of Standard Abbreviations (Symbols) for Synthetic Polymers and Polymer Materials, Pure Appl. Chem. 40, 473-476 (1974).

Approved Recommendation (1978): Quantities and Units in Clinical Chemistry, Pure Appl. Chem. 51, 2451-2479 (1979). Also published in Clin. Chim. Acta 96, 157-183F (1979).

Approved Recommendation (1978): List of Quantities in Clinical Chemistry, Pure Appl. Chem. 51, 2481-2502 (1979). Also published in Clin. Chim. Acta 96, 185-204F (1979).

Rules Approved 1974: Abbreviations and Symbols for Description of Conformation of Polypeptide Chains, Pure Appl. Chem. 40, 291-308 (1974). Also published in Handbook of Biochemistry and Molecular Biology, 3rd Ed., Proteins, Volume I, 59-74; *ibid.* Volume II, 63-78, CRC Press, Cleveland (1976).

Recommendations for Nomenclature of Thermal Analysis, Pure Appl. Chem. 37, 439-444 (1974).

Guide to Trivial Names, Trade Names and Synonyms for Substances Used in Analytical Nomenclature, Pure Appl. Chem. 50, 339-370 (1978).

Rules Approved 1974: Abbreviations and Symbols for Nucleic Acids, Polynucleotides and Their Constituents, Pure Appl. Chem. 40, 277-290 (1974). Also published in Hrana Ishrana 18, 473-489 (1977) (Croat.).

Recommendations for Symbolism and Nomenclature for Mass Spectroscopy, Pure Appl. Chem. 50, 65-73 (1978). Also published in Int. J. Mass Spectrom. Ion Phys. 29, 392-398 (1979).

Definitive Rules: A One-Letter Notation for Amino Acid Sequences, Pure Appl. Chem. 21, 639-645 (1972). Also published in Handbook of Biochemistry and Molecular Biology, 3rd Ed., Proteins, Volume I, 75-78; *ibid.* Volume II, 59-62, CRC Press, Cleveland (1976).

Abbreviated Nomenclature of Synthetic Polypeptides (Polymerized Amino Acids), Pure Appl. Chem. 33, 437-444 (1973).

Revised Tentative Rules (1965): Abbreviations and Symbols for Chemical Names of Special Interest in Biological Chemistry, Eur. J. Biochem. 1, 259-266 (1967). Also published in Biochemistry 5, 1445-1453 (1966); Biochem. J. 101, 1-7 (1966).