

## APPENDIX

### IUPAC Publications on Nomenclature and Symbolism

---

#### 1.0 Compilations

1.1 Nomenclature of Organic Chemistry, a 550-page hardcover volume published in 1979, available from Pergamon, Oxford.

- Section A: Hydrocarbons
- Section B: Fundamental heterocyclic systems
- Section C: Characteristic groups containing carbon, hydrogen, oxygen, nitrogen, halogen, sulphur, selenium, and tellurium
- Section D: Organic compounds containing elements not exclusively those referred to in the title of Section C
- Section E: Stereochemistry
- Section F: General principles for the naming of natural products and related compounds
- Section H: Isotopically modified compounds

1.2 Nomenclature of Inorganic Chemistry, a 110-page hardcover volume published in 1970, available from Pergamon, Oxford.

- Chapter 1: Elements
- Chapter 2: Formulae and names of compounds in general
- Chapter 3: Names for ions and radicals
- Chapter 4: Iso- and hetero-polyanions
- Chapter 5: Acids
- Chapter 6: Salts and salt-like compounds
- Chapter 7: Co-ordination compounds
- Chapter 8: Addition compounds
- Chapter 9: Crystalline phases of variable composition
- Chapter 10: Polymorphism
- Chapter 11: Boron compounds

1.3 Biochemical Nomenclature and Related Documents, a 220-page softcover manual published in 1978 by The Biochemical Society for IUB, and available from the Biochemical Society Book Depot, P.O. Box 32, Commerce Way, Colchester, Essex CO2 8HP. The contents are as follows:

##### General

- Nomenclature of organic chemistry. Section E: Stereochemistry (1974)
- Nomenclature of organic chemistry. Section F: Natural products and related compounds (1976)
- Nomenclature of organic chemistry. Section H: Isotopically modified compounds (1977)
- Isotopically labelled compounds: common biochemical practice
- Recommendations for measurement and presentation of biochemical equilibrium data (1976)
- Abbreviations and symbols for chemical names of special interest in biological chemistry (1965)
- Abbreviations and symbols: a compilation (1976)
- Citation of bibliographic references in biochemical journals (1971)
- Amino acids, peptides and proteins*
- Nomenclature of  $\alpha$ -amino acids (1974)
- Symbols for amino-acid derivatives and peptides (1971)
- Rules for naming synthetic modifications of natural peptides (1966)

Abbreviated nomenclature of synthetic polypeptides or polymerized amino acids (1971)

- A one-letter notation for amino-acid sequences (1968)
- Abbreviations and symbols for the description of the conformation of polypeptide chains (1969)
- Nomenclature of peptide hormones (1974)
- Recommendations for the nomenclature of human immunoglobulins
- Protein data bank. A computer-based archival file for macromolecular structures (1977)
- Nomenclature of multiple forms of enzymes (1976)
- Nucleotides and nucleic acids*
- Abbreviations and symbols for nucleic acids, polynucleotides and their constituents (1970)
- Lipids*
- Nomenclature of lipids (1976)

Nomenclature of steroids (1967)

- Nomenclature of quinones with isoprenoid side chains (1973)
- Tentative rules for the nomenclature of carotenoids (1970). Amendments (1974)
- Nomenclature of tocopherols and related compounds (1973)
- Carbohydrates, etc.*
- Tentative rules for carbohydrate nomenclature. Part 1 (1969)
- Nomenclature of cyclitols (1973)
- Phosphorus-containing compounds*
- Nomenclature of phosphorus-containing compounds of biochemical importance (1976)
- Miscellaneous*
- Trivial names of miscellaneous compounds of importance in biochemistry (1965)
- Nomenclature and symbols for folic acids and related compounds (1965)
- Nomenclature for vitamins B-6 and related compounds (1973)
- Nomenclature of corrinoids (1973)

1.4 Compendium of Analytical Nomenclature, a 222-page volume published in 1978, available in hardcover and softcover from Pergamon, Oxford.

- Chapter 1: Recommendations for the presentation of the results of chemical analysis
- Chapter 2: Recommendations for terminology to be used with precision balances
- Chapter 3: Recommended nomenclature for scales of working in analysis
- Chapter 4: Recommendations on nomenclature for contamination phenomena in precipitation from aqueous solution
- Chapter 5: Recommended nomenclature for automatic analysis
- Chapter 6: Recommendations for nomenclature of thermal analysis
- Chapter 7: Recommendations for nomenclature of mass spectrometry

## INSTRUCTIONS FOR AUTHORS (1988)

- Chapter 8: Recommended nomenclature for titrimetric analysis
- Chapter 9: Report on the standardization of pH and related technology
- Chapter 10: Practical measurements of pH in amphiprotic and mixed solvents
- Chapter 11: Recommended symbols for solution equilibria
- Chapter 12: Recommended nomenclature for liquid-liquid distribution
- Chapter 13: Recommendations on nomenclature and presentation of data in gas chromatography
- Chapter 14: Recommendations on nomenclature for chromatography
- Chapter 15: Recommendations on ion-exchange nomenclature
- Chapter 16-18: Nomenclature, symbols, units and their usage in spectrochemical analysis. I, General atomic emission spectroscopy. II, Data interpretation. III, Analytical flame spectroscopy and associated non-flame procedures
- Chapter 19: Classification and nomenclature of electroanalytical techniques
- Chapter 20: Recommendations for sign conventions and plotting of electrochemical data
- Chapter 21: Recommendations for nomenclature of ion-selective electrodes
- Appendix: Recommendations on the usage of the terms 'equivalent' and 'normal'

1.5 Compendium of Chemical Terminology: IUPAC Recommendations, a 456-page volume published in 1987, available in hardcover and softcover from Blackwells, Oxford.

## 2.0 Documents not included in the compilations

### 2.1 Nomenclature of Elements and Compounds

#### 2.1.1 Amino acids and Peptides

Nomenclature and symbolism for amino acids and peptides (*Pure Appl. Chem.*, 1984, **56**, 595; *Eur. J. Biochem.*, 1984, **138**, 9).

#### 2.1.2 Analytical Reagents

Guide to trivial names, trade names, and synonyms for substances used in analytical chemistry (*Pure Appl. Chem.*, 1978, **50**, 339).

#### 2.1.3 Boron Compounds

Nomenclature of inorganic boron compounds (*Pure Appl. Chem.*, 1972, **30**, 681).

#### 2.1.4 Carbohydrates

Conformational nomenclature for five- and six-membered ring forms of monosaccharides and their derivatives (provisional) (*Pure Appl. Chem.*, 1981, **53**, 1901; *Eur. J. Biochem.*, 1980, **111**, 295).

Abbreviated terminology of oligosaccharide chains (provisional) (*Pure Appl. Chem.*, 1982, **54**, 1517; *J. Biol. Chem.*, 1982, **257**, 2347).

Polysaccharide nomenclature (provisional) (*Pure Appl. Chem.*, 1982, **54**, 1523; *J. Biol. Chem.*, 1982, **257**, 3352).

Nomenclature of unsaturated monosaccharides (provisional) (*Pure Appl. Chem.*, 1982, **54**, 207; *Eur. J. Biochem.*, 1981, **119**, 1; errata *Eur. J. Biochem.*, 1982, **125**, 1).

Nomenclature of branched-chain monosaccharides (provisional) (*Pure Appl. Chem.*, 1982, **54**, 211; *Eur. J. Biochem.*, 1981, **119**, 5; errata *Eur. J. Biochem.*, 1982, **125**, 1).

Symbols for specifying the conformation of polysaccharide chains (provisional) (*Pure Appl. Chem.*, 1983, **55**, 1269; *Eur. J. Biochem.*, 1983, **131**, 5).

#### 2.1.5 Elements

Recommendations for the names of elements of atomic number greater than 100 (*Pure Appl. Chem.*, 1979, **51**, 381).

#### 2.1.6 Enzymes

Enzyme Nomenclature (1984), published by Academic Press in hardcover and softcover editions.

#### 2.1.7 Folic Acid

Nomenclature and symbols for folic acid and related compounds (*Pure Appl. Chem.*, 1987, **59**, 833).

#### 2.1.8 Heterocyclic Compounds

Revision of the extended Hantzsch-Widman system of nomenclature for heteromonocycles (*Pure Appl. Chem.*, 1983, **55**, 409).

#### 2.1.9 Isotopically Modified Compounds

Nomenclature of inorganic chemistry. Part II. 1. Isotopically modified compounds (*Pure Appl. Chem.*, 1981, **53**, 1887).

#### 2.1.10 Lambda Convention

Treatment of variable valence in organic nomenclature (*Pure Appl. Chem.*, 1984, **56**, 769).

#### 2.1.11 Nitrogen Hydrides

Nomenclature of hydrides of nitrogen and derived cations, anions, and ligands (*Pure Appl. Chem.*, 1982, **54**, 2545).

#### 2.1.12 Nucleotides

Abbreviations and symbols for the description of conformations of polynucleotide chains (provisional) (*Pure Appl. Chem.*, 1983, **55**, 1279; *Eur. J. Biochem.*, 1983, **131**, 9).

#### 2.1.13 Numerical Terms

Extension of Rules A-1.1 and A-2.5 concerning numerical terms used in organic chemical nomenclature (*Pure Appl. Chem.*, 1986, **58**, 1693).

#### 2.1.14 Polymers

Nomenclature of regular single-strand organic polymers (*Pure Appl. Chem.*, 1976, **48**, 373).

Nomenclature for regular single-strand and quasi single-strand inorganic and co-ordination polymers (*Pure Appl. Chem.*, 1985, **57**, 149).

Source-based nomenclature for copolymers (*Pure Appl. Chem.*, 1985, **57**, 1427).

Stereochemical definitions and notations relating to polymers (*Pure Appl. Chem.*, 1981, **53**, 733).

Use of abbreviations for names of polymeric substances (*Pure Appl. Chem.*, 1987, **59**, 691).

Basic definitions of terms relating to polymers (*Pure Appl. Chem.*, 1974, **40**, 477).

#### 2.1.15 Prenols

Nomenclature of prenols (*Pure Appl. Chem.*, 1987, **59**, 683; *Eur. J. Biochem.*, 1987, **167**, 181).

#### 2.1.16 Retinoids

Nomenclature of retinoids (provisional) (*Pure Appl. Chem.*, 1983, **55**, 721; *Eur. J. Biochem.*, 1982, **129**, 1).

#### 2.1.17 Tetrapyrroles

Nomenclature of tetrapyrroles (*Pure Appl. Chem.*, 1987, **59**, 779).

#### 2.1.18 Tocopherols

Nomenclature of tocopherols and related compounds (*Pure Appl. Chem.*, 1982, **54**, 1507; *Eur. J. Biochem.*, 1982, **123**, 473).

#### 2.1.19 Vitamins

Nomenclature of Vitamin D (provisional) (*Pure Appl. Chem.*, 1982, **54**, 1511; *Eur. J. Biochem.*, 1982, **124**, 223).

### 2.1.20 Zeolites

Chemical nomenclature and formulation of compositions of synthetic and natural zeolites (*Pure Appl. Chem.*, 1979, **51**, 1091).

## 2.2 Terminology, Symbols, and Units, and Presentation of Results

### 2.2.1 General

Glossary of terms used in physical organic chemistry (*Pure Appl. Chem.*, 1983, **55**, 1281).

Manual of symbols and terminology for physicochemical quantities and units (*Pure Appl. Chem.*, 1979, **51**, 1, also available from Pergamon, Oxford, as a 40-page softcover booklet).

### 2.2.2 Analytical

Nomenclature, symbols, units, and their usage in spectrochemical analysis. Part IV, X-Ray emission spectroscopy (*Pure Appl. Chem.*, 1980, **52**, 2543). Part V, Radiation sources (*Pure Appl. Chem.*, 1985, **57**, 1453). Part VI, Molecular luminescence spectroscopy (*Pure Appl. Chem.*, 1984, **55**, 231).

Recommendations for nomenclature, standard procedures, and reporting of experimental data for surface analysis techniques (*Pure Appl. Chem.*, 1979, **51**, 2243).

Glossary of terms used in nuclear analytical chemistry (provisional) (*Pure Appl. Chem.*, 1982, **54**, 1533).

Recommendations for publication of papers on a new analytical method based on ion exchange or ion-exchange chromatography (*Pure Appl. Chem.*, 1980, **52**, 2555).

Recommendations for presentation of data on compleximetric indicators. 1. General (*Pure Appl. Chem.*, 1979, **51**, 1357).

Recommendations for publishing manuscripts on ion-selective electrodes (*Pure Appl. Chem.*, 1981, **53**, 1907).

Recommendations on use of the term amplification reactions (*Pure Appl. Chem.*, 1982, **54**, 2553).

Recommendations for the usage of selective, selectivity, and related terms in analytical chemistry (*Pure Appl. Chem.*, 1983, **55**, 553).

Proposed terminology and symbols for the transfer of solutes from one solvent to another (*Pure Appl. Chem.*, 1978, **50**, 589).

Nomenclature, symbols and units recommended for *in situ* microanalysis (provisional) (*Pure Appl. Chem.*, 1983, **55**, 2023).

### 2.2.3 Clinical

Physicochemical quantities and units in clinical chemistry with special emphasis on activities and activity coefficients (*Pure Appl. Chem.*, 1984, **56**, 567).

Quantities and units in clinical chemistry (*Pure Appl. Chem.*, 1979, **51**, 2451).

Quantities and units in clinical chemistry: nebulizer and flame properties in flame emission and absorption spectrometry (*Pure Appl. Chem.*, 1986, **58**, 1737).

List of quantities in clinical chemistry (*Pure Appl. Chem.*, 1979, **51**, 2481).

### 2.2.4 Colloids and Surface Chemistry

Definitions, terminology, and symbols in colloid and surface chemistry. I (*Pure Appl. Chem.*, 1972, **31**, 577). II, Heterogeneous catalysis (*Pure Appl. Chem.*, 1976, **46**, 71). Part 1.14: Light scattering (provisional) (*Pure Appl. Chem.*, 1983, **55**, 931).

Reporting experimental pressure-area data with film balances (*Pure Appl. Chem.*, 1985, **57**, 621).

Reporting physisorption data for gas/solid systems with special reference to the determination of surface area and porosity (*Pure Appl. Chem.*, 1985, **57**, 603).

Reporting data on adsorption from solution at the solid/solution interface (*Pure Appl. Chem.*, 1986, **58**, 967).

### 2.2.5 Electrochemistry

Nomenclature for transfer phenomena in electrolytic systems (*Pure Appl. Chem.*, 1981, **53**, 1827).

Electrode reaction orders, transfer coefficients, and rate constants—amplification of definitions and recommendations for publication of parameters (*Pure Appl. Chem.*, 1980, **52**, 233). Recommended terms, symbols, and definitions for electroanalytical chemistry (*Pure Appl. Chem.*, 1985, **57**, 1491).

Classification and nomenclature of electroanalytical techniques (*Pure Appl. Chem.*, 1976, **45**, 81).

Recommendations for sign conventions and plotting of electrochemical data (*Pure Appl. Chem.*, 1976, **45**, 131).

Electrochemical nomenclature (*Pure Appl. Chem.*, 1974, **37**, 499). Recommendations on reporting electrode potentials in non-aqueous solvents (*Pure Appl. Chem.*, 1984, **56**, 461).

Definition of pH scales, standard reference values, measurement of pH and related terminology (*Pure Appl. Chem.*, 1985, **57**, 531).

Interphases in systems of conducting phases (*Pure Appl. Chem.*, 1986, **58**, 437).

The absolute electrode potential: an explanatory note (*Pure Appl. Chem.*, 1986, **58**, 955).

### 2.2.6 Kinetics

Symbolism and terminology in chemical kinetics (provisional) (*Pure Appl. Chem.*, 1981, **53**, 753).

### 2.2.7 Photochemistry

Recommended standards for reporting photochemical data (*Pure Appl. Chem.*, 1984, **56**, 939).

### 2.2.8 Quantum Chemistry

Expression of results in quantum chemistry (*Pure Appl. Chem.*, 1978, **50**, 75).

### 2.2.9 Reactions

Nomenclature for straightforward transformations (provisional) (*Pure Appl. Chem.*, 1981, **53**, 306).

### 2.2.10 Rheological Properties

Selected definitions, terminology, and symbols for rheological properties (*Pure Appl. Chem.*, 1979, **51**, 1215).

### 2.2.11 Spectroscopy

Recommendations for publication of papers on methods of molecular absorption spectrophotometry in solution (*Pure Appl. Chem.*, 1978, **50**, 237).

Nomenclature and spectral presentation in electron spectroscopy resulting from excitation by photons (*Pure Appl. Chem.*, 1976, **45**, 221).

Recommendations for the presentation of infrared absorption spectra in data collections. A, Condensed phases (*Pure Appl. Chem.*, 1978, **50**, 231).

Definition and symbolism of molecular force constants (*Pure Appl. Chem.*, 1978, **50**, 1709).

Recommendations for symbolism and nomenclature for mass spectrometry (*Pure Appl. Chem.*, 1978, **50**, 65).

Nomenclature and conventions for reporting Mössbauer spectroscopic data (*Pure Appl. Chem.*, 1976, **45**, 211).

Recommendations for the presentation of NMR data for publication in chemical journals. A, Proton spectra (*Pure Appl. Chem.*, 1972, **39**, 625). B, Spectra from nuclei other than protons (*Pure Appl. Chem.*, 1976, **45**, 217).

Presentation of Raman spectra in data collections (*Pure Appl. Chem.*, 1981, **53**, 1879).

Names, symbols, definitions and units of quantities in optical spectroscopy (*Pure Appl. Chem.*, 1985, **57**, 105).

### 2.2.12 Thermal Analysis

Nomenclature of thermal analysis. I (*Pure Appl. Chem.*, 1974, **37**, 439). II, DTA and TG apparatus and technique. III, DTA and TG curves (*Pure Appl. Chem.*, 1980, **52**, 2387). IV (*Pure Appl. Chem.*, 1985, **57**, 1737).

Calorimetric measurements on cellular systems: recommend-

INSTRUCTIONS FOR AUTHORS (1988)

ations for measurements and presentation of results (provisional) (*Pure Appl. Chem.*, 1982, **54**, 671).

2.2.13 *Thermodynamics*

A guide to procedures for the publication of thermodynamic data (*Pure Appl. Chem.*, 1972, **39**, 395).

Assignment and presentation of uncertainties of the numerical

results of thermodynamic measurements (*Pure Appl. Chem.*, 1981, **53**, 1805).

Notation for states and processes; significance of the word 'standard' in chemical thermodynamics and remarks on commonly tabulated forms of thermodynamic functions (*Pure Appl. Chem.*, 1982, **54**, 1239).