

IUPAC 命名和符号体系出版物概况

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一、引 言

当今社会正昂首进入信息时代,信息量正在急剧增长膨胀。如何有效利用和传播信息是当代人不可缺少的生存技能。在信息化社会中,为使各种信息为社会所了解和有效的利用,标准将成为信息传播和利用的利剑。在化学科学领域中,IUPAC 是世界上最大的非政府、非赢利性的化学组织,目前已有 40 个会员国和 14 个观察员国,有近 1000 名各国化学家为 IUPAC 工作,其秘书处已从 1997 年 4 月后从英国伦敦迁至美国北卡罗来纳州研究三角园。自 IUPAC 成立之日起,已经制定了各种标准,规范并约束各国化学家们在化学科学研究中化学信息的传播和利用。它已出版了多种出版物,包扩命名、符号、单位、术语、原子量和技术报告等。本文仅收集列出了与我所研究领域相关的命名和符号体系出版物,给出了出版物的出处、出版刊物、出版时间等简要信息,相信它们将在我所的化学研究中发挥出其作为标准的职能,在科技论文的写作、投稿及我所与国际国内科研机构的学术交流中起到推动作用。

二、IUPAC 出版物概况

IUPAC 出版物归印刷和电子出版物委员会统一管理。该委员会由原来的出版物委员会和化学数据库委员会于 1996 年合并而成。出版形式有书、期刊和网络文档(web documents)。Pure and Applied Chemistry 是 IUPAC 的官方期刊,自 1960 年创刊起主要发表 IUPAC 研究报告,而 Chemistry International 则是 IUPAC 的新闻性杂志。IUPAC 本身并不出版书,而是委托授权给其它出版商。1983 年至今,IUPAC 授权的出版商是 Blackwell Science,1975—1983 年则是 Pergaman Press 即现在的 Elsevier Science Ltd.,因为 Elsevier Science Ltd. 1991 年出资购买了 Pergaman Press。IUPAC 溶解度数据系列(Solubility Data Series)则由 Oxford University Press 出版。IUPAC 下设多个委员会,由各个委员会组织世界上的著名化学家们制定相应的各种标准,因此,这种研究报告是非定期出版,没有统一的检索方法,而是散见于 IUPAC 书刊中。IUPAC 已将其 1960 至 1996 年所有出版物做成数据库,感兴趣的读者可从作者处索取或从 Internet 下载(网址:

<http://chemistry.rsc.org/rsc/iupacsch.htm>)

三、IUPAC 出版物的主要作用

IUPAC 起源于国际上对于化学科学中需要标准化的认识。这些原子量、测量、命名和符号的标准化对科学事业已有和连续的成功是必需的,同时对于国际贸易和商业的发展与成长也

是必不可少的。IUPAC 是全世界化学家们的组织,它帮助化学家们消除国家的界限,不论他们属于那个民族、政治团体和社会制度,为了达到这种目的,IUPAC 需要制定各种标准使之成为化学家们通用的语言,用它来规范和约束各国化学家们在化学科学研究中化学信息的传播与作用。IUPAC 出版物则是这些标准的具体体现。

四、选择的 IUPAC 命名和符号体系出版物

由于 IUPAC 有很多命名和符号体系出版物,不可能面面俱到。考虑到我所的研究方向与研究领域。从实用的角度,以下仅列出与之相关的 IUPAC 命名与符号出版物。

Compilations

Nomenclature of Inorganic Chemistry, Blackwell Scientific Publications; Oxford.

1990.

Chapter 1: General aims, functions and methods

Chapter 2: Grammar

Chapter 3: Elements, atoms and groups

Chapter 4: Formulae

Chapter 5: Names based on stoichiometry

Chapter 6: Neutral molecular compounds

Chapter 7: Names for ions, substituent groups and radicals, and salts

Chapter 8: Oxoacids and derived anions

Chapter 9: Coordination compounds

Chapter 10: Boron hydrides and related compounds

Compendium of Analytical Nomenclature, Blackwell Scientific Publications; Oxford.

1987. The contents are as follows:

Presentation of the Results of Chemical Analysis

Solution Thermodynamics (activity coefficients, equilibria, pH)

Recommendations for Terminology to be used with Precision Balances

Recommendations for Nomenclature of Thermal Analysis

Recommendations for Nomenclature of Titrimetric Analysis

Electrochemical Analysis

Analytical Separation Processes (precipitation, liquid, distribution, zone melting and fractional crystallization, chromatography, ion exchange)

Spectrochemical Analysis (radiation sources, general atomic emission spectroscopy, flame spectroscopy, X-ray emission spectroscopy, molecular methods)

Recommendations for Nomenclature of Mass Spectrometry

Recommendations for Nomenclature of Radiochemical Methods

Surface Analysis (including photoelectron spectroscopy)

Compendium of Chemical Terminology IUPAC Recommendations, Blackwell Scientific Publication; Oxford. 1987.

Quantities, Units and Symbols in Physical Chemistry, Blackwell Scientific

Nomenclature of Elements and Compounds

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

Names for hydrogen atoms,ions and groups,and for reactions involving them
(Aure Appl. Chem. ,1988,60,1115).

Nomenclature of inorganic chemistry. Part II. Isotopically modified compounds
(Pure Appl. Chem. ,1981,54,2545).

Nomenclature of polyanions(Pure Appl. Chem. ,1987,59,1529).

Revised nomenclature for radicals,ions,radical ions and related species(Pure Appl. Chem. ,1993,
65,1357).

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

Terminology,Symbols and Units,and Presentation of Results

General

English — derived abbreviations for experimental techniques in surface science and chemical
spectroscopy(Pure Appl. Chem. ,1991,63,887).

Analytical

Recommendations for publishing manuscripts ion 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).

Nomenclature for automated and mechanized analysis(Pure Appl. Chem. ,1989,61,1657).

Nomenclature for sampling in analytcal chemistry(Pure Appl. Chem. ,1990,62,1193).

Nomenclature for chromatography(Pure Appl. Chem. ,1993,65,819).

Nomenclature of kinetic methods of analysis(Pure Appl. Chem. ,1993,65,2291).

Nomenclature for liquid — liquid distribution (solvent extraction) (Pure Appl. Chem. ,1993,
65,2373).

Nomenclature for supercritical fluid chromatography and extraction (Pure Appl. Chem. ,
1993,65,2397).

Nomenclature and terminology for analytical pyrolysis(Pure Appl. Chem. ,1993,65,2405).

Nomenclature for the presentation of results of chemical analysis(Pure Appl. Chem. ,1994,
66,595).

Recomendations for nomenclature in laboratory robotics and automation(Pure Appl. Chem. ,
1994,66,609).

Couoids and Surface Chemistry

Definitions, terminology and symbols in collid 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).

Manual on catalyst characterization(Pure Appl. Chem. ,1991,63,1227).

Thin films including layers;terminology in relation to their preparation and characterization (Pure Appl. Chem. ,1994,66,1667).

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. ,1980,52,2330).

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

Recommendations for sign conventions and plotting of electrochemical data (Pure Appl. Chem. ,1984,56,461).

Definition of pH scales. Standard reference values, measurement of pH and realted terminology(Pure Appl. Chem. ,1986,58,437).

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).

Electrochemical corrosion nomenclature(Pure Appl. Chem. ,1986,61,19).

Terminology in semiconductor electrochemistry and photoelectrochemical energy conversion (Pure Appl. Chem. ,1991,63,569).

Nomenclature, symbols, definitions and measurements for electrified interfaces in aqueous dispersions of solids(Pure Appl. Chem. ,1991,63,895).

Nomenclature, symbols and definitions in electrochemical engineering (Pure Appl. Chem. ,1993,65,1009).

Terminology and conventions for microelectronic ion—selective field dffect transistor devices in electrochemistry(Pure Appl. Chem. ,1994,66,565).

Kinetics

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

Kinetics of composite reactions in closed and open flow systems(Pure Appl. Chem. ,1993,

65,2641).

Quantum Chemistry

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

Reactions

System for symbolic representation of reaction mechanisms(Pure Appl. Chem. ,1989,61,23).

Detailed linear representation of reaction mechanisms(Pure Appl. Chem. ,1999,61,57).

Spectroscopy

Recommendations for publication of papers on methods of molecular absorption spectrophotometry in solution(Pure Appl. Chem. 1978,50,231).

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

Nomenclature and conventions for reporting Mossbauer 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. ,1972,29,625).

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).

A descriptive classification of the electron spectroscopies (Pure Appl. Chem. ,1987, 59, 1343).

Presentation of molecular parameter values for IR and Raman intensity(Pure Appl. Chem. , 1988,60,1385).

Recommendations for EPR/ESR nomenclature and conventions for presenting experimental data in publications(Pure Appl. Chem. ,1989,61,2195).

Nomenclature, symbols, units and their usage in spectro—chemical analysis.

V I . Molecular absorption spectroscopy. UV and visible (Pure appl. Chem. ,1988, 60, 1449);

V III . V III . Nomenclature system for X—ray spectroscopy (Pure Appl. Chem. ,1991,63, 735);

IX . X . Preparation of materials for analytical atomic spectroscopy(pure Appl. Chem. ,1988, 60,1461);

X . X II . Terms related to electrothermal atomization(Pure Appl. Chem. ,1992,64,253);

XI . X III . Terms related to chemical vapor generation(Pure Appl. Chem. ,1992,64,216).

Recommendations for nomenclature and symbolism for mass spectroscopy (Pure Appl. Chem. ,1991,63,1541).

Symbols for fine and hyperfine structure parameters(Pure Appl. Chem. ,1994,66,571).

Solid State

Definitions of terms related to phase transitions of the solid state(Pure Appl. Chem. ,1994, 66,577).

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 the thermodynamic functions (Pure Appl. Chem. ,1982,54,1239).

Standard quantities in thermodynamics; fugacities, activities and equilibrium constants for pure and mixed phases(Pure Appl. Chem. ,1994,66,533).

Recommendations for nomenclature and tables in biochemical thermodynamics(Pure Appl. Chem. ,1994,66,1641).

Toxicology

Glossary for chemists of terms used in toxicology(Pure Appl. Chem. ,1993,65,2003).