

# 19 CODATA / NEWSLETTER

SEPTEMBER 1978

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*The Committee on Data for  
Science and Technology  
(CODATA) was established  
in 1966 by the International  
Council of Scientific Unions.*

*Working on an international,  
interdisciplinary basis,  
CODATA seeks to improve  
the quality, reliability and  
accessibility of data of  
importance to science and  
technology.*



## CODATA ELECTIONS

At the 11th CODATA General Assembly held in Santa Flavia, Italy on May 26-27, 1978, the following scientists were elected as Officers and Members of the CODATA Executive Committee:

### *President:*

Professor **MASAO KOTANI**

Science University of Tokyo, Kagurazaka 1-3,  
Shinjuku-ku, Tokyo 162, Japan

### *Past President:*

Professor **PAUL MELCHIOR**

Observatoire Royal de Belgique, 3 av. Circulaire,  
1180 Brussels, Belgium

### *Vice President:*

Professor **V. V. SYTCHEV**

All-Union Scientific-Technical Information Center  
USSR Academy of Sciences, 14 Leninsky Prospekt,  
117901 Moscow, U.S.S.R.

### *Secretary General:*

Professor **EDGAR F. WESTRUM, JR.**

Dept. of Chemistry, University of Michigan,  
Ann Arbor, Michigan 48109, U.S.A.

### *Treasurer:*

Professor **NICHOLAS KURTI**

Dept. of Engineering Science, Parks Road,  
Oxford OX1 3PJ, U.K.

### *Members:*

Professor **JACQUES-EMILE DUBOIS** (France)

Centre d'Information et de Documentation Automatique,  
1 rue Guy de la Brosse, 75005 Paris, France

Dr. **DOROTHY DUNCAN** (I.U.N.S.)

Commonwealth Bureau of Nutrition  
Bucksburn, Aberdeen AB2 9SB, Scotland, U.K.

Professor **H. GUTFREUND** (I.U.B and I.U.P.A.B.)

Dept. of Biochemistry, University of Bristol Medical  
School, Bristol BS8 1TD, U.K.

Dr. **W. W. HUTCHISON** (I.U.G.S.)

Geological Survey of Canada, 601 Booth Street,  
Ottawa, Ontario K1A 0E8, Canada

Dr. **DAVID R. LIDE, JR.** (U.S.A.)

Office of Standard Reference Data, National Bureau  
of Standards, Washington, D.C. 20234, U.S.A.

Professor **C. N. R. RAO** (India)

Solid State & Structural Chemistry Unit, Indian  
Institute of Science, Malleswaram, Bangalore 560012,  
India

Professor **WOLFGANG SCHIRMER** (G.D.R.)

Zentralinstitut für Physikalische Chemie,  
Rudower Chaussee 5, 1199 Berlin-Adlershof, G.D.R.

Dr. **MANFRED SCHOENBERG** (F.R.G.)

Hoechst A.G., Postfach 800320,  
D-6230 Frankfurt/Main, F.R.G.

Members of the Executive Committee are chosen from among past and present National, Scientific Union or Co-opted Delegates for a period of two years. Each member's affiliation is listed after his or her name.

A complete listing of CODATA Delegates, Task Group and Advisory Panel Chairmen and members will appear in the next issue of the *CODATA Newsletter*.

## 6TH INTERNATIONAL CODATA CONFERENCE

The 6th International CODATA Conference was held at the Hotel Zagarella & Sea Palace in Santa Flavia, on the north shore of Sicily, on May 22-25, 1978 and brought together 180 scientists from 24 countries, representing all disciplines of science and having in common an interest in scientific numerical data, from their measurement and evaluation to their storage, management and dissemination.

The Program Committee under the chairmanship of Professor Jacques-Emile Dubois (France) and Professor Marcello Carapezza (Italy) expanded on the usual CODATA concerns and a large part of the program was devoted to using available data for the preservation of ecosystems, the prediction of natural disasters, the prevention of man-made hazards and other issues pertaining to ameliorating the quality of life. Thus participants were able to learn about the current status of earthquake prediction, about present geochemical measurements in volcanic predictions whereby 10-12 hours of advance warning can be given, about physical, chemical and/or biological data in monitoring and prevention programs related to atmospheric pollution, water pollution and medicine in terms of the complexities between short-term and long-term effects on man and the environment. Data requirements for energy storage technology was the subject of a panel discussion wherein energy storage associated with large and small scale generation, renewable energy sources, utilisation in industry, transport and buildings was discussed. Participants were able to learn of lacunae in data needed by industry, of legal problems and the role of scientific data in the establishment of environmental and security regulations.

Papers on existing and future Data Base Management Systems were presented. In the area of evaluation and dissemination of data, the role of the computer was discussed and the importance of "brainware" in addition to software and hardware was emphasized. Computerization of research journals is leading to the improved use of the conventional research journal for evaluation and communication of numerical data. More traditional CODATA subjects such as thermodynamic properties of substances, molecular spectra, presentation of numerical data in the primary literature and modus operandi of scientific numerical data banks were equally discussed.

Open parallel meeting of CODATA Task Groups enabled participants to exchange ideas and suggestions on current and future CODATA projects.

The beautiful countryside of Sicily, unfortunately so vulnerable and so often the victim of natural disasters, provided an appropriate setting for the Conference. Excursions to Agrigento, Piazza Armerina, Mount Pellegrino and Monreale were organized for accompanying members. The Local Organizing Committee, in particular Professors Marcello Carapezza and Lodovico Riva di Sanseverino, arranged for participants to enjoy Sicilian folksongs and dances, concerts and a sumptuous closing banquet.

The complete program of the Conference can be found on the following pages and the full Proceedings will be published by Pergamon Press in early 1979. The CODATA General Assembly, at its meeting held after the Conference, accepted the invitation from Japan to hold the 7th International CODATA Conference in Kyoto on October 8-11, 1980.

SCIENTIFIC PROGRAM  
6TH INTERNATIONAL CODATA CONFERENCE  
22-25 MAY 1978 SANTA FLAVIA, ITALY

MONDAY - MAY 22

OPENING SESSION

Co-chairmen: Prof. Marcello Carapezza (Italy), Prof. E. F. Westrum, Jr. (U.S.A.)

Opening Address - Pierre Santi Mattarella, President, Sicilian Government  
Rectorial Address - Giuseppe La Grutta, Rector, Palermo University, Italy  
Welcoming Address - Ernesto Quagliariello, President, Consiglio Nazionale delle Ricerche, Italy  
Presidential Address - Paul Melchior, President CODATA, Observatoire Royal de Belgique,  
(Prediction of Earthquakes: A Data Evaluation and Exchange Problem)  
Records, Record Linkage and Monitoring for Long Term Toxic Substances - Donald Acheson, F.R.C.P.,  
University of Southampton Medical School, U.K.

EVALUATION AND PREVENTION OF MAN-MADE HAZARDS

Co-chairmen: Dr. W. W. Hutchison (Canada), Prof. H. Viellard (France)

Data Importance in Relation to Chesapeake Bay Pollution - L. Eugene Cronin, Chesapeake Research  
Consortium, Johns Hopkins University, U.S.A.  
Epidemiological Aspects of TCDD Contamination in Seveso - Francesco Pocchiari, Director, Istituto  
Superiore di Sanità, Italy  
Reliability of Data in Studying Automobile Exhaust Pollution - Osamu Hirao, Mukta Institute of  
Technology, Japan

LUNCH

ATMOSPHERIC DATA AND QUALITY OF LIFE

Co-chairmen: Prof. V. V. Sytchev (U.S.S.R.), Dr. B. Tell (Sweden)

Photochemical and Kinetic Data for Atmospheric Chemistry - Richard P. Wayne, Oxford University, U.K.  
Ambient Air Quality Maintenance Data System Applied to Coal-Fired Electric Generating Stations -  
John P. Bradley, Murray and Trettel, Inc., U.S.A.  
Pollution Problem and Numerical Data - Nikolay G. Rambidi, Research Institute of Metrological  
Service, U.S.S.R.  
Data and Ocean Pollution - Jacques Piccard, Fondation pour l'Etude et la Protection de la Mer  
et des Lacs, Switzerland

ENVIRONMENTAL DATA MODELLING - SHORT COMMUNICATIONS

Co-chairmen: Prof. F. Pocchiari (Italy), Dr. D. Duncan (U.K.)

Problems in the Establishment of Environmental Data Banks in Food and Agriculture - D. D. Singer,  
Ministry of Agriculture, Fisheries and Food, U.K.  
Statistical Data in Biological Sciences - Kirill P. Ivanov, Pavlov Institute of Physiology,  
U.S.S.R.  
Hydrological Models, Data Bases, and the Computerized Control of Volta Lake - Sheldon C. Bachus,  
Robert Ankrah, Volta River Authority, Ghana  
Modeling Ultraviolet Radiation Sources - Critical Data Needs - Lucy Hagan, National Bureau of  
Standards, U.S.A.  
Information System Man-Environment - Nenad Prelog, INDOC-Centre for Protection and Improvement  
of Human Environment, Yugoslavia  
The Evaluation of Toxicological Data - The Methodological Contribution of a Data Bank -  
Renée Gerday, Maurice Fiskus, Institut National de la Santé et de la Recherche  
Médicale, France

INDUSTRIAL DATA AND INTERNATIONAL ENDEAVORS - SHORT COMMUNICATIONS

Chairman: Dr. M. Schönberg (F.R.G.)

Responding to Industry's Need for Health, Safety and Environmental Information of Materials -  
J. M. Nielsen, J. H. Westbrook, General Electric Company, U.S.A.  
PVT Relations of Ethylene-Hydrogen Mixtures - D. S. Viswanath, D.H.L. Prasad, Indian Institute  
of Science, India  
History and Work of the International Association for the Properties of Steam - H. W. Bradly,  
Bradly Associates, President IAPS, U.K.  
The National Geothermal Data Bank for Numerical Data Storage and Data Handling - Susan R. Schwartz,  
Sidney L. Phillips, Lawrence Berkeley Laboratory, U.S.A.  
The Economics of a Small Data Center - John G. Stevens, Virginia E. Stevens, William L. Gettys,  
Mössbauer Effect Data Center, U.S.A.  
Nature of Numerical Data Necessary for the Research and Development of Thermochemical Hydrogen  
Production Processes from Water - Shigeru Yamauchi, Kazuo Fueki, Kunio Yoshida,  
University of Tokyo, and Masayuki Dokiya, National Chemical Laboratory for Industry, Japan

OPEN MEETINGS OF CODATA TASK GROUPS AND ADVISORY PANELS (IN PARALLEL SESSIONS)

Advisory Panel on the Geosciences - R. Sinding-Larsen, Chairman  
Task Group on Fundamental Constants (Uncertainty in the Determination of the Gas Constant) -  
E. Richard Cohen, Chairman  
Task Group on Chemical Data for Industry - Arnold Bondi, Chairman  
Advisory Panel on the Biosciences - H. Gutfreund, Chairman  
Task Group on Accessibility and Dissemination of Data and World Data Referral Center -  
D.G. Watson, Chairman



TUESDAY - MAY 23

DATA AND COMPUTERIZED INFORMATION SYSTEMS

Chairman: Dr. Olga Kennard (U.K.)

- Data Information Systems and Conception Problems - Jacques-Emile Dubois, Director, Centre d'Informatique et de Documentation Automatique (CIDA), France  
Data Base Management and Scientific Information - Nigel Tubbs, Organisation for Economic Cooperation and Development, Paris

DATA EVALUATION AND DISSEMINATION

Co-chairmen: Prof. H. Gutfreund (U.K.), Prof. A.S. Kertes (Israel)

- Critical Analysis of Numerical Biological Data - D. Colquhoun, St. George's Hospital Medical School, U.K.  
Modular Computer Programs for the Reduction of Spectrophotometric Data - R. Norman Jones, National Research Council of Canada, Canada  
Computerization of Research Journals: Significance to Numeric Data Users - H. William Koch, A.W.K. Metzner, R.H. Marks, R. Lerner, American Institute of Physics, U.S.A.  
A Data System for Molecules and Crystals - Takehiko Shimanouchi, University of Tsukuba, I. Suzuki and M. Tasumi, University of Tokyo, Japan

LUNCH

SPECTROSCOPY AND COMPUTER-AIDED ELUCIDATION OF STRUCTURES - SHORT COMMUNICATIONS

Chairman: Prof. C.N.R. Rao (India)

- Data Evaluation and Quality of Spectroscopic Data Banks in the NIH/EPA Chemical Information System - Stephen R. Heller, EPA/MIDSD, and George W.A. Milne, National Institutes of Health, U.S.A.  
Machine Treatment of Infrared Spectroscopic Data Forming A Standard for Storage and Dissemination - Dietmar Kunath, Uwe Pape, Central Institute for Physical Chemistry, German Democratic Republic  
An Assessment of the Validity of Mass Spectral Data Bases - R.W.A. Oliver, J.A. Cooke, University of Salford, U.K.  
Identification of Organic Compounds Using Combined Retrieval System - Jure Zupan, Matej Penca, Dusan Hadzi, Boris Kidric Chemical Institute, Yugoslavia  
On Some Problems Connected with the Characterisation of Certain Structures by Standard Crystallographic Data - Helga Fichtner-Schmittler, K. Dornberger-Schiff, K. Fichtner, Zentralinstitut für Physikalische Chemie, German Democratic Republic  
Infrared Data Evaluation in View of Computer Data Handling - A. Massat, University of Paris VII, France

CORRELATION AND CRITICAL EVALUATION OF DATA - SHORT COMMUNICATIONS

Chairman: Prof. G. de Maria (Italy)

- Correlation and Prediction of Vapor-Liquid Equilibria Using a Computerized Data Bank - J. Gmehling, U. Onken, Universität Dortmund, Federal Republic of Germany  
The Use of Database Management Systems in Particle Physics - Paul R. Stevens, California Institute of Technology, U.S.A.; Alan Rittenberg, Lawrence Berkeley Laboratory, U.S.A.; Fred D. Gault and Brian J. Read, University of Durham, U.K.  
Data Evaluation: Methods for Ascertaining Thermodynamic Consistency - Lester Haar, John Gallagher, National Bureau of Standards, U.S.A.  
Data Correlation: Several Subtle but Very Serious Errors That May Occur from Inconsistencies Imposed by the Correlator in the Processing of Data - Lester Haar, John Gallagher, National Bureau of Standards, U.S.A.  
Critical Evaluation of Models for the Calculation of Thermophysical Properties - H.J. Bittrich, W. Fratzscher, H.P. Picht, D. Lempe, Technische Hochschule "Carl Schorlemmer" Leuna-Merseburg, German Democratic Republic  
Data in Electrochemical Engineering - R. Audinos, Université Paul Sabatier, France  
Critical Evaluation of the Viscosity of Aqueous Sodium Chloride Solutions from 0° to 150° C - Sidney L. Phillips, Huseyin Ozdek, Lawrence Berkeley Laboratory, U.S.A.  
Viscosity of Fluids at Elevated Pressures - A Compilation and Critical Evaluation of Present Data and Correlation Techniques - Karl Stephan, Klaus Lucas, Institut für Technische Thermodynamik und Thermische Verfahrenstechnik, Federal Republic of Germany  
Intellectual & Scholarly Judgement in Critical Evaluation of Numerical Data - A.S. Kertes, The Hebrew University, Israel, and S.S. Davis, University of Nottingham, U.K.

NATIONAL AND INTERNATIONAL DATA MANAGEMENT PROGRAMS

Chairman: Prof. Boris Vodar (France)

- Programs Related to Data for Science and Technology in India - C.N.R. Rao, Indian Institute of Science, India  
Euronet As A User Facility for Accessing Data Banks - Garth W.P. Davies, Commission of the European Communities, Luxembourg  
Information on Ongoing Research - Its Role in Improving Access to Data - Adam Wysocki and John Rose, Unesco, Paris  
Data Management for ICSU's International Magnetospheric Study - A. H. Shapley, Environmental Data Service, U.S.A.  
National Science Foundation's Role in Numerical Data Activities - Louis Cima, National Science Foundation, U.S.A.



WEDNESDAY - MAY 24

DATA IN THE PHYSICAL SCIENCES

Co-chairmen: Prof. T. Plebanski (Poland), Dr. D. R. Lide, Jr. (U.S.A.)

Physical and Chemical Data - Present Sources and Future Needs - David R. Lide, Jr.,  
National Bureau of Standards, U.S.A.

Data Compilations in Physics: Survey and Needs - H. Behrens, G. Ebel, Fachinformationszentrum  
Energie, Physik, Mathematik, Federal Republic of Germany

Thermodynamic Data for Technology - A. Bylicki and Andrzej Maczynski, Institute of Physical  
Chemistry of the Polish Academy of Sciences, Poland

DATA EVALUATION METHODOLOGY - SHORT COMMUNICATIONS

Co-chairmen: Prof. Y. S. Touloukian (U.S.A.), Dr. Guy White (Australia)

The American Society for Metals and the NBS Alloy Data Center Joint Program for Compilation  
of Alloy Phase Diagrams - G.C. Carter, L.H. Bennett, D.J. Kahan, National Bureau  
of Standards, and A.G. Gray, E.L. Langer, H.D. Chafe, American Society for  
Metals, U.S.A.

Information Content of Chemical Analysis Results and Methods - V. Stepanek, Karel Eckschlager,  
Czechoslovak Research Centre for Environmental Pollution Control, Czechoslovakia

Unreliable Data - A Study in Its Impact in Modeling MHD Power Generating Devices -  
J.R. Rumble, Jr., E.C. Beaty, Atomic Collision Data Center, National Bureau of  
Standards, U.S.A.

Data Extrapolation: A Physically Based Model for the Extrapolation of Data - Lester Haar,  
John Gallagher and Max Klein, National Bureau of Standards, U.S.A.

Statistical Evaluation of Calcite Solubility Data - J. Vanderdeelen, L. Baert, H. Steyaert,  
State University Ghent, Belgium

Precision and Accuracy of Numerical and Graphical Data Presentation - Y. Mashiko, Japan

International Data Series, Series B, Data on Aqueous Organic Systems - J.A. Larkin, National  
Physical Laboratory, U.K., and H.V. Kehiaian, Centre de Recherches de Microcalorimétrie  
et Thermochimie du CNRS, France

LUNCH

DATA NEEDS FOR ENERGY - PANEL DISCUSSION

Co-chairmen: Mme. A. David (France), Prof. N. Kurti (U.K.)

A CODATA Vade-Mecum for Energy? N. Kurti, Oxford University, U.K.

Energy Storage Research & Development in Europe - Jack Butterworth, Atomic Energy Research  
Establishment, U.K.

Evaluated Physical Properties Data for Materials Used in Energy Storage Systems - Victor Hampel,  
Lawrence Livermore Laboratory, and Lewis H. Gevantman, National Bureau of Standards, U.S.A.

Thermal Energy Storage in District Heating Systems - Ulrich Plantikow, R. Jank,  
Kernforschungsanlage Juelich, Federal Republic of Germany

What Does the User of Energy Data Want? - Bernard Bailly du Bois, Délégation Générale à  
l'Energie, France

FUTURE TRENDS IN CODATA

Co-chairmen: Prof. M. Kotani (Japan), Sir Gordon Sutherland (U.K.)

Legal Problems and Data - H. Viellard, Laboratoire Central de la Prefecture de Police, France

Data for Industrial Needs - J. H. Westbrook, General Electric Company, U.S.A.

FILM - "ANATOMY OF DATA"

OPEN MEETINGS OF CODATA TASK GROUPS (IN PARALLEL SESSIONS)

Presentation of Data in the Primary Literature - Henry V. Kehiaian, Chairman

Transport Properties - Y.S. Touloukian, Chairman

Computer Use - Olga Kennard, Chairman

Associate Organisations - Boris Vodar, Chairman

THURSDAY - MAY 25

ASTRO AND GEOSCIENCES

Co-chairmen: Prof. M. Caputo (Italy), Dr. A. H. Shapley (U.S.A.)

Geochemical Surveillance of Active Volcanoes - Marcello Carapezza, Istituto di Geochimica, Italy

Interdisciplinary Cooperation and Technical Exchange in Handling of Space-Time Varying Data - R.F. Tomlinson, International Geographical Union Commission on Geographical Sensing and Processing, Canada

Computer Use of Astronomical Information and Data - Morris S. Davis, University of North Carolina, U.S.A.

SCIENTIFIC DATA CORRELATION

Co-chairmen: Prof. W. Schirmer (G.D.R.), Dr. N. Tubbs (OECD)

Operation of a Data Bank in Biomedical Science and Correlation Problems - Henry M. Kissman, National Library of Medicine, U.S.A.

Interpretation of Data Through Pattern Recognition - William J. Sacco, Chemical Systems Laboratory, U.S.A.

DATA HANDLING AND COMPUTER SYSTEMS

Co-chairmen: Prof. J. E. Dubois (France), Dr. R. F. Tomlinson (Canada)

Data Handling and the Relevant State of the Art in Computer Science - H. Gallaire and J-M Nicolas, O.N.E.R.A. Centre d'Etudes et de Recherches de Toulouse, France

Handling the Data for the GEOS Satellite - K. Knott and J.R. Sternberg, European Space Agency, Holland

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DATA PROCESSING METHODOLOGY - SHORT COMMUNICATIONS

Co-chairmen: Dr. V. Hampel (U.S.A.), Prof. T. Shimanouchi (Japan)

Versatile Output from a Simple Numeric Data File - W. Bruce Ewbank, Oak Ridge National Laboratory, U.S.A.

Techniques for Evaluating Computer-Based Systems for Numerical Data Management - Wayne D. Dominick, Joseph E. Urban, University of Southwestern Louisiana, U.S.A.

Space Science Data Evaluation Methodology: Measured by One Operational System - I. Mistrik, University of Stuttgart, Federal Republic of Germany

Switching from a Large Time-Share Computer to an In-House Small Computer - One Data Center's Perspective - J.R. Rumble, Jr., P. Rутtenberg, E.C. Beaty, JILA, National Bureau of Standards and University of Colorado, U.S.A.

Paleontological Data Processing with an HBDS Data Bank at the Université Pierre et Marie Curie - François Bouillé, Daniel Pajaud, Marie-José Roulet, Université Pierre et Marie Curie, France

Storage and Treatment of Geological-Geotechnical Information - Jean-Luc Buisson, Renaud Sanejouand, Laboratoire Central des Ports et Chaussées, France

Bond Graphs as a Unified Technique for a Topology Coding and Substructuring of Nonholonomical Dynamical Systems - Wladyslaw Stepniewski, Politechnika Warszawska, Poland

Communication and Processing Languages - J.C. Bonnet, PLURIDATA, France

Creation and Implementation of a Migratory Bird Data Base - Chantal Prost, Felix Houtsa, Université Pierre et Marie Curie, France

Bulletin of Chemical Thermodynamics: A 10-Year Success Story of Data Flagging and Tagging - Robert D. Freeman, Oklahoma State University, U.S.A.

Numerical Data Growth Rate Problems - G.K. Hartmann, Max Planck Institut für Aeronomie, Federal Republic of Germany

A Relational Data Base Management System for Scientific Data - Stephen E. Jones, Daniel R. Ries, Lawrence Livermore Laboratory, U.S.A.

An Integrated Information System for Energy Storage - V.E. Hampel, B. Mallon, S. McGrogan, J. Swanson, T.M. Quick, Lawrence Livermore Laboratory, U.S.A.

Pattern Recognition as a Method of Data Analysis - Michele Caputo, Istituto di Fisica, Università di Roma, Italy



## CODATA DAYS IN FRANCE

On the initiative of the French National CODATA Committee and its parent body, the Bureau National de l'Information Scientifique et Technique (B.N.I.S.T.), two "CODATA-France Days", devoted to the problems of data utilization, were held on September 27-28, 1977 in the very modern premises of AFNOR, the French Standards Institution.

Some 200 participants, representing many disciplines (science, technology, economics, art museums, national archives) spent the better part of two days comparing their experience, getting acquainted with unfamiliar or even unsuspected aspects of the data world, and generally discussing the problems encountered in setting up and operating data banks. A dozen short papers were delivered, most of them describing a specific data bank or information system recently created in France, the gamut of which covered such diverse subjects as air travel, the effects of drugs (BIAM), building materials (ARIANE), infrared spectra (CIS), French industrial firms (ENEIDE), geological data, and the dimensions of the human body. The second day was more particularly devoted to practical applications of data banks: an actual demonstration session, chaired by Dr. Edouard Labin, had been organized in one of the near-by lobbies. Using a battery of terminals which had been installed just for that purpose, participants were able to access remote data banks (Thermodata, BIAM, Toxico, ENEIDE, ARIANE) and obtain answers to their queries. Monsieur Labin wound up this demonstration session with a short exposé explaining why the attempts to develop a "universal software" (un logiciel universel) were bound to fail, which, he said, was not to be taken as a set-back but, on the contrary, as a sure sign that informatics had reached its "maturity", since each user was now capable of writing his own, tailor-made software.

The overall session ended with a "question period" during which participants, speaking from the floor, addressed their questions to a multidisciplinary panel of experts. Many of the questions revolved around the notion of legal responsibility on the part of data suppliers. Two main trends of thought appeared to exist, according to which, in the first opinion, the data supplier is a mere "conveyor belt" between the primary data producer and the ultimate user and thus cannot be held responsible for the quality of the data he supplies, whereas the second opinion held that, inasmuch as the supplier charges money for the data he supplies, he ought to guarantee their quality. Speakers were obviously divided on the subject and the only unanimous opinion was that the problem deserved a lot more reflection.

Even though no formal Proceedings will be published, some of the papers delivered are available, free of charge, from the French National CODATA Committee, c/o B.N.I.S.T., 8 rue Crillon, 75194 Paris Cedex 04, France. The list of available papers includes:

- Présentation du système BIAM (Banque d'Information Automatisées sur les Médicaments) by H. Ducrot
- Description du système ARIANE by M. Clavel
- La Banque de Données sur le Transport Aérien by R. Mathieu and R. Assabgui
- Une Banque de Données de Biométrie Humaine by A. Coblentz
- La Banque de Données du Sous-Sol du B.R.G.M. by B. Lemaire et L. Lheureux
- Le Centre d'Information Spectroscopique du G.A.M.S. by D. Sandino and G. Emschwiller
- Présentation de la Banque de Données ENEIDE by I. Darmon.

The meeting was so successful that a second one centered on software for data banks has been scheduled for November 16, 1978.

## BULLETIN OF CHEMICAL THERMODYNAMICS

As of August 1977, the yearly edition of the *Bulletin of Thermodynamics and Thermochemistry*, an annual survey of research in chemical thermodynamics, has resumed its former name of *Bulletin of Chemical Thermodynamics*. Corresponding to this change of title, the editorial offices, which were operated from the University of Michigan under the authority of Professor E.F. Westrum, Jr., have been moved to Oklahoma State University under the editorship of Professor Robert D. Freeman.

What makes the *Bulletin of Chemical Thermodynamics* somewhat of a unique publication is that it manages to cover both published reports and current-but-not-yet-published research, thus allowing scientists and engineers to avail themselves of the most recent thermochemical data.

The *Bulletin* contains three major sections: Reports, Index and Bibliography. The Reports section provides terse summaries of unpublished research results from some 500 laboratories located all over the world. For ease of consultation, the Reports section has been divided into seven sub-sections labelled as follows: *I: Identification* (essentially a list of cooperating laboratories, with a brief mention of their specialized activities); *K: Thermochemical quantities* (e.g. enthalpy changes in chemical reactions); *Q: Thermal properties* (e.g. enthalpy changes for non-reacting systems); *V: Vaporization studies* (e.g. vapor pressures, adsorption of gases); *X: Other non-calorimetric studies* (e.g. P-V-T, solubility, compressibility); *Y: Bio-chemical and macromolecular systems*; *Z: Compilations and Correlations*.

The Bibliography provides a list of papers with chemical thermodynamic content published during the preceding year. In the 1977 volume, some 5400 references (giving author, title and source of article) were listed according to four main classes: organic, organic mixtures, inorganic, biological/macromolecular. These references were extracted from 60 journals by four separate groups of scientists, each group being responsible for a specific class.

Four separate Indexes, corresponding to the same four classes as above and arranged by chemical compound, enable the users to refer back to published work, i.e. the Reports and the Bibliography sections. Each index entry lists explicitly the substance (or system) studied, gives the property measured in terms of a category, e.g. P-V-T data, calorimetric heats of reaction, solubilities, etc., and a complete bibliographic citation. Each section of the Index also contains a collection of entries devoted to correlations, descriptions of apparatus, and to properties of miscellaneous industrial materials and substances not readily identifiable by chemical formula. Annual subscription to the *Bulletin* is \$25.00 (*bona fide* personal subscriptions: \$20.00). It can be obtained by writing to:

Bulletin of Chemical Thermodynamics  
Department of Chemistry  
Oklahoma State University  
Stillwater, Oklahoma 74074  
U.S.A.

## CODATA ADVISORY PANEL ON DATA FOR INDUSTRIAL NEEDS

The first meeting of the CODATA Advisory Panel on Data for Industrial Needs was held in Paris in November 1977 and a follow-up meeting took place at the Santa Flavia CODATA Conference.

The Advisory Panel has adopted Terms of Reference which include a review of the general needs for data in industry and identification of areas where CODATA can most usefully contribute; recommendation to CODATA for the appointment of Task Groups for specific projects, setting up their objectives, estimation of costs, monitoring progress and receiving final reports; advising other CODATA Task Groups of industrial needs that fall within the scope of their activities; informing CODATA of developments taking place within industry in any of CODATA's defined spheres of interest, and assisting as appropriate in any references thereto in CODATA's publications; seeking agreement with the editors of data handbooks used in industry on the inclusion of evaluated data wherever possible, and on the statistically sound characterization of data they publish; stimulating and/or participating in the critical evaluation of the validity range and reliability of published physical property correlations; and exploring the most effective ways of collaborating with other international bodies concerned in data for industry, and, where appropriate, indicating to CODATA joint projects that could be undertaken.

The Panel has made initial contact with CODATA National representatives, ad hoc committees and leading industrial laboratories which evoked a large number of suggestions for Panel action including adsorptive capacity of substances in selected environments, an "on-line" materials information data base, fatigue and fracture data, directory of data collections, critical evaluation of CCT and ITT data for steels, cross-reference of world industrial standards, international cross-reference to toxicological data, transport properties of binary mixtures, coordination of data evaluation activities on halogenated hydrocarbon refrigerants, symposium on data correlation methodology, support and advice to NBS/ASM binary phase diagram project, compilation of ternary phase diagrams, data on molten oxides and slags, thermodynamic data on compounds relevant to coal conversion, data for catalysis, etc.

Bearing in mind CODATA's charter and budget limitations, the group will recommend definite projects which can produce concrete results in a finite time.

Members of the Advisory Panel are Dr. J. H. Westbrook (General Electric Company, U.S.A.), Chairman; Professor A. Bylicki (Academy of Sciences, Poland), Dr. R. W. McIntyre (Rolls-Royce, U.K.), Dr. M. Schoenberg (Hoechst A.G., Federal Republic of Germany), and Professor H. Viellard (Laboratoire Central, France).

## INTERNATIONAL TRAINING COURSES IN THE HANDLING OF EXPERIMENTAL DATA

A detailed description of the CODATA/Unesco-UNISIST training courses in the handling of experimental data in chemistry/physics, the biosciences and engineering which were held in Poznan, Poland in September 1977 is now available upon request from the CODATA Secretariat as CODATA Special Report No. 6.

## ITALIAN NATIONAL COMMITTEE FOR CODATA

In February 1978, the Consiglio Nazionale delle Ricerche named the following scientists as members of the Italian National Committee for CODATA:

Professor MARCELLO CARAPEZZA, Chairman  
Istituto di Geochimica  
Via Archirafi 36  
90123 Palermo

Dr. GIULIANO GRAZIOLI, Secretary  
Consiglio Nazionale delle Ricerche  
Piazzale delle Scienze 7  
00100 Rome

Professor MICHELE CAPUTO  
Past Chairman of Italian CODATA  
Istituto di Fisica  
Città Universitaria  
Piazzale delle Scienze 5  
00100 Rome

Professor GIANFRANCO CIMMINO  
Vice Presidente  
Istituto Nazionale Alta Matematica  
(home) Via Caroncini 53  
00197 Rome

Professor GIOVANNI DI MARIA  
Istituto di Chimica-Fisica  
Città Universitaria  
00100 Rome

Professor LODOVICO RIVA DI SANSEVERINO  
Istituto di Mineralogia  
Via Archirafi 36  
90123 Palermo

Professor LUIGI ROSSI BERNARDI  
Istituto di Chimica Organica  
Via Celorio 2  
Milan

Professor GIUSEPPE RUFFINO  
Leeds & Northrup Italiana  
Corso Massimo D'Azeglio 60  
10126 Torino

## ISRAEL NATIONAL COMMITTEE FOR CODATA

The new composition of the Israel National Committee for CODATA as announced by the Council of the Israel Academy of Sciences and Humanities is as follows:

Professor A.S. KERTES, Chairman  
Department of Chemistry  
The Hebrew University of Jerusalem  
Jerusalem

Dr. E. HOFFMANN, Secretary  
Centre of Scientific and Technological Information  
POB 20125  
Tel-Aviv

Dr. K. KEREN  
Centre of Scientific and Technological Information  
POB 20125  
Tel-Aviv

Professor D. ABIR  
The Faculty of Engineering  
Tel-Aviv University  
Ramat Aviv



Professor M. RAHAT  
Department of Zoology  
The Hebrew University of Jerusalem  
Jerusalem

Professor A. S. FRAENKEL  
Department of Applied Mathematics  
The Weizmann Institute of Science  
Rehovot

Dr. D. GIL  
Geological Data Processing Division  
Geological Survey of Israel  
30 Malchei Israel Street  
Jerusalem

## AUSTRALIAN NATIONAL COMMITTEE FOR CODATA

The Australian Academy of Science has named the following as members of the Australian National Committee for CODATA:

Dr. G. K. WHITE, Chairman  
CSIRO National Measurement Laboratory  
P.O. Box 218  
Lindfield NSW, 2070

Dr. C. K. COOGAN  
CSIRO Div. of Chemical Physics  
PO Box 160  
Clayton, Vic. 3168

Mr. C. GARROW  
Manager, Information Service  
CSIRO  
PO Box 89  
East Melb. Vic. 3002

Dr. G. N. LANCE  
CSIRO Division of Land Use Research  
PO Box 1666  
Canberra City 2601

Dr. M. LAY  
Australian Road Research Board  
PO Box 156  
Bag 4  
Nunawading, Vic. 3131

Professor J. D. MORRISON, FAA  
Dept. of Chemistry  
La Trobe University  
Bundoora, Vic. 3083

Dr. W. D. L. RIDE  
Australian Biological Survey  
Dept. of Science  
Scarborough House  
Phillip ACT 2606

Mr. P. SHELLEY  
Bureau of Mineral Resources  
Constitution Avenue  
Parkes, ACT 2600

Professor V. B. D. SKERMAN  
Dept. of Microbiology  
University of Queensland  
St. Lucia, Qld. 4067

Dr. B. YATES  
Australian Science & Technology Library  
PO BOX E 333  
Canberra, 2600

## RADIATION CHEMISTRY DATA CENTER\*\*

The Radiation Chemistry Data Center located at the University of Notre Dame has enlarged its scope to include the compilation and evaluation of quantitative data on photochemical and photophysical processes in solution, with the support of the Division of Environmental Research and Development of the U.S. Department of Energy. Accompanying expansion of the bibliographic data base will support the data compilation effort and also make it possible to provide information services to a wider group. Impetus for the expansion has come from the need for information on environmental effects of solar radiation, especially on aquatic systems. Photochemical solution kinetics are also of importance in the development of methods for utilization of solar energy and other applications. Newly emphasized topics are the chemical kinetics of photochemical transformations, primary processes, and experimental and theoretical studies of excited states. Topics not covered include photography, photosynthesis, synthetic methods, spectroscopy, and chemistry of the atmosphere.

Established in 1965, the Radiation Chemistry Data Center is sponsored by the Office of Standard Reference Data of the National Bureau of Standards and the Division of Basic Sciences of the Department of Energy, and is located in the Notre Dame Radiation Laboratory, site of a broad research program in radiation chemistry and photochemistry. The Center has assembled a bibliographic data base including nearly 40 000 references. Since 1968, a current-awareness service has been provided to scientists throughout the world. The *Biweekly List of Papers on Radiation Chemistry and Photochemistry* is available on subscription; the reference lists are cumulated each year and published with keyword and author indexes. Back issues are available starting with 1971. Retrospective searches are provided for a minimum fee of \$20.00 per search; the service is free to those performing Department of Energy or NBS-sponsored research. The *Thesaurus for Radiation Chemistry* serves as a guide to the keywords used for searching and for indexing the annual cumulated reference lists; new terms are continually being added to keep abreast of the current literature and to accommodate the coverage of new topics.

Data compilation activities have centered in several areas. Reaction rate data for transient radicals in solution are being collected and reviewed in a series of NSRDS reports. Data sheets containing previously published and contributed optical absorption spectra for transient species in both aqueous and organic media are in preparation. The spectra, which have been obtained by pulse radiolysis and flash photolysis, are plotted on a standard grid and will serve for reference and for identification of reaction intermediates. Other publications have covered the effects of ionizing radiation on alcohols and the gases  $\text{NH}_3$  and  $\text{N}_2\text{O}$ , and the behavior of excess electrons in dielectric materials.

Additional information on the Center may be obtained by writing to Dr. Alberta B. Ross, Supervisor, Radiation Chemistry Data Center, Radiation Laboratory, University of Notre Dame, Notre Dame, Indiana 46556.

\*\* This article has been reprinted from *NSRDS Reference Data Report*, Mar./Apr. 1978.

## THE IUPAC COMMISSION ON MOLECULAR STRUCTURE AND SPECTROSCOPY

Much of the work of the IUPAC Commission on Molecular Structure and Spectroscopy is concerned with formulating recommendations for carrying out measurements and reporting data for various branches of chemical spectroscopy. This process is deliberately made rather slow in order to insure that the recommendations represent a carefully thought out consensus of the relevant scientific community. Recommendations are first published in provisional form and are widely circulated. After a minimum of eight months they are revised in the light of comments received and then, after approval of the IUPAC Bureau and Council, they are published in the IUPAC journal *Pure and Applied Chemistry*. Documents in this series published prior to 1974 were summarized at the Fourth International CODATA Conference at Tsakhcadzor (U.S.S.R.).\*

The following recommendations have subsequently been completed and have been published or are in process of publication:

1. "Nomenclature and Conventions for Reporting Mössbauer Spectroscopic Data", *Pure Appl. Chem.* **45**, 211-216 (1976).
2. "Presentation of NMR Data for Publication in Chemical Journals--B. Conventions Relating to Spectra from Nuclei Other than Protons", *ibid.* **45**, 217-219 (1976).
3. "Nomenclature and Spectral Presentation in Electron Spectroscopy Resulting from Excitation by Photons", *ibid.* **45**, 221-224 (1976).
4. "Recommendations for Symbolism and Nomenclature for Mass Spectroscopy", *ibid.* (in press).
5. "Recommendations for the Presentation of Infrared Absorption Spectra in Data Collections. A. Condensed Phases", *ibid.* (in press).
6. "Definition and Symbolism of Molecular Force Constants", *ibid.* (in press).
7. "Recommendations for the Presentation of Raman Spectra in Data Collections". Approved in provisional form, 1977; to appear as an IUPAC *Information Bulletin*.

In addition, the second edition of *Tables of Wave-numbers for the Calibration of Infrared Spectrometers*, compiled by Professor A.R.H. Cole, and published by IUPAC has now appeared and is on sale (Pergamon Press, \$16.25). This book incorporates thorough revisions of the tables covering the range 4300-600  $\text{cm}^{-1}$ , which were published in 1961, as well as the supplement covering the range 600-1  $\text{cm}^{-1}$ , which was published in 1973.

A document on "Use of Abbreviations in the Chemical Literature" which originated in the Molecular Spectroscopy Commission was broadened in scope and has been issued as a Provisional Recommendation (IUPAC *Information Bulletin* - in press) under the auspices of the IUPAC Interdivisional Committee on Nomenclature and Symbols.

On-going projects of the Molecular Spectroscopy Commission and its Subcommittees include the following: (a) preparation of recommendations for chiro-

tical phenomena (ORD/CD); (b) critical evaluation of current practice in the choice of molecular axes in symmetric systems, with possible preparation of a set of recommendations; (c) preparation of recommendations for symbolism and terminology in electron paramagnetic resonance; (d) study of the scope of and nomenclature in new areas of spectroscopy, with possible preparation of a set of recommendations; (e) preparation of a document on definitions and symbolism in Raman spectroscopy; (f) preparation of a document on further definitions of terms in mass spectroscopy; (g) study of the need for recommendations on presentation of mass spectra in data collections; (h) study of proposed formats for computer-readable storage of spectral data; (i) study of the presentation of gas phase infrared spectra in data collections.

The Commission would be pleased to hear from anyone having an interest in these topics. Further information about them can be obtained by writing to the IUPAC Secretariat, Bank Court Chambers, 2-3 Pound Way, Cowley Centre, Oxford OX4 3YF, England, or to the Chairman of the Commission on Molecular Structure and Spectroscopy, Dr. E. D. Becker, Building 2, Room 120, National Institutes of Health, US Department of Health, Education and Welfare, Bethesda, Maryland 20014, U.S.A.

## DATA BANK ON THERMODYNAMIC PROPERTIES OF GASES AND LIQUIDS

The All-Union Scientific-Research Center of the State Service on Standard Reference Data (VNITS-GSSSD) in the U.S.S.R. has a new computerized system for standard reference data on the thermophysical properties of technically important gases and liquids.

This automatized system calculates thermodynamic properties of nitrogen, air, methane, and ethylene in one-phase and two-phase regions in the interval of parameters from the triple point to 1500 K and 100 MPa. In 1978 data on the thermodynamic properties of water, carbon dioxide, oxygen, ammonia and other substances will be introduced into the system.

The system provides, in the form of numerical tables, the following data: density, compressibility, enthalpy, entropy, isobaric, isochoric, and saturation heat capacities, velocity of sound, adiabatic throttle-effect, adiabatic exponent, volatility, coefficient of volume expansion, temperature dependence vapor pressure, Gibbs potential, and heat of vaporization.

The data bank of this system contains the official Gosstandard tables of standard reference data - fundamental physical constants, densities of water and mercury.

The system was established to provide a service to organisations and industry with data problems on thermodynamic properties of substances. Users are requested to indicate the temperature and pressure for which they require data.

The system is under the direction of Dr. A. D. Kozlov. Requests should be sent to Automatized System Service, VNITS-GSSSD, Ezdakov per. 1, 117965 Moscow B-334, U.S.S.R. Telephone: 250-0190.

\* CODATA Bulletin No. 14 (1974), p. 104.



## ATOMIC AND MOLECULAR PROPERTIES

STANDARDIZATION IN SPECTROPHOTOMETRY AND LUMINESCENCE MEASUREMENTS (1977, vii + 150 pp, \$5.25, U.S. National Bureau of Standards, NBS Special Publication 466), K.D. Mielenz, R.A. Velapoldi and R. Mavrodineanu, editors, presents the Proceedings of the Workshop Seminar held at NBS, Gaithersburg, MD, November 19-20, 1975. The 15 papers reprinted in this volume were originally published in the Journal of Research of the NBS, 80 A, 389-428 and 551-658 (1976). In their constant concern for improving the accuracy and reliability of the data based on the properties of Standard Reference Materials, the NBS authorities organized this interdisciplinary forum in the hope that the needs for standardization of measurements in the field of spectrophotometry could be better defined, and also that new materials could be adopted as SRM's. The papers presented centered on three themes: Measurement of Luminescence Yields (mostly by radiometric, actinometric and calorimetric techniques), Diffuse Reflectance Spectroscopy (a technique with numerous applications, all of them essentially based on the measurement and matching of colors), and Ultraviolet Absorption Spectrometry (a field where stricter standardization procedures and improved standards are called for; interesting suggestions were made regarding the use of acidic potassium dichromate solutions and semi-transparent metallic thin films as, respectively, absorbance and transmittance standards). - The document can be ordered from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, U.S.A., under SD Catalog No. C13.10:466).

## BIOLOGICAL SCIENCES

CRITERIA (DOSE-EFFECT RELATIONSHIPS) FOR CADMIUM (1977, 214 pp, \$17.50, Pergamon Press, ISBN 0 08 022024 X). This report, written by a Group of Experts, was prepared for the Health and Safety Directorate of the Commission of the European Communities at Luxembourg. It contains tables detailing the exposure/effect relationships for cadmium and provides an up-to-date compendium of literature on the subject with an extensive list of references. This is the first book covering the entire field of the effects of cadmium on man and his environment, and it will prove to be a very comprehensive and authoritative source of data to toxicologists and public health practitioners. - Contents: Chemical and physical properties of cadmium and its compounds. Natural occurrence, production, uses and sources of environmental pollution. Concentration of cadmium in the environment in particular in air, food, water. Metabolism, (intake, absorption, transport, distribution, body burden, excretion). Toxicological effects of cadmium, acute and short term exposure; long term exposure; carcinogenicity; mutagenicity; effect on reproductive processes (fertil-

ity, embryotoxicity, perinatology). - Some existing guides and standards for the monitoring of environmental levels are mentioned, and the needs for further research are outlined. A tentative proposal is made to define a no-effect level for long term exposure to cadmium. The literature references provided include more than 500 items.

## EARTH SCIENCES

AVALANCHES, special issue of Glaciological Data (World Data Center A for Glaciology, Report GD-1, 1977, 134 pp). Glaciological Data is a new publication superseding the Glaciological Notes published by WDC-A: Glaciology up to October 1976. Its Editor is Marilyn J. Shartran of the Institute of Arctic and Alpine Research, Boulder, Colo. Glaciological Data, to be issued 3-4 times per year, will comprise a systematic bibliography and related data information on a selected theme. This first issue is centered on data problems and data applications in the context of avalanches. The main articles deal with: Problems of avalanche terminology (by E. LaChapelle); Procedures and problems encountered in avalanche data collection (by R. L. and B. Armstrong); Surveys of avalanche damage in the U.S. (by M. Martinelli) and in Switzerland (by H. Frutiger); Avalanche research in USSR (by M. Plam) and in Iceland (by H. Björnsson) and a brief account of the avalanche workshop held in Banff, Canada, in November 1976. - The bibliography consists of a list of 643 selected items covering the period 1950-1977. It includes only non-Russian references. Another bibliography containing approximately 600 Russian citations is in preparation and will appear in a future issue of Glaciological Data. No subject index to the bibliography, unfortunately, is provided. - The next issue will be devoted to arctic sea ice.

WORLD CATALOGUE OF VERY LARGE FLOODS (1976, 424 pp, 100FF, Presses de l'Unesco, Place Fontenoy, 75700 Paris). The management of water resources and the defense against floods depend to a large extent on those data relative to the variability of floods in space and time, as well as on their formation and propagation. The main objective of this catalogue is to provide an overview of the floods situation throughout the world. But it also includes additional information enabling more elaborate methods to be used for the treatment of data: for example, physiographic information on those basins which are subject to floods (total area and mean altitude) and other information (slope, nature of the soil, etc.) which can be of help in more complex studies, usually based on geographic interpolation. Statistical data are also given on maximum discharges and volumes, as well as information on flood evaluation (peak discharges, hydrogram volume and other characteristics). - This catalogue also exists in French (Répertoire mondial des très fortes crues), in Spanish (Catalogo mundial de grandes crecidas) and in Russian.

## HANDBOOKS FOR BROAD FIELDS OF SCIENCE AND TECHNOLOGY

LANDOLT-BORNSTEIN 6th Edition  
Volume No

4. Part 4b Thermodynamic properties of mixtures. Combustion. Heat transfer. (Springer Verlag, 1972, 740 Figures, xxvii + 771 pp, \$208.10)

Part 4c1 Absorption of gases in liquids of low vapor pressure (Springer Verlag, 1976, 384 pp, \$159.90)

Part 4c2 Absorption of gases in liquids of high vapor pressure (Springer Verlag, 1978, 1000 + pp.)

### NEW SERIES

- Group 1. Volume 5 Part c Estimation of unknown excitation functions and thick target yields for p-, d-,  $^3\text{He}$ - and  $\alpha$ -reactions (Springer Verlag, 1974, 506 Figures, vi + 257 pp, \$65.60)

- Group 2. Volume 6 Molecular constants from microwave, molecular beam and electron beam resonance spectroscopy (Springer Verlag, 1974, 153 Figures, xii + 687 pp, \$194.80)

Volume 7 Structure data of free polyatomic molecules (Springer Verlag, 1976, 1200 graphs, 404 pp, \$147.60)

Volume 8 Magnetic properties of coordination and organometallic transition metal compounds (Springer Verlag, 1976, 451 Figures, 1200 pp, \$451.00)

Volume 9 Magnetic properties of free radicals Part a Atoms in organic radicals and radicals in metal complexes (Springer Verlag, 1977, approx. 300 pp, \$142.80)

- Group 3. Volume 7 Crystal structure of inorganic compounds

Part b Key elements O, S, Se, Te

1. Substance numbers 1-1817 (Springer Verlag, 1975, 23 Figures, xxii + 674 pp, \$229.60)

Part e Key elements d<sup>9</sup>-, d<sup>10</sup>-, d<sup>1</sup>-, d<sup>3</sup>-, f-elements (Springer Verlag, 1976, 14 Figures, xxvi + 739 pp, \$278.80)

Part g References (Springer Verlag, 1974, iv + 457 pp, \$94.30)

Volume 9 Ferro- and antiferroelectric substances (Springer Verlag, 1975, 1150 Figures, vii + 496 pp, \$172.20)

- Group 4. Volume 2 Heats of mixing and solution (Springer Verlag, 1976, 84 Figures, approx. 700 pp, \$237.80)

Volume 3 Thermodynamic equilibria of boiling mixtures (Springer Verlag, 1975, 630 Figures, viii + 376 pp, \$131.20)

SANYO'S TRILINGUAL GLOSSARY OF CHEMICAL TERMS (English-Japanese-Chinese), (1976, 2028 pp, \$150.00, The Sanyo Shuppan Boeki Co., Inc., P.O. Box 5037, Tokyo International, 100-31, Japan). - This monumental dictionary, which took 15 years to prepare, is the work of Hiroshi Yamada who translated, annotated and compiled its 35000 entries. The main section of the glossary (giving the actual trilingual correspondence) is arranged by alphabetical order of the English term, each term being followed by its Japanese translation with figured pronunciation and Chinese translation with its phonetic rendition. Whenever necessary, the chemical formula is given. Two subject indexes, one in Japanese, the other in Chinese, permit accessing the trilingual glossary from Japanese and Chinese respectively.

## MATHEMATICAL METHODS AND COMPUTER PROGRAMS

COMPUTER PROGRAMS FOR INFRARED SPECTROPHOTOMETRY (1976-77, seven volumes published as special issues of NRCC Bulletin, No. 11 through 17, approximately \$7.00 per volume), R. Norman Jones editor. This is a collection of fifty programs generated by 18 (different) authors working in the Organic Spectrochemistry Section of the Chemistry Division of NRCC. Programs 1 to 38 and 42 to 50 deal with the reduction of digitized experimental data for IR spectrophotometry by transmission and by attenuated total reflection. Programs 39, 40 and 41 have been written for the calculation of molecular vibrational frequencies by normal coordinate analysis. - These programs may also be obtained on two 600 ft. reels of magnetic tape, accompanied by two short card deck programs designed to facilitate retrieval from the tapes. The tapes list the complete set of programs together with the test data and test data output. - Orders for the Bulletins should be sent to Mr. G. Lacroix, Publication Sales and Distribution Division, Bldg. M-58, National Research Council of Canada, Ottawa, Ontario, Canada K1A 0R6. - Orders for the tapes (\$50.00 the set of two tapes) should be placed with Dr. R. Norman Jones, Division of Chemistry, National Research Council of Canada, Ottawa, Ontario, Canada K1A 0R6.

## NOMENCLATURE, SYMBOLS, UNITS, STANDARDS AND CONSTANTS

NODC TAXONOMIC CODE. (1977, 451 pp; distributed by the National Oceanographic Data Center, 2001 Wisconsin Avenue NW, Washington, D.C. 20235) is a digital hierarchical taxonomic code prepared for NOAA/NODC by George Mueller of the Institute of Marine Science, University of Alaska at Fairbanks. It was devised to record biological



data from studies of the Outer Continental Shelf (OCS), Marine EcoSystems Analysis (MESA) and Deep Ocean Mining Environmental Study (DOMES). It is based on the idea that one taxonomic level is represented in the code by a 2-digit number. Thus, identification of the five taxonomic levels corresponding to phylum, class, family, genus and species, results in a 10-digit number, with the possibility of adding two more digits for sub-species or varieties in some taxonomic groups. The two main sections of this code are: A Complete Taxonomic List in Code Order, extending from Code 01 (Vira) to Code 9227020501 (Capra hircus); and A Complete Taxonomic List in Alphabetical Order, ranging from Abarenicola Claparedi (designated by code 5001620101) to Zygosphaera (carrying code 06030419), thus providing two mutually inverted files to facilitate retrieval. In addition, a 90-page Trivial Index Listing, also in alphabetic order and with the pertinent code numbers, is provided.

## NUCLEAR PROPERTIES

COMPILATION OF PION PHOTOPRODUCTION DATA. (1977, 306 pp, Physik Daten/Physics Data, 7-1, ZAED, 7514 Eggenstein-Leopoldshafen, FRG), by D. Menze, W. Pfeil and R. Wilcke of the Institute of Physics of the University of Bonn, presents an extensive compilation of data on the two-body reaction of pion photoproduction off nucleons. A more comprehensive compilation had been published in 1973 in the Landolt-Börnstein New Series, of which the present publication is the first part, in a new, more compact presentation and with an updated list of references extending to June 1977. - The four photoreactions tabulated here, in which pions are produced, are:  $\gamma + p \rightarrow \pi^+ + n$ ,  $\gamma + p \rightarrow \pi^0 + p$ ,  $\gamma + n \rightarrow \pi^- + p$  and  $\gamma + n \rightarrow \pi^0 + n$ . In each case, the tables give the differential cross section, the polarised photon asymmetry, the polarisation of the recoil nucleon, the polarised target asymmetry, the asymmetry produced by linearly polarised photons hitting a polarised target, the integrated cross section and the references.

## SOLUTION PROPERTIES

SOLID-LIQUID PHASE EQUILIBRIA. (1977, 252 pp, Academia Publishing House of the Czechoslovak Academy of Sciences. Distribution in non-socialist countries by Elsevier Scientific Publishing Company, Jan van Galenstraat 335, Amsterdam, The Netherlands), by Jaroslav Nyvlt, is a very useful monograph providing an overall and yet detailed view of the problem of phase equilibria in condensed systems. Descriptions are given of methods employed for the measurement of phase equilibria in condensed systems, and of phase diagrams used in the calculation of experimental data. Considerable attention has been given to correlation methods based on semiempirical and theoretical procedures. It contains information on the conditions required to

reach phase equilibrium, on fundamental thermodynamic equations and types of systems, on the results of measurements, etc. Numerous tables in the text illustrate the solubility of substances, mainly inorganic ones, in water. The tables are arranged in two parts: part I contains data on two-component systems—from 0 to 100 °C—giving also the value of a differential dissolving temperature and temperatures for crystalhydrate conversion. In conclusion, data are given on the solubility of several selected organic substances in water. - Part II contains data on three-component inorganic systems with components which do not mix in their solid phase. All data have been treated critically in the form of constant equations describing phase equilibria in three-component systems. The character of the equations enables the use of the tabulated constants even in temperature interpolations and moderate extrapolations, and in the calculation of the solubility in systems with a bigger number of components. All tables have been supplemented with computer programs.

## THERMODYNAMIC PROPERTIES

VERIFIED VAPOR-LIQUID EQUILIBRIUM DATA. Volume 1: Binary hydrocarbons systems (1976, 206 pp, \$12, PWN-Polish Scientific Publishers, Warsaw) is the inaugural volume, compiled and edited by Professor A. Maczynski, of the new series "Thermodynamical Data for Technology" published under the aegis of the Institute of Physical Chemistry of the Polish Academy of Sciences. The objective of this very ambitious but highly useful series is to collect all VLE data available from the open literature, convert them into a unified form and assess them critically, simultaneously providing an opportunity to compare the data reported for identical systems by various authors and to select the best ones. The present volume contains the verified VLE data for 173 binary hydrocarbon-hydrocarbon systems having at least four carbon atoms in each component. The data listed in each Table are either taken at constant pressure (for example, liquid composition - vapor composition - Temperature, i.e. x-y-T) or at constant temperature (for example, x-y-P). Most data have been smoothed by means of suitable procedures, which in turn served for evaluating, selecting and possibly eliminating the data. For purposes of comparison, some data were recalculated with the aid of the constants used in the smoothing equations, and inserted in the Tables. - Further volumes in this Series I will deal with hydrocarbon-halocarbon systems, oxo-thio-nitro compound systems and systems with limited miscibility. - In their preface to this volume, the general editors of the series, Professors A. Bylicki and W. Zielenkiewicz have made it clear that this Thermodynamical Data for Technology Program, far from being a purely Polish national project, is actually open for cooperation to all other institutions and authors who might be interested in extending the program and improving its realization.

## THERMOPHYSICAL AND TRANSPORT PROPERTIES

COMPUTER-AIDED DATA BOOK OF VAPOR PRESSURE. (1977, 2035 pp, \$115, The Data Book Publishing Co., Tabata-Kaikan, 11-3 Udagawa-cho, Shibuya-ku, Tokyo 150, Japan) by Shuzo Ohe, is a very compact vademecum giving vapor pressure data for 2000 pure compounds. All the pertinent information concerning a given compound has been fitted onto a single page, providing the reader with the compound name, its formula, the literature cited, a graph showing the experimental values of vapor pressure (in mm Hg) vs the temperature (in °C), the ranges of temperature and pressure observed, the values, for each compound, of the Antoine coefficients A, B and C, entering in Antoine's equation giving the value of the vapor pressure, and the mean error between the observed values and the calculated values. - An alphabetical index of all 2000 compounds is appended.

DOKUMENTATION RHEOLOGIE - DOCUMENTATION RHEOLOGY. (1976, 1033 pp, \$25.00 Special Issue (No. 42), Bundesanstalt für Materialprüfung (BAM), D-1000 Berlin 45. Unter den Eichen 87, F.R.G.) is a reference guide to the world's published literature on deformation and flow of materials. The 7000-odd references listed provide a very comprehensive coverage of all aspects of rheology, and a very convenient Table of Contents, reinforced by a 17-page alphabetical subject index, enables the reader to retrieve references easily and efficiently. The general arrangement of the volume is to review first the rheology of materials, then the rheology of processing, then friction and lubrication and finally damping and sealing. The coverage of the latter two sections is extremely superficial, but many more references on friction and lubrication can be found in "Documentation Rheology"'s companion volume "Documentation Tribology - Wear, Friction and Lubrication" also edited by BAM.

THERMAL CONDUCTIVITY AND EMITTANCE OF SOLID  $\text{UO}_2$ . (1977, 185 pp, \$39.50, Center for Information and Numerical Data Analysis and Synthesis (CINDAS), 2595 Yeager Road, West Lafayette, Indiana 47906, USA), by R. Brandt, G. Haufler and G. Neuer (Y.S. Touloukian, translation editor), is the English translation of a comprehensive critical review published by the authors in German. The work was translated into English by CINDAS in order to make available to the English-speaking technical community the results of this outstanding study which is a must reference for all engineers and scientists involved in nuclear power generation and related areas of endeavor. The primary thrust of the work is the thermal conductivity. In 160 pages, the review covers 231 references encompassing all material

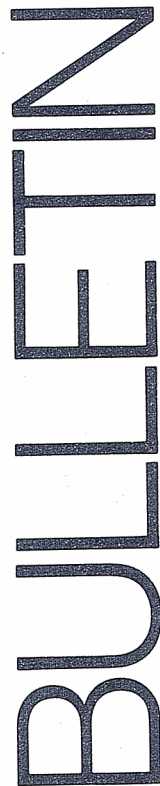
aspects of  $\text{UO}_2$  such as composition, stoichiometry, porosity (and shape factors), irradiation, manufacturing process, impurities, temperature level, zone melting, annealing. The emittance study is relatively short, consisting of some 46 references discussed in a space of 25 pages. Definitive recommendations of property values are given and many physical phenomena are fully illustrated.

## MISCELLANEOUS

THE FIFTH BIENNIAL INTERNATIONAL CODATA CONFERENCE. (1977, 642 pp, \$60.00, Pergamon Press, Headington Hill Hall, Oxford), edited by Bertrand Dreyfus, contains the 110 papers presented at the CODATA Conference held in Boulder, Colorado in June 1976. The following broad headings are covered: Statistical techniques in the correlation and evaluation of data. General problems of data evaluation and analysis. Data for technology. Data tagging and related activities. Computer techniques in the handling and dissemination of data. National and international data programs. Data needs for energy and environmental problems. Construction and indexing of files in the geosciences. Data services in the astro- and geosciences. Biological data-banking and networking. Data activities relevant to energy research and development. Evaluation of data on thermophysical properties of fluids. Computer techniques in numerical data handling. Computer systems for numerical data handling. Evaluation of thermochemical data. Evaluation of data on solid state properties.

ACCESSING NUMERIC DATA VIA FLAGS AND TAGS: A FINAL REPORT ON A REAL WORLD EXPERIMENT. NASA Technical Memorandum 79326 (1978, 63 pp, NASA, Scientific & Technical Information Office, Washington D.C.) by James P. Kottenstette, James E. Freeman, Eileen R. Staskin, and Charles W. Hargrave. An experiment is reported which (1) extended the concepts of data flagging and tagging to the aerospace scientific and technical literature; (2) generated experience with the assignment of "data summaries" and "data terms" by documentation specialists; and (3) obtained "real world" assessments of data summaries and data terms in information products and services. Inclusion of data summaries and data terms improved users' understanding of referenced documents from a "subject" perspective as well as from a "data" perspective; furthermore, a radical shift in document ordering behavior occurred during the experiment toward proportionately more requests for data-summarized items.





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## International Compendium of Numerical Data Projects

Springer-Verlag, Berlin, Heidelberg, New York, 1969, 295 pp, DM 48.—. Us \$ 20.—, FF 120.—.

Proceedings : Third International CODATA Conference ; Le Creusot, France, 26 – 30 June, 1972

CODATA, Frankfurt Main, F.R.G., Aug. 1973, 100 pp, 297 x 210 mm, DM 30.—, US \$ 15.—, FF 75.—.

## CODATA Newsletter

No 1 (Oct. 1968), 12 pp ; No 2 (Aug. 1969), 12 pp ; No 3 (Dec. 1969), 8 pp ; No 4 (May 1970), 16 pp ; No 5 (Dec. 1970), 28 pp ; No 6 (June 1971), 20 pp ; No 7 (Dec. 1971), 20 pp ; No 8 (May 1972), 16 pp ; No 9 (Dec. 1972), 12 pp ; No 10 (June 1973), 12 pp ; No 11 (March 1974), 20 pp ; No 12 (Aug. 1974), 24 pp ; No 13 (Sept. 1974), 20 pp ; No 14 (June 1975), 12 pp ; No 15 (Nov. 1975), 16 pp ; No 16 (Mar. 1976), 16 pp. No 17 (Feb. 1977), 20 pp ; No 18 (Sept. 1977), 20 pp., No 19 (Sept. 1978), 16 pp.

**CODATA Bulletin** : Annual subscription : US \$ 20 or 100 French Francs.

No 1 (Oct. 1969), 12 pp, *Automated Information Handling in Data Centers*, US \$ 1.50, superseded by Bulletin No 4.

Nos 2, 5, 6, 7, 10, 17 and 22, superseded by Bulletin No 28.

No 3 (Dec. 1971), 28 pp, *A Catalog of Compilation and Data Evaluation Activities in Chemical Kinetics, Photochemistry and Radiation Chemistry*, US \$ 3.50.

(Report of the CODATA Task Group on Data for Chemical Kinetics).

No 4 (Dec. 1971), 12 pp, *Automated Information Handling in Data Centers*, US \$ 1.50 2nd Edition.

(Report of the CODATA Task Group on Computer Use, Nov. 1971).

No 8 (Nov. 1972), 32 pp, *Geological Data Files : Survey of International Activity*, US \$ 3.50.

(Report of COGEO DATA, Committee on Storage, Automatic Processing and Retrieval of Geological Data of the International Union of Geological Sciences (IUGS)).

No 9 (Dec. 1973), 6 pp, *Guide for the Presentation in the Primary Literature of Numerical Data Derived from Experiments*, US \$ 1.50.

(Report of the CODATA Task Group on Presentation of Data in the Primary Literature, Sept. 1973).

No 11 (Dec. 1973), 8 pp, *Recommended Consistent Values of the Fundamental Physical Constants, 1973*

(Report of the CODATA Task Group on Fundamental Constants, August 1973).

No 12 (Sept. 1974), 12 pp, *Energy Data Accessing and/or Retrieval*, US \$ 1.50.

(Report on Data Tagging, compiled by a Panel of Experts at the Energy R & D Data Workshop held at Gaithersburg, Md, May 6-7, 1974).

No 13 (Dec. 74), 8 pp, *The Presentation of Chemical Kinetics Data in the Primary Literature*, US \$ 1.50.

(Report of the CODATA Task Group on Data for Chemical Kinetics).

No 14 (Feb. 1975), 180 pp, *Proceedings of the Fourth International CODATA Conference on the Generation, Compilation, Evaluation and Dissemination of Data for Science and Technology* (Tsakhadzor, U.S.S.R., June 1974), US \$ 17.00.

No 15 (March 1975), 32 pp, *Man-Machine Communication in Scientific Data Handling*, US \$ 5.00.

(Proceedings of the Symposium sponsored by the CODATA Task Group on Computer Use, Freiburg im Breisgau, F.R.G., July 1973).

No 16 (October 1975), 32 pp, *Study on the Problems of Accessibility and Dissemination of Data for Science and Technology*

(Report of the CODATA Task Group on Accessibility and Dissemination of Data), US \$ 5.00.

No 18 (April 1976), 44 pp, *Abstracts - Fifth International CODATA Conference*, US \$ 5.00.

No 19 (June 1976), 22 pp, *Flagging and Tagging Data*, US \$ 5.00.

(Report of the ICSU AB/CODATA Joint Working Group).

No 20 (Sept. 1976), 16 pp, *Recommendations for Measurement and Presentation of Biochemical Equilibrium Data*, US \$ 5.00.

(Report of the ICSU Interunion Commission on Biothermodynamics).

No 21 (Oct. 1976), 122 pp, *Proceedings of the Plenary Sessions Fifth International CODATA Conference*, US \$ 7.50.

No 23 (May 1977), 42 pp, *Selected Papers Relevant to Energy Presented at the 5th International CODATA Conference*, US \$ 5.

No 24 (June 1977), 42 pp, *CODATA Directory of Data Sources for Science and Technology, Chapter 1 : Crystallography*, US \$ 10.

No 25 (Nov. 1977), 5pp, *Biologists' Guide for the Presentation of Numerical Data in the Primary Literature*, US \$ 1.50.

(Report of the CODATA Task Group on the Presentation of Biological Data in the Primary Literature).

No 26 (Jan. 1978), 37 pp, *International Training Courses in the Handling of Experimental Data*, US \$ 5.00.

(Report of the CODATA Task Group on International Training Courses in the Handling of Experimental Data).

No 27 (March 1978), 40 pp, *Abstracts-6th International CODATA Conference*, US \$ 5.00

No 28 (April 1978), 17 pp, *CODATA Recommended Key Values for Thermodynamics 1977*, US \$ 5.00.

(Report of the CODATA Task Group on Key Values for Thermodynamics)

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