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CODATA

NEWSLETTER

November 1993

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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 interdisciplinary basis, CODATA seeks to improve the quality, reliability, processing, management, and accessibility of data of importance to science and technology.

CODATA Task Group on Artificial Intelligence and Computer Graphics Workshop

The CODATA Task Group on Artificial Intelligence and Computer Graphics (AIGRA) conducted a Workshop on Decision Making in Science and Technology with emphasis on Material Selection at the University of Marne-la-Vallée and at the CODATA Secretariat in France on November 4-6, 1993. Organized in conjunction with the French and Japanese CODATA Committees and the newly established University of Marne-la-Vallée by Professors H. Bestougeff, J.-E. Dubois and S. Iwata, 25 participants came from France, Italy, Japan, Switzerland, the United Kingdom and the Commission of the European Communities. Representing universities, Government administrations, and industry in various fields of knowledge, they discussed the role of data, databases, and CAD/CAM for engineering, in connection with decision making systems. Current trends in decision making based on knowledge derived from databases were analyzed.

The Workshop was organized around five themes. In the session on Decision Making and Scientific Information, renowned specialists of management presented the limits and evolution of managerial theories systems.

Similarity models, data and knowledge interplay, special mathematical methods to deal with fuzzy and imprecise data as well as to extend their correlation through genetic algorithms demonstrated the need for specialized information to move from data to associated knowledge without neglecting data precision in materials science.

The session on High Level Integration emphasized information reshaping to achieve a new intelligent base system for research and development, how to use the regularity concept and rules at the atomic level to predict, through similarity, certain properties of metallic compounds. These were elaborated in a Materials and Engineering session.

Special attention was given to the role and importance of standardization of data used at different levels of decision making such as the framework and evolution of STEP (Standard for the Exchange of Product Model Data) and CALS (Computer Aided Acquisition and Logistic Support). Multidisciplinary needs and access to specifications as well as the recent dynamic information concept in the materials field led to

(continued on page 2)

CODATA Task Group on Materials Database Management

A meeting of the CODATA Task Group on Materials Database Management was held on Friday and Saturday, October 8 and 9, 1993, at the Holiday Inn-Gaithersburg, MD. Those in attendance were: A. J. Barrett, W. G. Jackson, J. G. Kaufman, H. Kröckel, A. D. Kozlov, S. Nishijima, R. Sandström, G. H. Wood, and Z. Xia (representing Yunwen Lu).

The following changes/additions were made in liaison activities:

- Nishijima will become liaison member with the Asian Sources Task Group. Because of Nishijima's inability to attend the forthcoming Taiwan meeting, Wood will be the representative there.
- Jackson will replace Kaufman as liaison with the Electronic Publishing Task Group.

Barrett provided an update on the Long-Term Planning (LTP) activity for CODATA. As a follow-on to this discussion, Task Group members were asked to provide their recommendations on items for consideration by the LTP group to Barrett, who will by year's end summarize and redistribute them to all Task Group members. Based upon this input, Barrett will represent the Task Group in the LRP discussions.

Barrett reported on the publication of the Second Edition of the Register of *Database Managers*; an analysis of its content was provided and discussed. Barrett relinquished leadership of this activity and Jackson volunteered to take it on. Barrett and Jackson will work out the transition, with the intent to publish the next update in about 2 years. At Kröckel's suggestion, Task Group members were asked to review the document carefully and provide suggestions to Jackson about new additions within the next six months or so. Thanks were extended to Barrett for initiating and moving this activity along at an impressive pace.

On the Cost-Benefits Project, Jackson presented a fine summary of the data received from the recent cost survey data from over twenty database producers now represented by the study. It was concluded that a paper summarizing the process and the information trends should be prepared by Jackson and published following another look at whether or not it is possible to subdivide the analysis by database media (online vs. PC), private or public, and/or growing or stable content). Jackson will re-examine the data, provide an updated summary by year's end, and following comment, target publication by Spring '94 and presentation at CODATA '94.

Jackson noted that plans to co-sponsor a cost/benefits workshop with UNIDO failed through lack of interest on their part. After much discussion on the subject of such a workshop, Sandström agreed to consult with some of his economist associates and develop a recommendation for the next meeting.

Consideration was given to several possible new areas of activity:

- a. Expert Systems. Since ASTM is investigating this activity, their position will be awaited before acting further. Kaufman will get a report from Teresa Cendrowska on this, and also distribute a copy of the new NMAB study that includes guidelines for expert systems.

- b. Quality and Reliability Data. Several recent developments, including Barrett's chapter on this subject in the new ASTM Manual on Materials Databases and ASTM E49.05's draft guideline will be distributed (Kaufman/Barrett) before further consideration of any Task Group activity in this area.
- c. Waste Materials/Environments Aspects. Kozlov introduced the subject of databases on waste material characteristics and disposal. Kröckel and Nishijima reported that they both also interface with work on the subject. After some discussion, it was concluded that Kröckel will head a Sub-Task Group, including both Kozlov and Nishijima, on this subject with the objective of recommending a position for the Task Group on contributions that might be made in the understanding and management of data on "ecomaterials" and/or the "environmental friendliness" of materials.
- d. Neural Networks. After a brief discussion, it was agreed that this subject falls outside of the Task Group objectives.

—J. G. Kaufman

Artificial Intelligence

(continued from page 1)

an excellent state-of-the-art report and interesting discussions. These topics were assembled in the standardization and exchange problems. Scientific Directors from large industries addressed the group in the final session on Industrial Policies and Decision Processes.

Dr. P. Shirmann, Scientific Director of ATOCHEM, noted the difficulties in getting molecules to listen to directives from international organizations such as the U.N.'s ruling that CFC's in the atmosphere must be reduced by the year 1994. He discussed the challenging research undertaken during the past five years to find fluorocarbon substitutes and new refrigerants.

A view of the development of complex conventional codes as communication tools between industries and research in the field of aircraft motor design was presented by Dr. A. Ormancey. A final presentation by Mr. P. Betin, Director of the Société Européenne de Propulsion in France, concerned the relationship between decisions (small and large) and material development. Hindsight from previous experiences, in the context of the French aerospace programs, were used more or less to present the conceptual analysis of "retroengineering".

A final round-table discussion highlighted the deep interest of the participants and the success of the meeting in bringing together experts from various fields of the decision making process. The importance of artificial intelligence and its practical aspects moved the audience to request the AIGRA group (based on previous meetings in Paris, Beijing, Tsukuba, and this special workshop) to produce a monograph defining the complexity and coherence of the decision making processes.

A majority of participants were satisfied with the diversity of the topics and suggested that such bipolar workshops be considered in the future to encourage other disciplines to think more deeply about the knowledge which might be derived from existing databases, thereby opening several doors leading to different pathways for research within a single database.

New CODATA Book on Crop Modeling

Crop modeling is a valuable and effective multipurpose technique. Its uses can help increase agricultural yields, assist in timely preparations for anticipated crop shortfalls, and improve trade decisions, economic planning, and related policy making.

Crop modeling has so advanced that it can now often make reliable predictions. Crop models can replace trial-and-error types of research, assist farmers and agricultural officials in making strategic and real-time decisions, and provide sufficiently accurate predictions of factors such as duration of the plant-growth stage, plant biomass assimilation rates, and soil-water balance. These developments, in turn, are beginning to be useful on larger scales in helping to set regional or national policies that require information on anticipated crop yields.

Overall—progress in crop modeling may be characterized as encouraging. Nevertheless, for this technique to become fully effective, improvements need to be made in a number of areas.

A new CODATA book, *Crop Modeling and Related Environmental Data*, is intended to promote a better understanding of this technique and to enhance its uses. The book describes recent developments in crop modeling and identifies the most significant issues, with a focus on applications for arid and semi-arid regions in developing countries. The volume is divided into four major sections. Part One, on *Crop Modeling and Related Data Requirements*, provides the technical background with emphasis on the data that are needed to support successful crop modeling applications. Part Two treats *Accessibility of Global Environmental Data and Selected Data Integration Issues*. Part Three, on *Crop Modeling Applications for Arid and Semi-Arid Regions in Developing Countries*, reviews the major issues involved in the effective application of crop models in this specific context and provides some notable examples from sub-Saharan Africa. Finally, Part Four covers the *Technical, Institutional, and Human Infrastructure Considerations*.

The book provides information to assist in the transfer of crop modeling techniques to researchers and agricultural specialists, particularly those working in and with developing countries. It also can be used effectively as supplemental reading in higher education institutions, either in agricultural or international relations courses. The details on how to order this timely and useful publication appear on page 7 of this Newsletter. This volume is the first in CODATA's new "Monograph Series"!

—Paul F. Uhler, Director
U. S. National Committee for CODATA
National Research Council

Thermodynamicists, Materials Scientists, Compilers will note a strong focus on materials properties at Chambéry's 94 CODATA Conference.

CODATA Calendar

1994

March

10-12 CODATA East Asian Data Sources Task Group Meeting, Taipei, Taiwan

13-14 CODATA Task Group on World Data Depository for Experimental Data on Thermophysical Properties. San Diego, California, USA

17 CODATA Officer's Meeting. Paris, France

18-19 CODATA Executive Committee Meeting. Paris, France

July

2 CODATA Task Group on Fundamental Constants. Boulder, Colorado, USA

September

15-17 CODATA Task Group on Biological Macromolecules. Chambéry, France

17-18 CODATA Task Group on Materials Database Management. Chambéry, France

18-22 International CODATA Conference. Chambéry, France

23-24 CODATA General Assembly. Chambéry, France

1996

----- International CODATA Conference. Tsukuba, Japan

----- CODATA General Assembly. Tsukuba, Japan

CISTI's Document Delivery Service

Anyone who has been frustrated by long delays in interlibrary loan will delight to learn of CISTI's (Canadian Institute of Scientific and Technical Information) Document Delivery Service.

The Canada Institute for Scientific and Technical Information (CISTI) has awarded a contract to Network Support Inc. to develop an innovative system for electronic document delivery. Over the next six months, CISTI's photocopy operations will be replaced with workstations that will give clients the option of receiving documents in various ways.

The development of this system places CISTI in the vanguard of document delivery technology. The system has certain contemporary features that will greatly enhance efficiency and productivity.

There are three major software packages. The first manages the orders and their associated documents. This enables clients to receive a status report on their requests. The second program allows the scanned images to be manipulated. For example, pages can be inserted or deleted as needed. The third program manages the workflow. It will also produce statistical reports that will help CISTI monitor the efficiency of the workflow.

CSTIN—China's New Science and Technology Information Network

Full utilization of the resources of databases and software developed in many institutions under the support of the Industrial Ministries and the Academy of Sciences and meeting the data and software needs from users in the front line of research design and manufacturing around the country are relevant goals. To meet them, CODATA-China was entrusted by the State Science and Technology Commission (SSTC) to organize networking services for scientific and technological databases. This project was given the acronym CSTIN, standing for Chinese Science and Technology Information Network. Considering that most scientific and technological databases are run on personal computers, that most users are familiar with them and with the existing telecommunication network of China, as well as with the available financial support within data source fields, CSTIN chose distributed service centers.

Databases in the same discipline are concentrated together. Every service center employs a Novell local area network using the PSTN (Public Switched Telephone Network) as the major means of access at present. An alternative access means is the CHINAPAC (Packet Switched Network) in capital cities. For the first phase (1994-1995), two service centers were selected to give trial services. One of these in the Laboratory of Computer Chemistry, Chinese Academy of Sciences (CAS) provides service in chemical and chemical engineering, and another in Tsinghua University provides service on materials.

The databases available online are:

In chemistry and chemical engineering:

- ITDB Inorganic Thermo-Chemical Engineering and Data Estimation System
- KB-OPDS Knowledge-Based Organic Property Database System
- ATDB Aqueous Solution Thermodynamic Database
- GEPCE Generic Program of Chemical Equilibrium, and

In materials:

- ACDB Advanced Ceramics Database
- HPDB High Polymer Database

A Science and Education Computer Network (of optical fiber) called NCFC (The National Computing and Networking Facility of China), connects the CAS network and campus networks in Tsinghua University and Peking University within the triangular area of Zhongguancun. These two local area networks can be connected to each other via NCFC.

In addition to online retrieval from the above databases, by means of E-mail, Fax or telephone, the two centers will offer S & T-related services, including data source identifying, problem-oriented consulting, software sharing, book reservation, full text searching of encyclopedic handbooks, etc., relating to chemistry and materials information. In the initial period, service charges will be kept low by financial subsidy from the SSTC and the NATIONAL Natural Science Foundation. Moreover, for user guidance, a series of handbooks will be published by the Chinese Science Press.

International Workshop on Epitope Data

An international workshop on epitope data was organized at the Biosciences Research Institute of the Science University of Tokyo from 12-15 September 1993 to discuss the need for epitope data organization. The idea for this workshop was proposed during the Joint Task Group Meeting of Biological Macromolecules and Commission on Standardized Terminology for Access to Biological Data Banks held in Munich last March.

The workshop on epitope data was organized by Prof. Tsugita (Chairman, CODATA Task Group on Biological Macromolecules). The meeting was attended by scientists from China, India, Japan, Taiwan, UK, and the USA and was funded by Keirin, CODATA, and the Bioscience Research Institute. After discussing the available information on epitopes and its probable applications, both for industry and research scientists, they unanimously agreed that the addition of epitope data along with protein sequence data and data on hybridomas would be a valuable resource. A feasibility study will be carried out for one year at two levels: 1) data coding and 2) its usefulness. The format for the feasibility study was discussed and finalized. The data are to be coded in a relational database model by adding epitope information with proper pointers to HDB and PIR-International entries. The Feature Table in PIR-International will be modified only if the initial study is found feasible. The work plan was also finalized after discussion.

Taking into consideration the importance and growth of quantitative information in immunology, the group noted a need for a new Task Group on Data Activity in Immunology. Dr. Sugawara in consultation with Prof. Tada will submit a proposal to CODATA for the formation of such a Task Group.

Dr. Kolaskar presented the work done on the computerized Animal Virus Data Bank at the University of Poona, India. A discussion was held on the establishment of a sub-Task Group on a Virus Data Bank as a part of the Task Group on the Survey of Data Sources of Asian-Oceanic Countries. Afterwards, the chairman of this Task Group, Prof. Tasumi, suggested that a sub-Task Group on Data on Micro-organisms in Asian Oceanic Regions be established with priority on collection and organization of information on viruses, yeasts, and other industrially important micro-organisms. Upon unanimous approval by the members, necessary action will be taken by Drs. Kolaskar and Sugawara in consultation with Prof. Tasumi.

Did you miss the *Global Change* thrust of the Beijing Conference? Don't worry! Buy a copy of the relevant presentations in CODATA's Bulletin Series, published late in 1992. Other subjects will follow soon in the "partial" proceedings volumes divided along disciplinary lines. (cf. p. 7)

CODATA Workshops on Thermophysical Property Data Banks

The second CODATA Workshop on Thermophysical Property Data Banks and Process Simulators was held in Warszawa, Poland, 6-8 September, 1993. It was organized jointly by the CODATA Task Group on World Data Depository for Experimental Data on Thermophysical Properties, the Institute of Physical Chemistry, and the Institute of Coal Chemistry of the Polish Academy of Sciences, as well as the Institute of Economics of the Chemical Industry.

Their first meeting was held in Paris in April 1993, also under the chairmanship of K. Marsh. At that time, they announced they will endeavor to:

- coordinate the collection of raw experimental thermophysical and physical property data, including metadata, in electronic form to minimize duplication of effort;

Note to Participants in 1994 International CODATA Conference in Chambéry:

The abstract deadline has been moved to 1 February 1994 to enable latest developments to be included.

The Second Circular to be distributed in early December will include the preliminary program.

- establish a mechanism for the collection and storage of the electronic information;
- establish guidelines for the submission of experimental data and metadata in electronic form;
- respond to new data needs;
- establish mechanisms for the collection and dissemination of electronic data using modern communication techniques;
- expand the task group work to include environmental safety, and health data primarily on organic compounds and mixtures required for chemical engineering design;
- inform the scientific community of data needs, and influence and initiate the filling of these needs;
- provide the chemical and chemical engineering community with the world's literature data, thus giving it the means to develop new, safe, non-polluting, and energy saving chemical processes;
- provide the academic community with access to the world's literature data, thus giving it the means to develop new correlations and estimation methods, to conduct related research, and to avoid duplication of experimental work

The program of the September workshop included invited lectures, posters, and computer demonstrations on the following topics: data collections, programs for critical evaluation and prediction of data for pure substances and mixtures, data banks, database management systems, data for environmental protection, process simulators, and interfaces between data banks and process simulators.

The workshop was attended by 35 participants from 7 countries. The following data centers and systems were represented: TRC (Thermodynamics Research Center) by K. Marsh; DIPPR (Design Institute for Physical Property Data) by T. Selover; PPDS (Physical Property Data System) by A. Johns; NIST (National Institute for Standards and Technology) by J. Gallagher; TPDC (Thermophysical

Property Data Center) by A. Maczynski; STI by K. Rajogopal; F*A*C*T by P. Talley; and CHEMCAD by S. Mikulaski.

At this meeting, the prime objective was the establishment of a World Data Depository (WDD). The Thermodynamic Research Center and DECHEMA agreed to actively pursue the amalgamation of their databases to form the nucleus of WDD with the aim of establishing the WDD by early 1995. The Task Group would be responsible for the establishment of (a) the Scientific Advisory Committee consisting of representation from supporting institutions including industry, government, and the academic community, and (b) the Management Board consisting of representatives from DATA Centers. The Scientific Oversight Committee would be a committee of this Task Group and would advise on areas of coverage of the WDD, metadata requirements (in general), etc. The Management Board would assume legal responsibility for all financial aspects of the WDD. They would define requirements for submission and extraction of data and oversee these requirements in cooperation with participating data centers.

The third Task Group Meeting—to be held in San Diego in March 1994—would outline the prototype WDD, define responsibilities of the Scientific Committee and the Management Board (including legal aspects, and devise guidelines for contributors.

Members of the Task Group include K. Marsh (chm.), A. Bylicki, M. Chase, R. Eckermann, J. Gallagher, A. Johns, A. Maczynski, T. Selover, H. Uchida, J.T.R. Watson, and Z. Xu. H.V. Kehiaian is a consultant.

Thermochemistry and Equilibria of Organic Compounds

This book is essentially a *troika* of (three) monographs published earlier in the USSR dealing with the thermodynamics of organic substances. One on bomb calorimetry by S. N. Hadjiev (1988, Nauka, Moscow), thermodynamics/equilibria of isomers by G. J. Kabo, G. N. Roganov, and M. L. Frenkel (1986, Universitetskoye, Minsk), and thermochemistry of vaporization by Yu. A. Lebedev and E. A. Miroshichenko (1981, Nauka, Moscow).

Although all three parts emphasize the data aspects as well as evaluation/estimation procedures, the second one (on isomeric substances) has extensive thermodynamic data, tables (ΔS° , ΔH°), and contributions to degrees of freedom evaluated by statistical mechanics, and the third has even more extensive tables. The first is focused more on the experimental aspects and the Washburn corrections. Taken together, they represent a substantial contribution to thermochemistry of molecular crystals. Details on the procurement of the volume will be found on page 7.

ADEP—Thermodynamic and Transport Properties Database

The ADEP (Action for DEvelopment and study of Processes) data and calculational base for the thermodynamics of chemical systems as well as the prediction of synthetic chemical reactions, composition of pyrolytic products of industrial waste, and of materials corrosion has 450 species in the standard library but may have 950 species plus the annual updates.

In a recent development, the ADEP system (online since 1991) has been made available in a PC compatible version. In both French and English, the base may be placed on IBM (or 100% compatible clones) with MS-DOS operating systems; memory of 640 kbytes and math coprocessor are recommended.

The software allows the calculation of the composition and the thermodynamic properties. It also allows subscribers to use powerful and specially adapted graphics aids. The results are tabulated on an ASCII file which may be readily imported to Lotus 123 or Excel software. The standard library contains 450 chemical compounds. These are mainly elements and inorganic compounds. A demonstration diskette is available to qualified potential users.

An agreement was negotiated with Thermodata (France) to build a normalised library of thermodynamic data. The purchase of ADEP with a data library from Thermodata of 3600 species over the temperature range spanning 300 K to 2300 K is also an option.

ADEP not only manages its integrated thermodynamic database properties but enables the practical processing of this information. ADEP finds the phase composition which minimizes the Gibbs energy of the entire multiphase system (solid, liquid and gas) with the selected pressure and temperature as constrained by the operator. Then it calculates all relevant functions of the thermodynamic potential of the entire system.

Online access may also be obtained by subscription and IBM-PC or VT-100 terminals. Here users benefit from an extensive library, a list of services, from a guided search and auto-documentation of the disk, as well as from access facilitated by a choice of default options by transport properties of the gaseous phase (which is assumed to be in accord with the virial equation of state. Further information may be obtained from the listing on page 7.

Database on Enzymes and Metabolic Pathways—DBEMP

The DBEMP produced in the Moscow region is now available for world wide distribution and licensing. It is designed for teaching, fundamental and applied studies in biology, biochemistry, molecular biology, biotechnology, pharmacology, medicine, agriculture, ecology, and environmental protection applications.

It covers many types of relevant data on enzymes and metabolic pathways grouped into 17 subject categories: Entry identification, bibliographic description, biological source, laboratory host, biochemical genetics, cell cultivation conditions, metabolism, enzyme and reaction, assay and purification, enzyme kinetics, regulation, modification, and structure, equilibrium and thermodynamics, physical chemistry and spectral properties, immunochemistry, and common fields.

Cellular metabolism and its metabolic maps are classified into five general categories: anabolism, catabolism, membrane transport, electron transport, and signal transduction.

These categories cover the metabolism of carbohydrates, lipids, aromatic compounds, amino acids, nucleic acids, purines, pyrimidines, coenzymes and vitamins, as well as phosphates, nitrogen, oxygen, and sulfur compounds.

The December 1993 release will contain over 13 000 entries based on 7800 annotated original publications, 2700 enzymes with different EC-numbers, 600 new enzymes, over 800 characterized enzymatic reaction mechanisms illustrated with schemes, over 300 metabolic maps, detailed phenotype descriptions of bacterial cells. Over 2000 entries per year, *i.e.*, *ca.* 4 Mbytes per year, are to be added.

DBEMP uses DBR (an original, friendly interactive software) as a retrieval software system on IBM-compatible PC's with MS-DOS based on the inverted list method. Combination of the Boolean functions in the query protocol or numerical range search may be used expeditiously. Further definition and procurement details are given on page 7.

New! Fresh from the printer!

Crop Modeling and Related Environmental Data

Paul F. Uhlir and Cynthia Carter—Editors

- Global environmental data •Arid and semi-arid regions
- Applications to arid regions •Selected data integrations

Postpaid —Hard cover \$ 69 —Soft cover \$ 34

Available from CODATA (Paris and Ann Arbor)

For details: page 3 and page 7.

CODATA Books

- Crop Modeling**, edited by Paul Uhler and Cynthia Carter. (a)
Register of Datagase Managers (Second Edition), edited by A. J. Barrett. (b)
Data for Global Change, edited by Phyllis S. Glaeser and Stanley Ruttenberg. (c)

Books

- Progress in Vapor-Liquid Equilibrium Bibliographic Database**, by I. Wichterle, J. Linek, Z. Wagner and H. V. Kehiaian. (d)

Reporting Experimental Data. Selected Reprints, edited by H. J. White, Jr. (e)

Thermochemistry and Equilibria of Organic Compounds, by S. N. Hadjiev; G. J. Kabo, G. N. Roganov and M. L. Frenkel; Yu. A. Lebedev and E. A. Miroshichenko, edited by M. L. Frenkel. (f)

Databases

- Progress in Vapor-Liquid Equilibrium Bibliographic Database**, by I. Wichterle, J. Linek, Z. Wagner and H. V. Kehiaian. (d)
Database on Enzymes and Metabolic Pathways—DBEMP (g)
ADEP—Thermodynamic and Transport Properties Database. (h)

(a) 1993. Available from CODATA Secretariat, 51 bd. de Montmorency, 75016 Paris, France or CODATA, Department of Chemistry, University of Michigan, Ann Arbor, MI 48109-1055, USA. 252 pp; hardbound US\$69 (postpaid); softbound US\$34 (postpaid), or in Fr. Francs.

(b) 1993. 32 pp. CODATA Special Report, No. 14. Available from CODATA Secretariat, 51 bd. de Montmorency, 75016 Paris, France. \$20.

(c) 1993. 123 pp. The historic last *CODATA Bulletin*. Available from Begell House, 79 Madison Avenue, Suite 1106, New York, NY 10016-7892, USA. Contains the most relevant papers of the title papers from fall 1992 Beijing meeting. CODBA4 24(4) 1992. \$40.

(d) 1993. 766 pp. Covers papers published from 1900 through 1991, contains more than 8,800 references, references more than 1,000 primary

data sources and almost 10,000 authors, refers to more than 12,000 systems and more than 2,200 components. Available from ELDATA, 81-83 rue Michelet, 93100 Montreuil, France. Tel: (33)-1-4988-3046. Fax: (33)-1-4988-3045. ISBN 2-9507664-0-4 (book); ISBN 2-9507664-1-2 (diskette). Full price 2750.00 FF; educational institutions (10% discount) 2475.00 FF (book).

(e) 1993. An extensive compilation of documents by CODATA, IUPAC, etc. (often by photo reproduction) dealing with the publication of data in the physico/chemical realm, organized under the auspices of the American Chemical Society's Task Group on Numeric Data. 376 pp. ISBN 0-8412-2529-X.

(f) 1993. 584 + xv pp. VCH Publishers, Inc., 220 East 23rd Street, New York, NY 10010-4606, USA; VCH Verlagsgesellschaft mbH, P. O. Box

10 22 61, 69451 Weinheim, Germany. ISBN: 1-56081-559-0 (VCH Publishers); ISBN: 3-527-89559-0 (VCH Verlagsgesellschaft).

(g) Further information including distribution and licensing can be obtained from Dr. Niels Larson, Department of Microbiology, 131 Burrill Hall, 107 South Goodwin Avenue, University of Illinois, Urbana, IL 61801, U.S.A. Tel: (217)-333-9369; E-mail: niels@darwin.life.uiuc.edu; Fax: (217)-356-5451; or

(h) Database with standard data library for 30,000 French francs. Demonstration diskette is available to qualified potential users. Producer: EQUIPE PLASMA, LASER, MATERIAUX, Laboratoire Ceramiques et Traitements de Surfaces, URA 320 CNRS/Universite de Limoges, 123 avenue Albert Thomas, 87060 Limoges Cedex, FRANCE. Contact: B. Pateyron; Phone: 33 55 74 39; Fax: 33 55 45 72 11.

Have you planned to participate?

CODATA's 14th International Conference at Chambéry, France 18-22 Sept. 1994

Watch for the December *Second Circular* for the program and further details in the February *CODATA Newsletter*

Progress in Vapor-Liquid Equilibrium (VLE) Bibliographic Database

A new volume entitled Progress in Vapor-Liquid Equilibrium Bibliographic Database comprising an updated set of earlier bibliographic volumes aggregates 766 pages in a hard cover book barely an inch thick (by being printed on tough, thin, "Bible" paper). This achievement, edited and engineered by the four authors in Prague or Paris (I. Wichterle, J. Linek, Z. Wagner, and H. V. Kehiaian) represents a significant enhancement of the work.

In addition, a 1993 VLE Bibliographic Electronic Database covering the (printed) contents of the book may also be obtained by the book purchase without further cost (or separately on payment of a fee [see procurement details of either book or diskette on page 7, entry (b)]).

Vapor-Liquid Equilibrium Bibliographic Database (VLE '93) gives references to experimental vapor-liquid equilibrium measurements for 2- to 9-component systems. These components are molecular substances, either organic or inorganic, having well-defined molecular formulas. Aqueous and non-aqueous solutions of simple organic or inorganic electrolytes are included.

The 1994 edition of the database, in preparation, will cover the literature from January 1990 through December 1993.

This bibliographic database is presented in both a printed version and a diskette version. The printed version is the most convenient means for seeking references, if any, to well-defined systems. The diskette version, supplied as a complete database system, allows one to take full advantage of the VLE Database. With just a few keystrokes, you can display, print, or save in the form of an ASCII file all information on components, systems, and references covered by this work.

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Assistance in dissemination provided by National Committees

INTERNATIONAL COUNCIL OF SCIENTIFIC UNIONS
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CODATA / NEWSLETTER

CODATA, 51 bd. de Montmorency, 75016 Paris