

International Council for Science (ICSU)
Committee on Data for Science and Technology
CODATA Newsletter Number 79
March 1999

HIGHLIGHTS

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| <ol style="list-style-type: none">1. <u>Books/Databases</u>2. <u>Chinese/English Web Resource</u>3. <u>CODATA Calendar</u>4. <u>CODATA Int'l. Conference Report</u>5. <u>CODATA Personnel</u> | <ol style="list-style-type: none">6. <u>Electronic Data Formats</u>7. <u>John Rumble</u>8. <u>Nicholas Kurti</u>9. <u>Species 2000</u>10. <u>Thermodynamic Modeling</u>11. <u>U.S. Data Management Conference</u> |
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General Assembly Revitalizes CODATA Personnel



Dr. Krishan Lal

The November 13 and 14, 1998 CODATA General Assembly at New Delhi elected officers, reviewed activities, and authorized various group activities.

Officers

President: *Dr. John Rumble*, USA ('98-'02)

Past-President: *Prof. Jacques-Emile Dubois*, France ('98-'00)

Vice-President: *Acad. Fedor A. Kuznetsov*, Russia ('96-'00)

Vice President: *Prof. Akira Tsugita*, Japan ('98-'02)

Secretary General: *Prof. Paul G. Mezey*, Canada ('98-'02)

Treasurer: *Dr. Michael A. Chinnery*, USA ('96-'00)

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Prof. Ekkehard Fluck, Germany ('94-'00)

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Prof. Sun Honglie, China Academy of Sciences ('96-'00)

Prof. Mitsuo Tasumi, Japan ('94-'00)

Dr. Jen-Leih Wu, Academy Located in Taipei ('96-'00)

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The Publications Committee

Chair: *Dr. Ekkehard Fluck*

Members: *Prof. David Abir, Mr. Keith W. Reynard, Dr. Jack H. Westbrook, Dr. Gordon H. Wood. Ex-officio & CODATA Newsletter Editors: Mrs. P. Glaeser and Prof. E. F. Westrum, Jr.*

Task Groups and their Chairs

Biological Macromoles *Arthur Lesk (UK)*

CODATA and the World Wide Web *Mr. James Crease (US/UK)*

Comparative Mathematical Methodologies of Data Handling *Prof. Alexi Gvishiani (Russia)*

Data Information, and Visualization *Dr. Nahum Gerson (US)*

Data Quality and Database Compatibility: Development of

General CODATA Safeguards *Dr. Paul Mezey (Canada)*

Fundamental Constants *Dr. Peter Mohr (US)*

Global Plant Checklist Network *Dr. Karen Wilson (Australia)*

Materials Database Management *Dr. Charles Sturrock (US)*

Outreach, Education, and Communication *Dr. Micah Krichevsky (US)*

Standardization of Physico-Chemical-Property Electronic

Data Files *Dr. Henry Kehiaian (France)*

Survey of Data Sources in Asian-Oceanic Countries *Prof. Akira Tsugita (Japan)*

Working Groups

Environmental Life Cycle Inventories* *Prof. Bo Weidema (Denmark)*

Molten Salts* *Prof. Marcelle Gaune Escard (France)*

Commissions

Data Access *Prof. Ferris Webster* (US)

Standardized Terminology for Access to Biological

Data Banks *Dr. Frank Bisby* (UK)

Special Group

Environmental Ecosystem Conservation* *Prof. Yuri Arsky* (Russia)

[An asterisk indicates a new group]

New Chinese/English Resource S&T Handbook of Web

This handbook contains more than 3000 web sites selectively chosen for their importance to science and technology. Brief introductions are given to the contents of 1300 of them, including ownership, service, characteristics, important links, etc. These sites are arrayed in categories: News and Conferences, Research Information, Databases and Statistical Data, Bibliographic Information Services, Academic Organizations and Foundations, Governmental Administrations, Internet and Computers, Electronic Publications, Libraries and Museums, as well as Education and Colleges.. The bilingual (Chinese/English) treatment of the classification scheme and site titles will facilitate a broad readership.

The successful development of the Internet is one of the most amazing events in human civilization and progress near the close of the 20th century. Unlike energy and materials resources, information resources can be used without exhaustion. It's unlikely that information resources are reduced by sharing. On the contrary, during the spreading, exchanging, sharing and multi-utilizing, the information resources rise in value. The goals of the information industry are to develop information technology, to exploit information resources, to promote the exchange and sharing of information, and to make information increase in value, so as to create spiritual and/or material wealth.

The Internet, the global information infrastructure overlying territory, boundary, and language, has paved the way for information exchanging and sharing by advanced information technology.

World Wide Web (Web or WWW, for short) is the Internet-based information service system accessed by hypertext searching and browsing. Recently, due to its convenience and unified interface, the Web is widely applicable to publicize information by all trades and professions, leading to the rapid increase of URLs on the Web. Now the most difficulty most Web users face is how to quickly acquire their needed information in the vast sea of Web URLs.

Although there are dozens of powerful search engines, such as Yahoo, Alta Vista, etc. for searching, they deal with all-inclusive subjects, making it difficult to search for a specialized subject. Moreover, there are tens of millions URLs in their databases, and several hundred thousands of URLs will be added every week. With only several limited key words or subject words to retrieve from ten millions of pages, the retrieval results are often either too many "matched items" (hundred thousands), making the choice difficult, or "zero matched," leading to disappointment. But the users have spent a lot of time and some money on the Web and brought temporary chaos to the Internet.

Web users urgently need to provide searching services of Web URLs for specific disciplines, fields, and professions. On the Web there are already many welcome URL directories for specialized professions.

For most Chinese users, some other factors, such as language barriers, unclear retrieval rules of search engines, unfamiliarity with browsers, and rather high communication fees, increase the trouble while searching for information on the net.

For these reasons, we have set up a Chinese, hyper linking, subject-navigating system of information resources of science and technology on the Web--"the WWW of Science and Technology."

The URLs of important resources of S & T are collected, and a brief introduction and principal links are given for these pages. The clear hierarchic scheme of subject-based categories and the hyper links on Web pages will lead and help Chinese users of S & T to locate quickly the scope of the subject they want, and then to search for the special information they need.

As a paper carrier of the "WWW of Science and Technology," the "Resource Handbook of Science and Technology on the Web" was published with the purpose to provide a virtual web space and also to offer a real guide, which opens up a whole view of the URLs collection of the "WWW of S & T," as well as help users who wander in this virtual space to find out their starting point on the Handbook.

The contents of this navigating system/Handbook are to be updated continually. Users' suggestions and comments are sincerely welcomed. Also, users' recommendations of outstanding web sites are welcomed.

The URL of the WWW of Science and Technology: <<http://www.ncodata.ac.cn>>. Email: <webmaster@sect.ncodata.ac.cn>; Fax: 86-10-62560928; Address: No. 4 Nan 4 Street, Zhongguancun, Beijing, China (100080).

[Further information is contained in footnote [b] in Book Section.]

International Proteome & Proteomics Conference

The first Pacific Rim 2-DE IPPC '99 Meeting will be held August 29 - September 1, 1999 at Kazusa Academia Park at Kisarazu, Japan. The International Science Program Committee is chaired by R. J. Simpson and the National Organizing Committee by A. Tsugita. The Kazusa Academia Park provides a complex of conference rooms and an ideal meeting site for this Conference.

Topics will include basic and practical aspects of proteome and Proteomics and related technology and its application to the Life Science. Topics covered in the Meeting will include: gene expression, transcript imaging, protein profiling, bioinformatics, protein and protein/ligand interaction, proteomics for drug discovery and screening, as well as new technologies for proteomics to promote valuable interchange between these fields. An outstanding Scientific Program has been developed that will focus on the most important developments in the areas of biochemistry, molecular and cellular biology, and mass spectrometry that are related to gene expression, maturation of proteins, and protein interaction.

The deadline for submission of abstracts and early registration is April 30, 1999, at the IPPC '99 Secretariat: Dr. Toshiaki Isobe, Graduate School of Science, Tokyo Metropolitan University, Hachioji-shi, Tokyo 192-0397. Fax: +81 426 77 2525. E-mail: ippcwww@comp.metro-u.ac.jp

Standardization of Physico-Chemical Property Electronic Datafiles

The work is being undertaken under the auspices of three organizations associated with ICSU, all of which are recognized as world authorities in the field of standardization and codification of scientific and technical information: IUPAC, CODATA and ICSTI. Design standardized electronic formats for the publication, dissemination and storage of numerical datafiles on physico-chemical properties of pure substances, mixtures, solutions and materials are to be sought by a Joint Project. The primary objective of the Project is to support the

transfer of information from data generators to data users in all the natural scientific disciplines, in an Internet environment.

In the era of enhanced electronic communication and world-wide development of information systems, electronic publishing and the Internet offer powerful tools for the dissemination of all type of scientific information. This is now made available in electronic form not only from computerized databanks, but also from *primary sources* (journals, conference proceedings, theses, etc.). However, because of the multitude of existing physico-chemical properties and variety of modes of their presentation, the computer-assisted extraction of the numerical values of physico-chemical properties from primary sources is as difficult as before. As a consequence, the collection of these data, the assessment of their quality in specialized data centers, the publication in handbooks and other printed or electronic *secondary sources* (compilations of selected data) or *tertiary sources* (collections of carefully evaluated and recommended data), the storage in data banks, and the dissemination of these data to end users (educational institutions and basic scientific or applied industrial research centers), still remain a tedious and expensive operation.

The objective of this Project will be to design in cooperation with data publishers, data centers, data bank managers, and data users, computer-readable *Standardized Electronic File Formats (SELF Formats)* presenting the numerical data, as well as the relevant metadata, for each type of physico-chemical property, as they appear in primary sources. The authors (data generators) will be encouraged to submit to the primary source editors their data in the SELF format, *in parallel* with their article. Data compilers and evaluators will be encouraged to format their data files in the same SELF Format, *in addition or in replacement* of the formats currently used in the data center. The objective of the Project is to assure that the datafiles are available in the clearly, uniformly, and completely documented SELF Format, the same for all data sources.

The standardized data files will be disseminated exclusively in electronic form, most likely only via Internet. A specialized DataExplorer will be a directory to data sources, not a repository of large amounts of data. It will function in the following way. All categories of users who need data will contact DataExplorer. From here they will be directed (linked) to one or several data sources where such data are available. All sources that are associated to DataExplorer will be carefully selected according to well defined quality criteria.

Dr. Henry V. Kehiaian (of the University of Paris VII) is acting as the project coordinator. The field is one in which he has had extensive and pioneering experience and considerable success.

2nd International Workshop of Species 2000

The Species 2000 Japan, CODATA Japan, and NIES/CGER invite participation in the joint workshop on Species 2000, CODATA '99 DSAO Workshop for the 14th Global Environment, Tsukuba, to be held on July 14-16 at Tsukuba International Convention Center, Japan. The Workshop will be devoted to the study of issues related to the world's information resources related to biological diversity.

The goal is promotion of a reliable activity and information network in Asia-Oceanic region. Topics for the scientific sessions will include: Global Species Database; Museum, Collection, and Species; Bank Information; Regional and Inter-regional Biodiversity; Informational Resources; Interoperability of Biological Information Resources; and Standardization of Taxonomic Information System as well as the Promotion and Enhancement of Reliable Databases and Networking in Asia-Oceanic area.

A title and an abstract of no more than 250 words should be submitted *BEFORE* May 1, 1999 by e-mail to junko@ulmus.riken.go.jp or mail by regular post to the Secretariat: Species 2000, DSAO Workshop & 14th Global Environment Tsukuba, c/o Japan Collection of Microorganisms, The Institute of Physical and Chemical Research (RIKEN), 2-1 Hirosawa, Wako, Saitama 351-0198, Japan. Notification of intent should be sent as soon as possible providing name(s), postal addresses, and electronic addresses.

The Species 2000 Project Management Team is chaired by Frank A. Bisby, and the Workshop Local Organizing Committee is chaired by Makoto M. Watanabe and by CODATA Vice-president, DSAO, Akira Tsugita. It is sponsored by the National Institute for Environmental Studies (NIES), the Center for Global Environmental Research (CGER), and the Committee on Data for Science and Technology (CODATA) of ICSU.

The 16th CODATA Conference at New Delhi



The 16th International CODATA Conference was focused on "Scientific & Technical Data and Communication for the Sustainable Development of Nations--Data Management in the Evolving Information Society. It was held at the excellent conference facilities of the Convention Hall of the India Habitat Center, in New Delhi, India, 8-12 November 1998.

The CODATA Conference, organized by the Indian National CODATA Committee and the Indian National Science Academy, involved approximately 70 international (from 20 countries) and 100 Indian delegates and participants. The inaugural session included invigorating talks by Professor M. G. K. Menon, Co-Chairman of the Task Force on Information Technology and Software and by Prof. J.-E. Dubois, President of CODATA, as well as by Drs. S. Varadarajan, Krishan Lal, P. C. Kothari, and Profs. Rajaraman and A. S. Kolaskar.



Dr. V. Rajaraman addresses the officers and conferees at new Delhi

The Conference provided an important forum for interactions among experts of different scientific and technical fields in 13 Sessions of Plenary Oral Presentations and 2 Poster Sessions. The exchange of information and ideas covered recent, revolutionary developments and applications, reflecting the revolutionary changes and rapidly increasing importance of data science, including bases, management, mining, sources, etc., in the Computer Age. As has been observed by Prof. Paul Mezey, the pivotal role of CODATA in fostering a conscientious use and development of Data Science within an international setting was evident in the Conference presentations.

The Conference was preceded by the CODATA Task Group for Data Sources in Asia-Oceania's Meeting and Seminar on November 6-7 at the Indian National Science Academy, and the CODATA Task Group for Data/Information and Visualization's Study-Tutorial Workshop Symposium on "Information, Visualization, and Management of Heterogeneous Systems." Both meetings were well attended and provided information and inspiration.

CODATA Books

Thermodynamic Modeling and Materials Data Engineering. J-P. Caliste, A. Truyol, and J. H. Westbrook. [a].

Books and Databases

Web , Resource Handbook of Science and Tech-nology on the Web. Hu Yaru, Xiao Yun, and Zhong Hui. [b]

Transport Properties and Related Thermodynamic Data of Binary Mixtures, Part 5: Index. K. N. Marsh, Qian Dong, A. K. R. Dewan. [c]

Begell House Catalog Data Compilations. [d]

Footnotes

[a] The series Data and Knowledge in a Changing World covers the quality and accessibility of quantitative and qualitative data, classical and ground-breaking methods by which numeric and symbolic data are acquired, analyzed, and managed. This volume contains selected up-to-date professional papers prepared by specialists from various disciplines related to geosciences and water resources. It provides a forum bringing together contributions, both theoretical and applied, with special attention to equations of state, complex systems, computer-aided-design, synthesis of new materials, materials structure. Many of the chapters were inspired by work prepared for the 14th CODATA Conference held in Chambéry, France (1994) and updated subsequently. 1998. 408 pp., many tables and figures, some in color. Hardcover: ISBN 3-540644455-8 SPIN 10678790, approx. \$130. Order from Springer-Verlag, Postfach 31 13 40, D-10643 Berlin, Germany.

[b] After introductory words on the Web, there is news on general information, on professional matters, on conferences and on research information (mathematics, physics, chemistry, space science, environment, geophysics, energy and resources, biology and ecology, molecular biology, medicine, agriculture, etc.), as well as scientific databases and statistical data (by fields), bibliographic information services on patents, standards, literature, special reports, etc. There are featured governmental administrations, Internet and computerization (editors, servers, browsers), scripts and languages, software, shareware, freeware, compression, tool engines, search engines, companies. Electronic publications, libraries and museums, education, universities, colleges, and the Internet Chronicle and an appendix are included. The soft-bound book consists of iv + 329 pp. ISBN 7-115-06916-6-/TP65. Publisher: People's Posts and Telecommunications Publishing House.

[c] The massive four volume set of *Transport Properties and Related Thermodynamic Data of Binary Mixtures* containing about 2140 mixture-property pair tables covering 361 mixture classes (*cf. CODATA Newsletter 76 & 77*) both in hard copy and the electronic version are now compiled by Part 5:Index. In the printed form, the data are only given in SI units. Both SI and original units can be accessed from the DIPMIX database. This book, Part 5, gives the index, by formula and name, to all the mixtures compiled in Parts 1 to 4. Contact: American Institute of Chemical Engineers, 345 East 47th St., New York, NY 10017-2395, Ph (800) 242-4363; outside US and Canada (212) 705-8100; Fax (212) 705-8400. Other recent databases are listed in the TRC Catalog of books available from the same source. The price of Part 5 = \$???. ISBN 0-8169-0735-8, 116 pages.

[d] An extensive collection of recent additions to books, monographs, proceedings as well as critical reviews covering many fields of science and engineering will be found in the catalog from Begell House, Inc., 79 Madison Avenue, New York, NY 10016 or by Fax (212) 213-8368, phone (212) 213-8368, or e-mail begellhouse@worldnet.att.net.

Dr. John Rumble, Jr. Elected President of

CODATA

At the November 1998 CODATA General Assembly meeting in New Delhi, India, Dr. John Rumble, Jr. was elected president of CODATA. Dr. Rumble has spent most of his career working on scientific data. As Chief of the Standard Reference Data Program at the National Institute of Standards and Technology (NIST), Rumble oversees more than 35 data activities that cover the full range of physical science and engineering.

He received a Ph.D. (1976) in chemical physics from Indiana University. He was at the Joint Institute for Laboratory Astrophysics in Boulder, Colorado, and subsequently at the International Atomic Energy Agency in Vienna, Austria as well as a chemist in industry. He joined NIST in 1980. He served as a Department of Commerce Fellow working in the Office of Science and Technology Policy in 1993-1994. Dr. Rumble has



published extensively in atomic and molecular physics and scientific informatics. He has been active in developing scientific database standards, including an international standard for industrial data exchange. He has also helped build several online property data systems. Dr. Rumble is a Fellow of the American Society for Testing and Materials and ASM International, a member of the Russian Federation Academy of Metrology, and recipient of the U.S. Department of Commerce Silver Medal.

CODATA faces important challenges in the coming years, as the information revolution continues unabated in science and technology. Dr. Rumble anticipates further strengthening of CODATA's activities to improve the quality and availability of scientific data throughout the world. He states, "No other organization is positioned internationally as well as CODATA to help individual scientists, societies, and national and regional data organizations work together. Science and technology in the 21st century needs 21st century data access. We will do everything in our power to make this happen."

Other CODATA officers are listed in article entitled "General Assembly Revitalizes CODATA Personnel."

Second U.S. National Conference on Scientific and Technical Data: Improving Data Applications for Research and Society

In conjunction with several federal science agencies, the USNC/CODATA Committee is organizing the 2nd National Data Conference to address important issues in managing scientific and technical (S&T) data, and to improve the visibility of those issues and of U.S. and international CODATA activities. The science agencies are the principal source of support for national and international S&T data activities. The ultimate value of these activities is determined by the accessibility and usefulness of the data to various applications, both within and beyond the research sector. Indeed, with the ever-increasing connectivity of digital networks, our entire society is becoming more data-dependent in all spheres of life.

The conference, which will be held March 13-14, 2000, will focus on issues related to S&T data exchange and integration with special emphasis on enhancing productivity of data applications in other disciplines and sectors, and in measuring and evaluating productivity in the management and use of such data.

The research policy objectives to be furthered by this Conference include:

Developing policies and mechanisms that facilitate the use of S&T data and enhance communication across disciplines and sectors;

Improving the exchange and integration of S&T data from different sources, domains, and non-text media types to create new knowledge and understanding; and

Increasing the effectiveness and productivity of S&T data for all kinds of applications, especially across distances or over time.

This project follows from the results of the 1st conference held in December 1997, and from discussions with the Committee members and agency liaisons. The Conference will build on the findings of the Committee's previous reports, including *Finding the Forest in the Trees: The Challenge of Combining Diverse Environmental Data* (NAP, 1995) and *Bits of Power: Issues in the Transborder Flow of Scientific Data* (NAP, 1997), and will be consistent with the CODATA organizational mandate.

The main focus will be to improve the availability and usefulness of S&T data to all users--both in research and in society--with particular focus on K-12 education. Although our digital networks are overloaded with information, S&T data frequently cannot be obtained easily when they are needed or in the form required. Emphasis, therefore, will be placed on three main challenges, with a number of specific topics to be developed in conjunction with the sponsors and the program committee under each one:

How can access to and use of S&T data for interdisciplinary basic and applied research be improved?

How can access to and use of S&T data by other sectors and applications areas outside research be improved?
[*Building New Communities with Knowledge Networks: Focus on K-12 Education*]

How do we measure and evaluate productivity and performance in the management and use of S&T data within disciplines, across disciplines, and in other sectors and applications areas?

The Conference co-sponsors expect to explore opportunities for enhancing productivity of data applications and for stimulating improvements in knowledge creation across disciplines and sectors by providing a forum for experts from different disciplines and sectors to share their experiences and solutions to common problems, to enable personal networking, and to initiate follow-on projects. As in the case of the first conference, the WorldWideWeb will be used extensively, both in preparing for the conference and in subsequent activities.

The two full days of conference will feature four types of sessions: invited plenary presentations, contributed papers, technical demonstrations, and break-out discussions. The event will be held at NAS and the invited plenary presentations will be taped, transcribed, edited, and published electronically. Electronic links will be provided for the contributed papers, as in the first conference.

Additional information about this event will be available in May on the USNC/CODATA web site at: <www.nas.edu> at the Commission on Physical Sciences, Mathematics, and Applications home page, under "Special Projects."

- Paul F. Uhler, Director, USNC/CODATA

Professor Nicholas Kurti [1908-1998]



Professor Nicholas Kurti, Treasurer of CODATA from 1972-1980, Professor Emeritus of Physics at Oxford University, died of bone cancer on November 24, 1998.

Professor Kurti was born in Budapest where he went to high school at the Minta Gymnasium and where he studied piano with Bela Bartok with a vision of pursuing a career as a pianist. As a result of anti-Jewish laws he had to leave Hungary, went to Paris where he obtained his masters degree at the Sorbonne, then moved to Berlin where he worked with Professor Franz Eugene Simon to obtain his doctorate in low-temperature physics. With the rise of Hitler in Germany, he and Simon found refuge at the Clarendon

Laboratory in Oxford where Kurti's profound knowledge of magnetic phenomena combined with Simon's thermodynamic expertise enabled them to obtain very low temperatures. He was able to determine, with gadolinium sulphate, energy splittings a million times smaller than those observed in the optical spectrum of the hydrogen atom.

At the outbreak of the Second World War, Kurti and Simon worked on the atomic bomb project and in 1945 returned to Clarendon. Kurti and Simon and their associates succeeded in 1956 in reaching a temperature of one microkelvin, about a hundred thousandth of a degree above absolute zero, using an apparatus they called the Simple Simon Liquefier. Following worldwide attention to this accomplishment, Kurti was elected a Fellow of the Royal Society in 1956, and later became its Vice-President from 1965 to 1967. He was named Professor of

Physics at Oxford in 1967 where he remained until his retirement in 1975. He was Visiting Professor at City College in New York, the University of California in Berkeley, and Amherst College in Massachusetts.

As Treasurer of CODATA, his colleagues will remember him for his entertaining and captivating stories, his serious, attentive accounting of every dollar, and his notorious correspondence. His hobby, as he put it, was "cooking, enjoying its results and judiciously applying physics to the noble art of cookery." He achieved fame for his reversed baked Alaska, frozen on the outside and hot inside. He traveled the planet, giving lectures on the physicist in the kitchen and, in later years, organized several international workshops in Erice, Italy on "Molecular and Physical Gastronomy." With his wife and life-time companion, Giana, he edited an amusing and useful book entitled *But the Crackling is Superb* where he invited Fellows of the Royal Society to submit their favorite recipes and cooking astuces. Invited by French television to appear on Christmas Eve in 1996 with a wish list for Santa Claus, he appeared sipping a glass of St. Emilion wine, which he explained contained over 500 different molecules, to express his wish that television-tasting should disappear since it could never replace a *bona fide* good meal and excellent wine in a nice restaurant!

To his wife Giana and his daughters Camille and Susanna, CODATA expresses its deepest sympathies.

Conference on Effective Data Management for New Materials Discovery and Materials Informatics

June 28-29, 1999, Boston, Massachusetts, USA

The Critical Competitive Advantage: Turning Data into Information

One major breakthrough arising from the need to shorten product development time is the latest high throughput and rapid screening methods of new materials discovery, which have, in turn, resulted in an unprecedented explosion of data. Whereas until recently only a few tests could be performed each day, it is now common to do over 100. Opportunities abound for profiting from this abundance of data, including the ability to harness and utilize the resulting information more efficiently than the competition.

Materials Informatics: Can We Copy the Bioinformatics Success Story?

The pharmaceutical industry has been making giant strides in the discovery of new drugs since the establishment of the bioinformatics network for data sharing. The technology is now available to do the same for the materials industry. Organizations such as ASM International are developing new, efficient methods of data sharing. New standards are continuously being developed by NIST and CODATA, as well as ASTM, to eliminate the barriers to widespread data sharing. Companies like MSI and MacNeal-Schwendler are helping to streamline materials databases (mdbs), from the molecular to engineered data level. Industry leaders such as Lockheed Martin will describe how they are using these tools to their advantage.

This groundbreaking conference will examine:

New strategies for construction of mdbs

Data mining and management

Information visualization

Access to shared mdbs

Integration among dissimilar systems

Use of government and shared mdbs

A special workshop has been designed that will explore the competitive advantages of *Combinatorial Approaches to New Materials Discovery*. For more information, contact sponsor lmclaugh@knowledgefoundation.com

"Thermodynamic Modeling and Materials Data Engineering"

This book, by J-P. Caliste, A. Truyol, and J. H. Westbrook, is the sixth volume to appear in CODATA's series, *Data and Knowledge in a Changing World*. Most of the contributions emanated from the 14th International CODATA Conference in Chambéry, France in 1994.

Collectively, the 40 papers in this volume, by authors from 13 countries, cover recent developments in computer-aided modeling and simulation of complex materials systems, reflecting three current *desiderata*--like state equations.

Firstly, basic thermodynamic tools must be revisited;

Secondly, the new physical parameters of materials modeling require the increased data precision obtainable by recent physical and analytical instrumentation; and

Lastly, highly specialized databases need to be created as tools for quality assessment, correlation, and prediction.

The book includes concrete examples in metallurgy, polymers, composites, solutions, and gels--all currently relevant and important to materials scientists and engineers. It examines the behavior of new materials and their complex synthetic processes. The growing importance of CAD methodology in materials science and engineering, especially in the context of whole materials life cycle, is also emphasized.

For further information on this breakthrough, refer to Book section.

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