An Overview of the Subject Gateway: Materials Science

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ABSTRACT

The primary objective and functions of libraries have not changed due to computerization. Only, the tools and techniques to achieve these objectives with ease and accuracy have. In the present day the focus is on Electronic Information. Thus it is not only acquiring, sources of information but providing access to information and sharing also. With the Internet, WWW and Information explosion, identification and extraction of information resources is an essential function of all libraries and information centers. The Electronic information sources are rapidly growing and with a wide variety in form and content it takes a lot of time to get the required information. There is thus a need to organize and classify this wide spectrum of information. With this as background, the author has created a web page providing information to not only the internal sources at the Central Library, I.I.T Bombay but also links to external electronic information sources in the field Materials Science.

KEYWORDS: Digital library, Subject gateway: Materials Science, Information sources and services.

0. INTRODUCTION

Libraries have been undergoing tremendous developments in this era, adapting to the advent of information technology in the day to day working. Electronic, Digital Libraries have arrived. OPAC, CDROM databases, Electronic journals and Internet access exist in most Libraries. Libraries are no longer storehouses but are becoming gateways of relevant information. The role of Librarians have become challenging enough to expect the increasing demands of users and catering to specific information needs. Librarians are also showing ample enthusiasm in introducing advanced technologies and innovative services in their Libraries.

1. SCOPE OF THE STUDY

While most Library websites serves the needs of the users, the information in digital medium is so vast and varied that the users in any field of study cannot over look it. It becomes very difficult to locate the required information at the least possible time in this expanse of information available in the cyberspace. This study has been done as a consequence of working experience in conducting manual searches for researchers in the Material Science & Engineering field. This web page has arisen with the intention to design and develop similar types in all subjects related to the information needs of the Departments, Centers and Schools specific to their areas of academic pursuits, research and projects.

This study is also the outcome for the reasons specified below:

- Users disinterest to visit the Library as they get most material on their desktops.
- Not willing to go through the print material but may be interested in photocopies of the required material.
- Users expectations to get all material at the shortest possible time.
- Less patience in searching and browsing through Print material.

With this as the background, this compilation / guide supplements the library website and is user specific. Due to the diversity of subject areas covered by materials science, this guide is intended to provide a core list (not a comprehensive one). It includes many other materials science resources that are available in the library, both in paper copy and via subscriptions to electronic databases. It also includes WWW gateways, and online reference sources. This guide also includes reference tools and educational resources related to materials that are freely available on the Internet and do not require subscription or

registration on the part of individual researchers to access them. A few commercial sites have been included if they contained educational resources.

2. METHODS

The sites contained in this guide are the results of web surfing while looking for useful sites to assist in answering reference questions related to materials science. Most of the sites have been visited to make the searches authentic. The resources in this web page were chosen for inclusion based on their relevancy to the intended users, their authority, usefulness, clarity and ease of use.

3. WHY GATEWAY ?

Library web sites are becoming increasingly complex. Complexities in the form of links and services, profusion of print and electronic formats, duplication and the general web resources. When the content becomes massive the functions of the library web sites needs more restructuring. This complex environment has arisen from various factors including:

· Innovative ways of providing information and services such as electronic resources, course specific, and library help pages and document delivery.

· Complex library searches due to the cross functions and links between the online catalog, journal aggregator databases, electronic resources etc..

· The need to identify and present high quality free information resources on the web and distinguish those from library licensed material.

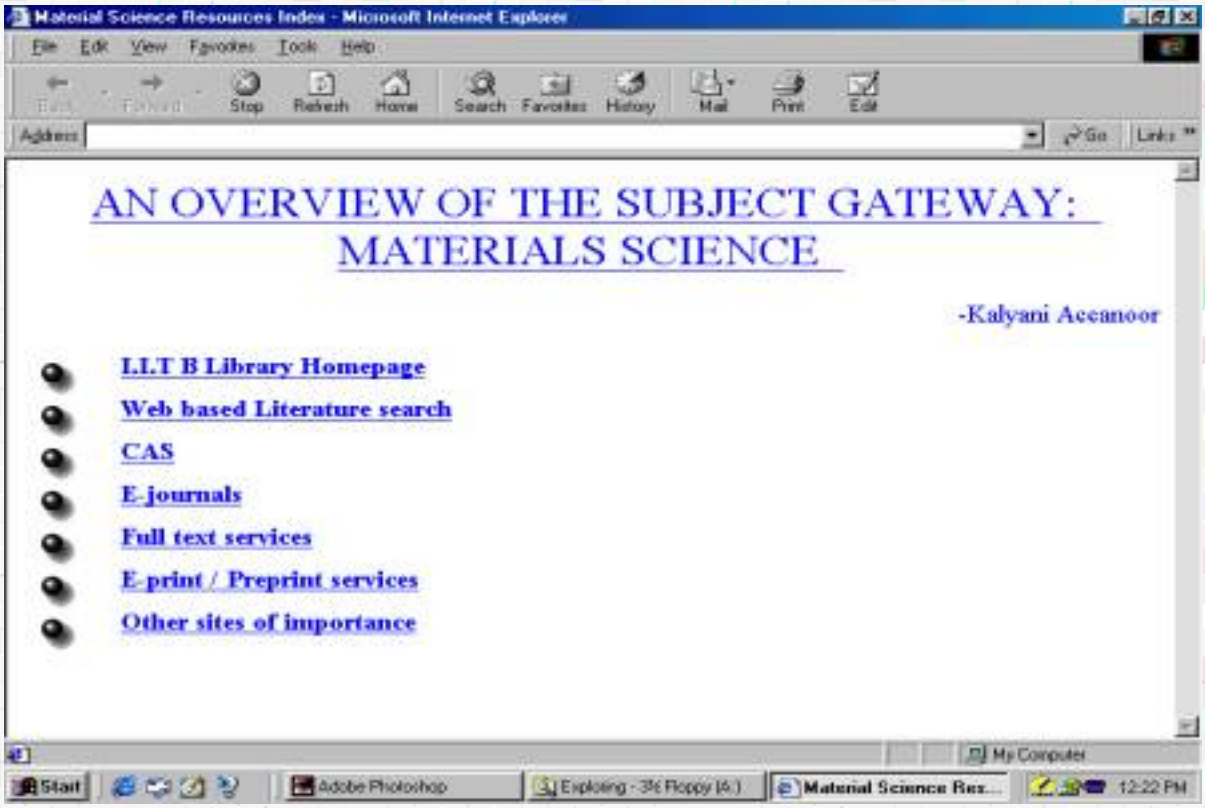
· The increasing expectations of users for interfaces to lead directly, without undue hunting, to the information or service they need.

· Many library web sites get congested with ample content, general objectives and duplication of services. It is no longer simple and clear how to do research or projects with a tool that provides gateways for getting information. There are number of steps that a library researcher must perform to successfully get information. Thus Gateways are needed to improve the effectiveness of Internet searching and will serve as a source of information in specific areas and saves the time of the users.

4. WHAT IS MATERIALS SCIENCE ?

The Metallurgical & Materials Science Department of IIT Bombay is one of the largest in the nation. The MM Department has earned a reputation as one of the top materials programs in the country. The faculty have an exceptional commitment to outstanding teaching and research. Students in the Department are conducting research that is laying the groundwork for future progress in these and other areas. The training and experience they receive prepares them to make new contributions as the materials field expands in scientific, technological, and economic importance.

5. INFORMATION RESOURCES & SERVICES



1. Library homepage
2. Web based Literature search
3. CAS
4. E-journals
5. Full text services
6. E-print services / Preprint services
7. Other sites of importance

5.1 Library Home Page

The aim of the library website is to serve as a library guide to the resources and services.

Some of the sources at IITB are as follows:

· Primary journals .One can locate the list from the option at Journals on the Homepage.

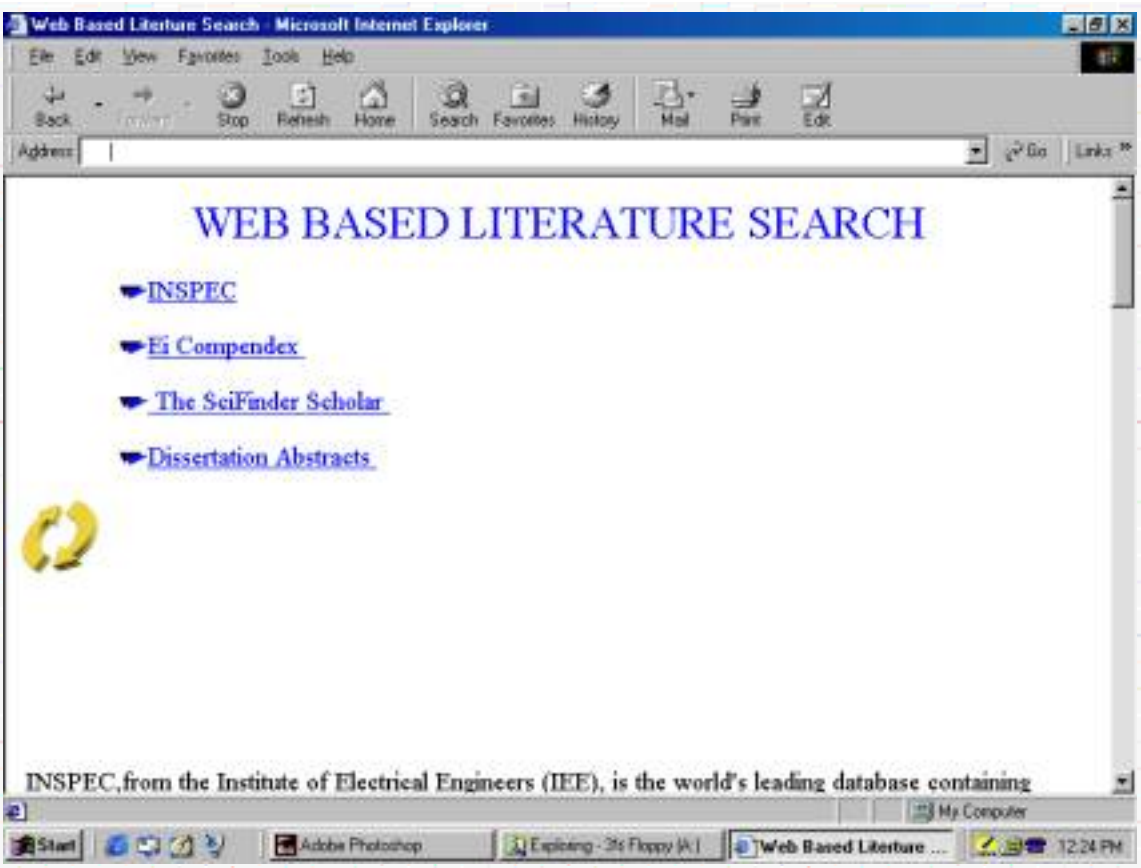
· Secondary or Abstracting / Indexing journals which are now available On-line. There are several online databases to the literature in the field of Materials Science. The following databases are not comprehensive but rather a listing of resources that are especially useful for researchers, such as Current Contents, Compendex +, Web of Science, INSPEC, Scifinder Scholar.

· Books under materials science can be located under the author, title, subject heading and class no's.

· Theses & Dissertations, Standards, Patents, and Reports, A/V Materials can be located in the Pamphlets section catalogues.

· Information Services: A number of services rendered by the Library can be found under the services option.

5.2 Web Based Literature Search



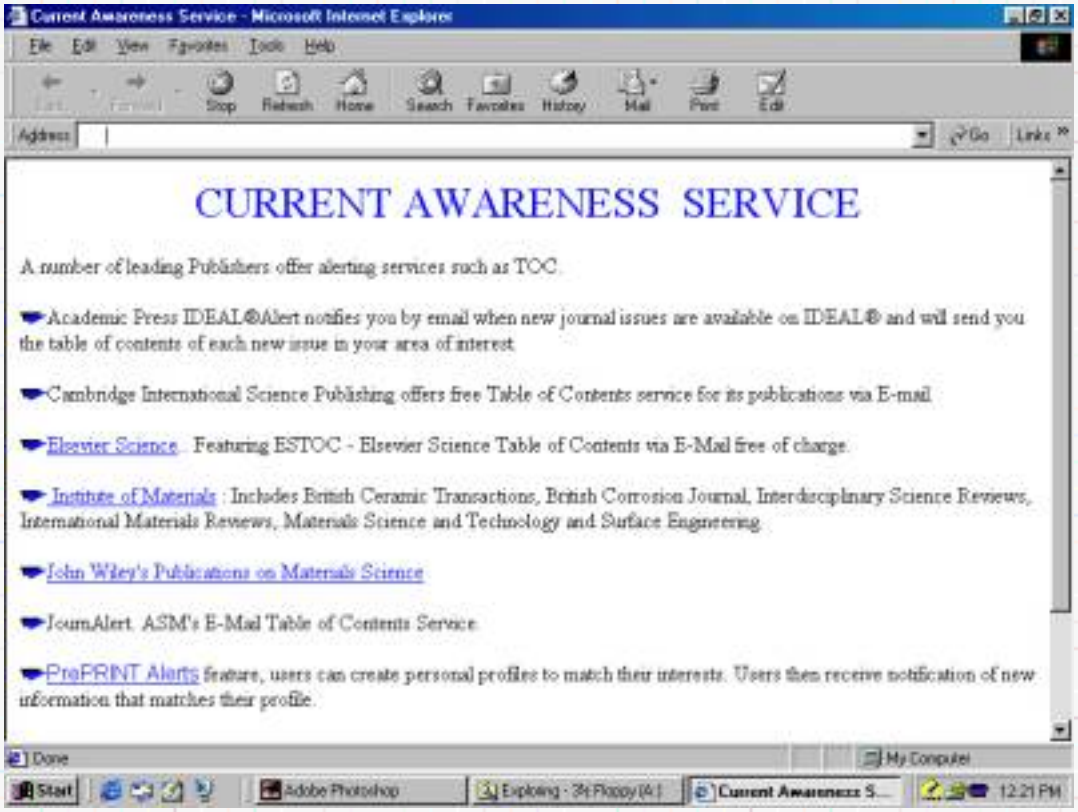
INSPEC, from the Institute of Electrical Engineers (IEE), is the world's leading database containing citations with abstracts of the worldwide literature in physics, electronics and electrical engineering, and computer fields. Primary coverage is of journal articles and papers presented at conferences, although significant books, technical reports, and dissertations are also included in the database's 7.3 million records. Sources include more than 4,200 journals and more than 2,000 conference proceedings, books, and reports.

Ei Compendex provides summaries of technical reports, journal articles, and conference papers and proceedings. The Ei Compendex covers over 2,600 international engineering journals, conference proceedings and technical reports. Each year, 200,000 new abstracts are added within the broad applied engineering areas of mechanical, civil, environmental, electrical, structural, process, materials science, solid state and superconductivity etc.,

The SciFinder Scholar is an innovative interface to Chemical Abstracts online. The Chemical Abstracts Service (CAS) of the American Chemical Society is the world's leader in providing scientists online and Web access to chemistry-related research data. CAS produces the world's largest and most comprehensive databases of chemical information. This information is combined with sophisticated search and analysis software vital to new product and patent research, as well as academic research in over 300 leading universities globally. The SciFinder Scholar gives access to abstracts from 8,000 journals; patents from 29 patent issuing authorities (including India), 31 million substances, 4 million organic reactions, supplier details of 1.1 million chemicals from catalogs.

Dissertation Abstracts represents original academic research from over 1,000 universities throughout the world. It is the most comprehensive information resource covering doctoral dissertations and master's theses, including content from a number of ProQuest dissertation print publications.

5.3 Current Awareness Service



A Number of leading Publishers offer alerting services such as TOC

1. Academic Press IDEAL®Alert notifies you by email when new journal issues are available on IDEAL® and will send you the table of contents of each new issue in your area of interest
2. Cambridge International Science Publishing offers free Table of Contents service for its publications via E-mail.
3. Elsevier Science. Featuring ESTOC - Elsevier Science Table of Contents via E-Mail free of charge.
4. Institute of Materials : Includes British Ceramic Transactions, British Corrosion Journal, Interdisciplinary Science Reviews, International Materials Reviews, Materials Science and Technology and Surface Engineering.

5. John Wiley's Publications on Materials Science
6. Journal *Alert*. ASM's E-Mail Table of Contents Service.
7. PrePrint Alerts feature, users can create personal profiles to match their interests. Users then receive notification of new information that matches their profile

5.4 Online E Journals

Major publishers of journals such as Academic Press, Elsevier and Blackwell Scientific provide Web access to their journals. There are two types of electronic journals, which are: -

- Electronic version of printed journals
- E-journals with no print counter part

E-journals offer quick access to almost all current journals, which are otherwise difficult to subscribe by an industry or business establishment in print media. Electronic form is available much earlier than their print version for distribution.

5.5 Full Text Services

Publishers such as Academic, Springer Verlag and Elsevier offer full text of articles at cost.

1. IDEAL articles back to 1993 are now available on-line.

2. LINK is a visionary information service created for the Internet by the science publisher Springer .It provides an extensive digital library delivered directly to the workplace of scientists, librarians, and information brokers.

3. SCIENCEDIRECT offers a rich electronic environment for multiple content sources including research journals, bibliographic databases and reference works. The world's largest full-text journals database provide for the following:

4. More than 1700 scientific, technical & medical peer-reviewed journals

5. Over 59 million abstracts

6. Over two million full-text scientific journal articles

7. An expanding suite of bibliographic databases

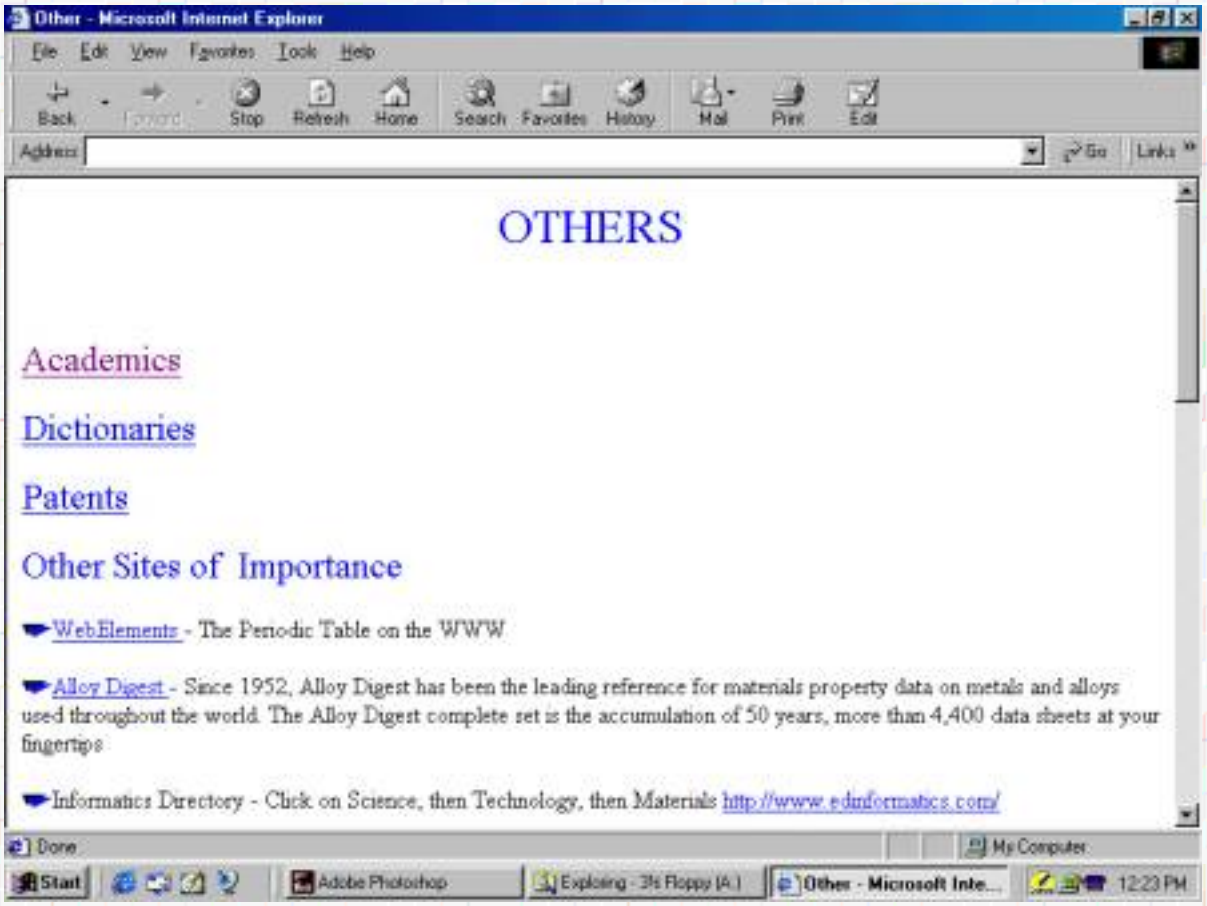
8. Linking to another one million full-text articles via Cross Ref to other publishers' platforms.

5.6 E - Print Services/Pre Print Services

1. http://www.osti.gov/preprints The PrePRINT Network provides access to electronic preprints available from diverse sites. Developed by the U.S. Department of Energy (DOE) Office of Scientific and Technical Information (OSTI), the network is a "one-stop shopping" site for preprints in science and technology.

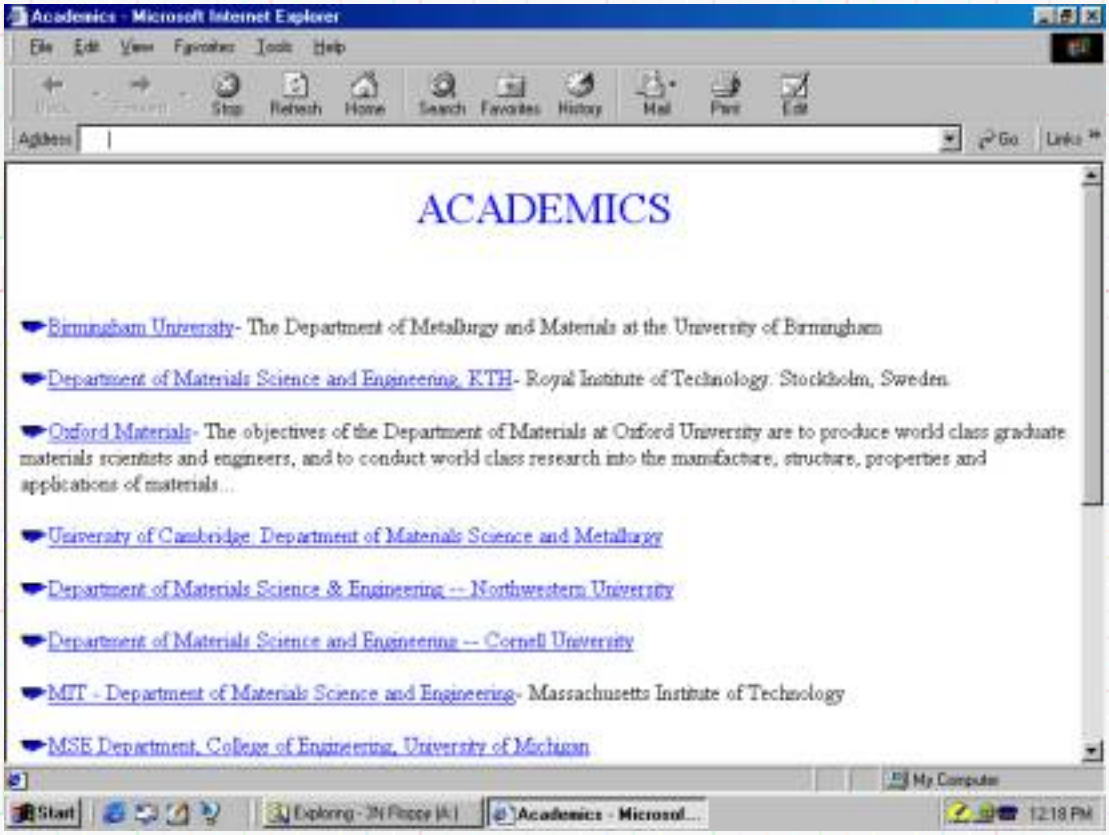
2. UK e-Print Archive Mirror

5.7 Other Sites of Importance



1. Dictionaries
2. Patents

3. Academics
4. Others



6. CHANGING ROLE OF LIBRARIANS

To provide the right information to the user, Librarians have to analyze the user's needs and information seeking behaviour frequently. Modern technology for information storage and retrieval needs to be updated. Regular training programs and demos for any new product acquired by the Library need to be conducted. Educating the users in learning the techniques for efficient retrieval of information should be a regular feature. Librarians need to acquire sufficient knowledge and skills on information management and processing. Information should not be mishandled or poorly presented; otherwise it looses its importance. There should always be a dialogue with the users to know their requirements.

7. CONCLUSION

Gateways, in every discipline and subjects help the users in Academic Libraries where the thrust is on Cutting edge technologies. Gateways serve as a ready reference tool. It is hoped that this compilation will be useful to the Departmental needs. While studies of such nature can never be all comprehensive and complete, attempts should be made to narrow down on the resources and services, thus helping the

users. Updating of resources in such compilations are absolutely necessary, only then will this gateway be of importance and relevant.

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ANNEXURE

† **On-Line Material Science Journals**

Abrasives Magazine

Acta Materialia

American Metals Market Online

Annual Review of Materials Science

Bulletin of Materials Science

Cutting Tool Engineering Magazine

International Journal of Fatigue

International Materials Reviews

Journal of Adhesion Science & Technology

Journal of Advanced Materials

Journal of Computer-Aided Materials Design.

Journal of Corrosion & Engineering

Journal of Crystal Research and Technology

JOM

Journal of Materials Engineering and Performance

Journal of Materials Research

Journal of Materials Science

Journal of Material Science Letters

Journal of Materials Science and Technology

Light Metal Age

Machine Design

MAN: Modern Applications News

Matéria, a Brazilian Materials Science On-Line Journal

Materials Science & Technology

Materials Technology

Materials World

Modelling and Simulation in Materials Science and Engineering

Metal Bulletin

Metallurgical and Materials Transactions

Progress in Materials Science

Scientific.Net: Materials Science and Technology

Scripta Materialia

Theoretical and Applied Fracture Mechanics

Tribology International

Wear

Ø Dictionaries

Dictionary of Composite Materials Technology - the online version of Technomic Publishing's Dictionary of Composite Materials Technology by Stuart Lee.

Glossary of Materials Attributes - A glossary describing the properties common to all materials. Units and equations provided.

Glossary of Metallurgical Terms - California Steel Industries is proud to provide the following glossary of metallurgical terms.

Steel Glossary - Everything You Always Wanted to Know About Steel... A Glossary of Terms and Concepts

A Dictionary of Measures, Units and Conversions - This provides a summary of most of the units of measurement to be found in use around the world today (and a few of historical interest), together with the appropriate conversion factors needed to change them into a 'standard' unit of the S I.

Ø Patents

Canadian Patent Database

European Patent Office - This is the official Web site of the European Patent Office, the executive body of the European Patent Organisation.

Internet Patent News / Source Translation & Optimization Patent Web Site

UK Patent Office - The role of the UK Patent Office is to help to stimulate innovation and the international competitiveness of industry through intellectual property rights.

US Patent and Trademark Office (USPTO) Web Patent Databases

Ø Academics

Birmingham University - The Department of Metallurgy and Materials at the University of Birmingham

Department of Materials Science and Engineering, KTH - KTH, Royal Institute of Technology. Stockholm, Sweden.

Oxford Materials - The objectives of the Department of Materials at Oxford University are to produce world class graduate materials scientists and engineers, and to conduct world class research into the

manufacture, structure, properties and applications of materials...

University of Cambridge: Department of Materials Science and Metallurgy

USA Department of Materials Science & Engineering -- Northwestern University

Department of Materials Science and Engineering -- Cornell University

McGill University, Montreal, Canada - Mining, Metals and Materials Engineering

MIT - Department of Materials Science and Engineering - Massachusetts Institute of Technology

MSE Department, College of Engineering, University of Michigan

UC Berkeley Department of Materials Science - Graduate and undergraduate education and research in electronic materials, ceramics, metallurgy, and mineral processing.

UIUC Department of Materials Science and Engineering - The Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, is recognized throughout the world for its excellence in education and research

Ø Others

WebElements - The Periodic Table on the WWW

Alloy Digest - Since 1952, Alloy Digest has been the leading reference for materials property data on metals and alloys used throughout the world. The Alloy Digest complete set is the accumulation of 50 years, more than 4,400 data sheets at your fingertips.

ED informatics Directory - Click on Science, then Technology, then Materials
http://www.edinformatics.com/ √

Internet for Materials Engineering - from EEVL's RDN Virtual Training Suite
http://www.eevl.ac.uk/vts/materials/index.htm√

Company info - The Minerals, Metals & Materials Society (TMS) Career Resource Center maintains an excellent page, arranged alphabetically by company, with hot links to individual materials companies and includes information on "type of material" for each company.
http://www.crc4mse.org/resources/industry.html √

The Materials Research Society maintains three very extensive directories -- professional societies, academic departments, and government organizations (including national laboratories):

http://www.mrs.org/gateway/

MaterSci --. MaterSci.Net provides a searchable database of Internet resources related to Materials Science and Metallurgy. Launched in January of 2000, the mission of MaterSci.Net is to become the best

source for information related to all branches of Materials Science.

To date, there are a total of 722 links in the database.

http://www.matersci.net/

MatPro: Materials and Processes Database -- advanced materials database.

http://amptiac.iitri.org/MATPRO/

SciTechResources.gov -Sponsored by NTIS, it contains links to government resources related to science and technology.

http://www.scitechresources.gov/ √

http://www.infotoday.com/newsbreaks/nb020715-2.htm

The National Technical Information Service (NTIS; **http://www.ntis.gov**) is the federal government's leading delivery outlet for scientific and technical reports, especially those produced under government contract. On its Web site, NTIS has begun electronic delivery of all its reports dating to 1997. Reports numbering fewer than 20 pages are free; those over 20 pages are $8.95. The scanned reports appear in Adobe PDF. Some documents are retrieved through links to other federal agency Web sites; however, NTIS promises that the archived copies of all documents will remain available through its site. "One Search. One Source. One Solution." is the banner cry of the Web site upgrade project.

Ø Standards

National Information Standards Organization (NISO)

The National Information Standards Organization (NISO) is a non-profit organization accredited by the American National Standards Institute to develop consensus-approved standards used in publishing, library services, and other information-related industries. NISO standards include the ISBN, Z39.50, and the Open URL.

BRIEF BIOGRAPHY OF AUTHOR

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Ms. Kalyani Accanoor is currently working as Assistant Librarian (SG) in the Central Library, IIT Bombay. Prior to this she has also worked at IISc and Times of India Library. She is the recipient of the ILA / Dr. C. D. Sharma award for the best presentation and best author at the 44th ILA conference Hyderabad, February 1999. Ms Accanoor has given talks, and published papers in various Seminars/Conferences.