

National Knowledge Resource Consortium – a national gateway of S&T on-line resources for CSIR and DST laboratories

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Today's cutting edge S&T research areas of interdisciplinary character have not only metamorphosed the very resource needs of the researchers, but it has also reflected deep impact on the qualitative and quantitative character of the resources concerned. The quest of more resources is on the exponential curve. In this scenario, the cost effective way of accessing scholarly S&T resources is crucial for all the DST and CSIR laboratories. The National Knowledge Resource Consortium is the national platform to allocate core S&T online resources (7000+ online journals and 18 major global databases like Web of Science, SciFinder, Science Direct) to all 23 DST and 40 CSIR laboratories in a substantive cost effective manner.

Keywords: Journals and databases, knowledge resource consortium, research laboratories, science and technology.

Restrospective

WITH significant development and contribution of the Indian science and technology (S&T) to the world community for the last two decades and growing needs of the phenomenal access potentiality of the global scholarly resources of the major Indian S&T research laboratories for the state-of-the-art interdisciplinary and multidisciplinary research projects, the Government of India decided to build a National Knowledge Resource Consortium platform within the major scientific laboratories of the country during 2000–2001. Earlier from time to time small consortium efforts were made, but none of those met with success. The very basic objective behind this national-level consortium is to give access to the core high-ranked journals and databases in a more cost-effective manner, because, the exponential growth of the cost factor of the foreign publishers is a major and complex challenge to the S&T research libraries all over India. In this context it is noteworthy to mention that the CSIR libraries, which are an important constituent of the S&T information system in India, recognize the potential of expanding the journal base in CSIR laboratories through consortium access to electronic journals. In 2001, the CSIR Electronic Journal Consortium was started with its 40 laboratories and this was the first milestone of the national-level consortium with all major 40 CSIR research labs. Within the

next 3–4 years the CSIR consortium budget was enhanced to nearly Rs 12 crores and overall consortium access was over 4000+ journals and databases, including coveted databases like *Science Direct* from Elsevier, *Web of Science* and *Delphion* (renamed as Thomson Innovation) from Thomson, etc. In 2009, the inclusion of 23 DST laboratories, including the important and blue-chip institutes like Indian Association for the Cultivation of Science, Bose Institute, S.N. Bose National Centre for Basic Sciences, Raman Research Institute, Indian Institute of Astrophysics, etc. was another milestone and the CSIR Electronic Journal Consortium was renamed as the National Knowledge Resource Consortium (NKRC) of 23 DST and 40 CSIR laboratories¹.

National Knowledge Resource Consortium – state-of-the-art

Today, NKRC is one of the biggest national resource consortia in terms of investment and its nodal partners in the global map. The 40 CSIR and 23 DST laboratories and the NKRC projected 12th Five Year Plan budget outlay of Rs 440 crores are enough to emphasize the importance of NKRC in the national and global perspective. The extent of full-text access that NKRC is giving to all its nodal institute members, i.e. 63 laboratories is worth over Rs 120 crores per year as against the average part investment of individual laboratories within the range Rs 1.5–2.5 crores per year, which was beyond imagination and expectation 10–12 years ago.

There are two types of resource models in NKRC. The first and most important one is the core subscription or

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e-only model, where NKRC subscribes the whole resources for all its 63 laboratories. The second model is the part subscription model, where the individual laboratory has to subscribe a small percentage of journals of the respective publishers and the major part is being contributed by NKRC and whole resource is being shared amongst the 63 laboratories.

Today NKRC is procuring all the high-ranked core journals/databases of the major international societies and commercial publications like American Chemical Society (ACS) up to 2012, American Institute of Physics/American Physical Society (AIP/AIS), Royal Society of Chemistry (RSC), Nature Publishing Group (NPG), Chemical Abstracts Service (CAS) – SciFinder Scholar, IEEE (Institute of Electrical & Electronics Engineers), Elsevier (Science Direct), Taylor & Francis, World Scientific, Annual Reviews, ASTM, ISI *Web of Science* (Thomson) as core subscription or e-only subscription model, where the whole expense of yearly subscription is taken care by NKRC, thus saving crores of rupees to every nodal member institutes.

The part subscription model of NKRC is also extremely important to get access to the huge platform of full-text journals of major global publishers like Springer, Institute of Physics (IOP), Wiley-VCH, Cambridge University Press, etc. The total number of journals now accessible (full text) through NKRC platform is over 7000, to meet the research demands of the respective nodal R&D research laboratories.

Another extremely important objective of NKRC is to build the IR (institutional repository) platform of the all 63 research organizations based on a common standard using D-Space open source software. The IR will be accessible from the NKRC single national window. The following institutional primary information resource types will be available on the IR platform:

- Pre-prints
- Electronic theses and dissertations (ETD)
- Technical reports
- Annual reports/progress reports
- Special lectures/special publications
- Patents and standards
- In-house journals

NKRC is also committed to adopt best practices to make CSIR and DST laboratories information system relevant, effective and vibrant. To initiate this NKRC is going to take following steps (Figures 1 to 3):

- Develop Information resource to serve the laboratories' mission.
- Utilize optimally the available resources for the end-users.
- Develop standardized best practices in system (libraries or knowledge resource centres).
- Develop compatible information retrieval tools and services.

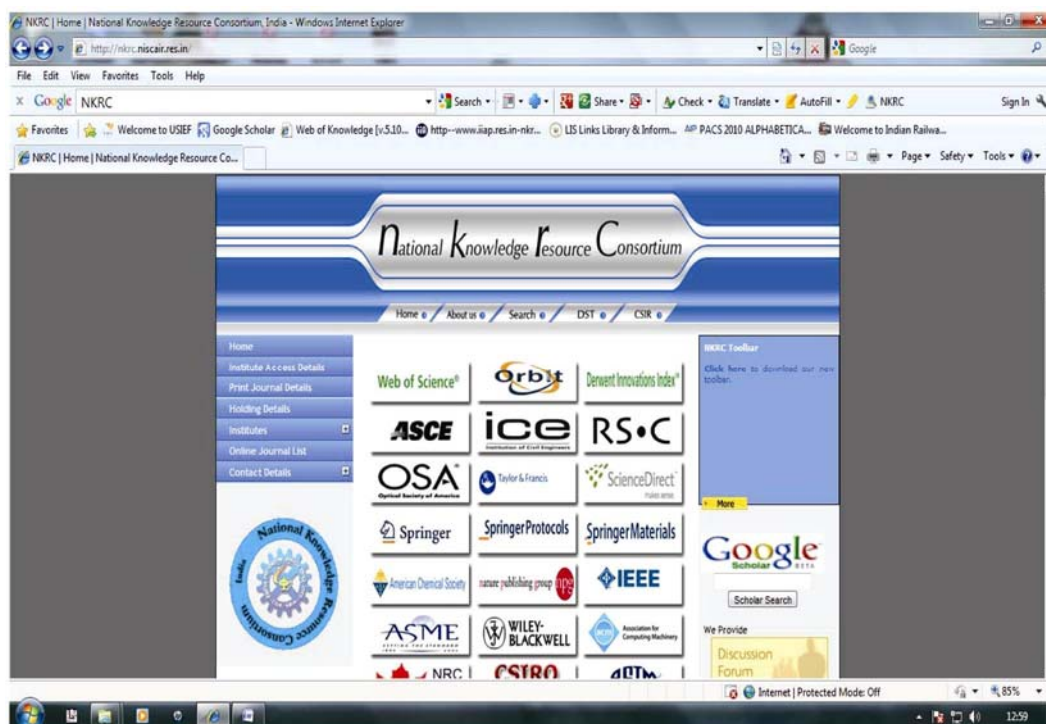


Figure 1. The first-order homepage of NKRC (source: NKRC search interface page; <http://nkrc.niscair.res.in/>).

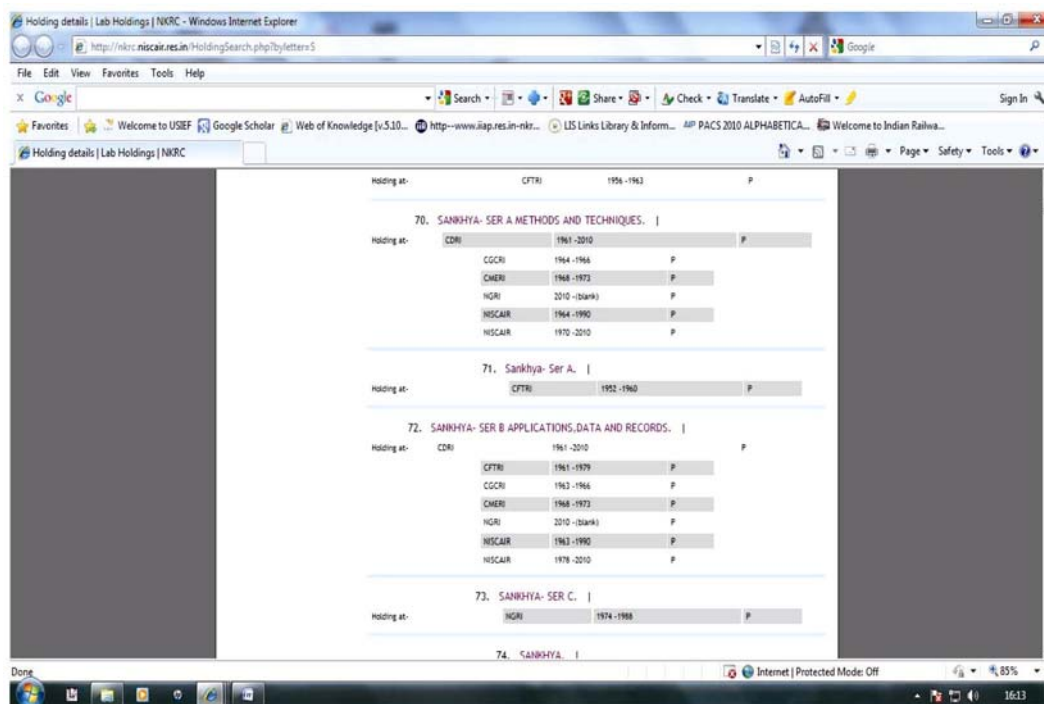


Figure 2. The journal holdings search (union catalogue of 40 CSIR and 23 DST laboratories holdings) page of NKRC (source: NKRC search interface page, <http://nkrc.niscair.res.in/HoldingSearch.php>).



Figure 3. The research update (monthly) first-order page of NKRC platform (source: NKRC search interface page, <http://nkrc.niscair.res.in/blog/>).

- Provide flexibility to the professional staff to take independent decisions and to show creativity in their activities and services.
- More effective interaction with the library professional and Information and Communication Technology (ICT) personnel for better use of the ICT infrastructure of the respective DST and CSIR libraries or Knowledge resource centres.
- To use international bibliographic standards and cataloguing standards for effective interchange of data amongst the libraries and (knowledge resource centres) of DST and CSIR institutes.
- Address the issues that concern the newer developments in the information transfer process.
- E-journal access in the virtual CSIR campus under the National Knowledge Network (NKN) cloud, where

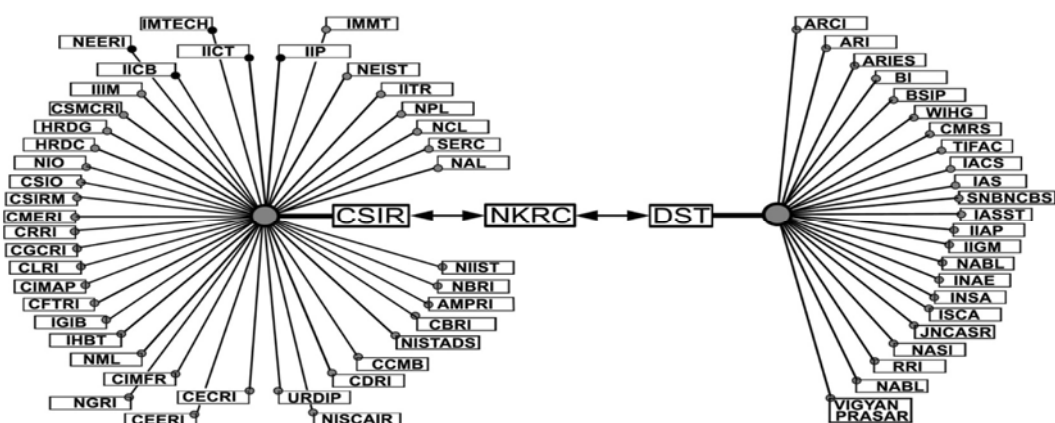


Figure 4. Basic infrastructural diagram of NKRC comprising of 40 CSIR and 23 DST laboratories.

the extremely high bandwidth of NKN above 1 GB can be harnessed for sharing information within CSIR^{2,3}.

NKRC infrastructure

The NKRC comprises of 40 CSIR and 23 DST laboratories. The cluster of these laboratories is as follows (see Figure 4).

CSIR laboratories

Advanced and Process Research Institute (AMPRI), Bhopal; Central Building Research Institute (CBRI), Roorkee; Centre for Cellular and Molecular Biology (CCMB), Hyderabad; Central Drug Research Institute (CDRI), Lucknow; Central Electrochemical Research Institute (CECRI), Karaikundi; Central Electronics Engineering Research Institute (CEERI), Pilani; Central Food Technological Research Institute (CFTRI), Mysore; Central Glass and Ceramic Research Institute (CGCRI), Kolkata; Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow; Central Institute of Mining and Fuel Research (CIMFR), Dhanbad; Central Leather Research Institute (CLRI), Chennai; Central Mechanical Engineering Research Institute (CMERI), Durgapur; Central Road Research Institute (CRRI), New Delhi; Central Scientific Instruments Organization (CSIO), Chandigarh; CSIR Madras Complex (CSIRM), Chennai; Central Salt and Marine Chemical Research Institute (CSMCRI), Bhabanagarh; Human Resource Development Centre (HRDC), Gaziabad; Institute of Genomics and Integrated Biology (IGIB), New Delhi; Institute of Himalayan Bio-resource Technology (IHBT), Palampur; Indian Institute of Chemical Biology (IICB), Kolkata; Indian Institute of Chemical Technology (IICT), Hyderabad; Indian Institute of Integrative Medicine (IIIM), Jammu; Indian Institute of Petroleum (IIP), Dehradun; Indian Institute of Toxicological

Research (IITR), Lucknow; Institute of Minerals and Materials Technology (IMMT), Bhubaneswar; Institute of Microbial Technology (IMTECH), Chandigarh; National Aerospace Laboratories (NAL), Bangalore; National Botanical Research Institute (NBRI), Lucknow; National Chemical Laboratory (NCL), Pune; National Environmental Engineering Research Institute (NEERI), Nagpur; North-Eastern Institute of Science and Technology (NEIST), Jorhat; National Geographical Research Institute (NGRI), Hyderabad; National Institute of Interdisciplinary Science and Technology (NIIST), Thiruvananthapuram; National Institute of Oceanography (NIO), Goa; National Institute of Science Communication and Information Resources (NISCAIR), New Delhi; National Institute of Science Technology and Developmental Studies (NISTADS), New Delhi; National Metallurgical Laboratory (NML), Jamshedpur; National Physical Laboratory (NPL), New Delhi; Structural Engineering Research Centre (SERC), Chennai; Unit for R&D for Information Products (URDIP).

DST laboratories

International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad; Agarkar Research Institute (ARI), Pune; Aryabhata Research Institute of Observational Sciences (ARIES), Nainital; Bose Institute (BI), Kolkata; Birbal Sahani Institute of Palaeobotany (BSIP), Lucknow; Centre for Soft Matter Research (CSMR), Bangalore; Indian Association for the Cultivation of Science (IACS), Kolkata; Indian Academy of Sciences (IASc), Bangalore; Institute of Advanced Study in Science and Technology (IASST), Guwahati; Indian Institute of Astrophysics (IIAP), Bangalore; Indian Institute of Geomagnetism (IIGM), Navi Mumbai; Indian National Academy of Engineering (INAE), New Delhi; Indian National Science Academy (INSA), New Delhi; Indian Science Congress Association (ISCA), Kolkata;

Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore; National Accreditation Board for Testing and Calibration Laboratories (NABL), New Delhi; National Academy of Sciences India (NASI), Allahabad; Raman Research Institute (RRI), Bangalore; Sree Chitra Tirunal Institute for Medical Science and Technology (SCTIMST), Thiruvananthapuram; S.N. Bose National Centre for Basic Sciences (SNBNCBS), Kolkata; Technology Information, Forecasting and Assessment Council (TIFAC), New Delhi; Vigyan Prasar, Noida; Wadia Institute of Himalayan Geology (WIHG), Dehradun.

The following searches can be manoeuvred through the NKRC interface search engine (Figures 1 to 3):

- Institute access details → by publishers/by respective laboratory/by journal.
- Print journal availability of each laboratory (union catalogue for 40 CSIR and 23 DST laboratories holdings).
- Access details of each laboratory → The overall on-line access details through NKRC platform of each CSIR & DST laboratory are given with links.
- List of 10,000+ journals against each publishers → One can access against journal as well as against publisher.
- One can get the publications year-wise against each CSIR and DST laboratory.
- Contact details → contact details of each laboratory.

The total list of global publishers/database providers listed in the NKRC platform for consortia access is as follows:

- ACS – core subscription – NKRC platform.
- CAS – core subscription – NKRC platform.
- AIP/APS – core subscription – NKRC platform.
- Elsevier (Science Direct) – core subscription – NKRC platform.
- Taylor and Francis – core subscription – NKRC platform.
- NPG – core subscription – NKRC platform.
- Thomson (ISI Web of Science and Delphion Database) – core subscription – NKRC platform.
- Cambridge University Press – Part subscription – NKRC Platform.
- World Scientific – core subscription – NKRC platform.
- IEEE – core subscription – NKRC platform.
- Annual Reviews – core subscription – NKRC platform.
- American Association for the Advancement of Science (AAAS) – core subscription – NKRC platform.
- CSIRO Publications, Australia – core subscription – NKRC platform.
- Optical Society of America – core subscription – NKRC platform.

- Indian Journals.Com – core subscription – NKRC platform.
- Sage Publishing – core subscription – NKRC platform.
- Wiley-VCH – part subscription – NKRC platform.
- IOP (Institute of Physics), UK – part subscription – NKRC platform.
- RSC – core subscription – NKRC platform.
- Springer – part subscription – NKRC platform.

Transition from platform of knowledge resource to knowledge research analyser^{2,3}

The objective of NKRC is to facilitate access to international electronic journals and databases for strengthening research and development in the participating institutions. Hence, it is necessary to analyse the research output of the respective institutions of NKRC, based on the utilization of NKRC-oriented platform of e-resources. It is rightly recommended by the NISCAIR Director to rename NKRC considering the transition of functional domain of NKRC from just a platform of knowledge resource provider to both knowledge resource provider as well as a platform of knowledge resource utilization research analyser.

Conclusion

Today the NKRC platform is the backbone for knowledge resources for all the CSIR and DST laboratories. The 12th Five-Year Plan of the NKRC budget requires nearly Rs 440 crores, but there is fund crunch, due to which NKRC has failed to procure some major publishers resources for 2013.

From the standpoint of profit, some major publishers of S&T micro-literature (journals) like ACS, Springer, Elsevier, etc. are not showing keen interest in consortia model of pricing and it is quite demoralizing that they are more inclined towards subscription model of individual laboratories. This is not healthy for overall resource facility for S&T laboratories. The consortia model is always cost-effective for individual laboratories, where with minimum cost the respective laboratories may enjoy more access potentiality from the consortia platform. We are still optimistic and expect a better roadmap for NKRC in the coming years.

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Received 9 July 2013; accepted 19 July 2013