होमी भाभा राष्ट्रीय संस्थान

Homi Bhabha National Institute

ANNUAL REPORT
2011-2012
(Volume - 1)

Training School
Bhabha Atomic Research Centre
Anushaktinagar, Mumbai 400 094

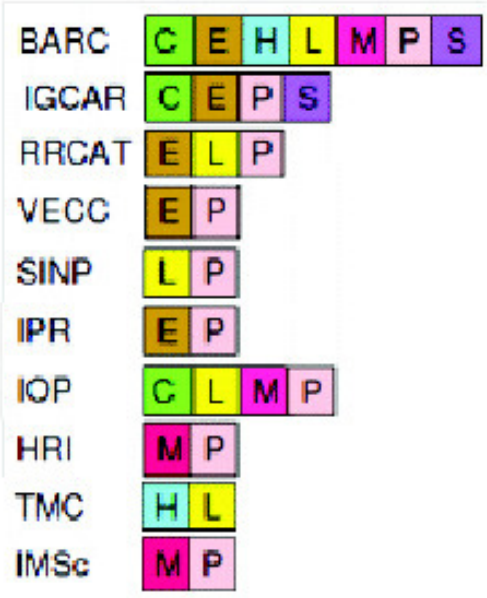
MANAGEMENT OF THE INSTITUTE

[Homi Bhabha National Institute (HBNI), is a deemed-to-be university under section 3 of the UGC Act, 1956 vide Notification No. F.9-5/2004-U.3, dated 3rd June, 2005 of the Government of India.]

January 2012

The Council of Management is the principal organ for the management of the Institute. All academic issues are handled by an Academic Council which functions on the advice of the Board of Studies. There is a Board of Studies for every discipline as follows.

- Chemical Sciences (C)
- Engineering Sciences (E)
- Health Sciences (H)
- Life Sciences (L)
- Mathematical Sciences (M)
- Physical Sciences (P)
- Strategic Studies (S)



To manage the affairs of the Institute at the level of Constituent Institutions (CIs), each CI has one or more Deans-Academic and a university cell. CIs have also established a robust framework for admission, evaluation of performance and monitoring the progress of research by the students.

Front cover page : Main entrance of Training School Complex
Anushaktinagar, Mumbai 400 094

From the Director

A committee appointed by Ministry of Human Resource Development reviewed existing institutions which have been recognized as 'deemed to be universities' under Section 3 of the UGC Act, 1956. The Review Committee evaluated deemed to be universities in accordance with nine parameters and submitted its report in 2009[1]. One of the parameters was 'consideration of the idea of a university.' One comes across several essays, debates and commentaries on 'the idea of a university' and a short summary including some ideas about conduct of academic programmes in HBNI follows.

A good summary of historical perspective on the subject is provided in a report from Research Institute for Higher Education, Hiroshima University[2] published in 2005. This report is a compilation of papers presented at a conference in Hiroshima in 2001. Characteristics of a university which emerge from various essays in the report and some other reports[3] are 'the supremacy of the idea of the unity of education and research', 'academic freedom', and 'a guarantor of creative tension in which knowledge, intellect and skills are held in balance'. Keeping the tension between scholarship and engagement, abstraction and application, and teaching and research have, in fact, led to several different ideas of a university and these diverse ideas seem to co-exist everywhere.

In the report by Hiroshima University, Lawrence Goldman refers to the Parliamentary debate over the reforms of Oxford in particular and says that "in the case of Oxford and Cambridge, there was no single 'idea of the university' but many different ideas held simultaneously, sometime in creative tension with each other, and sometime in disabling competition." He expresses concern about the "danger that the university will have to choose between rival functions rather than allow different activities in parallel. The problem today is to maintain the legacy that the Victorians handed down: they bequeathed several different ideas of a university in a single institution."

Summing up the debate at Hiroshima University, Narisada Kaoru writes that the process of adapting to the circumstances of each country, and fulfilling various functions has led to the co-existence of several "ideas of the university". He continues, "Research and education, and specialized education and cultural training are frequently said to be in opposition to each other, and pull against each other in the context of "the idea of the university", but if we actively

[1] http://mhrd.gov.in/sites/upload_files/mhrd/files/RepoRevCom-DmdUniv.pdf assessed on 1st March 2012.
[2] "The Idea of a University in Historical Perspective: Germany, Britain, USA and Japan", Reviews in Higher Education 84, November 2005, Research Institute for Higher Education, Hiroshima University.
[3] "Idea of a University", Anne Corbett, London School of Economics and Political Science, UACES News, Summer 2011.

accept the co-existence of several types of "ideas of the university", we can avoid this unproductive opposition."

No discussion on the idea of a university can be complete without quoting Newman's "Idea of a University" written in 1852[4]. A detailed recent commentary on Newman's idea has been written by Alasdair MacIntyre[5]. Newman's idea was to hold together diverse specialities in unity and has been considered irrelevant by many present day scholars. MacIntyre differs from other scholars, and claims "that a surprising number of the major disorders of the latter part of the twentieth century and of the first decade of the twenty-first century have been brought about by some of the most distinguished graduates of some of the most distinguished universities in the world and this as the result of an inadequate general education, at both graduate and especially undergraduate levels, that has made it possible for those graduates to act decisively and deliberately without knowing what they were doing." He begins the last paragraph of his paper with the sentence, "What we have to learn then from Newman is first of all that undergraduate education has its own distinctive ends, that it should never be regarded as a prologue to or a preparation for graduate or professional education, and that its ends must not be subordinated to the ends of the necessarily specialised activities of the researcher."

With this general background, one can examine the report of the Review Committee referred to in the beginning. The report says that "Universities are meant to be places -which facilitate and promote critical intellectual engagement with: (a) different traditions of thought and its great variety of expression, (b) modes of understanding the human condition and predicament, (c) the incredibly diverse inanimate and non-human living world. Such engagement obviously has many utilitarian and extrinsic values; but it is its intrinsic value that marks it off as a very special sort of human practice." The report then goes on to quote Radhakrishnan Commission on Education, 1948, "It should be a place for providing a student with opportunity for all round well proportioned education for effective living and for citizenship, in addition to preparation for a calling. It may occur that a university shall develop special strength in some particular field, as in engineering or industrial development or in teacher-training or in forestry or fisheries……areas of special strength should be in addition to facilities for all round higher education, and should not be a substitute for such facilities."

Based on a study of various viewpoints and my personal experiences I would like to state that undergraduate education must provide an opportunity to a student for all round self-development for effective living and citizenship in addition to a preparation for a calling and this requires that general liberal education should find enough space in curriculum. At post-graduate level, a student has to concentrate on a calling with a sprinkling of general liberal education. Let us ensure that we are sprinkling general liberal education in the academic programmes at the post-graduate level in our Institute.

[4] See http://www.gutenberg.org/ebooks/24526 for downloading the complete book.

[5] "The Very Idea of a University: Aristotle, Newman, and Us", British Journal of Education Studies, Vol. 57, No 4, December 2009, pp 347 – 362.

The HBNI has the following as its Constituent Institutions (CIs).

1. Bhabha Atomic Research Centre (BARC), Mumbai
2. Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam
3. Raja Ramanna Centre for Advanced Technology (RRCAT), Indore
4. Variable Energy Cyclotron Centre (VECC), Kolkata
5. Saha Institute of Nuclear Physics (SINP), Kolkata
6. Institute for Plasma Research (IPR), Gandhinagar
7. Institute of Physics (IOP), Bhubaneswar
8. Harish-Chandra Research Institute (HRI), Allahabad
9. Institute of Mathematical Sciences (IMSc), Chennai, and
10. Tata Memorial Centre (TMC), Mumbai.

The role of HBNI is to nurture in-depth capabilities in nuclear science and engineering and to serve as a catalyst to accelerate the pace of basic research and facilitate its translation into technology development and applications through academic programmes, viz., Master's and Ph.D. degrees in Engineering, Physical, Chemical, Mathematical, Life and Health Sciences while encouraging inter-disciplinary research. Additionally, a Strategic Studies programme has also been identified to ensure availability of adequate qualified human resources to address issues pertaining to nuclear law, economics of nuclear power, nuclear security, nuclear proliferation, intellectual property rights etc.

In 2006, the Government of India decided to strengthen science education and set up institutions for science education and research in various parts of the country. One such institution, the National Institute for Science Education and Research (NISER) was setup at Bhubaneswar by the Department of Atomic Energy (DAE) as a project of the Institute of Physics. Academic programmes of this institute were started as a part of IOP and thereby under HBNI. Steps are being taken to make NISER an independent CI of HBNI.

Harish-Chandra Research Institute located at Allahabad

ACADEMIC PROGRAMMES OF THE INSTITUTE

The HBNI offers a range of academic programmes in chemical sciences, engineering sciences, health sciences, life sciences, mathematical sciences and physical sciences. It also has a programme in strategic studies. Except for NISER, all other institutions conduct programmes at post-graduate level. Various programmes offered are the following.

Ph.D. in varied disciplines is offered at all CIs. HRI and IMSc also offer an integrated Ph.D. programme where students study for M.Sc. as well as Ph.D.

M.Tech. in engineering sciences and M.Phil. in physical sciences, chemical sciences and life sciences. These programmes consist of one year of course work and one year of project work. The course work is offered at all campuses of BARC Training School and project work is offered at BARC, IGCAR, RRCAT VECC and some other units of DAE. Those who are not interested in project work get a diploma in lieu of a M.Tech. or a M.Phil.

M.Sc. (Engg) in which research content is more than that in a M.Tech. programme. The duration of the project work under this programme is one and half year, while the duration of the course work is up to one year. This programme is offered at BARC, IGCAR, VECC and RRCAT and has been tailored for the employees of the Department.

Integrated M.Sc. of five-year duration at NISER.

Super Specialty Courses at TMC

- **D.M. (Medical Oncology)**
- **M. Ch. (Surgical Oncology)**
- **M. Ch. (Gynaecological Oncology)**

Post Graduate Courses at TMC

- **M.D. (Pathology)**
- **M.D. (Anaesthesiology)**

A partial view of the classroom facility

- M.D. (Radio-diagnosis),
- M.D. (Radiotherapy),
- M.D. (Microbiology), and
- M.D. (Immuno Haematology & Blood Transfusion)

DRM: Diploma in Radiation Medicine at BARC.

M.Sc. (Nursing) at TMC

Dip.R.P.: Diploma in Radiological Physics at BARC.

DMRIT: Diploma in Medical Radio Isotope Techniques at BARC.

A laboratory in the Training School

A classroom session in progress

In addition, the TMC also offers a two-year Certified Fellowship programme in 23 different disciplines related to Oncology.

The Institute offers a unique Ph.D. programme where students are encouraged to work at the interface of basic research and technology development. Under this programme, they work under the guidance of two supervisors, one having strength in basic research and the other in technology development.

More than 1250 students are pursuing Ph.D. in various disciplines.

All the Constituent Institutions have excellent library facilities having a large collection of books and subscribe to a large number of research journals.

FACULTY

Faculty strength in all CIs put together is about 800 CIs, particularly research & development centres have a large number of scientific officers and they provide valuable inputs to research scholars as Technology Advisers. Amongst faculty and scientific officers, there are many who are fellows of prestigious academies, and winners of national and international awards.

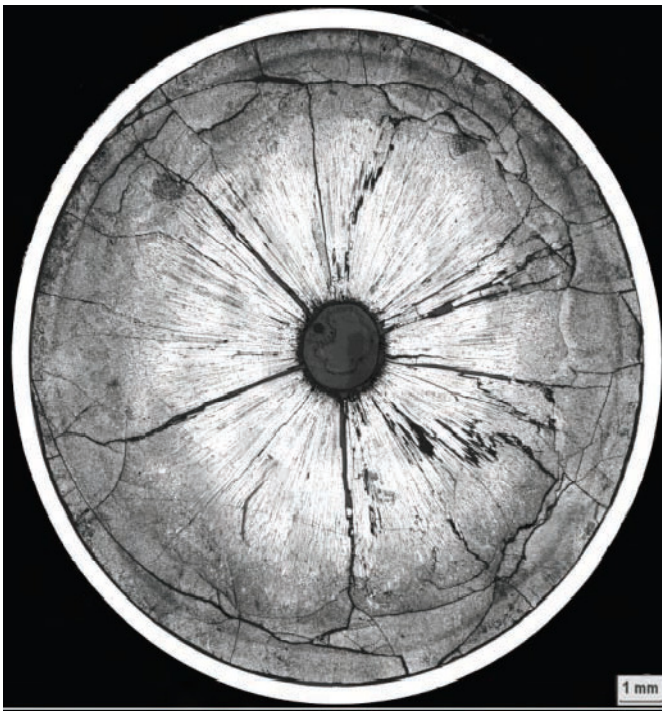
R&D ACTIVITIES AT CONSTITUENT INSTITUTIONS *(in brief, details available at respective websites)*

Bhabha Atomic Research Centre (www.barc.gov.in)

BARC is a premier multi-disciplinary nuclear research centre having excellent state-of-the-art infrastructure for advanced research and development with expertise covering the entire spectrum of nuclear science and engineering and related areas. Its main campus is located in Mumbai and it also has campuses at Tarapur in Maharashtra, Kalpakkam in Tamil Nadu and Mysore in Karnataka. It is in the process of establishing new campuses at Visakhapatnam in Andhra Pradesh and Chitradurga in Karnataka.

BARCOM, a 1:4 size containment test model at Tarapur is built to generate database of containment performance evaluation studies and

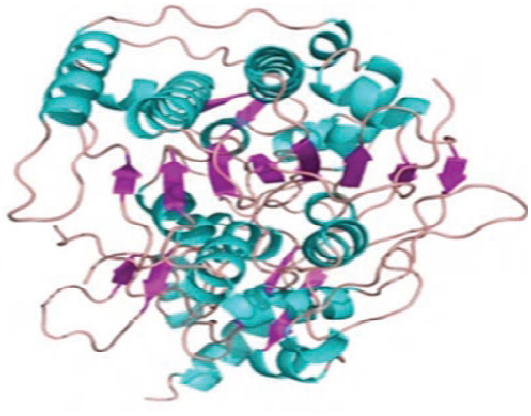
Research areas pursued in BARC cover the entire spectrum of nuclear science and engineering and also strategic studies. The core mandate of the Centre is to provide research and development support to all aspects of the nuclear power programme. The R&D activities of the Centre cover wide range of disciplines including physical sciences, chemical sciences, engineering sciences, life sciences, health sciences, reactor engineering, environmental sciences, materials science, and others.



Micrograph of an irradiated, failed fuel pellet showing the restructuring in fuel.

The Centre also operates a wide range of large facilities viz., fuel fabrication facilities, critical facilities, research reactors, isotope production facilities, fuel reprocessing plants and waste management facilities. Technologies already developed and under development by the Centre span a large domain covering electronics & instrumentation, robotics & automation, mechatronics, parallel computing, lasers, accelerators, electrodynamics to name a few. The research at the Centre is done at laboratory scale as well as pilot plant scale.

Neutron scattering facility at Dhruva. The facility is regularly utilized by the research students and faculty of HBNI and various universities.



Accurate 3-dimensional structure of phosphatasegene PhoK, important for engineering of enzyme useful for bio-precipitation of uranium.

The Centre is doing pioneering work in the field of nuclear agriculture and preservation of food by irradiation. The center uses its Dhruva reactor at Trombay and the medical cyclotron facility at Parel, the first of its kind in India, to produce large quantities of medical isotopes and radiopharmaceuticals for diagnostics and therapy. Radioisotopes are also used for sterilization.

Indira Gandhi Centre for Atomic Research (www.igcar.gov.in)

The Centre operates a Fast Breeder Test reactor and several large test facilities. As a result of the research and development work done by the Centre, a Prototype Fast Breeder Reactor (PFBR) has been designed and is being constructed. Further design and engineering work is being pursued, to develop next generation Fast Breeder Reactors (FBR), based on a fuel cycle having a short doubling time and incorporating economic and robust features.

Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam is dedicated to the development of fast reactor and associated fuel cycle technologies based on intense multi-disciplinary research.

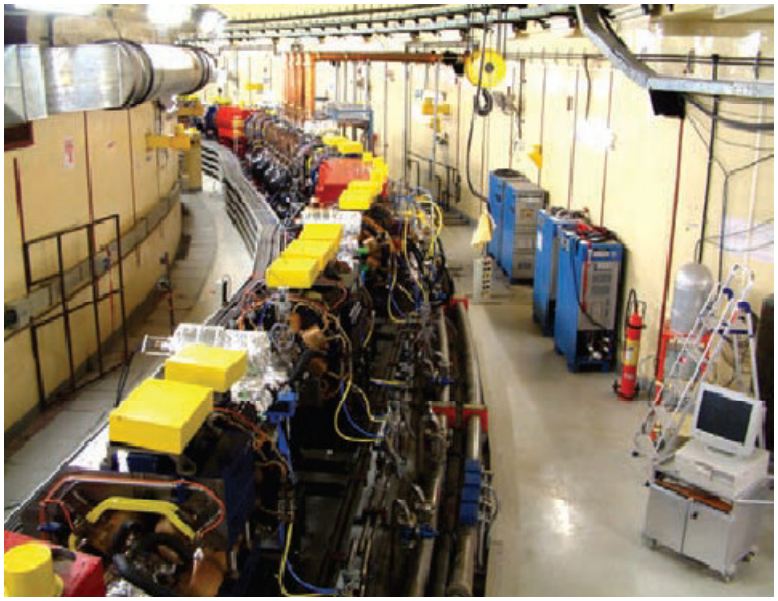
Beam lines and experimental stations built around a 1.7MeV tandem accelerator, used for Rutherford back scattering & channeling, and synthesis of nanostructures.

This includes the development of new and improved materials, techniques, equipment and systems reactor thermal hydraulics, thermal hydraulic code verification; vibration & noise analysis of reactor components, testing of fast reactor components in air, water and sodium; development of full-scope operator training simulator, design qualification and reactor safety. The Centre has strong programmes in metallurgy and materials, non-destructive testing & evaluation, robotics & automation, chemical sciences, radiological & engineering safety in FBR systems and related fuel cycle facilities.

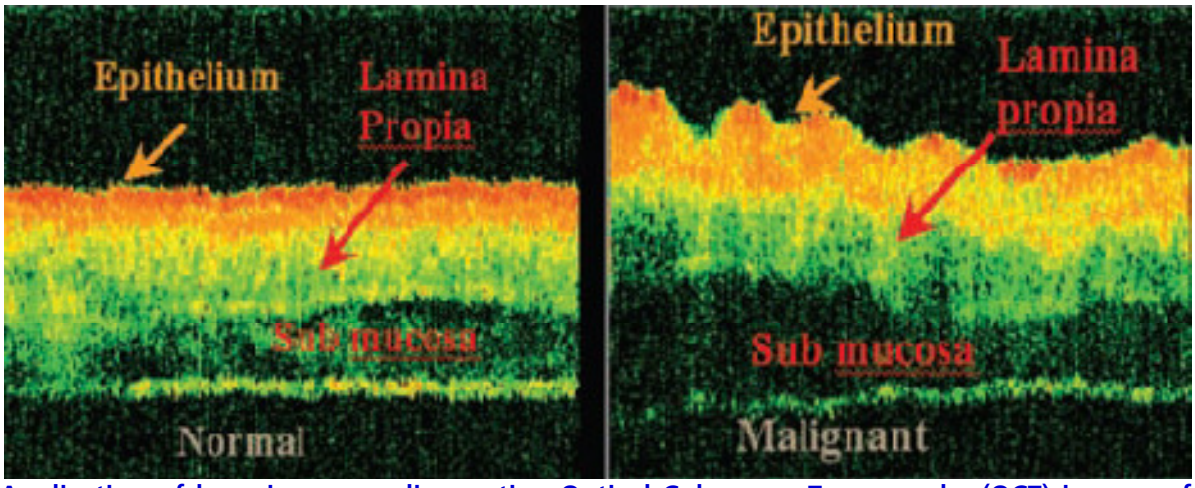
Shake table for seismic simulation

Raja Ramanna Centre for Advanced Technology (www.rrcat.gov.in)

RRCAT is engaged in R&D in areas of lasers, particle accelerators, cryogenics, plasma physics, vacuum and other related technologies. The Centre also has mature programmes in the areas of RF-superconductivity, lowtemperature physics, material science, cold atom physics, non-linear optics, opto-electronics, nano-science etc. The Centre has set up two Synchrotron Radiation Sources INDUS-1 & INDUS-2, which are national research facilities, and also many smaller accelerators for radiation processing applications. The Centre has excellent cryogenic facilities as well as state-of-the-art equipment for low temperature physics measurements.



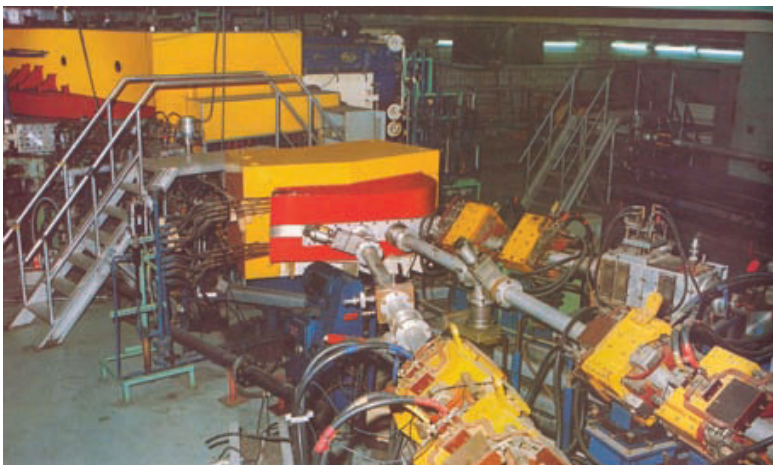
Indus-2 operates round the clock at 2 GeV & 100 mA. Six beamlines are operational and are used by research students and faculty of HBNI and other universities.



Application of laser in cancer diagnostics: Optical Coherence Tomography (OCT) images of Hamster cheek pouch.

Several laser systems have been built by the Centre and are being used for a wide range of applications. These include gas lasers (such as copper vapour lasers, CO2 lasers), solid state lasers (like diode pumped solid state lasers and semiconductor lasers). Lasers are deployed for the studies in the areas like bio-medical applications of lasers and laser-plasma interaction.

K-500 superconducting cyclotron, under final stages of commissioning.



K-130 room temperature cyclotron for light and light heavy ions. This is a national facility used byCIs and other universities.

Variable Energy Cyclotron Centre (www.vecc.gov.in)

The Variable Energy Cyclotron (VEC) is the main accelerator, operational at the centre since 1980. VECC is dedicated to carry out research and development in the fields of accelerator science & technology, nuclear science (theoretical and experimental), condensed matter physics, bio-physics, materials science, computer science & technology and in other related areas.

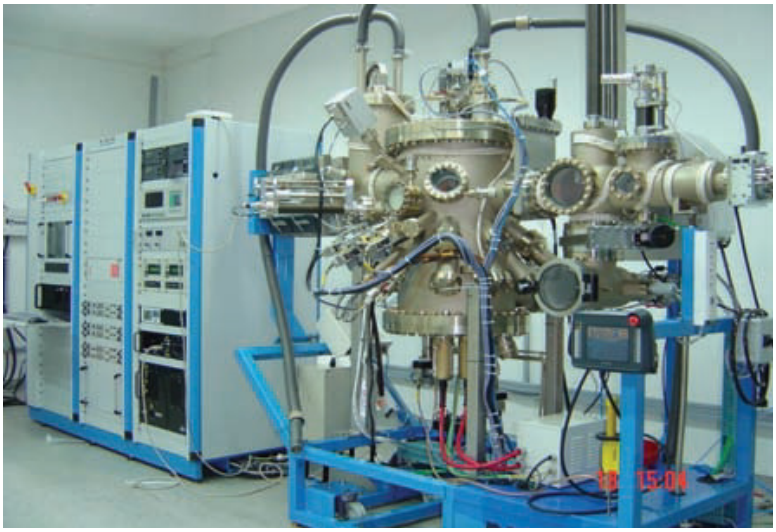
In the field of accelerator technology, the centre has developed beamlines, magnets, components for beam injection, extraction and diagnostics etc. A large Superconducting Cyclotron

is being constructed to provide nuclear physicists with a quantum jump in the accelerated particle energies for carrying out frontline experiments.

The centre has a program on building Radioactive Ion Beam (RIB) facility for studying nuclear reactions involving short-lived radioactive nuclei. The Centre is also engaged in exploration and recovery of helium gas from hot spring emanations and earthquake prediction utilizing related observations. The Centre is setting up a high power beam medical cyclotron for production of medically useful radioisotopes and materials research.

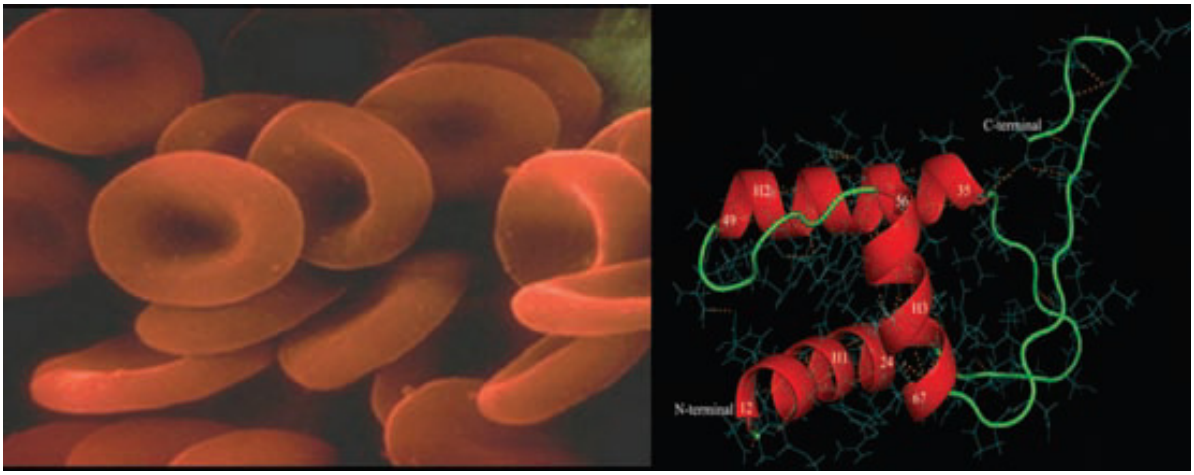
Saha Institute of Nuclear Physics (www.saha.ac.in)

SINP conducts basic research in five major areas, namely biophysical sciences including chemistry, condensed matter physics including surface physics and nanoscience, experimental nuclear and particle physics, theoretical physics including mathematics and plasma physics.



MBE facility for growth of silicon-germanium based quantum well structures.

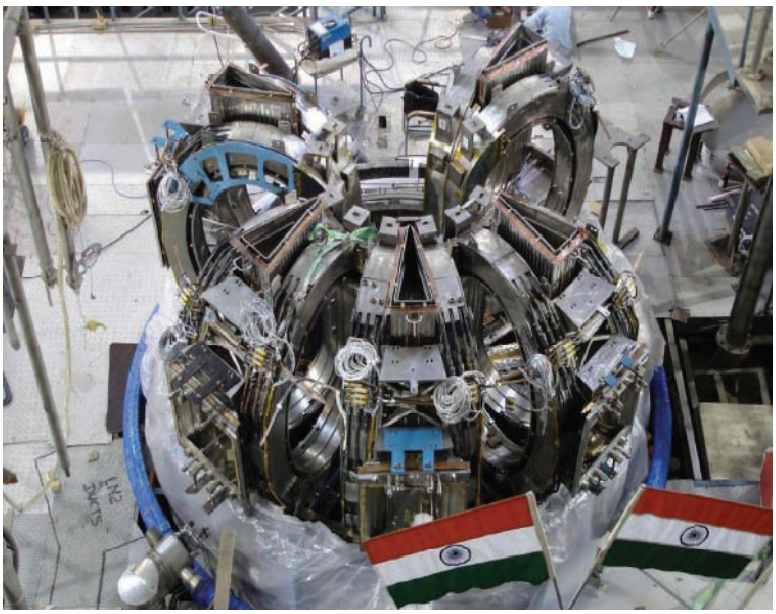
Research in experimental condensed matter physics and surface physics is conducted in the general areas of quantum structures, soft matter physics, conducting nanocomposites, rare-earth based intermetallics, perovskites, double perovskites, quasi low-dimensional system, quantum spin chains, strongly correlated systems and nanocrystalline materials. Research activities in nuclear and particle physics involve the experimental and theoretical studies of matter produced in ultra-relativistic high ion collisions and nuclear structure studies at high spin.



Thalasemic RBC and structure of variant haemoglobin

In biophysical sciences, research covers cell biology, genetic toxicology, micro-molecular crystallography, membrane biophysics, molecular genetics, nuclear & radiochemistry, photochemistry, radiation chemistry & biology, structural biology & bio-molecular spectroscopy and ultra structural research.

Institute for Plasma Research (www.ipr.res.in)



Assembly of SSC Tokamak at IPR

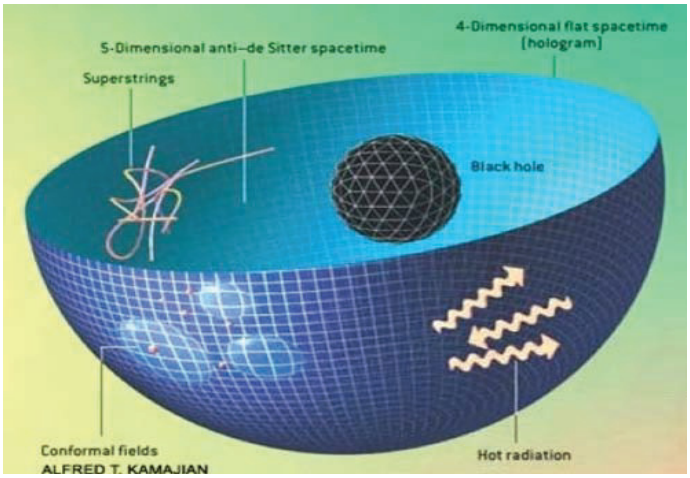
IPR is devoted to research in all aspects of plasma physics and is the lead institute of India for participation in ITER, an international project, aimed at setting up of an experimental fusion reactor at Cadarache, France. The institute pursues research in high temperature magnetically-confined plasma in the Tokamak Aditya, basic experiments in plasma physics including free electron laser, dusty plasmas and other non-linear phenomena, and also pursues development of industrial plasma processing and its applications. The institute is in the process of building a Steady-state Superconducting Tokamak (SST-1). On theoretical and computational front, many phenomena in Tokamak plasmas such as excitation of Geodesic Acoustic Modes (GAM), turbulent transport, edge localized modes mitigation, nonlinear dynamics of multiple neoclassical tearing modes etc., are actively pursued.

Institute of Physics (www.iopb.res.in/indexphp.php#)

IOP is involved in research in areas of nuclear physics, high energy physics and condensed matter physics. In the field of nuclear physics, a new mode of fission decay termed as multifragmentation fission has been predicted with important implications in stellar evolution. There is also active research in the field of nano-science and nanotechnology.

Field Emission Gas SEM-Focussed Ion Beam (FEGSEM-FIB): Cross Beam facility.

Harish-Chandra Research Institute (www.hri.res.in)

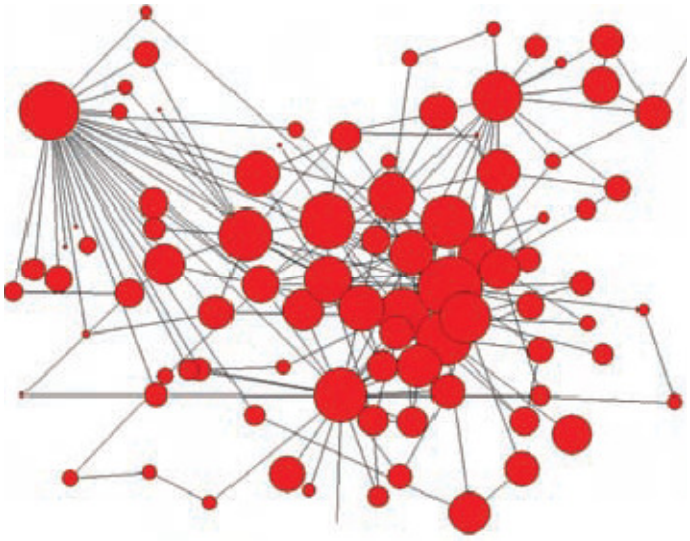


Work related to physics of black holes and quantum space-time at HRI.

HRI conducts fundamental research in mathematics and theoretical physics. Under mathematics, it pursues research in algebra, analysis, geometry & topology, number theory and cryptography. Under physics it pursues research in the field of astrophysics, condensed matter physics, high energy physics, string theory, and quantum information & computation.

Institute of Mathematical Sciences (www.imsc.res.in)

IMSc pursues fundamental research in the disciplines of mathematics, theoretical physics and theoretical computer science. The areas of research being pursued under mathematics are: algebra, algebraic geometry, number theory, partial differential equations, Schrödinger and Jacobi operators, representation theory and topology.



Scale-free network theory extended to understand social network

Theoretical Computer Science group works on algorithms and data structures, automata theory, computational complexity, distributed computing, graph theory and combinatorics, logics of programs and semantics. Under physics, it pursues research in condensed matter physics, statistical mechanics, non-linear dynamics, high energy physics, mathematical physics, quantum optics and theoretical physics.

Tata Memorial Centre (www.tatamemorialcentre.com/education/profedu.htm)

TMC is a national centre for the prevention, treatment, education and research in cancer and is a leading cancer centre in this part of the world. It runs Tata Memorial Hospital (TMH) located at Parel in the heart of Mumbai. TMH is a postgraduate teaching hospital. It also runs the Advanced Centre for Treatment, Research and Education in Cancer (ACTREC) in Navi Mumbai. It has a professional education division which is designated by the UICC (International Union Against Cancer) as the co-ordination centre for professional education in cancer in the Asia-Pacific region.

Advanced Centre for Treatment, Research and Education in Cancer (ACTREC) at Kharghar

Cancer research in Tata Memorial Hospital has resulted in cost-effective intervention (costing less than Rs. 100) in breast cancer.

21ST INTERNATIONAL CONFERENCE ON STRUCTURAL MECHANICS IN REACTOR TECHNOLOGY UNDER THE AGEIS OF HOMI BHABHA NATIONAL INSTITUTE

Since 1971, Structural Mechanics in Reactor Technology (SMiRT) conferences are being held every two years, in major cities around the world. The purpose of these conferences is to bring together scientists and engineers, to discuss and resolve structural mechanics problems in reactor technology. Over the years, certain aspects of these conferences have

Dr.A.P.J.Abdul Kalam Releasing 21st SMiRT Conference Proceeding in Hotel Ashok, New Delhi

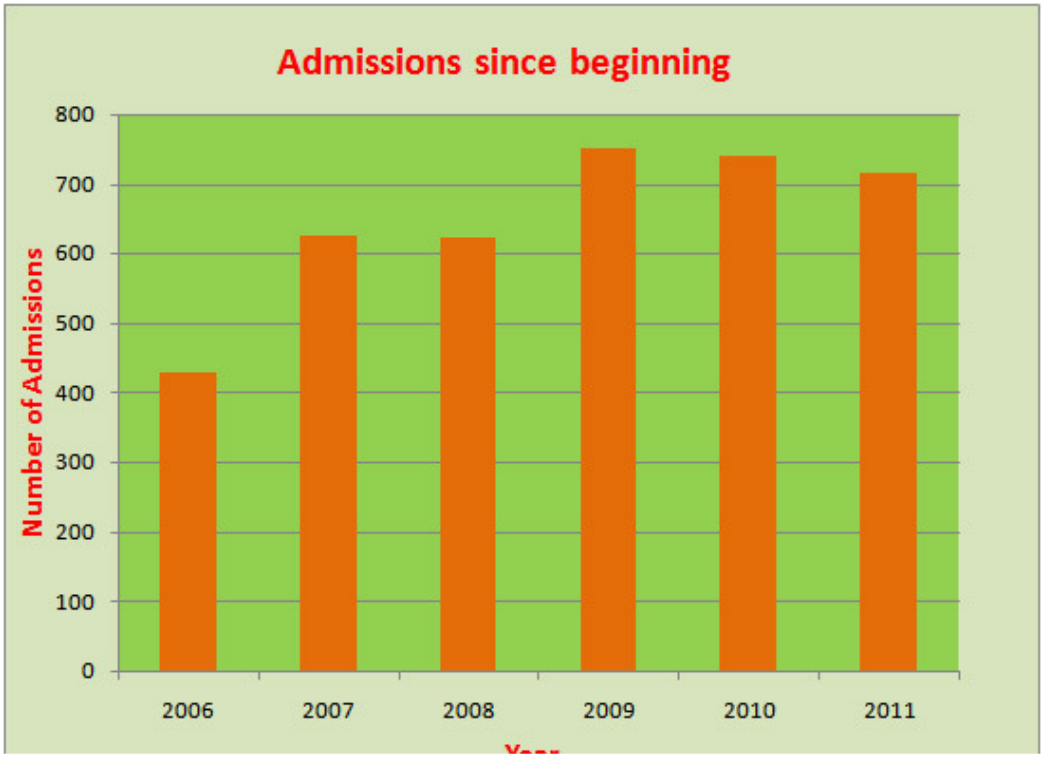
become traditional and a unique culture has evolved around these conferences. The SMiRT conferences are organized in different parts of the world under the auspices of International Association of SMiRT (IASMiRT) (www.iasmirt.org). The association is registered in Berlin, Germany. It is a non-profit entity with the sole objective of broadening and disseminating knowledge on the subject of applied mechanics in reactor technology by organizing national and international scientific-technical conferences and seminars. Association is managed by a five member Board of Directors and an Advisory Board.

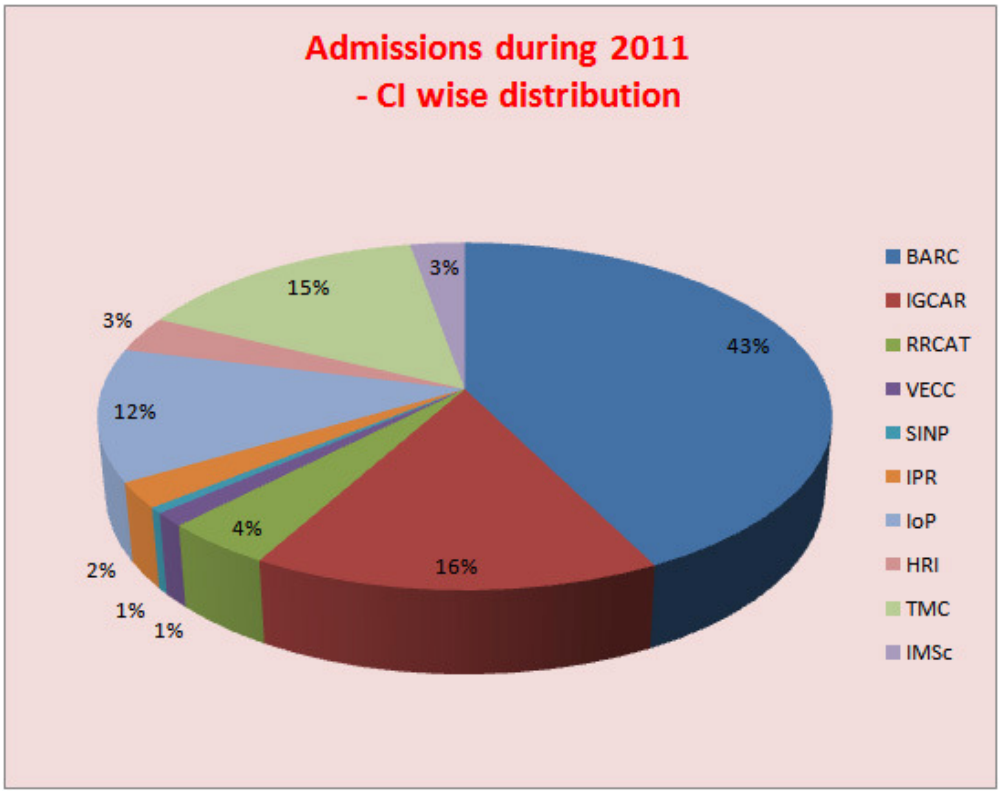
21st International Conference on Structural Mechanics in Reactor Technology (SMiRT 21) was organized in New Delhi, during 6-11 November 2011 under the aegis of Homi Bhabha National Institute. The conference was co-sponsored by regulatory bodies, research centres, academic institutions, reactor component manufacturers, national laboratories, engineering and construction firms, nuclear utilities and national professional societies in India. The conference was dedicated to the Art, Science and Practice of Structural Mechanics. The conference aimed to cover all technical and professional practice issues, relevant to Structural Mechanics in Reactor Technology. It focused on contemporary issues affecting Structural Mechanics profession. It highlighted the profession's interface with society at large to improve the public image and credibility of nuclear technology in general and structural mechanics in particular. Every effort was made to bring together the best and the brightest in the world of structural mechanics, to meet and discuss major issues in the profession.

Dignitaries and Delegates during Inauguration

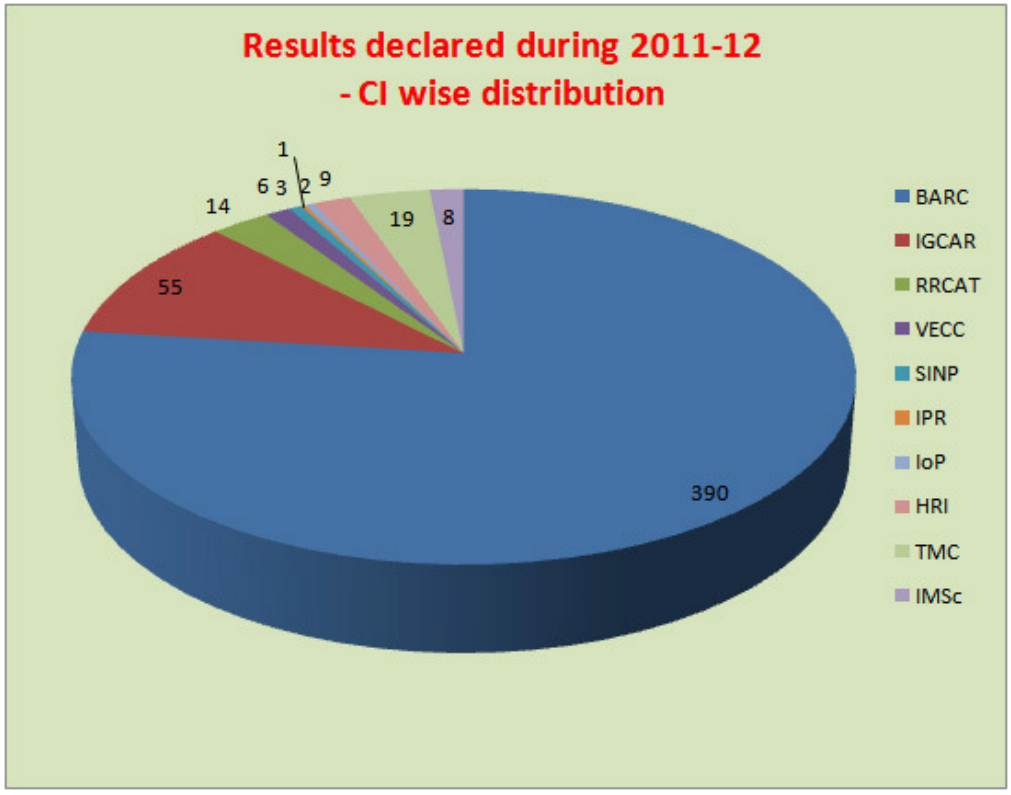
The conference was inaugurated by Dr.A.P.J.Kalam. More than 620 delegates from thirty countries attended the conference and presented 580 research papers authored/co-authored by 1200 researchers. The papers were presented in ten parallel sessions. Beside research papers, there were six key note addresses, eight plenary lectures and 12 workshops. International Scientific Committee consisting of 37 members from 11 countries helped to review the abstracts, preparing the sessions, identifying the chairman and co-chairman of each session and managed their respective divisions in various auditoriums during the technical sessions. Prof. B.K.Dutta, Dean-Academic, BARC was the Chairman of the conference.

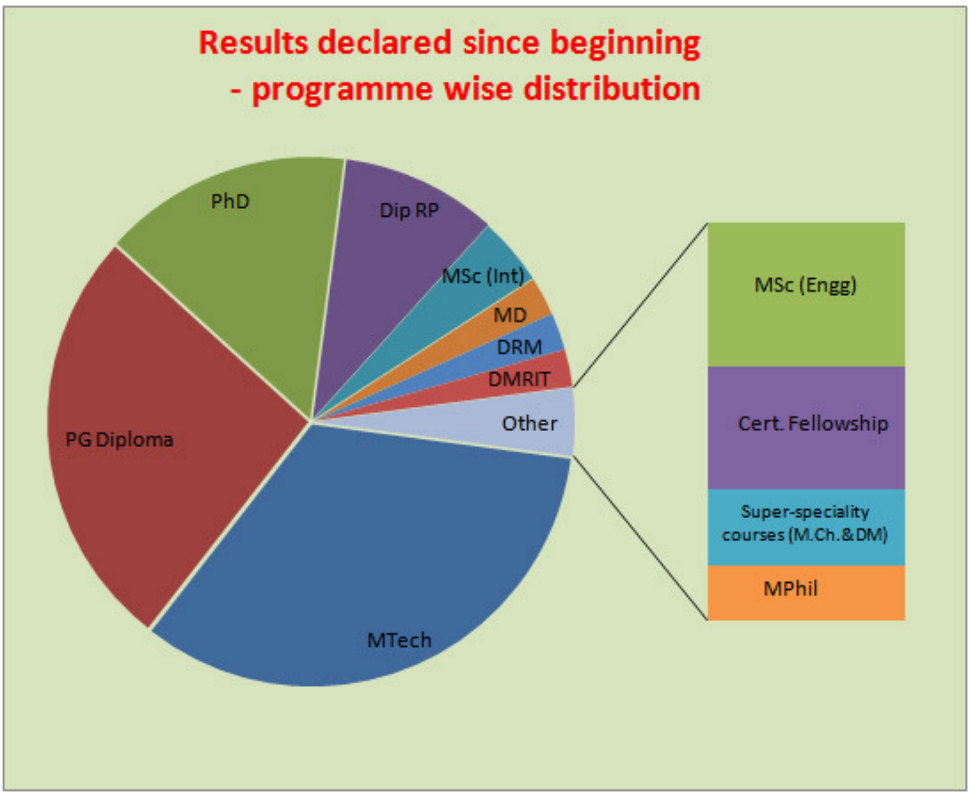
The Institute at a Glance

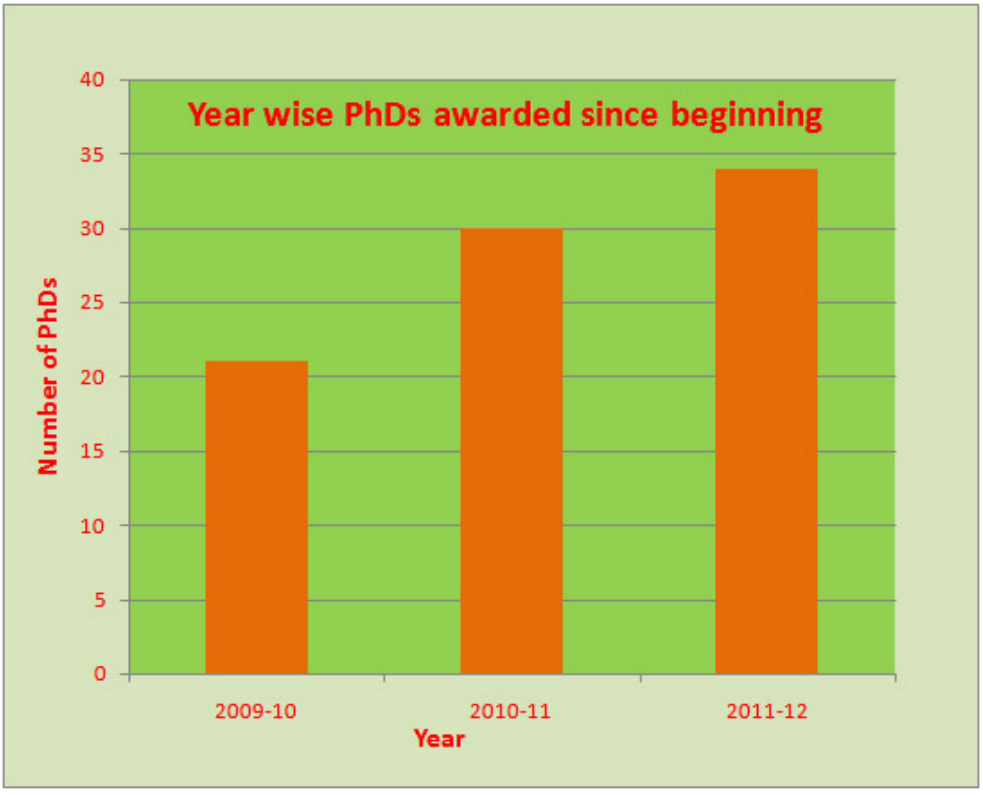


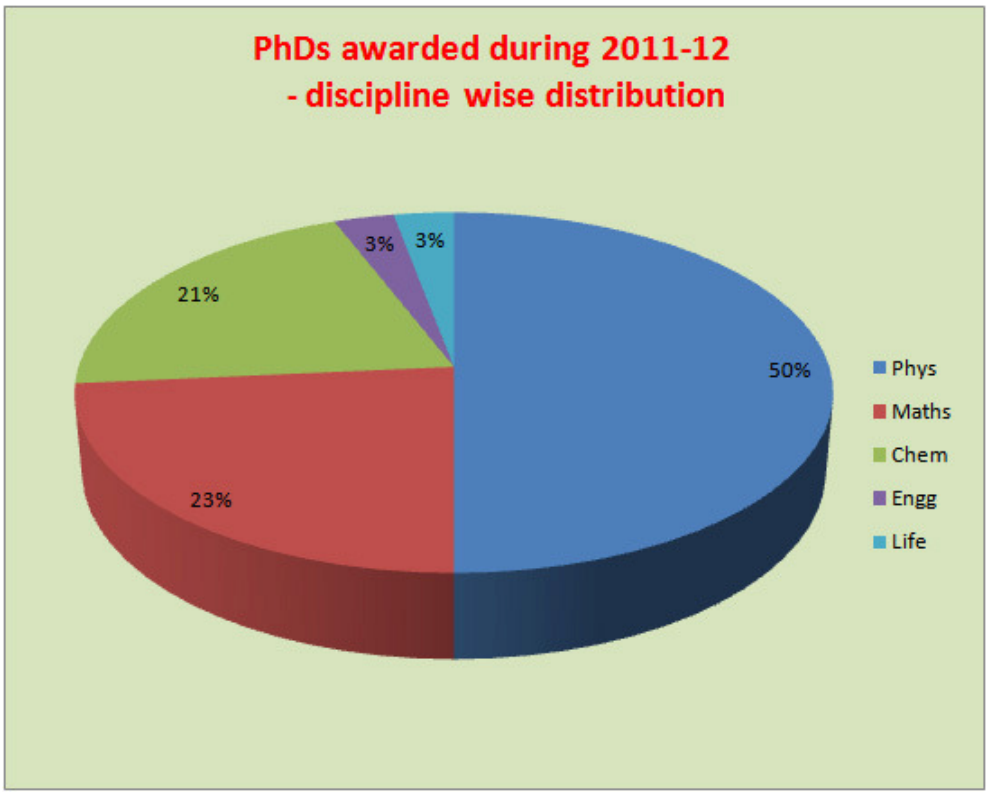


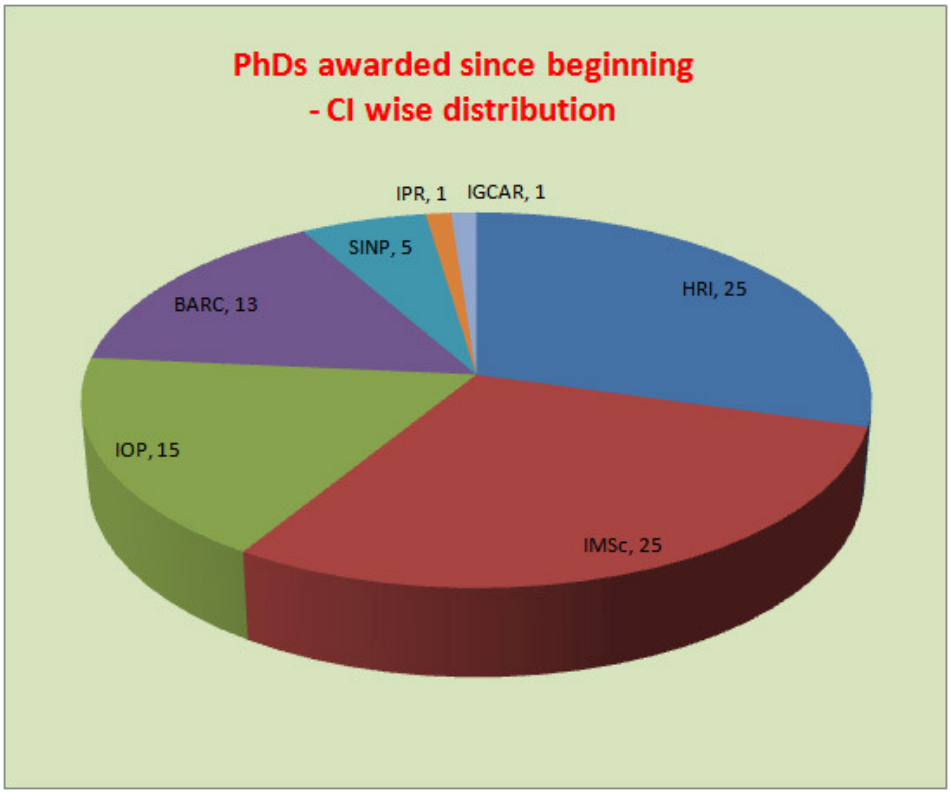
Students joining BARC Training Schools were given option to get a PG Diploma or upgrade to MPhil or MTech. In most cases, students in science streams opted for a PG Diploma and enrolled for a PhD. Decision making during the early years took time and diploms for earlier years were issued during 2011-12.

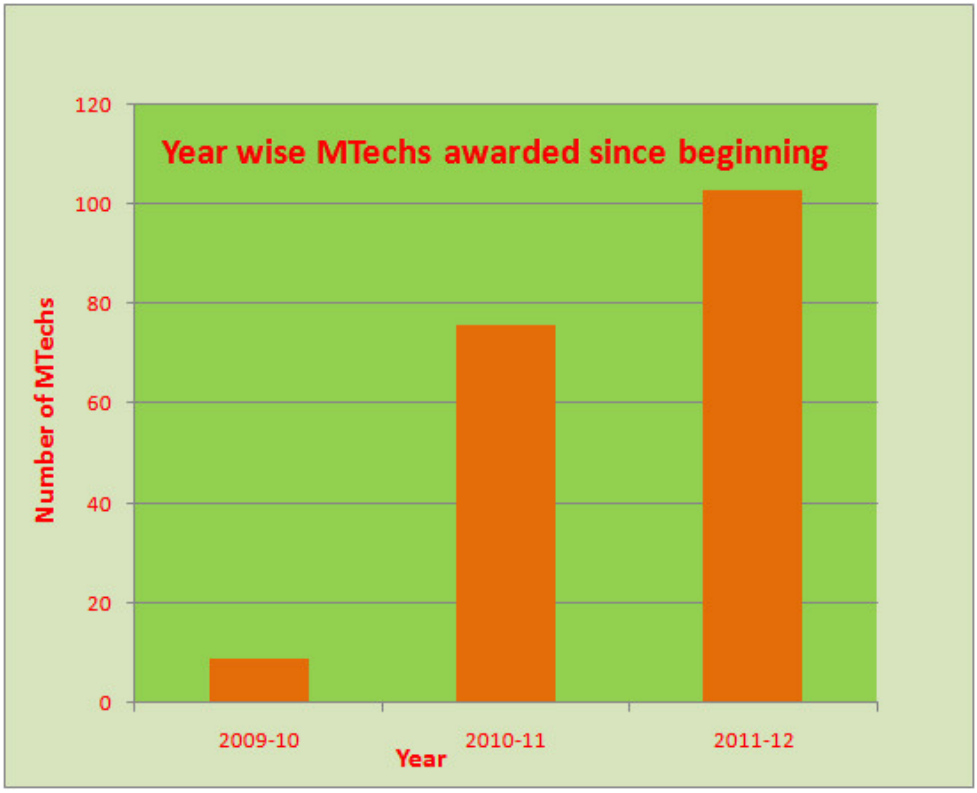


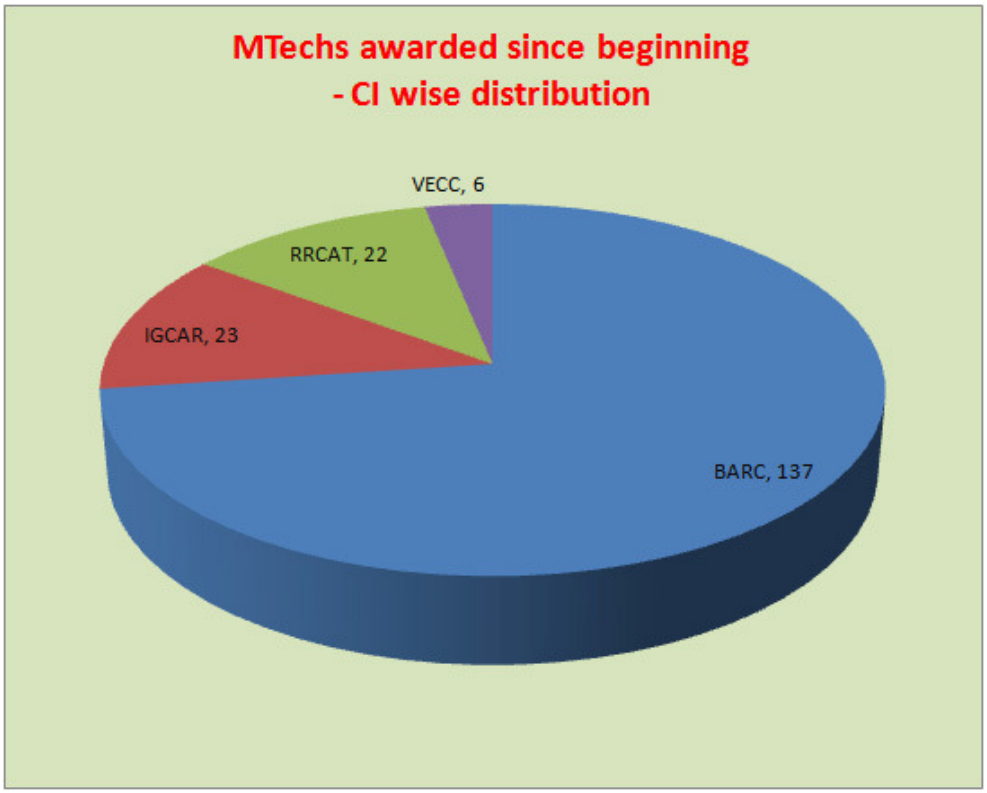

Results declared since beginning
- programme wise distribution
PhD
Dip RP
MSc (Int)
MD
DRM
DMRIT
Other
PG Diploma
MTech
MSc (Engg)
Cert. Fellowship
Super-speciality courses (M.Ch.&DM)
MPhil

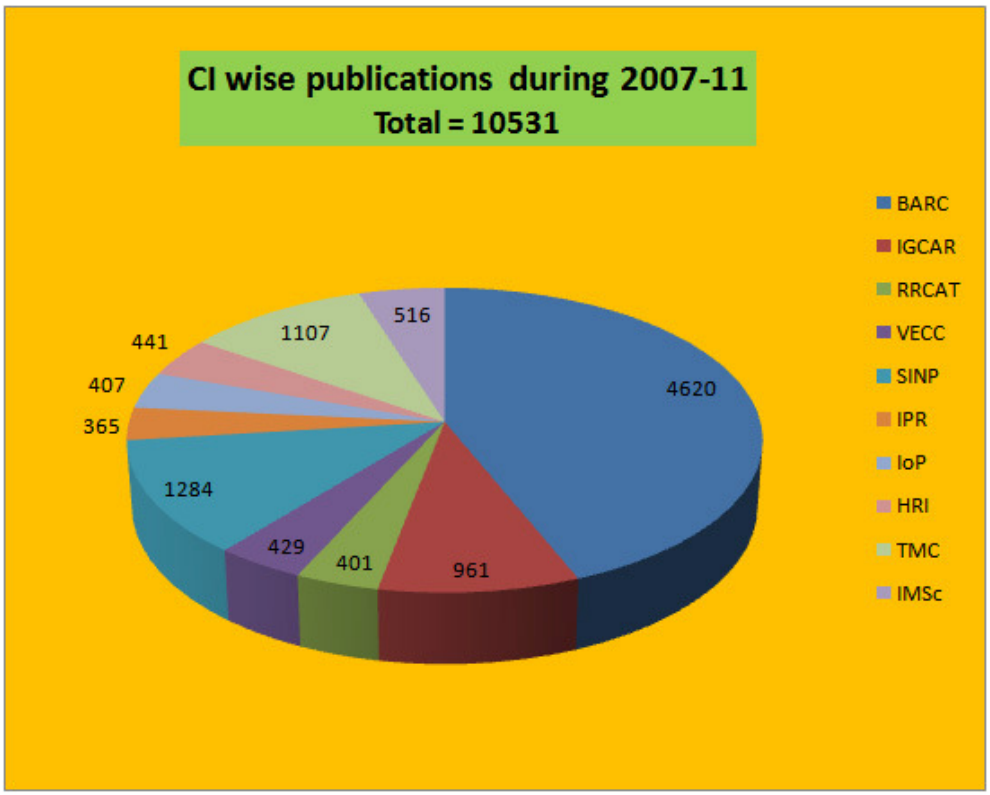

Year wise PhDs awarded since beginning
Number of PhDs
40
35
30
25
20
15
10
5
0
2009-10
2010-11
2011-12
Year

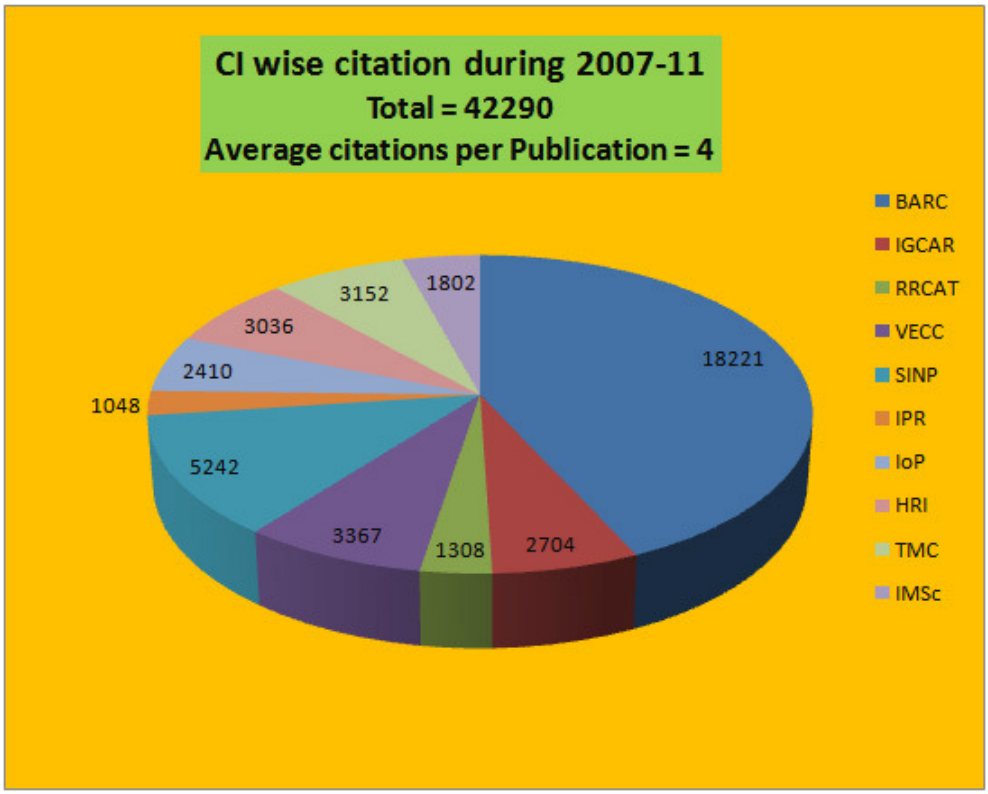

PhDs awarded during 2011-12
- discipline wise distribution
50%
23%
21%
3%
3%
Phys
Maths
Chem
Engg
Life


PhDs awarded since beginning
- CI wise distribution
IPR, 1
IGCAR, 1
SINP, 5
HRI, 25
BARC, 13
IOP, 15
IMSc, 25


Year wise MTechs awarded since beginning
Number of MTechs
120
100
80
60
40
20
0
2009-10
2010-11
2011-12
Year


MTechs awarded since beginning
- CI wise distribution
VECC, 6
RRCAT, 22
IGCAR, 23
BARC, 137


CI wise publications during 2007-11
Total = 10531
4620
961
401
429
1284
365
407
441
1107
516
BARC
IGCAR
RRCAT
VECC
SINP
IPR
IoP
HRI
TMC
IMSc


CI wise citation during 2007-11
Total = 42290
Average citations per Publication = 4
18221
2704
1308
3367
5242
1048
2410
3036
3152
1802
BARC
IGCAR
RRCAT
VECC
SINP
IPR
IoP
HRI
TMC
IMSc

Annual Report 2011-2012 Volume-1

Volume 2 contains the following information :

Annex 1 : Composition of the Bodies of the Institute

Annex 2 : Composition of Standing Committees

Annex 3 : Faculty list updated upto March 2012

Annex 4 : Admission and Results Status

Annex 5 : Abstracts of Ph.D. theses for which results were notified during April 1, 2011 to March 31, 2012

Annex 6 : Titles of M.Tech, M.Phil & M.Sc. (Engg.) theses for which results were notified during April 1, 2011 to March 31, 2012

Annex 7 : Memorandum of Understanding with Jadavpur University and with Indian Statistical Institute, Kolkata

Annex 8 : Receipts & Payments for the financial year ending on 31.3.2012

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