

RESEARCH AND CONSULTANCY CELL, IEST SHIBPUR

Sponsored Research and Industrial Consultancy (SRIC)

Research Overview

In the light of changing economic scenario, government policies and Institute priorities, the Institute considers sponsored research and industrial consultancy projects as a very important means for extending benefit of scientific research work at the Institute for the benefit of the society as well as for the economic growth of our country. Therefore, as a matter of policy, the Institute encourages its faculty members to undertake research and consultancy work as a measure of scientific and technical collaboration with outside sponsored agencies. Research and consultancy projects provide knowledge of the current problems of industry and the emerging areas which are very helpful in tuning the curriculum to the national needs.

The Research and Consultancy Cell has, of late, matured into the singular channel for diverse externally funded research and industrial consultancy at the Institute. As of now its principal role is to act as a facilitator for R&D activities at the Institute including coordination in administration, managerial, liaison, monitoring etc, of sponsored research and consultancy work within the ambit of the administrative framework of the institute. But, in consonance with the 'Make in India' thrust of the Government and in tune with the technology roadmap of the country, the Cell is now gearing up to play a greater role to act as the hinge point for multi-institutional and interdisciplinary mega research for which the Institute is now well poised.

A tradition of uncompromising quality-concern has put the Institute in good treads and, over the last few years, a good number of government and non-government funding agencies like DST, DIT, DAE, BRNS, DRDO, ISRO, UGC, CSIR, AICTE, Ministry of Steel, Ministry of Defense, SMDP, UNICEF, MNRE, TATA Steel, TISCO, SAIL, NML, ICDC, NMRL, ICMR, Ministry of Earth Science, Dept. of Biotechnology, Digital India Corporation and others have come forward to sponsor research projects. Presently the Institute is putting a purposeful thrust on collaborative research both at national and international level.

The Institute enjoys a reputation for excellence in research and development. Casting a glance at its academic departments, the Institute can boast of commendable performance of its faculty members, particularly their quality research output which is reflected by a good number of publications in peer-reviewed national and international Journals.

A significant number of projects has been funded by international funding agencies like CIDA, USAID, DeIPHE, SANEI, UKRI-RCUK etc. which bear testimony to the quality of research and consultancy programs carried out at the Institute. In the recent past Institute shared its research accomplishments with IISc (ACRC) Bangalore, IBM, TATA Steel, SAIL, Infosys, DRDL, CPRI, TCS etc.

Institute is participating in the national program “One Nation One Research Web Portal” for scientific community called the Indian Science Technology and Engineering facilities Map (I-STEM) : *Linking Researchers and Resources*, to hold the database of all the R&D facilities established in the institution and to enable their sharing in a transparent manner. Institute has established Sophisticated Analytical Instruments Facility (SAIF, established by DST New Delhi) and Central Research Facility (CRF for providing advanced instrumental facility and scientific services), Continuing Education Programme (CEP), SPARC projects etc. On an average 30 new research projects and 60 new consultancy projects are received by IEST in a typical year. A total no. of about 300 research projects worth more than Rs. 140 Cr. and about 550 consultancy projects amounting to about Rs. 55 Cr. sanctioned to the Institute during the period of 2011 – October 2020.

Major Research Areas

Besides the conventional fields of technology and science, the Institute in recent years has brought many frontier areas of S&T under the purview of its sponsored research activities. Some of such areas are: Advanced Materials, Green Energy and Sensors, Synthesis of new compounds and catalysis, Computational Chemistry, Bio-Mechanics, Power Electronics, Control System, VLSI and Embedded Systems, Digital Manufacturing, Earthquake Dynamics, Disaster Management, Environmental Remediation, Healthcare Science and Technology, Computational Biology, Mobile Computing, Nano Science and Technology, Remote-sensing and GIS, Structural Engineering, Communication, Sensor Network, Water Resource and Environment, Transportation Planning, Aerospace Engineering, Fluid Mechanics, Carbon Sequestration, Atomic and Nuclear Physics, Soft Computing, Image processing, Robotics & Mechatronics, Mine Safety, Housing and Human Settlement Planning, Electrochemistry, Sedimentology, Environmental Economics, Mathematical and Statistical Theory of Life Testing and Reliability, Rural Technology etc. Major augmentation in infrastructure for facilitating academic, research and administrative activities has been undertaken.

R & D History

IEST is an institution of International standard and is producing quality manpower for the strategic sector of research and development in our country, research laboratories, modern industries and also quality teachers for the Institutions of engineering and science education. This reflects the aspirations of the people of India from us.

The world today faces extraordinary challenges and opportunities in several areas, such as, energy, healthcare, water and environment, advanced material, fabronics, transportation and telecommunication. The solutions of the challenges in each of these areas need an interdisciplinary approach. Today's students should be ready to approach and solve these most pressing global problems with an unbiased, innovative and independent mind. Our Institute today strives hard to contribute significantly in each of these areas.

The clock tower of the Institute has witnessed the growth and development of one of the earliest engineering Institutes in the country. The tower reminds us of our obligations and responsibilities towards our future generations in ensuring a healthy, strong and self-reliant India. With deep sense of gratitude to our glorious past and strong conviction for a brighter future, we reaffirm our commitment in dedicating ourselves to the service of the nation.

Featured Research

Centre for Excellence for Green Energy and Sensors System (CEGESS) has been recognized by Ministry of New Renewable Energy (MNRE) and also by DST Solar Hub with an objective to perform research and development on large scale silicon solar photovoltaic cells, modules and systems including design, fabrication and characterization using novel materials and methods. Two major nationally important projects under Jawaharlal Nehru Solar Energy Mission (JNNSM) on thin-film silicon solar cells and PV systems sponsored by MNRE, Govt. of India (Rs. 14.76 Cr.) and Solar Photovoltaic Hub at IEST sponsored by DST, Govt. of India were completed at CEGESS. In the year 2018-19, DST (GoI) has sanctioned another project for DST Solar PV HUB at IEST Shibpur.

The Ministry of AYUSH, Govt. of India, through the Central Council of Research in Homeopathy has sanctioned the establishment of Dr. Bholanath Chakroborty Fundamental Research Laboratory on Homeopathy to undertake focused, evidence-based research on homeopathy formulation and validate

their mode of action. The Fundamental Research Laboratory Centre, under Healthcare Science and Technology (CHST), is poised to house several high-end equipment and will act as a coordinating center for different researchers across the country interested in the scientific evaluation of medicines belonging to this AYUSH system.

CHST is also involved in a DBT, Govt of India, funded a multi-institutional project in association with IISc Bangalore, IIT Kanpur, etc. for design and manufacturing of orthopedic implants.

DST SERB has sanctioned the Nanomission project on 3D printing of polymer composites for patient-specific bone tissue engineering and a multi-institutional project on 'Bioprinting of 3D retina on microfluidic chip' (with NIT Raipur). Work is also underway to develop a low-cost benchtop microscope with NIT Rourkela and Medical College, Kolkata for early screening of cervical cancer under DST, IDP program. Collaborative projects are also carried out with CGCRI Kolkata, IIT Kharagpur, and AIIMS New Delhi, etc. on different healthcare problems like isolation of active molecules from plants against cancer, RNA delivery and developing vascularized engineered constructs to overcome a major bottleneck in tissue engineering.

IEST in collaboration with Tata Steel is engaged in developing advanced high strength steel and received sanction for IMPRINT-2 project from MHRD & DST, Government of India. Separately, Tata Steel is also working with Metallurgy & Materials Engineering Department through sponsored research projects.

Ministry of Electronics and Information Technology (MeitY), GoI has sanctioned 3 new projects to Electrical Engineering Department under NaMPET-III scheme.

Socially relevant research

Funding Agency	Title of the Project:
Tribal Cooperative Marketing Development Federation of India (TRIFED), Ministry of Tribal Affairs, Government of India.	Process developments for isolation of starch and tannin from sal cake.
UGC, New Delhi	Study on production of single cell protein for food and feed application from waste fruits.
Department of Food Processing and Horticulture, Govt of West Bengal	Creation of infrastructural facilities for running degree course in food processing technology.
GRSE (Garden Reach Shipbuilders & Engineers Limited), Kolkata, Govt. of India undertaking under the Ministry of Defence	Social out-reach programmes.
Ministry of Consumer Affairs, Food & Public Distribution (Department of Ministry of Food & Public Distribution), Directorate of Vanaspati, Vegetable Oils & Fats, New Delhi	Development of technology to make low cost nutritionally effective 'ready to eat' protein rich human food from oil seeds or deoiled edible seed cakes (seed meals) by co-extrusion with cereals.
Bharat Petroleum Corporation Ltd., Mumbai	Provide vocational training to unemployed youth on various Module/Trades under CSR activity.

R & D Profile

In 2017-18, Institute received 33 nos. of new research projects with a sanctioned amount of Rs.7.38 Cr. Almost all the Departments, Schools and Centres received such sponsored projects. Significant funding came from organisations/ agencies like the Department of Science and Technology, Government of India; The Royal Society UK; Tata Steel. Ltd.; Murata Business Engineering (India); UNICEF, IC-IMPACTS, Canada; The Institution of Engineers (India); the Council of Scientific and Industrial Research; the Central Council for Research in Homeopathy (CCRH), Ministry of Ayush, Govt. of India; Bharat Heavy Electricals Limited (BHEL); Electrosteel Castings Ltd. (ECL); Global Innovation and Technology Alliance (GITA); Dept. of Biotechnology, Indian Council of Medical Research, Dept. of Health Research. Thrust areas of sponsored research included (i) High energy density permanent magnet, (ii) Motor drives (iii) Pollution control of the river Ganges, (iv) Clean energy, (v) New Peptide based synthetic self-replicating system, (vi) Fundamental research in homeopathy (vii) Flexible super capacitors (viii) Extreme Point of Care Diagnostics on a CD etc.

In 2018-19, total 26 new projects (DST, Dept. of Biotechnology, Electrosteel Casting Limited (ECL), Digital India Corporation, DST-FIST, Indian Council of Medical Research, UNICEF, Ministry of Earth Science, CSIR etc.) have been approved with a total sanctioned amount of Rs. 33.56 Cr. Title of few important research projects include i) Flexible polymer nanocomposite films for energy generation and microwave shielding applications ii) Performance optimization organic solar cells iii) Scaling up WASH approach in schools in Purulia District, iv) DST Solar PV Hub Phase - II, v) Study of seismic failure possibilities of earthen dams and embankments etc.

In 2019-20, total 39 new projects (MHRD-SPARC, DST, DST-FIST, SERB, DBT, CSIR, UKRI-RCUK, WB-DST, WB Pollution Control Board etc.) have been approved with a total sanctioned amount of about Rs. 14.4 Cr. About 155 projects were running in the institute during this period sponsored by various funding agencies like SERB, SPARC, DST, BRNS, CSIR, DBT, UNICEF, ICMR, IC-IMPACTS, IMPRINT, TATA STEEL, WBPDC, DIC-MLA(VIS), NMPB-MOA, PHED-GOWB, MURATA, NRDC, MoES, DST-SAIF, DEITY-MCIT, MNRE UKRI, etc. In 2019-20, 45 projects have been completed.

Over the last few years, in tune with the Institute policy of strengthening national and international collaboration, the Institute has signed quite a number of MoUs with various academic/ research/ government organisations and Industry houses. In 2017-18, Institute signed MoU with BHEL, TATA Steel, Murata Business Engineering, TATA Motors Ltd. In 2018-19, institute signed 2 MoUs with Indian Institute of Technology (Indian School of Mines), Dhanbad and Bharat Petroleum Corporation Ltd. MoU has been signed with CSIR-Central Glass and Ceramic Research Institute (CSIR-CGCRI), Kolkata on 26th July, 2019 to promote collaborative research and to facilitate the exchange of ideas, development of new knowledge and to enhance high quality research acumen. IEST signed a MoU on 15th October 2020 with IBM India Pvt. Ltd. for faculty development program, technical interaction and exchange, guidance of projects etc

Consultancy Projects

Important funding agencies like Kolkata Municipal Corporation, West Bengal Medical Services Corporation Limited, P.W.DTE Govt. of West Bengal, Haldia Development Authority, IIT Kharagpur, Western Coalfields Limited, Larsen & Toubro Limited, ITD Cementation India Ltd., Coal India Limited, Kolkata Port Trust, Rail Vikas Nigam Limited, Kolkata Metro Rail Corporation Limited, Hooghly River Bridge Commissioners, Second Vivekananda Bridge, Visva Bharati University, Mackintosh Burn Limited, ECL, Kolkata Metropolitan Development Authority, Gorkhaland Territorial Administration, Bridge and Roof Co. (India) Ltd., The Singareni Collieries Company Limited (SCCL), Eastern Coalfields Limited, Mackintosh Burn Limited, Western Coalfields Limited, Hindalco Industries Ltd., PDCL etc are providing many significant consultancy activities.

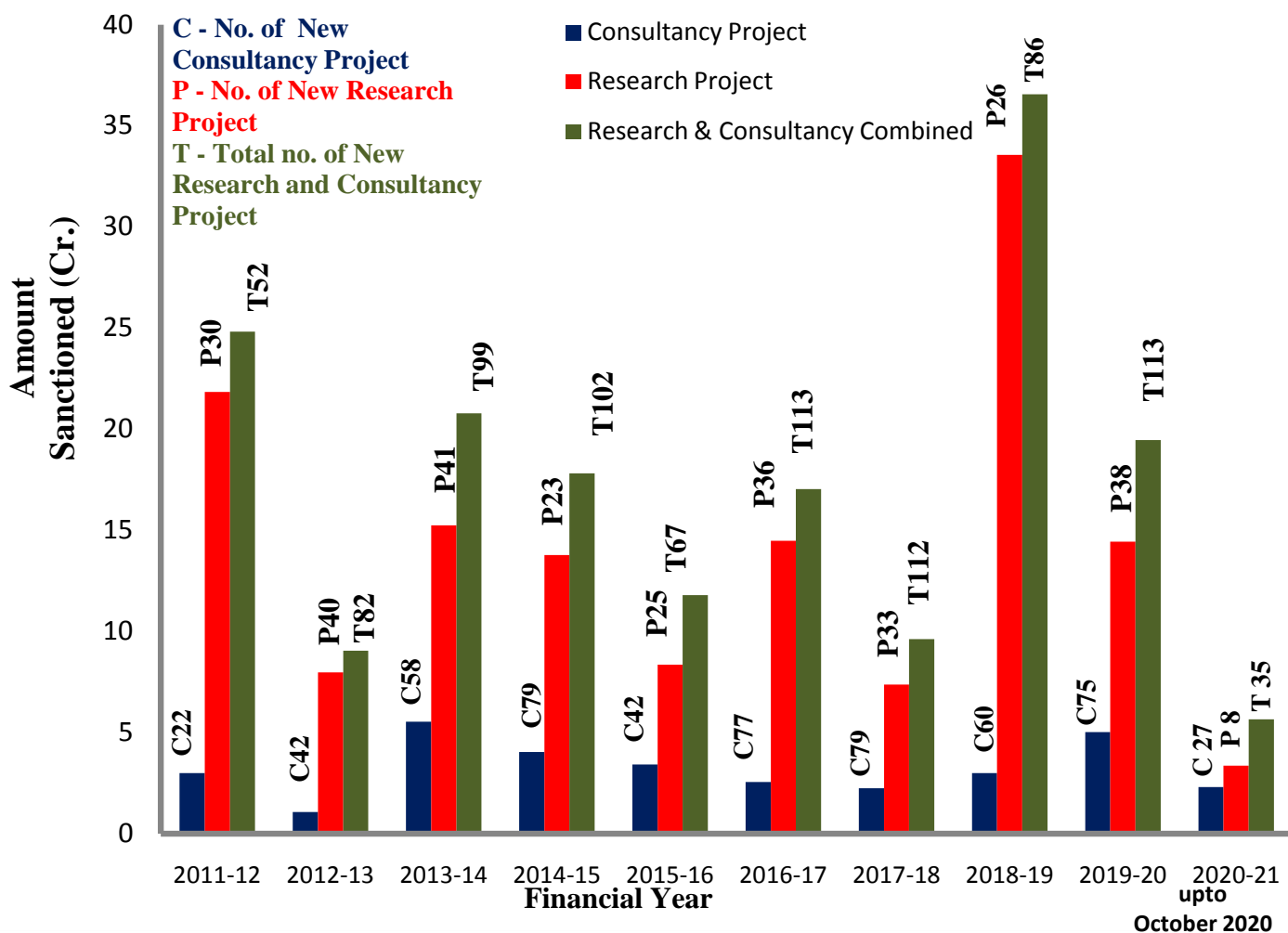
Some major consultancy projects in 2019-20 include:

- Analysis of referee coal samples from different mines by South Eastern Coalfields Limited, Bharat Cooking Coal Ltd.
- Verification of mine closure activities by Lignite Power Private Limited, Singareni Collieries Company Limited.
- Checking of structural design and stability of Swarnamani Tower, Kolkata by Mani Square Ltd.
- Re-assessment of Vent Shaft and New Mahakaran Dewatering scheme for Construction of UG Vent Shaft and New Mahakaran Station by Transtonnelstroy - Afcons Joint Venture.
- Quality Monitoring - Construction of three Bridges & Approach Road at Nayakhali at the 5th Km, at Jalda near Mandermani at 15th Km & at Saulat at 29th Km of Saikat Sarani under Tamluk Highway division in the district of Purba Midnapur by Mackintosh Burn Limited
- Proof Consultancy Services for 4 laning of Barhi - Koderma Section of NH 31 from km 0.00 to 27.500 in the state of Jharkhand by Ram Kripal Singh Construction Pvt. Ltd.
- Consultative Collaboration on Research between IEST, Shibpur and KMRCL for Kolkata East West Metro Project.
- Study of EIA/EMP and Bank Protection Study within Port limits in Halisahar Municipality.
- Renovation of Kedarnath Arogya Bhavan, Bali.
- Vetting of Structural design and drawings for Logistic Hub at Garden Reach, Kolkata under KMDA.
- Traffic Survey (7 days, 24 hours) of Vidyasagar Setu.
- Rain water harvesting of artificial recharge for Khagra Joydev Coal Block at Birbhum District of West Bengal.
- Scientific study for stability of dragline dump at Mungoli OCM of Wani Area, WCL

In 2017-2018, the Institute carried out about 75 new consultancy works at a sanctioned amount of Rs. 2.25 Cr in different engineering departments. In 2018-19, a total of 60 new consultancy works were sponsored with a value of Rs. 3.00 Cr. In 2019-20, total 75 new consultancy works were sanctioned with an amount of Rs. 4.74 Cr. from different agencies.

Research Account statement for the last three financial years

Sl.	Financial Year	Fund Received (Rs.)			Fund Transferred to Institute Overhead# (Rs.)		Expenditure (Rs.)	
		R&D Project	Consultancy	Testing Fees	R&D Project	Consultancy	Manpower	Equipment
1.	2019-20	11,52,76,043	3,09,25,269	1,93,049	53,36,046	67,20,151	2,82,11,048	6,22,45,776
2.	2018-19	28,85,49,919	4,35,58,662	8,32,978	42,62,008	88,48,608	3,02,97,848	2,84,61,189
3.	2017-18	7,89,46,712	3,28,19,966	2,82,500	56,78,048	87,60,343	3,09,16,391	3,38,72,558



The above chart shows the no. of new sponsored research and consultancy projects sanctioned in the FY 2011-12 till October 2020.

Contact address:

Office of the Dean (Research and Consultancy)

6th Floor, New Science & Technology Building, Indian Institute of Engineering Science and Technology, Shibpur, Howrah – 711 103, West Bengal
 Email: dean.research@iiests.ac.in, M - 9836044278

Prof. Subhasis Bhaumik

Dean, Research & Consultancy
 Contact: 9836044278, dean.research@iiests.ac.in

Dr. Chinmoy Bhattacharya

Associate Dean, Research & Consultancy
 Contact: 9433639041, assodean.research@iiests.ac.in

Mr. Alok Kr. Maity

Deputy Registrar (Finance),
 Contact: 9433153452
 dr.finance@iiests.ac.in

Mr. Dipankar Chakraborty

Assistant Registrar (Accounts / Research & Consultancy)
 Contact: 9830182266, dcac170909@gmail.com