



## **Indira Gandhi Centre for Atomic Research**

Indira Gandhi Centre for Atomic Research [IGCAR], located at Kalpakkam, 80 Km south of Chennai, is the second largest R&D establishment of the Department of Atomic Energy. The mandate of IGCAR is to conduct broad based scientific research and advanced engineering development towards sodium cooled Fast Breeder Reactor [FBR] technology. FBRs constitute the second stage of Indian Atomic Energy Programme, which will facilitate utilization of the extensive Thorium reserves and provide means to meet the large demands of electrical energy in the 21st century. A Sodium cooled Fast Breeder Test Reactor [FBTR] of 40 MWt was commissioned in the year 1985 to gain comprehensive experience in the design, construction and operational aspects of sodium cooled fast reactors. Another objective of FBTR is to provide a test bed for the development of fuel, blanket and structural materials, with particular reference to the development of high performance fuels.

Over the years, the centre has established comprehensive R & D facilities covering the entire spectrum of FBR programme related to Sodium Technology, Reactor Engineering, Reactor Physics, Metallurgy and Materials, Chemistry of Fuels and its materials, Fuel Reprocessing, Reactor Safety, Control and Instrumentation, high performance computing etc. It has developed a strong base in a variety of disciplines related to this advanced technology. With the experience and expertise gained by the successful operation of FBTR, the Centre has embarked upon the design and construction of 500 MWe, Prototype Fast Breeder Reactor [PFBR]. Various R & D activities in the areas of Structural Mechanics, Thermal Hydraulics and flow induced vibration, Component Testing in high temperature sodium environment, sodium-water reaction, hydraulic development of sodium pumps etc., were pursued and the design of PFBR was completed. PFBR is in advanced stage of commissioning. As a part of efforts for closing the fuel cycle, an integrated fuel cycle facility is under construction. IGCAR utilizes its expertise and resources in enhancing its standing as a leading Centre of research in various branches of basic, applied and engineering sciences that have a bearing on fast reactor science & technology.

Apart from pursuing mission oriented technological development, a strong emphasis is placed on basic research as well. The Centre has credentials as a leader of research in various frontier and topical subjects like, Oxide superconductors, Nano-structures, Nano-clusters, SQUID fabrication programs, exopolymers and experimental simulation of condensed matter using colloids etc., IGCAR has extended its expertise and facilities to other vital sectors such as Defense, Space and other industries of India to provide reliable solutions to their complex problems. It has diverse collaborations with industries, educational and R & D institutes.

IGCAR is one of the constituent institutions of Homi Bhabha National Institute (HBNI), a deemed to be university. HBNI - IGCAR provides an academic framework for integrating basic research with technology development and encourage inter-disciplinary research. It has nurtured an environment of attracting high quality manpower in science and engineering to take up careers in nuclear science and technology related areas. About two hundred young students are pursuing their M. Sc (Eng.)/ M. Tech/ Ph. D programme at the centre.

A modern Library caters to the technical needs of the Scientists and Engineers. The Central Workshop is fully equipped with sophisticated machines for the fabrication of precision components. The Computer Division houses advanced High Performance Computing Servers & applications packages to meet the computational demands of the users. The centre has a staff strength of around 2500 which includes Engineers, Scientists, supporting staff and Administrative/Accounts personnel.