

Dr. M. Sai Baba, Outstanding Scientist and formerly Director, Resources Management Group, Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam and Senior Professor, Homi Bhabha National Institute.

Dr. M. Sai Baba has made significant contributions for implementation of several high impact activities of relevance to IGCAR and the Department of Atomic Energy. From being an accomplished researcher in Chemistry, with several important contributions, he made a smooth transition in 2006 to lead the Strategic and Human Resources Planning; a new activity created to meet the growing needs of IGCAR for trained manpower for its mission on fast reactors and associated fuel cycle technologies. Provided commendable leadership in providing access to Scientific Information Resources with considerable ease, catering to the varied needs of researchers and large community of students. Has been instrumental in implementing the work flow automation (ATOMS) at IGCAR, to aid moving towards paperless office. Provided leadership in enhancing the activities relating to “Technology Transfer and Intellectual Property Rights” at IGCAR. This activity has grown under his leadership to become Resources Management Group and he was steering the activities of the group, in the capacity as its Director.

Presently holding “TV Raman Pai Chair Professor” at National Institute of Advanced Studies, Bengaluru, and working in the domain of Science Communication, Risk Communication and Education.

Providing Leadership in the Domain of Library and Information Science

Dr. Sai Baba has displayed commendable leadership in providing access to Scientific Information Resources with considerable ease, catering to the varied needs of researchers and large community of students. Using innovative and advanced principles of information technology, he has continuously worked for enhancing the access to information resources at IGCAR.

Digital Library initiative at IGCAR has gained momentum over the years with the aim of providing access to information resources across the campus network (intranet) by anyone, anytime and anywhere. High-end servers, content creation devices, storage area networks etc., form part of the digital infrastructure and forms the backbone for accessing the information resources. A Library gateway with links to all the resources provides an organized access to information resources. An initiative is also made to capture and build the knowledge resources of IGCAR such as photo images, news clippings, internal reports, publications and translated documents. Continued emphasis was laid on enhancing e-resource collection. Development including e-book, journal, scientific and bibliographic databases.

Taken lead in creating infrastructure for digital content creation and converting print to digital. With the availability of Microfiche/Microfilm scanner, ADF Document scanner, Book scanner, image scanners almost any form of information in the print form can be converted to digital form and made available to the users. For example, Table of content of holdings of about 50,000 in the digital form are made available for access across the campus network. Complete in-house publications are digitized and published via the web portal.

Library Gateway site provides compilation of information resources including the new arrivals, newly added records, Another important digital initiative is the creation of “Subject specific gateways”, which makes access to information on a particular topic easy to the patrons by bringing all the information on the given topic at one place.

Scientific Information Resources Division is equipped with” Advanced Radio Frequency Identification (RFID) based circulation system, Self-check-in and check-out stations, Shelf & Inventory Management Readers and Electronic Article Surveillance (EAS) Gates, making it one of the digitally well-equipped information resource centre.

Various institutional repositories are provided to patrons like IGC Publications, Research articles of IGCAR, Knowledge Management Documents of Fast Reactor, Image archives etc. Initiatives have been taken to build knowledge domains on various aspects of nuclear technology which aims to empower meaningful information retrieval. For example, Subject gateways on metallic fuel and fuel reprocessing have been developed with necessary bibliographic and full text information.

Organised four Bi-annual Recent Advances in Information Technology (READIT) with varying themes connected to Library and Information Science. Played important role and provided leadership in organizing these meetings as Convener and Chairman of the Organising Committee.

Served as the Chairman of Library and Information Science Committee, responsible for identifying the information resources required for IGCAR and allocation of budget for subscribing and procuring the journals, databases and books.

Served as a member of the committee at DAE level which has the responsibility of finalizing the agreement for consortium with Elsevier.

Education:

- Master's degree in Chemistry from Andhra University, and was awarded Prof. Nil Rathan Dhar Prize in Physical Chemistry.
- Doctoral degree from University of Madras.
- Postdoctoral work at Texas A&M University, College Station, Texas, USA and Research Centre, Julich, Germany
- Conferred **Doctor of Science (Honoris Causa)** by Dr MGR University, Education and Research Institute

Positions held

- Director, Resources Management Group, IGCAR
- Dean (Student Affairs) and the coordinating Dean of HBNI at IGCAR
- Visiting Scientist at Nuclear Research Centre (KFA), Julich, Germany 1988-1989, under Indo-German Bilateral Collaboration
- Post-Doctoral work at:
 - (i) Texas A&M University, College Station, Texas, USA (1996-1997)
 - (ii) Research Centre, Julich, Germany (1997-1998)
- Visiting Scientist at Research Centre (KFA), Julich, Germany in 2000
- Adjunct Professor: PSG College of Technology, Coimbatore
- "Official Spokesperson" of IGCAR.

Currently:

- Member of Editorial and Scientific Committee of the International Journal of Nuclear Knowledge Management published by WONUC.
- Adjunct Professor: at Amrita University, Coimbatore

Scientific Contributions:

- A key member of the team that established and nurtured the research in the domain of mass spectrometry at Chemistry Group to international acclaim. He has carried out extensive thermo-chemical investigations and modeling to assess fission product tellurium induced clad attack in fast breeder reactors.
- He is instrumental in standardizing methods for analysis of nuclear fuel solutions irradiated in a nuclear reactor to determine burn-up (a measure of how much energy has been extracted from a nuclear fuel in a nuclear reactor), nuclear material input accountability and fission gas analysis of fast reactor fuels.
- He has also established a new experimental programme for measurement of equilibrium vapour pressures by transpiration method based on Thermogravimetry.
- His research work on Fullerenes was highly appreciated. First to report the partial pressures of fullerenes and electron impact ionization cross section of Buckminster fullerene molecule (C₆₀) and C₇₀.

- He formulated a new computational model to predict the carbon-to-metal ratio (C/M) as a function of burn-up, applicable to mixed carbide fuels with high plutonium content, the results of which were crucial to obtain safety clearances for taking the high plutonium content fuel of Fast Breeder Test Reactor to higher burn-ups.
- As member secretary of the Task force on “Fuel Specifications” has been very actively involved in drafting the specifications for mixed oxide fuel for PFBR and mixed carbide fuel of FBTR.

Management Contributions:

- The group under his leadership has contributed towards formulating the capital projects for getting funds under five-year plan projects (XI and XII). Dr. Sai Baba is one of the key persons, representing the Indira Gandhi Centre for Atomic Research in various forums for obtaining approvals both within in the Department and with the Planning Commission/NITIAYOG. Monitoring of the both physical and financial progress and providing inputs to various monitoring agencies is one of the important assignments executed by his group under his leadership.
- Provided commendable leadership in providing access to Scientific Information Resources with considerable ease, catering to the varied needs of researchers and large community of students. Employing innovative and advanced principles of information technology, access to information resources at IGCAR has been enhanced.
- e-governance towards paperless office: Has been instrumental in implementing the work flow automation (ATOMS) at IGCAR, to aid moving towards paperless office. A user-friendly interface for data management relating to personnel, administrative, accounts, purchase and stores, which has received wide appreciation and has the potential for being adopted by other DAE units, as well. Implemented in some of the DAE units.
- Provided leadership in enhancing the activities relating to “Technology Transfer and Intellectual Property Rights” at IGCAR. Served as Chairman of the Committee dealing with Intellectual Property Rights and was Co-Chairman of the cell for Technology Transfer and Intellectual Property Rights.

Institution Building and Academic Managemnet

- **BARC Training School at IGCAR:** Made outstanding contributions to realise the dream of starting the BARC Training School programmes at IGCAR. He has played a pivotal role in formulating the academic content including commencement of new disciplines of Nuclear Reactor Physics, Nuclear Fuel Cycle Chemistry and Materials Science. He has put in commendable efforts in realising the necessary infrastructure for the Training School and the hostels, in a record span of time. 11 batches have graduated from the Training School and the 12th batch was undergoing training (at the time of superannuation).
- **Research Scholars at IGCAR:** Played an important role in formulating the procedures and implementing the Homi Bhaba National Institute (HBNI) programmes at IGCAR, right from its inception. He has played a pivotal role in creating necessary ambience for research scholars both at the Centre and at the Hostels.
- **Contributions to HBNI at IGCAR**
 - The Convener of the Apex coordination committee responsible for organizing the HBNI activities at Indira Gandhi Centre for Atomic Research.
 - Served as Member of the Standing Committees of Engineering, Physical and Chemical Sciences of HBNI at IGCAR. Also as the convener of the Standing Committee of Engineering Sciences.
- **As a Research Supervisor:** Under his guidance:
 - Five students have completed their doctoral work and received the degrees.
 - Currently two students are pursuing their Ph.D. programme with r HBNI
 - Served as a co-guide for one Ph.D. student with HBNI.
 - Two students are pursuing their PhD in the domain of Information Sciences.
 - Two students have completed their M.Tech. under HBNI.
- Served as a member of:
 - Board of Studies of Chemical Sciences, HBNI

- Board of Studies on Applied Systems Analysis, HBNI
- (Served as) Board of Studies of Department of Library and Information Sciences of University of Madras
- Currently: Board of Studies of School in Physical & Nuclear Chemistry and Chemical Oceanography, Andhra University
- Served as Convener of the committees responsible for selection of:
 - Research Associates
 - Visiting Scientists
- Served as Chairman of the committees for the selection of research scholars from the disciplines:
 - Nuclear Science & Technology
 - Library and Information Science
- Served as Convener of the committee responsible for allocation of research projects to the scholars joining the Centre for pursuing their doctoral programmes with HBNI.
- Convener of the committee responsible for assessing the suitability of applicants for pursuing higher studies at reputed academic institutes like IIT and IISc.
- Convener of the committee with the mandate to assess the collaborative projects seeking funds under BRNS from various agencies.
- One of the nodal persons to interact relating to M.Tech programmes in Nuclear Engineering at various academic institutes which include IIT-Madras, UPES, Dehradun, PDP, Gandhi Nagar and University of Delhi.

Editorial Contributions

- Member of editorial committee of 7 Books/Proceedings
- Chairman of the Editorial committee of (i) IGC Newsletter (quarterly publication) and (ii) IGCAR Annual Report

Publications

- Co-author of: 56 journal publications, 173 papers in symposiums/conferences and 4 confidential reports
- Authored 7 chapters in Books/Proceedings.
- Edited 7 Books

Invited Talks

Dr. M. Sai Baba has delivered several invited talks (more than 70 in the recent years) in various topics and notable among them are:

- High Temperature Mass Spectrometry
- High Temperature Chemistry and Thermodynamics
- Human Resource Development
- Technical Writing
- Library and information sciences
- Self-Motivation for Enhanced Performance
- IGCAR and its Mission
- Atomic Energy for Energy security and Enhancement of Quality of Life

Chaired sessions and has been invited speaker at the Nuclear Energy Summits held at Mumbai for the last few years

Organising Seminar and Conferences:

Took active part in organization number of Seminars and Conferences.

1. The Bi-annual Recent Advances in Information Technology (READIT) (four, 2009,2001,2013 and 2016)
Chairman of the Organising Committee

2. Mass spectrometry in Fuel Cycle
Convener
3. Convener of the Institute Lecture series at Indira Gandhi Centre for Atomic Research like
(a) IGC Colloquium (b) Sarabhai Lecture (C) Homi Bhabha Lecture

Awards:

1. Winner of **Prof. Nil Rathan Dhar Prize** in Physical Chemistry for the course of Masters in Chemistry, Andhra University, Visakhapatnam
2. Conferred **Doctor of Science (Honoris Causa)** by Dr MGR University, Education and Research Institute
3. **DAE Group Achievement Award:** Member of the Team that won the award for the contributions to
“Collaborative Research Coordination under BRNS and Outreach Activities for Human Resource Development
4. **Fellow** of Academy of Sciences, Chennai and Member of the Executive Council
5. **Best Paper Awards:** Many of the research papers (nine teen) co-authored by me have won **Best Paper Awards**
6. **Life member of several professional bodies**