

Prof. 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. 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.

Present work includes, obtaining effective and informative insights on managing public perceptions and public acceptance of public risks associated with new and emerging technologies, through science and technology communications. Developing platforms for enhancing interaction between scientists and public using conventional and nonconventional media of communication. Outlining strategies based on science and technology communication to manage the fear of hazards from novel technologies possessed by the public. The domains being studied include: Artificial Intelligence(AI), Exposure to Radiation especially the low-level radiation and various dimensions of what has happened in the Kerala and Kodagu with a focus on the natural resource management, risk mitigation, efficient flood management and effective communication of the risk between different strata of decision makers and non-expert general public, during a disaster.

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.

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 the Advisory Board, Governing Council of Hindustan Institute of Maritime Training Group of Educational Institutions, Chennai, Run under the ShriKrishna Educational Trust, Madhurika Educational and Charitable Trust, HIMT College Trust & HIMT Offshore.
- 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:

- Served as a member of all the decision-making bodies of Indira Gandhi Centre for Atomic Research, Scientific Committee of Indira Gandhi Centre (IGCSC), Directors Advisory Committee (DAC), Stores & Purchase Committee (SPC), Indira Gandhi Centre Council (IGC Council, the highest governing body of the Centre).
- Served as a member of the Management Committee of General Services Organisation, Kalpakkam
- Served as a member of some of the Specialist Groups constituted by Secretary, DAE for assessing and evaluating the new capital projects of all the DAE units.
- 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 was 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.
- 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.

- 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.
- Convener of the “Neighborhood Development Program” at Kalpakkam, a program initiated to contribute to the development of villages in the neighborhood. The program aimed to uplift the quality of life in surrounding villages in terms of better education, healthcare, infrastructure and community development.
- As the “official spokesperson” he has been continuously interacting with local public, students and the media, organising exhibitions and lectures to dispel the doubts and fears on nuclear energy in the minds of the people.
- Member of several professional bodies and served as Vice-president, Indian Society for Mass Spectrometry, (outside Head Quarters) for six years and as an executive committee member for several years.
- Served as Vice Chairman of the Local Management Committee of Atomic Energy Education Society Schools at Kalpakkam and Anupuram.
- Served as a member of committees constituted by Chairman, Atomic Energy Education Society, an autonomous unit of Department of Atomic Energy, Mumbai to discuss issues relating to governing the schools of the Atomic Energy Education Society. Cadre review of the Administrative cadre of Atomic Energy Educational Society being one of them.

Institution Building and Academic Management

- **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 Bhabha 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 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: 58 Journal publications, 177 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 85 in the recent years) in various topics and notable among them are:

- Science and Risk Communication
- Access to Information in the digital era
- Technical Writing
- Self-Motivation for Enhanced Performance
- Human Resource Development
- High Temperature Chemistry and Thermodynamics
- Library and information sciences
- 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** and Member of the Executive Council of **Academy of Sciences, Chennai**
5. **Best Paper Awards:** Many of the research papers (twenty) co-authored by me have won **Best Paper Awards**