

**Profile of Dr. BALDEV RAJ, Distinguished Scientist & Director  
Indira Gandhi Centre for Atomic Research, Kalpakkam**

1. Full Name : **Dr. BALDEV RAJ**  
 2. Date of Birth : 09 April 1947  
 3. Address : Distinguished Scientist & Director  
 Indira Gandhi Centre for Atomic Research  
 Kalpakkam 603102, Tamil Nadu, India  
 4. Academic & Professional Qualification

Degree	Year	College/University	Subjects
B.E.	1969	Ravishankar University, Raipur	Metallurgy (*)
Post-graduate Training	1970	Bhabha Atomic Research Centre, Trombay, Mumbai	Nuclear Engineering with emphasis on Nuclear Metallurgy
Ph.D	1989	Indian Institute of Science, Bangalore	Faculty of Engineering (**)
D.Sc.	2006	Satyabhama Deemed University, Chennai	
D.Sc.	2009	SASTRA University, Thanjavur	

(\*) Gold Medalist in all branches of Engineering

(\*\*) Faculty of Engineering, in collaboration between Metallurgy & Aerospace Engineering Departments. Highest CGPA in the Semester with record of taking examination in 22 grade points in one semester.

5. Positions held

Institution	Department	Designation	Period
Bhabha Atomic Research Centre, Mumbai	Department of Atomic Energy	Scientific Officer	1970-73
RISO National Laboratory, Denmark		Visiting Scientist	1973-74
Radiometallurgy Lab., Indira Gandhi Centre for Atomic Research, Kalpakkam	Department of Atomic Energy	Group Leader	1974-81
Radiometallurgy Lab., Indira Gandhi Centre for Atomic Research, Kalpakkam	Department of Atomic Energy	Head	1981-86
Divn. For PIE & NDT Development, IGCAR	Department of Atomic Energy	Head	1986-93
Metallurgy & Materials Group, IGCAR	Department of Atomic Energy	Director	1993-2004
Fraunhofer Institute for NDT, Saarbrucken, Germany		Visiting Scientist	Oct.-Dec. 1998
Chemical & Reprocessing Groups	Department of Atomic Energy	Director	1999-2004
Indira Gandhi Centre for Atomic Energy	Department of Atomic Energy	Director	1.5.2004 onwards

Dr. Baldev Raj, BE, Ph.D. D.Sc. (h.c.), is a Distinguished Scientist and Director, Indira Gandhi Centre for Atomic Research, Department of Atomic Energy, Government of India. He is leading many successful programmes at IGCAR involving development of materials, fabrication technologies, nondestructive testing techniques, corrosion science and technology, characterization of microstructural evolution during ageing, creep and fatigue, numerical modeling for simulating deformation processes, failure analysis, and life extension. These programmes have met the primary objective of maturing science and technology for fast breeder reactors and fuel reprocessing programmes. In addition, his contribution has been, in making available, the extensive experience and expertise of himself and his colleagues to a large number of applications in industries and cultural heritage. His expertise has been uniquely harnessed by strategic sectors, industries and educational institutes. Department of Science & Technology, Council of Scientific & Industrial Research and Department of Culture have used his expertise for national programmes and missions. International Atomic Energy Agency values him as an expert in materials research and technology, fast reactor with fuel cycle and utilizes his abilities to carry out assignments.

Dr. Baldev Raj, in his chosen area of specialization, namely science and technology of materials and component evaluation by nondestructive techniques, is a world renowned expert, with more than 650 publications in high impact journals, books and monographs. His work is widely cited and acclaimed for scientific contents providing practical solutions to challenging problems. Elsevier Science Publishers invited him to be the Subject Editor in the area of NDT and Mechanical Testing, Encyclopedia of Materials: Science & Technology, published in 2001. This distinct honour of an editorial position in a major reference book speaks about his stature internationally. He has also been invited to serve on the editorial board of reputed journals in India and abroad and be Chairman and members of many scientific events both nationally and internationally. Dr. Baldev Raj has been adjudged as the best researcher for the year 200-2004, when he won the first Researcher Award (Sokolov Award) of the International Committee on NDT, with participants from over 40 countries.

The notable scientific contributions of Dr. Baldev Raj include:

The application of acoustic emission technique for detailed understanding of dislocation dynamics, deformation process, detection of early fatigue damage and oxidation processes. He discovered acoustic amplification during deformation.

For the first time, Dr. Baldev Raj has identified couplant independent ultrasonic spectral parameters for characterization of microstructures in steels, thus paving the way for online process monitoring applications.

Through systematic analysis of ultrasonic data, he has brought out a new correlation between two independent elastic properties, the ultrasonic shear wave velocity and Poisson's ratio, in a wide variety of isotropic solid materials, such as pure metals, ceramics, polymers and intermetallics.

Dr. Baldev Raj has applied for the first time, anywhere in the world, an advanced impact echo technique for assessing the integrity of the ring beam, one of the critical components of a nuclear reactor containment building. He has extended this technique to Delhi Iron Pillar, a monument of international significance dating back to early 4<sup>th</sup> Century.

Dr. Baldev Raj has proposed a two stage process of irreversible magnetic domain wall movement during magnetization of ferromagnetic materials to correlate the Magnetic Barkhausen emission parameters with evolving microstructures during tempering, tensile deformation and fatigue damage.

He has developed more than ten innovative sensors and associated instrumentation, which have found applications and resulted in patents. An example of application is an in-house state-of-the-art intelligent imaging system, using artificial neural network, for automatic eddy current testing and three dimensional characterization of defects in electrically conducting materials such as the austenitic stainless steel plates and welds.

Dr. Baldev Raj has developed and patented a colloidal force microscope, for in-situ measurement of very weak forces ( $10^{-13}$ N to  $10^{-11}$ N) between individual colloidal particles that provides valuable insights into colloidal stability.

He has more than 750 publications in leading national and international journals, referred books, manuscripts of status articles, honour, plenary, key note and invited lectures, He has co-authored 12 books and co-edited 32 books and special journal volumes. He has 5 Indian Standards and 18 patents to his credit. He is Editor-in-Chief of two series of books: one related to NDE Science & Technology and another related to Metallurgy & Material Science. He has contributed 9 articles in

Encyclopaedia and a large number of reviews. He has been invited to more than 30 countries for plenary and keynote talks in leading conferences and forums.

Dr. Baldev Raj has characterized Restless Delhi Iron Pillar, South Indian Bronzes and Musical Pillars of Hampi with insitu metallography and corrosion measurements and other nondestructive testing methodologies based on electro-magnetic and acoustic principles. The work has been acclaimed.

He has nurtured and mentored students in primary schools, high schools, undergraduate and post-graduate levels through interactive and innovative programmes. He has mentored a large number of researchers, technologists and administrators to achieve success in challenging domains of science based technology in diverse interdisciplinary domains of high significance. He is responsible for holistic management of Kalpakkam Complex with about 20,000 residents. This responsibility includes management of schools, hospitals and surrounding villages. He managed post-Tsunami (December 2004) at Kalpakkam Complex (nuclear facilities and township) with technologically sound, efficient and sensitive ways.

Dr. Baldev Raj has been the past-President of International Committee on NDE and Indian Institute of Metals, and is a Director on the Board of International Institute of Welding. He has won many awards and honours, notable among them being the National Metallurgist Award (1986), AEWG (I) Gold Medal (1994), GD. Birla Gold Medal (1996), MRSI-ICSC Superconductivity a Materials Science Annual Prize (2004), Life Time Achievement Award of Indian Society for Nondestructive Testing (2004), Indian Welding Society (2004), Jaeger Lecture Award of International Institute of Welding (2004), International Researcher Award of International Committee on NDT (2000-2004), Indian Nuclear Society Award (2004) and Stanley Ehrlich Distinguished Lecture.

Dr. Baldev Raj is a Fellow of the Third World Academy of Sciences, Indian National Science Academy, Indian National Academy of Engineering, Indian Academy of Sciences, Bangalore and The National Academy of Sciences, Allahabad. He is a recipient of Padma Shri, one of the highest civilian honours from the Govt. of India in the year 2007. Dr. Baldev Raj is member, Scientific Advisory Council to Prime Minister and Nano Science a Technology Mission of Department of Science & Technology, Government of India.

Dr. Baldev Raj has very successful and sustained collaborations with Fraunhofer Institut fur Zerstorungsfreie Prufverfahren (IzfP), Saarbrucken in the area of NDE science & technology, Staaatliche Materialprufungsanstalt (MPA), Stuttgart in the area of mechanical deformation and fracture toughness, Forschungszentrum, Juelich in the are of high temperature corrosion and mechanical properties, BAM, Berlin in the area of digital radiography and evaluation of concrete materials and structures and Institute for Metallic Materials (IFW), Dresden in the area of corrosion science & technology. All these collaborations over three decades have resulted in significant high quality research leading to enhanced technological solutions.

His interests include technology management, heritage, philosophy, theosophy and education. He is an acclaimed specialist in the area of archeometallurgy and education.

### **Distinction with Industries**

Dr. Baldev Raj is valued by industries for science based technology and mentoring of young and senior professionals.

A few examples:

1. Building cutting edge competence in engineering manufacturing  
Baldev Raj  
Lecture delivered to Visionary Corporate Leaders for Manufacturing (VLFM), organized by Confederation of Indian Industries, Gurgaon, December 22, 2008.
2. Science & technology challenges in India: Academy, research & industry collaborations  
Baldev Raj  
**First Address in the Series of 70<sup>th</sup> Year Tata Steel R&D**, Tata Steel, Jamshedpur, September 12, 2007  
Tata Steel is one of the large and distinguished steel makers in the world.

3. Opportunities and challenges in realizing fast reactor and associated fuel cycle technology in India  
Baldev Raj  
Delivered to Management of Larsen & Toubro Ltd. (L&T), Hazira and Powai works, March 28 & 31, 2008 under the auspices of L&T **GURU SPEAKS**
4. A perspective on career management for young scientists and engineers  
Baldev Raj  
Delivered to Management of Larsen & Toubro Ltd.(L&T), Hazira and Powai works, March 28 & 31, 2008 under the auspices of L&T **GURU SPEAKS**

Larsen & Toubro Ltd. is one of the distinguished heavy engineering manufacturing, infrastructure and software company in the world.

5. Baldev Raj  
Honour Award Lecture on Corrosion Prevention Management delivered to young and senior management of Gujarat State Fertilizers Corporation, Vadodara
6. Member, Advisory Committee of M/s. Ashok Leyland, one of the premier industry in transport sector.
7. Member, NTPC Energy Technology Research Advisory Council (6 Member empowered Advisory Committee constituted by National Thermal Power Corporation of India Lt. for effective R&D systems and in-house and collaborative research work)

#### **Distinctions with Educational Institutes**

1. Course on Current Research & Developments in Materials for Mega Energy Systems  
Baldev Raj  
PSG College of Technology, Coimbatore, December 29, 2008
2. Sustainable Nuclear Energy: Materials Challenges  
Baldev Raj  
Knowledge Leadership Forum, SASTRA University, Thanjavur, August 8, 2008
3. Marvels of Indian Bronze – Gods come alive  
Baldev Raj  
Institute for South Asia, Tibet and Buddhism of Vienna University, Vienna, Austria, June 15, 2007
4. Nuclear energy programme of India: Vision and challenges  
Baldev Raj  
Bharat Ratna C. Subramaniam Memorial Endowment Lecture, University of Madras, Chennai, March 29, 2007
5. Pursuit of Science : Joy and Pride  
Baldev Raj  
18<sup>th</sup> Foundation Day Lecture, DAV Public School, Bhubaneswar, August 5, 2006
6. Development of Fast Breeder technology in India: Status and directions  
Baldev Raj  
Prof. E.C. Subba Rao Memorial Lecture, Indian Institute of Technology, Kanpur (2006)
7. Pursuit of science : Joy and pride – Fascination and excitements of materials scientist  
Baldev Raj  
Meet the Distinguished Scientist programme to students of X to XII standards of Chennai schools under the auspices of The National Academy of Science, Allahabad (2005)
8. A perspective on energy security strategies for India  
Baldev Raj  
Technology Day Celebration, Indian Institute of Technology Madras, Chennai, May 11, 2002
9. FY2009 Japan Society for the Promotion of Science Invitation Fellowship Program for Research in Japan, Nagoaka University of Technology, Japan, May 18 to June 6, 2009-04-09

## Distinctions with Professional Bodies

1. Science and technology of fast breeder reactor programme in India: Challenges and achievements  
Baldev Raj  
Prof. Jai Krishna Memorial Award Lecture, Annual Convention of Indian National Academy of Engineering, Goa, December 5-6, 2008
2. Science and technology of fast reactor materials: Challenges and achievements  
Baldev Raj  
Distinguished Materials Scientist Award Lecture, Annual Meeting of Materials Research Society of India, Kolkata, February 10-12, 2009.
3. Design and performance of Fast Reactor fuels for achieving energy sustainability and security  
Baldev Raj  
Dr. P.R. Roy Memorial Lecture, Powder Metallurgy Association of India, February 20, 2008
4. Fast reactor programme and associated fuel cycle facility : In the context of Indian nuclear scenario  
Baldev Raj  
Prof. K.S.G. Doss Memorial Lecture, Fourteenth National Convention of Electrochemists, Society for Advancement of Electrochemistry Science & Technology, December 6, 2007
5. A perspective on materials science & technology programme at Indira Gandhi Centre for Atomic Research, Kalpakkam  
Baldev Raj  
Prof. A.K. Seal Memorial Lecture, Indian Institute of Metals, Kolkata, July 31, 2007
4. Acoustic techniques for materials research, characterization and performance  
Baldev Raj  
Stanley Ehrlich Gold Medal Distinguished Lecture, Madras-India Regional Chapter of the Acoustical Society of America & International Research Institute for the Deaf (IRID), India, Chennai, December 2006
6. Robust diagnosis of degradation in aerospace structures using NDE methodologies  
Baldev Raj  
Prof. P. Joga Rao Memorial Lecture, 14<sup>th</sup> National Seminar on Aerospace Structures, Indian Aeronautics Society, Visvesvaraya National Institute of Technology, Nagpur, January 30, 2006
7. Materials challenges for energy security of India  
Baldev Raj  
Presidential address: 43<sup>rd</sup> National Metallurgists' Day and 59<sup>th</sup> Annual Technical Meeting of The Indian Institute of Metals, Chennai, November 12, 2005
8. Pursuit of Science : Joy and pride – Fascination and excitements of materials scientist  
Baldev Raj  
Prof. Brahm Prakash Memorial Lecture, Indian Institute of Metals, Kalpakkam (2005)
9. Welding research in India – Current interests & future directions  
Baldev Raj  
Jaeger Lecture, International Institute of Welding, Mumbai, February 16, 2005
10. Welding science & technology : Past, present and future – A journey through our experience at IGCAR  
Baldev Raj  
Life Time Achievement Award, Indian Welding Society, Indian Welding Society, Hyderabad, February 18, 2005
11. Science and technology of ferrofluids  
Baldev Raj  
MRSI-ICSC Superconductivity & Materials Science Annual Prize lecture, Materials Research Society of India, Pune (2005)

12. Robust fast breeder reactor and associated fuel cycle technology towards energy security  
Baldev Raj  
Prof. R.V. Tamhankar Memorial Lecture, Indian Institute of Metals, Hyderabad (2005)
13. Robust inspection technology at IGCAR, Kalpakkam  
Baldev Raj  
Life Time Achievement Award, Indian Society for Nondestructive Testing, December 2004
14. Welding technology  
Baldev Raj  
Presidential address, National Welding Seminar, Indian Institute of Welding, Kolkata, January 23-25, 2003
15. Challenges in materials development for energy systems  
Platinum Jubilee Lecture, 83<sup>rd</sup> Indian Science Congress, Patiala, January 1996
16. Fresh insights into microstructure, deformation and processes using nondestructive methodologies  
Baldev Raj  
G.D. Birla Gold Medal Lecture presented at the Golden Jubilee Annual Technical Meeting of the Indian Institute of Metals, New Delhi, November 1996
17. Presidential address – 14<sup>th</sup> World Conference on NDT, organized by International Committee on NDT, New Delhi, December 8-13, 1996
18. A perspective on material characterization for technology advancement and industrial growth – Emphasis on nondestructive evaluation  
Presidential Address – Materials Science Section, 82<sup>nd</sup> Indian Science Congress, Kolkata, 1995. Published as a Special Issue of Bulletin of Materials Science (Presidential Address, Platinum Jubilee and Invited Lectures at the 82<sup>nd</sup> Indian Science Congress, Kolkata, January 1995 – 19(6) (1996) pp. 839-856
19. Towards improved reliability of welded structures  
Keith Hartley Memorial Lecture, National Welding Seminar, Kolkata, November 1992
20. Analytical nondestructive evaluation for materials characterization  
Baldev Raj  
MRSI Medal Lecture – Presented at the Third Annual General Meeting of the Materials Research Society of India, Bangalore, February 9-11, 1992

### **National Distinctions**

1. Fast breeder technology: A passionate journey for providing energy security to India through nuclear energy  
Baldev Raj  
Guest of Honour lecture to young trainees, Defence Institute of Armament Technology, Pune, June 8, 2006
2. Metallurgy in ancient India  
Baldev Raj  
Nehru Centre Lecture Series on "Science in India: Past and present", Mumbai, January 4, 2003
3. NDE – Current national status and priorities  
Baldev Raj  
National Seminar on Application of Advanced Technology in the Field of Testing and Evaluation of Materials, Platinum Jubilee Session of National Test House, Kolkata, November 1988
4. Chairman, Research Council, National Metallurgical Laboratory (a premier Metallurgy & Materials Research Laboratory of India)
5. Member, Governing Body, Sree Chithra Tirunal Institute of Medical Sciences & Technology, Thiruvananthapuram (a premier institute for research in healthcare)
6. Member, Board of Management, International Centre for Materials Science, Bangalore
7. Member, Governing Council of Engineering Council of India
8. Member, Scientific Advisory Council to Prime Minister of India (SAC-PM), Govt. of India
9. Member, Scientific Advisory Committee to Cabinet, Govt. of India

10. Member, Eminent Persons Group (EPG) to give direction and guidance to the Ministry of New & Renewable Energy
11. Chairman, National CODAT Committee of Indian National Science Academy
12. Member, Nanoscience & Technology Mission Council, Department of Science & Technology, India
13. Member, Governing Council of Homi Bhabha National Institute (Deemed University)
14. INAE-AICTE Distinguished Professor of Indian Institute of Technology Madras, Chennai, PSG College of Technology, Coimbatore and Vellore Institute of Technology (Deemed University), Vellore
15. Distinguished Professor, Institute of Chemical Technology (Deemed University), Mumbai (a premier chemical technology institute in the country)
16. Member, Scientific Advisory Council of School of Engineering Science & Technology (SEST), Central University of Hyderabad to guide and extend expertise in nuclear materials and nanostructured materials & their processing to formulate the courses in Post-graduate and Ph.D. programmes in Materials Engineering.

### **International Distinctions**

1. Status of sodium cooled fast reactors with closed fuel cycle in India  
Baldev Raj  
Director's colloquia, Los Alamos National Laboratory, USA, July 10, 2007
2. An overview of materials technology at IGCAR  
Baldev Raj  
Institut de Soudure, Villepinte, France, May 10, 2007
3. Member, National Nanotechnology Advisory Board, Department of Science & Technology, South Africa (2008-2011)
4. Member, Global Energy International Prize Committee, Russia (Equivalent of Noble Prize in Energy)
5. Member, Board of Advisors, The AI Gore Sustainable Technology Venture Competition, India
6. Member, Indo-US Research Fellowship Award Committee under the auspices of Indo-US Science & Technology Forum in association with SERC of the Department of Science & Technology
7. Co-Founder, Global Forum on Structural Longevity
8. Member, Standing Advisory Group on Nuclear Energy (SAGNE), International Atomic Energy Agency
9. Scientific Advisor to Proposal for Singapore Institute of Nuclear Science & Engineering Research (SINSER), National University of Singapore
10. Adjunct Professor & Hon. Consul General, Department of Electrical & Computer Engineering, Michigan State University, USA (2009-2011)
11. Member, International Nuclear Energy Academy
12. Member, Australia India Science & Technology Research Award on "Energy Generation in a Low Carbon Future" instituted by Australian Academy of Technological Sciences and Engineering in association with Australian Government's Australia India Council

## **Membership of Academies and Societies**

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Member, International Nuclear Energy Academy  
Member, German National Academy of Sciences  
Fellow of Third World of Academy of Sciences  
Fellow of Indian National Academy of Engineering  
Fellow, Indian National Science Academy  
Fellow of Indian Academy of Sciences, Bangalore  
Fellow of The National Academy of Sciences, India, Allahabad  
Fellow of Tamil Nadu Academy of Sciences  
Fellow of Institution of Engineers (India)  
Fellow of Indian Institute of Metals  
Fellow of Acoustic Society of India  
Fellow of Ultrasonic Society of India  
Fellow of International Institute of Quality Assurance, UK  
Honorary Member, International Committee on NDT (only 12 professionals in the world)  
Honorary Member, Hellenic Society of NDT, Greece (only one in Asia)  
Honorary Member, Indian Institute of Metals  
Honorary Fellow, British Institute of NDT (only one from Asia)  
Honorary Fellow, Indian Society of NDT (the youngest to get the honour)  
Honorary Fellow, Indian Welding Society  
Life Fellow, International Longevity Centre-India

President, International Committee on NDT (1992-96)  
President, 14th World Conference on NDT (December 1996, India)  
President, Indian Institute of Metals (2005-06)  
President, Indian Institute of Welding (2001-2002)  
Vice President, International Institute of Welding (2009-2011)  
Vice President, Materials Research Society of India (2008-2011)  
Vice President, Academia NDT International  
Vice President (Academic, Professional & International Affairs), Indian National Academy of Engineering (2008-2011)  
Chairman, Policy & General Purpose Committee, ICNDT (1996-2004)  
Chairman, Metal Sciences Division and Vice President, IIM (2004-05)  
Chairman, IIM Kalpakkam Chapter (1995-2001)  
Chairman, Services to Industry Committee of IIM (2001-2003)  
Chairman Committee to make Heritage Film on 50 years of IIM  
Co-chairman, Technical Committee, Golden Jubilee Celebrations of IIM  
Chairman, Indian Nuclear Society, Kalpakkam Branch (2004 - ...)  
President, NACE International Southern Region (2004 - ...)  
Member, Sectional Committee on Metallurgy, Mining and Materials Science of INAE (1998-2001)  
Member, Engineering Heritage Committee (Metallurgy) of INAE (1996-2003)  
Chairman, Engineering Heritage Committee (Metallurgy) of INAE (2003- ...)  
Foreign Secretary, Indian National Academy of Engineering (2005 - ...)  
Chairman, Working Group on Research & University Education, ICNDT  
Founder Member, Board of Directors, World Federation of NDE Centres, USA  
Chairman, Education Group, World Federation of NDE Centres (1998)  
Past-President, Acoustic Emission Working Group of India  
Patron, Acoustic Emission Working Group of India  
Past-President, Indian Group of International Society of Stereology  
Patron, Indian Group of International Society of Stereology  
President, Metal Sciences, 82nd Session of Indian National Science Congress (1994)  
President, Indian Society for Non-Destructive Testing (1997)  
Vice-President, Indian Institute of Welding (1994-96)  
Member, Asian Pacific Committee on NDT  
Founder Member, Asia-Pacific Academy of Materials  
Member, MRSI Council - Topic Chairman, Materials Characterization (1998-2001)  
Past-Chairman, Technical Committee comprising of 14 Commissions  
of Indian Institute of Welding (1990-1997)  
Chairman, International Technical Committee, International Welding Seminar - 1996  
Chairman, NDT Committee of the Bureau of Indian Standards (1996-2008)  
Foreign Secretary, Indian National Academy of Engineering (2005-06)  
Member, Board of Director, International Institute of Welding (2006-2009)

## National and International Distinctions

Member, Management Council, Recruitment & Assessment Centre, Defence Research & Development Organization (2005 ...)

Member, Committee on Centre for NDT, IIT Madras, Chennai, in collaboration with World Federation of NDE Centres and International Institute of Theoretical and Applied Physics, UNESCO, Iowa State University, USA

Chairman, 40 years of NDT activities of IAEA (participants from 10 countries), 1996, IAEA, Vienna

Member, Standing Advisory Group on Nuclear Energy (SAGNE), IAEA (2004 - ...)

Co-Chairman, Consultants Meetings on Digital Radiography for Industrial Applications, IAEA, Vienna, July 1998

Guest of Honour and Plenary Speaker on the occasion of 60<sup>th</sup> Anniversary of Chinese Mechanical Engineering Society

Guest of Honour and Plenary Speaker on the occasion of 40<sup>th</sup> Anniversary of Russian Society of NDT

Member, Advisory Board, NDE Centre, University of Massachusetts, USA

Member, Advisory Board, Material Science & Technology, CSIR (1996-1999)

Member, Project Management Board, Component Integrity Evaluation, CSIR (1996-1999)

Member, Board on Structural Integrity and Life Management, NML, CSIR (1997-2001)

Member, Research Council, National Metallurgical Laboratory (1996-200 & 2004-2006); Central Glass & Ceramic Research Institute (2001-2003) and Central Electrochemical Research Institute (2001- ...);

Chairman, Research Council, National Metallurgical Laboratory (2007-..)

International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI) (2003- ...)

Member, Divisional Scientific Committee on Structural Integrity, NAL, CSIR (1996- ...)

Member, Programme Advisory Committee on Metallurgy, Mining & Material Science of DST (1997-2000)

Member, Scientific Advisory Committee, Department of Culture and Science & Technology (2000-2004)

Co-Chairman, National Certification Board, Indian Society for Nondestructive Testing (2002-07);

Chairman, National Certification Board, Indian Society for Nondestructive Testing (2007- ...)

Member, Steering Committee, Life Extension of Fighter Helicopters and Aircrafts, Indian Air Force (1990- ...)

Member, Peer Review Committee, Fraunhofer Institute of NDT, Germany (2004)

Member, Scientific Advisory Council to Prime Minister (2005- ...)

Member, Scientific Advisory Committee to Cabinet, Govt. of India (2008...)

Member, Nanoscience & Technology Mission Council, Department of Science & Technology (2007...)

Chairman, Committee on Science & Technology of Department of Economic Affairs

Member, Committee on High Sensitivity Detection of Chemicals

Central Advisory Board of Archaeology (CABA), Archaeological Survey of India, Govt. of India (2005- ...)

Management Council of Defence Research & Development Organization for human resources strategies and member,

Academic Council of Anna University, Chennai

AICTE-INAE Distinguished Visiting Professor, Vellore Institute of Technology (University), Indian Institute of Technology Madras, PSG College of Technology, Coimbatore (2005)

Member, Board of Management, International Centre for Materials Science (2008 ...)

Member, Governing Body, Sree Chithra Tirunal Institute of Medical Sciences & Technology, Thiruvananthapuram (2008..)

Chairman, Confederation of Indian Industries-Corrosion Management Committee (2008 ...)

Member, Section Governing Board, NACE International India Section (2008 ...)

Adjunct Professor, University Institute of Chemical Technology, University of Mumbai (Best Chemical Science & Technology Institute in the country)

Adjunct Professor, PSG College of Technology, Coimbatore

Adjunct Professor, Satyabhama University, Chennai

Adjunct Professor & Hon. Consular General, Department of Electrical & Computer Engineering, Michigan University, USA (2009-2011)

Member, National Committee of Centre for Co-operation in Science & Technology in Developing Societies under the auspices of Indian National Science Academy (2005 ...)

Chairman, National CODAT Committee of Indian National Science Academy (2008...)

Member, Eminent Persons Group (EPG) to give direction and guidance to the Ministry of New & Renewable Energy (2008 ...)

Member, National Nanotechnology Advisory Board, Department of Science & Technology, South Africa (2008-2011)

Member, Global Energy International Prize Committee, Russia (Equivalent of Noble Prize in Energy) (2009...)

Member, Board of Advisors, The AI Gore Sustainable Technology Venture Competition, India (2009-...)

Member, Advisory Board of Summer School on Modeling, Experimentation & Validation (MeV), Idaho National Laboratory, Argonne National Laboratory & Idaho State University (2009 ...)  
Co-Founder, Global Forum on Structural Longevity (2009...)  
Member Indo-US Research Fellowship Award Committee under the auspices of Indo-US Science & Technology Forum (2009....)  
Member, Research Advisory Board of SRM University, Chennai (2009...)  
Member, Board of Director, Council of Academies in Engineering & Technological Sciences (CAETS) (2010-2011)  
Member, Dr. Yellapragada SubbaRow Award Advisory Committee (2009 ...)  
Member, Governing Council of Velammal Engineering College, Chennai (2009 ...)  
Member, Advisory Committee for Shanti Swarup Bhatnagar Prize 2009 (Engineering Sciences)  
Chairman, NTPC Energy Technology Research Advisory Council, National Thermal Power Corporation of India Ltd. (2009....)  
Member, Scientific Advisory Council of School of Engineering Science & Technology (SEST), Central University of Hyderabad (2009...)  
Patron, Society for Failure Analysis (2009...)  
Member Australia India Science & Technology Research Award on "Energy Generation in a Low Carbon Future" instituted by Australian Academy of Technological Sciences and Engineering in association with Australian Government's Australia India Council

### **Responsibilities in Department of Atomic Energy Committees**

Member, Governing Council, Institute of Plasma Research, Gandhinagar  
Member, Governing Council, Safety Research Institute, Atomic Energy Regulatory Board  
Member, Chairman's Advisory Committee, DAE  
Member, Board of Directors, Bharatiya Nabhikiya Vidyut Nigam Ltd. (BHAVINI)  
Member, Steering Committee on Nuclear Power Programme, DAE  
Member, Steering Committee on Nuclear Fuel Cycle  
Chairman, R&D Committee on Nuclear Fuel Cycle  
Member, Committee for Constitution of Homi Bhabha National Institute  
Member, Academic Council, Homi Bhabha National University (Deemed University)  
Member, Council of Management, Homi Bhabha National University (Deemed University)  
Chairman, Expert Visiting Committee of Homi Bhabha National University (Deemed University)  
Member, Board of Nuclear Fuel Complex  
Vice-Chairman, Safety Review Committee for Operating Plants, AERB (2002-2004)  
Member, Senior Selection Committee of Personnel  
Member, Apex Exploration Research Advisory Committee of the Atomic Minerals Directorate for Exploration & Research, Department of Atomic Energy  
Chairman, Monitoring Committee of CSIR Network Project  
Senior Professor, Homi Bhabha National Institute (University)

### **Editorial Responsibilities**

Member, Editorial Board, Advanced Science Letters, Germany  
Member Editorial Board, Indian Journal of Engineering & Materials Science  
Chief Editor, Golden Jubilee Commemorative Volume on Technology Development  
Subject Editor in the area of NDT and Mechanical Testing, Encyclopedia of Materials: Science & Technology, Elsevier Science Publishers, UK  
Advisor to the Chief Editor, Encyclopedia of Materials: Science & Technology, Elsevier Science Publishers, UK  
Member, International Editorial Advisory Board, INSIGHT, European Journal of NDT  
Principal Editor, Metal Sciences, Metal News  
Chairman, Publications Committee, Transaction of Indian Institute of Metals & Metal News  
Member, Editorial Board of Bulletin of Materials Science (1999- ...)  
Chief Editor, IGC Annual Report & IGC Newsletter (1982-2004)  
Member, Editorial Advisory Board, Journal of Nondestructive Testing & Evaluation, ISNT  
Member, Editorial Board, MAPAN, Journal of Metrology Society of India  
Member, Editorial Board of International Journal of COMADEM  
Editor-in-charge, Indian Institute of Metals-Universities Press Book Series on Materials Science & Technology

Editor-in-charge, ISNT-NCB Book Series on various NDT Methods, National Certification Board of Indian Society for Non-Destructive Testing, Narosa Publishing House in collaboration with ASM, USA and Alpha, Europe  
Member, Editorial Board of Steel Tech  
Member, Editorial Board of Asian Journal of Professional Ethics & Management  
Executive Editor, Journal of Structural Longevity  
Co-Editor, Special Issue on High Performance Structural Materials, Transaction of the Indian Institute of Metals

### **Trusts, Foundations & Educational Institutes**

Member, Dr. K.S. Krishnan Memorial Trust Alumni Association of G.S. Hindu High School, Srivilliputhur (2005)  
Hon. Secretary, Quality through Nondestructive Evaluation Science & Technology (QUNEST) Foundation (1994 - ...)  
Member, Trust for education of mentally challenged children at Kalpakkam (MEHATVA) (1998-2004)  
Member, Swarna Jayanti Endowment Trust of Indian Institute of Metals (2002)  
Member, National Association for Application of Radiation & Radioisotopes (NAARI) (2003 - ...)  
Member, Sundaram Venkataraman Trust for encouragement of science students and science & technology in Kalpakkam (2003 –2007)  
Chairman, Vidyalaya Management Committee of Kendriya Vidyalaya and Atomic Energy Central Schools at Kalpakkam (2004 - ...)

### **Awards & Honours**

Gold Medal in BE (among all Branches of Engineering, Ravishankar University, Raipur (1969))  
NDT Man of the Year from Indian Society for Nondestructive Testing (1985)  
National Metallurgist Award from Indian Institute of Metals (1986)  
MRSI Medal from Materials Research Society of India (1992)  
Sir C.V. Raman Award from Acoustical Society of India (1992)  
Keith Hartley Memorial Award from Indian Institute of Welding (1992)  
Vasvik Award from Vividhlaxi Audyogik Samshodhan Vikas Kendra, Mumbai (1994)  
AEWG Gold Medal from Acoustic Emission Working Group of India (1994)  
Grand Prize from Indian Institute of Metals (1995)  
G.D. Birla Gold Medal from Indian Institute of Metals (1996)  
Platinum Jubilee Lecture, 83<sup>rd</sup> Indian Science Congress, Patiala (1996)  
M.S. Narayanan Memorial Lecture Award from Acoustical Society of India (1999)  
National Metallurgist Day Lecture, IIM Salem Chapter (1999)  
Prof. Brahm Prakash Memorial Lecture Award from Thiruvananthapuram Chapter of Indian Institute of Metals (2000)  
Metallurgical and Materials Engineering Gold Medal from Institution of Engineers (India) (2000)  
3<sup>rd</sup> Kishore Kumar Memorial Lecture, Indian Institute of Metals, Baroda Chapter (2002)  
13<sup>th</sup> T.L. Rama Char Memorial Lecture, Electrochemical Society of India (2002)  
Raman-Chandrasekhar Award of Acoustical Foundation for Research & Education 2002  
Guest of Honour Lecture at Nehru Centre, Mumbai (2003)  
C.Y. Krishnamurthy Memorial Lecture, National Institute for Quality Research, Chennai (2003)  
1<sup>st</sup> V.S. Jain Memorial Lecture, Indian Society for Nondestructive Testing, Thiruvananthapuram (2003)  
Distinguished Scientist Award, Jaya Engineering College, Chennai (2004)  
The first International Committee on NDE Research Award (2000-2004). The best researcher internationally chosen among the 40 countries. The Award is given once in four years.  
Life Time Achievement Award of Indian Society for Nondestructive Testing (2004)  
MRSI-ICSC Superconductivity & Materials Science Annual Prize (2004)  
Life Time Achievement Award of Indian Welding Society (2004)  
Jaeger Lecture Award of International Institute of Welding (2004)  
Prof. R.V. Tamhankar Award, Indian Institute of Metals, Hyderabad (2005)  
Indian Nuclear Society Award by the Prime Minister of India (2005)  
NOCIL Award for Excellence in Process and Equipment by Indian Institute of Chemical Engineers (2005)  
Prof. Brahm Prakash Memorial Lecture for students of Class XI & XII, Indian Institute of Metals, Kalpakkam (2005)  
Dr. S. Bhagavantam Award for outstanding achievements and sustained leadership in Acoustics, Acoustical Society of India (2003-2004)  
Prof. P. Joga Rao Memorial Lecture, National Seminar on Aerospace Structure, Visvesvaraya National Institute, Nagpur (2006)  
Corrosion Awareness Award from NACE International India Section (2006)

Prof. E.C. Subba Rao Distinguished Lecture, Indian Institute of Technology, Kanpur (2006)  
Stanley Ehrlich Distinguished Lecture and Gold Medal, Acoustical Foundation for Education and Charitable Trust, India (2006)  
*(Stanley Ehrlich Gold Medal is presented to an eminent acoustician/ENT surgeon irrespective of nationality, or society affiliation to promote international brotherhood in the diverse field of acoustics. This is the highest award presented by International Research Institute for the Deaf, India to an individual whose dedication and devotion to acoustics are universally acknowledged)*  
1<sup>st</sup> Prof. A.K. Rao Memorial Lecture, ISAMPE (2006)  
National NDE Award for International Recognition, Indian Society for Non-Destructive Testing (2006)  
Padma Shri from Government of India (2007)  
Indian Science Monitor Award, Indian Science Monitor Foundation (2007)  
Prof. A.K. Seal Memorial Lecture, Indian Institute of Metals, Kolkata (2007)  
Director's Colloquia, Los Alamos National Laboratory, USA (2007)  
National Metallurgist Award (Research & Academia), Ministry of Steel & Indian Institute of Metals (2007)  
Distinguished Alumni Award for sustained excellence in Science & Technology, Indian Institute of Science (an eminent science Institute in India) (2007)  
Prof. A.K. Rao Memorial Lecture Award, Indian Society for Nondestructive Testing (2007)  
Prof. K.S.G. Doss Memorial Lecture, Society for Advancement of Electrochemical Science & Technology (2007)  
Lifetime Achievement Award, International Institute of Welding (2008)  
Dr. P.R. Roy Memorial Lecture, Powder Metallurgy Association of India (2008)  
Prof. Jai Krishna Memorial Award, Indian National Academy of Engineering (2008)  
Distinguished Materials Scientist Award, Materials Research Society of India (2009)  
Federation of Indian Chamber of Commerce & Industry Annual Award for Outstanding Research in Materials Science (2007-08)  
2<sup>nd</sup> Y.M. Mehta Memorial Award Lecture, Indian Institute of Metals (Vadodara & Mumbai Chapters) (2009)  
1<sup>st</sup> Dr.Sr. Annamma Philip Endowment Lecture, Stella Mary's College, Chennai (2009)  
Dr. Homi Bhabha Centenary Award, Nayudamma Centre for Development Alternatives, Nellore (2009)  
Smt. Rukmini Lakshminpathy Endowment Lecture, Women's Christian College, Chennai (2009)  
DAE Raja Ramanna Lecture in Physics, Jawarlal Nebru Centre for Advanced Scientific Research, Bangalore (2009)