



**CSIR - INDIAN INSTITUTE
OF TOXICOLOGY RESEARCH**



**COUNCIL OF SCIENTIFIC
& INDUSTRIAL RESEARCH**

Golden Jubilee Lecture

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Dr Baldev Raj

Director

National Institute of Advanced Studies
Bengaluru



50 Years of Service to the Nation



Dr Baldev Raj is the Director of the National Institute of Advanced Studies, Bengaluru, one of India's leading multi-disciplinary institutions. A distinguished scientist and former Director, Indira Gandhi Centre for Atomic Research in Kalapakkam, Dr Baldev Raj has helped advance several challenging technologies, especially those related to sodium cooled fast spectrum reactor with closed fuel cycle; a sustainable energy spectrum. He has also nurtured and grown excellent schools of global stature in nuclear materials and mechanics and nano science & technology. He has pursued his work in interdisciplinary domains of energy, cultural heritage, medical technologies, nano-science & technology and education. He has been responsible for providing solutions to many unsolved challenges in strategic, security and industry domains. He is known for

overcoming the barriers of academic research and industry with acumens of leadership and experiences.

The author of more than 970 academic papers in peer reviewed journals along with 75 books and special journal volumes, he has substantial and arguably one of the unparalleled achievements considering his contributions to realise technologies and large mission programmes. Dr Baldev Raj has been recognized by way of more than 100 awards, 380 honours, keynote, invited lectures and significant assignments in more than 30 countries. He is Editor-in-Chief of three series of books and Editor in several reputed national and international journals and publications.

Dr. Baldev Raj is a recipient of the Padma Shri award; Life Time Achievement Award of the Indian Nuclear Society, National Metallurgist Award by Ministry of Steel, the Homi Bhabha Gold Medal, Distinguished Materials Science Award, Materials Research Society of India, etc. He is a distinguished alumnus of Indian Institute of Science, Bengaluru. A member of the Circle of Advisors, Cambridge University, UK, and a member of the Search Group for the Queen Elizabeth prize in engineering, Selection Committee Global Energy Prize (both are being nurtured to the stature of Nobel Prize in Sciences).

Dr. Baldev Raj is Fellow of INSA, NASI, IAS, INAE, German Academy of Sciences and Third World Academy of Sciences, International Nuclear Science Academy, Academia NDT International, Indian Academy of Social Sciences, etc. He is the Chairman, Board of Governors of IIT Gandhinagar & NIT, Puducherry. A member of the Court of Jawaharlal Nehru University, Delhi, and President of the International Council of Academies of Engineering and Technological Sciences (CAETS). He is Honorary Member, International Medical Sciences Academy and Honorary Consul General of Michigan State University. He is Honorary Member, IIM, ICNDT, British Institute of NDT, ISNT, etc. He has been the Past President, Indian Institute of Metals, International Committee on NDT, International Institute of Welding, Indian National Academy of Engineering, Indian Society of NDT, Indian Institute of Welding, etc. He has been alternate Chairman of Senior Advisory Group of Nuclear Energy (IAEA, Vienna) and Chairman of Apex Committee of Nuclear Energy Systems [Atomic Energy Regulatory Board (AERB), India].

Dr Baldev Raj is known for mentoring hundreds of children, students, scientists and technologists, inspiring them to pursue high levels of professionalism in the pursuit of science and technology without losing sight of the need for exemplary ethical practices.



Energy Security: Foresight and Technologies

Baldev Raj

Director

National Institute of Advanced Studies, Bengaluru

President, International Council of Academies of
Engineering & Technological Sciences

Member, German Academy of Sciences; JC Bose Fellow, DST

Chairman, Board of Governors, IIT, Gandhinagar

Chairman, Board of Governors, NIT, Puducherry

Energy foresight for India is of paramount importance to have security with sustainability. Foresight can be a driver to plan and realize desired transition to low carbon energy society with high emphasis on growth with equity and culture.

The world scenario of energy production, consumption and growth is briefly described. Indian energy growth scenario is debated and paradigm changes are suggested. Current technologies basket of India and predicted scenarios for advanced energy technologies of India, in the context of sustainability and security are discussed. A few breakthrough research and disruptive positive innovations in design, materials and management of energy systems are highlighted.

The emphasis is placed on materials and manufacturing technologies relating to water, fast spectrum and fusion reactors. New initiatives of significant importance in the domain of advanced energy systems for India will be discussed.





CSIR-INDIAN INSTITUTE OF TOXICOLOGY RESEARCH (COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH)



CSIR-IITR, Lucknow is the only multidisciplinary research institute in the field of toxicology in South East Asia with the motto:

Safety to Environment & Health and Service to the Nation

R&D Areas

- Food, Drug & Chemical Toxicology
- Environmental Toxicology
- Regulatory Toxicology
- Nanotherapeutics & Nanomaterial Toxicology
- Systems Toxicology & Health Risk Assessment

Services Offered

- GLP certified for pre-clinical toxicity studies
- NABL accredited
- Safety / toxicity evaluation of NCEs
- Water quality assessment and monitoring
- Analytical services
- Environmental monitoring and impact assessment
- Epidemiological studies
- Information on chemicals / products

Recognitions

- Scientific & Industrial Research Organizations (SIROs)
- UP Pollution Control Board (Water & Air)
- Indian Factories Act (Drinking Water)
- Bureau of Indian Standards (Synthetic Detergents)
- Food Safety & Standards Authority of India (FSSAI)

Technologies Developed / Available

- Water Analysis Kit
- Mobile Laboratory Van for on spot water quality analysis
- Argemone Detection Kit for rapid screening of Argemone in mustard oil
- CD-Strip for detection of butter yellow, an adulterant in edible oils
- Arsenic Detection Kit



Director

CSIR-Indian Institute of Toxicology Research
MAHATMA GANDHI MARG, POST BOX NO 80,
LUCKNOW-226001 (INDIA)

+91 522-2621857, 2613357
director@iitr.res.in

Fax: +91 522-2628227
www.iitrindia.org



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