

Preface

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It brings us a great pleasure to publish the selected research papers presented during the 23rd National Symposium on Radiation Physics (NSRP-23) as a special issue in the Journal, *Radiation Protection Dosimetry*. NSRP-23 was organized by the Department of Studies in Physics, University of Mysore, India in collaboration with the Indian Society for Radiation Physics (ISRP) during 19–21 January 2023.

The century old University of Mysore is one of the oldest Universities in India, established in the year 1916. The university is spread over 350 hectares in a serene, green, and plastic free campus. The Department of Studies in Physics was established in the year 1960 in the Manasagangotri campus, Mysuru. The department is actively engaged in research activities in the areas of Atmospheric Physics, Condensed Matter Physics, Environmental Radiation, Nuclear Physics, Structural Biology, and Theoretical Physics.

The ISRP was formed with a main objective of offering a common forum to the Radiation Physics Scientists and Engineers working on different basic as well as applied aspects of ionizing radiation. The idea of forming ISRP originated during the National Symposium on Radiation Physics (NSRP) held in Mumbai, India, in 1970 under the inspiring leadership of Dr. A. K. Ganguly, the then Head of the Radiation Hazards Control Section, Department of Atomic Energy, Government of India. It is a matter of great pride for the University of Mysore that the ISRP was officially inaugurated by the then director of Bhabha Atomic Research Centre (BARC), Mumbai, Dr. Raja Ramanna during the 2nd NSRP organized at the University of Mysore on 10 June 1976. The first international symposium on radiation physics was held in Calcutta, India in 1974 was the

inspiration for the formulation of the International Radiation Physics Society (IRPS). Now it is continuing to organize a series of triennial international symposiums in various countries.

Radiation Physics is relatively a new subject to emphasize the fact that Physics has played a vital role in the use of radiation in various fields of human activity such as medical, industry, agriculture, etc. It has to be emphasized that even today, there is a great need for innovative approach in the utilization of ionizing radiation. Over the past 3 decades, the Science and Technology of Radiation Physics have experienced significant transformations. Enhanced insights into the fundamental concepts, coupled with advancements in science and progress in electronics and instrumentation, have broadened the scope of scientific and technological innovations in Radiation Physics. These advancements are contributing to the betterment of mankind across numerous areas.

Dr. H. J. Bhabha is an eminent Indian scientist and builder of scientific institutions in creating the opportunities for the advancement of science and technology in India. Due to the dedicated work of scientists and technologists over recent decades, numerous applications of ionizing radiations have been developed. Today, ionizing radiation is recognized as a potent and efficient tool across various sectors, including agriculture, defense, food processing, industry, medicine, and power production.

The theme of the symposium (NSRP-23), 'Innovations in Radiation Physics' highlighted the significance of the innovations in the field and underscored the importance of disseminating knowledge, technology, and experience among the scientific community. The

Received: May 6, 2024. Editorial decision: May 9, 2024. Accepted: May 9, 2024

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importance of radiation physics becomes increasingly significant as the application of ionizing radiations expands across pure and applied research including areas such as agriculture, medicine, and industry. A deeper understanding of different aspects of radiation physics would contribute significantly to the optimum utilization of existing and new sources of energy and thus assume much social relevance. NSRP-23 utilized this opportunity by creating a unique meeting ground for all radiation research scholars, academicians, and professionals to share their theoretical and experimental work, discuss, and debate the current trends and explore future directions.

Dr D. K. Aswal, one of the most eminent scientists from BARC, inaugurated this national symposium and also engaged actively in discussions, providing invaluable inspiration to the younger scientists. The honorable acting Vice-Chancellor of the University of Mysore, Prof. H. Rajeshekar, and the President of ISRP, Prof. B. S. Sandhu, were the chief guests at the event. Prof. P. Venkataramaiah, former Vice-Chancellor of Kuvempu University, presided over the inaugural program. This national-level symposium was organized by Prof. M.S. Chandrashekhara, Chairman of the Department of Studies in Physics, University of Mysore, India.

The scientific program of the conference included invited talks by renowned scientists from prestigious institutions and presentations of the contributory papers on the platform and posters by the delegates under the major scientific themes such as: basic radiation processes; reactor physics, shielding, and transport; radiation protection and nuclear industry; radon/thoron in the environment; environmental radioactivity and transfer; radioactive elements in the environment; pollution and aerosols; internal and external dosimetry and biological effects of radiation; radiation detection, measurement and nuclear instrumentation; radiological protection and safety in nuclear reactors; societal applications of nuclear radiation; accelerator based radiation physics; material characterization using radiations; radiation physics in advanced technologies; and regulatory aspects in practices involving ionizing radiations.

The NSRP-23 received overwhelming response from all parts of the country, with 228 contributed and 12 invited papers. About 250 delegates from all parts of India and 150 students participated in the symposium. A public awareness program was also conducted by Indian Nuclear Society during NSRP-23. A cultural event was presented by students of Fine-Arts College, University of Mysore and few folk artists during the symposium.

Out of the papers presented in this symposium, 85 research papers were published as a special issue in

the journal *Nuclear and Particle Physics Proceedings* (Elsevier Publications) and now 45 selected research papers are being published as special issues in the journal *Radiation Protection Dosimetry* (Oxford University Press).

The organizers express their gratitude to all members of the advisory and organizing committees, as well as to everyone who contributed directly or indirectly to the successful organization of this symposium. The organizers are thankful to the University of Mysore, India, Board of Research in Nuclear Sciences, India, Atomic Energy Regulatory Board (AERB), India, Defence Research and Development Organisation (DRDO), India, and Nucleonix Systems Pvt. Ltd., Hyderabad, India for sponsoring the symposium. The organizers extend their sincere thanks to all the authors, session chairpersons, invited speakers, panel members, and all those connected with the various activities of the symposium without whose wholehearted support it would not have been possible to organize this symposium.

We must specially acknowledge the support of Director and Group Directors of BARC (Mumbai) Project Director of RMP a Unit of BARC in Mysuru, Director of IGCAR (Kalpakkam), Chairman of DRDO (Mumbai), Chairman of AERB (Mumbai), Director of SINP (Kolkata), and all the members of the advisory and organizing committee, who took time off from their busy schedule and supported significantly for the success of NSRP-23.

We extend our special thanks to Dr. D.V. Gopinath, Ex-Director, HS & EG, BARC, Prof. T. K. Umesh, Professor of Physics (Rtd.), Prof. L. Paramesh, Professor of Physics (Rtd.), Prof. C. Ranganathaiah, Professor of Physics (Rtd.), Dr. A. Chandrashekhara, BARC, Mysuru, Dr. Appa Saheb Patil, BARC, Mysuru, Mr. M. R. Srikanthan, Ex-Project Director, BARC and Dr. K. S. Pruthvi Rani, KSOU, Mysuru for their help and support during various stages of organizing NSRP-23. We specially thank Dr. B. S. Sandhu, Professor of Physics, Panjab University, India, and President of ISRP and all executive committee members of ISRP for providing us with an opportunity to organize this symposium in the University of Mysore and for their constant advice and support throughout this journey of NSRP-23.

We are thankful to the faculty members of the department of studies in Physics Prof. M. A. Sridhar, Prof. N. K. Lokanath, Prof. A. P. Gnana Prakash, Prof. S. Krishnaveni, Prof. H. B. Ravi Kumar, and Dr. M. Mahendra; guest faculty, research scholars, students, and office staff for their constant work and efforts without whose wholehearted support it would not have been possible to organize this symposium successfully. We specially thank research scholars Mrs. Namitha S. N. and Mrs. Lavanya B. S. K. for their team work and taking

the major load of the NSRP-23 correspondence with patience, diligence, and punctuality.

We offer our special thanks to Prof. Magnus. Båth, Editor-in-Chief of this Journal, University of Gothenburg and Sahlgrenska University Hospital, Sweden. Ms. Katie Kent, Senior Journal Manager, Oxford University Press. Our special thanks to Ms. Karen Coldwell, RPD Editorial Office and all the Associate Editors and Editorial Board members of this journal. Our

special thanks to Ms. Gemma Barker, accounts manager, Oxford University Press, and Ms. Linda Sullivan and Mr. Guy Edwards, Editorial team members and all other members of the journal who are involved in this process for their work and support at all stages of review, production, and publication. We are grateful to the reviewers of the research papers for sparing their valuable time, without whom it would have been impossible to publish the papers on time.