

Foreword

Nuclear fission was discovered 75 years ago and is considered to be one of the most important scientific discoveries in basic and applied nuclear research. It has played a key role in the understanding of statistical and dynamical properties of nuclei, in the production of nuclear power, development of nuclear instrumentation and evolution of other related fields. In order to commemorate this occasion, a conference was organized on “75 years of Nuclear Fission: Present Status and Future Perspectives” by Bhabha Atomic Research Centre, Mumbai during 8–10 May 2014 at the Nabhikiya Urja Bhavan Auditorium, Anushaktinagar. The conference was sponsored by the Board of Research in Nuclear Sciences (BRNS). The main goal of the conference was to review the progress in the understanding of nuclear fission during the past 75 years and also to indicate the direction of future research in fission. Nuclear fission occupies a prominent place in the context of global energy resources, and has given impetus to scientists and engineers to look for advanced reactors for the production of cost-effective nuclear power.

In his welcome address, Dr V M Datar, Chairman of the organizing committee, mentioned about the goal of the conference in the context of nuclear fission research programme in BARC. Dr R K Sinha, Chairman, Atomic Energy Commission, inaugurated the conference and highlighted the progress of nuclear science and engineering since the discovery of fission in 1939. Prof V S Ramamurthy, Director, National Institute of Advanced Studies (NIAS) and former Secretary, DST, delivered the keynote address. He emphasized the relevance of basic research in understanding the nuclear fission process and its application in various fields. Dr S S Kapoor, INSA Honorary scientist and former director, Physics Group, BARC, gave an overview of the nuclear fission research and mentioned that it is one of the landmark discoveries in nuclear physics. He presented some of the exciting results on superheavy elements and also discussed the possibility of accelerator-driven subcritical reactor system for nuclear power production.

Many eminent scientists from various research institutes and universities, who have made significant contributions in the fields of nuclear fission for the last many decades, participated in the conference. There was a special reminiscences session on 9 May 2014, to recollect their involvement in the growth and development of research activities on nuclear fission and related fields in India. Dr S Kailas, former director, Physics Group, BARC, delivered the summary talk of the conference.

The conference gave a scientific forum for the participants to discuss their work and interact with other researchers in the field of nuclear fission and related areas. It provided exposure of nuclear fission studies using advanced reactors, accelerators and detector systems, spanning a wide range of topics of current interest. The research work reported in the conference covered the topics in the field of fission process, fission fragment spectroscopy, radiochemical studies in fission, cluster radioactive decay, superheavy element studies and various applications of fission data. The role of nuclear fission in the design of advanced nuclear reactors, radioactive ion beam production and development of sophisticated experimental techniques were highlighted. There were very enthusiastic responses to the conference in terms of poster presentations and invited talks

delivered by distinguished speakers from India and abroad. This volume contains the papers of the talks provided by the invited speakers.

The valuable suggestions and support from the members of the organizing committee as well as the advisory committee for planning the conference are duly acknowledged.

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