

Preface

It is a great pleasure for us to publish the KURRI Progress Report 2012. This report contains all of the accomplishments of research and related activities at the Research Reactor Institute, Kyoto University (KURRI) during the fiscal year 2012 from April 2012 to March 2013.

The institute was established in 1963 for the joint use program among Japanese universities to promote experimental research and education in the fields of nuclear energy and radiation application. The main facility, called the Kyoto University research Reactor (KUR), has been widely used for various experiments since its first criticality in 1964. It has been successfully operated, and has served as one of the most useful inter-university research reactors in our country. The Kyoto University Critical Assembly (KUCA), accelerators and other research facilities are also open to researchers and students for their experiments.

In the past fiscal year, KUR was operated for 1,156 hours, and KUCA was operated for 933 hours. In total, we accepted 5,858 man-day researchers and students for using research facilities and for attending scientific meetings held at KURRI. A large number of research subjects has been enrolled, which covers various fields of nuclear science and technology, material science, radiation life science and radiation medical science. It is noted that 68 patients have been treated in the clinical studies of the boron neutron capture therapy (BNCT) using KUR in this period. The results of these activities are given in this report.

Some special research projects are in progress at KURRI. One is the project on the Accelerator Driven System (ADS) by using a Fixed Field Alternating Gradient (FFAG) accelerator combined with KUCA. The world's first ADS experiment has been successfully conducted on March 2009, and the 150 MeV proton beam is being provided for the ADS experiment and for the related studies including development of target materials. In another project, the world's first clinical trial of the BNCT was started last fall using a proton accelerator, based on the successful clinical studies using KUR. Such leading research activities as well as educational activities at the institute are highly rated in a recent external evaluation.

Efficient utilization of nuclear energy and radiation is expected to provide solutions to maintain, sustain and even to develop human society. However, it is now required to again ensure the safety of nuclear energy for its continued use. With the joint use of such research resources as reactors and accelerators, our program is thus to strengthen the scientific basis for improved safety and to promote leading research toward efficient utilization of multidisciplinary nuclear science and technology. Our program also emphasizes the importance of experimental education for fostering young people in the related fields.

The high standing of the institute in research and related activities relies on the enthusiasm and dedication of all the participants. Details of their work and achievements during the year are given in the following pages. I am grateful to all of my colleagues who have taken time to prepare this report, and thank them for their cooperation. Also, I would like to express my sincere thanks for the continued support from the national and local governments, scientific communities and residents in the neighborhood of KURRI.

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