

## Preface

It is a great pleasure for us to publish the KURRI Progress Report 2010. This report contains all of the accomplishments of KURRI, which includes research and investigations performed under the “Joint use program” for Japanese universities during the fiscal year 2010 from April 2010 to March 2011.

In FY2010, the first year of the second 6-year mid-term program for KURRI, the Kyoto University research Reactor (KUR) was started and operated for 1,245 hours with the low enriched uranium (LEU) of 20%, which was converted from the highly enriched uranium (HEU) of 93%. Meanwhile, the Kyoto University Critical Assembly (KUCA) was operated for 871 hours. In total, we accepted 3,844 man-day researchers and students for using research facilities and for attending scientific meetings held at KURRI. The research activities cover various fields of nuclear science and technology, material science, radiation life science and radiation medical science. The results of these activities are given in this report.

In parallel with research and investigations performed under the joint use program, some special projects are being promoted at KURRI. One is the project on “Technology development for the Accelerator Driven Subcritical Reactor (ADSR) by using a Fixed Field Alternating Gradient (FFAG) accelerator”. The project has been started in FY2002 as a part of the MEXT program, and the world’s first ADSR experiment has been successfully conducted with the combination of the KUCA and the FFAG accelerator. Extensive efforts are now being devoted to increase the beam intensity for the ADSR experiment and the related studies including development of target materials are being performed. In another project, a proton cyclotron was installed for initiating clinical trial of the boron neutron capture therapy (BNCT), and preliminary experiments were started. It is noted that the progress of multidisciplinary nuclear science and technology including these two projects is strongly supported by several academic societies.

Efficient utilization of nuclear energy and radiation is expected to provide solutions to maintain, sustain and even to improve development of human society. However, it is now required to again ensure the safety of nuclear energy for its continuous use. With collaborative use of important research resources such as reactors and accelerators, our program's objective in this 6-year mid-term program for KURRI is thus to establish a center of excellence to grow and to promote multidisciplinary nuclear science and technology, leading to improved safety and quality of life for all. This program will accelerate accumulation of basic and fundamental knowledge necessary for safe and effective utilization of nuclear energy, including development of material science and the BNCT study. The objective is application for the benefit of society, as well as for human resource cultivation.

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 continued cooperation. Also, I would like to express my sincere thanks for the continuous support from the national and local governments, scientific communities and residents in the neighborhood of KURRI.

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