

Preface

It is a great pleasure for us to publish the KURRI Progress Report 2011. 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 2011 from April 2011 to March 2012.

In FY2011, the third year of the second 6-year mid-term program for KURRI, the Kyoto University research Reactor (KUR) was operated for 1,184 hours, and the Kyoto University Critical Assembly (KUCA) was operated for 917 hours. In total, we accepted 5,452 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 cover various fields of nuclear science and technology, material science, radiation life science and radiation medical science. It is noted that 62 patients have been treated in the clinical studies of the boron neutron capture therapy (BNCT) using the KUR in this period. The results of these activities are given in this report.

In parallel with research and investigations performed under the joint use program, some special research 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. Then extensive efforts are being devoted to optimize the 150 MeV proton beam parameters for the ADSR experiment and the related studies including development of target materials are being performed. In another project, preliminary experiments are being performed for clinical trial of the BNCT using a proton accelerator, based on the successful clinical studies using the KUR. The progress of multidisciplinary nuclear science and technology including these research 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 continued use. With collaborative use of such research resources as reactors and accelerators, this 6-year mid-term program's objective 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 and radiation, 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 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.

Kumatori, June 15, 2012

Hirotake Moriyama
Director, KURRI