

The Roles and Research Directions of Radioisotope Research Center (tentative name)

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1. Introduction

Busan metropolitan City and Kijang-gun have recognized the importance of fostering the RI and radiation industry since the late 2000 and have been investing in a Radiation medical science complex with future investment value. The purpose of medical science complex is to build a global science complex that can be an exemplary model abroad by building infra structures such as kijang research reactor, heavy particle accelerator center, attracting business companies and attracting domestic and international conferences.

In line with this, Dongnam Institute of Medical sciences(DIRAMS) opened in 2010 and the construction of a heavy particle accelerator treatment center, a power semiconductor commercialization center, and new type Kijang research reactor is under way. Especially, Kijang research reactor received construction permission in May from Nuclear Safety Commission and construction project is being launched.

In 2015, The government identified the need for another infrastructure for the utilization of RI produced in Kijang reactor, and prepared to launch new project to build the Radioisotope Research center. This project was launched in December, 2019 according to acquiring the construction approval of Kijang reactor in May 2019.

The purpose of this project is to prepare the operation system to develop application technology of RI, commercialization support and human resource development system. In this presentation, we will discuss the progress of this project, the description of the project, and the role of Radioisotope Research Center.

2. Details of Prosecution

The project's plan began in 2012 and the start of the project was implemented in 2019. The process is as follows

'12 Planning the establishment of Radioisotope Fusion Research Institute

'13.07 Presidential Election (Local commitment Action plan)

Presidential Pledge: The construction of radiological medical industrial complex

'14.12 Including 'Planning Research' in Radiation Research Expanding Infrastructure Project

Planning Research Project: Hanyang Univ.('15. 08~'16.02)

'15.12. Construction design cost (1 billion won) for Radioisotope Research Center (Reflected in Radiation Research Expanding Infrastructure Project)

'16.10. Conformation of the project (Ministry of Science, 23.1 billion won)

'19.12. Starting the project

3. Radioisotope Research Center in Kijang

Radioisotope research center will be located in medical science complex in Kijang-gun, Busan and also located around the Kijang research center and the power semiconductor commercialization center. The land area is 19,369m² and total construction area is 5,656m². The research center is consisted of 1 floor ground and 3 floor above ground. The 1st floor consists of conference room, RI application labs and public equipment rooms, 2nd floor consists of offices and labs for KAERI researchers and 3rd floor also consists of offices and labs for private companies. What is noteworthy is that all of analytical instruments in radiation zone will be provided for researches and product developments to private company and students. Even though companies and universities want to use instruments in radiation zone, they can't access the proper institutes in KOREA, so they can solve this problem.



< Bird's eye view of Radioisotope Research Center >

4. The function of center

4.1 The role of center in Southeast Radioisotope R&D

Kijang research reactor need not only production of Fission Mo, but production research for medical and industrial radioisotope. The first goal is to develop RI production systems for mass production and supply chain. In addition to the technologies possessed by

KAERI, it is necessary to develop new technologies by using RI in cooperation with various organizations. To solve these goals, it is important to play the role of technical medium among the radioisotope facilities, industrial companies for commercialization and research hospitals including universities.

4.2 Industrial/academic supports in radioisotope fields

Even though education and medical institutes want to try to use RI, but they are having difficulties conducting research due to the absence of research facilities and public instruments planned as radiation zone. From basic science to commercialization, KAREI will share research spaces that can perform productive technologies together, and will provide technical support necessary for research performances. In addition, 50% of office and research area will be provided to private companies, education and medical institutions. Research equipment required by companies and educational institutions will be prioritized and will be installed within the radiation zone.

4.3 Education

In reality, institutes and companies related to RI research are not able to easily hire the skilled manpower and train their own manpower through for a certain period of time. To solve this problem, it is necessary to establish a training community related to RI, and to prepare a training curriculum that can be immediately put into the fields of institutes and companies. The facility in Radiation Medical Science Complex will be provided as research labs and lecture rooms to enable field research practice.

4. Conclusion

In the meantime, RI and radiation techniques have been mostly fragmented studies led by each research Institute. In the future, researches in the Medical Science Complex should achieve research results by conducting together by institute/academic/industry. It can be said that appropriate research cooperation is necessary. In this presentation, we will look back at the problems once again and discuss the future researches.