Development of Proton Beam Utilization Technologies and User Facilities in the PEFP

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Abstract

Proton Engineering Frontier Project (PEFP) was started in 2002, as one of the 21C Frontier Projects supported by the Ministry of Science and Technology (MOST) of the Korean Government. It has three goals; to develop 100MeV proton linear accelerator, to develop proton beam utilization technologies, and to promote industrialization of these technologies. The construction of 20MeV proton linear accelerator has been completed, and 20MeV proton beam has been delivered to users with some limited conditions. The Gyeongju city was decided as the local government to host the project site in 2006. The site preparation and construction works are under progress in cooperation with Gyeongju.

Proton beam has various utilization and application fields, such as nano-, bio-, space-, and medical science and technologies. These can be categorized according to its applicable beam energy and current. In order to develop and study the proton beam utilization, 6 projects and 18 small projects covering these areas are carrying out in parallel with the construction.

Its user facilities have been designed in reflection of domestic user demand surveys. These are composed of beam transfer line, beam distribution magnets, target room and treatment room. The 20MeV and 100MeV proton beams can be distributed to the each five beam-lines by the AC magnets. The each target room has specified by the major application fields, such as RI production, biological & medical application, material irradiations, space radiation test, low energy proton therapy, and nuclear physics.

In this presentation, I will explain the status of the PEFP and developments of proton beam utilization technologies and user facilities.