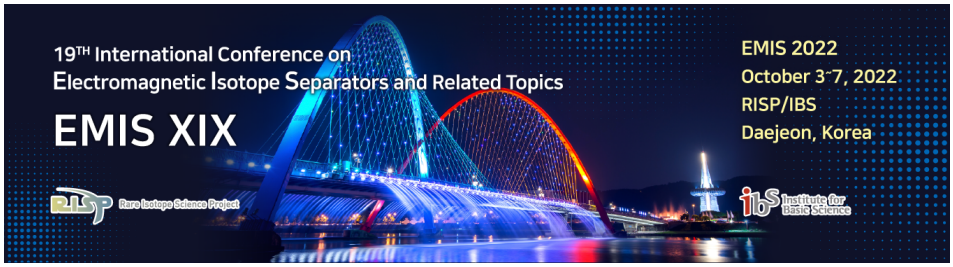

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High beam-power RI production project at SCRIT electron scattering facility

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Electron-beam-driven RI separator for SCRIT (ERIS) [1] was constructed as an online isotope separator (ISOL) system that is dedicated to produce a radioactive isotope (RI) beam for the SCRIT (Self-Confinement RI Target) electron scattering facility [2] at RIKEN RI Beam Factory. Electron scattering is one of the best ways to accurately understand the internal structure of atomic nuclei. The aim of this facility is realization of electron scattering experiment with unstable nuclei, for which the target nuclei of 108 ions/s are required.
In ERIS, the photofission of uranium driven by the electron beam is used for the RI production. 43 self-made uranium-carbide disks are stacked to be the target. The disk is approximately 0.8 mm thick and 18 mm in diameter. The amount of uranium is approximately 0.65 g/disk. The uranium-carbide disks are irradiated by 150 MeV electron beam accelerated by a microtron. Recently, the yields of ^{132}Sn and ^{137}Cs beams extracted from ERIS were achieved to 2.6×10^5 ions/s and 8.0×10^6 ions/s with 15-g and 28-g uranium targets and a 10-W electron beam, respectively [3].
SCRIT experiment requires to increase the yield of RI beam by a factor 100. We plan to upgrade the power of electron beam to 2 kW. At the same time, we need to develop a high-power resistant system for ERIS such as a remote handling system for ERIS, treatment of targets after irradiation, radiation shields, and so on.
In this contribution, we will report of present status of ERIS and an upgrade plan in the SCRIT facility.

References

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