Operation of fee-based activities by the industrial cooperation team

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The operation of fee-based activities by the industrial cooperation team in 2015, utilization of heavy-ion beams to industry and distribution of radioisotopes, are summarized below.

RIKEN Nishina Center opens the AVF cyclotron, RILAC, and RIKEN Ring Cyclotron (RRC) to private companies in Japan for a fee.[1] At RRC, three fee-based beamtimes were successfully performed at E5A beamline; two beamtimes with a 70-MeV/A ^{84}Kr beam were performed in July and December, and one beamtime with a 95-MeV/A ^{40}Ar beam was performed in December. Another article in this report describes the technical details of beam preparation and characterization.[2] At the AVF cyclotron, a beamtime was performed in March with an RI beam of ^{7}Be ($T_{1/2}$ = 53 days) from the CNS RI beam separator (CRIB) at E7A beamline, but it was cancelled owing to a technical problem.

Since 2007, RIKEN has been distributing radioisotopes (RIs) produced at the AVF cyclotron to users in Japan for a fee in collaboration with the Japan Radioisotope Association[3] (JRIA). The RIs are produced by the RI Applications Team. According to a material transfer agreement (MTA) drawn between JRIA and RIKEN, JRIA mediates the transaction of RIs and distributes them to users. In April 2015, the MTA was amended to add a new nuclide ^{85}Sr ($T_{1/2}$ = 65 days) to the list of distributed nuclides that included ^{65}Zn ($T_{1/2}$ = 244 days), ^{109}Cd ($T_{1/2}$ = 463 days), and ^{88}Y ($T_{1/2}$ = 107 days). The ^{85}Sr nuclide is produced by the $^{\mathrm{nat}}\mathrm{Rb}(d,x)^{85}\mathrm{Sr}$ reaction[4] and supplied as solution in hydrochloric acid with a concentration of 0.1 M. The maximum radioactivity of one package is 10 MBq. Because ^{85}Sr and ^{88}Y have short half-lives, they are not stocked like ^{65}Zn and ^{109}Cd but are produced in a scheduled beamtime after an order is accepted. Therefore, the RIs are delivered after two or more months. Details can be found on the on-line ordering system J-RAM[5] of JRIA.

In 2015, we delivered three shipments of ^{109}Cd with a total activity of 4 MBq, two shipments of ^{65}Zn with a total activity of 10 MBq, and one shipment of ^{88}Y with an activity of 1 MBq. The final recipients of the RIs were five universities and one hospital. Figure 1 shows the yearly trends in terms of the number of orders and the amounts of the distributed RIs. Compared to 2014, the amount of distributed ^{109}Cd decreased by a factor of 5.5 and that of ^{65}Zn by 4.4, whereas the amount of ^{88}Y was the same.

Information on the RIs can be obtained from JRIA through JRAM or FAX (03-5395-8055).

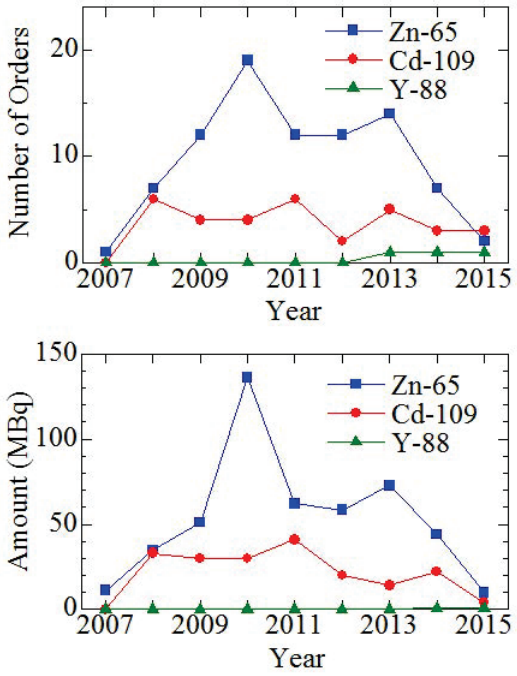

Fig. 1. Number of orders (upper) and amount (lower) of RIs distributed yearly from 2007 to 2015. The distribution of ^{88}Y started in 2010.

References

1) http://ribf.riken.jp/sisetu-kyoyo/ (Japanese).
2) T. Kambara et al.: in this report.
3) http://www.jrias.or.jp/ (Japanese), http://www.jrias.or.jp/e/ (English).
4) S. Yano et al., RIKEN Accel. Prog. Rep., **48**, 299 (2015).
5) https://www.j-ram.net/jram/DispatchTopPage.do (Japanese).

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