

Operation of fee-based activities by the industrial cooperation team

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The fee-based activities operated by the industrial cooperation team in 2017, which are the utilization of heavy-ion beams in the industry and the distribution of radioisotopes, are summarized below.

RIKEN Nishina Center allows the use of the AVF cyclotron, RILAC, and RIKEN Ring Cyclotron (RRC) by private companies in Japan for a fee.¹⁾ In 2017, three clients successfully used fee-based beamtimes to test space-use semiconductor devices. In February, one client used a 39-MeV/A ^{136}Xe beam at the E3A beamline of the RRC for approximately 8 h, and in March, two clients used a 70-MeV/A ^{84}Kr beam at the E5A beamline for approximately 60 h in total.

Since 2007, RIKEN has distributed radioisotopes (RIs) to users in Japan for a fee in collaboration with the Japan Radioisotope Association²⁾ (JRIA). The nuclides are ^{65}Zn ($T_{1/2} = 244$ days), ^{109}Cd ($T_{1/2} = 463$ days), ^{88}Y ($T_{1/2} = 107$ days), and ^{85}Sr ($T_{1/2} = 65$ days), produced by the RI Applications Team at the AVF cyclotron. According to a material transfer agreement (MTA) drawn between JRIA and RIKEN, JRIA mediates the transaction of the RIs and distributes them to users. ^{65}Zn and ^{109}Cd are delivered approximately two weeks after the acceptance of an order. ^{85}Sr and ^{88}Y , which have shorter half-lives, are not stocked like ^{65}Zn and ^{109}Cd but are rather produced in a scheduled beamtime after an order is accepted. Therefore, they are delivered two months or more after the acceptance of an order. Details can be found in the online ordering system J-RAM³⁾ of JRIA.

In 2017, we delivered no ^{109}Cd , two shipments of ^{65}Zn with a total activity of 5.5 MBq, two shipments of ^{88}Y with a total activity of 2 MBq, and a shipment of ^{85}Sr with an activity of 3.7 MBq. The final recipients of the RIs were three universities and one medical research center.

Figure 1 shows the yearly trends in the number of orders and the amounts of distributed RIs. Compared with 2016, the amount of distributed ^{65}Zn decreased by 4, that of ^{88}Y remained same, and that of ^{85}Sr increased by 3.7.

We are preparing to start the distribution of a new RI ^{67}Cu ($T_{1/2} = 61.8$ h) in spring 2018. Since its half-life is very short, it will be produced in a scheduled beamtime after an order is accepted. Details will be announced in J-RAM.

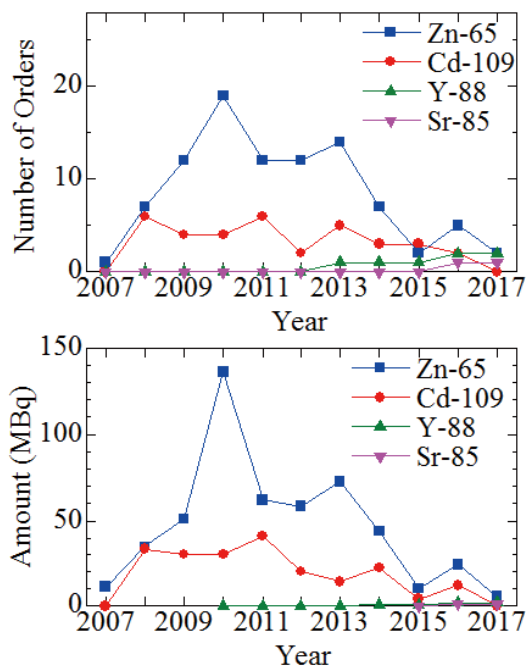


Fig. 1. Number of orders (upper) and amount (lower) of the RIs distributed yearly from 2007 to 2017. The distribution of ^{88}Y started in 2010 and that of ^{85}Sr in 2015.

References

- 1) <http://ribf.riken.jp/sisetu-kyoyo/> (Japanese).
- 2) <http://www.jrias.or.jp/> (Japanese),
<http://www.jrias.or.jp/e/> (English).
- 3) <https://www.j-ram.net/jram/DispatchTopPage.do> (Japanese).

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