

## Present status of liquid-helium supply and recovery system

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The liquid-helium supply and recovery system<sup>1)</sup>, which can produce liquid helium from pure helium gas at a rate of 200 L/h from pure helium gas, has been stably operated since the beginning of April 2001. The volumes of liquid helium supplied each year from 2001 to 2012 are shown in Fig. 1. The volume gradually increased from 2001 to 2008 but sharply increased in 2010, before decreasing sharply in 2011, and again sharply increasing in 2012.

We extended the recovery line at one place. A new recovery line was connected to the existing line at the RIBF Building at B3F.

The purity of helium gas recovered from laboratories gradually improved once the construction of the system was completed. Currently, the impurity concentration in the recovered gas is rarely more than 200 ppm. The volume of

helium gas recovered from each building in the Wako campus and the volume transported to the liquid-helium supply and recovery system were measured. The recovery efficiency, which is defined as the ratio of the amount of recovered helium gas to the amount of supplied liquid helium, was calculated. The recovery efficiency for the buildings on the south side of the Wako campus, such as the Cooperation Center building of the Advanced Device Laboratory, the Chemistry and Material Physics building, and the Nanoscience Joint Laboratory building, increased to more than 90%. The average recovery efficiency from January 2008 to July 2013 is shown in Fig. 2. This value also increased to over 90%.

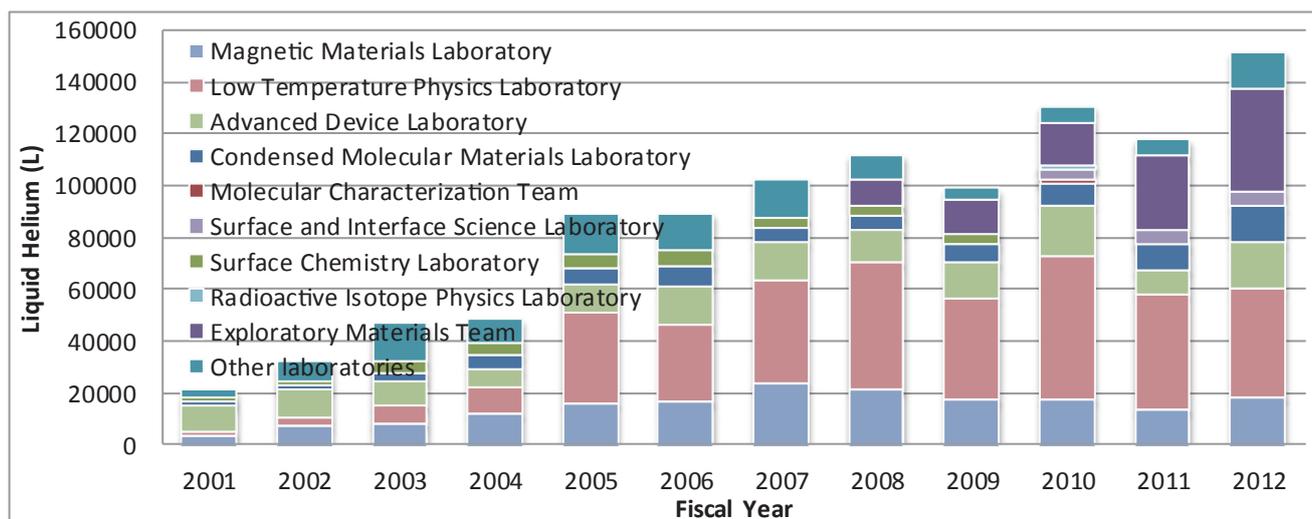


Fig.1. Volumes of liquid helium supplied to laboratories for each fiscal year from 2001 to 2012

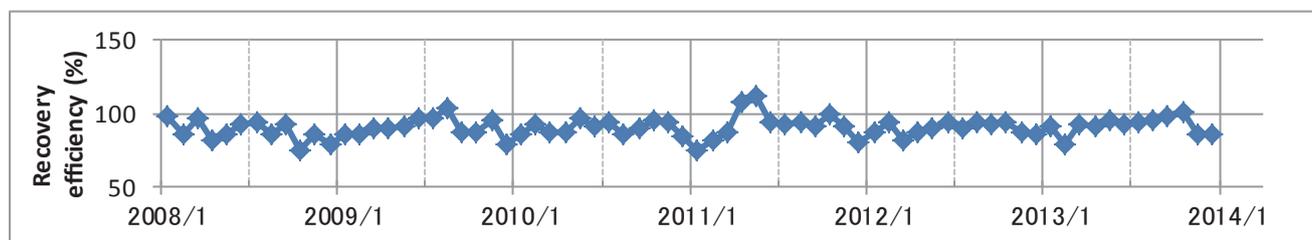


Fig.2. Average recovery efficiency measured from January 2008 to July 2013

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### References

1) K. Ikegami et al.: RIKEN Accel. Prog. Rep. 34, 349 (2001).