



## Measurement of evaporation residues produced in the multinucleon transfer reaction using the JAEA Recoil Mass Separator

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Multinucleon transfer (MNT) reaction has attracted attention in the fields of nucleosynthesis and the production of superheavy elements because they can produce nuclei with a large neutron number. To produce desired nuclei efficiently and investigate their nuclear properties, it is necessary to determine the optimal beam and target combination and reaction energy, as well as detection angle. The objective of this study is to measure ER cross sections by changing various experimental conditions in order to establish a reliable theoretical model. We have started a program to study MNT reaction using the JAEA Recoil Mass Separator (JAEA-RMS) [1]. In contrast to kinematic separators dedicated for fusion reaction, the RMS is advantageous as it can rotate around the target chamber, essential for the study of MNT reactions. As a first attempt, we performed the experiment in the reaction of  $^{30}\text{Si}+^{209}\text{Bi}$ . The production rate as a function of recoil angle, recoil energy (thus excitation energy), and incident beam-energy dependence were studied. The alpha-decay of the implanted ERs in the focal plane Si detector was observed online. The result is the first to realize the decay measurement in correlated with ERs, produce in the MNT reaction at a finite angle.

### Reference

- [1] H. Ikezoe et al., Nucl. Instrum. Methods Phys. Res. A **376**,420 (1996)