

Experimental study of Multinucleon Transfer reaction using JAEA-RMS/JAEA/反跳生成核分離装置を用いた多核子移行反応の研究

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Multinucleon transfer (MNT) reactions have attracted attention in the field of nuclear physics and astronomical nucleosynthesis as a reaction which produces neutron-rich nuclei as evaporation residues (ER). But detailed feature of reaction mechanism is not understood. Detailed experimental data are necessary to develop a model to guide an optimal reaction and experimental condition. We have started the measurement of ER cross sections in various conditions. Experiments were carried out using the JAEA Recoil Mass Separator (JAEA-RMS[1]). As a first attempt, we studied the reaction $^{30}\text{Si}+^{209}\text{Bi}$. The production cross sections for each produced isotopes are determined as a function of recoil angle and recoil energy (thus Q-value), where identification of nuclides were achieved by the on-line alpha-decay measurement of the implanted ERs at the focal plane Si detector. The result is the first to realize the on-line decay measurement produce in the MNT reaction at a finite angle.

References

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

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