


(※本報告書は英語で記述してください。ただし、産業利用課題として採択されている方は日本語で記述していただいても結構です。)

 MLF Experimental Report	提出日 Date of Report
課題番号 Project No. 2013B0189 実験課題名 Title of experiment Measurement of Angular Distribution of Prompt Gamma-rays from Radiative Capture Neutron Reactions 実験責任者名 Name of principal investigator Hirohiko Shimizu 所属 Affiliation Nagoya University	装置責任者 Name of responsible person Hideo Harada 装置名 Name of Instrument/(BL No.) BL04 実施日 Date of Experiment 2014/02/22-2014/02/26

試料、実験方法、利用の結果得られた主なデータ、考察、結論等を、記述して下さい。(適宜、図表添付のこと)
 Please report your samples, experimental method and results, discussion and conclusions. Please add figures and tables for better explanation.

1. 試料 Name of sample(s) and chemical formula, or compositions including physical form.
LaBr ₃ ; powder, packed in aluminum cell

2. 実験方法及び結果 (実験がうまくいかなかった場合、その理由を記述してください。)
Experimental method and results. If you failed to conduct experiment as planned, please describe reasons.
<p>We placed LaBr₃ at the normal sample position, which is located 21.5 m from the moderator surface, and acquired gamma-ray signals from the set of cluster germanium detectors. The pulse heights of the gamma-ray signals from individual germanium crystals were recorded as a function of neutron time-of-flight.</p> <p>The obtained time-of-flight spectrum is consistent with the previous experiment. P-wave and S-wave resonances of ⁸¹Br were observed at tof=1.7ms, 155μs and 133μs, which corresponds to the neutron energy of E_n=0.88 eV, 101eV and 135eV. The direct decay event from compound resonance state to grand state and first excited states of ⁸²Br, which correspond to the gamma energy of 7593keV and 7547keV, were not observed in this measurement. On the other hand, second excited state, which corresponds to 7518keV, was observed by the gating analysis with S-wave resonance of 101eV and 135eV.</p>

2. 実験方法及び結果(つづき) Experimental method and results (continued)

The measured gamma energy and neutron energy spectrums are shown below. In this figure we can see some gamma energy peaks from ^{27}Al , ^{79}Br and ^{81}Br .

