


(※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. 2016A0311 実験課題名 Title of experiment Measurement of neutron capture cross sections of Y-89 実験責任者名 Name of principal investigator Tatsuya Katabuchi 所属 Affiliation Tatsuya Katabuchi	装置責任者 Name of responsible person Yosuke Toh 装置名 Name of Instrument/(BL No.) ANNRI/ BL-04 実施日 Date of Experiment 2016/5/12-2016/5/14

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.
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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>The neutron capture gamma-rays from Y-89 were measured with a Ge detector array of ANNRI. The sample was placed at the sample position with a neutron flight length of 21.5 m from the J-PARC spallation neutron source. Capture gamma-rays emitted from the sample were detected with the Ge detector array. Time-of-flight (TOF) and pulse height of the detected events were recorded. The main objective of this experiments was to assign the element making a neutron resonance peak which had been newly observed at 19.7 eV in a TOF spectrum of a Y-89 sample in a previous experiment using an NaI(Tl) detector of ANNRI. The resonance peak could originate from Y-89 itself or an impurity although any possible resonance cannot be found in existing resonance database. In the NaI(Tl) measurement, it was not possible to determine the origin of the resonance due to its poor gamma-ray energy resolution. In this experiment, we used Ge detectors which have a higher gamma-ray energy resolution, allowing us to determine the origin of the resonance peak from a capture gamma-ray spectrum.</p>

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

As a result, capture gamma-ray spectra were clearly observed. Neutron capture gamma-rays of Y-89 was strongly observed at a neutron energy of 19.7 eV, the resonance peak observed in our previous experiment. Thus, we concluded that the resonance peak of 19.7 eV was Y-89. The lowest resonance energy of Y-89 reported in the past and included in databases was 2.6 keV. The resonance energy newly found in the present research is much lower than the value. The present result has a large impact on neutron nuclear data of Y-89 especially in th low energy region.