 <b>MLF Experimental Report</b>	提出日 Date of Report
課題番号 Project No. 2016A0249 実験課題名 Title of experiment Neutron-capture cross-section and total cross section measurements for Sn-117 and Sn-119 実験責任者名 Name of principal investigator Atsushi Kimura 所属 Affiliation Japan Atomic Energy Agency	装置責任者 Name of responsible person Atsushi Kimura 装置名 Name of Instrument/(BL No.) ANNRI BL04 実施日 Date of Experiment 2016/6/3~12 2017/1/14~15

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.

<p>1. 試料 Name of sample(s) and chemical formula, or compositions including physical form.</p> <p>Samples were isotopically enriched metallic tin with a diameter of 5mm.                  The weight of the <math>^{117}\text{Sn}</math> and <math>^{119}\text{Sn}</math> samples was mg, 88.9 and 69.4 mg, respectively.</p>
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<p>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> <p>Capture cross section measurements with neutron TOF method were performed with the array of Ge spectrometer in ANNRI. In the measurements, two cluster-type Ge detectors were used, but the coaxial-type Ge detectors were not used because they suffered from severe electrical noise. The pulsed neutron beam was collimated to a 7mm at the sample position.</p> <p>The samples were put in fluorinated ethylene propylene (FEP) film bag and attached to a polytetrafluoroethylene (PTFE) sample holder. The total measuring times for the <math>^{117}\text{Sn}</math> and <math>^{119}\text{Sn}</math> samples were about 63 and 72 hours, respectively. To deduce the background, measurements for a <math>^{208}\text{Pb}</math> sample with a diameter of 5 mm, a weight of 159.7 mg, and an isotopic enrichment of 99.60 mole% and a sample holder with an empty FEP film bag (Blank) were also carried out during 36 and 32 hours. In order to obtain incident neutron energy distribution, boron sample measurements were carried out.</p>
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## 2. 実験方法及び結果(つづき) Experimental method and results (continued)

Figure 1 shows TOF spectra of the  $^{117}\text{Sn}$  and  $^{119}\text{Sn}$  samples. Resonance peaks of  $^{117}\text{Sn}$  and  $^{119}\text{Sn}$  are clearly observed. Figure 2 shows  $\gamma$ -ray pulse-height spectra with dead time correction for the  $^{117}\text{Sn}$  and  $^{119}\text{Sn}$  samples. Many clear full-energy peaks and peaks are observed. However, there is no clear differences between the samples. The  $\gamma$ -rays are mainly originated in neutron capture events resulting from scattered neutrons by the samples and the helium gas in the beam duct. There are no clear full-energy peaks originated in neutron capture events of  $^{117}\text{Sn}$  and  $^{119}\text{Sn}$ .

Data analysis is in progress.

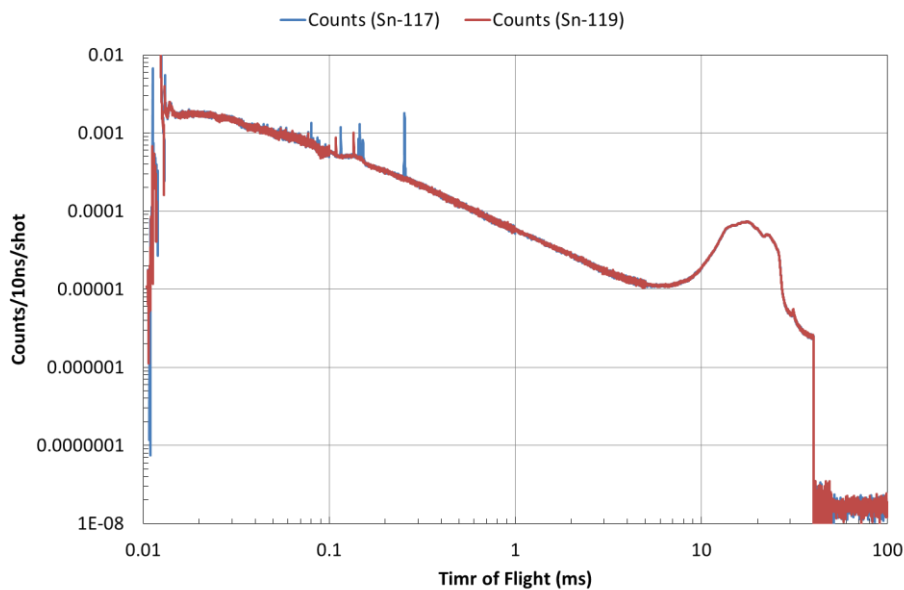


Figure 1  $\gamma$ -ray pulse-height spectra with dead time correction for the  $^{117}\text{Sn}$  and  $^{119}\text{Sn}$  samples.

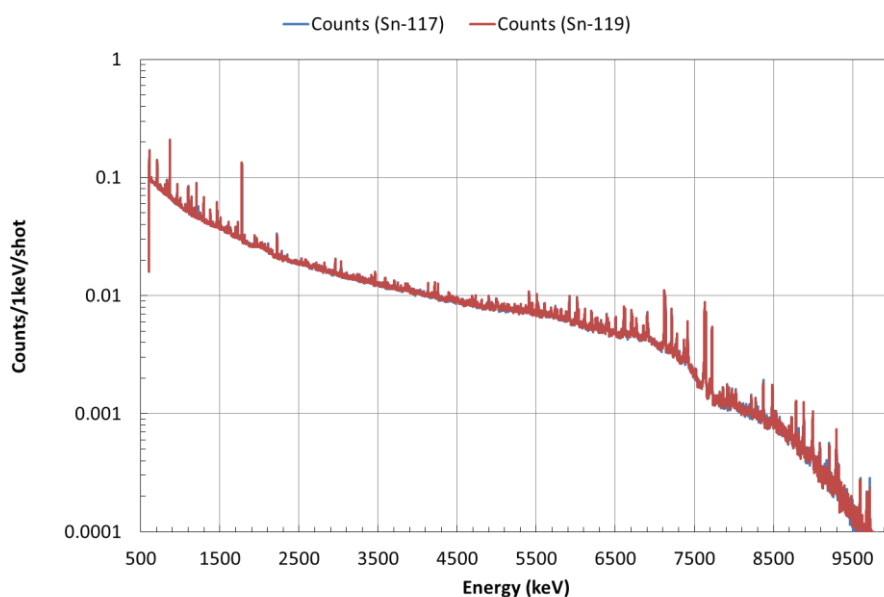


Figure 2 TOF spectra of the  $^{117}\text{Sn}$  and  $^{119}\text{Sn}$  samples.