(※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 9 Nov. 2012
課題番号 Project No. 2012A0141 実験課題名 Title of experiment Mu emission from alkali-metal coated tungsten surfaces 実験責任者名 Name of principal investigator Yasuyuki Nagashima 所属 Affiliation Tokyo University of Science	装置責任者 Name of responsible person Yasuhiro Miyake 装置名 Name of Instrument/(BL No.) D2 実施日 Date of Experiment 14-19 June (6 days)

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.

The target was a polycrystalline tungsten foil of 50 μm thickness. It was heated up to 2300K in vacuum. After cooling down to room temperature, Na was deposited on the rear surface of the target.

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.

Our experimental system for the observation of muonium emission from metal surfaces has been completed. It provides time-of-flight data for muonium emitted from the surfaces.

Figure 1 shows the experimental chamber. Muon beam is guided to the metal target, which can be heated by the passage of an electric current. Muonium emission from the rear surface of the target is monitored using two scintillator arrays. The signals detected by the arrays are analyzed to determine the position of muon decay. The muon lifetime spectra for the several regions of the muon decay positions are also accumulated.

In the beam time of 2012A, we tried to observe muonium emitted from a tungsten surface heated up to 2300K. We have also searched for muonium emitted from Na coated tungsten surface. The tungsten was cooled down after the measurement for the heated up tungsten and coated with Na. Thickness of the Na layer was about one monolayer.

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

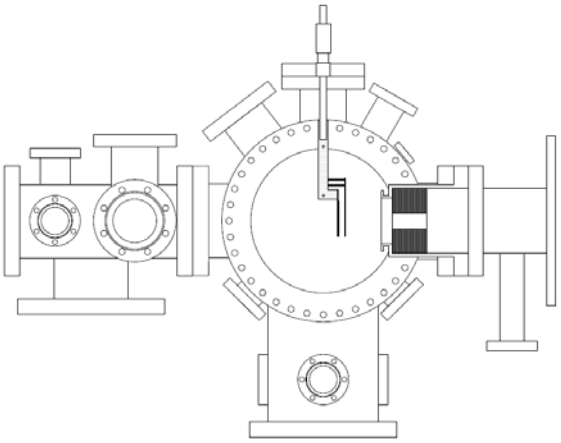

Figure 1. Schematic diagram of the apparatus for the observation of Mu emitted from tungsten surface.

Unfortunately, undulation of the spectra due to the magnetic field produced by the current for heating up the tungsten prevented from identification of the muonium signals. After the beam time, we have prepared a pulsed power supply, which provide the current only in the intervals between muon pulses, for the next beam time (2012B).

For the Na coated target, a small excess over the data for the uncoated surface, which might be due to muonium emission, was observed. In order to investigated the excess, we will try new experiments in the next beam time.