（ ※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. 2014A0239 実験課題名 Title of experiment Development of a micro-cell MWPC for an experimental search for a muon-electron conversion 実験責任者名 Name of principal investigator Hiroaki Natori 所属 Affiliation KEK	装置責任者 Name of responsible person Hiroaki Natori 装置名 Name of Instrument/(BL No.) micro-cell MWPC 実施日 Date of Experiment 2014 11/1-11/5, 2014 12/9

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.

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.

We planed muon pulsed beam to penetrate a wire chamber to test its high rate beam tolerance, and test if the chamber recovers to be operational just after the burst pulse using delayed positrons from decayed muons. We planed to try both surface muon beam and decay muon beam with a higher momentum to find the best setting for this purpose. In November, the experiment starting time was delayed due to troubles of accelerator. During the beam-time, accelerator often stopped due to troubles of sensors of neutron generation target.

After the frequent stops of the beam, we exposed the chamber with surface muon beam, and found the delayed positrons are too much that the chamber could not identify each pulses of the positron signal. As the machine time was very shortened, and we had no time to change beam momentum setting to be higher so that muons penetrate the chamber and stop at a stopping target to be put downstream of the chamber, making the number of positron smaller enough.

We had only a limited time and we gave up the original plan and put the chamber aside the beam line and changed plan to observe only the Michel positrons. We hurried too much to ramp up high voltage of the chamber. This caused trip of the chamber, resulting in cut of wires inside the chamber.

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

As the repair work takes a time, we exchanged beamtime with accelerator commissioning time in December. We dismounted the experimental setup to transport to our lab. Before the beam-time in December, we repaired the chamber and make some improvements in HV supply system. We tried to test if whole the system work just before the beam-time. During the bench test, we found a leakage in gas line, which was unfastened by mistake during the dismounting of the November beam time. At the time we noticed this, the gas bottle was already almost empty, and we could not perform the bench test before the beam-time.

We borrowed a gas bottle in KEK, delivering it half a day before the start time of the experiment. We wanted to test the chamber in the beam area before the time of beam ejection, but we should wait for delivery of gas bottle mount ordered by MLF. But it was found that the bottle mounting parts are not ordered, so we go to buy some equipments to fix the gas bottles. We could not start flashing the chamber with gas before the start time of the experiment, and should wait for the gas exchange. We used "fast flashing line" which was newly installed in our gas system, and planed to return to usual gas speed before the data taking. We mistook operation of the new gas line. We intended to close the new line, but it resulted in flashing only Ar gas, though the nominal gas mixture was Ar/C2H6 50%/50%. We did not notice the mistake of the operation of gas line this time. We applied HV on the chamber and it tripped with relatively low voltage. As we could not perform bench test before the experiment and we modified something inside the chamber, we first doubted the failure to be inside the chamber. We opened the chamber and cleaned and checked inside, and redo the gas exchange and applied HV, trip with low voltage again. We could not find it was due to gas line during the beam-time.

The reason the experiment failed was

Experimental time was too much shortened.

We should hurry

-Resulting in wire cut

-Unfastening of wrong parts of gas line by mistake during the dismounting

--Gas leakage -> Missing chance of bench test before the beam time

Missing gas bottle mount in the facility

- Missing chance of operation test before the beam time

Missing chances of operation caused mistake of gas line operation

- HV could not be applied at chamber

Missing chances of operation before the beam time caused it difficult to identify what made the trip