

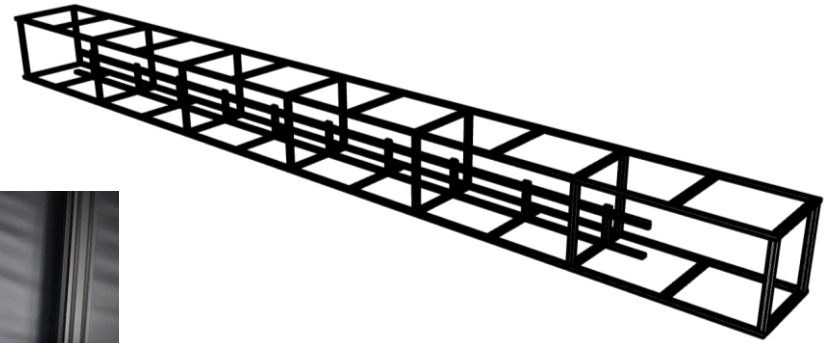
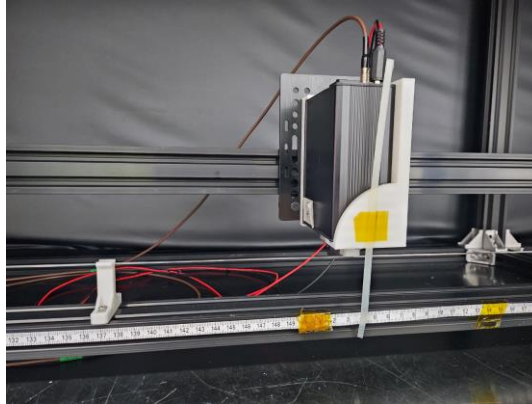
Status Report |

01. 28. 2025

Seoyun Jang |

SciFi measurement setup

List Done



@UoS & Yonsei Univ. of Korea

Establish & Upgrade similar setup done in Korea, based on [SP5600E kit](#), with LED installed on rail.

- List & Order frame for setup (**Done**)

Order lists : https://drive.google.com/file/d/1pRRCbUB6zlsG_Dazbil6ydLXdZAahnC3/view?usp=sharing
3D printed jigs

- Fiber management (**Done**)

SCSF-78 Kuraray, 10 single cladding fibers, 10 double cladding fibers -> polishing done.

- SP5600E Working Test (SiPM validation) (**Done**)

Multi-photon peak, gain vs bias voltage, threshold vs frequency check

**We can now start measuring
as the frame arrives!**

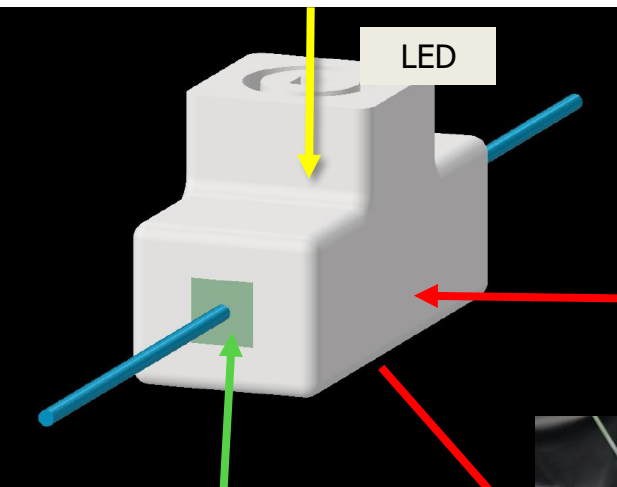
Frame Setup

3D-printed jigs

- List & Order frame for setup (**Done**)

Order lists : https://drive.google.com/file/d/1pRRCbUB6zlsG_Dazbil6ydLXdZAahnC3/view?usp=sharing

3D printed jigs

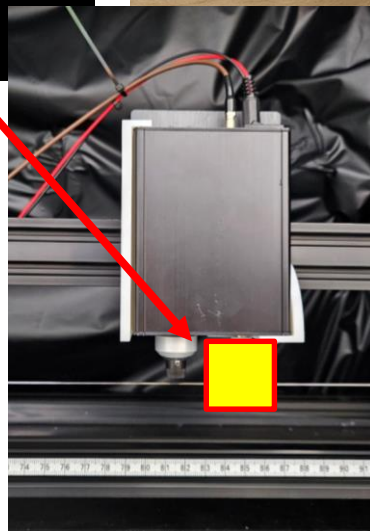


LED to SciFi

Soft material (sponge, foam, ...)



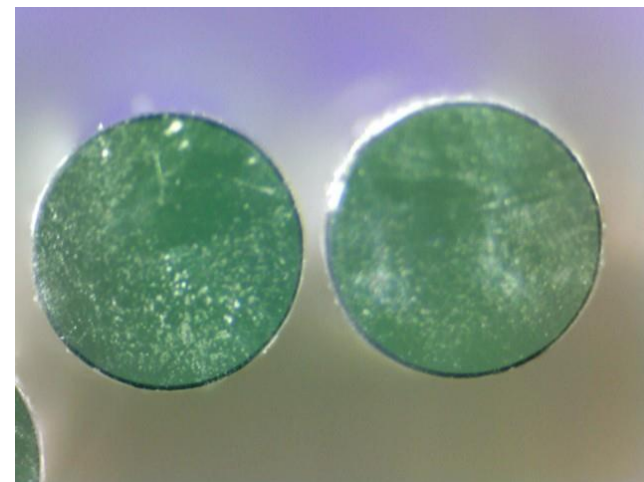
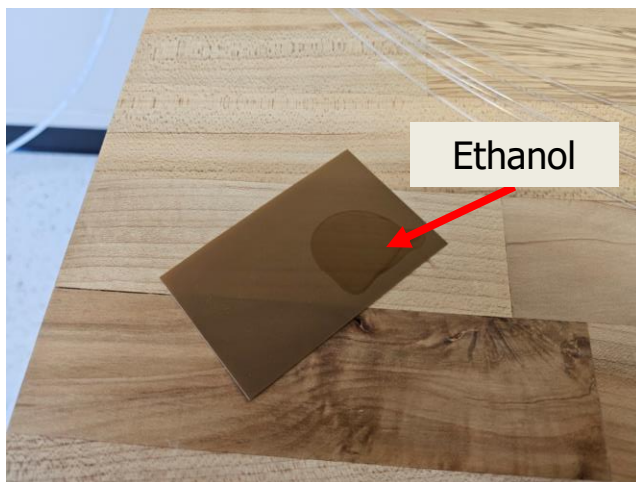
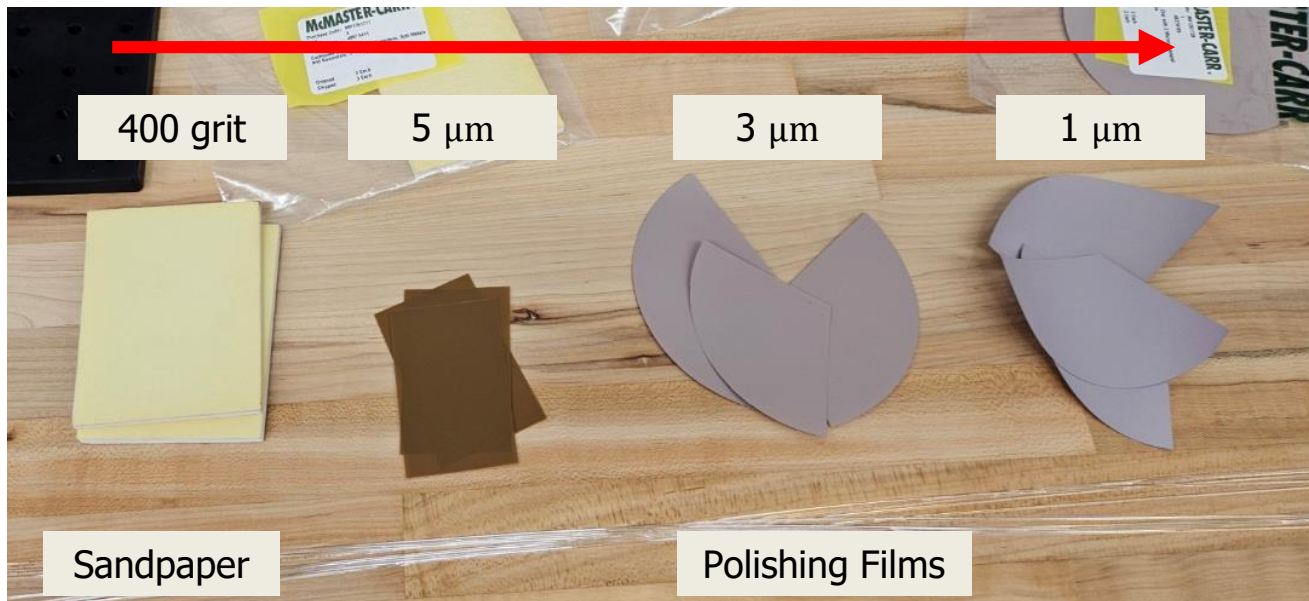
SciFi to SiPM



Hold and aligns fiber with LED driver,
while the driver moving on rail.

Fiber Polishing

Method



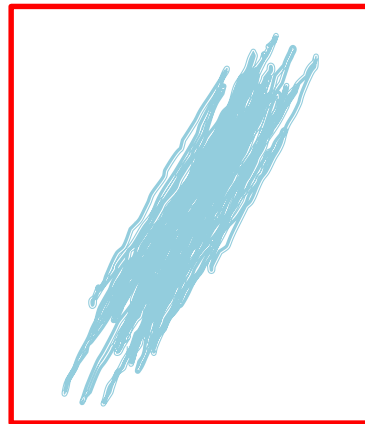
Fiber Polishing

Instruction

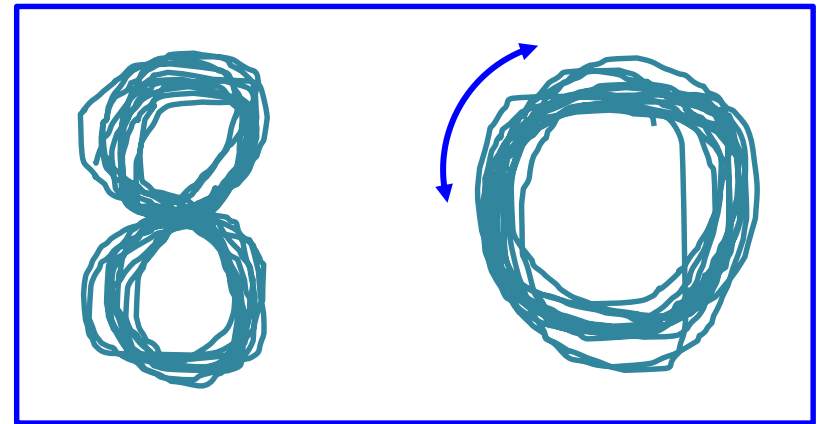
Please **wear GLOVES** on all process. (Latex, Silicon, ...)

0. Align & grip 3~4 fibers near 1cm point from the edge.

1. Grind fibers on 400 grit sandpaper, **until they become flat**. (~1 min.)



X



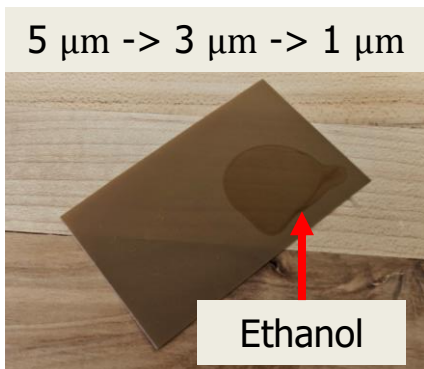
O

Grind fibers drawing 8 or O shape, to make edge of fibers perpendicular

2. Grind fibers on polishing films, **5 μm -> 3 μm -> 1 μm** . (each ~2 min.)

Spray ethanol on polishing films before grinding, and clean up fiber with ethanol swab after each process.

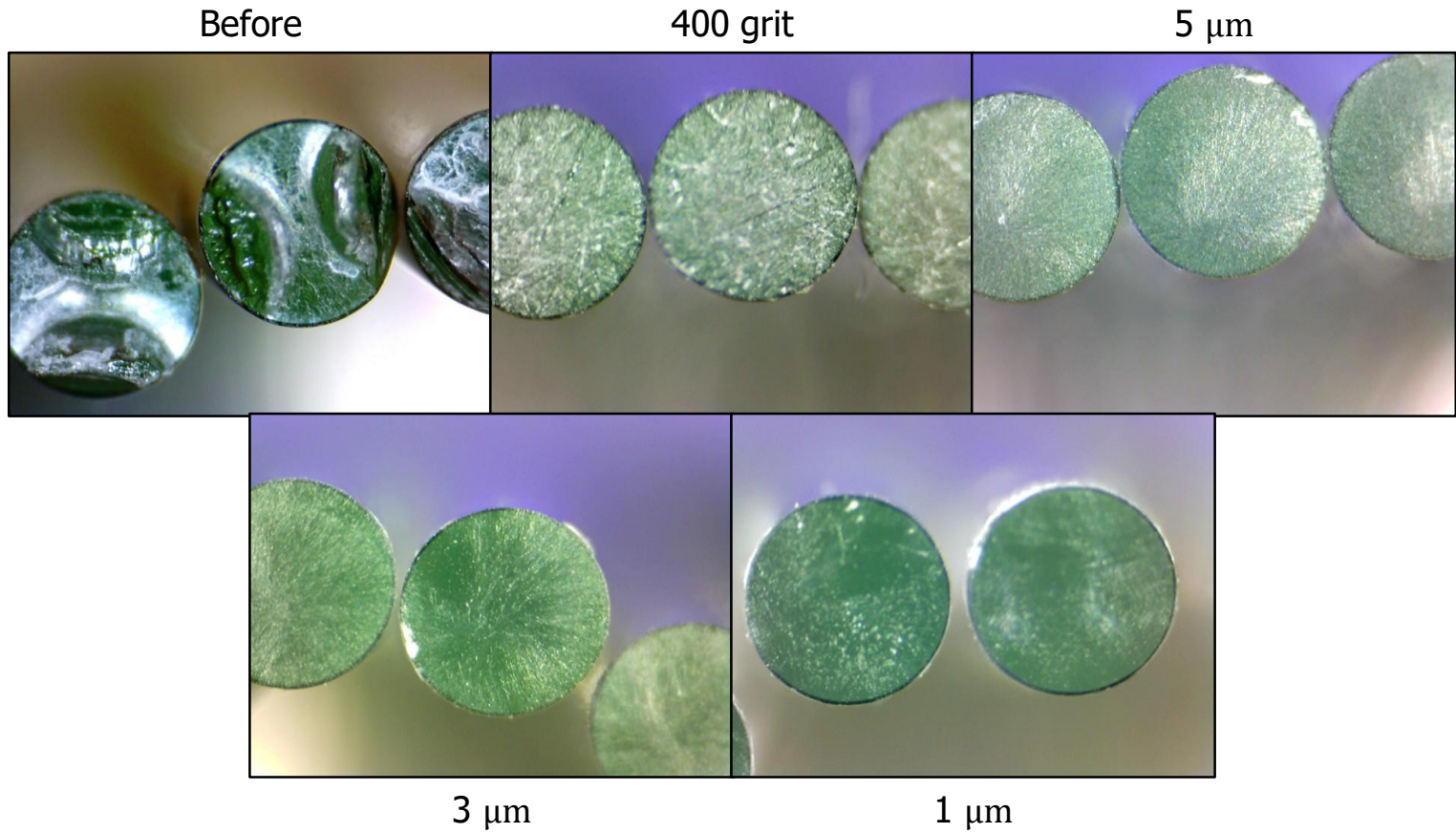
This helps eliminating grinded particles of fibers on them.



Fiber Polishing

Single Cladding

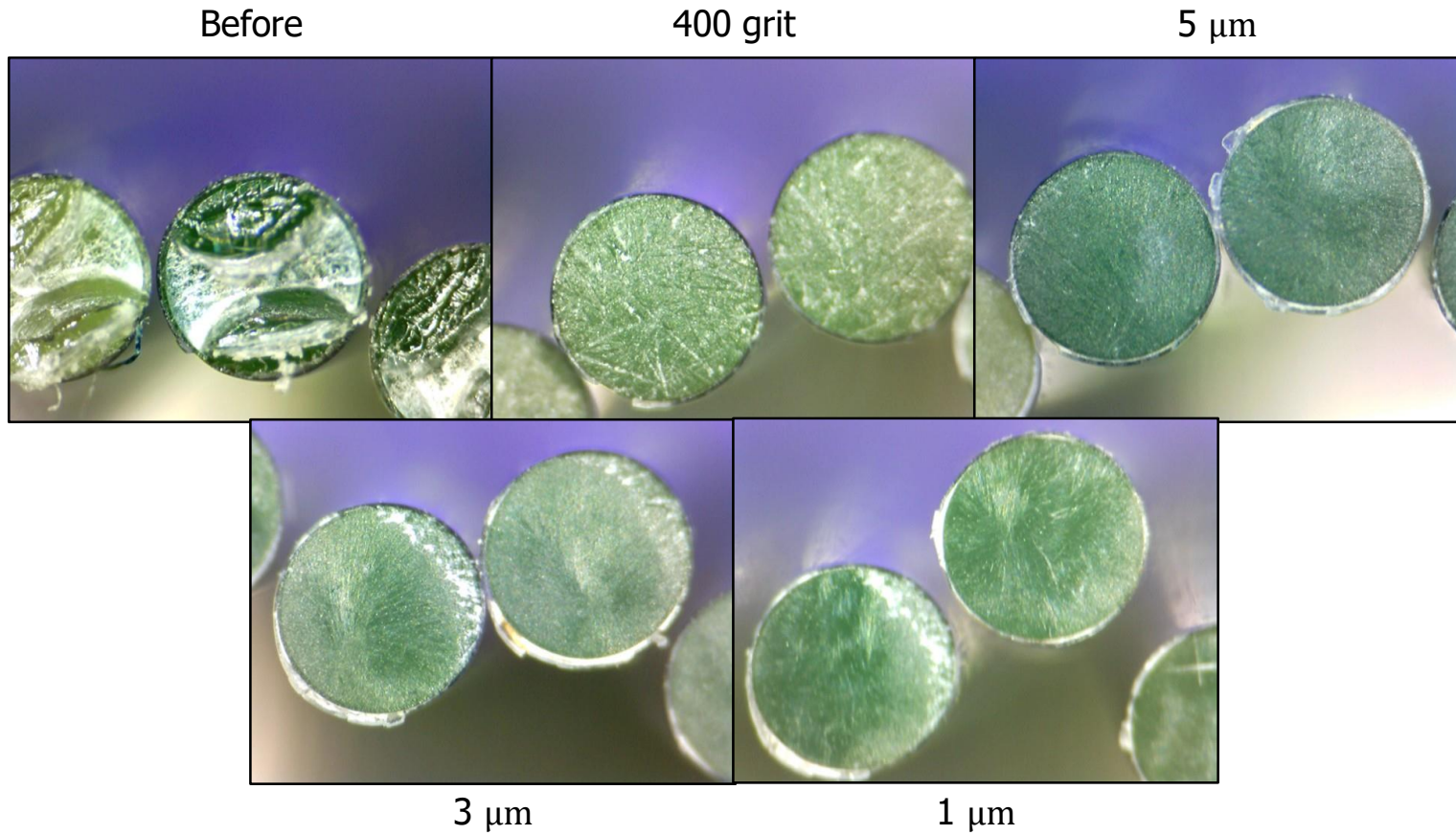
Single Cladding



Fiber Polishing

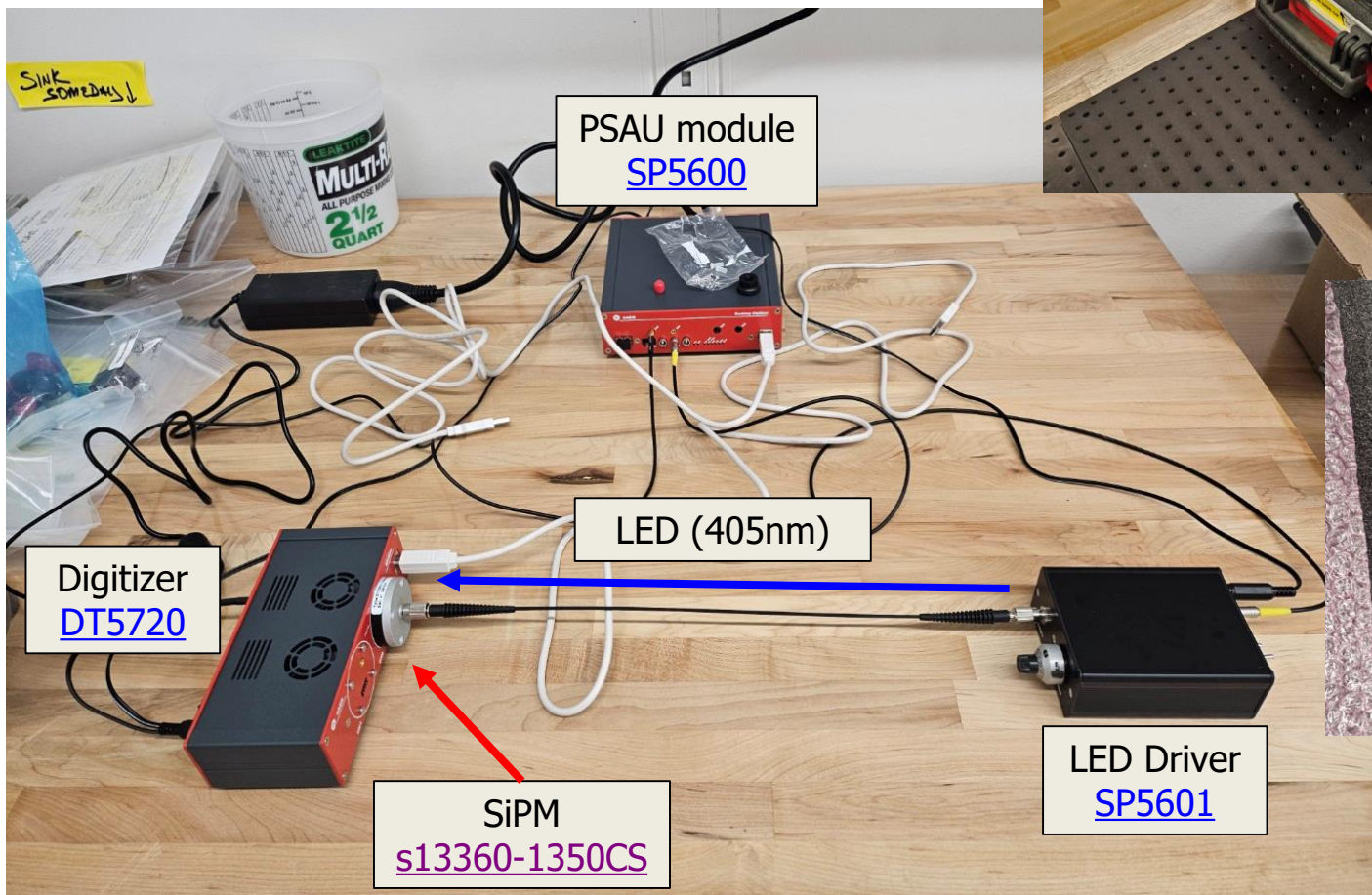
Double Cladding

Double Cladding



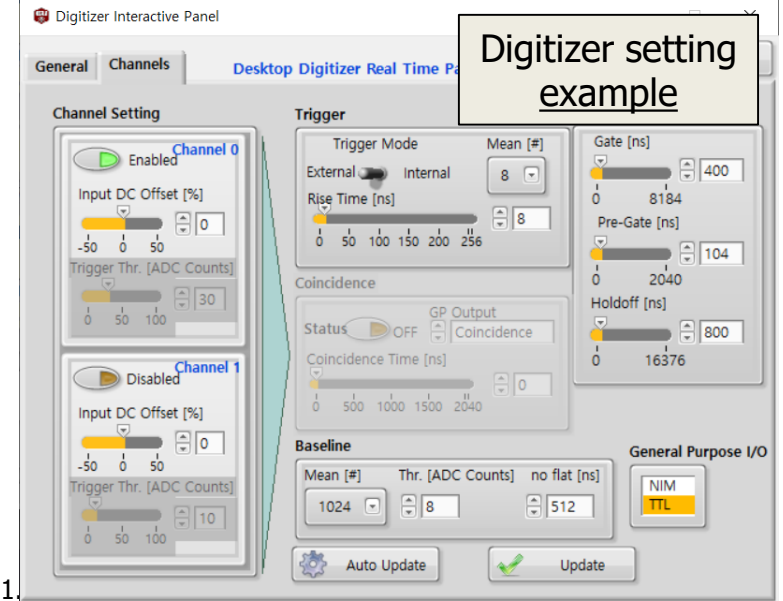
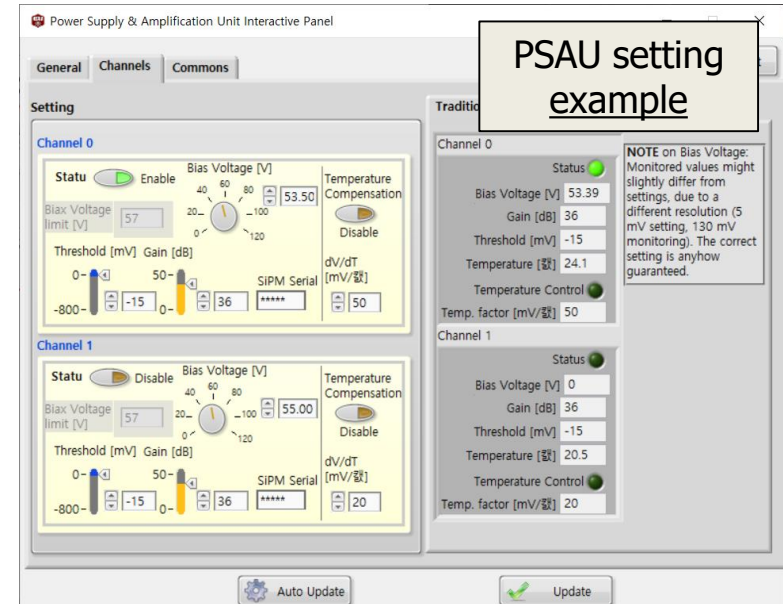
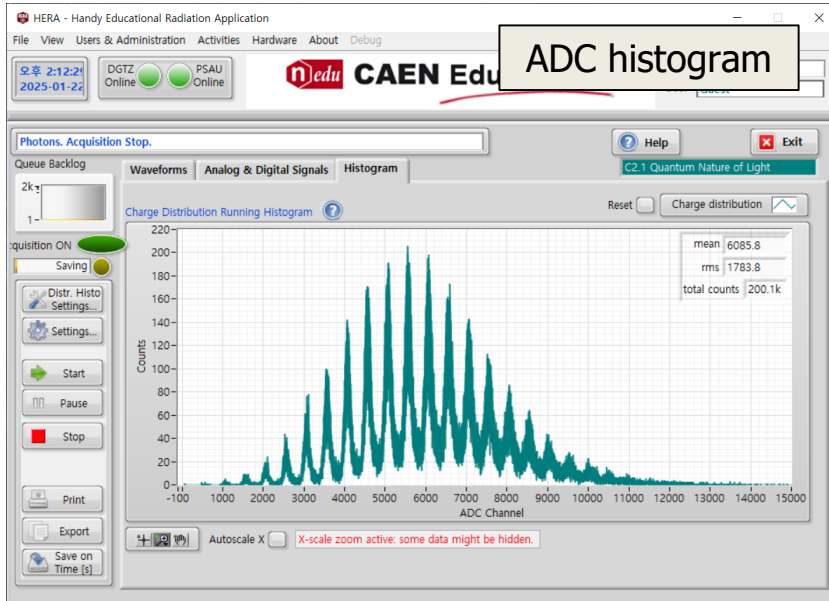
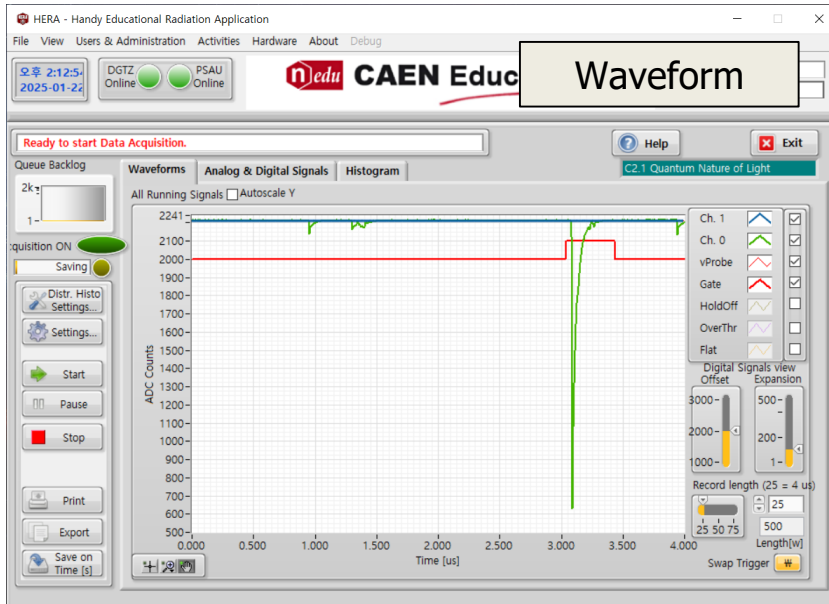
SP5600E Working Test

Hardware Setup



SP5600E Working Test Software Setup

CAEN **HERA**

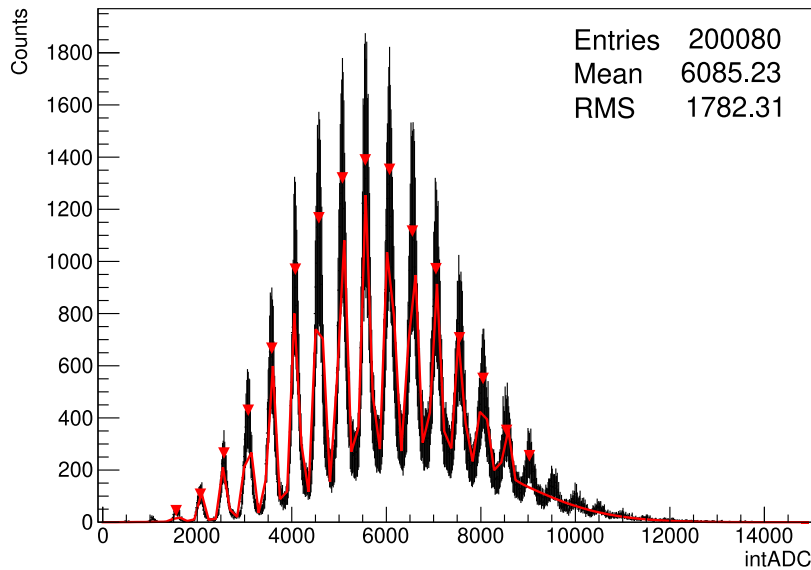


SP5600E Working Test

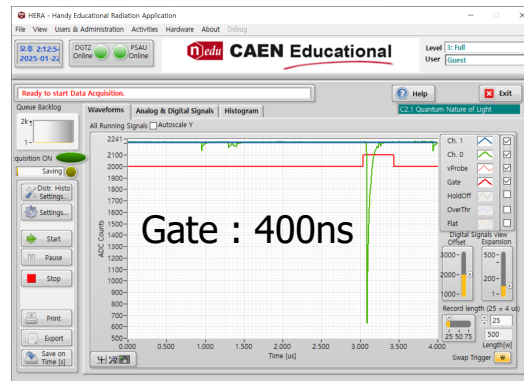
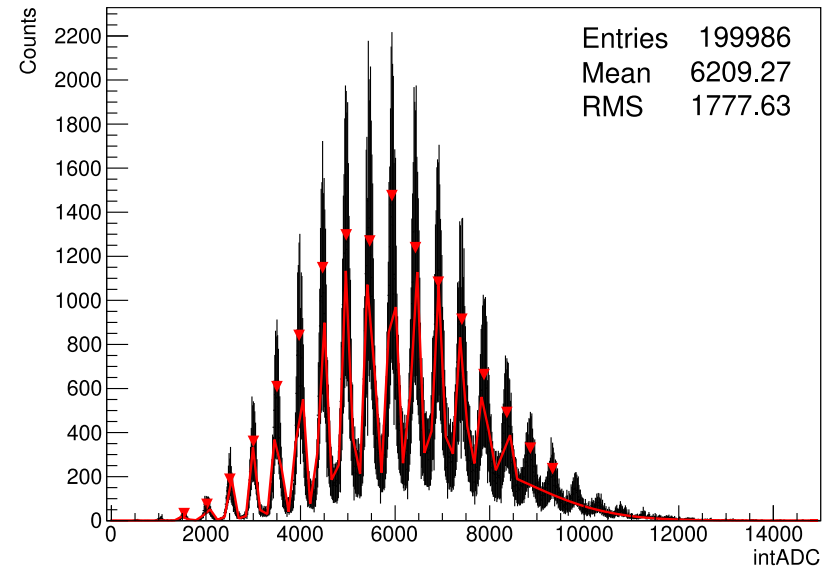
Multi photon distribution

HV : 53.5 V ($V_{BD} = 53$ V), LED amp. : 4.5, Evt # : 200k, ext trigger

SiPM #1



SiPM #2

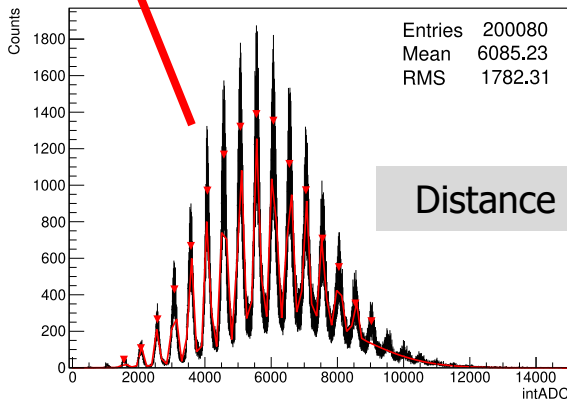
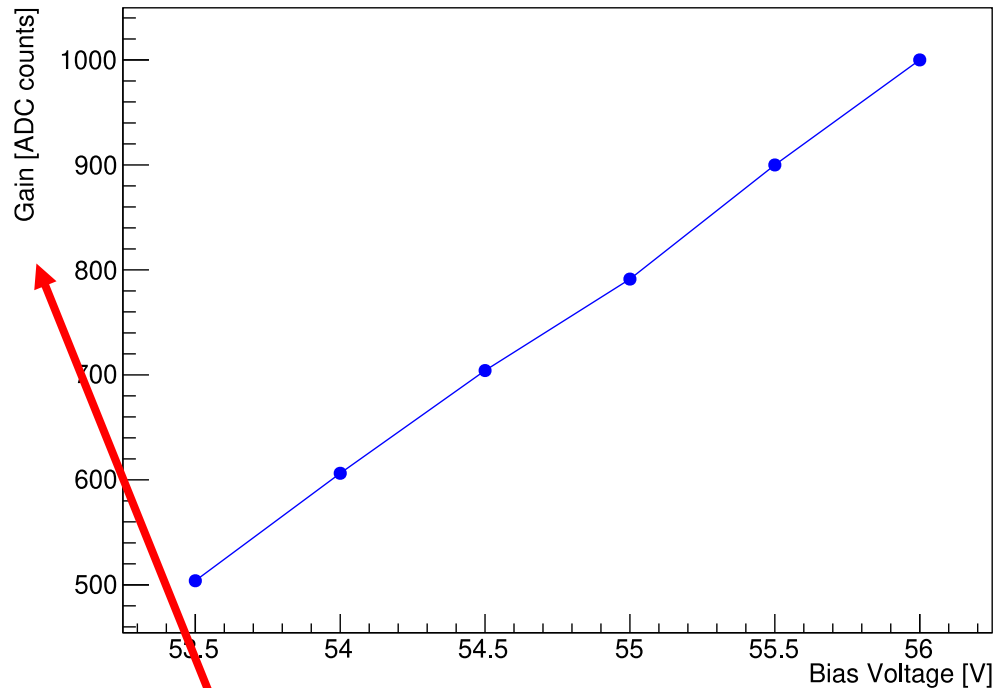


Shows clear multi-photon peaks

SP5600E Working Test

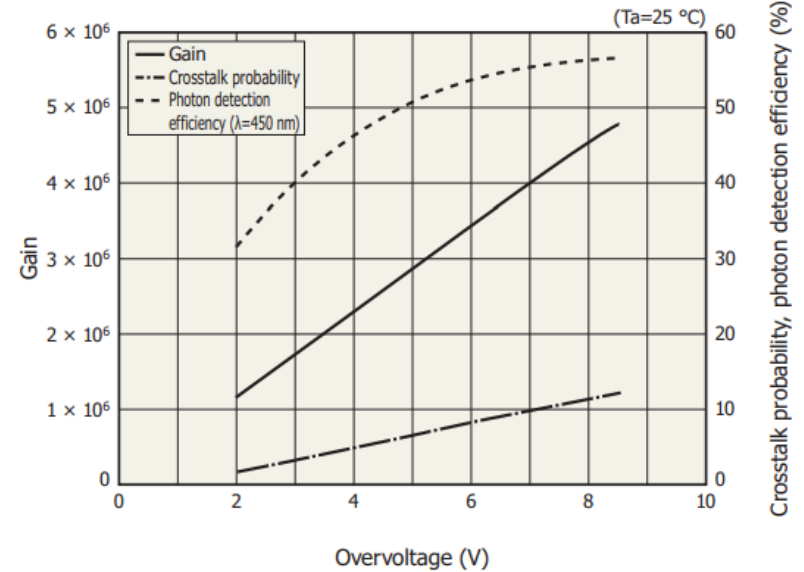
Gain vs Bias Voltage

SiPM #1, ($V_{BD} = 53$ V), Δ ADC vs Voltage



Distance (ADC) between 3rd, 4th peak

S13360-1350CS

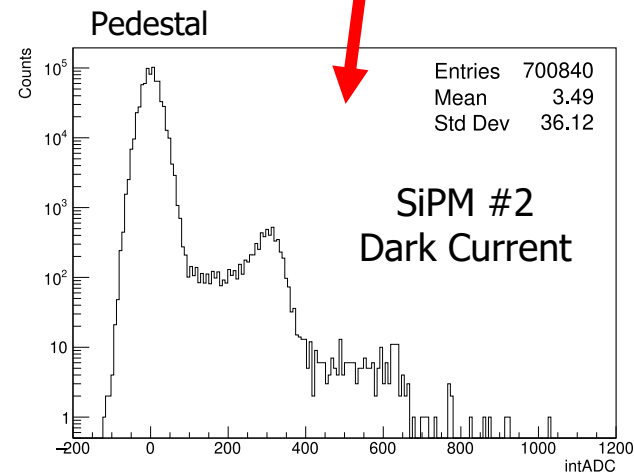
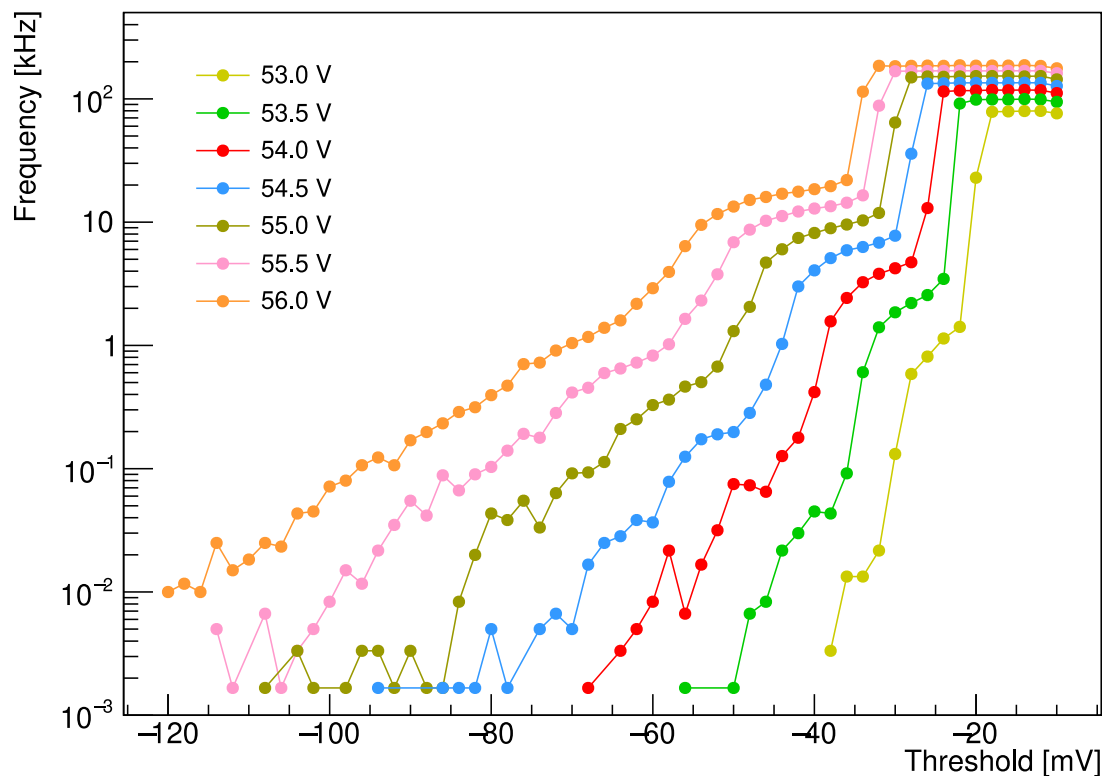


From spec. sheet ([link](#))

SP5600E Working Test

Threshold vs Frequency

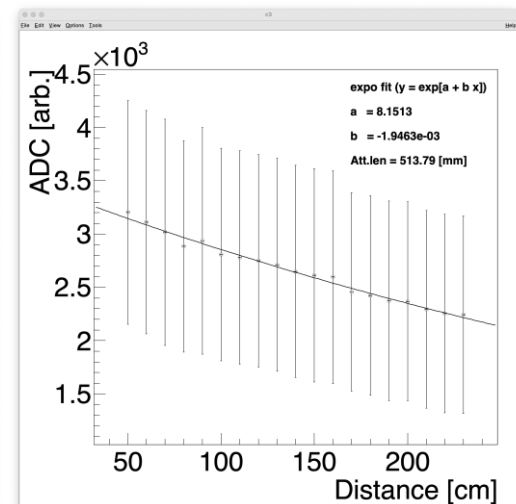
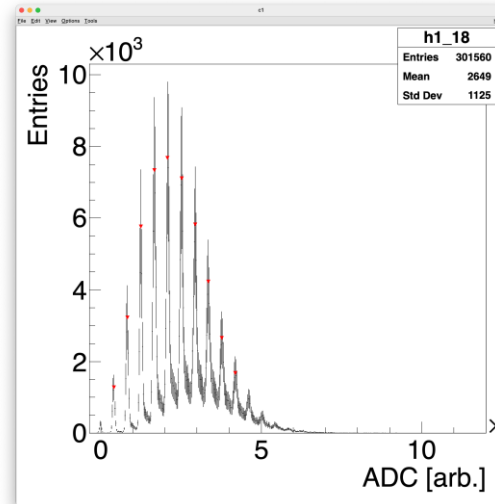
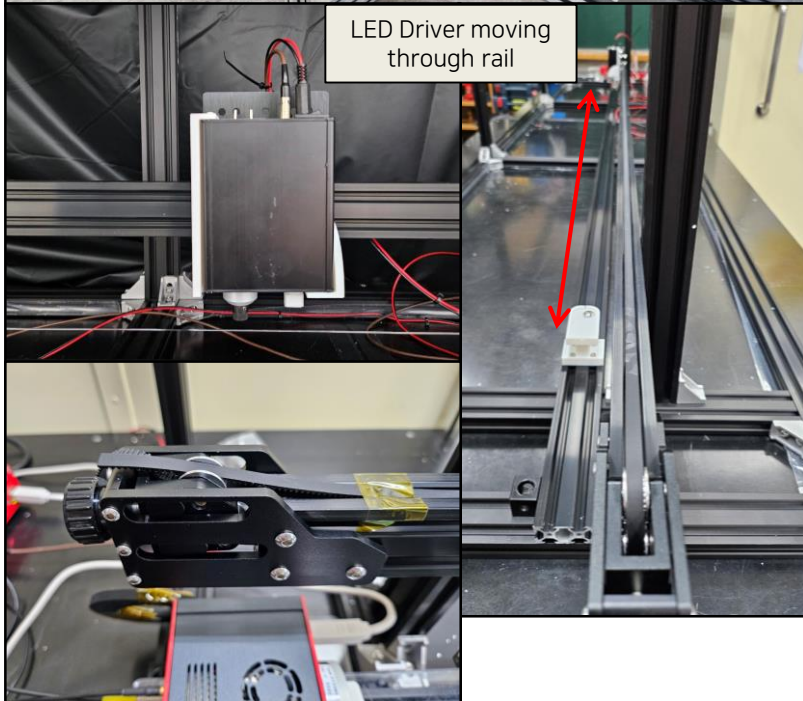
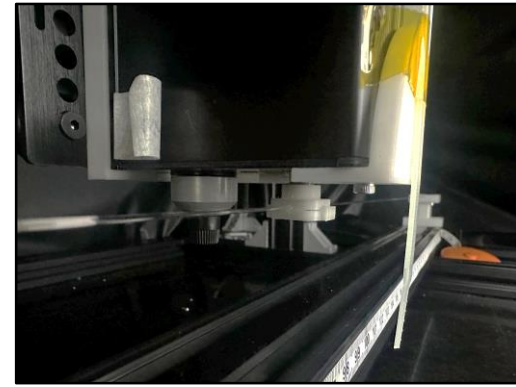
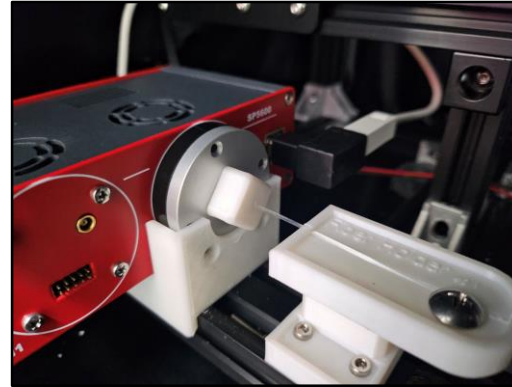
SiPM #1, 53.0 V ~ 56.0 V, 2mV interval



Backup

Setup at UoS

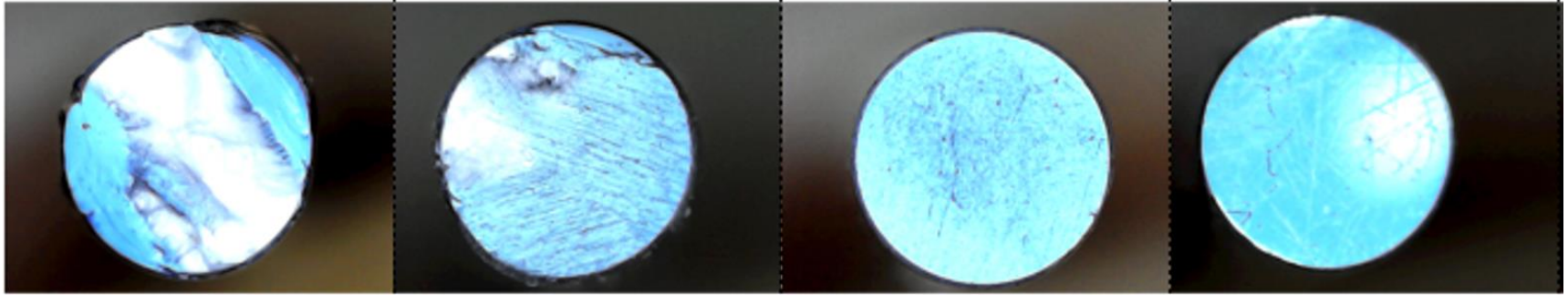
SP5600E, LED on rail



Preliminary Results (SCSF-78), measured on UoS setup.

Fiber Polishing

@Yonsei



Before Polishing

Sandpaper

3 μ m Film

1 μ m Film

