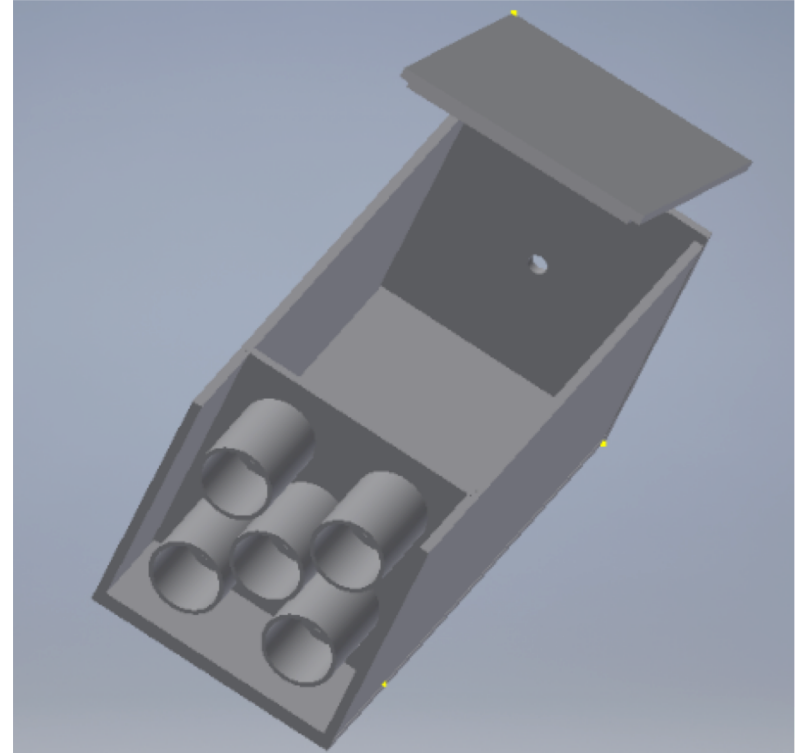
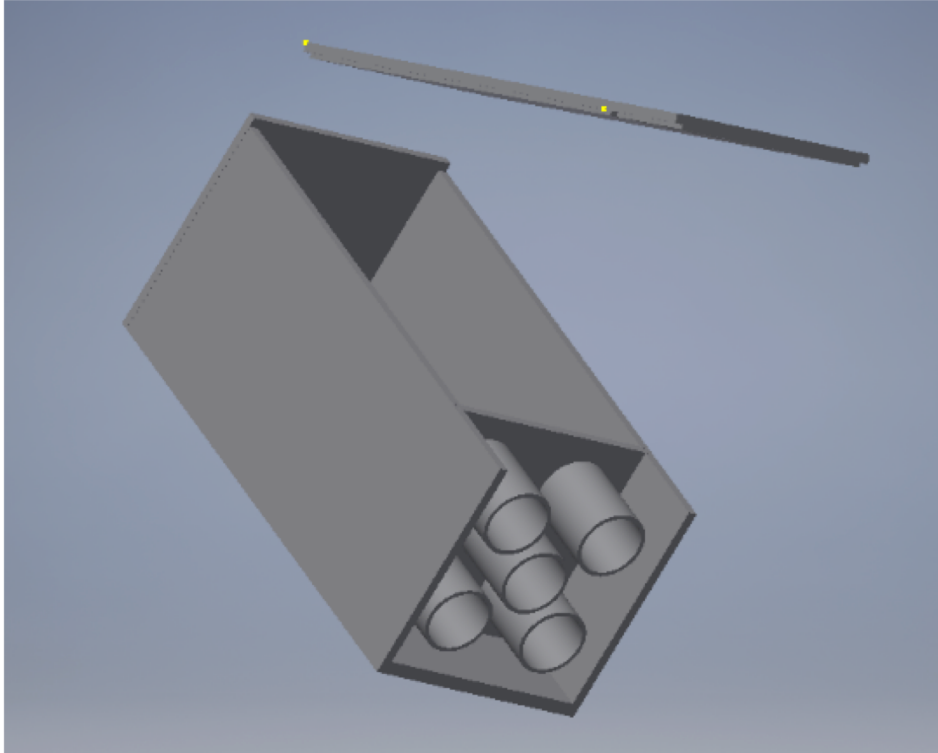


# Mid Report of Multi PMT Test System Construction

Seon Ho Nam

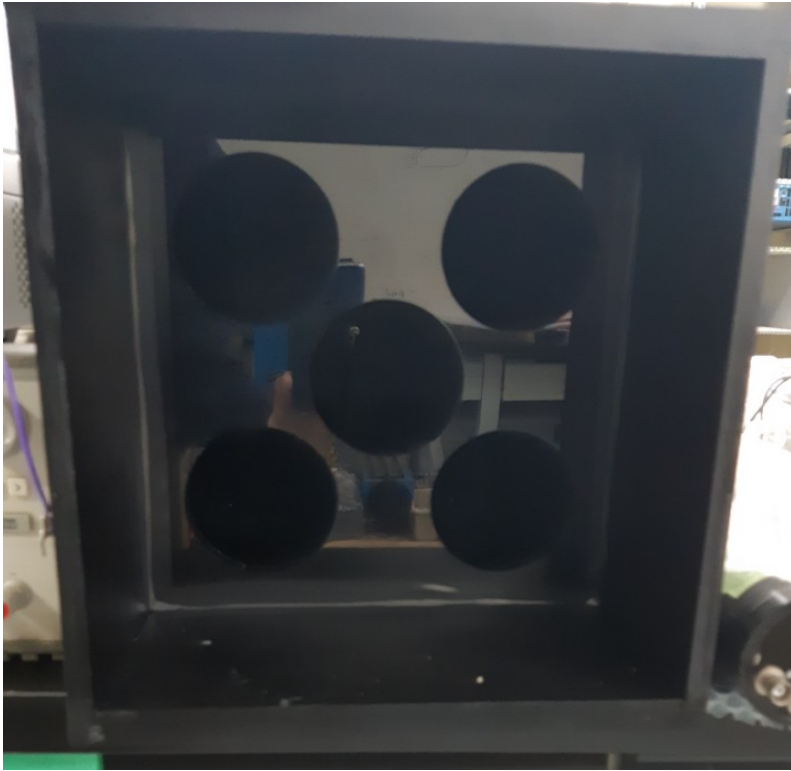
2018.06.01

# Inventor Design



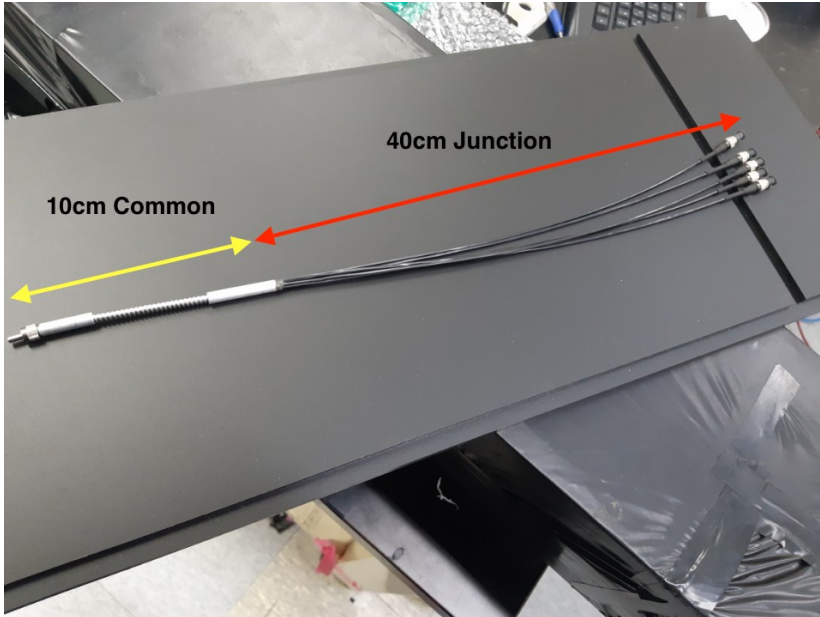
Decided design after last LAMPS meeting (5/2)

# Dark Box Frame



Material : Black acrylic , Thickness : 10mm ~ 15mm ,  
Inside wall : Matte treated

# Optical fiber



1 to 5 Fiber Bundle

Fiber : FT400UMT-MMF,  $\text{Ø}400\mu\text{m}$  core

Common Length 10cm, Junction Length : 40cm

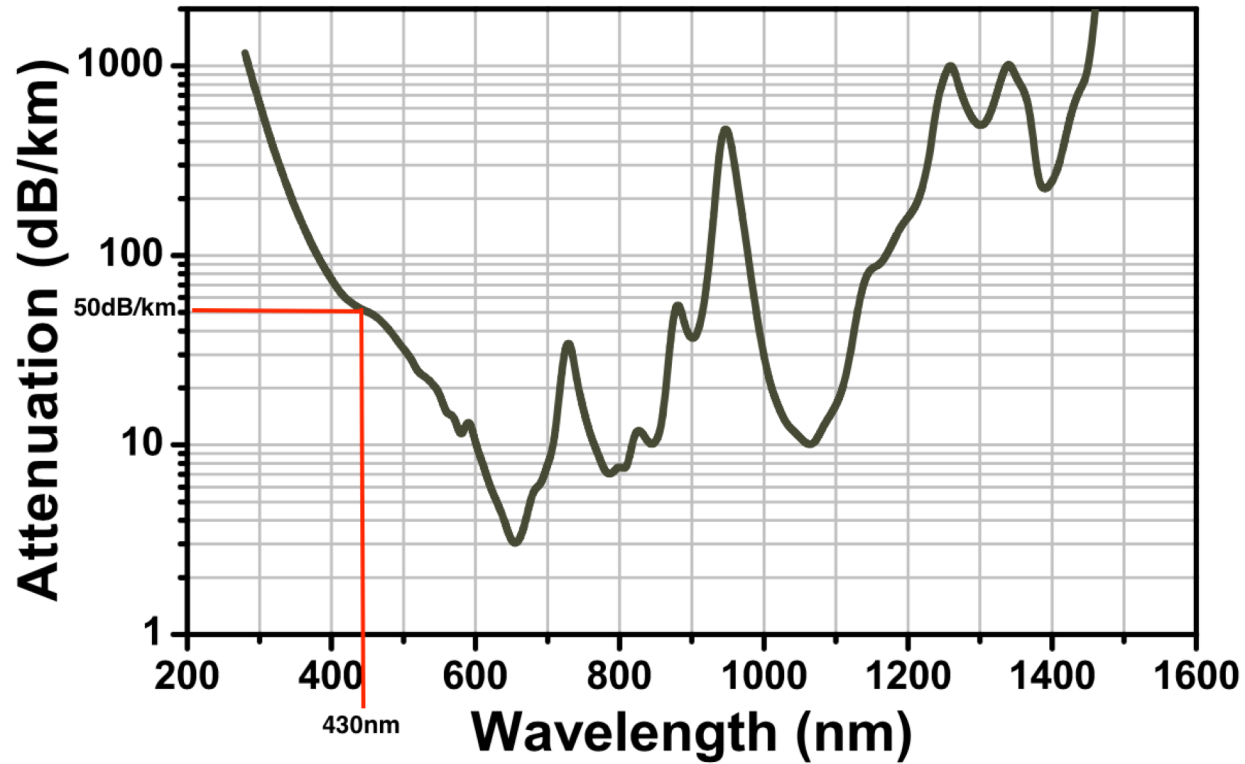
Jacket : common  $\text{Ø}5.0\text{mm}$  SUS Jacket (Spiral shape steel cover)

Junction  $\text{Ø}3.0\text{mm}$  or  $\text{Ø}2.0\text{mm}$  PVC Jacket

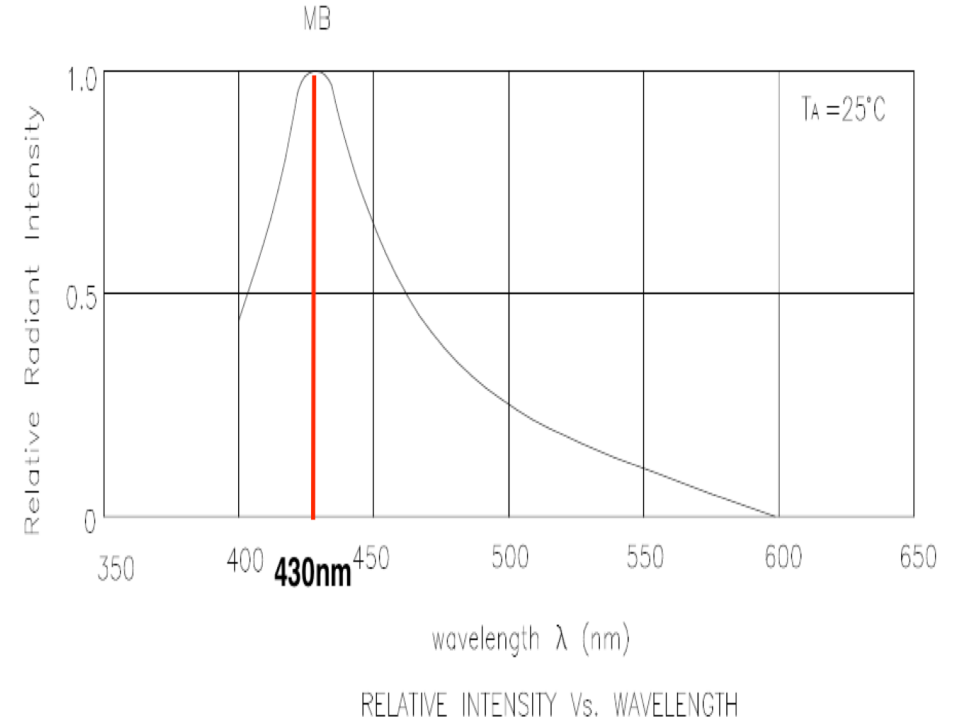
# Fiber Specification

- Item # : **FT400UMT** , 0.39NA
- Wavelength Range : **300 - 1200 nm**
- Core diameter :  $400 \pm 8 \mu\text{m}$
- Cladding diameter :  $425 \pm 10 \mu\text{m}$
- Max Power Capability : Pulsed 4.0MW

### UV to Visible Transmission (High OH)



Wavelength - Attenuation (from specific sheet)



LED wavelength spectrum

$$50\text{dB/km} = 0.025\text{dB}/0.5\text{m} \rightarrow \frac{P_f}{P_i} = 10^{-0.0025} = 0.994 \approx 1$$

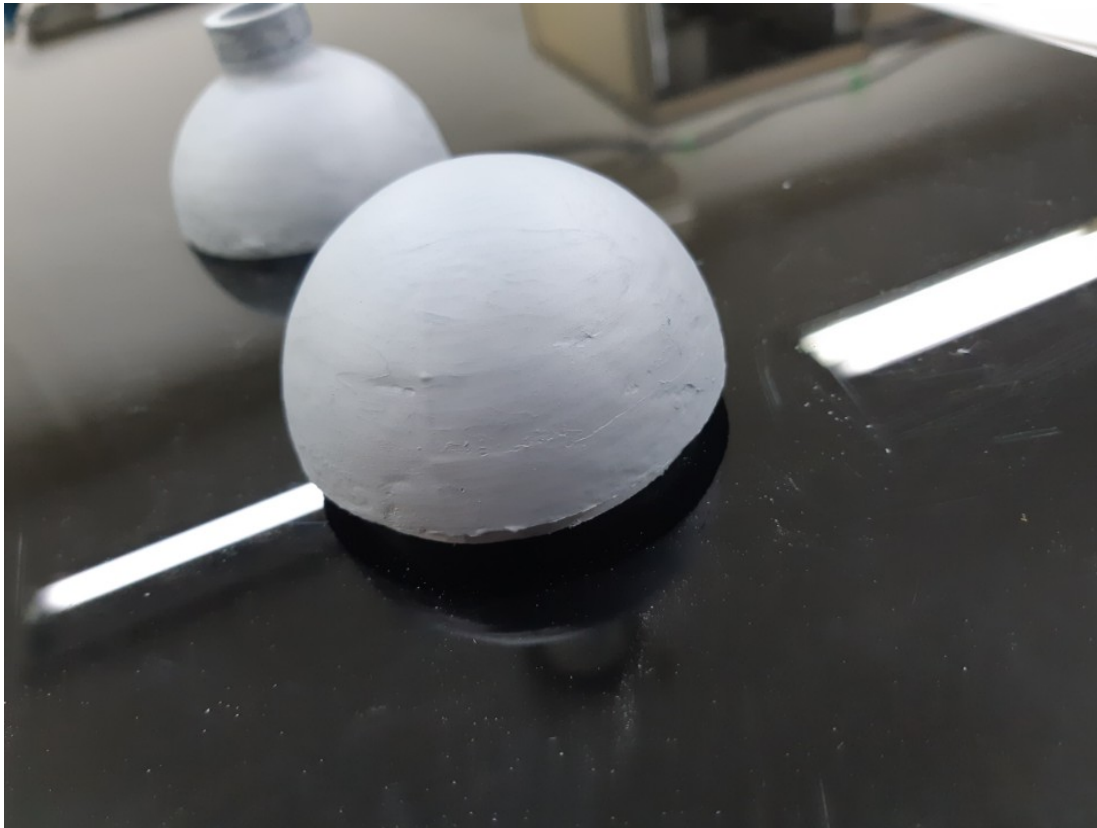
# Diffusion ball and LED

Diffusion ball was formed by 3D printing -> The Material has **very good light transmission!!**

so I needed to do light shielding



First coated inner and outer surface using putty which include metal powder

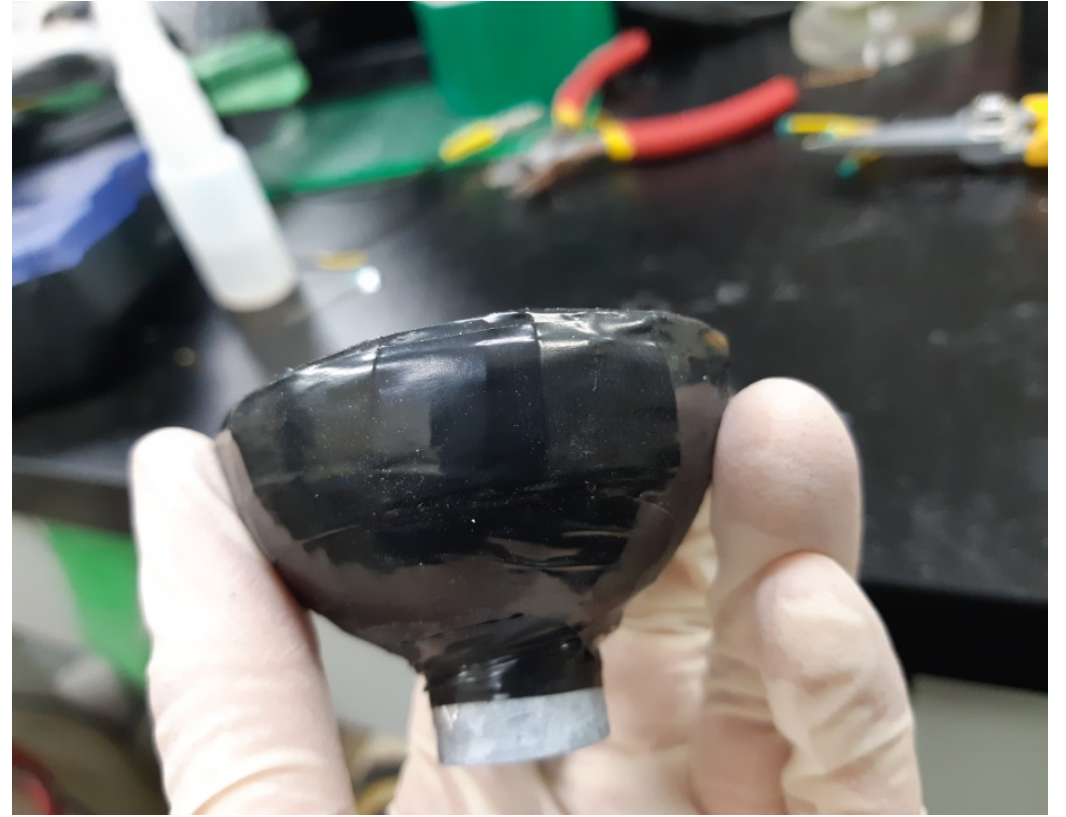




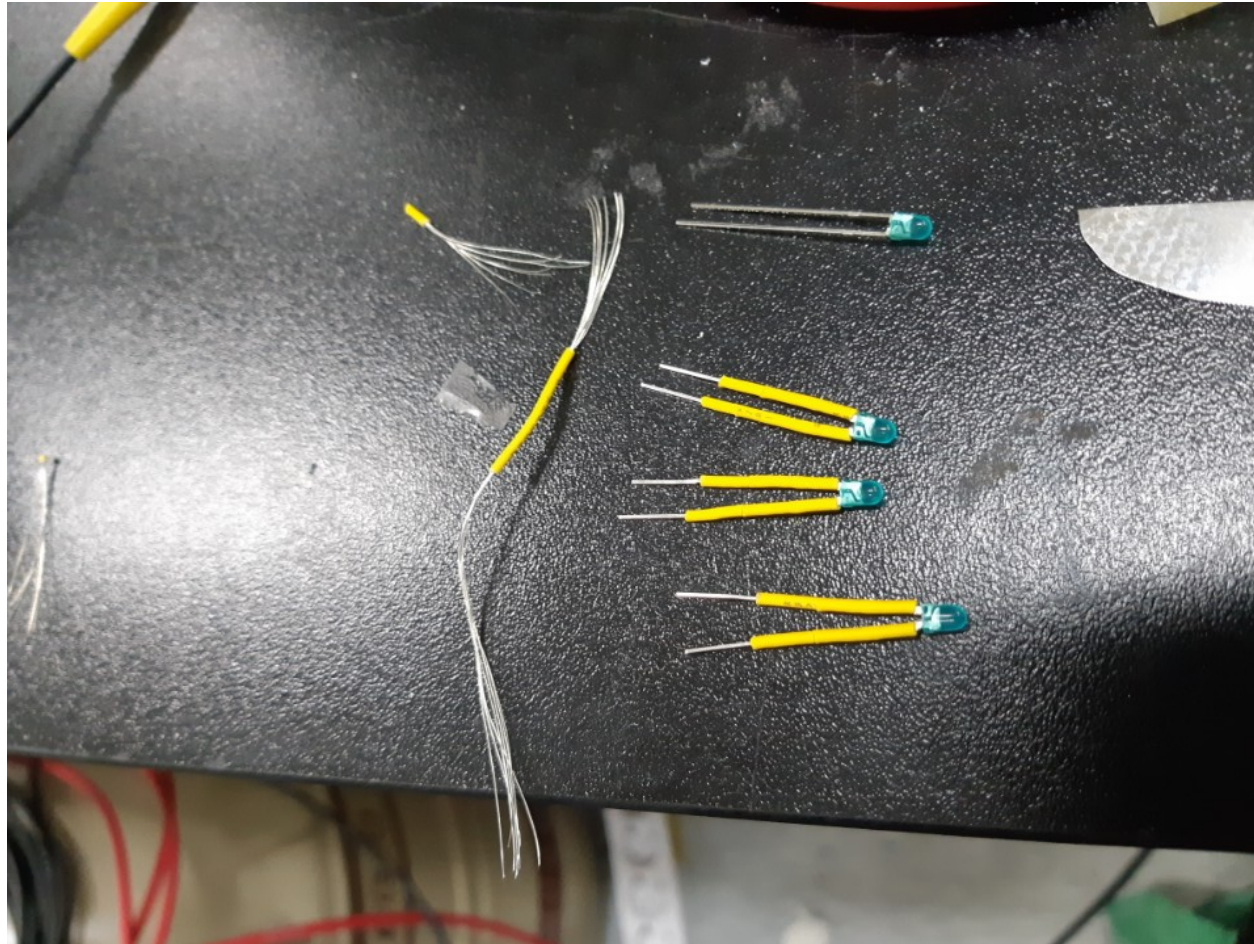
Next attached aluminum foil on outer surface using instant glue



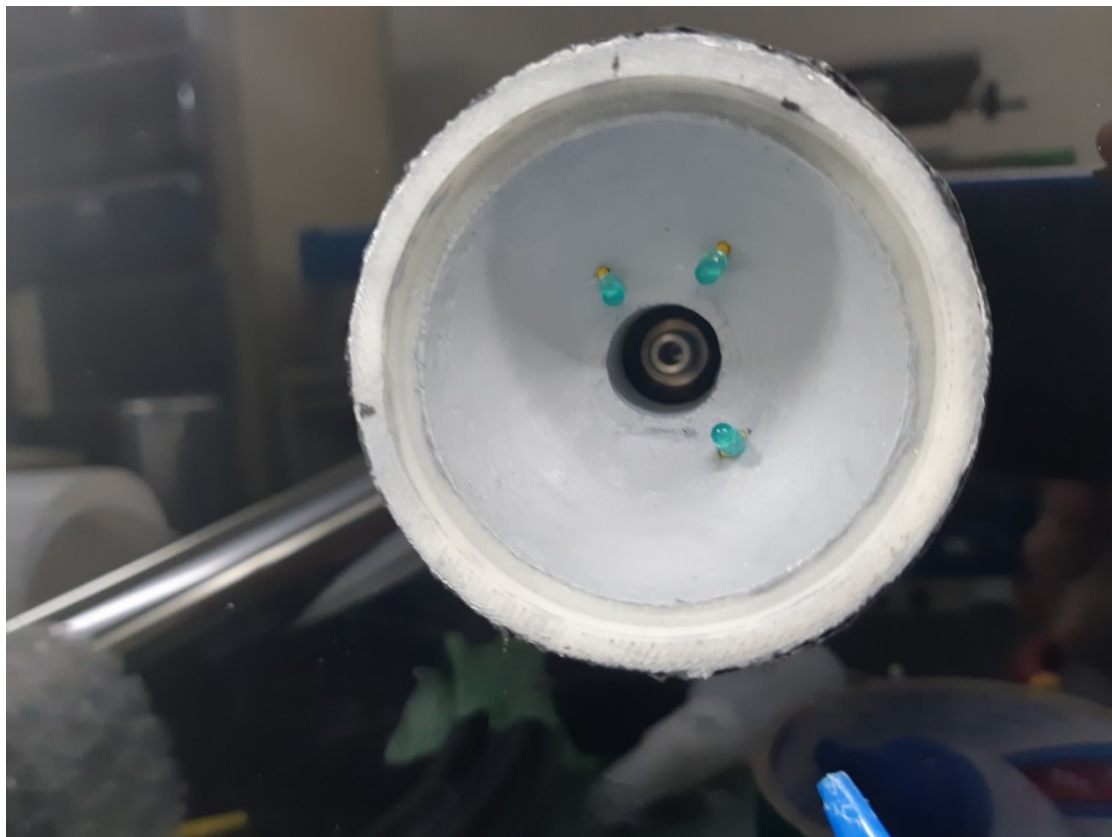
And than, cover black sheet and black tape on aluminum foil



For avoid electrical short by metal surface, LED terminals covered by rubber (from electric wire)



Finally, drilled the LED terminals hole and coated reflection paint inside wall

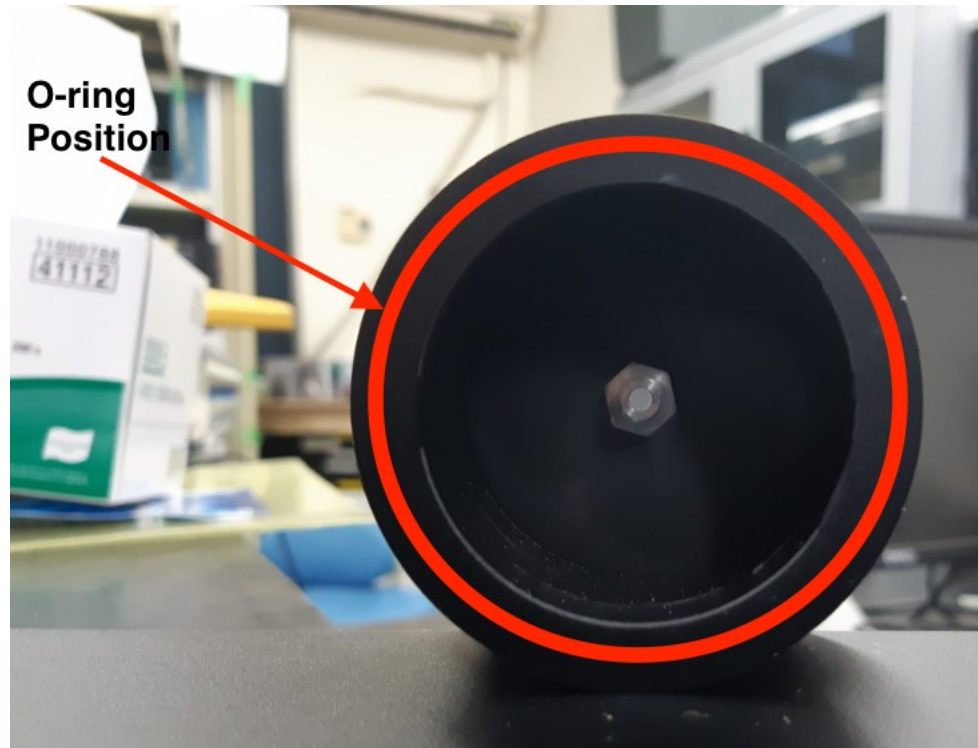


# Result



# Future Plan

- Cut PVC pipe for PMT fixing and buy O-ring for block outer light



- Construction will finish next week (may be....)
- After construction, test the system using PMT in out Lab and I will report the final result.