2013_10_11_labmeeting

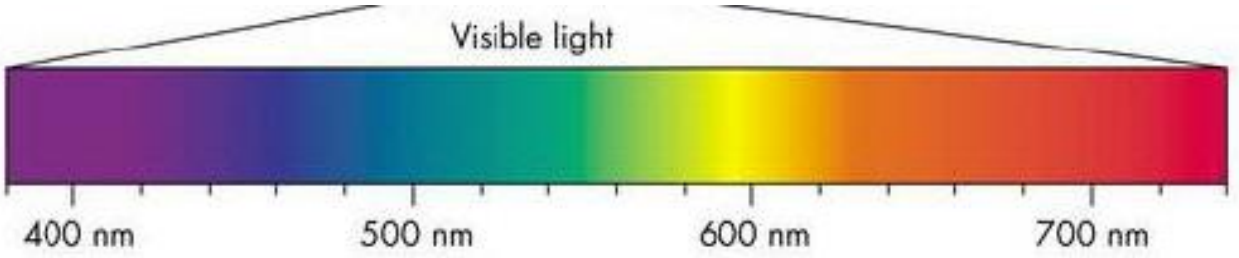
KiSoo Lee

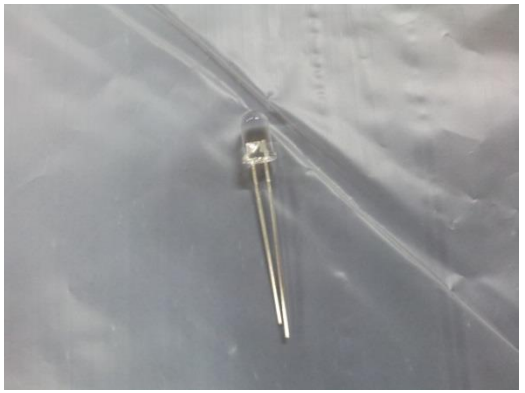
Effect of light guide

- Test effect of light guide to the scintillation light
- Attenuation or reflection or gathering
- Compare different light guide, source(LED, Co)

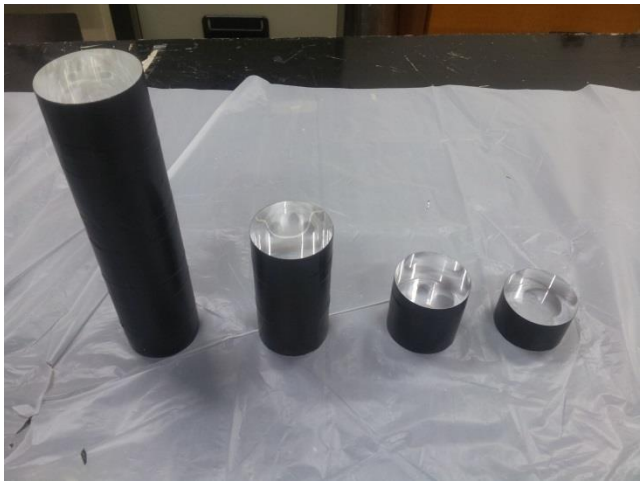
LED

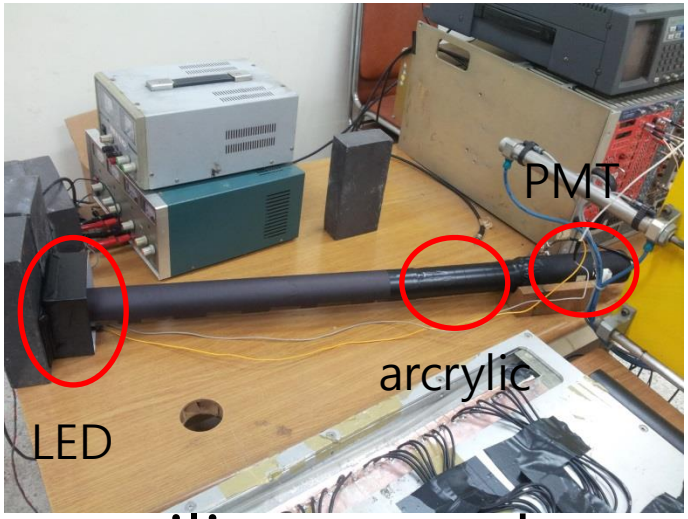
- We assume that low intensity light affect more attenuation in the light guide
- Maximum yield wavelength of BC-408 scintillator is 425 nm
- We do not know width of wavelength range
- So we used just blue LED(nm)



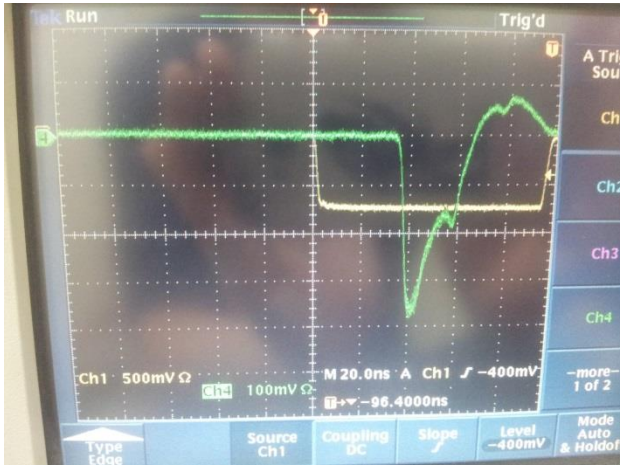


LED test with cylinder

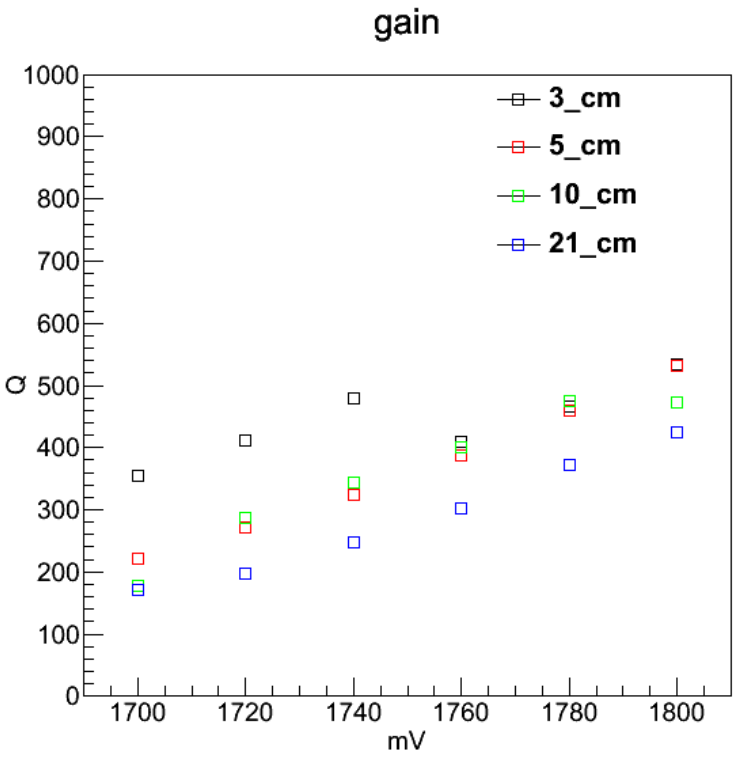




- 3, 5, 10, 21 cm cylinder shape silicon used
- Give square pulse to LED and get discrete pulse

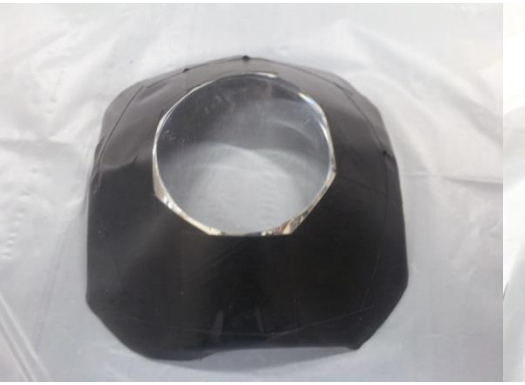


Cylinder result

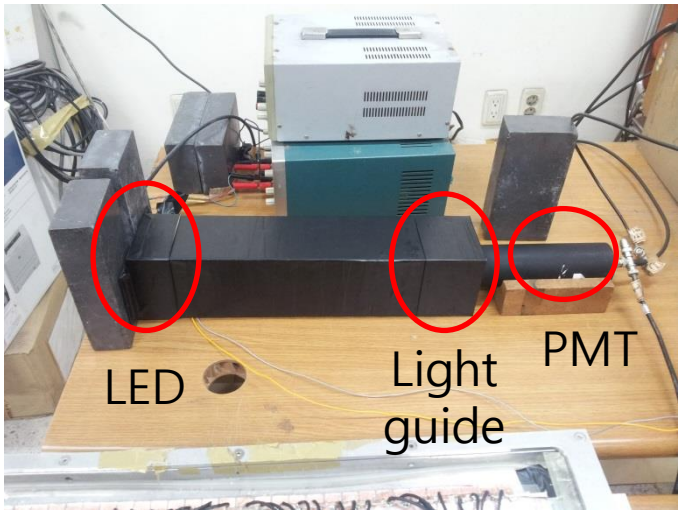


- 3 cm case need more test
- 5 cm and 10 cm cases are similar
- But 21 cm case shows attenuation
- No difference between low and high voltage

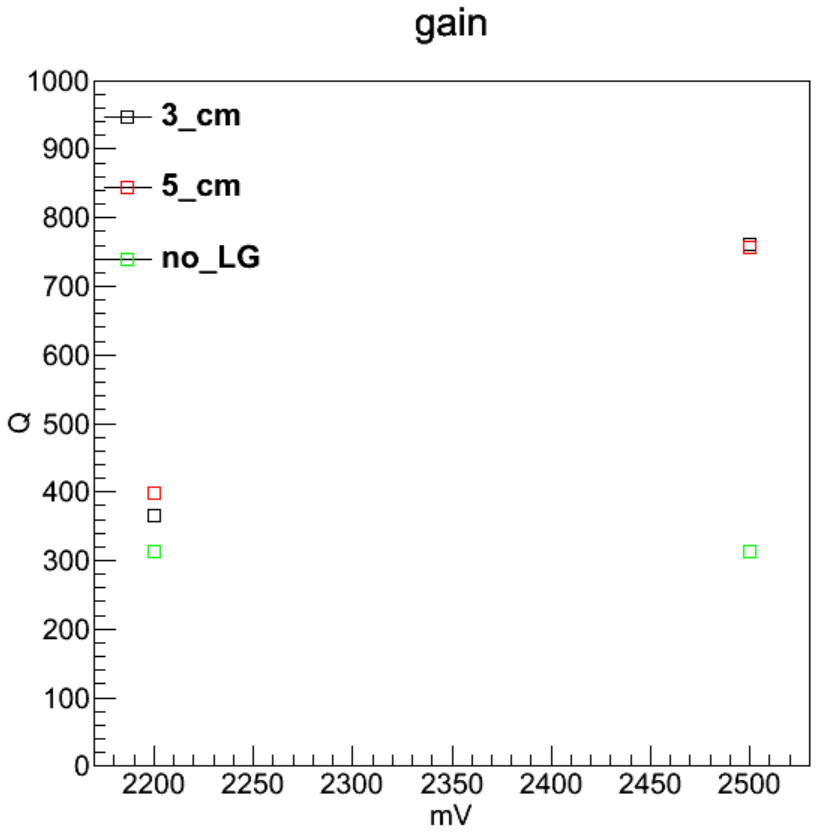
LED test with light guide



- 3 , 5, 21 cm light guide used



Result of light guide with LED

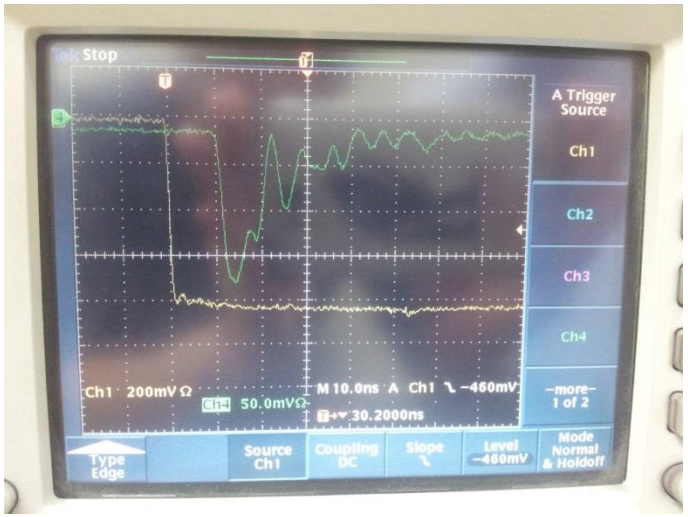


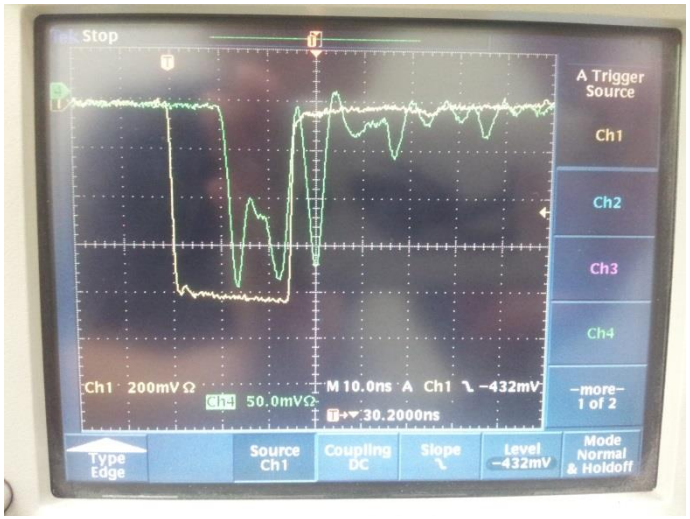
- No voltage dependence in no Light guide case
- 21 cm cases are all overflow
- Light gathering with the light guide works
- Light gathering overcome attenuation?

Cobalt test with light guide

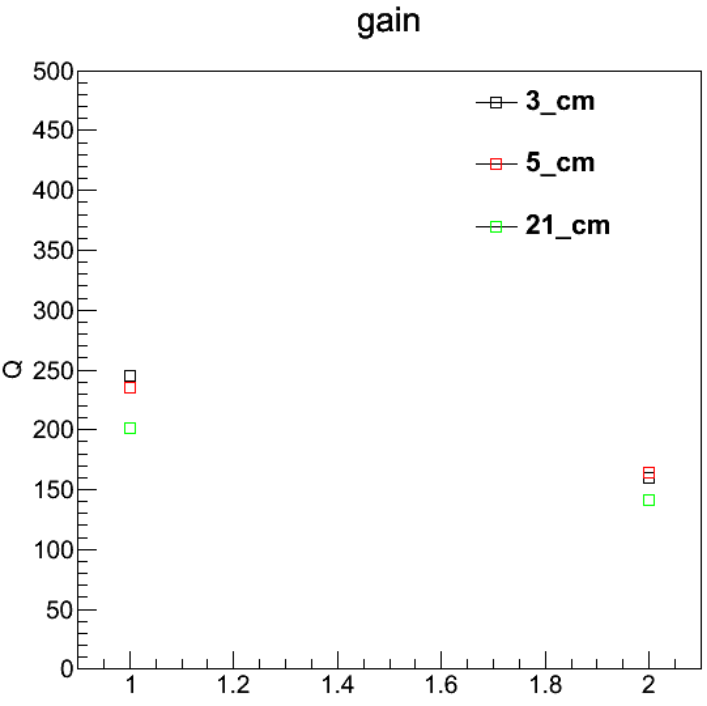
Peak selection

- For this case peak is not one
- Second peak can be larger than first and triggerable
- Compare all charge and triggerable charge case
- If ratio of them is small, it means some low pulse can not over the threshold





Peak selection result

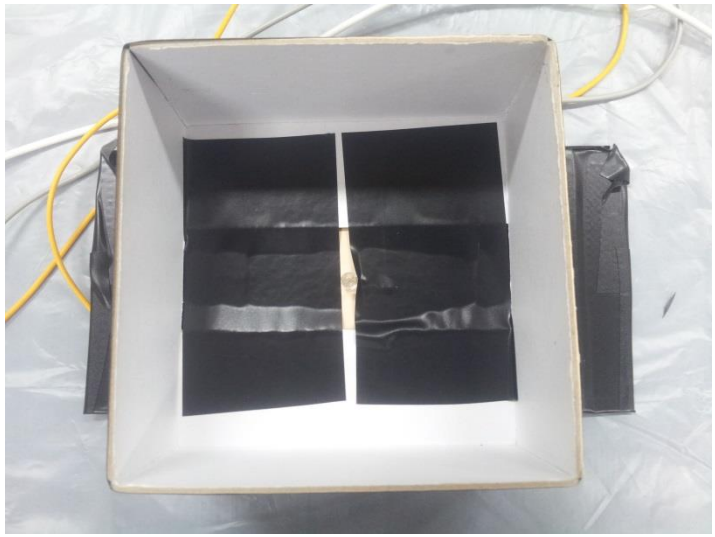


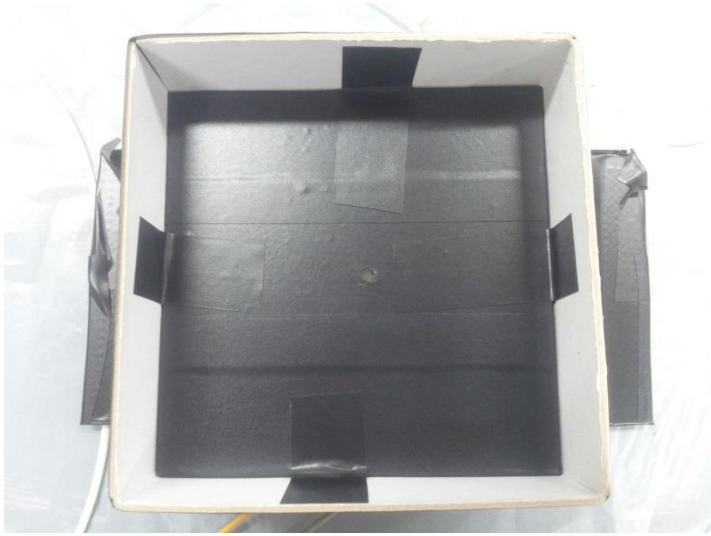
- 1: long time width
- 2: short time width
- First and second peak contribution in 21 cm is not smaller than other case
- Result is opposite with LED

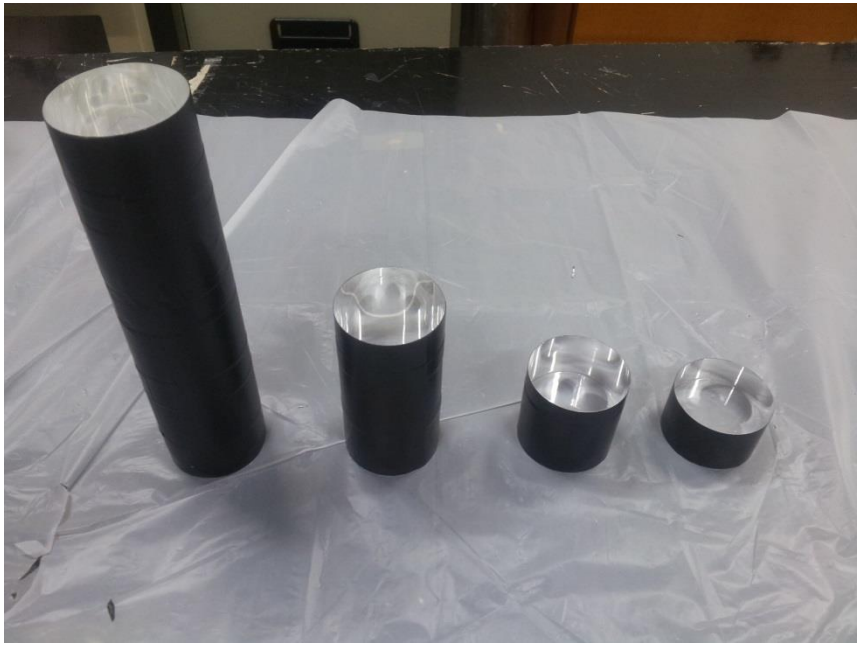
summary

- LED result and cobalt result show opposite tendency
- Geometrical effect is more crucial than attenuation?
- Is LED really profit to know characteristic of light guide?

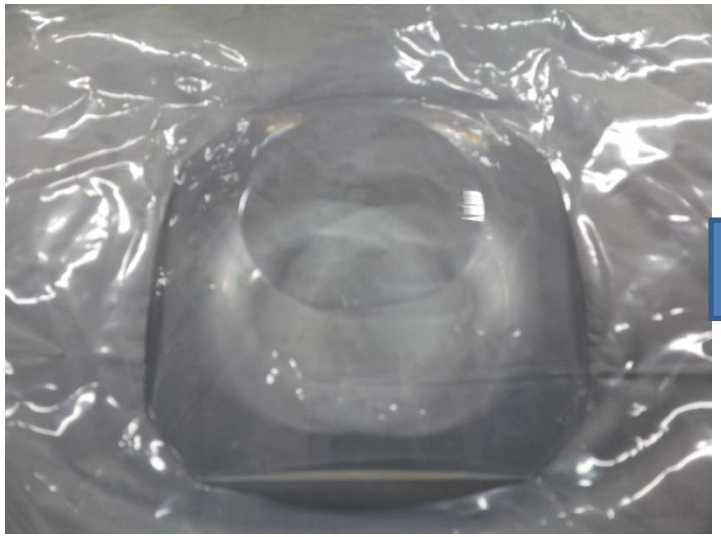
Back up

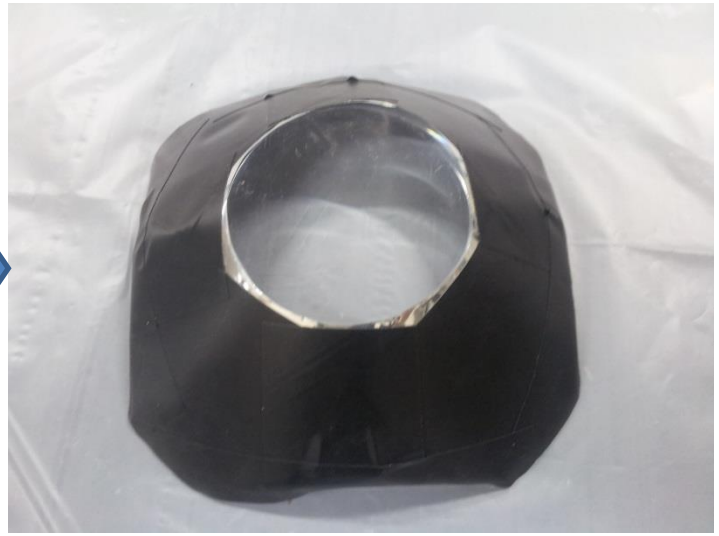




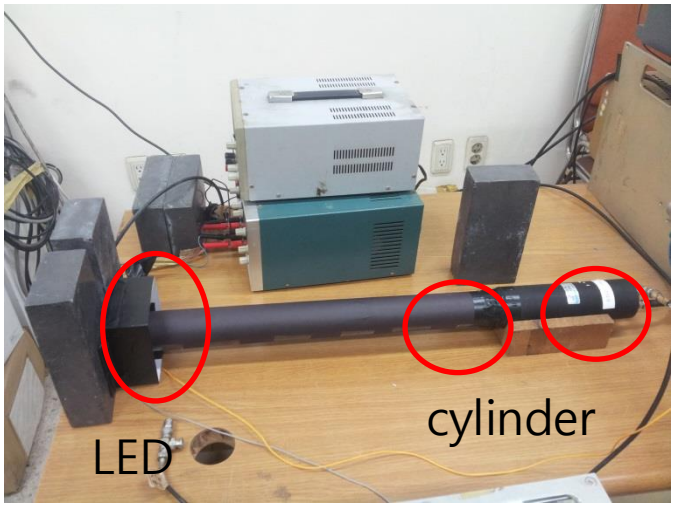


3 cm





5 cm


LED
cylinder
PMT

Cylinder results

- Voltage means LED voltage
- Detectable voltages are different for each length of cylinder