Some basic test of shashlyk material

Shandong University

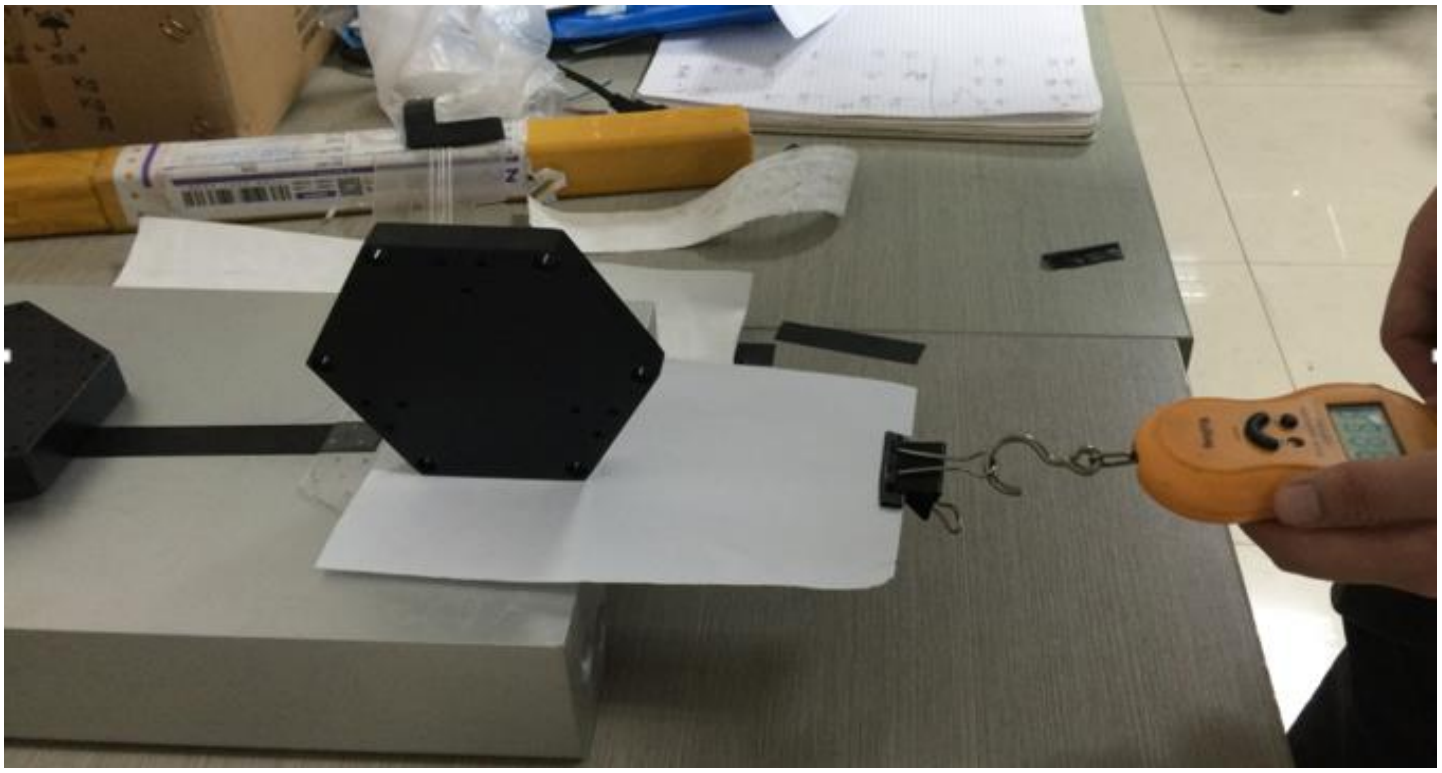
Ye Tian

Test of Coefficient of Friction

Test method

Keep the upper weight move as paper which means the friction just caused by one surface, and draw the paper with constant speed.

The LSB of spring scales is just 10g.



	Pressure(kg)	Tension(kg)	Coefficient of friction	Note
Paper/Scintillator	0.77	0.17	0.221	Friction will cause electrostatic adherence, make results larger. Just use several initial measurements.
	1.15	0.25	0.218	
	1.54	0.32/0.33	0.214	
Paper/Lead	0.77	0.25	0.325	
	1.15	0.38	0.330	
	1.54	0.52	0.338	
Tyvek/Scintillator	0.77	0.08/0.09	0.104/0.107	Electrostatic adherence phenomenon isn't obvious.
	1.15	0.14/0.15	0.122/0.130	
	1.54	0.18/0.19	0.117/0.123	
Tyvek/Lead	0.77	0.08	0.104	
	1.15	0.11/0.12	0.096/0.104	
	1.54	0.16/0.17	0.104/0.110	

Some uncertainty influence:

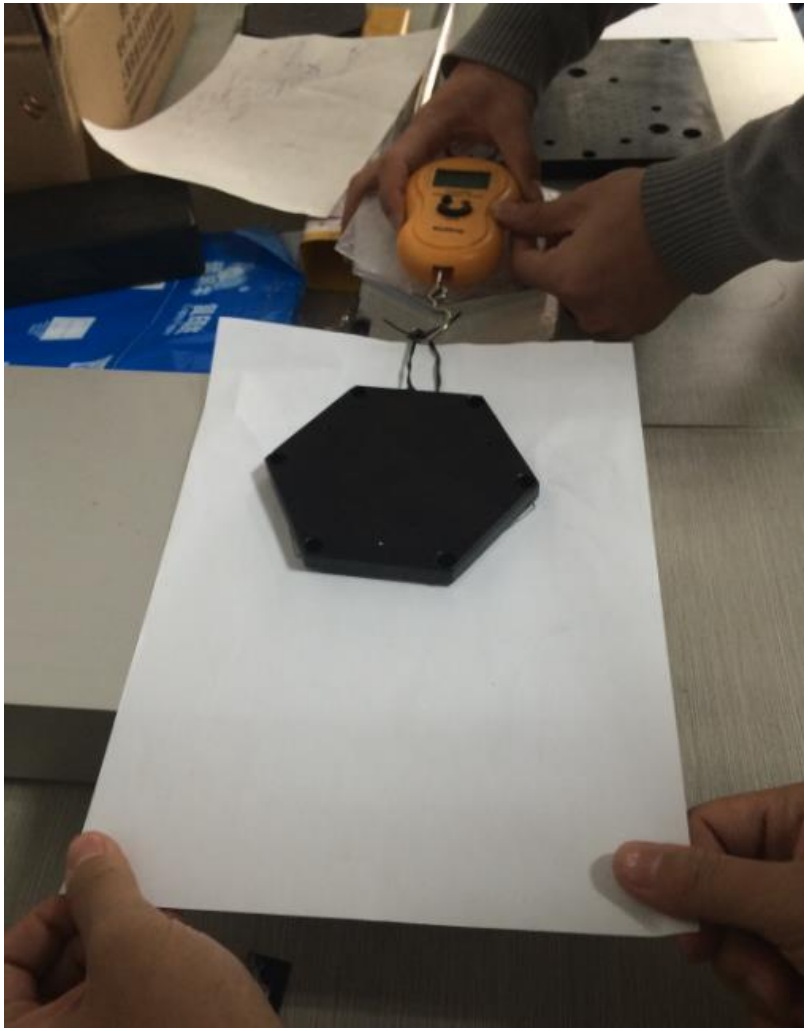
1. Electrostatic adherence caused by friction will make coefficient of friction larger.
2. Lead is easily rubbed off, so fractionate with lead will make paper/Tyvek surface smooth.

Other test method and result

More precise method by keeping the upper weight rest, and moving the paper to get tension drawn on weight. It will make experiment easier because constant speed is unnecessary.

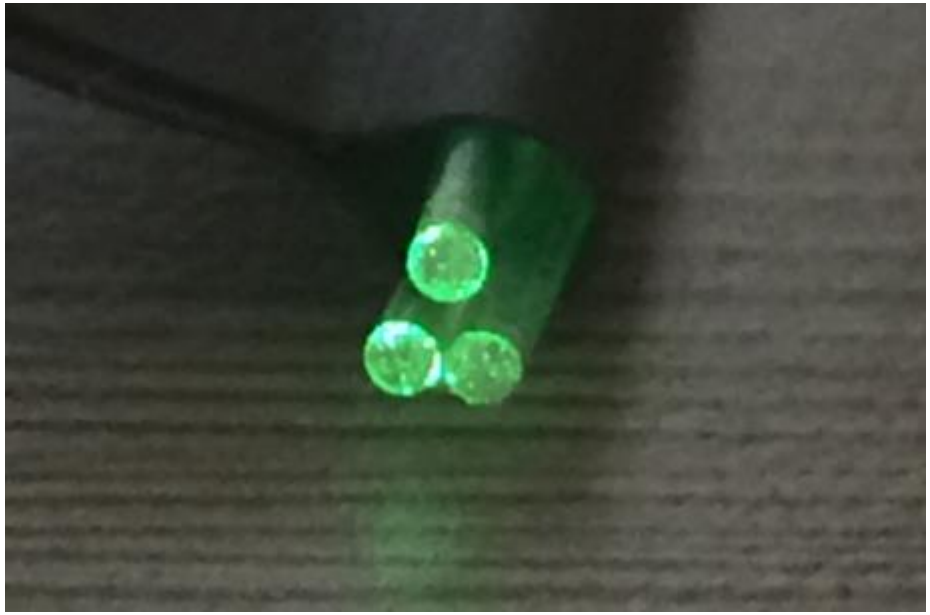
Material	Coefficient of friction
Paper/Scintillator	0.21
Paper/Lead	0.344
Tyvek/Scintillator	0.1256
Tyvek/Lead	0.1324

Coefficient of friction between paper and scintillator(lead) is same, but the Tyvek is higher.

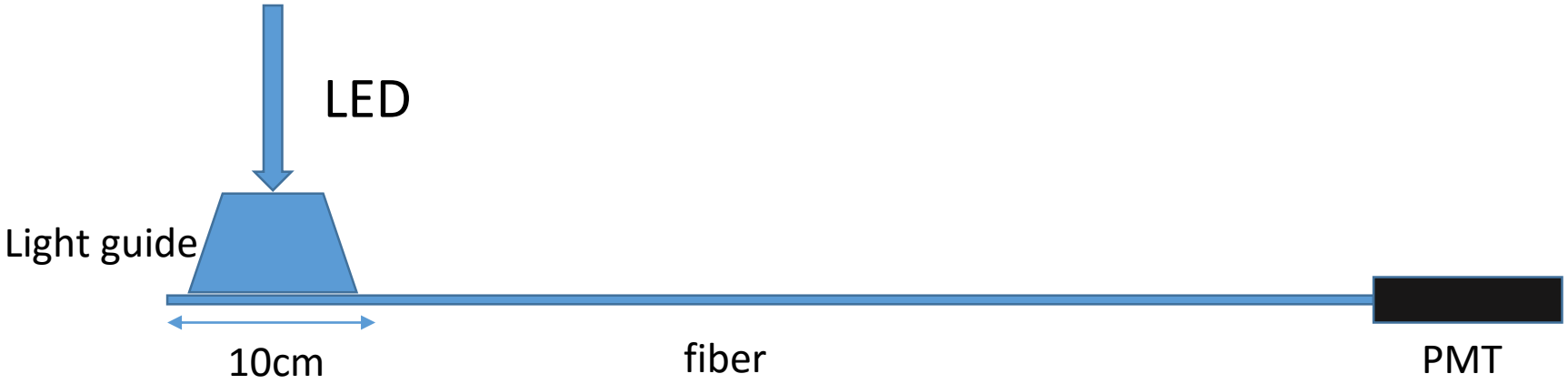


Reflection Property of Plated Fiber

- The plated fiber is gotten from a company in Yantai, Shandong Province.
- One end of each fiber is plated by silver.
- We only own three plated fiber with light leak slightly which is obviously from picture, and easily shed.



Test method



The length of fiber is about 60cm.
The Voltage of PMT is 1500V, about 2*10^6 gain.

Test Results

The different of two charts is the voltage of LED. No. 4 fiber is reference fiber without plating.

No.	FWHM(full width at half maximum)(ns)	Amplitude(mV)	Charge(pC)	Compared to No. 4
4	20.2	56	12.7	
	20.3	54	12.6	
1	20.5	104	24.2	1.92
2	20.7	92	21.5	1.706
3	20.6	96	22.5	1.786
3(other end)		7-8	2	0.159
No.	**FWHM(full width at half maximum)(ns)**	**Amplitude(mV)**	**Charge(pC)**	**Compared to No. 4**
4	22	113	27.8	
	22	112	27.6	
1	22	214	52.6	1.900
2	22	193	47.5	1.715
3	22	200	49.2	1.776
3(other end)		15	4.9	0.177

Thickness test of owned material

- 600 pieces 0.5mm lead plate

  Thickness: most 0.51+-0.005mm, but some could reach0.52-0.53mm

- 20 pieces 1.5mm scintillator

  Thickness: 1.50+-0.02mm

  The surface of all scintillator is not flat.

- The hole position is rather good.