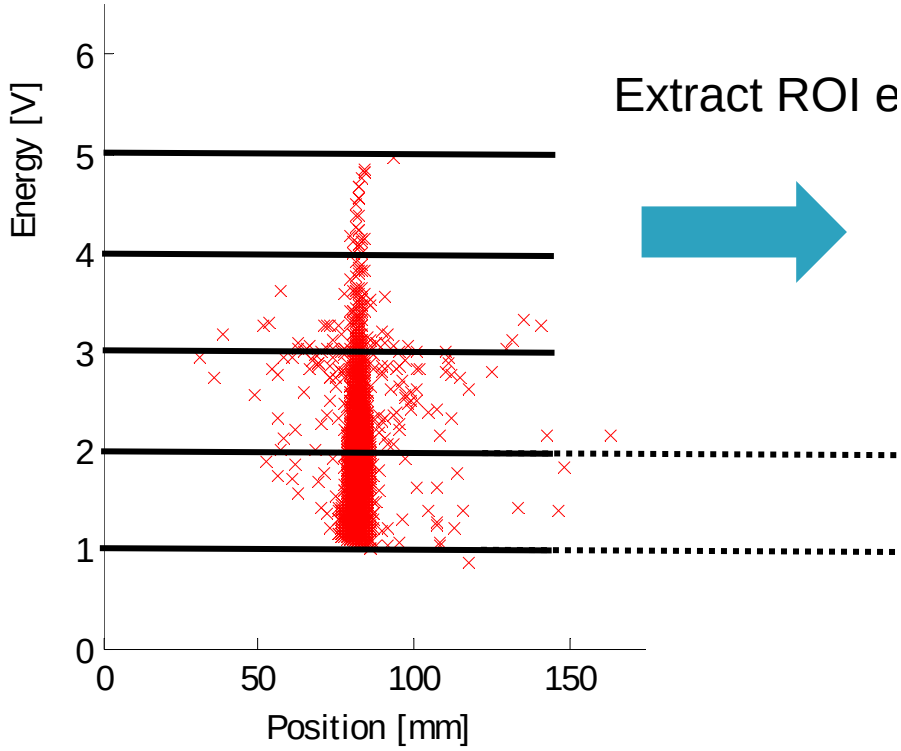
Why the resolution can not be atchieved less than 1mm?

Energy vs Position on the anode



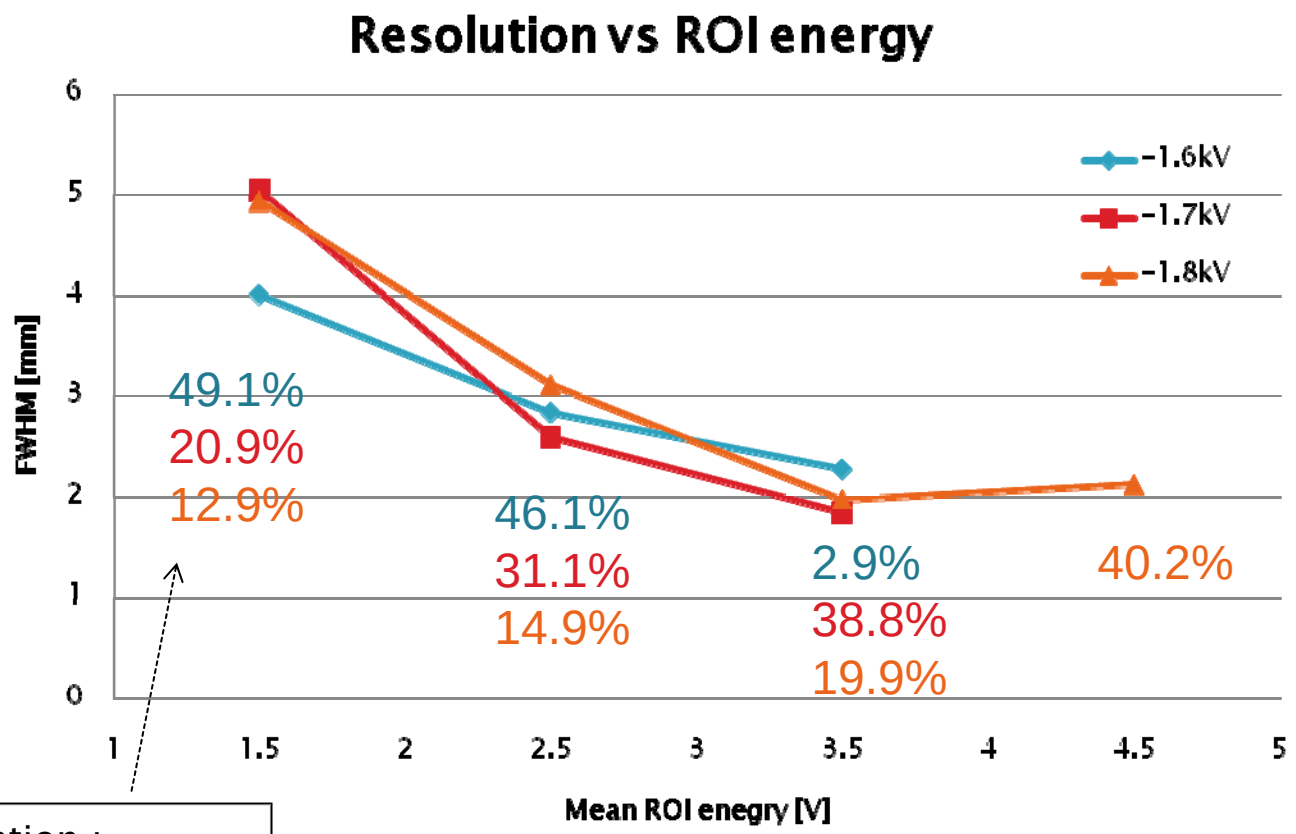
Extract ROI e

- Higher Gas gain
-> Some sparks will be appear more than Vc=-1.9kV .

- Better S/N
-> Optimized Amplifier will be test at next experiments.

- response of position
-> see Energy vs Position on the anode.

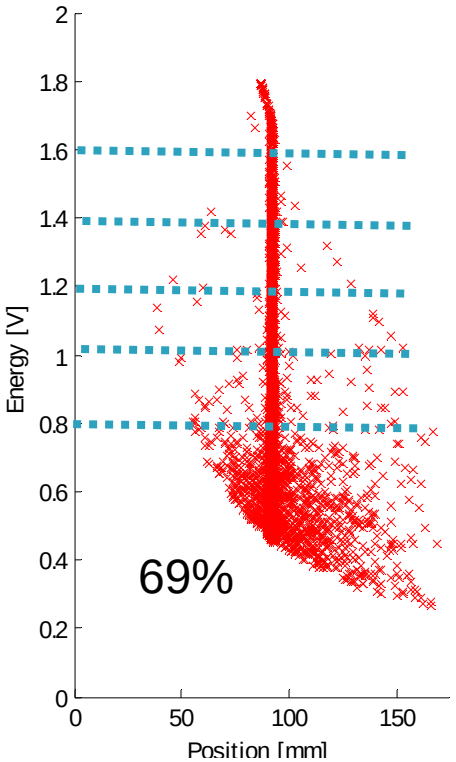
Sliced analysis

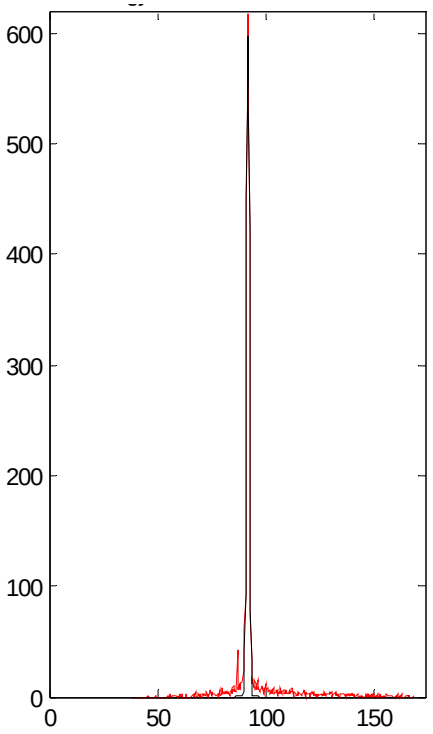


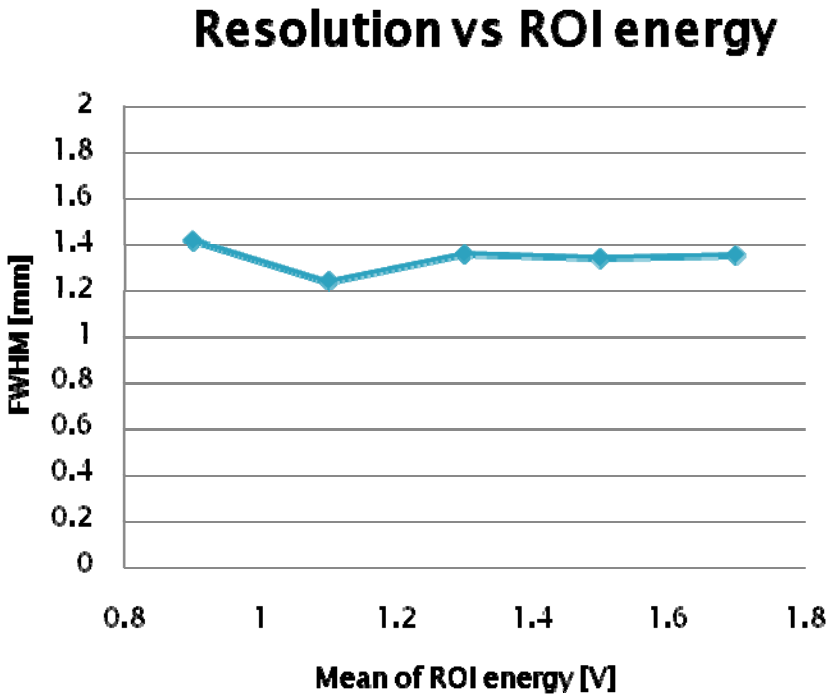
Population :
Event number /total events

“Quick” result with another Amplifier

120nsec 0.75V/pC
Vc=-1.8kV







Trig at 250mV, FWHM 1.56mm

Experiments-3

- Aging

Condition

- With 5mm slit horizontal
- No attenuation (no plexiglass)

} ~ 22 kHz/mm/anode

One anode is observed for more than 12hours

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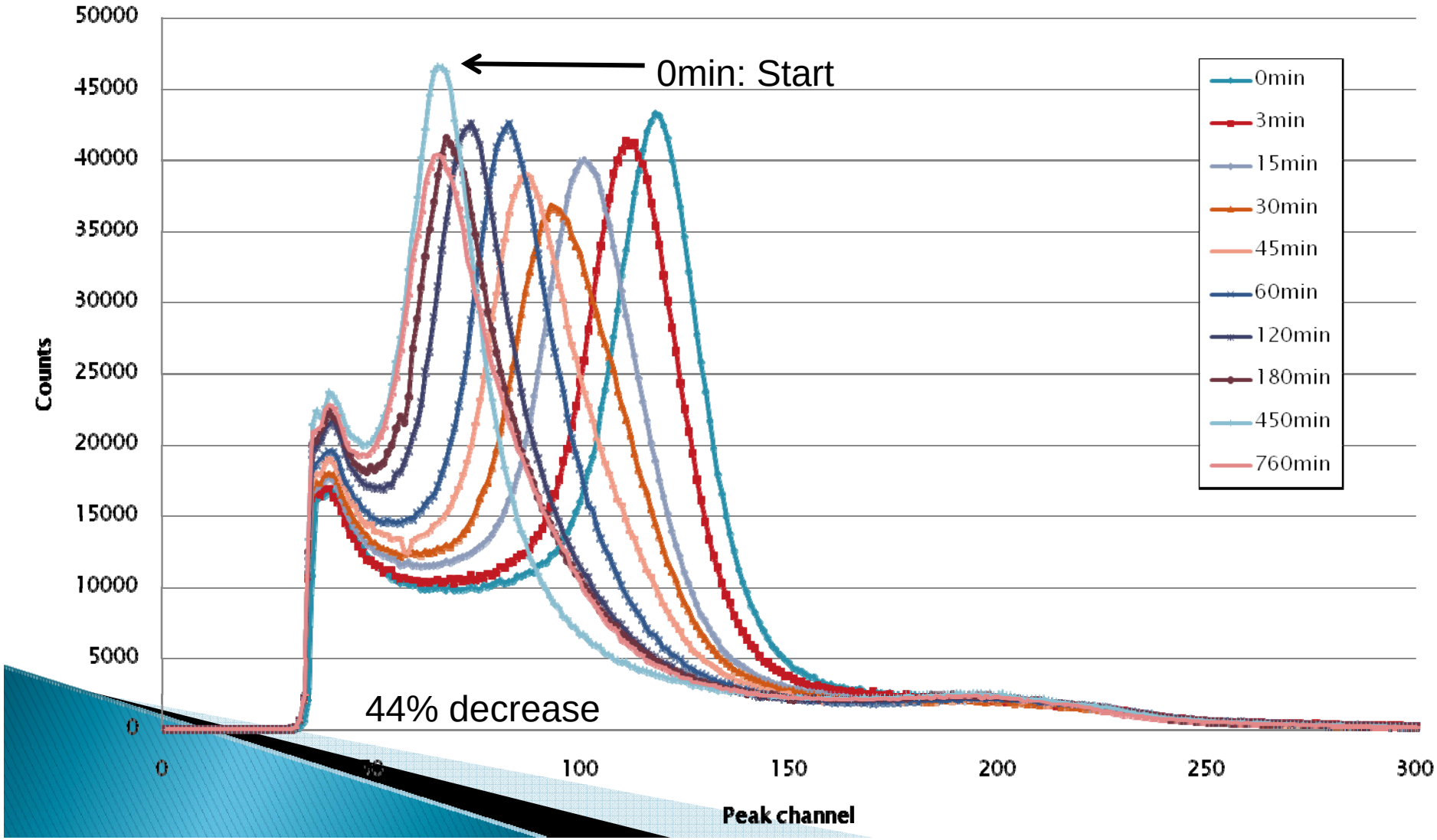
Aging

After 180min:
Peak stays at the same peak position



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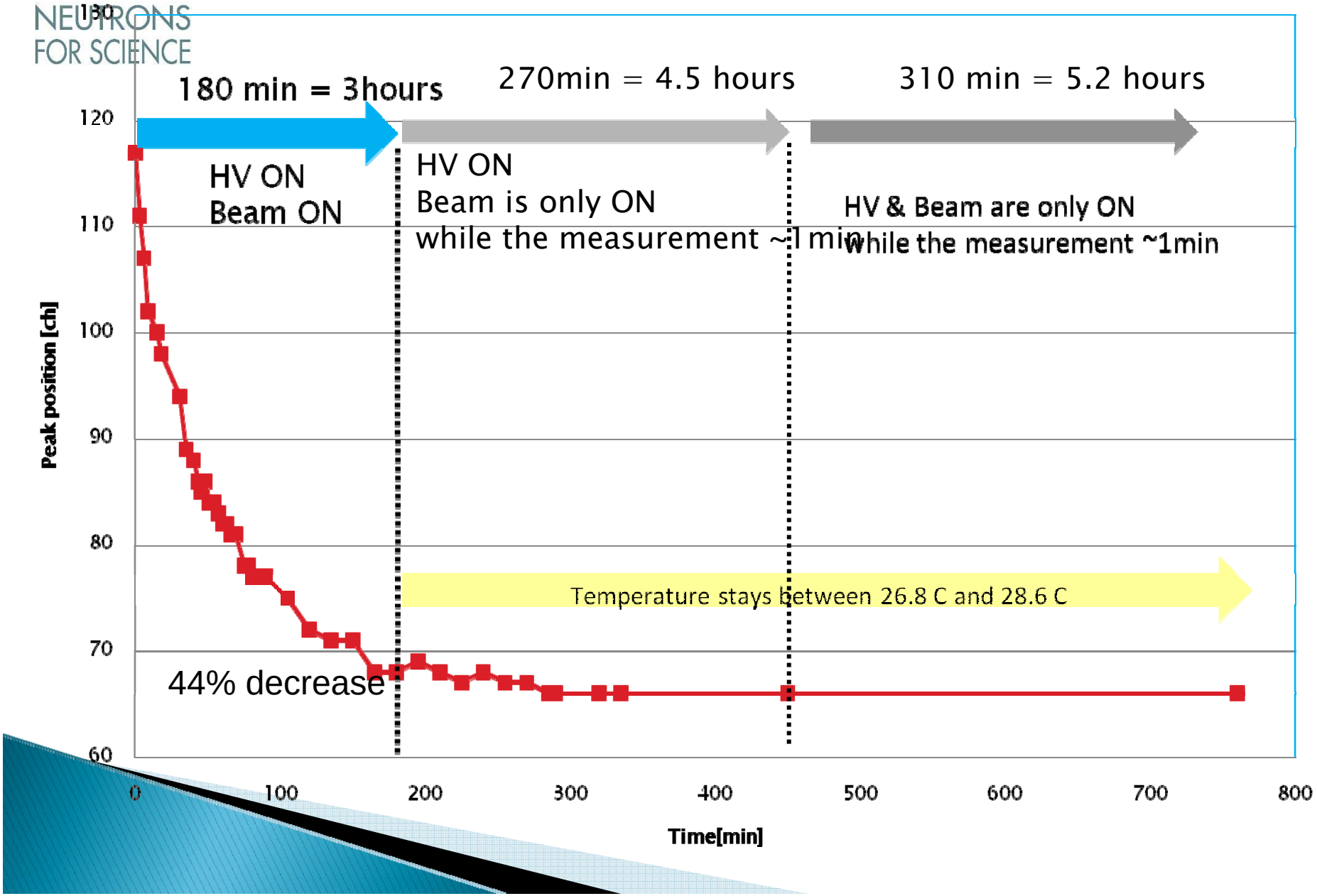
the experiments duration ~ 12hours total

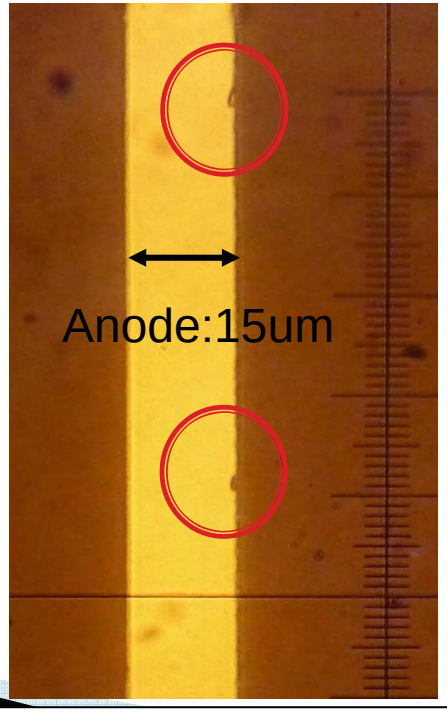


What is the cause of instability?

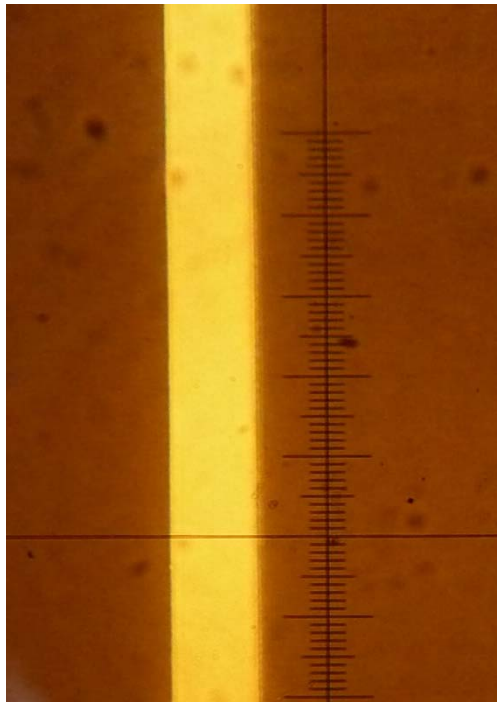
- Gas impurity? -> Al electrode is etched by contaminated CF_4 ?

Microscope observation (magnitude x100)

Used plate
for 9 months



New plate



!!! These defected positions are not always corresponded to the place irradiated…

Future works

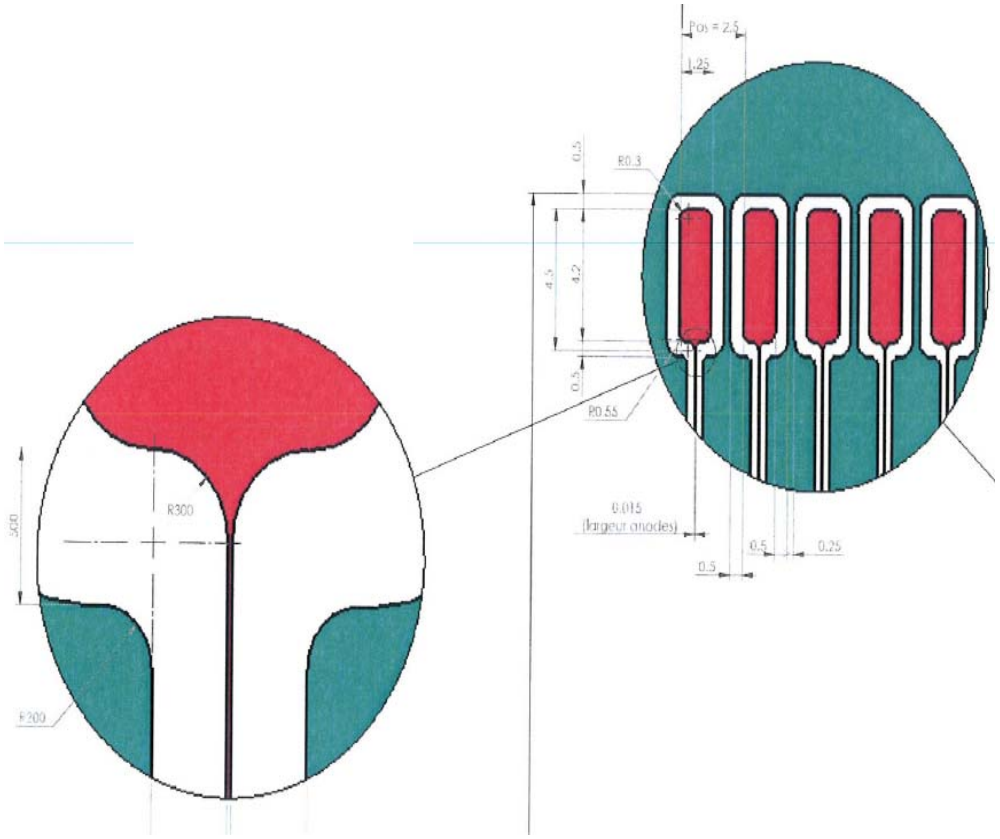
- Define how fast Bidim200 signal can be?
- Analysis on spatial resolution
  - Optimize amplifier gain/shaping time

- Cause of the Aging
  - CF_4 Gas purity will be cared for next experiment
  - Inspection to figure out if there is an damage on Al electrode

NEUTRONS
FOR SCIENCE

Thank you

Plate design



Design

64 Anode strips

Pitch : 2500µm

Anode width : 15µm

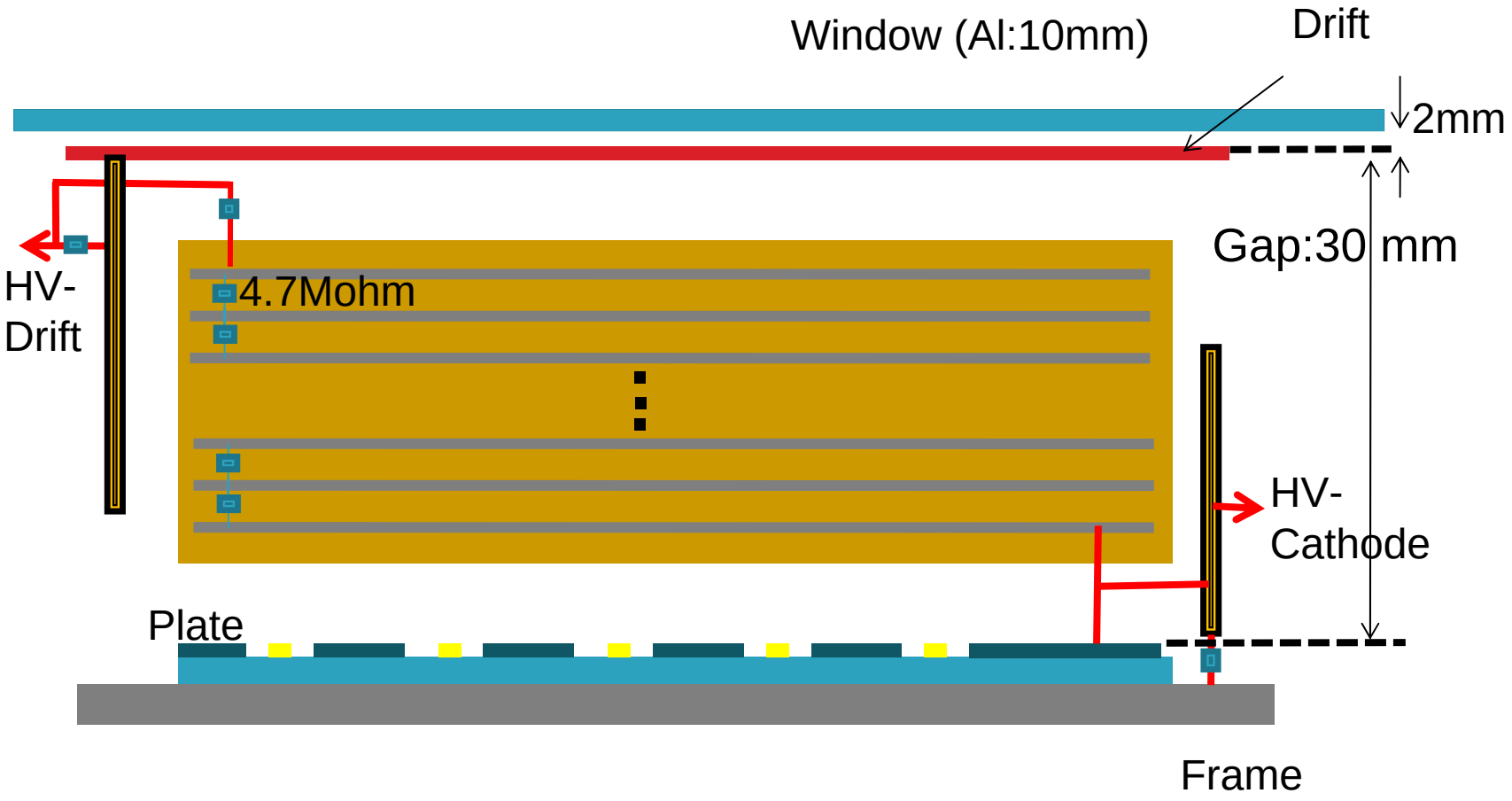
Anode-cathode Gap : 300µm

Material

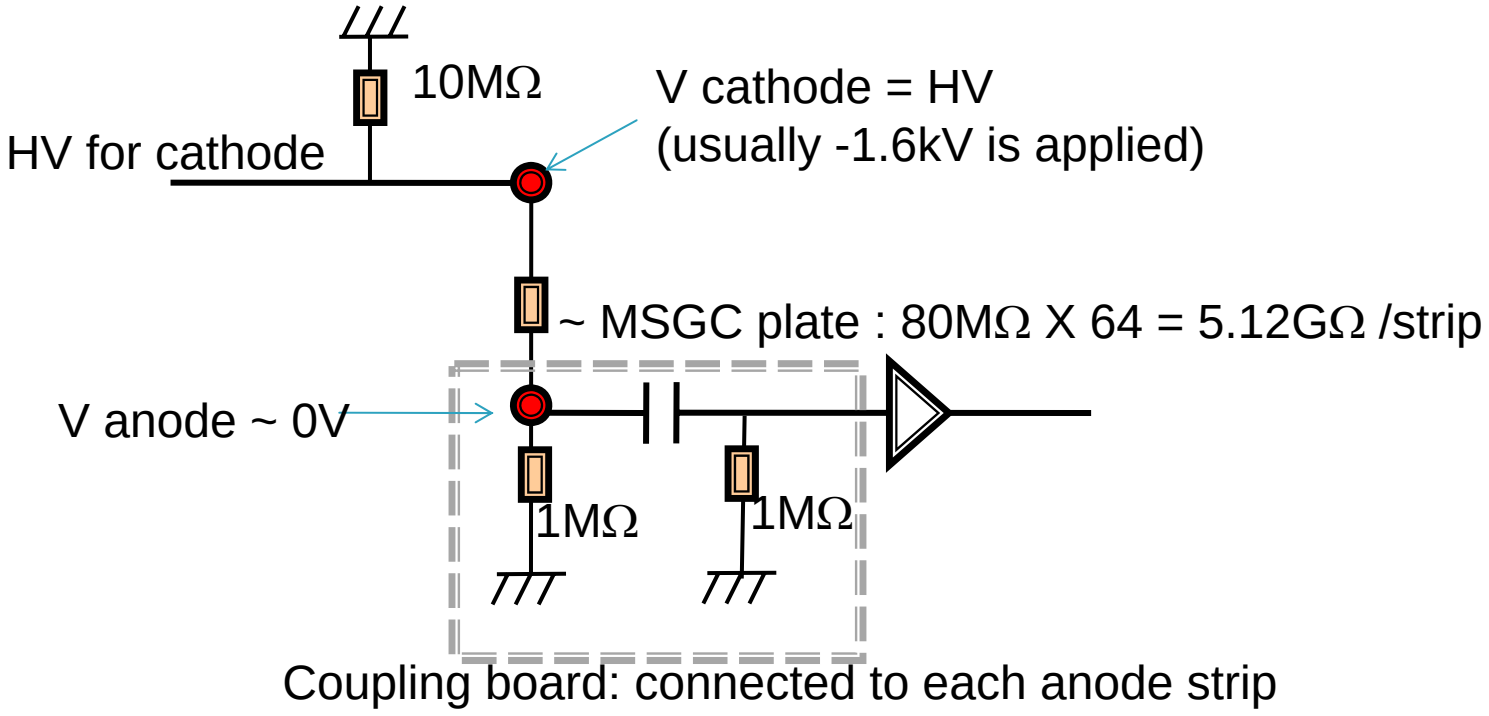
Plate : S8900

Electrodes : Cr 2000Å

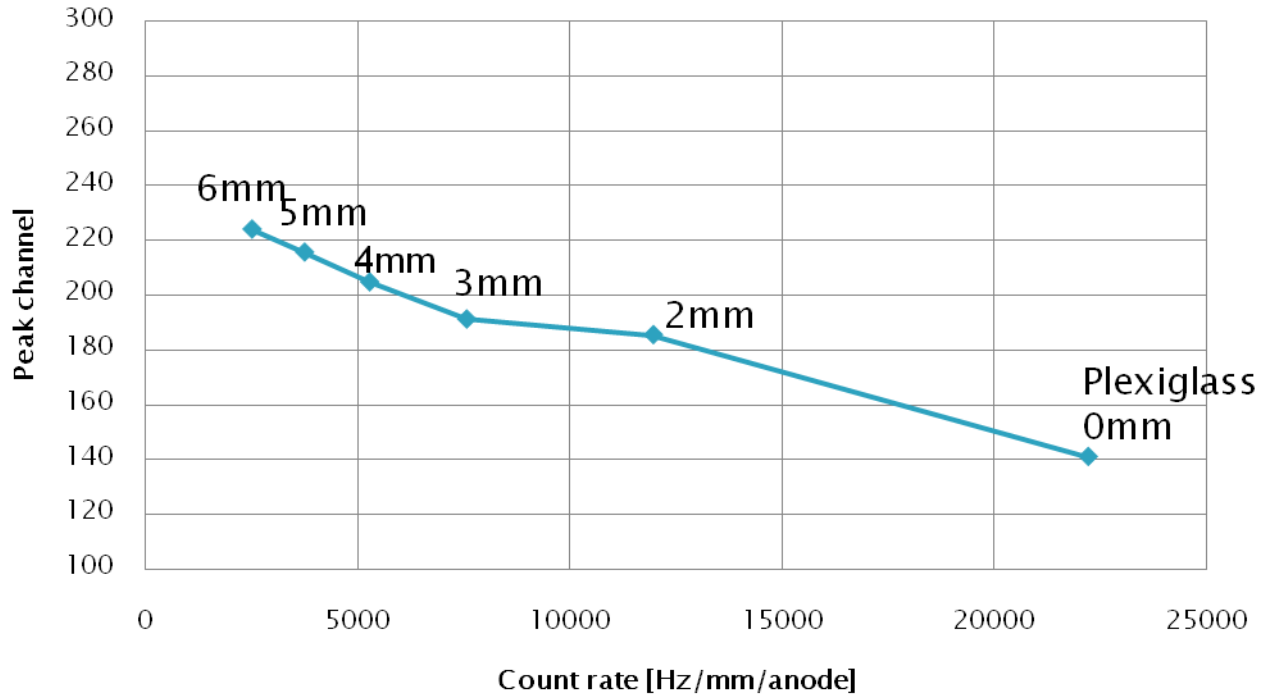
Al is on the Anode strips 1000Å


Window (Al:10mm)
Drift
2mm
Gap:30 mm
HV-
Drift
4.7Mohm
HV-
Cathode
Plate
Frame

Connection of electronics



Peak shift


300
280
260
240
220
200
180
160
140
120
100
Peak channel
6mm
5mm
4mm
3mm
2mm
Plexiglass
0mm
0
5000
10000
15000
20000
25000
Count rate [Hz/mm/anode]

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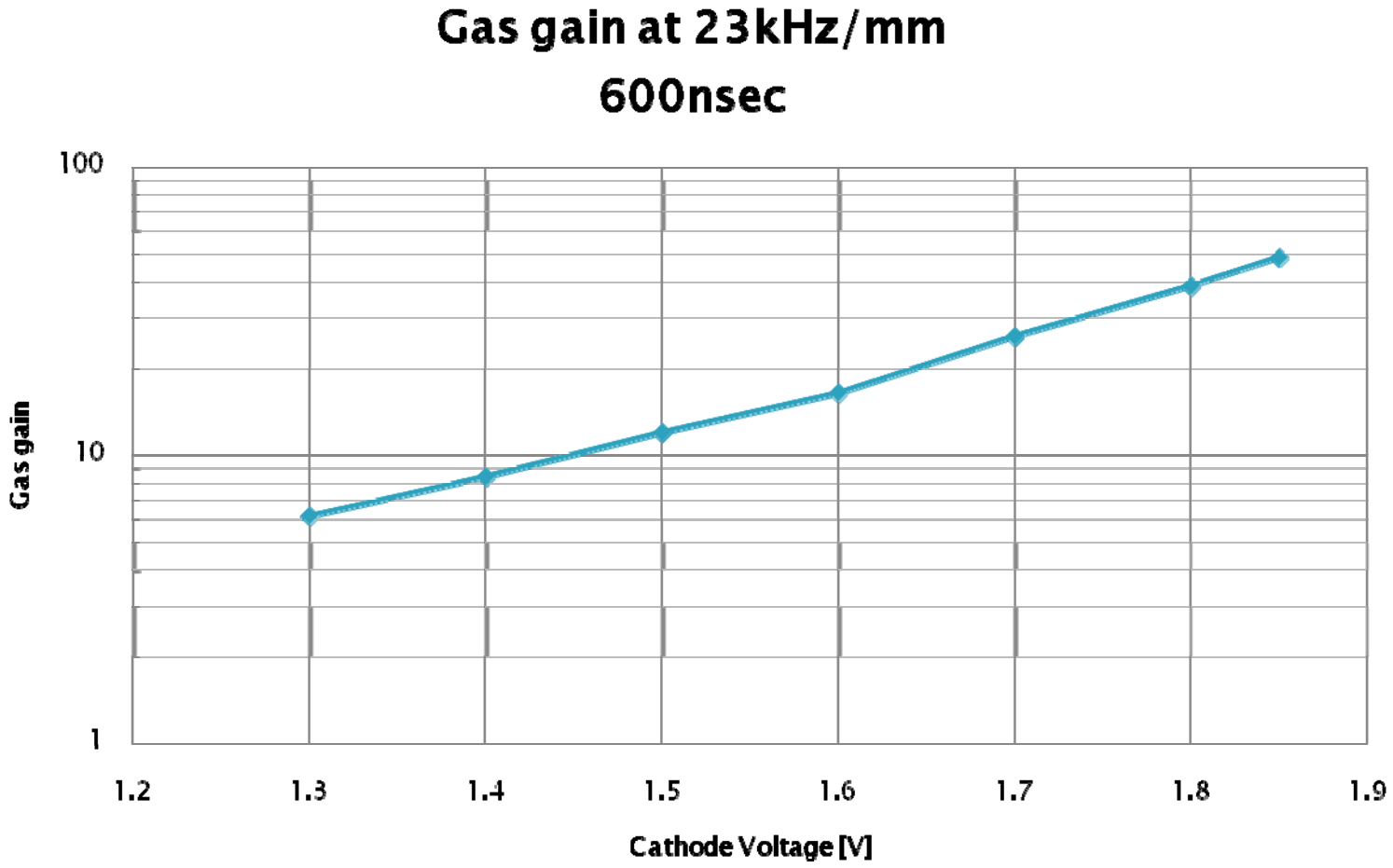
Gas gain (W=34)

!!This is calculated only to compare with the result of Bidim80!!



Why the resolution can not be atchieved less than 1mm?

120nsec 0.75V/pC

- Higher Gas gain

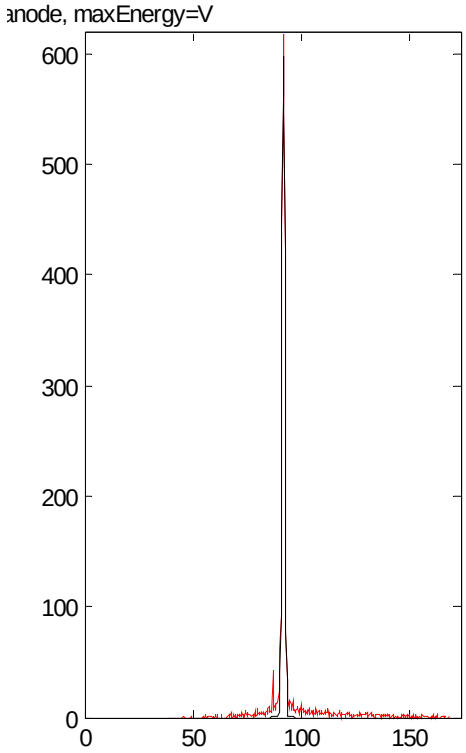
-> Some sparks will be appear more than Vc=-1.9kV

- better resolution per bit

-> The acquisition system only has 8bit resolution. Try with small gain of Amplifier.

- response of position

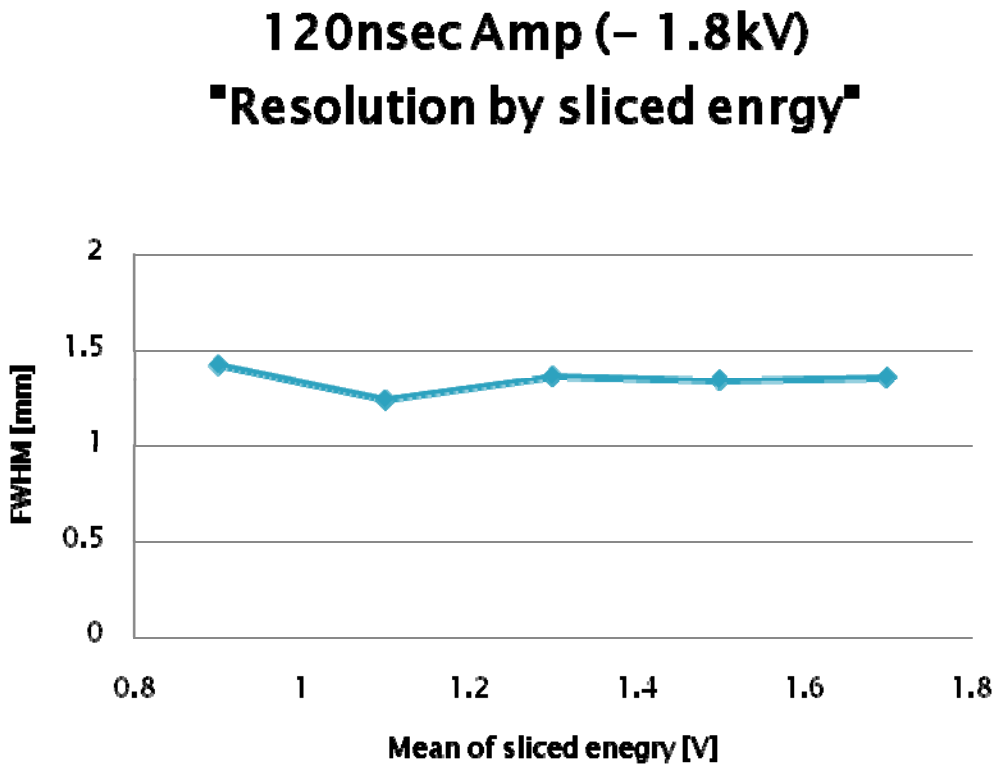
-> see Energy vs Position on the anode



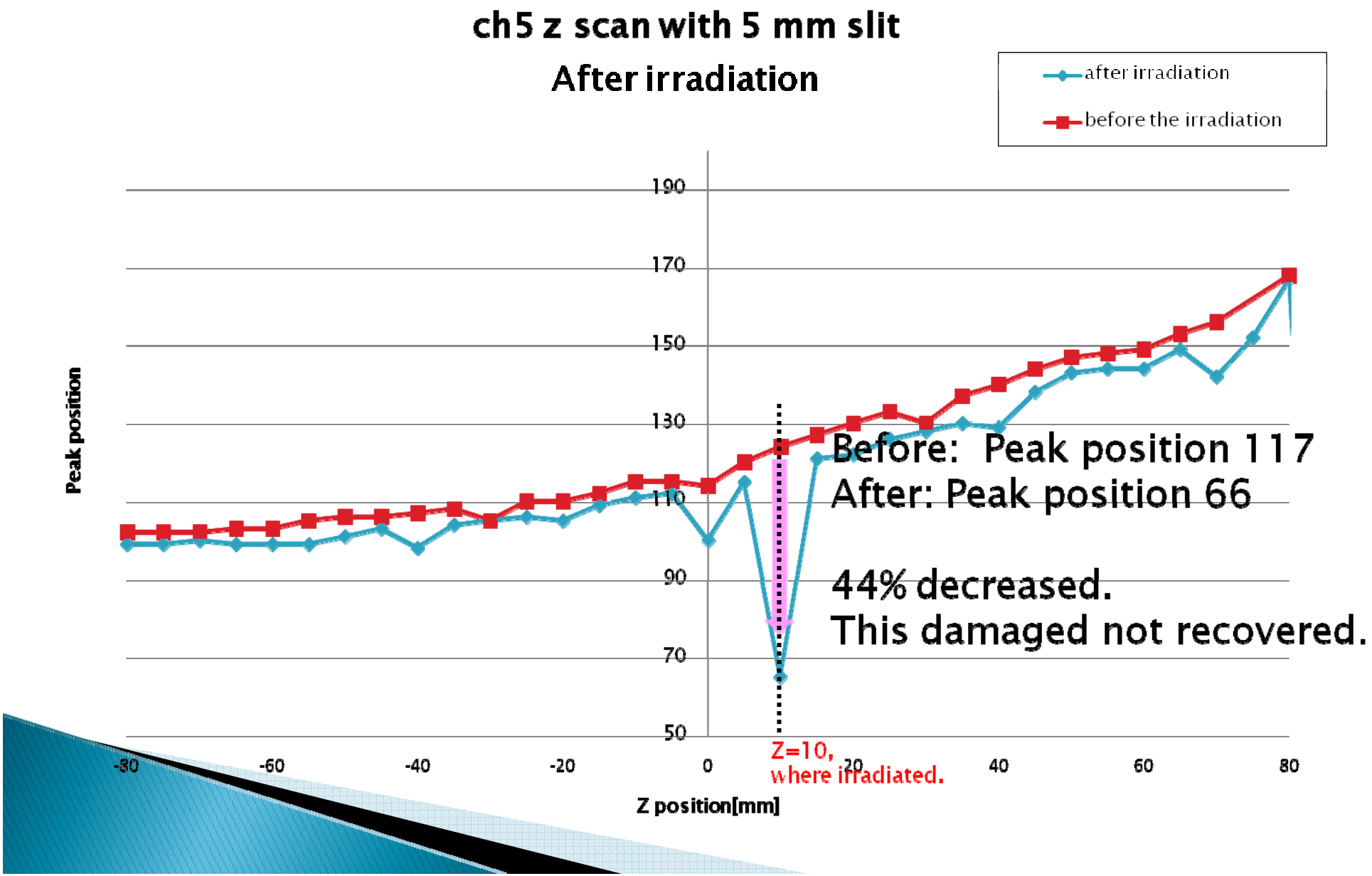
Trig at 250mV, FWHM 1.56mm

NEUTRONS FOR SCIENCE

Sliced analysis



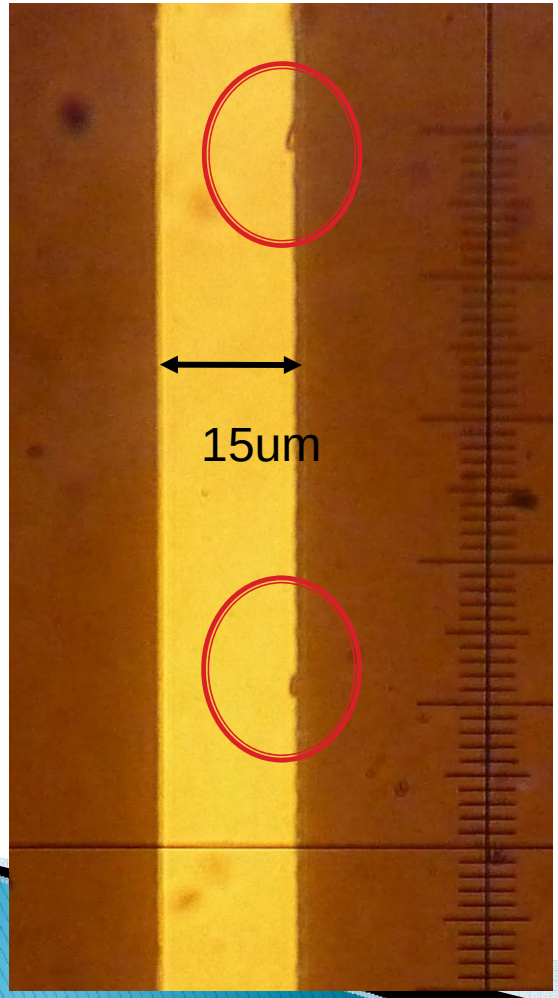
Scan after the irradiation



Experiments-3

- Microscope observation

Used plate



New plate