

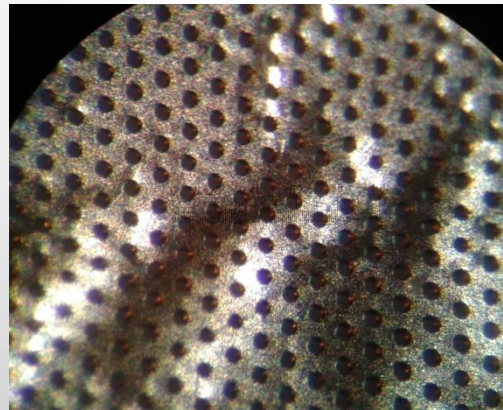
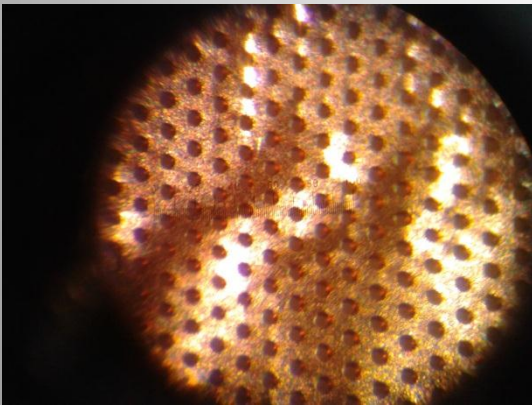
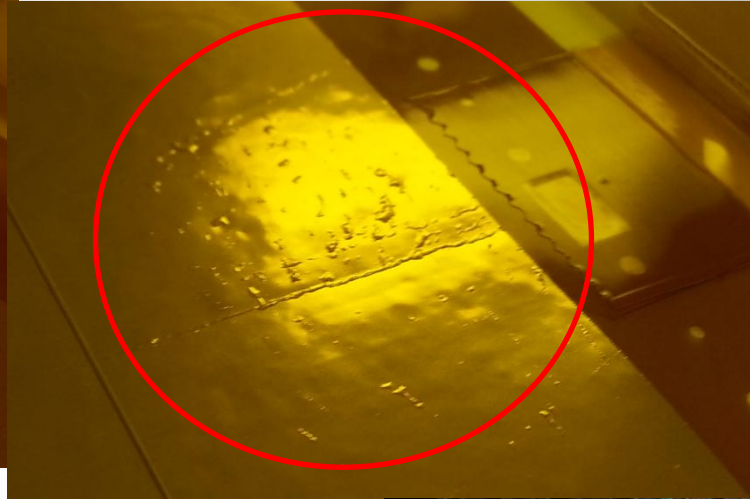
Korean GEMs tests

Christopher Armaingaud

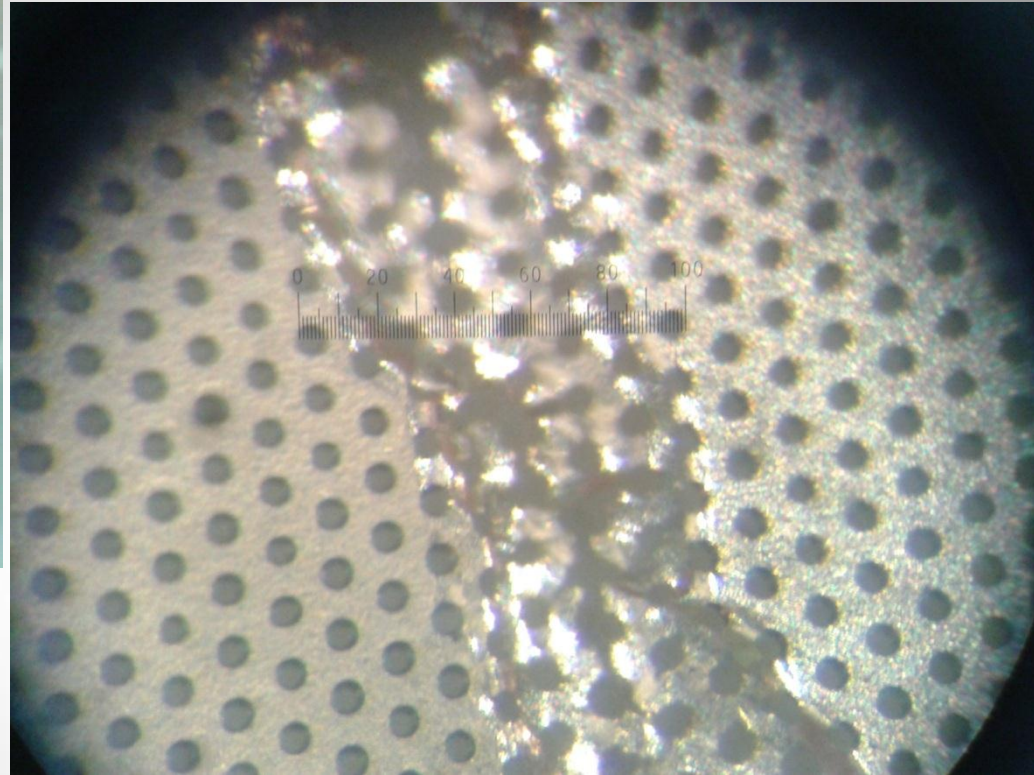
STATUS

- We need an industry to produce GEMs in high quantity.
- We receive 4 GEM foils from Korea.
- The last step of cleaning was missing, which induced many discharges from all the sectors.
- They have been cleaned in Rui De Oliveira's workshop then the behavior seems ok.

Visual inspection



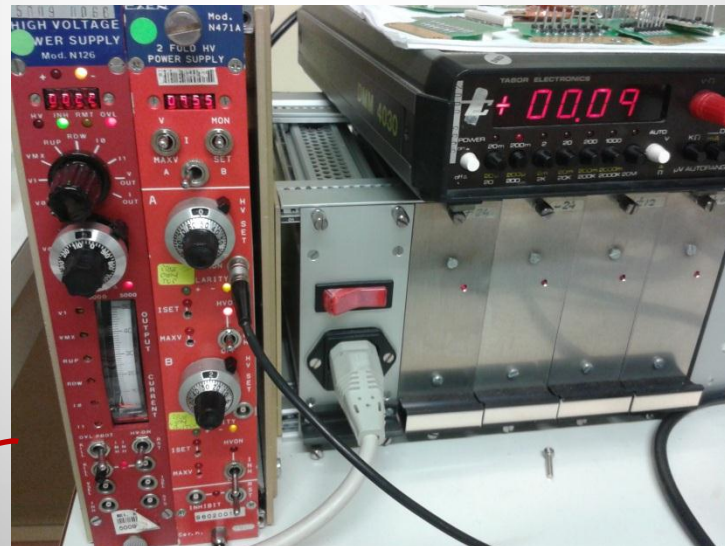
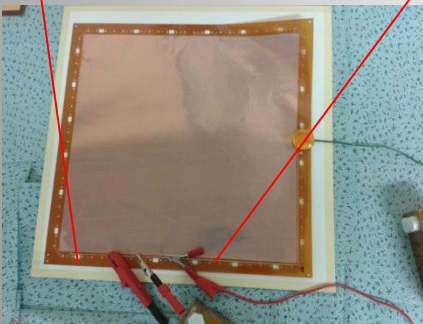
Visual inspection



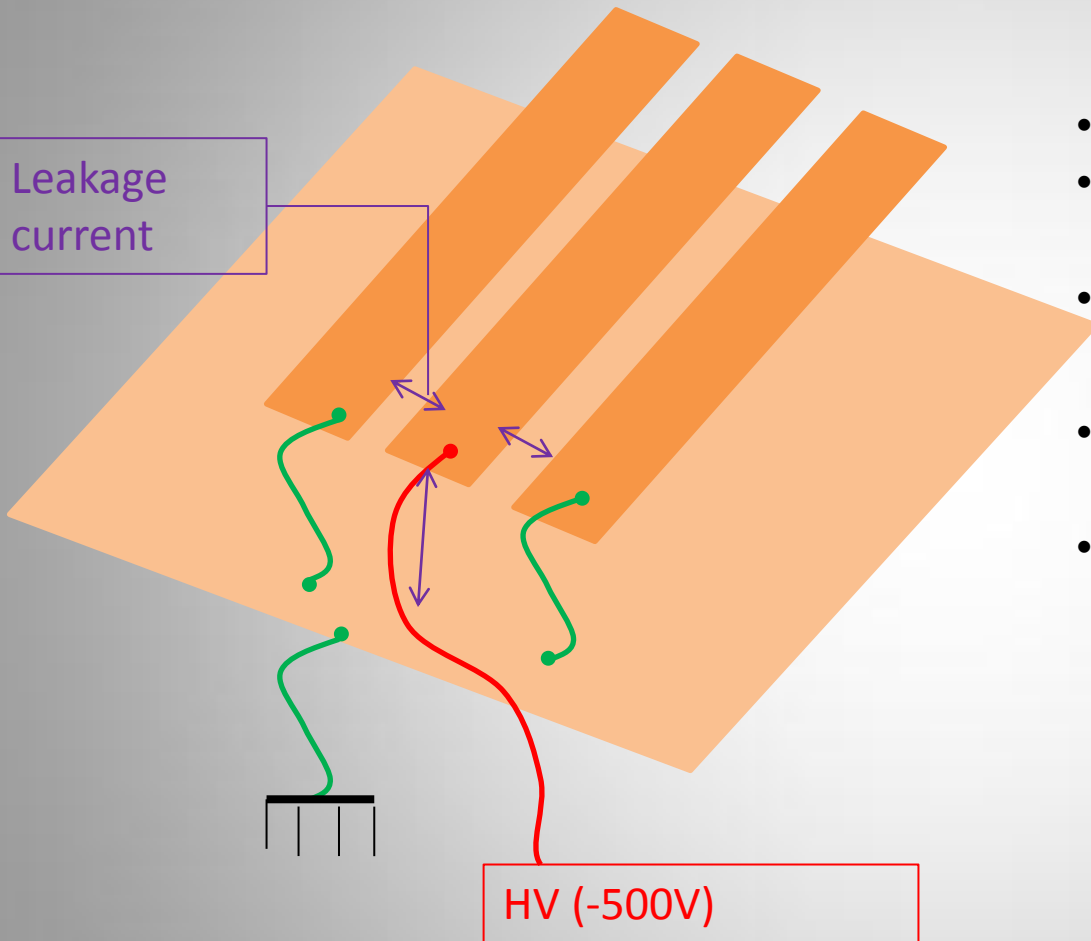
Test performed and Set up



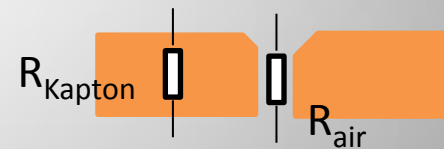
- Sector to test from -50V to -500V by step of 50V.
- High voltage applied on the top, bottom and first neighbors sectors connected to ground.
- Measuring the leakage current



Expected leakage current



- Kapton resistivity $\sim 10^{19}$ ohm.m
- Air resistivity $\sim 10^{16}$ ohm.m
- $R_{//} = R_{\text{kapton}} \times R_{\text{air}} / (R_{\text{kapton}} + R_{\text{air}})$
- $R_{//(60\mu\text{m})} \sim 10^{16} \times 60 \cdot 10^{-6} = 6 \cdot 10^{11}$ ohm
- $I_{\text{expected}} \sim 500 / R_{//(60\mu\text{m})} = 0.8$ nA



Comments and Remarks

- Most of the sectors OK.
- Sectors 1 and 10 (on the sides) discharging or high leakage current for almost every foils.
- Leakage current higher than 1nA for 2 sectors on GEM 4.
- Sometimes we have a spark or an unusual leakage current but the current calms down after a while. (electrical cleaning burning dusts).