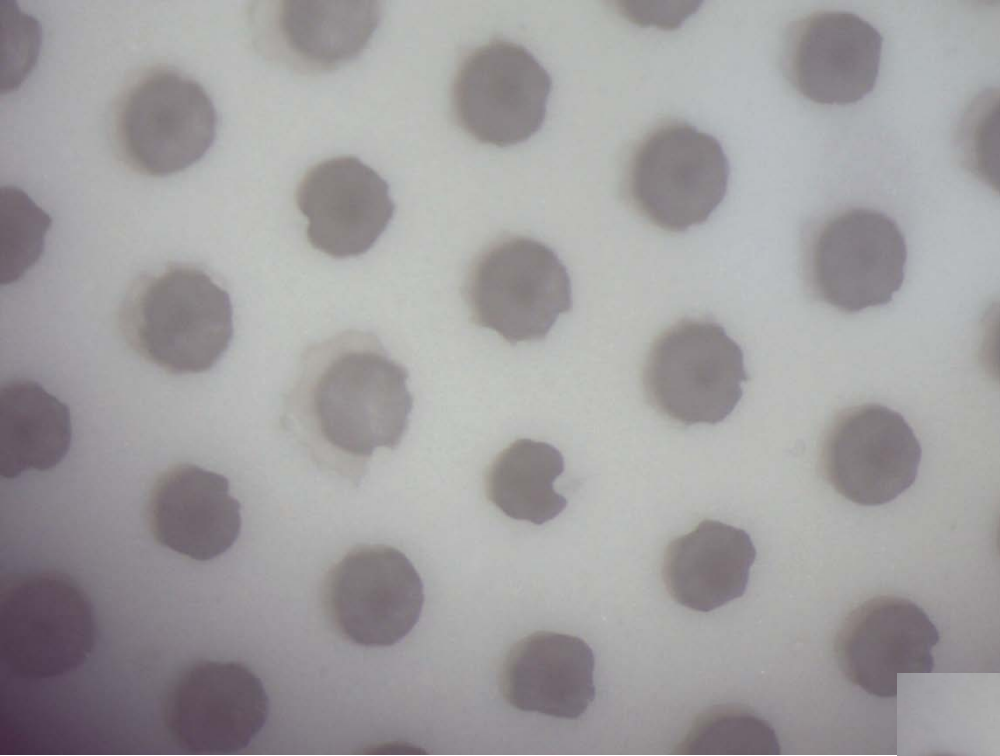


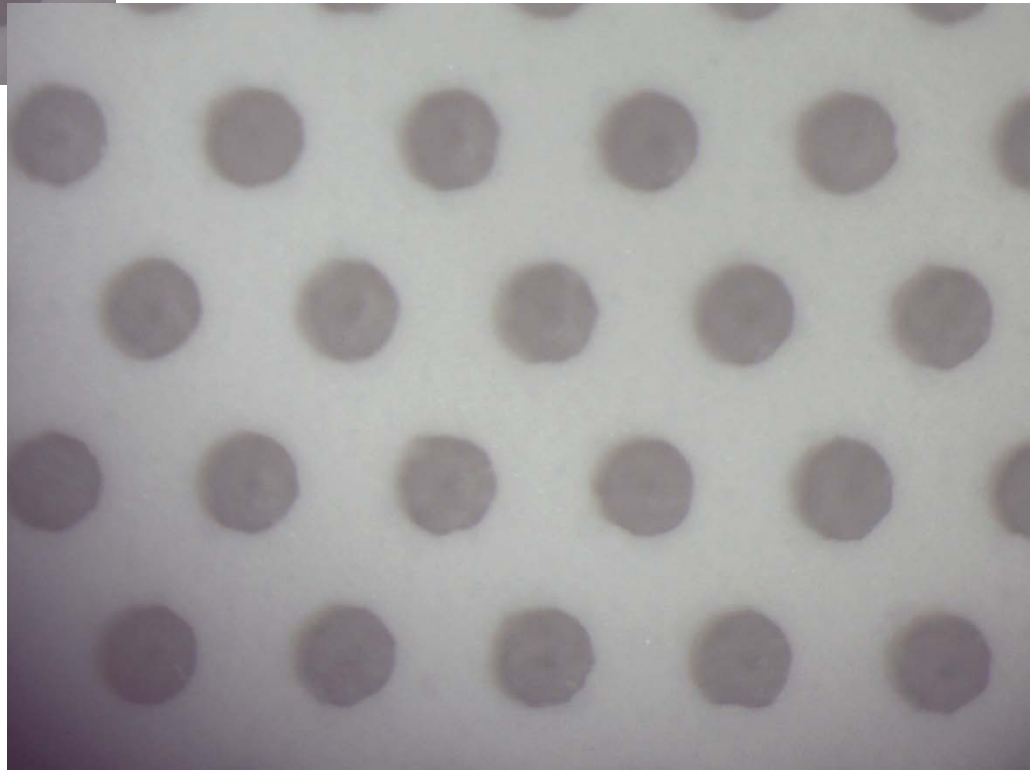
# 3D printed MPGDs

- 3 samples finally arrived last week
- Produced at different temperatures
- Pure ceramic without copper plane
- Aim: Check holes and HV stability

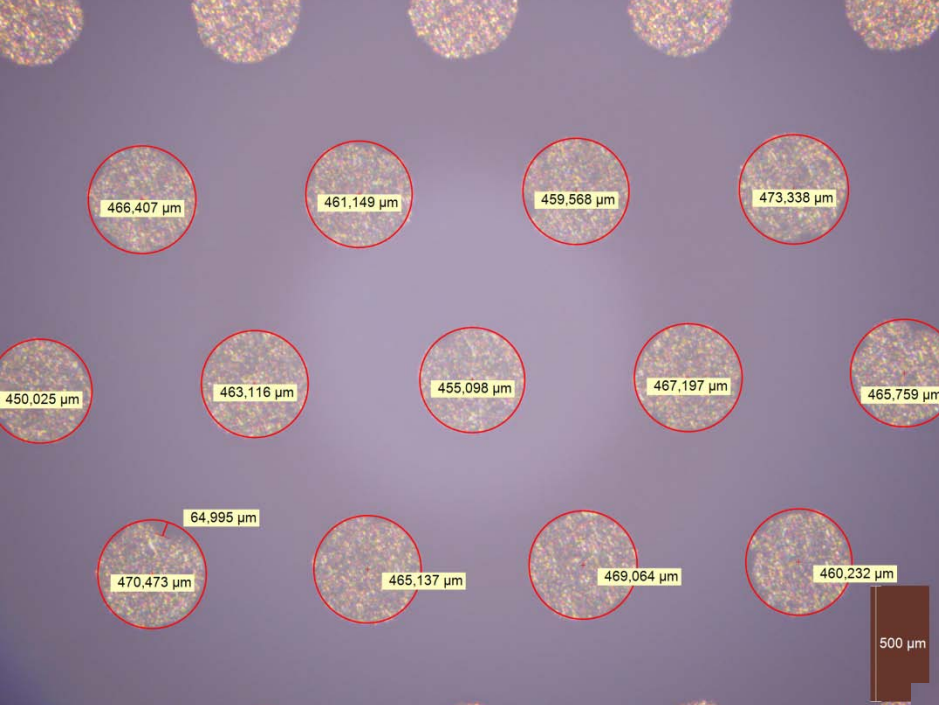


First scan with microscope  
with wide angle

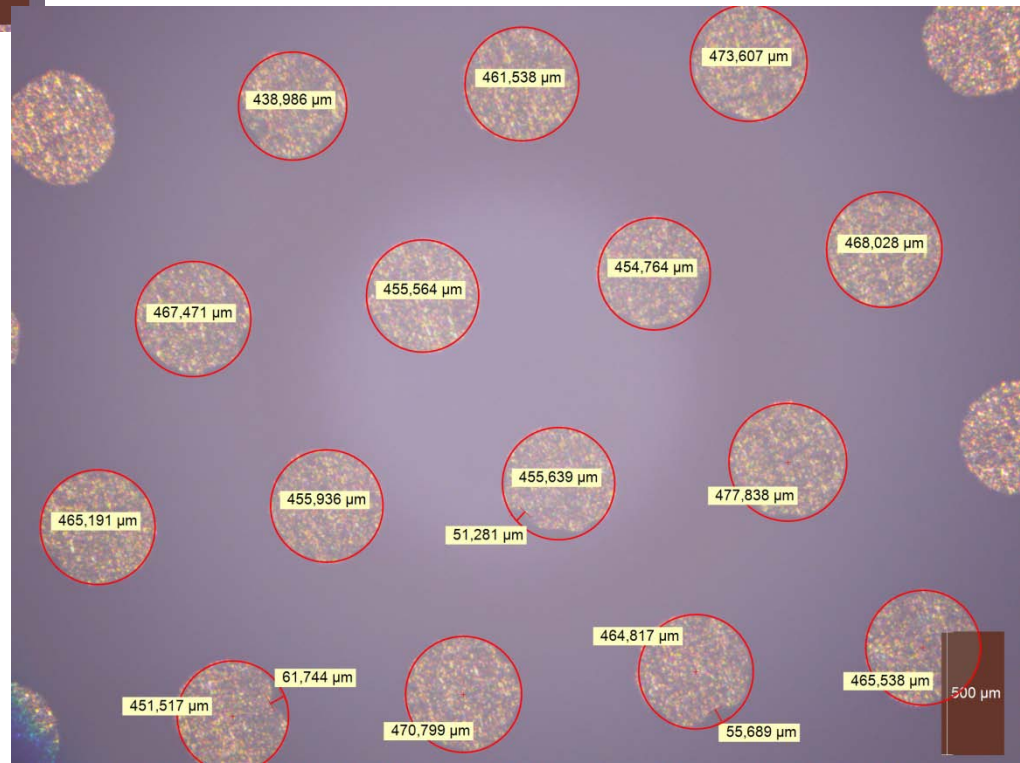
- large differences between the 2 sides of the samples
- from the production problem seem to be in one side
- difference between sides depends on sample



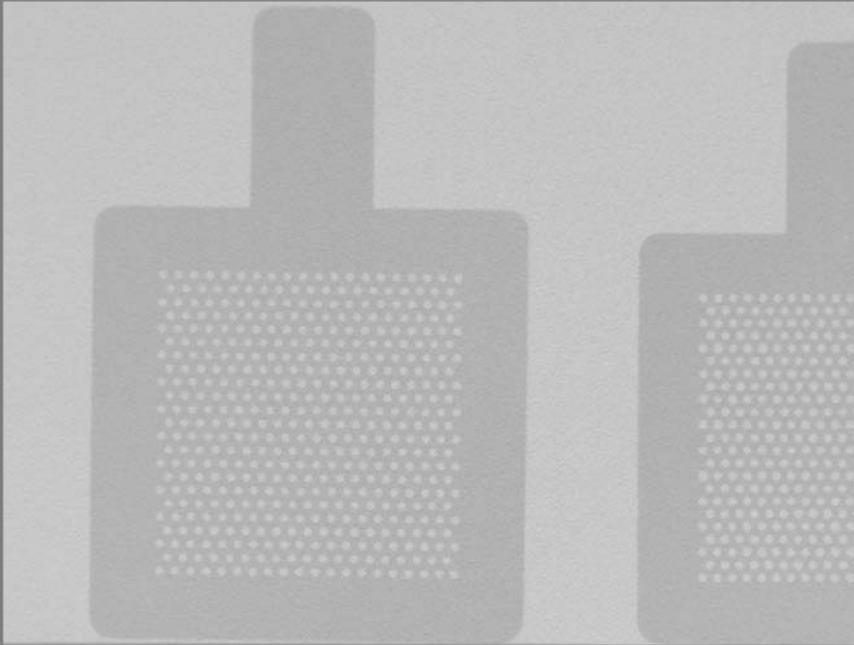
## Second microscope with measurement possibility



- measurement not so easy sometimes due to non-uniform holes
- nominal diameter seems to be 470  $\mu\text{m}$  (to be checked with Dresden)
- mean and error still to be calculated
- some deformations of up to 60  $\mu\text{m}$  in some holes
- thickness: 570  $\mu\text{m}$  (to be checked with Dresden)



X-ray device to look for cracks and non-uniformities in density

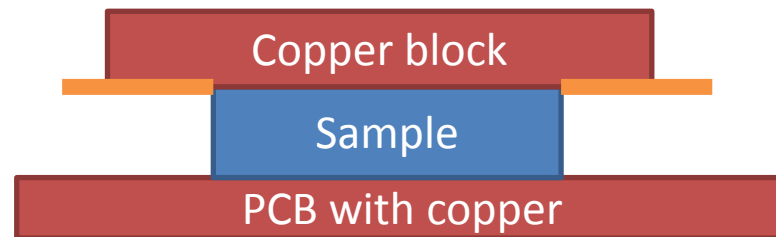


- density looks very homogenous
- very few tiny variations were seen with zoom
- holes also not perfectly round with X-rays but seem to be more uniform than with light => hole deformations mainly at the edges of the holes? Could the sides be polished to remove these?



# HV Tests

- HV tested in gas detector with dry air (some one stole my N2)
- not optimal configuration: electrodes should be smaller than sample and better sample without holes
- first 2 samples sparking at 2-2.8 kV but sparks seem through air at the edges of the copper block
- last sample with longer time under air flow before HV test started stable for 40 hours at 3 kV and now without current at 3200 V



# Conclusions

- First samples have arrived and were tested
- HV stability of the ceramic itself should be more than fine
- Hole quality is an issue and possible improvements of production process have to be discussed with Fraunhofer (Dresden) and Weizmann Institute
- Now: write short report about findings