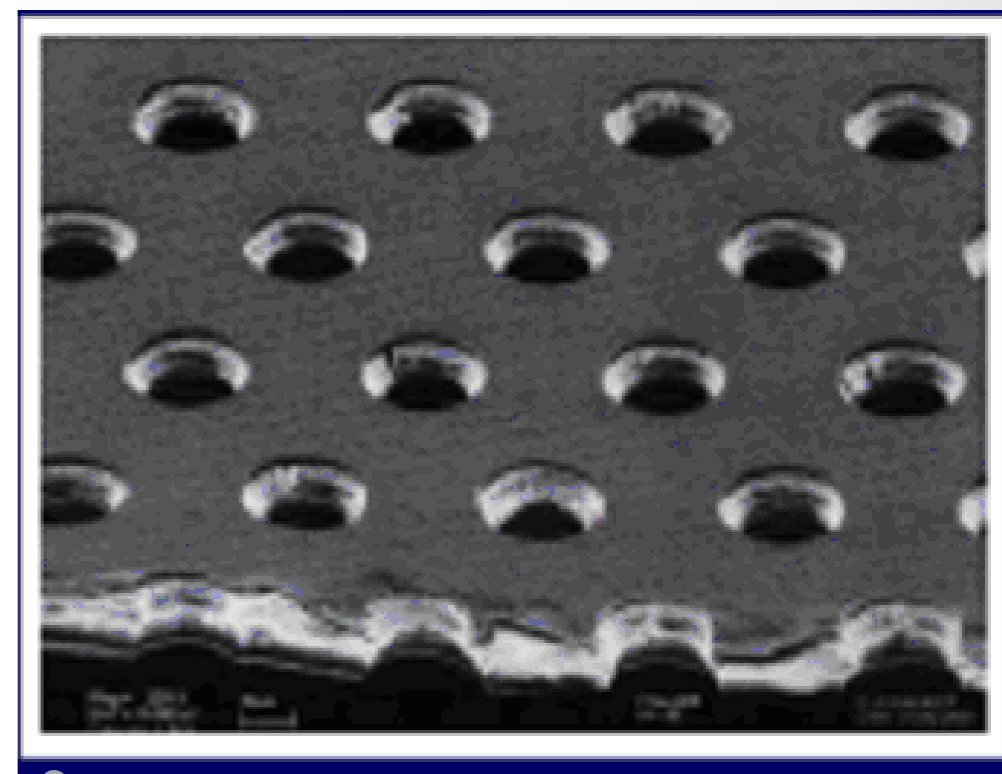
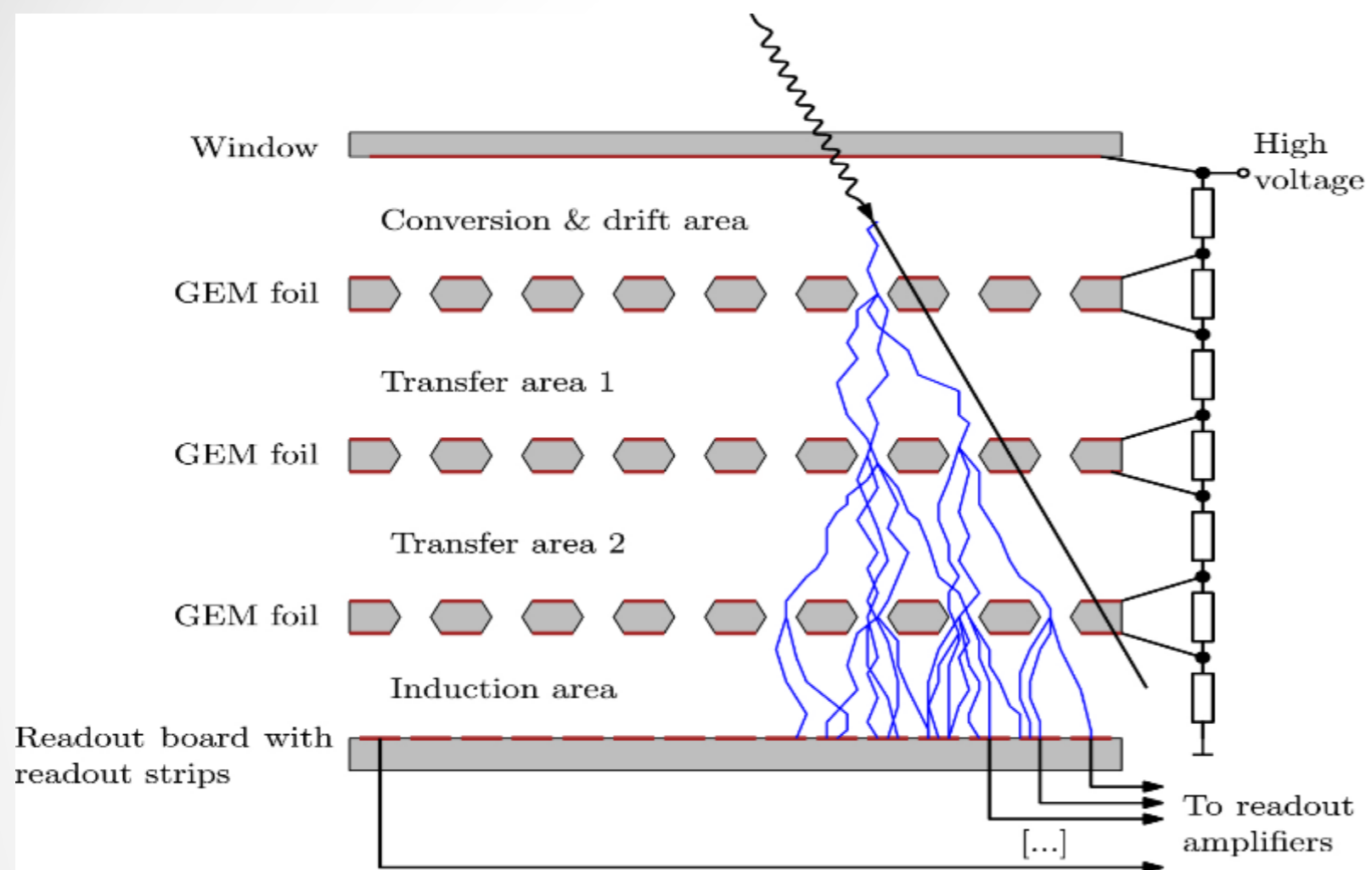


# The use of CVD diamond in gas detectors of charged particles in experiments in high-energy physics

Irina Dribas, LPI RAS  
Moscow, 4<sup>th</sup> international conference for particle physics  
and astrophysics  
October 25<sup>th</sup>

# GEM detector (MPGD)

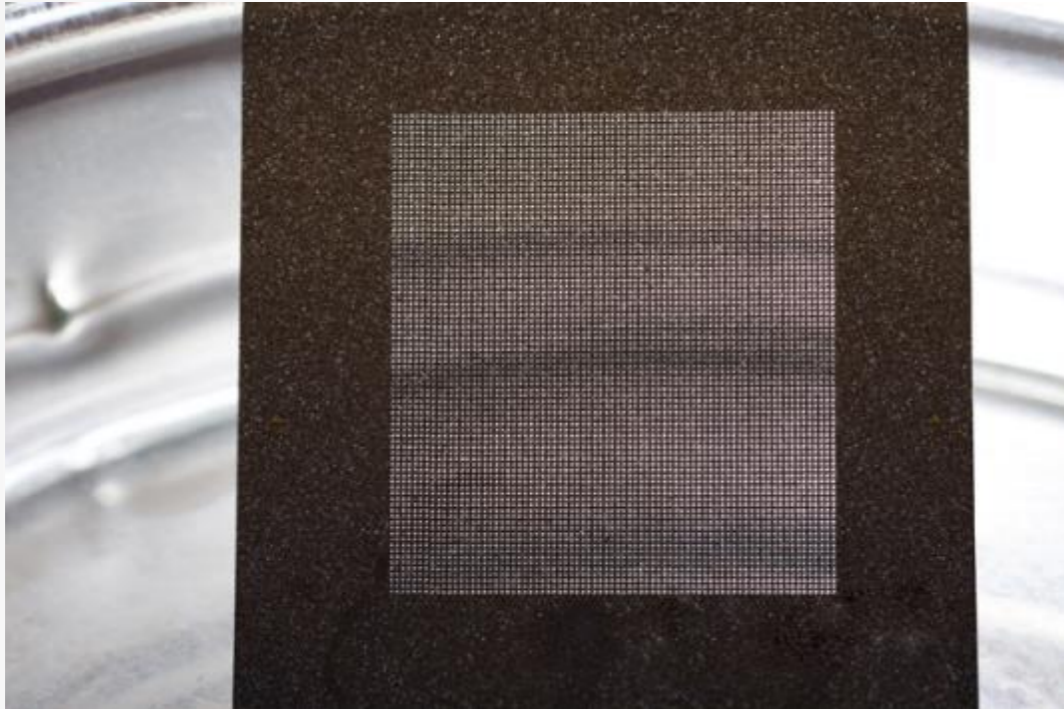


Source:  
<http://gdd.web.cern.ch/GDD/>

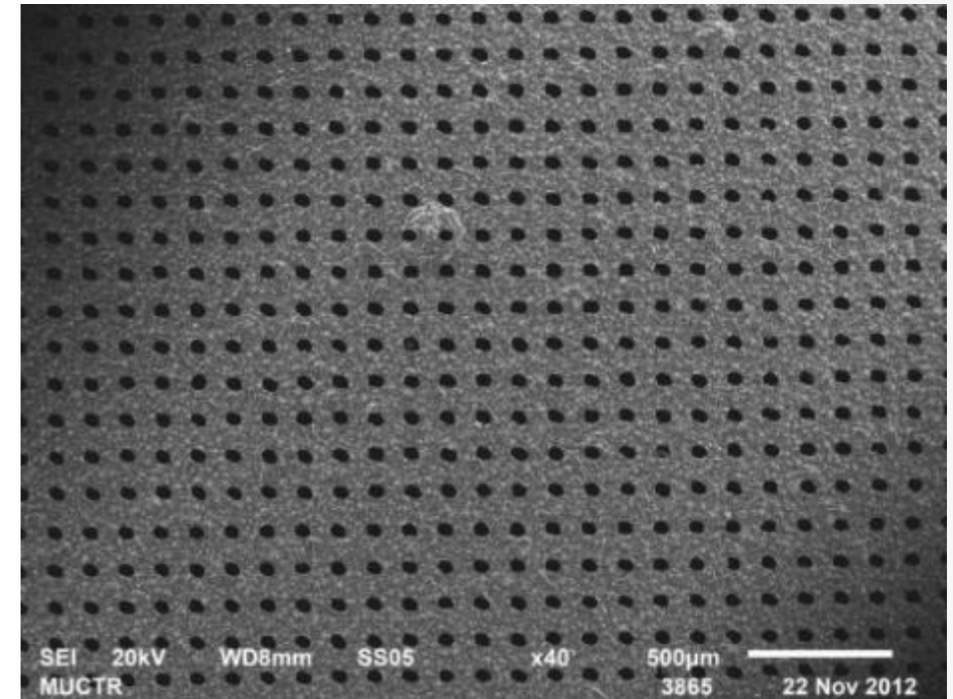
Source: Zabołotny, W.M., Kasproicz, G., Poźniak, K. et al. J Fusion Energ (2018)  
<https://doi.org/10.1007/s10894-018-0181-1>

Structure and operating principle of the GEM detector

# GEM made of CVD diamond



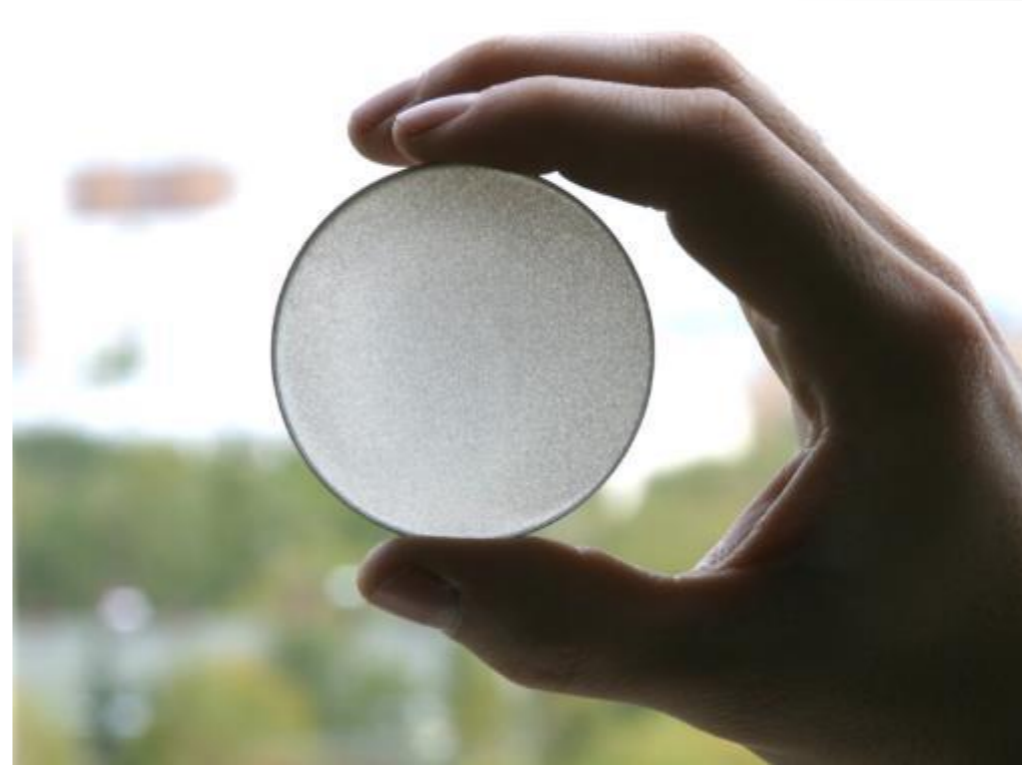
Sample made in 2014



# Production of CVD diamond

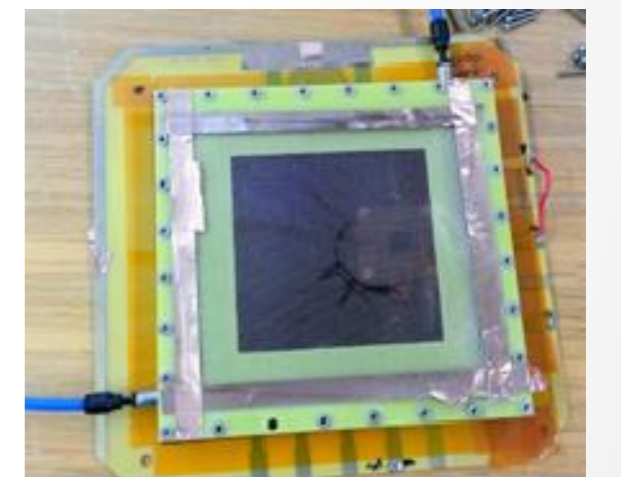
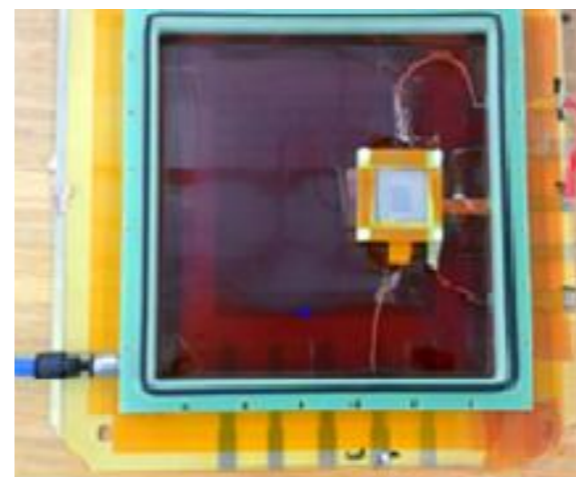
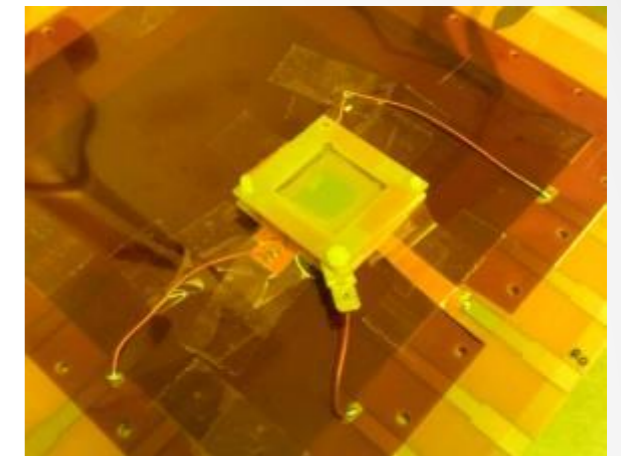
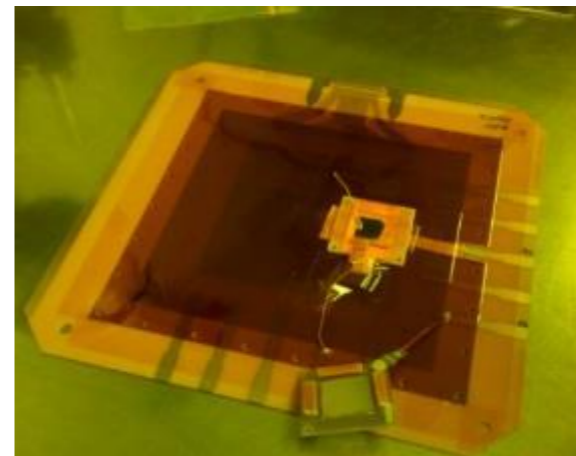
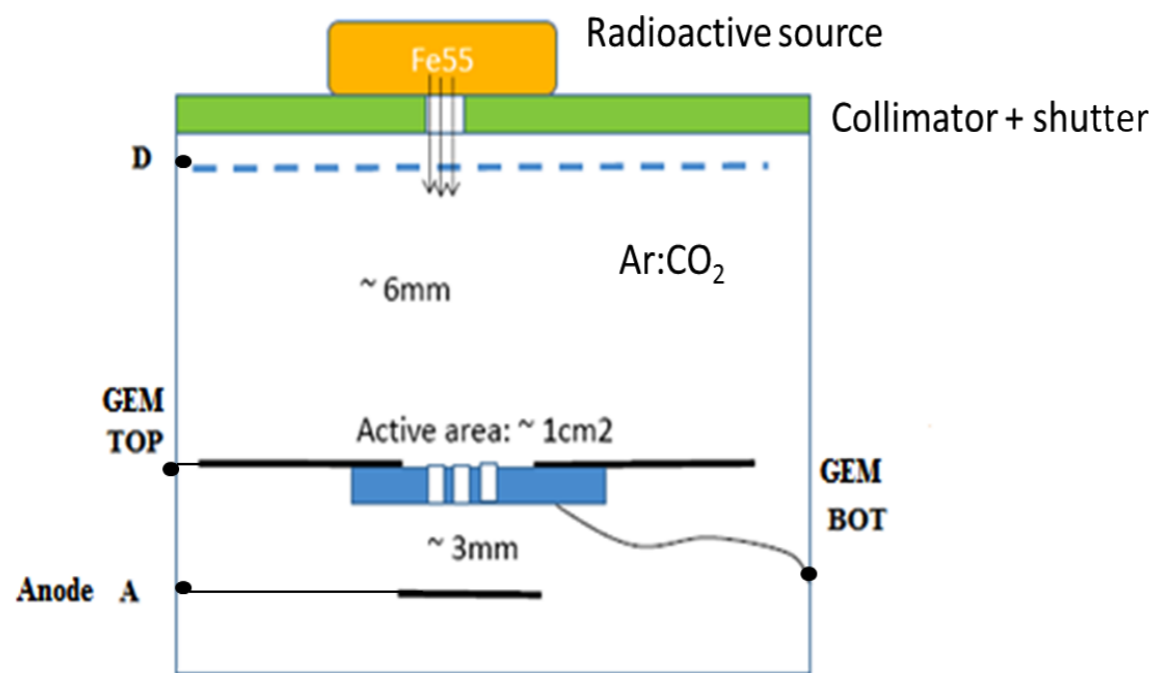


Device for growing diamond UPSA 100 by CVD technology



CVD diamond disk, diameter 57mm, thickness 0.5 mm

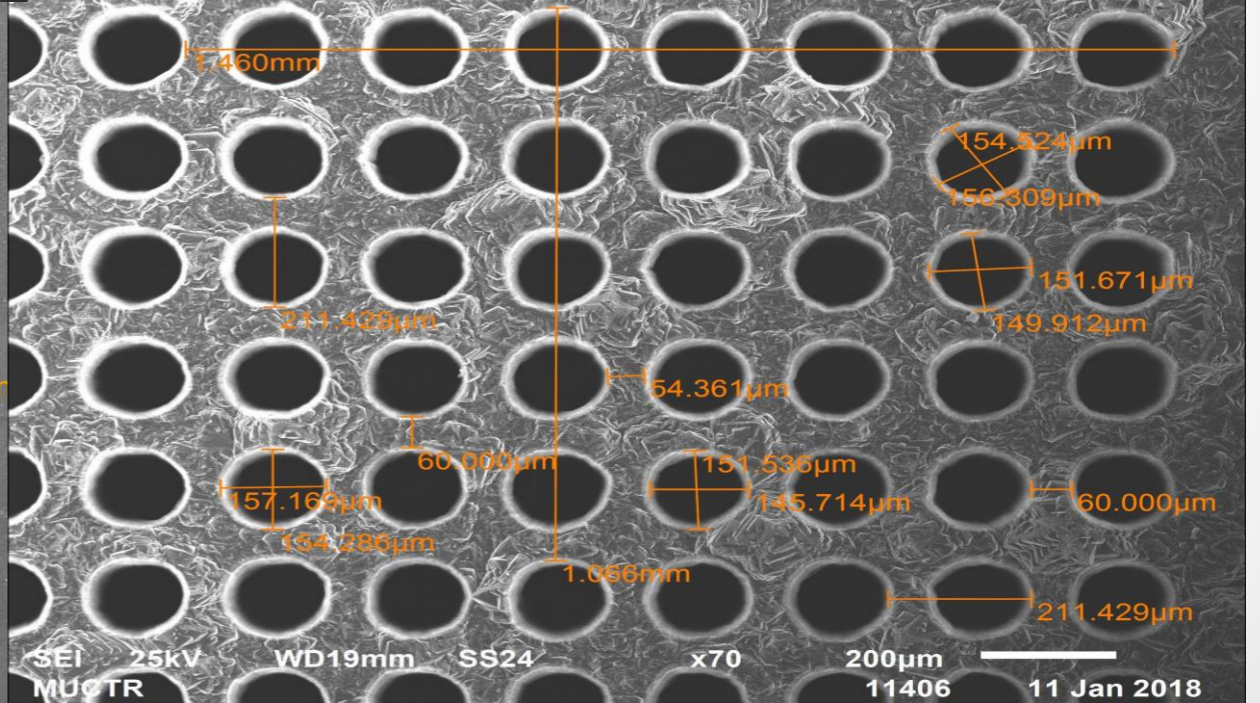
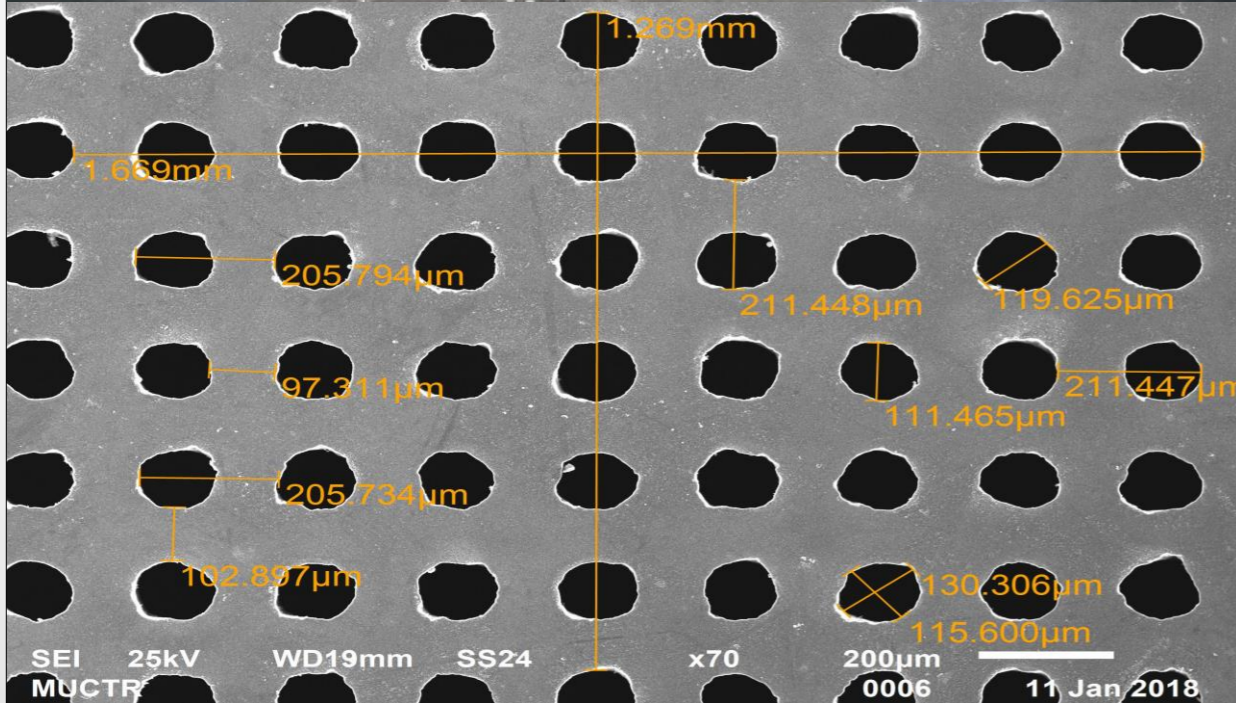
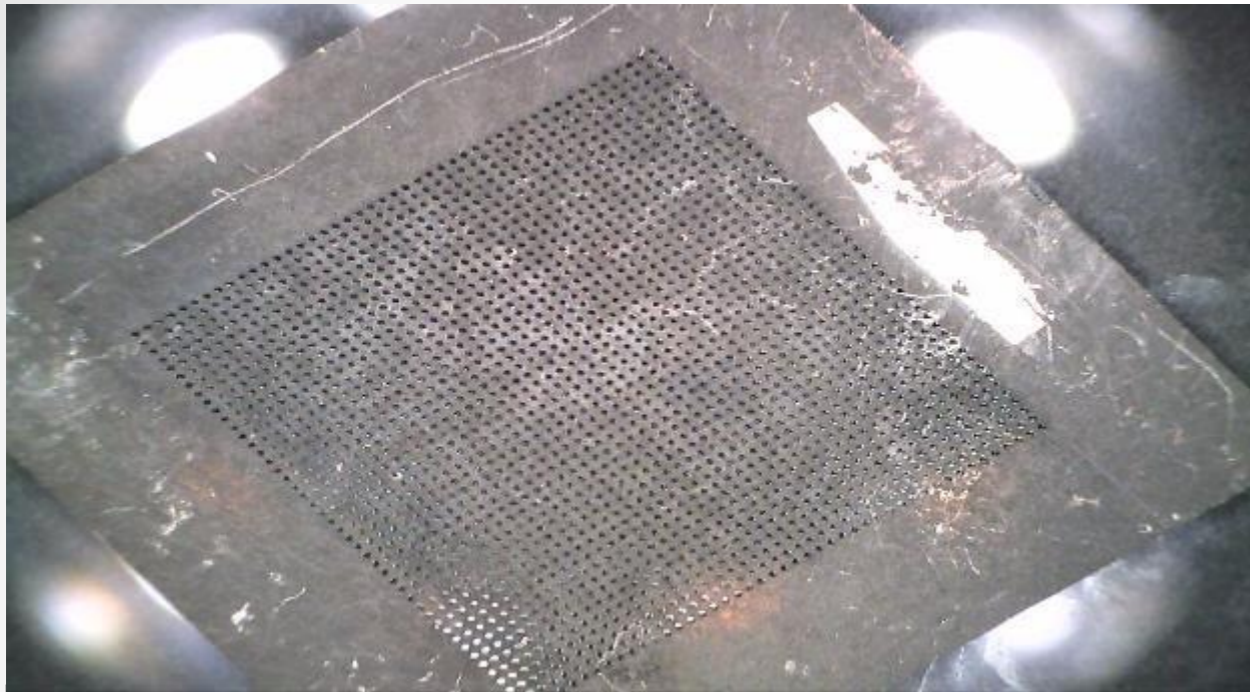
# GEM made of CVD diamond, measurements



Transversal scheme of the setup for diamond GEM tests

Photographs of assembly steps of the chamber for testing CVD diamond GEM

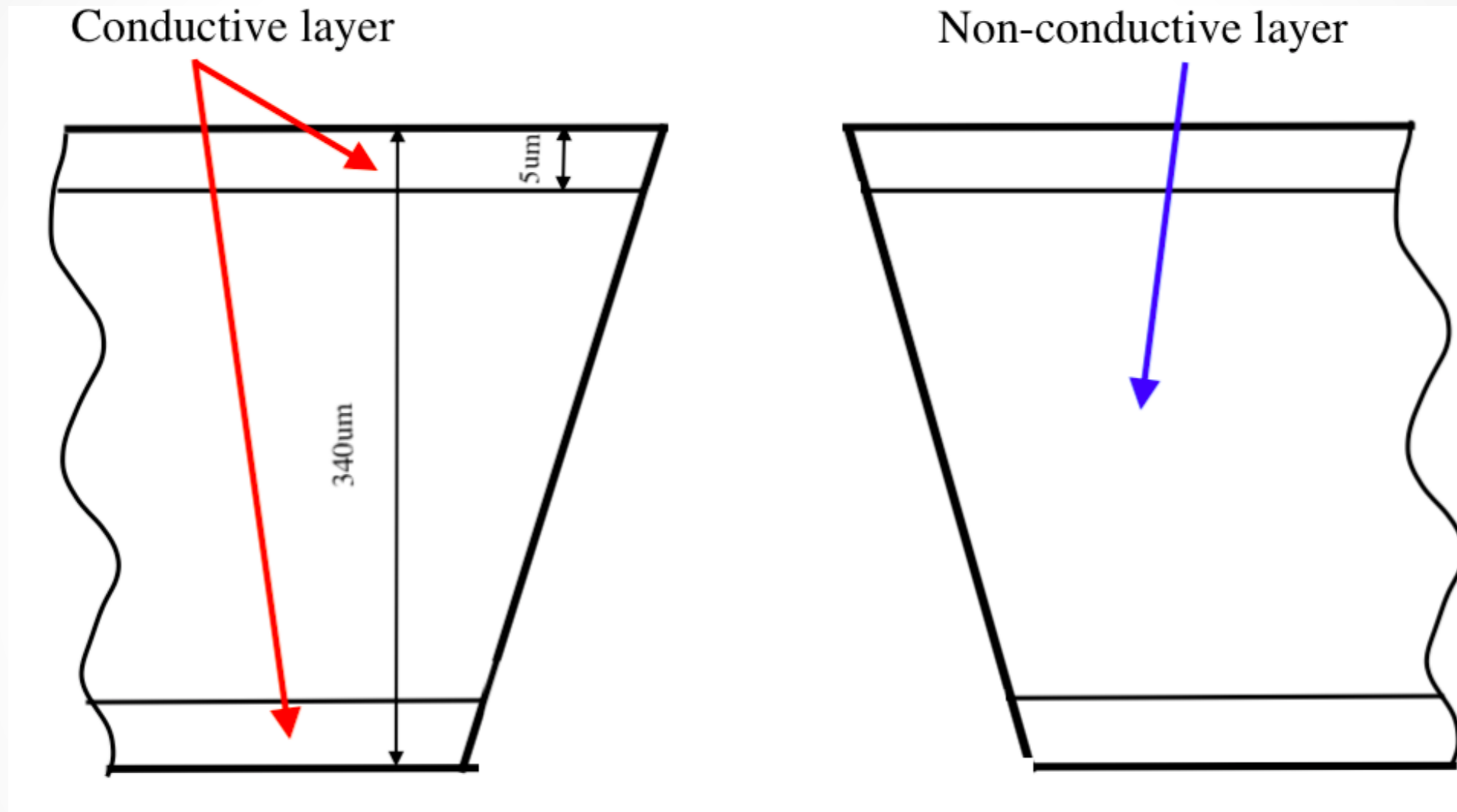
# Structure



Nucleation side

Grow side

# Geometrical structure



Borum doped level is 5  $\mu\text{m}$

# Pluses and minuses

## Pluses

- Radiation hard material
- Control of resistivity
- Long ageing
- Easy to repair

## Minuses

- Small sizes
- Long time of production



# Future plans

- Continue measurements
- Work on better geometry of the structure

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