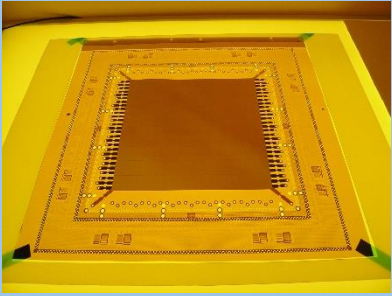


The use of Low-Temperature Cofired Ceramics technology in Gas Electron Multiplier Microstructures.

Piotr Bielówka

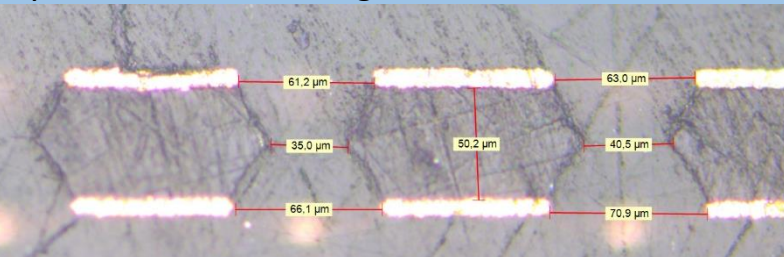
Production



Most of GEMs are made by wet etching technology that was invented at CERN.



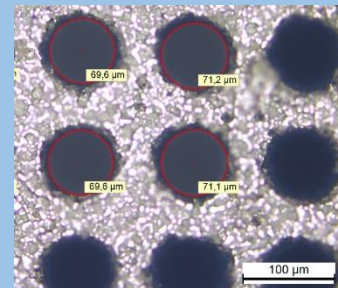
GEM production at Techtra by chemical wet etching.



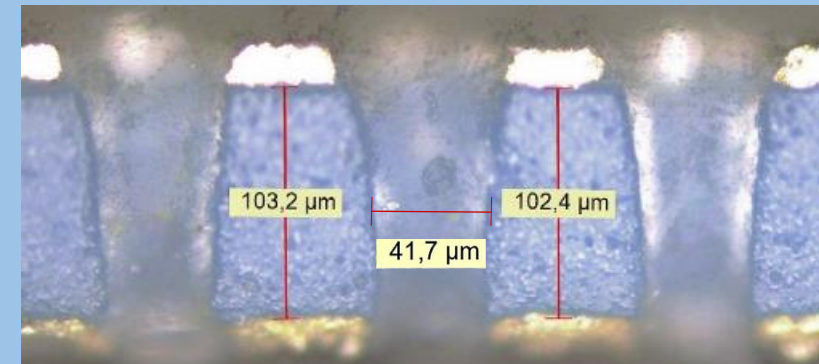
Cross-section of polyimide GEM foils, Techtra.



Cu conductive layer on GEM.



Ag conductive layer on LTCC-GEM.



Cross-section of LTCC-GEM sample.

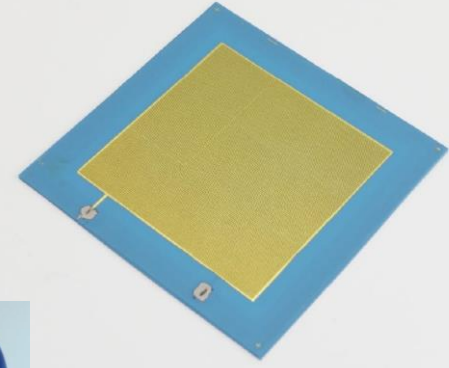
Foreseen advantages of LTCC-GEM structures over polyimide-based ones:

- low outgassing
- low coefficient of thermal expansion
- excellent dielectric properties
- a high amplification
- a high density of vias
- robustness and durability
- many types of conductive layers can be used
- low production costs of prototypes

The first LTCC-GEM prototypes were investigated, and the R&D work is ongoing.

R&D work

A GEM made on the basis of Low-Temperature Cofired Ceramics technique.



LTCC-GEM microstructure made with LTCC substrate covered by a conductive substrate. Vias were fabricated by a laser beam.