James Watt Nano Fabrication Centre

The Centre has comprehensive micro and nanofabrication facilities housed within 750 m² of cleanroom space including one of the most advanced large area high resolution electron beam lithography tools in the world. Glasgow University has been engaged in micro and nanofabrication for more than thirty years and has a wealth of accumulated expertise in core fabrication technologies.

High resolution Lithography
Precision metal deposition
High aspect ratio etching
Manufacture of 3D detectors
Fabrication method depends on material and geometry

Plasma etching
Laser ablation
PEC etching

Cross-section SEMs of 3D pores made by the three methods

3D hexagonal geometry connected in strip and pixel configurations
Design & Fabrication of GaN Diodes

MSM (metal-semiconductor-metal) diodes

- Schottky (rectifying) contacts
- Interleaving finger design
  - minimised response time
  - Increased active area
Design for Synchrotron Diodes

Green - GaN fingers (10µm width, 10µm pitch)
10nm Pd contacts
Purple - PCB design for integration to DIP socket

- Entire GaN diode = 6x20mm²
- Solar Blind – No need for setup to be “light tight”
- Diode can be operated unbiased – 0V
- 519 electrodes at < 30 µm spacing
  - Line width reduced to ~500nm
- 2053 electrodes at 60 µm
  - Line width 1mm
  - Area ~ 7 mm²
Electrode arrays

4-inch wafer

30 µm electrode spacing
Area ~ 0.4mm²

26/06/07  Val O'Shea - Glasgow