

SCPS Cleanroom

The Cleanroom Fabrication Facility opened in 2011 and is designed for the fabrication of novel electronic devices.

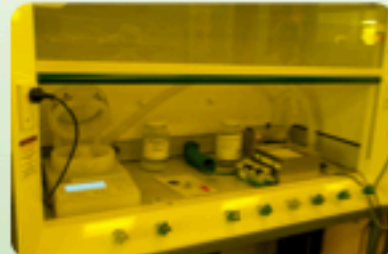
Cleanroom overview

The cleanroom fabrication facility in the School of Chemical and Physical Sciences houses the equipment used in the key process steps for electronic device fabrication.

This poster highlights our most commonly used processes and equipment. The facilities are readily applied to fabricating thin film electronics, nanomaterial device fabrication, and organic electronics. We are always open to potential collaborations and encourage all interested parties to get in touch via the addresses below.



A busy day in the lab



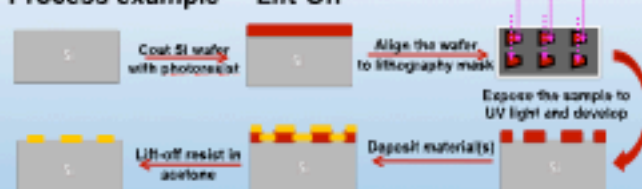
The photoresist preparation area, under yellow light for lithography processing

Karl Suss MJB3 Mask aligner

- Mask aligner for photolithography – the workhorse of microelectronics
- Resolution limit of 2 μm minimum feature size
- Contact & proximity lithography
- Custom designed lithography masks can be fabricated at the NEST facility at the University of Canterbury



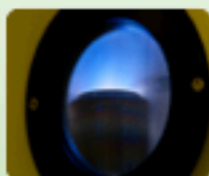
Process example - "Lift-Off"



DEPOSITION METHODS – DIELECTRICS AND METALLISATION

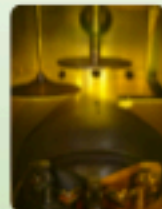
Ezzi Vision Sputter Coater

- RF magnetron sputter deposition
- Capable of depositing both metals and dielectrics, including Ti, Ag, Ni, SiO_2 , and ZnO
- Inficon deposition rate controller for monitoring film thicknesses



Angstrom Engineering Evaporator

- Two thermal evaporation sources
- Suitable for metals such as Cr, Al, Au, Ag
- E-Gun source for high melting point materials such as W and SiO_2
- High accuracy Inficon deposition rate controller



SPECIALIST PROCESSING – EPITAXIAL THIN FILMS AND ETCHING

Ultra High Vacuum

- Ultra-high vacuum thin film deposition
- Present focus on rare-earth nitrides with spintronics applications
- Base pressure < 10^{-8} mbar
- Growth temperature up to 900°C
- In-situ growth monitoring by electron diffraction



Oxford Instruments Plasmalab 80

- The Plasmalab 80 is setup for reactive ion etching
- High quality gases included are SF_6 , CF_4 , Ar, and O_2
- Dual RF function to allow for Plasma enhanced chemical vapor deposition (PECVD)



INSPECTION AND ELECTRICAL CHARACTERISATION

Dektak Profilometer & Nikon 66 C

- Profilometer for inspecting metal layer thicknesses, resist, and etch profiles
- Optical microscope with digital camera to inspect samples during processing runs



Agilent 4156C

- Precision semiconductor parameter analyzer
- Connected to probe station
- Four high-resolution source measure units
- Femto-amp resolution
- Capable of quasi CV measurements



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To find out more about us, please visit - <http://www.victoria.ac.nz/scps/research/industry/cleanroom>



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