

CLEAN ROOM FACILITIES

The Centre has Class 100 and 1000 clean room facilities to fabricate micro and nano devices for a range of applications.

The facilities have 200mm wafer processing capability to perform a variety of semiconductor processes which include:

- Photolithography, Electron beam lithography & Nano-imprint lithography.
- Dielectric, semiconductor and metal deposition and etching process.
- Rapid thermal annealing
- Dry and wet chemical etching process.
- Electroplating and wafer cutting

The facilities also have characterisation tools to perform full wafer inspection and characterise the device performance by measuring film thickness, sheet resistance, refractive index and uniformity.

In addition, the facilities have a class 10,000 bioclean room for tissue engineering and device functionalisation.

BENEFITS

ONE STOP SHOP-Full wafer processing all under one roof leading to product cost reductions.

PRODUCT MINITURISATION- for portable point of care applications.

PROTOTYPING- Low volume and low cost prototyping.

AT THE NANOSCALE- Produce high sensitivity.



APPLICATIONS

AREA OF INTEREST	APPLICATIONS
MEMS & MICROFLUIDIC DEVICES	<ul style="list-style-type: none"> • Blood extraction systems • Copper Electroplating • High Aspect ration systems • Micro needles • Mlcro pumps
NANOWIRE BIOSENSORS	<ul style="list-style-type: none"> • SiNW biosensors • ZnO Biosensors • Graphene Biosensors • Biofilm Biosensors
PHOTOVOLTAIC CELLS	<ul style="list-style-type: none"> • Si Photovoltaic cells • III V Photovoltaic cells • Nanostructure coatings • Antireflective porous textured surface
FULL WAFER PROCESSING	<ul style="list-style-type: none"> • Nanowire biosensors • Photovoltaic cells • Micro needles • Nano electrodes • Large Area Nano Imprint

EQUIPMENT

SUSS MicroTEC MA8 MASK ALIGNER

- Sub micron resolution
- Assisted and manual alignment, top and bottom side alignment

SUSS SUBSTRATE CONFORMAL IMPRINT LITHOGRAPHY (SCIL) SYSTEM

- Low cost nano device manufacturing technology
- Nanoimprint large area
- Sub 10nm resolution

Raith E_line electron beam Lithography

- Ultra high resolution electron beam lithography with 10nm resolution
- Flexibility and speed for prototyping

Spin Coater

SPTS PECVD

- Plasma enhanced deposition of amorphous silicon, silicon dioxide and silicon nitride. Film: A-Si, SiO₂ and Si₃N₄
- Liquid delivery system
- Mixed frequency for stress tuning

Kurt J Lesker PVD75

- Thin Film deposition
- Semiconductors, metals, dielectrics and metal oxides sputtering

SPTS ICP Etcher

- Highly flexible and etches wide range of material including oxides, nitride, polymers, silicon and metals
- Acid and Solvent Fume Cupboards
- Full wafer cleaning
- Semiconductors, metals and dielectric film wet chemical etchings

Annealsys Jipelec JetFirst RTP

- Rapid thermal annealing from ambient to 1000°C
- Ramp rate 1°C/s to 300°C/s
- Contact annealing, crystallization

FilmTek 4000-A

- Multiple layer thickness from 1Å to 350µm
- Optical properties 190nm to 1700nm
- Determine Energy band gap, extinction (absorption) coefficient, indices of refraction

SemiProbe LA200 and Keithley Unit

- Four Point Probe IV Measurements

MakerBot Replicator 2

- 3D printing for prototyping

ATV Diamond Scribers

- Substrate cutting and scribing

Copper Electroplating

GX Semiconductor and Metallurgical Microscope

CASE STUDY

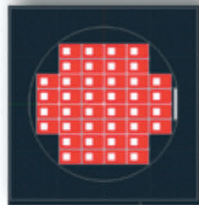
PURE WAFER LTD.

Development of a low cost photovoltaic solar cell with the reclaimed silicon. Introducing layers of anti-reflective coating on the solar cell to increase the efficiency of the solar cell.



NANO FLEX

Fabricating nano electrode for electrochemical applications.



SPTS

Fabricate Bio-MEMS devices for medical applications.

