

## Fabrication Network (Materials and Devices) – NSW Nodes National Collaborative Research Infrastructure Strategy (NCRIS) program

### Enhanced fabrication research facilities across New South Wales

NSW research and development infrastructure in the field of fabrication, nanotechnology and advanced manufacturing has been enhanced with the establishment of research infrastructure under the Australian National Fabrication Facility (ANFF) network. The laboratories, brought together under the Commonwealth Government's National Collaborative Research Infrastructure Strategy (NCRIS), and with NSW Government financial support, will provide external users from industry, research sector and government, with some of the leading research infrastructure and skills in the country.

#### Benefits to Industry

- § Laser micro machining
- § Semiconductors
- § Lithium niobate fabrication
- § Photolithography
- § Nanostructured oxides
- § Organic electronics

A key principle of NCRIS is that the facilities that it funds be accessible to public and private sector researchers on the basis of merit at reasonable prices, wherever they are located in Australia.



### NSW supported facilities

The New South Wales based facilities, accessible by researchers, industry and government are:

OptoFab Node	Macquarie University University of Sydney Bandwidth Foundry International	3-D laser micromachining; Direct write photolithography; Lithium Niobate device fabrication; Specialty fibre fabrication and characterisation;
NSW Node	University of New South Wales	Electron-beam lithography for large area structures, especially in nanoelectronics; Ultra-high resolution EBL for small scale prototype devices; Semiconductor device prototyping.
Materials Node	University of Wollongong University of Newcastle	Superconducting and electronic material; Nanostructured oxides and ceramics; Metals processing Nanostructured polymer electronic materials Organic electronic devices.

## Optoelectronics and photonics capabilities

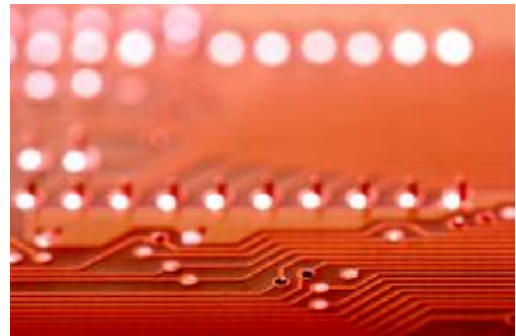
The OptoFab Node includes two universities (Macquarie University and the University of Sydney) and the Bandwidth Foundry International (owned by ASX listed company Arasor). The node has specific research expertise in the area of optoelectronics and photonics. The three organisations will provide an integrated service and support for users seeking:

- Photolithography to 0.8  $\mu\text{m}$  res
- PDMS soft-lithography
- 64 level grey scale lithography
- MCVD lathes
- Speciality fibre draw towers
- Optical fibre characterisation
- Periodically Poled Lithium Niobate
- Microstructured optical materials (features down to 5  $\mu\text{m}$ )
- Nanosecond and femtosecond laser micromachining from UV to IR
- Glass and crystal processing

Please direct your enquires to Dr Michael Withford at [withford@ics.mq.edu.au](mailto:withford@ics.mq.edu.au)

## Nanoelectronics and semiconductor fabrication capabilities

The University of New South Wales will double the cleanroom capacity of the Semiconductor Nanofabrication Facility (SNF) to house the new ANFF node at its Kensington campus. The SNF currently houses Australia's largest concentration of electron-beam lithography (EBL) tools – capable of the highest resolution nanofabrication in Australia, with features down to 10nm.



The node will also offer training in fabrication of complete devices and a research device prototyping service, including device design and conception, photo-mask design, photomask fabrication and process development.

The new ANFF facilities will include:

- Cleanroom to class 350, with special gases infrastructure
- Cleanroom to class 3.5
- Large-area electron beam lithography tool
- UV lithography and wet-process tools
- Multi-source refractory layer deposition tool

Please direct your enquires to Professor Andrew Dzurak at [a.dzurak@unsw.edu.au](mailto:a.dzurak@unsw.edu.au)



## Organic electronics capabilities

The world class electromaterials research expertise of the University of Wollongong and the University of Newcastle will be opened up to external users as the ANFF Materials Node. The node has specific strengths in the areas of both hard and soft electronic materials and builds on the capacity of the University of Wollongong's of the Australian Research Council Centre of Excellence for Electromaterials Science.

Research infrastructure includes:

- Thin film deposition facilities
- Superconductor fabrication-electron beam evaporation
- Pulsed layer deposition
- Class 1000 clean room
- Nanostructure Deposition Facility
- Electron beam lithography
- Ebeam – XPS
- Preparative HPLC and GPC
- MALDI MS
- Material synthesis in an organic laboratory environment

Please direct your enquires to Professor Gordon Wallace at [gwallace@uow.edu.au](mailto:gwallace@uow.edu.au)

## Would you like some further information?

### NSW Department of State and Regional Development

For more information about the Department, the NSW Government's economic development agency, please visit : [www.business.nsw.gov.au](http://www.business.nsw.gov.au)

### NSW Office for Science and Medical Research

The Office for Science and Medical Research (OSMR) works with research institutes, universities and businesses to promote growth and innovation in science and medical research to achieve better economic, technological, health and environmental outcomes for NSW. For more information on OSMR, visit:

[www.osmr.nsw.gov.au](http://www.osmr.nsw.gov.au)

### NSW Government Statement on Innovation

The NSW Government Statement on Innovation outlines the NSW Government plans to enhance industry innovation as a means of improving productivity and increasing business investment. A copy of the statement can be downloaded from:

[www.nsw.gov.au/thankyou.asp?linkid=7119](http://www.nsw.gov.au/thankyou.asp?linkid=7119)

Visit the Department of State and Regional Development's innovation website at:

[www.business.nsw.gov.au/innovation](http://www.business.nsw.gov.au/innovation)

### Australian National Fabrication Facility

For more information on the ANFF, visit their website at:

[www.anff.org.au](http://www.anff.org.au)

### National Collaborative Research Infrastructure Strategy (NCRIS)

For information about NCRIS visit the Commonwealth Department of Innovation, Industry, Science and Research (DIISR) at:

[ncris.dest.gov.au](http://ncris.dest.gov.au)

