The Australian National Fabrication Facility
Materials Node

Novel nanomaterials offer the potential for groundbreaking improvements in areas as far reaching as biomedicine, industrial processing, and energy conversion and storage. The ANFF Materials Node brings together specific strengths in the fabrication of both hard and soft materials, particularly nano-organic and inorganic electronic materials.

The Materials Node is based at the University of Wollongong and combines the skills, facilities and expertise of the Intelligent Polymer Research Institute (IPRI), the Institute for Superconducting and Electronic Materials (ISEM) and the University of Newcastle’s Centre for Organic Electronics (COE).

Between them, these three partners offer extensive and unique capabilities in the design, development and fabrication of nanostructured electronic materials and devices for researchers and industry.

Researchers are able to either work at the node under expert guidance, or to contract for specialised products to be fabricated at a reasonable cost.

Specific capabilities
Fabrication and characterisation of novel organic, polymer and inorganic nanomaterials, and organic electronic device fabrication.

Speciality nanostructured materials
The Materials Node offers services for the production of commercial quantities of speciality nanostructured materials such as electronic polymers, oxides, macromolecules, and metallic powders.

It also offers extensive facilities for fabricating thin films and devices.

In addition, the Materials Node has extensive experience across a broad range of speciality materials systems and offers a range of materials consultancy services in the design, development and fabrication of novel materials and devices.

Contact Details
Facility Manager: A/Prof Peter Innis
Email: innis@uow.edu.au
Phone: +61 2 4221 3600

Node Director: Prof. Gordon Wallace
Email: gwallace@uow.edu.au
Phone: +61 2 4221 3127
Web: www.uow.edu.au/science/research/ipri
**Instrumentation available**

The University of Wollongong

- Bruker 400 MHz NMR spectrometer
- Waters Aqueous and Shimadzu organic GPCs
- Shimadzu HPLC
- Shimadzu UV-VIS spectrometers
- Bruker EMX ESR/EPR spectrometer with electrochemical capability
- Electrochemical Raman spectrometer with 632 and 785 nm excitation sources
- Scanning Vibrating Electrochemical probe
- Localised electrochemical impedance (LEIS) mapping
- Electrochemical Atomic Force Microscope (AFM) with nanomanipulator
- Zetasizer Nano-PCS particle sizer (0.5-3000nm) & zeta potential
- Goniometer - Data Physics Contact Angle System
- Scanning Electrochemical Microscope
- XPS/Auger electron spectroscopy system
- Electron beam lithography
- Pulsed magnetron sputtering thin film deposition
- Electron beam evaporation thin film deposition
- Metal organic deposition (MOD)
- Spray pyrolysis
- Magnetooptical imaging
- Hunterlab ColorQuest XE Spectrometer
- Brookfield Viscometer
- Thermal Gravimetric analysis system
- Jandal 4 point conductivity measurements
- Smart motor actuator, load cell (10N) and LVDT system
- Electrochemical Quartz Crystal Microbalance
- Leica Confocal Microscope
- Nitrogen Gloveboxes

The University of Newcastle

- Class 1000 clean room facilities
- 2 Glove boxes
- Atome PECVD system
- Carey 6000i UV-Vis system
- Profilometer
- Scanning near-optical microscope
- Spin-coating and thin film deposition system
- Electrical characterisation facilities

**Synthesis capability**

The Materials Node has a capability of producing monomers, polymers, inorganic oxides, macromolecules, and metallic powders for a wide variety of applications. The following are the reaction capabilities we have for producing advanced materials in multiple step syntheses:

- High temperature reactions (to 320°C)
- Cryogenic reactions (to -120°C)
- High pressure reactions
- High vacuum distillation
- Organometallic chemistry
- Photochemistry
- Dry box reactions
- Catalytic hydrogenation
- Microwave reactions

The Node is well equipped to produce milligram to multi-gram quantities of advanced materials.