Australian National Fabrication Facility

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Australian National Fabrication Facility Access and Pricing Policy

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Introduction

The Australian National Fabrication Facility (ANFF) provides access to nano and microfabrication facilities to all Australian researchers. The ANFF seeks to encourage collaboration in research. The Access and Pricing Policy is intended to ensure that there are as few barriers as possible to accessing major infrastructure for those undertaking meritorious research.

All Fabrication Nodes will have **Access Committees** charged with oversighting access to the facilities, including implementing the Policy, prioritising use of facilities, and monitoring operating costs and access income.

In the early stage of operations, access to ANFF facilities will be managed by **Facility Managers**, as it is anticipated that Nodes will have excess capacity and that access will be provided on a liberal basis. The full ANFF Access & Pricing Policy will come into operation at the point that each Node is in the position of needing to ration access.

The Policy has been developed to ensure open and transparent access to the facility for all Australian researchers. The Policy will be reviewed by the Nodes on an annual basis to ensure it meets the needs of the growing user base and maximises use of the infrastructure.

Definitions

Facility Manager: the first point of contact at the Node for a new user.

External users: users external to the host institution.

Assisted access: a Node staff member operates the equipment, is in attendance or must remain nearby to monitor operation.

Unassisted access: a user operates the instrumentation without the assistance of a Node staff member. Users must be preauthorised by the Node.

Core time: the working day in which assisted access can be booked.

Access Committee: group responsible for prioritising allocation of instrument bookings.

Oversubscribed: a booking on the instrument required is not available within one month.

Accessing a Node

The Access & Pricing Policy outlines the process for allocating available hours in the event that the facilities are oversubscribed, and the rates for using the facilities under the NCRIS program. Once time has been allocated in the facility, the procedure for all users accessing a Node will be the same, regardless of whether the access is funded by the NCRIS program or otherwise. Users must follow the local Node's policies including OH&S and after-hours access.

Access Committees

Access to ANFF Nodes will be managed by an Access Committee for each Node. The role of the committees is to ensure that the ANFF Access and Pricing policy is implemented at the Node. Typically, the committee at each Node is composed of the Node Director, Facility Manager and representatives from the major user groups. The ANFF CEO may also attend a Node's Access Committee meetings.

It is anticipated that initially the groups will meet at least quarterly. Additional reviews may take place electronically or by sub-committee. The frequency of meetings is driven by the need to advise potential users of the outcome of their application within one month of submission.

Access Committees membership for each Node is given below.

Application Procedures

It is expected that the first contact with a potential user will be a discussion to determine the feasibility of the project. This will establish the techniques required and enable the user to submit a detailed application.

Initial contact for new users may be:

- direct application to a Node's Facility Manager (telephone / email); or
- via ANFF (website, email, telephone). ANFF will then contact the relevant Node or Nodes to determine availability of instrumentation.

Following initial discussions, the formal application process for accessing the instrumentation will be to complete a short project proposal (less than two pages) describing the work and the expected outcomes. Users will be asked to note any factors influencing the timing of the work, e.g., international travel, commercial production implications or grant / thesis submission dates.

In the first instance, the Facility Manager will review the application, in consultation with the Node Director if necessary, to allocate a booking. In the event that the instrument is oversubscribed, the Facility Manager will submit the application to the Access Committee for review. Copies of all applications will be lodged with the committee.

Criteria for identifying successful applicants

When demand for the facility exceeds capacity, access committees will review applications on a regular basis. Priority will be given to meritorious research from the following three groups and the committees will work to balance their needs:

- Early career researchers;
- Other public sector researchers of merit; and
- Researchers from SMEs who are able to pay commercial prices for access.

Meritorious research will include, but is not limited to, those awarded nationally competitive grants. The committee will not duplicate existing review processes. It is anticipated that up to 50% of the NCRIS allocation will be prioritised for commercial users. Spare capacity at a Node may be used to meet overflow in other Nodes.

Each application will be considered by the committee based on the following criteria:

- the suitability of the techniques and facilities available at the Node to contribute to the research outcomes sought;
- the potential outcomes of the research, including knowledge and wealth creation via collaborations, papers, and patents;
- significance and innovation of the program;
- commercial urgency or research submission deadlines;
- travel arrangements for interstate or international users; and
- experience of the applicant in the use of the facility and the requirement for technical support.

Reporting

Users are asked to acknowledge the program in papers as follows:

*"This work was performed in part at the [*insert name*] Node of the Australian National Fabrication Facility. A company established under the National Collaborative Research Infrastructure Strategy to provide nano and microfabrication facilities for Australia's researchers."*

The ANFF logo (available from the website) should be included on the acknowledgements slide of a presentation. In addition, users funded by travel grants will need to meet the requirements of the grant.

The Access Committee will report the number and type of users and the access income to the ANFF on a quarterly basis. These metrics will form part of the Node's key performance indicators.

Pricing structure

The ANFF recognises three classes of user:

1. PhD students;
2. publicly funded researchers, including University researchers; and
3. industry users.

Pricing for public sector researchers is based on marginal costs only. A full listing of costs for each Node, including consumables, is given in below.

International researchers will be charged at industry rates.

All prices in this document are exclusive of GST.

Conditions of access

Instrumentation funded by the NCRIS program will be available to external users at the ANFF rate for 50% of the core time or as detailed below:

- Access to the Direct Write Lithography at the Bandwidth Foundry will be up to 16 hours per week.
- University of Queensland: A maximum of five hours may be booked in one core period.

Grievances

In the first instance, grievances should be reported to the Node Director for discussion at the Node's Access Committee meeting. In the event that a resolution is not reached, the grievance should be reported to the ANFF.

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Membership of Access Committees

The ANFF CEO may attend access committee meetings at each Node. The committees may also be augmented by other local experts.

VIC

- Prof Nicolas Voelcker
- Dr Sean Langelier (MCN)
- Dr Paul Spizzirri (MCN)
- Prof Paul Pigram (LaTrobe)
- Dr Peter Miller (Monash)
- Prof Arnan Mitchell (RMIT)
- Prof Sally McArthur (Swinburne)
- Prof Joselito Razal (Deakin)
- Prof Ray Dagastine (UniMelb)
- Dr Cathy Foley (CSIRO)

ACT & WA (combined committee)

- Prof. Jim Williams, Chair (ACT)
- Prof. C. Jagadish, Node Director (ACT)
- Dr Fouad Karouta, Node Facility Manager (ACT)
- Prof. Rob Elliman, ANU Electronic Materials Engineering (ACT)
- Prof. Laurie Faraone, Node Director (WA)
- Res/Prof. Mariusz Martyniuk, Node Facility Manager (WA)
- Prof. Tim Senden, ANU Applied Mathematics (ACT)
- Prof. Hoe Tan, ANU Electronic Materials Engineering (ACT)
- A/Prof. Duk-Yong Choi, ANU Laser Physics Centre & CUDOS (ACT)
- A/Prof. Larry Lu, ANU College of Engineering & Computer Science (ACT)
- Prof. Dragomir Neshev, ANU Non-linear Physics Centre (ACT)

QLD

- Prof Justin Cooper-White (Node Director)
- Prof Paul Burn (Deputy Director)
- Prof Nam-Trung Nguyen (Deputy Director)
- Prof Andrew Whittaker
- Dr Jane Fitzpatrick (Facility Manager)
- Dr Mirko Lobino
- Mr Alan Iacopi
- Ms Anita Gibson (Business Development Officer)

NSW

- Prof Andrew Dzurak (Director)
- Dr Nadia Court
- Mr Gordon Bates (Laboratory Manager)
- Prof Darren Bagnall
- Prof Justin Gooding (UNSW - Chemistry)
- Prof Chee Yee Kwok (UNSW - Electrical Engineering and Telecommunications)
- Prof Nigel Lovell (UNSW - Biomedical Engineering)
- A/Prof Adam Micolich (UNSW - Physics)
- Prof Andrea Morello (UNSW - Electrical Engineering and Telecommunications)
- Prof David Reilly (University of Sydney - Physics)
- Prof Michelle Simmons (UNSW - Physics)
- Prof Richard Tilley (UNSW - Electron Microscope Unit - NCRIS Characterisation Capability)
- Prof Nagarajan Valanoor (UNSW - Materials Science and Engineering)
- Dr Bram Hoex (UNSW - Photovoltaics and Renewable Energy Engineering)

SA

- Dr Craig Priest, Node Director (UniSA)
- A/Prof Benjamin Thierry (UniSA)
- Prof Joe Shapter (Flinders Uni)
- Prof John Arkwright (Flinders Uni)
- A/Prof Said Al-Sarawi (Adelaide Uni)
- Dr Marta Krasowska (UniSA)
- Mr Igor Switala (DST Group)
- Mr Simon Doe, Facility Manager (UniSA)

OptoFab

- A/Prof Michael Withford (MQ, Chair)
- Ben Johnston (MQ)
- Martin Ams (MQ)
- Simon Fleming (USYD)
- David O'Connor (BFI)
- Richard Lwin (USYD)
- Heike Ebendorff-Heidepriem (UoA)
- Luis Lima-Marques (UoA)
- David Reilly (USyd)

Materials

- Prof Gordon Wallace (Node Director)
- Prof Peter Innis (Facility Manager - UoW, IPRI)
- Prof David Officer (UoW)
- Prof Paul Dastoor (UoN)

Pricing Structure

The pricing structure for the facility is given below. Note that standard consumables are included in cost price; however, specialised consumables or retooling will be charged to the user at cost. For further details, refer to the Node.

Charges are subject to annual review and may be changed without notice.

Victorian Node

ANFF-VIC: MELBOURNE CENTRE FOR NANOFABRICATION (MCN)

Table 1. Pricing structure for use of MCN major equipment and laboratories

FLAGSHIP EQUIPMENT		
	Academic/public funded	**Industry**
Vistec Electron Beam Lithography *Note: a surcharge for specialty resists may apply. Please see staff for details and current market rates.*	$90 / hour ($750 cap per 24hrs)	$225 / hour ($1875 cap per 24hrs)
UV Lithography (excluding chrome mask)	$40 / hour ($320 cap per 24hrs)	$100 / hour ($800 cap per 24hrs)
Seki Diamond Deposition Systems	$70 / hour ($750 cap per 24hrs)	$170 / hour ($1875 cap per 24hrs)
Nanofrazor: Thermal Scanning Probe Lithography	$70 / hour ($750 cap per 24hrs)	$168.75 / hour ($1875 cap per 24hrs)

Tier 1 Equipment (Sorted by capability area)		
	Academic/Public funded	**Industry**
PRICING	$70 / hour	$170 / hour
Bio Capabilities	3D Printer (Objet Eden 260V)	
Characterisation	Atomic Force Microscope (Bruker Dimension Icon)	
	Bio Atomic Force Microscope (JPK Nanowizard II)	
	FEG-SEM (FEI NovaNano SEM 430)	
	FIB-SEM (FEI Helios Nanolab600 Dual Beam FIB-SEM)	
Etching	Etcher 1 (Oxford DRIE – Bosch)	
	Etcher 2 (Oxford RIE – General)	
Lithography	Mask Aligners (SUSS MA6 and EVG6200) *	
	Nano Imprint System (EVG 520 IS)	
Thin Film Deposition *Note: surcharge for precious metals may apply. Please see staff for details and current market rates.*	ALD Systems (Cambridge Nanotech ALD FijiF200 &	
	Electron Beam Evaporator (Intlvac Nanochrome II e-beam)	
	Furnace Stack Tube #4 (Silicon Nitride LPCVD)	
	Furnace Stack Tube #1 & #2 (Phosphorus/Boron Bubbler	
	Gold Electroplating (Digital Matrix PMT-16)	

	Nickel Electroplating (Digital Matrix SA1000)
	PECVD (Oxford Plasmalab 100 PECVD)
	Polymer Glovebox (Mbraun MB200)
	Sputter Systems (Intlvac Nanochrome & Anatech Hummer BC-20)
	Thermal Evaporator (Angstrom Engineering EvoVac)

Tier 2 Equipment (Sorted by capability area)		
PRICING	**Academic/Public funded**	**Industry**
	$45 / hour	$115 / hour
Bio Capabilities	Glovebox (Biolab)	
Characterisation	Hyperspectral Imaging (Cytoviva Hyperspectral Imaging System)	
	Laser Doppler Vibrometers (Polytec MSA-400 & UHF-120)	
	Laser Scanning Confocal Microscope (Nikon Instrument A1Rsi+Ti-E)	
	Microspectrometer (Nikon Instrument with Ti-U and Princeton Lightfield)	
	Near-field scanning optical microscope (NeaSNOM)	
	Optical Profilometer (Bruker Contour GT-I) *	
	Spectroscopic Ellipsometer (J.A.Woolam M-2000DI) *	
	Tabletop SEM (Hitachi TM3030 SEM with Oxford EDX)*	
	TIRF System (Nikon Instrument TIRF with Ti-U)	
Etcher	Anodic HF Etcher (Coming soon)	
Packaging	Dicing Saw (DiscoDAD321)	
	Scriber/Breaker (Dynatex DTX)	
	Wire Bonders (K&S 4524 and 4526, F&S Bondtec 5832 and Westbond 7476E)	
Thin Film Deposition	Hitech Oxidation Furnace ($250 Academic / $625 Industry caps/run)	
	Furnace Stack Tube #1 & 2 (Phosphorus/Boron solid source Doping)	
	Furnace Stack Tube #3 (general purpose)	

Tier 3 Equipment (Sorted by capability area)		
PRICING	**Academic/Public funded**	**Industry**
	$30 / hour	$75 / hour

Bio Capabilities	Microarray Spotter (Nanoprint TM LM60)
	Zeta Potential (Anton Parr SurPASS)
	Zetasizer (Malvern Zeta Sizer Nano) *
Characterisation	3D Scanner
	DSA Mass Spectrometer (Perkin Elmer DSA-TOF)
	Four-point probe station (Signatone WL- 1160)
	MALDI imaging (Bruker Ultraflextreme MALDI)
	Mapping Stage Filmetrics System *
	Pull tester (Bose ElectroForce 3200)
Etching	Metal wet etch bath tool *
	Plasma Asher *
Laboratories	General laboratories
	PC2 Laboratory
	PDMS Laboratory
Lithography	Flood Exposure Unit (ABM UV Flood Light Source) *
	Dual Track Robotic spin/bake/developer*
	Automated spin developer*
	Robotic wet bench and IPA dryer*
Rapid Prototyping	CNC Milling
	3D Printer (Autodesk Ember)
Thin Film Deposition	Cr Sputter Coating (Quorum Q300TT)

OTHER CHARGES		
	Academic/Public Funded	**Industry**
MCN Staff Assistance	$48 / hour	$120 / hour
General Residency (by arrangement)	$500 / month	$1250 / month
Full Access Residency (by arrangement)	$2000 / month	$5000 / month

OTHER CHARGES (These tools are bookable but not billable)	
Characterisation	Cleanroom Microscopes
	Stylus Profilometer *
	UV-VIS Spectrophotometer (Agilent Cary 60)*

Etching	HF Etch Station*
Lithography	Spin Coaters
Thin Film Deposition	Pt and Au Sputter Coater (Magnetron DSR-1 and EMITECH K550X)
Other	Network Analyser
	Vacuum Oven

* Denotes that this instrument is bookable in 15-min increments (above)

Please note that ALL tools require BOOKING in ACLS in order to schedule all users effectively.

Please note that the academic/public funded rate is only available to Australian academics. Users from academic institutions outside of Australia will be subject to industry prices.

General Residency includes: allocation of dedicated desk and laboratory space at MCN and access to all tier 3 equipment and laboratory use. It does NOT include use of any tier 2, tier 1 or flagship equipment. All residencies must be for a minimum of 3 months at each interval and paid in advance.

Full Access Residency includes: general residency plus access to all Tier 1-3 Equipment. It does NOT include use of any Flagship equipment. All residencies must be for a minimum of 3 months at each interval and paid in advance.

Variations to published access rates: MCN reserves the right to periodically modify tier pricing from those listed in this policy. In these instances, and for a defined period of time, an updated pricing schedule will be advertised with advanced notice (e.g. seasonal sale).

ANFF-VIC: BIOINTERFACE FACILITY (SWINBURNE)

Table 2: Pricing structure for use of Bio-interface equipment and laboratories

DESCRIPTION	ACADEMIC/PUBLIC FUNDED	INDUSTRY
Ellipsometer, Mask Aligner	$90 / hour	$225 / hour
Plasma Generator, Langmuir Blodgett, Dip Coater	$40 / hour	$100 / hour
Biointerface Staff Assistance	$60 / hour	$150 / hour

ANFF-VIC: CENTRE FOR MATERIALS & SURFACE SCIENCE (LA TROBE)

Table 3: Pricing structure for use of CMSS equipment and laboratories

La Trobe Flagship Equipment (Sorted by capability area)		
PRICING	**Academic/Public funded**	**Industry**
	$150 / hour	Quote on request
Surface Analysis	Time-of-flight SIMS (IONTOF ToF-SIMS 5 DSR/EDR/GCIS)	
	X-ray Photoelectron Spectroscopy (Kratos AXIS Ultra and Nova)	
	Scanning Auger Nanoprobe (PHI 710 Auger Nanoprobe)	

La Trobe Tier 1 Equipment (Sorted by capability area)		
PRICING	**Academic/Public funded**	**Industry**
	$50 / hour	Quote on request

Surface Analysis	Scanning Probe Microscopy (Asylum Research MFP-3D-SA and BIO)
	SEM (Zeiss Leo 1455)
Characterisation	Contact Angle Meter (DataPhysics OCA20)

La Trobe Other Instruments and Charges		
	Academic/Public funded	**Industry**
X-ray *μ*CT (Xradia XCT200)	$250 / hour ($1200 cap >5 hours)	Quote on request
La Trobe Staff Assistance	$60 / hour	Quote on request

ANFF-VIC: MICRO- AND NANO-DEVICES LABORATORY (CSIRO)

Table 4: Pricing structure for use of equipment and laboratory

DESCRIPTION	ACADEMIC/PUBLIC FUNDED	INDUSTRY
Laboratory Access	$40 / hour	$100 / hour

ANFF-VIC: GENERAL POLICIES

All training requests are conducted at the sum cost of ANFF-Vic staff assistance plus the relevant tool costs.

All job requests for independent completion by a process are conducted at the sum cost of staff assistance plus the relevant tool costs.

Small volumes of basic consumables are included in the price for major and minor equipment; however, large volumes or specialised consumables (e.g. substrate materials) will be at full cost to the user and must be arranged with a process engineer. Any retooling will be charged to the user at cost.

In addition to all other induction, operational health and safety and training requirements, researchers who wish to gain unassisted status must complete (and be assessed for competency against) application-specific training provided by the ANFF-Vic process engineers.

Discounts are available at MCN or the Bio-interface Facility through setup of non-refundable pre-paid accounts for instrument utilisation. Discounts do not apply to residencies, consumables or staff assistance.

PRE PAID PURCHASE	DISCOUNTS TO BE APPLIED
$2,000 pre-paid account	15% discount
$5,000 pre-paid account	20% discount
$10,000 pre-paid account	25% discount
$25,000 pre-paid account	30% discount

ACT Node

Pricing structure for ACT Flagship instruments.

	PhD	Publicly funded	Industry
All NCRIS supported units (except FIB)			
Unassisted	$50 / hr	$50 / hr	$150 / hr
Assisted	$100 / hr	$100 / hr	$250 / hr
FIB			
Unassisted	$60 / hr	$60 / hr	$150 / hr
Assisted	$110/ hr	$110 / hr	$250 / hr

Pricing structure for other ACT instruments.

	PhD	Publicly funded	Industry
Sputter only			
Unassisted	$40 / hr	$40 / hr	$150 / hr
Assisted	$90 / hr	$90/ hr	$250 / hr
Small processing tools Barrel Etcher, Ellipsometer, Flip-chip Bonder, Rapid Thermal Annealer, Surface Profiler & Thermal Evaporator			
Unassisted	$20 / hr	$20 / hr	$150 / hr
Assisted	$70 / hr	$70 / hr	$250 / hr
General assistance	$50 / hr	$50 / hr	$100 / hr
General Consumables Wafers, sample boxes, etc	At cost	At cost	At cost
Precious metals			
Gold (Au) Platinum (Pt)	$1 per nm	$1 per nm	$1 per nm
Paladium (Pd)	$0.5 per nm	$0.5 per nm	$0.5 per nm

WA Node

Pricing structure for use of WACSOM facility via the ANFF initiative.

	PhD	**Publicly funded**	**Industry**
UWA - WACSOM			
Unassisted	$50 / hr	$50 / hr	$250 / hr
Assisted	$100 / hr	$100 / hr	$300 / hr

Queensland Node

	PhD[1]	Publicly funded[2]	Industry[3]
All NCRIS, EIF and in-kind supported units			
Unassisted	$55 / hr Membership avail.	$55 / hr Membership avail.	$61 - 182 / hr
Assisted	$110[4] / hr Membership avail.	$110[4] / hr Membership avail.	$167 - 288 / hr
Levies (charged in addition to the above usage fees)			
Laser Scanning Microscope	$20 / hr	$20 / hr	$20 / hr
EBL within CMM	$40 / hr	$40 / hr	$40 / hr
Raman AFM at QMCN setup fee	$50	$50	$50
Membership			
50-hour increments			
First 50 hours	$1,925	$1,925	
Subsequent 50 hours top up	$1,650	$1,650	
100-hour increments			
First 100 hours	$3,300	$3,300	
Second 100 hours	$2,200	$2,200	
Subsequent 100 hours	$1,650	$1,650	

ANFF-Q general pricing policies

1. PhD students (and other higher education students) who are funded by public grant monies including those that include an industry contribution. This group can access membership rates.
2. Researchers from universities and other PFRAs who are funded by public grant monies including those that include an industry contribution. This group can access membership rates.
3. These rates cover the use of the facilities of Australian industry either through a research contract or a contract service. Research contract rates apply to research that is funded by industry and has been established through a research contract either with ANFF-Q directly or through another ANFF user. Contract service rates apply to all industry use that is not covered by a research contract. International rates are available.
4. An additional $55 per hour is applied for ANFF staff support (assistance) for PhD and PFRA users. This additional assisted rate is not applied to training.

The fees include technical support and **training**, some basic clean room **consumables**, standard chemicals, reagents and some gases. Extra charges include most consumables and equipment levies.

The LSMs attract a levy to cover their high running costs (including maintenance contracts) and the cost for access to CMM facilities is passed on to our users through an hourly levy.

These fees are reviewed on a yearly basis and in line with budget reviews.

All access is based on a maximum of 5 hours at any one time (core period 8am – 5pm) unless extended by the Facility manager in consultation with the ANFF Qld node access committee.

All external publicly funded researchers and industry users are subject to the agreed terms and conditions of access between ANFF-Q and UQ Research and Innovation.

In addition to the hourly access rates shown above, ANFF-Q offers annual memberships based on a guaranteed number of hours' access per year, but excluding non-standard consumables. Memberships are limited to a maximum of 50 groups initially, to ensure that commitments to all users can be met. Membership fees include NCRIS and EIF funded and in-kind equipment. The membership arrangement is open to all users, and offers frequent users access to ANFF equipment at a very economical minimum rate of $16.50/hour. Where there is ANFF support the assisted rate of $55 per hour will be in addition to any membership rate. The assisted rate will not apply for training.

Memberships are not reciprocal between all ANFF-Q sites.

NSW Node

Access for all tools and services will be at the rates ($/hr):

	PhD	**Publicly funded**	**Industry[1]**
ANFF-funded Tools	$50 / hr	$50 / hr	$250 / hr
MBE Tools	$50 / hr	$50 / hr	$250 / hr
XL30 and Sirion EBL Tools	$50 / hr	$50 / hr	$250 / hr
Other In-kind tools	$50 / hr[2]	$50 / hr[2]	$250 / hr
ANFF Staff assistance	$50 / hr	$50 / hr	$150 / hr

[1]Quoted rates apply to R&D work. Any work which cannot be classified as R&D will be charged at commercial rates as agreed with the ANFF-NSW Node Director.

[2]UNSW staff and students are currently not charged for use of other in-kind tools.

Hourly rates cover basic costs including clean-room garments, standard chemicals, standard resists and standard source materials. Consumables such as substrates, sample carriers and specialty materials (e.g. precious metals) will be charged at cost. Please note that all tools require pre-booking via ANFF-NSW's web-based scheduling software.

SA Node

UniSA

Training

All training shall be at a flat rate of $100 per item of equipment (eg SEM) or process (eg lithography)

Equipment usage

	PhD	Publicly funded	Industry
General Fabrication/characterisation			
Unassisted	$50 / hr Capped at $300 per month	$50 / hr Capped at $300 per month	$150 / hr
Assisted	$140 / hr	$140 / hr	$250 / hr
AFM – unassisted	$50 / hr	$50 / hr	$150 / hr
CNC Micro Mill - Work flow may have assisted and unassisted components			
Unassisted	$60 / hr up to 8 consecutive hours then $30 / hr each consecutive hour	$60 / hr up to 8 consecutive hours then $30 / hr each consecutive hour	$60 / hr
Assisted	$140 / hr	$140 / hr	$250 / hr
Nano/MicroCT scanning			
Unassisted	Scanning $40 / hr Up to 8 consecutive hours per session per instrument, then $40 / hr each consecutive hour over 8 hours per session per instrument	Scanning $40 / hr Up to 8 consecutive hours per session per instrument, then $40 / hr each consecutive hour over 8 hours per session per instrument	$150 / hr
Assisted	Scanning $40 / hr Up to 8 consecutive hours per session per instrument, then $10 per hour	Scanning $50 / hr Up to 8 consecutive hours per session per instrument, then $10 per hour	Quote on request

	each consecutive hour over 8 hours per session per instrument plus sample preparation Individual user cap of $2,000 per calendar year Analysis $80 / hr	each consecutive hour over 8 hours per session per instrument plus sample preparation Individual user cap of $2,000 per calendar year Analysis $80 / hr	
Levy – Deep Reactive Ion Etcher – (charged in addition to the above usage fees)			
Unassisted	$50 / day	$50 / day	$50 / day
Assisted	Plus $2.50/micron etching	Plus $2.50/micron etching	Plus $2.50/micron etching
Training per item of equipment (eg SEM) or process (eg lithography).	$100	$100	$100

Flinders University

Training

First 2 sessions are free. After this charged at the normal microscope rate

Equipment usage

	PhD	**Publicly funded**	**Industry**
Unassisted equipment usage Session times are 9am – 1pm and 1pm – 5pm	$30 / session	$30 / session	$30 / session
Assisted equipment usage	$60 / hr	$60 / hr	$200 / hr
Training	First two sessions are free, consecutive sessions charged at normal microscope rate		

Consumables and Premiums

Small volumes of standard consumables are included in the base costs. However, larger volumes or specialised consumables shall be charged to the user.

Any retooling or jigs shall be charged to the user at cost.

OptoFab Node

Bandwidth Foundry International

Bandwidth Foundry facilities are grouped according to equipment running costs and sophistication. The below is based on rates per hour for unassisted access after training as set on January 2015. **Training** is charged at equipment Group 1 rates per hour and not dependant on which equipment you are being trained on. Prices for product provided by BFI are based on a quotation which is created on the specific user requirements for the job. Direct material costs are added to these access costs. The typical direct material items would include items such as silicon wafers, soda lime blanks, plates, quartz blanks, photoresists, acids, PDMS, etc and typically range from $100-$250 per photo mask for example.

	PhD	**Publicly funded**	**Industry**
Equipment Group 1	$60 / hr	$90 / hr	$120 / hr
Equipment Group 2	$90 / hr	$120 / hr	$150 / hr
Equipment Group 3	$120 / hr	$150 / hr	$180 / hr
International and other users	Industry rate above + $30 / hr		

The existing equipment as of January 2015 is grouped as follows

Equip Group 1
Brewer Spin Coater
Brewer Developer
Spin dryer
Acid wet Bench 1
Acid wet Bench 2
Solvent Wet Bench
Nikon microscope
DekTak
Lasertec Scanning Laser microscope
Leica Stereo Zoom Microscope
Olympus Stereo Zoom Microscope
PM 5 Probe Station

Equipment Group 2
SVG 88 Track
RIE
DWL 200 Laser writer
Philips X:30 SEM/EBL
DWL 66+ Laser Writer

Equipment Group 3
ASML PAS5500/100 Stepper

University of Sydney fibre facilities

Indicative typical prices.

	PhD	Publicly funded	Industry
1 standard perform drawn to fibre (100 m – 1 km depending on diameter)	$165 / hr	$165 / hr	$350 / hr
1 customised perform drawn to fibre (100 m – 1 km)	$400 / hr	$400 / hr	$850 / hr
Fabrication service – operator time - labour cost for usage of draw tower	$50 / hr	$50 / hr	$110 / hr

Macquarie University

The Macquarie facilities in the table below are now based on *half day (4 hour blocks).* Equivalent hourly rates may be negotiated where appropriate.

	PhD	Publicly funded	Industry
Precision laser fabrication * Micromachining or photonic inscription facilities (per system basis). *	$400 / 4 hr	$400 / 4 hr	$800 / 4 hr
Photonic characterisation facilities*	$25 / 4 hr	$25 / 4 hr	$50 / 4 hr
CVD Facility*	$120 / 4 hr ($30 / hr) Capped at $2000 / quarter	$120 / 4 hr ($30 / hr) Capped at $2000 / quarter	$60 / hr Capped at $4000 / quarter

*Materials costs may be added if sourced/supplied by the facility. Custom tooling/jigging may also require for some jobs, and users may be required to cover workshop costs for custom fixtures.

The Macquarie Facilities in the table below are available on *6 month subscription fee for unassisted use after training.* Hourly rates may be negotiated for small assisted access projects where appropriate.

	PhD	Publicly funded	Industry
Chameleon laser facility	$250 / 6 mth	$250 / 6 mth	$100 / hr
Ball Milling Facility**	$250 / 6 mth	$250 / 6 mth	$500 / 6 mth
Polishing Facility – unassisted	$250 / 6 mth	$250 / 6 mth	$30 / hr
Polishing Facility – ANFF staff assisted	$250 / 6 mth	$250 / 6 mth	$75 / hr
JEOL Cross-section Polisher and Bench SEM – unassisted	$300 / 6 mth	$300 / 6 mth	$30 / hr
JEOL Cross-section Polisher and Bench SEM – ANFF staff assisted	$300 / 6 mth	$300 / 6 mth	$75 / hr
JEOL CP shield plate - one-off expense may apply for frequent users	$1000	$1200	$1200

FESEM and Kleindiek - unassisted	$60 / hr	$60 / hr	Please enquire
FESEM and Kleindiek – ANFF staff assisted	$900 / 6 mth	$900 / 6 mth	Please enquire

**Milling balls may be additional for specific projects or frequent users.

The FESEM and NanoAssembly facility is housed at Macquarie Microscopy and is available on a subscription basis after training, or at an hourly rate for assisted users.

University of Adelaide

Fabrication services:

Given the diversity of requests for specific products (glass, preform, fibre) of differing materials and structures, we will provide individual quotes for each specific request. These quotes will be based on the anticipated requirement for operator time, equipment, custom tooling and consumables. For the operator time, the labour costs in the table below apply.

	PhD	**Publicly funded**	**Industry**
Fabrication services	$75 / hr	$75 / hr	$200 / hr

Pricing structure for access to the EIF funded SNOM Housed at Adelaide Microscopy.

	PhD	**Publicly funded**	**Industry**
SNOM* - unassisted	$100 / hr	$100 / hr	$260 / hr
SNOM* - ANFF staff assisted	$150 / hr	$150 / hr	$350 / hr
SNOM* - **training**	$150 / hr	$150 / hr	$150 / hr

*Please note that a $30 charge will apply per tip.

Materials Node

University of Wollongong

Pricing structure for NCRIS-supported equipment or staff time, excluding consumables.

	PhD	Publicly funded	Industry
All UoW NCRIS supported units	$66 / hr	$66 / hr	$275 / hr

Access subscriptions can be arranged for long term projects.

Consultancy To be negotiated by each Node partner independently, costing of any consultancy is to follow each Node member's institutional costing/overhead structure.

Material Supply & Device Supply Node members to provide a quotation as required utilising each Node member's institutional costing/overhead structure.

University of Newcastle

Pricing structure for single use

	PhD	Publicly funded	Industry
All NCRIS supported units – unassisted	$50 / hr	$50 / hr	$240 / hr
All NCRIS supported units – ANFF staff assisted	$100 / hr	$100 / hr	$290 / hr
Training	$100 / hr	$100 / hr	$290 / hr
Collaboration	$30 / hr	$30 / hr	N/A
Subscription to all NCRIS supported units			
20 hours 60% discount	$400	$400	$1920
50 hours 65% discount	$875	$875	$4200
100 hours 70% discount	$1500	$1500	$7200
500 hours 75% discount	$6250	$6250	$30000
Unlimited	$10000	$10000	$48000

Access Type Detail

Unassisted User has been trained and is able to operate equipment independently.

Assisted User requires a staff member to run the equipment for them. This includes samples being sent to us and characterised. Time taken completing analysis reports is also included in this rate.

Training User is trained in the correct operation of the equipment by a staff member. The user can then run the equipment unassisted.

Collaboration Staff member has some scientific input into the work. They will be a co-author on any publications arising from the work.

Quotes All single use access will be quoted in advance but only charged based on actual usage.

Other Charges A **training** fee of $50/hour will apply for subscriptions per piece of equipment. For example it usually takes 3 hours to be trained on the Cypher AFM, so a $150 fee would be charged on top of the subscription. This training can be for multiple users at the same time.