# Program overview

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:45am</td>
<td>Registration &amp; Trade Hall</td>
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<tr>
<td>9:15am</td>
<td>Welcome</td>
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<tr>
<td>9:25am</td>
<td>Research Infrastructure at Sydney: Overview</td>
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<tr>
<td>9:50am</td>
<td>Keynote: Leveraging the Core Research Facilities for groundbreaking success</td>
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<tr>
<td>10:40am</td>
<td>Morning tea &amp; Trade Hall</td>
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<tr>
<td>11:15am</td>
<td>Core Research Facilities Showcase</td>
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<tr>
<td>1:00pm</td>
<td>Lunch &amp; Trade Hall</td>
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<tr>
<td>2:00pm</td>
<td>Facility tours (register via booths)</td>
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*Details overleaf →*
## Full program

<table>
<thead>
<tr>
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<tr>
<td>8:45am</td>
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<tr>
<td></td>
<td>Pick up your name tag and a tea or coffee, see who’s who in the Trade Hall and get seated.</td>
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<td>Overview</td>
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<td></td>
<td>Professor Simon Ringer</td>
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<td>Pro-Vice-Chancellor (Research Infrastructure)</td>
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**Welcome to Country**  
Yvonne Weldon, Metropolitan Local Aboriginal Land Council

**Welcome Message**  
Professor Emma Johnston, Deputy Vice-Chancellor (Research)
Keynote: Leveraging the Core Research Facilities for groundbreaking success

Speakers (L–R)
Associate Professor Arnold Lining Ju
Dr Zihao Wang
School of Biomedical Engineering, Faculty of Engineering

Jacky He
Ethel Ilagan
Process Engineers, Research & Prototype Foundry

Introduction by Professor Simon Fleming
Director, Research & Prototype Foundry

In this illuminating session, Associate Professor Arnold Lining Ju (School of Biomedical Engineering), Australian Heart Foundation Future Leader Fellow and the first engineer to win a Snow Fellowship, will relay the journey of starting up his Mechanobiology and Biomechanics Laboratory (MBL) and his groundbreaking research in biomedical engineering. For the past 3 years, A/Prof Ju’s acclaimed research program has focused on innovative microfluidics to diagnose blood clotting diseases. He and Dr Zihao Wang, a member of his interdisciplinary team, will share how they have leveraged the Core Research Facilities to achieve success. Process Engineers Jacky He & Ethel Ilagan (Research & Prototype Foundry) will speak alongside the team, sharing their perspectives.

This keynote tells the story of collaborative innovation between researchers & facility engineers, showing the practical aspects and behind-the-scenes endeavours that fuel multidisciplinary technological development.
Full program

2023 Core Research Facilities Symposium

10:40am | **Morning tea & Trade Hall**
Grab some refreshments and talk to facility experts to plan your project.

11:15am | **Core Research Facilities showcase**
Hear a brief overview of each facility with a focus on capabilities and access pathways for researchers, plus examples of the research projects they enable.

*Introduction: “Modelling, Making, Measuring, Servicing”*
Professor Simon Ringer, Pro-Vice-Chancellor (Research Infrastructure)

**Modelling**

**Sydney Informatics Hub**

*Research data analysis and training*

Facility basics: Professor Tom Bishop, Director

[Research Highlight]
‘Unlocking patterns of language use: the Australian Text Analytics Platform and the Language Data Commons of Australia’
Professor Monika Bednarek
School of Humanities, Faculty of Arts and Social Sciences

**Making**

**Research and Prototype Foundry**

*Fabrication at micro and nano scale*

Facility basics: Professor Simon Fleming, Director

[Research Highlight]
‘Producing qubits in electronic devices: Archer Materials’
Full program
2023 Core Research Facilities Symposium

Sydney Manufacturing Hub
Additive manufacturing and materials processing

Facility basics: Professor Gwénaëlle Proust, Director

[Research Highlight]
‘BLINC: Bionic Lid Implant for Natural Closure – Restoring Blinking in Facial Nerve Paralysis’

Measuring

Sydney Analytical
Chemical, biological and materials analysis

Facility basics: Professor Margaret Sunde, Director

[Research Highlight]
‘Characterisation of insulin nanocarriers’
Dr Nicholas Hunt
School of Medical Sciences, Faculty of Medicine and Health

Sydney Cytometry
Quantitative cell sorting and analysis

Facility basics: Dr Adrian Smith, Technical Director

[Research Highlight]
‘Visualising the immune response to vaccination and infection’
Professor Jamie Triccas
School of Medical Sciences, Faculty of Medicine and Health

Sydney Imaging
Biomedical imaging

Facility basics: Professor Fernando Calamante, Director

[Research Highlight]
‘Application of CT-based imaging in bone regeneration research at Chris O’Brien Lifehouse’
Dr D S Abdullah Al Maruf, Chris O’Brien Lifehouse
Sydney Mass Spectrometry
Proteomics, metabolomics and lipidomics analysis

Facility basics: Professor Stuart Cordwell, Director

[Research Highlight]
‘Mapping the interactions between diet, age and sex on the mouse liver proteome’
Associate Professor Carsten Schmitz-Peiffer, Charles Perkins Centre
School of Life and Environmental Sciences, Faculty of Science

Sydney Microscopy and Microanalysis
Micro, nano and atomic-scale exploration

Facility basics: Professor Filip Braet, Director

[Research Highlight]
‘A multimodal microscopy approach to tackling thrombosis research?’
Imala Alwis
Thrombosis Research Group, Charles Perkins Centre

Servicing

Laboratory Animal Services
Animal facilities, technical and veterinary services

Facility basics: Dr Maria Wynne, Associate Director

Closing remarks
Professor Simon Ringer, Pro-Vice-Chancellor (Research Infrastructure)

1:00pm  Lunch & Trade Hall

Got questions after the showcase? Chat with facility experts over lunch to follow up and discuss your ideas, and register at the booths for optional facility tours.
If there’s a facility of particular interest to you, you may be able to take a tour. Ask facility staff about tours during Trade Hall time, and be ready to leave from the facility booth at 2pm.

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**Keynote speaker bios**

**Associate Professor Arnold Lining Ju**  
School of Biomedical Engineering, Faculty of Engineering

Associate Professor Arnold Ju received his PhD in Biomedical Engineering at Georgia Institute of Technology and Emory University, USA. In 2014, he joined the Australian Centre for Blood Diseases, Monash University, Melbourne as a junior postdoc and relocated in 2015 to Sydney, to join the Heart Research Institute. In early 2020, A/Prof Ju joined the University of Sydney (USYD)’s new School of Biomedical Engineering as a senior lecturer and started up the Mechanobiology and Biomechanics Laboratory (MBL).

A/Prof Ju currently holds a Heart Foundation Future Leader Fellowship, working at the interface between mechanical engineering and mechanobiology. His team has pioneered multiple biomechanical nanotools, including blood clot-on-chip microfluidic devices (Nature Materials 2019), single-cell biomembrane force probes (Nature Communications 2018), and 4-D haemodynamic modelling (Nature 2021). Recently, he was awarded the prestigious mid-career Snow Fellowship.

His vision is to build novel platforms that integrate advanced biomanufacturing, high-throughput biomechanical manipulation & artificial intelligence for biobank data processing. His track record spans developing, characterising, and evaluating innovations of 3D organoids and organ-on-chips, mechanobiology, imaging probes and biosensors, bio-nanotechnology, and image-based deep learning. These large facilities should provide significant benefits to interdisciplinary research in biofabrication, biomechanics and point-of-care microtechnologies.
Dr. Zihao Wang
School of Biomedical Engineering, Faculty of Engineering

Dr. Zihao Wang currently serves as a Postdoctoral Researcher under A/Prof Arnold Ju’s supervision. Dr. Wang is pioneering the development of 3D printing-based personalised vessel chips aimed at diagnosing cardiovascular diseases. His innovative approach in creating novel movable typing manufacturing techniques for both half-lumen (Advanced Functional Materials 2023) and full-lumen (Aggregates 2023) vessel chips has received provisional patent acknowledgment, showcasing his commitment to advancing personalised medical technology.

Dr. Wang’s multidisciplinary proficiency spans biomedical, electronics, mechatronics and systems engineering, allowing him to address intricate, industry-specific challenges with a holistic approach. With a rich blend of industrial and academic experience, he has led groundbreaking projects in both satellite attitude control systems and industrial electronic systems, with his notable contributions being integrated into real-world satellite missions and earning him the esteemed ARC Training Centre for CubeSats, UAVs and Their Applications (CUAVA) Research Scholarship. Dr. Wang’s extensive work with Sydney Manufacturing Hub highlights his adeptness in operating micro3D printing equipment, ensuring precision and innovation in microfabrication. His relentless pursuit of excellence in research and development continues to break new grounds, impacting both Australian and global industries.

Jacky He
Process Engineer: Nanofabrication, Research & Prototype Foundry (RPF)

As an RPF process engineer, Jacky He is responsible for the electron-beam lithography system. He has expertise in a variety of nanofabrication techniques, as well as CAD design, electron-beam & photolithography, thin-film deposition & wet chemical processes. Jacky joined RPF in 2018 as a technical officer, supporting photomask fabrication and photolithography-related projects. In 2022, he was promoted to his current role of nanofabrication process engineer, supporting Electron-beam Lithography and 3D Lithography capabilities. He has a Bachelor of Electrical Engineering & a Master of Quantum Engineering from UNSW Sydney.
Ethel Ilagan  
Process Engineer: Optical Lithography, Research & Prototype Foundry (RPF)

Ethel Ilagan has worked in micro-fabrication process development engineering at the University of Sydney for over 13 years. In her current role as an RPF process engineer, Ethel is responsible for the RPF’s photolithography tools. She has a degree in Chemical Engineering and is a Lean Six Sigma Engineer with 7 years’ experience in Environmental and Quality Management ISO (International Standard Organisation)-based high-volume fabrication process engineering with semiconductor manufacturers such as Samsung Electro-mechanics and Littlefuse Incorporation. Her career has focused on product development-to-pilot production phase transition validation; new material/equipment process set-up; technology transfer project management; manufacturing process challenges troubleshooting and continuous improvement introduction; and new product/process development & prototyping. Ethel is a 2022 recipient of the Australian National Fabrication Facility’s Frater Award in recognition of her success in delivering high-impact microfluidics projects at RPF.

Professor Simon Fleming  
Director, Research & Prototype Foundry (RPF)

Professor Simon Fleming is the Academic Director of the RPF and Deputy Director of the Australian National Fabrication Facility’s NSW node. His background is in photonics, focusing mainly on optical fibre, spanning from materials and fabrication through to devices.

Professor Fleming also maintains an academic appointment in the School of Physics, Faculty of Science, where he is a research leader in photonics with over thirty year’s experience. His research has focussed mainly on optical fibre, spanning all aspects: from materials and fabrication through to devices, and from discovery to applied. His research track record of over three hundred publications, twenty patents and numerous grants is complemented by extensive experience in working with industry and in the translation of research into commercial outcomes. He has supervised twenty research students.