SWINBURNE UNIVERSITY OF TECHNOLOGY

MECHANICAL AND PRODUCT DESIGN ENGINEERING

Our research creates impact in specialised topics critical for Australia and similar nations to transition to a sustainable, innovation-based future.

AREAS OF RESEARCH FOCUS

- Additive and near net shape manufacturing
- Advanced metal refining and impurities removal
- Alternative and urban resource processing
- Bio-interface engineering
- Characterisation of materials and structures
- Computational mechanics
- Design of phononic and photonic crystals, and metamaterials
- Dynamic interfacial phenomena
- Electric vehicle research
- Energy absorption of structures
- Fluid mechanics
- Fluid-structure interaction
- High temperature materials processing
- Impact engineering
- Lightweight materials and structures
- Medical devices and diagnostics
- Microbially influenced corrosion
- Nanostructured materials
- New materials and manufacturing processes
- Non-contact inspection and nondestructive testing
- Ocean wave power
- Recycling
- Surface engineering
- Thermal spray and laser processing
- Thermodynamics and phase equilibria
- Virtual design and prototyping

RESEARCH FACILITIES

The **Factory of the Future** represents our industry portal for advanced manufacturing. We work with industry partners to solve key challenges through integration of innovative design platforms, advanced manufacturing technologies, materials and information systems.

The **Direct Metal Deposition Facility** is an innovative additive manufacturing facility that integrates CAD, CAM, lasers and powder metallurgy to provide a unique near net shape metal deposition process that can be used in a wide range of industrial applications.

The **Energy Transformation Laboratory** is used for research and teaching in fluid dynamics. It includes two facilties dedicated to renewable energy - the wave channel facility and the solar simulator.

The **High Temperature Processing Facility** is used for the research and development of high temperature materials and minerals processing and includes high temperature and solar thermal laboratories.

The **Microfabrication Facility** offers knowledge, service, equipment and space in microfabrication areas of engineering and applied science for the research and teaching communities within Swinburne, external research institutions and local industries.

Swinburne's **Virtual Design Lab** allows researchers to visualise, model and test systems and products, providing a cost-effective method of research and development.

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