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Materials Characterisation and Fabrication Platform

The Capability

Materials science is an interdisciplinary field that enables the discovery and design of new materials through the study of synthesis, structure, properties and performance. Characterisation and fabrication underpins new materials discovery and design and incorporates a number of technologies at the forefront of engineering, nanoscience and nanotechnology.

The University Platforms

The Materials Characterisation and Fabrication Platform (MCFP) is a multi-node platform within the University supporting materials research. The Platform facilitates access to a range of complementary technologies, focusing on the characterisation of films/surface properties, particle size, coatings, and biomaterial interactions through the use of advanced instrumentation including atomic force microscopy, super-resolution microscopy, mass cytometry (CyTOF), nanofabrication and X-ray diffraction. The MCFP welcomes all users across the scientific community, from universities and research institutes to industry. The nodes of the MCFP are highlighted below:

* [**Advanced Fluorescence Imaging**](http://nanomaterials.unimelb.edu.au/node/advanced-fluorescence-imaging)

Located within the School of Engineering, the Advanced Fluorescence Microscopy Node of the MCFP combines cutting-edge technology in super-high resolution microscopy, live cell imaging and imaging flow cytometry. Notably, the super-resolution microscopes offer the ability to resolve structures down to 20nm providing unprecedented insight into cellular and drug delivery systems, while the Amnis Image Stream combines the statistical power and sensitivity of conventional flow cytometry with the spatial resolution of digital microscopy. The highly anticipated CyTOF combines flow cytometry with time-of-flight mass spectrometry. Through the use of heavy metal ion tags instead of fluorochromes, the CyTOF allows for many more parameters to be investigated in a single experiment with minimal signal overlap.

* [**Nanofabrication**](http://nanomaterials.unimelb.edu.au/node/nanofabrication)

The Nanofabrication node of the MCFP supports University of Melbourne researchers accessing the Melbourne Centre for Nanofabrication (MCN), located in Clayton. With a University Platform Support Officer located at the MCN, researchers have supported access to the key capabilities in lithography, thin film deposition, etching, design and prototyping, and characterisation.

[**X-Ray Diffraction**](http://nanomaterials.unimelb.edu.au/node/x-ray-diffraction)

The X-Ray diffraction node of the MCFP provides a range of services to investigate structural properties of materials, including crystalline phase identification, quantitative phase analysis, crystallite phase analysis, and residual stress

* [**Nanomaterials Characterisation**](http://nanomaterials.unimelb.edu.au/node/nanomaterials-characterisation)

The Nanomaterials Characterisation node of the MCFP houses a world-class atomic force microscopy (AFM) facility with considerable expertise in both direct force measurement, surface imaging and characterisation to analyse the roughness, topography or particle size of your samples. The facility supports a number of internal and collaborative research projects, providing equipment access and technical support for AFM, nanoindentation and contact angle instrumentation.

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