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Melbourne Advanced Microscopy

**The Capability**

Since its first invention in the 1200s, the microscope has made a fundamental contribution to our understanding of life and the physical world.  In particular, the last decade has witnessed a revolution based on the introduction of an amazing palette of fluorescent molecules and remarkable instrumentation developments that are transforming scientific research. Broadly categorised into three main branches; optical, electron and scanning probe microscopy, the technology premises on the diffraction, reflection or refraction of light, laser sources or electromagnetic radiation/electron beams interacting with the specimen being observed. This information is used to create an image of the specimen which can then be used to measure a range of cellular responses.

**The University Platforms**

Melbourne Advanced Microscopy is a large network of cross-faculty capabilities with an impressive suite of cutting-edge microscopy technology and expertise supporting a diverse range of world-class research within the University. The consolidation of this microscopy technology is reflected in four specialised platforms:

* [**BOMP - Biological Optical Microscopy Platform**](http://www.microscopy.unimelb.edu.au/)

With nodes situated within the Bio21 Institute,  and the departments of Biochemistry and Molecular Biology, Anatomy and Neuroscience and Microbiology and Immunology, BOMP provides open access to 15 contemporary fluorescent, confocal, super-high resolution and live cell imaging microscopes as well as technical training and support.

* [**Electron Microscopy**](http://www.microscopy.unimelb.edu.au/)

Located within the Bio21 Institute and the School of Botany, the Electron Microscope Platform has a range of transmission and scanning electron microscopes available to researchers as full-service or collaborative access. Instrumentation includes; FEI Quanta Scanning Electron Microscope (ESEM), FEI Nova dual beam, focused ion beam system  and FEI Tecnai F20 and F30 transmission electron microscopes.

* [**Advanced Fluorescence Imaging**](http://nanomaterials.unimelb.edu.au/)

Located within the School of Engineering, the Advanced Fluorescence Microscopy Platform combines cutting-edge technology in super-high resolution microscopy, live cell imaging and imaging flow cytometry. Notably, the super-high resolution microscope offers the ability to resolve structures down to 20nm providing unprecedented insight into cellular systems while the Amnis Image Stream combines the statistical power and sensitivity of conventional flow cytometry with the spatial resolution of digital microscopy. This platform has specialist expertise in applying this technology to nano-research and materials science.

* [**Atomic Force Microscopy**](http://nanomaterials.unimelb.edu.au/)

The Atomic Force Microscopy suite at the University operates what is currently the leading world-class scanning probe microscopy facility in Australia with considerable expertise in both direct force measurement and surface imaging and characterisation. The facility supports a number of internal and collaborative research projects, providing equipment access and technical support.

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