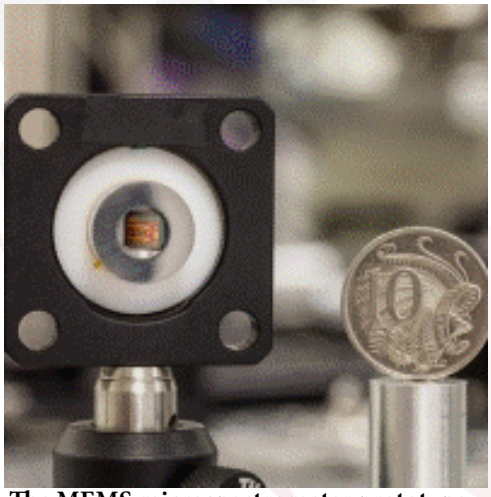
Australian National Fabrication Facility
ACT Node & WA Node
NEWSLETTER
March 2017 - Issue No. 31

Industry engagement remains strong for ANFF-WA flagship – Microelectromechanical systems

Utilisation of nanofabrication infrastructure and engagement with industry at the WA node has been given "a green light" for the next three years. A team of WA node core researchers in collaboration with a long-standing industry partner Panorama Synergy (ASX:PSY) are commencing two large research projects funded by the Australian Research Council (ARC) Linkage Project scheme.



The MEMS microspectrometer prototype

In total, over $1.1M of ARC funding will help solve industry needs during the next three years significantly leveraging funds committed by the industry partner.

This collaboration grows strong with additional relevant intellectual property being protected though two recent PCT publications "Optical sensor with 2d grating" and "Stimulating an optical sensor using optical radiation pressure." On the outlook is the commercial realisation of miniature sensor technologies capable of analysing anything from crop quality to the freshness of fruit and vegetables in the supermarket, which could soon be made available to consumers after a licencing deal between The University of Western Australia and Panorama Synergy. This agreement complements PSY LumiMEMS™ optical readout technology with the UWA-developed MEMS spectrometer technology, giving Panorama Synergy exclusive rights to bring the product to market.

Due to its size, MEMS devices can be adapted for highly sensitive applications. MEMS sensors are commonly used to detect movement and acceleration, gravity and a wide range of other applications. More than a decade since MEMS sensors research began at UWA, the MEMS spectrometer technology stands to revolutionize the way things are done in many fields, including agriculture, defence, and medicine. These tiny portable and robust spectrometers use light to analyse the properties of a sample. They can be mass-produced at very low cost, which makes it ideal for consumer applications.

In future, we may see the sensor fitted to smartphones, allowing shoppers to check the freshness of their fruit, vegetables and meat in real time just by pointing their phone at the product in a fresh food section. As the global food supply chain widens, consumers will need the peace of mind that comes from the ability to accurately determine the origin and quality of produce. It could even be used in drones to help search for minerals in the ground or to assess nutrient and water needs of crops and for a multitude of other innovative applications.

HAPPY EASTER

The ANFF team would like to wish you a very Happy Easter that is filled with plenty of love and happiness.
If you are traveling please stay safe and look after yourself and loved ones.
Please note that the ACT Node will be closed over the long weekend. ~Sue

Large Area Imaging using the SEM-CL System

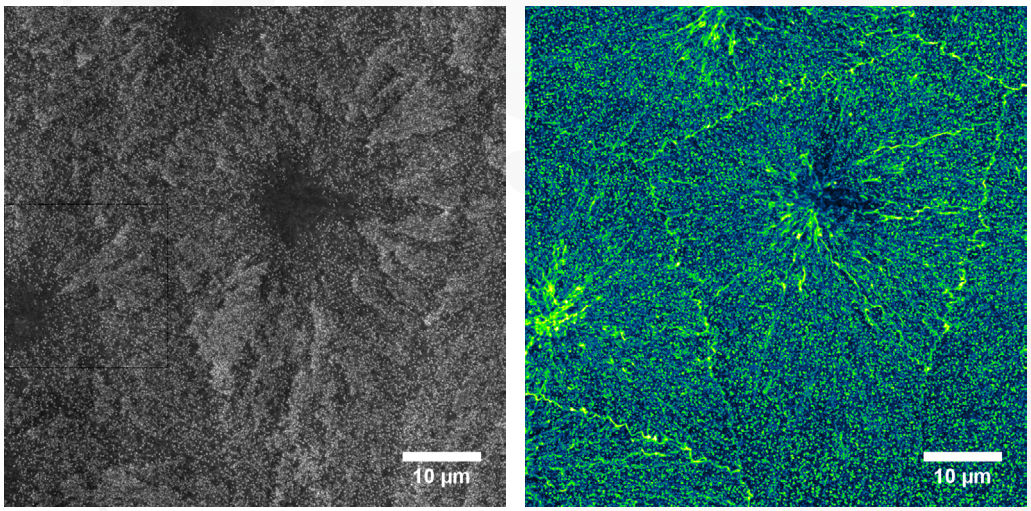
Trying to image and characterise nano-scale devices across a wafer can be challenging. Due to the difference in scales involved often macro-scale variations can be overlooked. This is where large area electron microscopy can be usefull.

Using the Verios SEM-CL system samples can be imaged with nanometre resolution over large areas. This is done through mosaic imaging, where an automated series of images is collected and stitched together, allowing several centimetres of sample to be imaged.

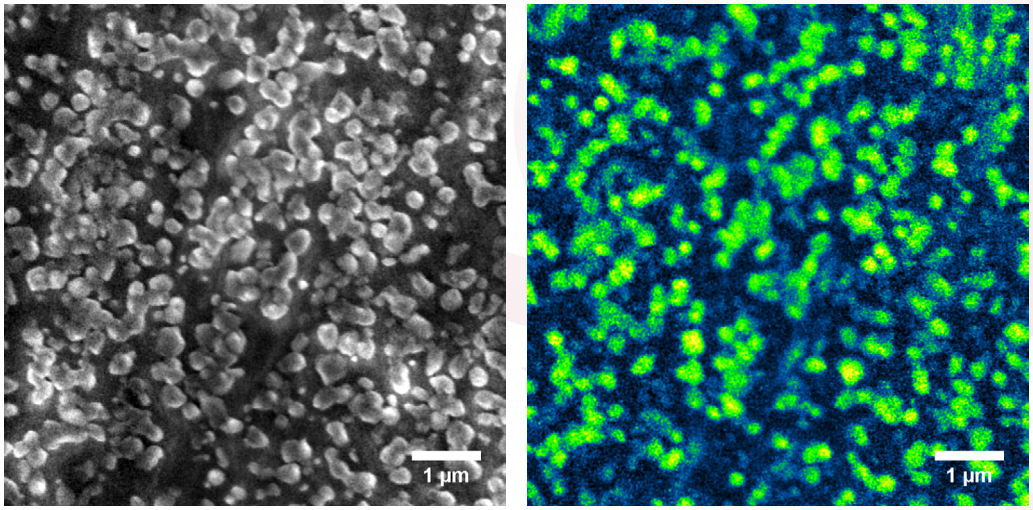
The Verios' large area imaging also allows for images to be collected using several detectors simultaneously. This enable correlated secondary electron, back scattered electron and cathodoluminescence images to be collected over a large area.

Using the large area imaging on the Verios' provides a simple yet powerful tool for imaging large areas of sample with high resolution.

~ Dr Mark N. Lockrey
ANFF ACT Node



SE (Left) and Panchromatic CL (Right) images of ZnO nanoparticles generated by annealing a thin film of ZnO. The image consists of 25 fields stitched



SE (left) and Panchromatic CL (Right) details extracted from the large area image above.

Welcome to the 2017 Autumn Issue -

The ANFF turned 10 years old this month. There will be a grand celebration at the Annual ANFF Showcase in Sydney later this year, keep an eye out for details. Established under the National Collaborative Research Infrastructure Strategy, the Australian National Fabrication Facility (ANFF) links 8 university-based nodes to provide researchers and industry with access to state-of-the-art fabrication facilities. Happy Birthday ANFF!

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We have a facebook page for the ACT Node where publications who acknowledge the ANFF ACT Node and general information is posted.

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