

# Innovative technology mobilises life-saving portable x-ray systems across the globe

Providing micro and nano fabrication facilities for Australia's researchers, students and industry

Revolutionary light-weight mobile x-ray systems, developed in South Australia, are delivering next-generation imaging capabilities to medical, security and defence agencies world-wide.

**Adelaide-based company, Micro-X, has created a novel carbon nanotube (CNT) x-ray tube to build the world's first ultra-lightweight mobile x-ray imaging system.**

The technology platform is the first innovation in x-ray emission since the diagnostic technology was developed a century ago.

Designed to be small and mobile, the DRX Revolution Nano system delivers a fully integrated imaging capability for applications in the medical, security and defence sectors.

When COVID-19 hit, global demand for Micro-X's mobile x-ray units exploded with multiple countries using them to diagnose and monitor lung infections caused by Coronavirus.

Micro-X's CNT project commenced in 2017 with the intention to establish and prove its carbon nanotube and x-ray tube technology in-house. The project resulted in a key addition to Micro-X's intellectual property portfolio, with a published Patent for 'Large Scale Stable Field Emitter for High Current Applications'.

Obtaining control over the complete design, engineering, testing and manufacturing process at Micro-X's Tonsley facility has afforded many substantial benefits including supply chain independence presenting flexibility in future product designs.

Micro-X's small team of world-leading experts have collaborated with all three South Australian universities and the South Australian node of the Australian National Fabrication Facility (ANFF-SA).

Some work was undertaken with support from a Future Industries Accelerator grant through the University of South Australia's Infrastructure Access Agreement Scheme, enabling SA industry to benefit from



UniSA's capabilities and expertise at no direct cost.

Micro-X's research chemist, Susanne Sahlos, was studying her Bachelor of Science degree at Flinders University when she first heard about Micro-X and a collaboration in 2018 enabled her to join the Micro-X team.

That same year, Susanne participated in ANFF-SA's free Microengineering Winter School to build her knowledge of world-class microfabrication techniques and equipment.

“ANFF-SA's facilities are perfect for our requirements.”  
**Susanne Sahlos,**  
**Research Chemist, Micro-X**

Susanne's work centres around the development of mobile x-ray imaging devices based on CNT technology and access to ANFF-SA's advanced microfabrication facilities at UniSA and Flinders University has been importance to the Micro-X team.

“Our research is novel. We often work on prototyping requiring specialised surface treatments of the materials, followed by assembly in a cleanroom environment,” said Susanne. “ANFF-SA's facilities are perfect for our requirements.”

Thrilled to be part of Micro-X's award-winning team with ongoing and exceptional support from ANFF-SA, Susanne says the ability to improve health care, defence and airport security is a constant motivator.

“Our x-ray technology is game-changing. We are continually working on product optimisation and new product development,” said Susanne.

“This brings new challenges and further exciting research and ANFF-SA staff show real interest in our problems without compromising the



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confidential nature of our projects.” With a portfolio of innovative products in the pipeline, Micro-X has completed compliance testing of its Rover mobile X-ray unit for deployed military hospitals.

Currently under development is the Mobile Backscatter Imager (MBI) to image Improvised Explosive Devices for security, defence and counter-terrorism applications and a mobile baggage scanner for airports.

It is anticipated that these capabilities will create at least another 20 new high technology engineering and manufacturing jobs at Micro-X in the next 18 months.

**Contact ANFF-SA today to find out how we can help optimise the design and development of your next project.**

**South Australian Node of the Australian National Fabrication Facility**

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