

Nano-manufacturing

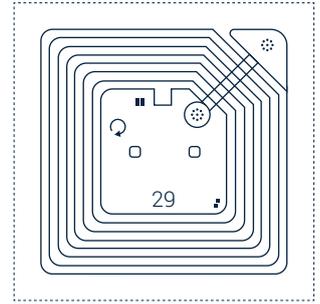
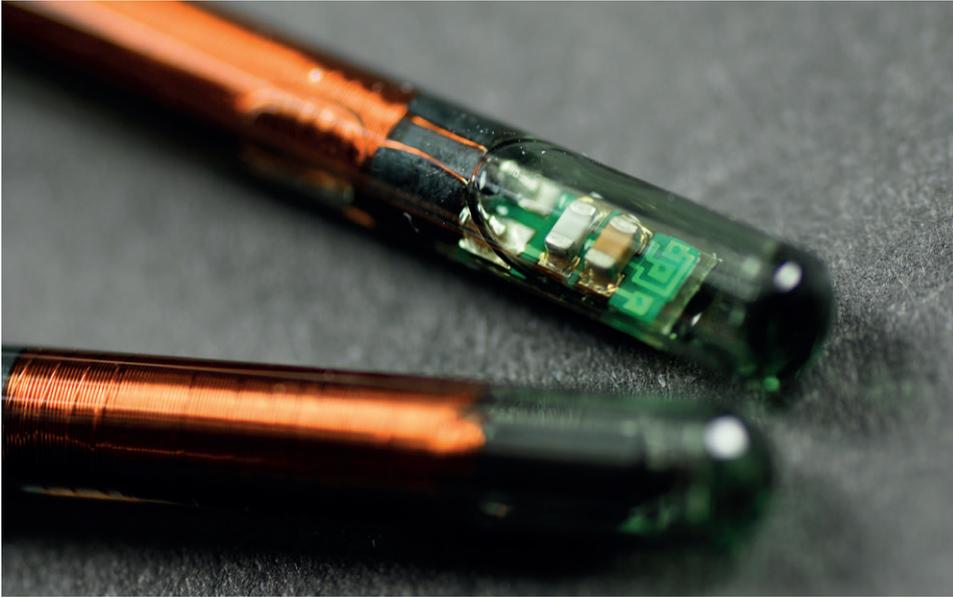
Working in collaboration to provide an internationally recognised printing capability for nano-manufacturing in the UK.

Executive Summary

In partnership with the University of Surrey we have collaborated with the Advanced Technology Institute (ATI) and the National Physical Laboratory (NPL) to secure a unique capability in the area of nanotechnology materials and device fabrication. This innovative capability will allow streamlined production of electronics for future smart consumer and industrial products.

The brief

The University of Surrey was looking for a world class industry partner to support a stronger case for their grant application to the Engineering and Physical Sciences Research Council (EPSRC). The grant application was to establish a nanoscale offset printing system the first outside of the USA – and to create a new capability for high quality research. The high speed system would give the UK the ability to produce and commercialise devices such as wearable sensors, electronic tags, and various wireless technologies. Importantly, it would be able to do this at a fraction of the cost that it currently takes to manufacture plastic electronics, supporting the development of Internet of Things (IoT) devices for smart-homes, smart-cities, and smart factories. As a strategic partner in research and technology, the University of Surrey chose to collaborate with us to improve their chances of securing research funding.



This capability will make manufacturing of inexpensive tagging and tracking devices that are unobtrusive and autonomous possible.

Our solution

By providing expertise in collaborating with academia and commercialising research our support strengthened the University's application for funding of the nanoscale manufacturing system.

Our focus was to:

- Demonstrate the potential applications of the capability
- Provide credible exploitation mechanisms, e.g. augmentation of current technology products such as sensors and RFID technologies
- Evidence a collaborative partnership between the University of Surrey and QinetiQ to highlight our combined materials capability.

Crucial to winning the proposal was identifying the real routes to market with a clear set of applications across the Technical Readiness Level (TRL) spectrum.

“ What’s different about QinetiQ is the affinity it has with academics. ”

Professor Roger Webb

Professor of Ion Beam Physics and Director of the Surrey Ion Beam Centre, UK

Outcomes and benefits

Through our strong understanding of industrial market applications we helped the partnership, including the University of Surrey, the ATI and the NPL, to secure the £1.6M funding.

As an industry partner with deep research heritage, QinetiQ is ideally positioned to support research programs and improve commercial outcomes for our academic partners.

The Nanoscale Offset Printing System will be:

- **Cost-effective:** providing a low-cost platform for mass-manufacture of printable components and systems with nanometre resolution without photolithography on flexible substrates. This capability will make manufacturing of inexpensive tagging and tracking devices that are unobtrusive and autonomous possible.
- **Innovative:** enabling the integration of electronic circuits with low energy communication interfaces, energy harvesting with storage modules, sensors and actuators in a single flexible platform for multi-functional applications and demonstrators.
- **Future-focused:** establishing an internationally recognised printing capability for nano-manufacturing in the UK. This capability will create near-zero power, nano-designed flexible electronic devices and products, with a focus on leading the rapidly expanding Internet of Things (IoT).

“ The overarching ambition of the Advanced Technology Institute, is to work with world class partners like QinetiQ to develop novel technology and its exploitation on a global scale, and this initiative is an outstanding example of how a great partnership will impact positively on societal change. ”

Professor Ravi Silva

Director Advanced Technology Institute (ATI), Head of Nano-Electronics Centre, University of Surrey, UK

“ We want to have intimate engagement with other companies in the same way that we have with QinetiQ. ”

Dr Peter Aaen

Reader in Microwave Semiconductor Device Modelling and Director of National Physical Laboratory (NPL) – South of England

Collaborating with QinetiQ

At QinetiQ we bring organisations and people together to provide innovative solutions to real world problems, creating customer advantage. Working with our partners and customers, we collaborate widely, working in partnership, listening hard and thinking through what customers need. Building trusted partnerships, we are helping customers anticipate and shape future requirements, adding value and future advantage.

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