

CSIRO Agreement for Printable Nanocube Memory Ink

Strategic Elements Ltd (ASX:SOR) is pleased to announce a research agreement has been formed with the CSIRO, a globally recognised Tier 1 research and development organisation, for development of the printable Nanocube Memory ink technology invented at the University of New South Wales.

The Nanomaterials and Devices Team of CSIRO Manufacturing based in Melbourne has been developing techniques that allow for the reproducible synthesis of nanoparticles on commercial scales, and using these nanomaterials in the fabrication of thin-film devices.

The CSIRO Team has extensive experience in the synthesis of nanocrystals of various compositions and morphologies, and has demonstrated expertise in the fabrication and characterisation of thin-film devices. CSIRO scientists will work in conjunction with materials science researchers from the University of New South Wales (UNSW) and the world leading printed electronics team based at VTT Finland.

Managing Director Mr Charles Murphy said “the printable memory opportunity we are chasing is large and global. This agreement is another step in building out a team that can assist us to achieve our goal of printable, flexible memory. We are cognisant of the fact that we need a development team with the ability to compete globally and look forward to working with the scientists from CSIRO Nanomaterials and Devices.”

The current program is the first of a number of proposed stages to assist with the scale-up of the synthesis of nanocubes, which are printed during the fabrication of Resistive Random Access Memory (RRAM) devices. The project will be undertaken with a decision gate between each stage allowing the parties to choose whether to continue or discontinue the project.

In this first stage CSIRO will perform characterisation of nanocubes and devices using analytical techniques not readily available at UNSW and prepare a larger batch size of Nanocube ink using large scale equipment at CSIRO facilities in Melbourne.

The first stage will also include preliminary slot die coating tests of the Nanocube ink at CSIRO. The Company is yet to test the slot die method of depositing Nanocube ink onto materials such as glass and plastic.

Slot die coating technology is commonly used to deposit a variety of liquid chemistries onto glass, stainless steel, and plastic substrates for the development and production of a broad range of applications. Slot die coating has potential advantages in scaling up to commercial production.

In addition, the research group of Professor Sean Li at UNSW has recently acquired advanced printing and slot die coating equipment (just the second installation of it globally).

This equipment has unique functionality to *combine slot die with printing* to expand the capability to produce advanced electronic materials in industrial scale.

Larger batch sizes of ink will also enable the Nanocube ink to be printed and coated with this equipment.





About the Nanocube Technology

Low cost traditional printing processes combined with advanced inks and new forms of flexible materials put electronics where they could never go before e.g. wrapped around curved surfaces, attached to clothing or on building infrastructure. The Nanocube ink is made from cerium oxide and is comprised of billions of tiny cubes that are roughly 10 nanometres thick, or about 10,000 times smaller than the thickness of a sheet of paper. Digital information (a series of ones and zeroes) is encoded and stored on the Nanocube memory cells by applying an electrical current, which changes the cell between a resistive and conductive state.

The Company identified the technology opportunity at UNSW in 2015 and committed resources to constructing prototype inks and producing data for patent and intellectual property purposes. UNSW are continuing to work on expanding the IP position of the technology and has committed large investment in printed electronic equipment and infrastructure.

Additional development of the technology has occurred outside of the UNSW laboratory since August 2016 through an agreement with VTT Finland, a recognised world leader in Printed Electronics. It has a strong network of experience in the sector through its collaborative work with some of the largest companies in the world. VTT has over 4000 employees and over 1200 patent applications and patents.

About CSIRO

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) is the federal government agency for scientific research in Australia. CSIRO Manufacturing research is based on multi-disciplinary scientific and engineering capabilities and uses world-class infrastructure. It partners with industry to develop innovative products and processes that allow Australian manufacturers to be globally competitive and environmentally sustainable. Successful CSIRO inventions include WIFI, plastic banknotes, Hendra virus vaccine, extended wear contact lenses and Raft polymerisation.

About Strategic Elements Ltd

Strategic Elements owns 100% of Australian Advanced Materials Pty Ltd, an unlisted Australian company developing the Nanocube Memory ink technology. Strategic Elements shares are listed on the Australian Stock Exchange under the code "SOR". The Company is registered under the Pooled Development Program run by the Australian Federal Government to encourage investment into SME's. SOR focuses on backing innovation in the technology and resource sectors. To assist Pooled Development Fund's to raise capital, the Federal Government enables most shareholders in a Pooled Development Fund to make capital gains and receive dividends tax-free. In return the Company must back only Australian SME's.

More Information

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