

## FACT SHEET

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## **NTU SUPPORTS NATION'S DRIVE TOWARDS BECOMING NANO HUB**

### ***About Nanometrology***

Nanometrology is concerned with dimensional measurements of very small objects in micro, semi-conductor and nano technologies. The dimensions are typically given in nanometres (1nm = 1/1 000 000 mm).

Nanometrology is fundamental to industries wishing to capitalize on nanotechnology to develop next-generation products and services.

### ***About NTU Ventures Pte Ltd***

NTU Ventures Pte Ltd was established in May 1995 as the commercial arm of Nanyang Technological University to:

- Encourage and support entrepreneurship
- Assist in the commercial exploitation of NTU technologies
- Provide seed funding for NTU spin-offs
- Seek private sector partners and investors

Since its inception, some 29 start-ups were formed, with over \$90 million garnered in external private funding.

### ***About the NanoFrontier-Mitutoyo Nanometrology Centre***

The NanoFrontier-Mitutoyo Nanometrology Centre has been set up at NTU's Research TechnoPlaza. It currently houses four cutting-edge precision

measuring instruments worth some S\$2 million, including a machine which is the first of its kind in Southeast Asia. When fully set up, the nanometrology centre will have a suite of cutting-edge nanometrology instruments worth some \$10 million and a staff strength of about eight.

#### ***About NanoFrontier's MOA with Mitutoyo Asia Pacific Pte Ltd (Singapore)***

Assoc Prof Bryan Ngoi, Director of NanoFrontier Pte Ltd and Mr Tadashi Ikuda, President of Mitutoyo Asia Pacific Pte Ltd (Singapore), will sign a Memorandum of Agreement (MOA) formalize their partnership. Witnessing it will be Mr Kazusaku Tezuka, President of Mitutoyo Corporation Japan, and Dr Seet Lip Chai, Managing Director of NTU Ventures Pte Ltd and Director of NanoFrontier Pte Ltd.

#### ***About NanoFrontier's MOU with Sumitomo Corporation (Singapore)***

Assoc Prof Bryan Ngoi, Director of NanoFrontier Pte Ltd and Mr Masao Tetsuya, Managing Director of Sumitomo Corporation (Singapore) Pte Ltd will also sign a Memorandum of Understanding to formally acknowledge their strategic alliance. This signing is witnessed by Dr Seet, and Mr Yoshinobu Fukuda, General Manager of Electronic Materials and Equipment Department of Sumitomo Corporation, Japan.

#### ***About NTU's Nanoscience and Nanotechnology Cluster***

The Nanoscience and Nanotechnology (Nano) Cluster is a NTU-wide network of research centres that includes shared facilities for nanofabrication, nanocharacterization, and exploitation of nanotechnology applications.

Set up in 1 April 2005, the Nano Cluster seeks to coordinate, facilitate, and stimulate research in nanotechnology in NTU by grouping together the following centres in NTU:

- Advanced Materials Research Centre (AMRC)
- Microelectronics Centre (MEC)
- Photonics Research Centre (PhRC)
- Micro-electromechanical Systems (MEMS)
- Precision Engineering Centre (PEN)

The AMRC focuses on materials synthesis of both organic and inorganic materials for applications ranging from microelectronics to biomaterials. The MEC and PhRC focus primarily on micro and nanofabrication as applicable to silicon microelectronics and compound semiconductors. The MEMS centre focuses on MEMS and Nano-electromechanical systems research; whereas the

PEN centre addresses scalable manufacturing technologies for nanoscale applications.

All nano characterization tools are housed in a facility with high resolution tunneling electron microscopes, scanning probe microscopes, and other equipment for atomic level characterization, testing, and simulation. There are also three cleanrooms occupying a total of 1,000 sq m.

The Nano Cluster consists of 125 faculty members from Electrical, Materials, Mechanical, and Chemical & Biomedical Engineering; and from Chemistry, Physics, and Biological Sciences.

***About the NanoFrontier-Mitutoyo Nanoprofiler***

Under their MOA, NanoFrontier and Mitutoyo will jointly research and develop a nanoprofiler for determination of nanoscale features.

Using a combination of laser and optical technology combined with microscopy, this nanoprofiler will be the first-of-its-kind specially developed for precision measurement in semiconductor, MEMs and data storage industries.

Mitutoyo will provide the necessary funding and technical support, while NanoFrontier will execute the design and instrumentation of the nanoprofiler. Profits from the successful commercialization of the product will be shared between the two companies, and the first prototype of the nanoprofiler will be developed within two years.