

Coordinating HK Nanotech R & D- Hong Kong R & D Center for Nanotechnology and Advanced Materials

Summary of Nanoscience and Technology R & D in Hong Kong University of Science and Technology (HKUST)

The Hong Kong Innovation Technology Commission (ITC) recently (publically announced on Dec. 9th 2004) launched new strategy of innovation and technology development and will set up core R & D centers in Hong Kong under the technology areas of

1. automotive parts and accessory systems;
2. logistics and supply chain management enabling technologies;
3. textile and clothing; and
4. nanotechnology and advanced materials.

The Hong Kong University of Science and Technology (HKUST) has been invited to host the R & D Center for Nanotechnology and Advanced Materials (RDCNAM). The ITC is expecting proposals from host institutes during Jan-Feb 2005 and the R & D Centers are expected to be set up in the second half of 2005. HKUST was funded by the ITC's Innovation and Technology Fund (ITF) for establishing the Institute of NanoMaterials and NanoTechnology (INMT) in 2002. The New R & D Center for Nanotechnology and Advanced Materials is expected to expand the scope of the institute and to cooperate with other universities and to provide strong support to industries in the greater Hong Kong (including the Pearl Delta region in the mainland near HK). ITC will provide funding the initial operation of the R & D center as well as research projects.

There is another Nanotech Institute at HKUST which is the university initiative, namely Institute for Nano-Science and Technology (INST) which focuses academic research. INMT focuses on applied research. The R & D infrastructure in HKUST for nanoscience and technology include

1. MicroFabrication Facility (MFF) with over KD100 million worth of equipment and 18 supporting staff- for fabrication
2. Micro Characterization and Production Facility (MCPF) with over HKD80million worth in equipment and 16 supporting staff – for characterization
3. Applied Engineering Manufacturing Facility (AEMF) – for Engineering Materials
4. Technology Transfer Center (TTC) – for Technology transfer

Details of the facility and R & D details can be found at the institute website: <http://inst.phys.ust.hk/>, <http://www.ust.hk/~inmt/>.

HKUST has an excellent environment for nanotechnology and advanced materials research. Its Chemical Engineering Dept is the only one in HK, it has the largest Physics Dept in HK and is the only Physics Dept focusing entirely on Condensed Matter Physics. Its Chemistry Dept is strong in materials and nanostructures research. HKUST is also strong in theory and simulation for materials research and support. There has been good synergy among different departments and interdisciplinary research.

The research areas in Nanoscience and technology at HKUST include Nanocatalyst, Nanocomposites, Nanomaterials Property, Nanomaterials Fabrication, Nanotube, Nanowire and Nanoelectronics. The total funding for nanotech is HKD143 million and over 75% has been used in applied research.

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The INMT is a 4 year project and inaugurated in Sept 2003. It consists of 25 faculty and 60 researchers. The mission of INMT is to

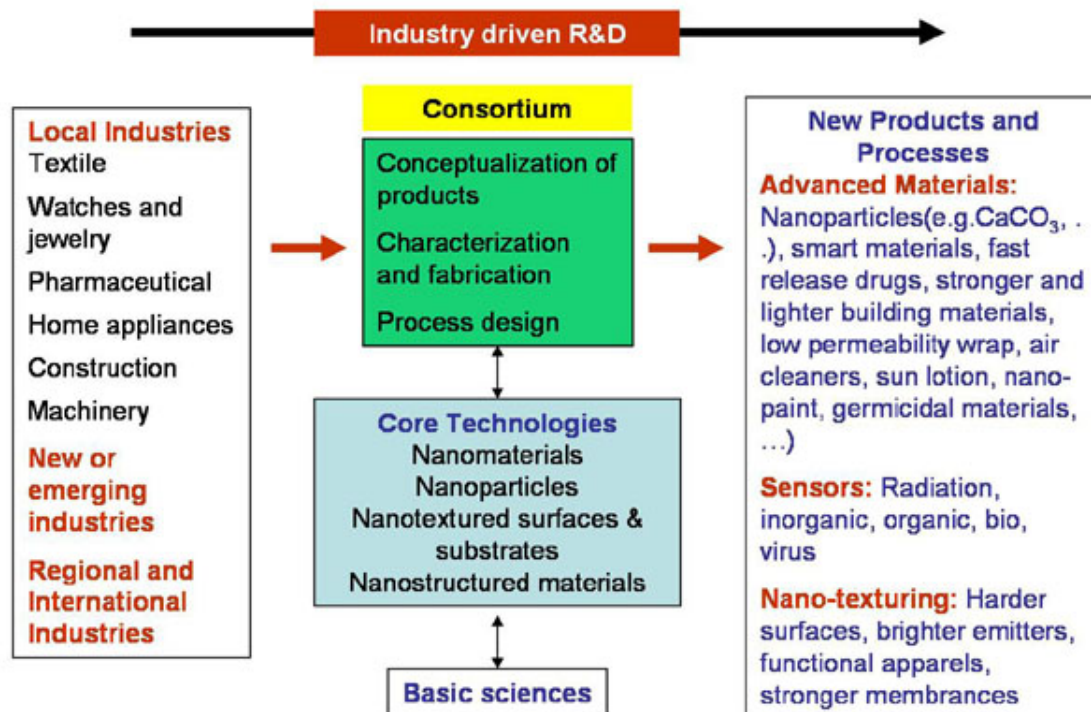
1. Become a World-class Nanomaterials and Nanotechnology R & D Center with local, regional and international collaborations
2. Create New Commercial Products and Processes
3. Develop Manufacturing Technologies for Transferring to Industry
4. Develop Human Resources

INMT focuses on developing nanotechnology that is Innovative, Affordable, Relevant and Timely.

The research projects being carried out at INMT are on the following 4 areas:

1. Energy Application (Nano-carbon for rechargeable lithium batteries, Zeolite-membrane microfuel cell using liquid organic fuel, Nano-carbon supports for microfuel catalysts)
2. Nanoelectronics (Displays: LCD and OLED, CMOS based nano-scale technology, GaN based technology, HEMT, anotube electronics)
3. Environmental Control Catalysts (Catalysts and appliance for treatment of air and water pollution)
4. Integrated Manufacturing Technologies (Manufacturing processes for carbon nanotubes, fullerene, nanoparticles and related products)

One of the mission of R & D Center for Nanotechnology and Advanced Materials (RDCNAM) to be hosted by HKUST is to establish the consortium for establishing partnership with industry. The Consortium is to provide information, problem solving, new technology and production services. The following slide shows the schematics of the RDCNAM role in coordinating with academics and industry:



Schematics of the Mission for the R & D Center for Nanotechnology and Advanced Materials.



Photos of the Inauguration Ceremony of the Institute of NanoMaterials and NanoTechnology (INMT) on 5th Sept 2003

President of HKUST Prof. Paul Chu (5th from the left), the Hong Kong Special Administration Region (HKSAR) Governor Mr Tung Chih Hwa (5th from the right) and the INMT Director Prof. C.T. Chan (1st from the right)

This report was based on the presentation given by the INMT Director Prof. CT. Chan and Innovation Technology Commission Press Release on Government Endorses New Strategy of Innovation and Technology.