



PRESS RELEASE

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NUS and A*STAR Launch Research Programmes in New Growth Area of Green Electronics

Programmes to train and equip NUS graduates with knowledge and skills to plan and design green data centres, and pioneer next-generation power devices for green automotive and energy harvesting

The National University of Singapore (NUS) and the Agency for Science, Technology and Research (A*STAR) jointly launched two new research programmes today to nurture and train skilled professionals to power **Green Electronics**, a new growth area in the electronics sector. These programmes will lead to a PhD degree for successful candidates who may be supported through scholarships provided by A*STAR and NUS.

Green Electronics have been identified by the Singapore Economic Development Board (EDB) to transform the electronics sector into a new engine for economic growth, alongside BioElectronics, Plastic Electronics and Security. EDB recently reported that the electronics sector experienced a 27 per cent growth and generated \$89.9 billion in fixed asset investment last year.

The new research programmes, undertaken by the **Department of Electrical and Computer Engineering (ECE) at NUS Faculty of Engineering in collaboration with A*STAR's Data Storage Institute (DSI) and Institute of Microelectronics (IME)**, will train and equip selected candidates with the skills and knowledge to enhance green data centre technologies and develop next-generation power devices for green automotive and energy harvesting. The programmes will commence in August 2011.

Said Dr Raj Thampuran, Executive Director, Science and Engineering Research Council of A*STAR, "A*STAR closely partners local universities to build new capabilities in growth areas such as Green Electronics. Such programmes leverage on our rich R&D ecosystem that can quickly create a critical mass of research effort and drive innovations rapidly. These partnerships have the potential to create new technologies and stimulate more industry development."

Said Professor Chua Kee Chaing, Head, Department of Electrical and Computer Engineering, NUS Faculty of Engineering, "With a focus on Green Electronics, the new research programmes

will help prepare NUS graduates for even higher skilled jobs in the industry, and pioneer new technologies and innovations that will propel the electronics industry into a new era of growth. These initiatives are timely, in response to an urgent need to tackle the global challenges of energy supply and sustainable development. NUS and A*STAR have multidisciplinary and broad capabilities in areas relevant to Green Electronics. We will leverage on our unique strengths to nurture outstanding PhD graduates who could lead a technology revolution in the electronics industry.”

Collaboration between NUS and DSI

The NUS ECE Department and DSI will train selected candidates to become highly-skilled researchers and engineers who are able to plan and design **data centres of the future**, which can result in high performance services with huge energy and cost reductions. Examples of technologies involved in this field include high performance computing with the use of multi-core and multi-processor embedded computer systems, performance optimisation techniques, as well as advanced memory devices designed for handling millions of requests. Data centres play a crucial role in storing massive volumes of data scaling up to hundreds of petabytes; enabling multi-tasking in real time; as well as managing user and application data.

The data centre market has been growing exponentially in the recent years. TechNavio’s Global Data Centre Outsourcing Market 2010-2014, a research and market report based on an extensive research with inputs by industry experts, vendors and end-users, has projected that the global data centre outsourcing market will reach US\$163.0 billion in 2014.

Said Dr Pantelis Alexopoulos, Executive Director of Data Storage Institute, “Data centres store majority of all digital content, for example, all YouTube videos are stored in a data centre, so are all Facebook content. Hence, with the fast-growing amount of data generated from such websites, data centres need to be more efficient, faster, consume less energy and cost less in order to make them sustainable. This joint research programme with NUS comes at an opportune time, enabling us to educate and train a new generation of engineers who can look into solving these real world problems that we are facing.”

Collaboration between NUS and IME

Selected candidates under this research programme will conduct research on **Power Semiconductor Devices**, which are used as switches in power electronic circuits. The applications for such devices include direct electrical energy conversions, such as those necessary for renewable energy systems, smart grid; and kinetic energy conversion such as those required for high-speed trains and electric cars.

Next-generation power semiconductor devices are expected to play a dominant role in the next decade. Their applications in the global market of renewable energy systems and electric vehicles alone are expected to be worth US\$20 billion annually in the next five years.

Said Professor Dim-Lee Kwong, Executive Director of Institute of Microelectronics, “IME’s world-class fabrication facilities and strong ties with leading industry partners will inject industry relevance to the new Power Semiconductor research collaboration with NUS. Together, IME’s involvement in technology and manpower training will groom a well-trained talent pool - vital to attracting power device developers to conduct R&D in Singapore, thus enabling this new industry to take flight locally.”

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About National University of Singapore (NUS)

A leading global university centred in Asia, the National University of Singapore (NUS) is Singapore's flagship university which offers a global approach to education and research, with a focus on Asian perspectives and expertise.

NUS has 15 faculties and schools across three campuses. Its transformative education includes a broad-based curriculum underscored by multi-disciplinary courses and cross-faculty enrichment. Over 36,000 students from 100 countries enrich the community with their diverse social and cultural perspectives.

NUS has three Research Centres of Excellence (RCE) and 22 university-level research institutes and centres. It is also a partner for Singapore's 5th RCE. NUS shares a close affiliation with 16 national-level research institutes and centres. Research activities are strategic and robust, and NUS is well-known for its research strengths in engineering, life sciences and biomedicine, social sciences and natural sciences. It also strives to create a supportive and innovative environment to promote creative enterprise within its community.

For more information, please visit www.nus.edu.sg

About the Agency for Science, Technology and Research (A*STAR)

The Agency for Science, Technology and Research (A*STAR) is the lead agency for fostering world-class scientific research and talent for a vibrant knowledge-based and innovation-driven Singapore. A*STAR oversees 14 biomedical sciences and physical sciences and engineering research institutes, and six consortia & centres, located in Biopolis and Fusionopolis as well as their immediate vicinity.

A*STAR supports Singapore's key economic clusters by providing intellectual, human and industrial capital to its partners in industry. It also supports extramural research in the universities, hospitals, research centres, and with other local and international partners.

For more information about A*STAR, please visit www.a-star.edu.sg.