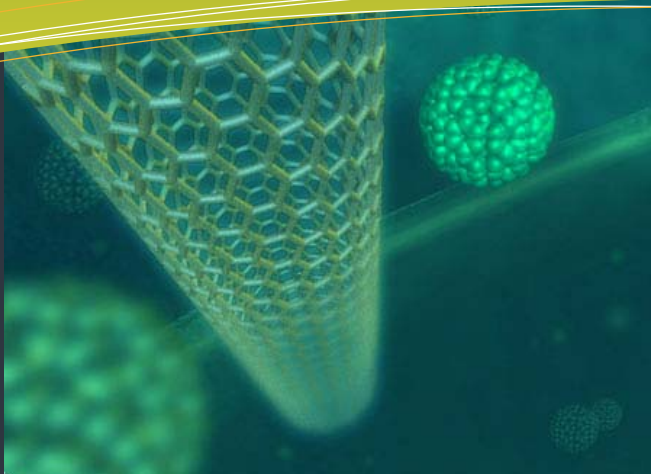


The Australia-China NanoNetwork Information Bulletin



“to promote collaborative research projects and research training ; addressing key contemporary research challenges through nanoscience”

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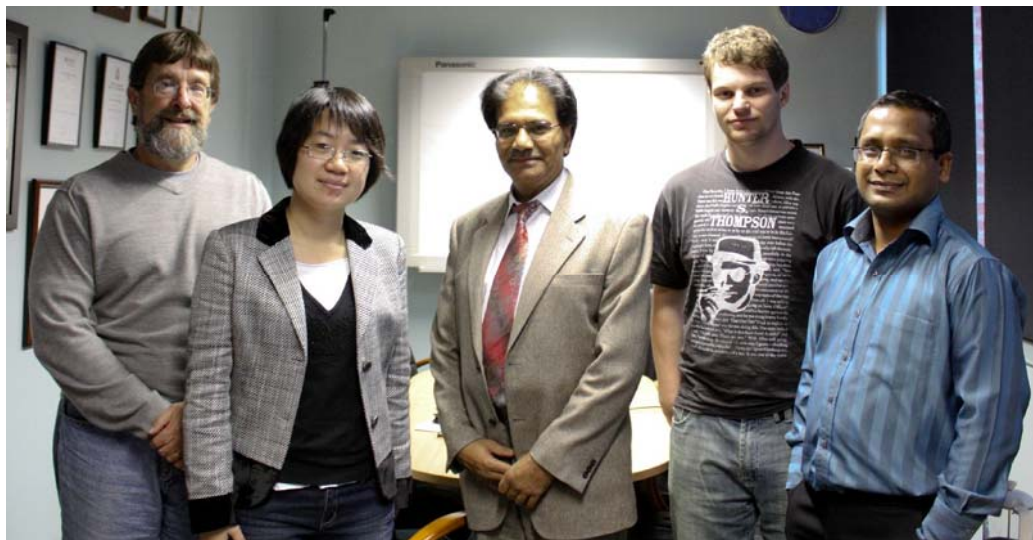
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Bilateral researcher exchange forges ahead



Professor Neil Furlong, Dr Ming Ma, Professor Suresh Bhargava, Mr Jos Campbell and Dr Vipul Bansal

Whilst enthusiasm for building Sino-Australian research partnerships has been high in all members of the NanoNetwork, some of our Chinese members in particular have been very enthusiastic and active in their efforts to build strong partnerships. Southeast University has continued its strong commitment to the NanoNetwork with recent visits to Australia designed to strengthen both joint research activity, as well as bilateral teaching and exchange of PhD students.

Dr Ming Ma, from the State key Laboratory of BioElectronics at Southeast University, visited RMIT University in early May to work with researchers from the Advanced Functional Nanomaterials Group on the development of joint research proposals in the field of Nanobiotechnology, a priority research area for both Australia and China.

The primary area of collaboration between RMIT and Southeast is focused on the synthesis of hybrid metal-iron oxide

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Researcher profile: Dr Cuong Ton-That

Cuong Ton-That obtained a BSc in Physics (Honours, University Medal) from UTS and a PhD degree in the field of surface science from the Robert Gordon University, UK in 2000. He joined UTS in 2003 as a lecturer. Prior to working at UTS, he was a post-doctoral research associate in the Nanoscience Centre, University of Cambridge from 2000-2003. He is currently the course director for Nanotechnology and Physics Honours programs at UTS

His research is focused upon the development of novel materials for solid state lighting applications. He has expertise in the growth and characterisation of zinc oxide nanostructures together with experience in synchrotron-based spectroscopy, high resolution electron and scanning probe microscopy. His current research includes the fabrication and analysis of transition metal doped semiconductors for applications in spintronic devices.

ATN researchers to attend major industry forum

Researchers from all five ATN universities will attend, present and participate in the upcoming International Forum on Nano-Biology, Nano-Medicine and Industry Development Conference at the invitation of ISTA partners.

The conference begins on 11th July at the Suzhou Institute of Nano-tech and Nano-bionics and is a major event supported by Jiangsu Province. It involves over 40 universities and approximately 800 Suzhou-based corporations, as well as a further 200 from neighbouring cities. The event is highly regarded in Suzhou, a particular



Suzhou Institute of Nano-tech and Nano-bionics

centre for nanotechnology activity in China, and represents an excellent opportunity to build academic linkages, highlight the activities of the NanoNetwork and explore possible opportunities for industry partnerships.

Adjunct appointments continue

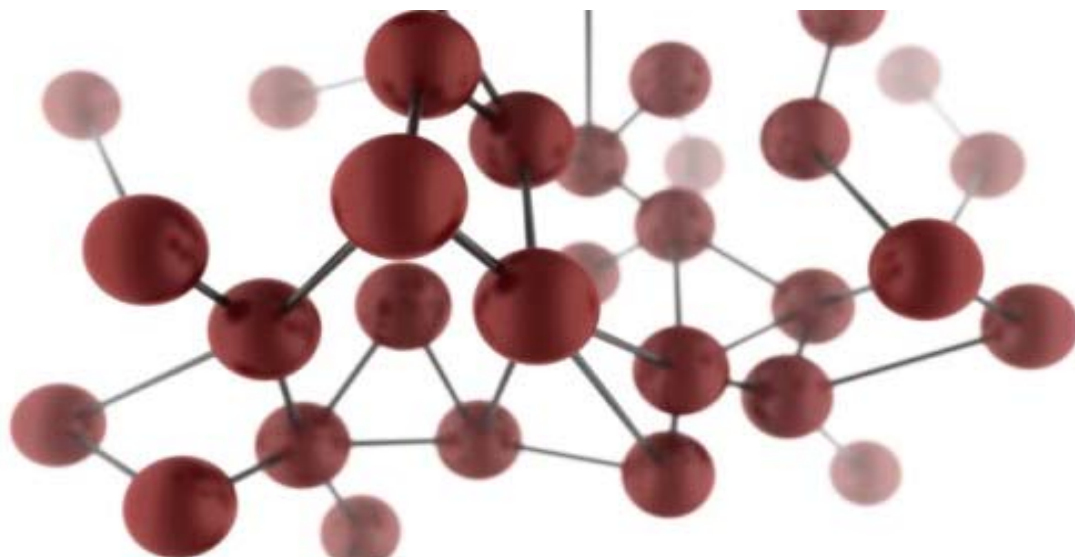
Further increasing linkages between Australian and Chinese NanoNetwork partners in preparation for joint PhD supervision, Professor Cheng Peng has been appointed an Honorary Associate within the Department of Physics and Advanced Materials at the University of Technology, Sydney (UTS).

Professor Peng, from the Key Laboratory of Advanced Photonic and Electronic Materials at Nanjing University, has particular research strengths in wide bandgap semiconductor optoelectronics and will be assisting in the supervision of PhD student Mark Lockrey along with Professor Matthew Phillips and Dr Cuong Ton-That of UTS' Institute for Nanoscale Technology.

This particular research collaboration will centre around producing superior performance light emitting diodes (LEDs). Ni-

tride semiconductor based LED's have the capacity to completely transform the lighting industry in the near future. They use significantly less energy than their less efficient counterparts which utilise incandescent and fluorescence lighting technologies. Deployment of LED lights could provide an instant 10% reduction in the world's energy consumption, leading to a massive 100 billion dollar cost savings and a decrease in the global green house gas production by 250 million metric tons.

Whilst the superior performance of LEDs has already been established with current generation devices, performance still falls as usage currents increase to the levels generally required in typical household lighting applications. The origin of this problem is still unknown, but the UTS and Nanjing researchers hope to 'shed some light' on the issue.



Nanobiotechnology on the rise in China

Nanobiotechnology, the convergence of nanotechnology and biotechnology to produce materials and products that use biological molecules in their construction or are designed to affect biological systems, is growing rapidly in China. R&D in this field in China is growing rapidly, both within the university and industry sectors. In the latter, it is estimated that more than 1,000 enterprises are now involved in nanotechnology-based commerce in China.

China's government has particularly promoted the growth of new industry in the high-technology sector, including biotechnology through tax incentives and the development of new facilities to encourage the growth of new biotech-related companies and attract foreign investment. As of 2006, in Beijing there were more than 80 nanotechnology-related companies. In Shanghai there were more than 3,000 people involved in nanotechnology-based industries and it contains probably well over 100 nanotechnology companies.

China has also been on the forefront in issuing national standards for nanotech-



Institute of High Energy Physics

nology, becoming the first country to do so in 2005. The Lab for Bio-Environmental Health Sciences of Nanoscale Materials was established in 2003 in the Institute of High Energy Physics to explore the biological and environmental (including both the positive and negative) effects of nanoscale materials. Its research activities include not only ways to identify the possibly adverse effects of nanomaterials, but also ways to recover or reduce the release of nanoparticles in manufacturing processes and how to eliminate nanotoxicity.

The above is a short précis of [The Increased Use Of Nanotechnology In China's Biotech Industry](#), *Life Science Leader*, June 2010.

Bilateral researcher exchange forges ahead

(Continued from page 1)

nanoparticles, and the ways they might be used in cancer imaging and treatment via MRI and hyperthermia applications – ‘frying’ the cancer tissue. Southeast University has hyperthermia instrument facilities available that are not available Australia-wide, greatly expanding RMIT's ability to contribute to research in this field.

Creating opportunities for NanoNetwork PhD students, an Endeavour Australia Cheung Kong Research Fellowship Application is currently being prepared to allow RMIT student Jos Campbell to work with the Nano-biomedical Research Group at Southeast University for 6 months on this research, benefiting from access to such state-of-the-art international facilities. A similar Endeavour Research Award Application is also in progress to allow a Southeast PhD

student to likewise visit RMIT University for 6 months.

Concurrent to that visit, Ms Tingting Bai, PhD student at Southeast University, spent two weeks working at Curtin University's Nanochemistry Research Institute in its Scanning Probe Microscopy Facility. Expanding on work she had already undertaken in China, Ms Bai performed preparations and measurements on various samples of nanoparticles using an Atomic Force Microscopy (AFM) system, learning to use the system for more advanced applications than she had previously done.

Ms Bai will continue her work on imaging of cellular interactions with nano and biomaterials via her involvement in the NanoNetwork joint PhD supervision program.

NanoNetwork at Shanghai Expo

ATN representatives Professor Neil Furlong, Project Manager (Research), and Ms Vicki Thomson, Executive Director, will be representing the NanoNetwork during Australia/China Science and Technology Week at the Shanghai Expo 2010. A high profile “Research and policy workshop on nanotechnology and biotechnology” will be held at the event, which is likely to attract the interest of many high profile Australian and Chinese Expo attendees.

Involvement in the workshop, sponsored by the Department for Innovation, Industry, Science and Research (DIISR), is by invitation and will discuss how nanotechnology can provide improved health outcomes, sustainable energy options and information and communication technologies to benefit society. One of our Chinese NanoNetwork partners will also attend the event, which will take place on 5-6 August.