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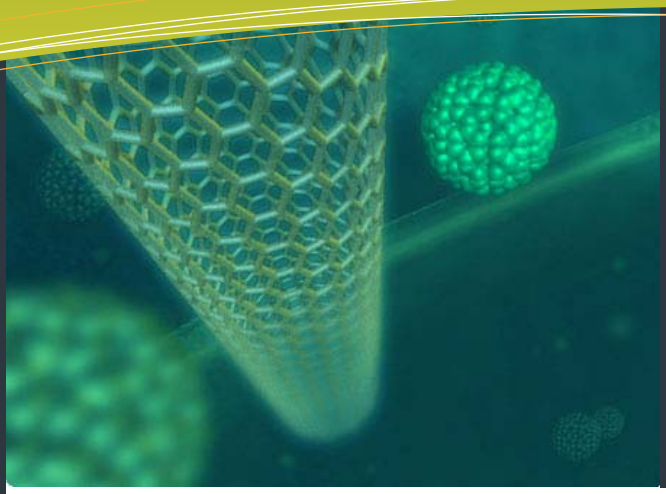
The Australia-China NanoNetwork Information Bulletin

AN INITIATIVE OF THE
AUSTRALIAN TECHNOLOGY NETWORK OF UNIVERSITIES (ATN)
AND INTERNATIONAL STRATEGIC TECHNOLOGY ALLIANCE (ISTA)



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

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Southeast University partnership continues strongly

NanoNetwork members at the 2010 ATN Conference

As part of an on-going ALA Fellowship grant the NanoNetwork welcomed Professor Gu to Melbourne at the time of the 2010 ATN Conference hosted by RMIT University. Professor Gu's visit facilitated further project development with ATN researchers around the use of magnetic iron containing nanoparticles for hyperthermia therapies; the potential for scanning probe techniques to evaluate nano-sized features on polymer substrates; and the synthesis of magnetic nanoparticles within inorganic nanotemplates. These discussions have involved researchers from RMIT, Curtin and UniSA in the first instance and it is expected will lead to funding grant applications in coming months. The formulation of these applications will be boosted by follow-up visits by other Southeast researchers.

Prof Gu's visit also led to more detailed planning for a Graduate student 'Autumn School' to be held late in 2010 in Suzhou. This School will bring together a cohort of Chinese and ATN PhD students to discuss matter of mutual interest in areas of nanomedicine and medical nanotechnology. A key objective of the Autumn School will be to encourage the establishment of a NanoNetwork Research Student Network to drive research student collaborations, exchanges and friendships.

ISTA International Strategic Technology Alliance 國際應用科技開發協作網

AUSTRALIAN TECHNOLOGY NETWORK OF UNIVERSITIES

Expanding the NanoNetwork

With many of the core group of NanoNetwork researchers now engaged in collaborative projects, we are seeking to broaden researcher engagement with the network from across the ATN. To assist in this, a series of research seminars will be presented at each member university to give interested researchers the opportunity to get information about the network and explore how they might become involved.

The seminars are aimed both at researchers who are interested in growing international links in their research and who see their research interests as aligned to the foci of the NanoNetwork, as well as research leaders/ managers who see the NanoNetwork as a vehicle which may assist their university to grow and deepen its research capabilities and capacity.

The first seminar will be held at
Curtin University Council Chamber
Tuesday 9 March
3:00pm – 5:00pm

A NanoNetwork PhD Student cohort

Recruitment is underway for up to 10 new PhD students across the 5 ATN universities under the 'renewable energy' and 'nanomedicine' banners - each with an underlying nanomaterials theme.

Whilst each ATN university will be 'home base' for two such students, the NanoNetwork will aim to underpin complementarity and integration across the individual PhD projects, and will actively promote collaboration between ATN universities and selected Chinese partner universities. It is anticipated that some of the students, Australian and/or Chinese, will be jointly supervised by Chinese Professors and will undertake a part of their research activity as a member of this Professor's group in China.

Selected Chinese Professors are currently being appointed as adjuncts to ATN member universities, with the current recruitment timetable to see these students commencing in time to participate in the Suzhou Autumn School.

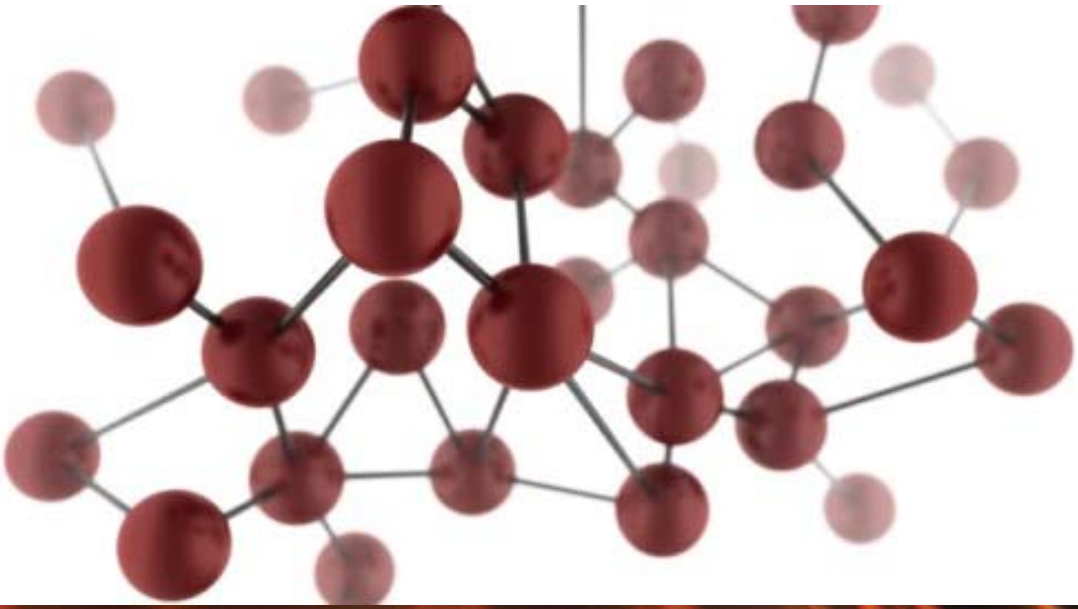
Award to one of our next generation nanoscientists

The use of contrast agents in magnetic resonance imaging (MRI) enhances image clarity and can also clearly distinguish between healthy and diseased tissues (e.g. tumour sites) within the body. Typically heavy metal based agents (e.g. gadolinium) are used for MRI, however due to rising health concerns, these products have been recently taken off the market.

To address this issue, Jos Campbell, a PhD student at School of Applied Sciences, RMIT University has developed a new generation of iron oxide based MRI contrast materials along with his PhD supervisors Dr Vipul Bansal and Prof Suresh Bhargava. The study involved highly controlled synthesis of biocompatible multifunctional core-shell nanoparticles with tumour targeting capabilities and also involved researchers from the School of Medical Sciences at RMIT and the Peter McCallum Cancer Research Institute in Melbourne.

Congratulations to Jos Campbell

Jos Campbell was awarded the best poster award with an honorarium and cash award for this work at the recent ICONN 2010 Conference. The next phase of the project is currently being discussed with NanoNetwork partners at Southeast University who bring expertise in hyperthermia applications ('tumour roasting') of these novel nanomaterials.



National Enabling Technologies Strategy released

The Government has just released its new National Enabling Technologies Strategy. The Strategy, which builds on the work of the earlier National Biotechnology Strategy (NBS) and National Nanotechnology Strategy (NNS), has been funded $38.2 million over four years to:

- support policy and regulatory development, industry uptake, international engagement and strategic research;
- build public awareness and community engagement to increase understanding of enabling technologies; and
- allow the National Measurement Institute to improve measurement infrastructure, standards and expertise.

The Strategy recognises many of the principles that the ATN and the NanoNetwork have as their core operating values, including the potential impact of nanotechnology on major global challenges; an emphasis on the importance of networks to facilitate collaboration both between researchers and with industry; and a focus on encouraging greater industry engagement and commercialisation of emerging technologies.

To support the Strategy, a Stakeholder Advisory Council with representation from a wide range of stakeholders will be formed to advise Government on important issues that may arise in the development or use of enabling Technologies, as well as an Expert Forum for Enabling Technologies to monitor emerging trends.

The Strategy can be accessed from the DIISR website.

Research Profile: A solution for radioactive waste cleanup

Profiled in the recent Royal Society of Chemistry publication, *"Nano-Society: Pushing the Boundaries of Technology"*, research undertaken by Professor Huai Zhu, Professor of Materials Chemistry at the School of Physical and Chemical Science, Queensland University of Technology, illustrates one of the potential benefits of nanotechnology.

Environmental contamination produced as a by-product of uranium processing or nuclear power generation finds its way into waste water and poses a potentially serious health threat.

Professor Zhu's team is currently examining the potential of ceramic nanofibres produced from titanium dioxide that could permanently lock away radioactive ions by displacing the existing sodium ions in the fibre. The nanofibres are a few to 40 microns in length and form thin layers, less than a nanometre in width, with sodium ions between the layers.

Professor Huai Zhu

The radioactive ions are attracted into the spaces between these layers where they are exchanged for the sodium. Once the ceramic has absorbed a certain amount of the radioactive ions, the layers collapse, locking them inside.

Ceramic is more chemically stable than metal, can last much longer and is much cheaper to make than steel. Effective measures to prevent radioactive contamination of the environment are greatly needed, particularly as the world increases its reliance on nuclear energy.

Professor Neil Furlong outlining the new Researcher Exchange Program at the ATN Conference

A Canadian Connection?

The ATN and the University of Waterloo (Canada) have recently announced a funded Researcher Exchange Program. Focus areas include nanoscience / nanotechnology and sustainability.

NanoNetwork researchers are encouraged to consider this Program and its potential to link their research with those at a Chinese ISTA partner and the University of Waterloo.

First round applications close on 31st March.

Guidelines may be accessed from the ATN website.