

INQUIRY INTO NANOTECHNOLOGY IN NEW SOUTH WALES

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Mr. Simon Johnston
The Director
Standing Committee on State Development
Parliament House
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Dear Simon

I am the convenor of the Australian Research Council Nanotechnology Network (ARCNN). ARCNN has about 950 members from Australia and overseas and about 30% of these members are from NSW. The ARCNN is dedicated to substantially enhancing Australia's research outcomes in this important field by promoting effective collaborations, exposing researchers to alternative and complementary approaches from other fields, encouraging forums for postgraduate students and early career researchers, increasing nanotechnology infrastructure, enhancing awareness of existing infrastructure, and promoting international links. Among many programs run by the ARCNN, one of the high profile activities of the Network is its International Conference on Nanoscience and Nanotechnology (ICONN), the most recent being held in Melbourne in Feb 2008. This conference drew more than 800 participants from all over Australia and 35 countries. Out of these 800 participants, about 500 are from Australia and 300 are from overseas. This is a significant growth in participation from ICONN 2006 held in Brisbane with 440 participants. ICONN 2008 featured activities covering school students, school teachers, researchers, industry, government policy makers etc. In addition to presentation of research developments in the field, occupational health, safety and environment issues, industry uptake and technology transfer, education, social and ethical issues and public outreach issues were discussed. *The Hon Tony Catanzariti MLC, Chair of the NSW Nanotechnology Inquiry also spent some time at the Conference to learn first hand the developments in the field and issues of public and policy interest.*

Nanotechnology is considered to be "the technology of the future" impacting on industry sectors such as health, energy, water, environment, transport, defence, agriculture, computing, communications and electronics. Globally governments have invested heavily in order to exploit the benefits of this technology. Nanotechnology is expected to significantly improve the quality of life of the global citizens. The Royal Society and Royal Academy of Engineering report has identified that the majority of the Nanotechnology (e.g. ICT) sector has limited concerns in terms OH&S and environmental issues, caution needs to be taken in dealing with engineered free nanoparticles, nanotubes and the use of nanoparticles in cosmetics till further studies are carried out.

In order for the NSW to be a major player in this technology sector, it is important that the NSW Government takes some initiatives for the benefit of the citizens of NSW.

- a. Invest in new infrastructure which will benefit the development of technologies of industrial interest. For example, developing prototyping and incubator facilities may benefit transfer of technology from research to industry.

- b. Play an active role in leveraging NSW resources with Federal programs to attract more Federal funds to NSW to support researchers and industry in NSW. For example, multi-user facilities accessible to the NSW research and industrial community.
- c. Create an environment where there is smooth flow of information and interactions between industry and researchers active in the field for the industrial uptake of the technology. For example, create networking opportunities like industry forums in targeted areas so that industry and research community are brought together.
- d. Encourage existing industries to explore the impact of nanotechnology on their operations to ensure that they benefit from the developments in this technology.
- e. Create an environment leading to new start-ups in this emerging field. For example, providing tax breaks, infrastructure support, technology business advice, IP protection etc.
- f. Invest in studies on health, safety and environmental effects of engineered free nanoparticles, nanotubes and cosmetic products containing nanoparticles.
- g. Address worker safety issues related to large scale manufacture of engineered nanoparticles and nanotubes. Worker education may be needed to ensure that workers are adequately protected.
- h. Examine the regulatory framework and identify its adequacies and inadequacies in meeting the needs of this new technology. Particularly identify regulatory gaps and develop policies to fill these gaps. Work with the Federal Government to ensure that there is consistency in the regulator framework of the NSW and Federal Government agencies.
- i. Develop the culture of safety by design from the early stages of development of the technology.
- j. Many NSW universities have degree programs in Nanotechnology, e.g. Wollongong, UNSW, UTSydney (UTS). Provide Universities with adequate funding to enable them to establish state of the art facilities in teaching laboratories or provide access to these facilities.
- k. Explore the need for courses in the TAFE sector and high schools to provide a skilled workforce for the emerging industry.
- l. Complement the programs of the Federal Government, e.g. National Nanotechnology Strategy, by taking into consideration of the NSW industry and researcher needs.
- m. Engage public in terms of the role of nanotechnology in improved quality of life while ensuring that the public is aware of the risks posed by some aspects of this technology (e.g. free nanoparticles and nanotubes).
- n. Address any ethical issues and impacts of this technology on society.
- o. Create programs at school level to train school teachers to be aware of the recent developments in this technology and also make use of this new technology as a source of inspiration for students to take up science.
- p. Attract major conferences such as ICONN to NSW to show-case the nanotechnology capabilities of NSW. This will lead to enhanced visibility of NSW efforts, leading to potential interactions with Australian and international communities.
- q. Enhance national and international linkages between industrial and research communities of NSW and rest of Australia and overseas through travel grant programs, visitor programs etc.

Hope these views are beneficial to the Inquiry committee and thank you for the opportunity to submit them. I will be happy to discuss these further with the committee in person, if necessary.

Best regards

Yours sincerely,



Professor Chennupati Jagadish
Federation Fellow and Convenor, ARC Nanotechnology Network