Editorial

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Biographical notes: Dr. Chennupati Jagadish was born and educated in India and worked in India and Canada, prior to moving to Australia in 1990. He is currently a Federation Fellow, Professor and Head of Semiconductor Optoelectronics and Nanotechnology Group in the Research School of Physical Sciences and Engineering, Australian National University. He is also Convener of the ARC Nanotechnology Network, serves as President-Elect of the IEEE Nanotechnology Council (NTC) and as Vice-President, Asia-Pacific of the IEEE Lasers and Electro-Optics Society, as well as on editorial boards of ten international journals. He advises many high tech companies in Australia and overseas. His research interests include quantum dots, nanowires, quantum dot lasers, quantum dot photodetectors, quantum dot photonic integrated circuits and photonic crystals. He has published more than 530 research papers, and holds five US patents. He won the 2000 IEEE Millennium Medal and received Distinguished Lecturer awards from both IEEE LEOS and EDS and Peter Baume Award from the ANU. He is a Fellow of the AAS, ATSE, IEEE, APS, OSA, SPIE, ECS, IoP, IoN, AIP, IET, AAAS.

Dr. Anita Hill received her PhD degree from Duke University in Mechanical Engineering and Materials Science. She is a Senior Principal Research Scientist and Research Group Leader at the Commonwealth Scientific and Industrial Research Organisation. Her group's research is in dynamics and transport of atoms, ions and small molecules in materials. Her multidisciplinary group contains physicists, chemists, materials scientists, mechanical, electrical, chemical and materials engineers, mathematicians, metallurgists, and formulation scientists. Materials under development include gas, liquid, vapor, and ion separation membrane materials; hierarchical porous inorganic materials; nanostructured light alloys; and novel materials characterisation technique development.

Dr. Peter Majewski is Research Professor at the Ian Wark Research Institute of the University of South Australia. Before he moved to Australia, he was Senior Scientists and Deputy Department Head at the Max-Planck-Institute for Metals Research, Stuttgart, Germany. His background is materials science and his

research focus is nano and biotechnology, materials synthesis and manufacturing, materials engineering, and phase diagram studies. Current research projects focus on the surface engineering of nano and micro-particles for applications in cancer diagnosis and treatment as well as water treatment. In addition, the studies include the up-scaled nano-manufacturing of these materials including continuous synthesis of nanoparticles and rapid deposition of self-assembled monolayers on surfaces.

There has been a significant investment and growth in nanotechnology worldwide in the past decade or so. Nanotechnology is expected to create multi trillion dollar industries in the next two decades. Nanotechnology is predicted to have a major impact in all industry sectors. Australia has active research programs in many areas of nanoscience and nanotechnology with major strengths in nanomaterials, nanobiotechnology, nanoelectronics, nanophotonics, nanofabrication and nanocharacterisation. An Australian Academy of Science Benchmarking Project has shown that Australia is number 7 in the world based on publications and patents. In order to maintain this ranking, both Australian Government (Federal and State) and Industry need to invest in this emerging field. There are about 150 research groups in Australia working on various areas of nanoscience and nanotechnology. Many Centres of Excellence funded by the Australian Research Council have been actively pursuing various aspects of nanotechnology (e.g., Functional Nanomaterials, Quantum Computer Technology, Electromaterials, Ultrafast Optical devices, Atom and Quantum Optics). Australian Research Council has established the Federation Fellowship program to attract and retain top researchers in Australia in various fields. A significant number of Federation Fellows are working in the fields of nanoscience and nanotechnology indicating the strength of Australian research in this field. CSIRO, ANSTO and DSTO have nanotechnology programs and recently CSIRO created a flagship program in 'niche manufacturing' which has significant component of nanotechnology research. Australian Government Department of Industry, Tourism and Resources has recently created an Australian Office of Nanotechnology which is addressing issues of industrial and public interest including nanometrology, standards, public outreach, occupational health and safety issues etc. Australian Government has announced funding for NanoFabrication (Australian National Fabrication Facility) and NanoCharacterisation (Australian Microscopy and Microanalysis Research Facility) facilities to create multi-user infrastructure accessible to the wider research community. There are other entities such as Australian Nano Business Forum, Australian Nanotechnology Alliance, Nanotechnology Victoria, Small Technologies Cluster, and miniFAB which are addressing various aspects of nanotechnology. Australia also hosts a bi-annual international conference on nanoscience and nanotechnology (ICONN) and next conference will be held in Melbourne in Feb 2008.

This special issue features a selection of 'Nanotechnology Research Activities in Australia'. Both contributed and invited papers (all refereed) cover a broad range of topics. We thank all the authors and reviewers for their contributions and efforts. We greatly appreciate the efforts of the invited contributors to the special issue (Calum Drummond, Michelle Simmons, Matt Trau, Gordon Wallace and their co-authors). Our special thanks are due to Ms. Liz Micallef and Ms. Ilonka Krolikowska for their assistance with the review process. Further information about Australian Nanotechnology Research Activities could be found at the Australian Research Council Nanotechnology Network website at: www.ausnano.net.