



The ARC Centre of Excellence Electromaterials Science (ACES)/ Intelligent Polymer Research Institute (IPRI) node, provided scholarships to four undergraduates from the Bachelor of Nanotechnology degree, University of Wollongong, to attend the International Conference of Nanotechnology and Nanoscience (ICONN2008) held in Melbourne late February. The four students were selected via a competition amongst all senior undergraduate students in Nanotechnology. Following is their report.

### **ICONN 2008 Melbourne**

*By Dennis Antiohos, David Marshall, Shane Ellis and Tom Higgins*

Nanoscience and nanotechnology are amongst the fastest growing area of research and ICONN was used to provide a forum for discussion about all aspects of the emerging nanotechnology field. The key ideas from this conference, were that nanotechnology cannot be considered as one field, but that it incorporates a vast range of disciplines where people from different backgrounds come together. It is important in further advancing nanotechnology positively that researchers, the private sector and governments have to work together in a cooperative fashion to maximise the benefits of this field.

The symposiums were split up into 6 related nanotechnology subject areas comprising of (1) nanomaterials, (2) nano biotechnology, (3) nanophotonics, (4) nanoelectronics, (5) nano-ethics, and (6) nano-industry. These key subject areas had multiple seminars (15 mins each) given by different researchers. Plenary sessions had distinguished speakers speaking on different topics concerning nanotechnology. Two of plenary talks were really dynamic and inspiring because they really broadened our view on nanotechnology and highlighted key issues involved in this subject matter.

The first was by Professor Michael Gratzel. His talk was related to light induced electron transfer reactions in micro-heterogeneous systems and consequently the development of these phenomena to produce dye sensitised solar cells. He made some very clear and concise points

on the imperative nature of developing new and renewable energy systems so that human kind will be able to move away from crude oil and coal to make the earth sustainable.

The second particularly interesting talk was presented by Dr. Don Eigler from IBM. His main focus was on new types of computing processes to further enhance processing capability and speed. His research group at IBM are producing nanostructured scaled devices where processing does not simply depend on the 'on' or 'off' state of the system, but also incorporates the spin of an electron (spintronics). Dr. Eigler calls it the 'Cascade Effect' and information can be coded by moving electrons into different energy states. In a localised region, electron actions seem random but over the bulk of a material they have an underlying order, and this is the basis for processing and storing information. The still highly random nature of the system has, at this time caused a lot of problems as information is lost, and random information is generated. This process is still in its infancy.

Cheers it was fun! *Dennis Antiohos, David Marshall, Shane Ellis and Tom Higgins.*

Coordinator of the Nanotechnology Degree, Prof. Will Price, said that it was a fantastic opportunity for the students to see and hear the latest research and development in this emerging area. The students also had the opportunity to attend specialist workshops and talk to industrial companies who want to employ graduates in Nanotechnology.

Prof. Gordon Wallace, director of ACES/IPRI, was glad to be able to provide this opportunity to those students as it is a great investment to inspire high quality students into careers in the forefront of technology.