

SCHOOL OF PHYSICS ALUMNI & FRIENDS NEWSLETTER

MESSAGE FROM THE HEAD

PROFESSOR DAVID N. JAMIESON



As 2009 drew to a close the remarkable and unexpected turmoil in the global financial systems that was such a feature of 2008 and 2009 seems to be abating somewhat.

Hopefully this will

ease the situation for the University and the wider community who have been affected. We physicists are used to dealing with the reliable and immutable laws of nature but have to keep on top of the finances that support our research. Fortunately late 2009 brought some excellent news in that area: we had a 47% success rate with our proposals submitted for funding under the prestigious Australian Research Council (ARC) Discovery program. This compares with the national average of 23% and shows the quality (and hard work) of our staff. We were also very pleased to see that the Excellence in Research for Australia (ERA) trial awarded the highest rating for the physical sciences for the University of Melbourne. This lists our work in the category of "exceptional quality research outputs consistently and substantially exceeding world performance in this Field of Research". We were also pleased to be a member of the team of leading Australian researchers who will receive an ARC grant of \$42M in funding for the development of a bionic eye capable of restoring vision to the blind. Steven Praver will lead the involvement of the School of Physics in this very ambitious project. Steven is also leading the new Materials Research Institute that focuses cross disciplinary research in this area for the University.

It was great also to see that 2009 delivered the largest cohort of undergraduate students into our lecture theatres on record. We needed to run several parallel streams of first year lectures because no one lecture theatre was big enough to accommodate the demand! Our hard working laboratory staff

were flat-out providing first year experiments for all these students which required night laboratory sessions to fit everyone in.

An outstanding result for the School was the promotion to two new Professors of Physics: Les Allen and Stuart Wyithe. Les was recognised for his leading research in the study of matter at the atomic level and the potential of the new generation of high power electron microscopes to place individual atoms in crystals using quantum mechanics. Stuart was recognised for work on quasar formation and the effect of the earliest stars on the interstellar medium. The work done by Les and Stuart has been influential around the world.

Our 2009 public lecture program drew capacity crowds. Aply organised by Prof Jeremy Mould from the Astrophysics group, the annual July Lectures in Physics were on an astronomy theme to celebrate the 2009 Galileo International Year of Astronomy. Jeremy himself was the recipient of the highly prestigious 2009 Gruber Prize in cosmology (see next column). We also hosted a very busy day for Physics teachers on some of the key topics in the new study design. This day saw many lively discussions about the best ways of teaching some of the challenging topics in the curriculum and the features of the new Melbourne Model BSc curriculum at the University! Michelle Livett and Roger Rassool and their team did an excellent job organising this event for our colleagues in the secondary education sector.

We look forward throughout 2010 to celebrating the 50th anniversary of the invention of the laser and hope you will get a chance to hear more about these and other event in Physics in 2010!

Professor David N. Jamieson



2009 GRUBER PRIZE

COSMOLOGY PRIZE OF THE
PETER AND PATRICIA GRUBER
FOUNDATION

The recipients of the 2009 Cosmology Prize of The Peter and Patricia Gruber Foundation are, (pictured below from left to right) Jeremy Mould, Professorial Fellow at the University of Melbourne School of Physics, Wendy Freedman, Director of the Observatories of the Carnegie Institution of Washington in Pasadena, California; Robert Kennicutt, Director of the Institute of Astronomy at the University of Cambridge in England.

These three renowned astronomers are being honoured for their leadership in the definitive measurement of the value of the Hubble constant, one of the most important numbers in astronomy. The Hubble constant indicates the rate at which the universe has been expanding since the "Big Bang," thus connecting the universe's age with its size.

The Cosmology Prize was the first to be awarded when the Gruber International Prize Program was inaugurated in 2000; and its tenth anniversary, which the Foundation celebrated this year, coincides with the International Year of Astronomy.

Freedman, Kennicutt, and Mould received the Prize on August 4, 2009, at the opening ceremony of the International Astronomical Union's General Assembly in Rio de Janeiro, Brazil.

The prize consists of a gold medal and \$500,000.



MELBOURNE MATERIALS INSTITUTE

Professor Steven Praver has been appointed as the Inaugural Director of the Melbourne Materials Institute: one of three new Research Institutes established to lead the University's research efforts in key interdisciplinary fields, such as Energy and Sustainable Societies.

The University of Melbourne has more than 100 researchers engaged in materials-based research. Drawing on these established strengths, the Melbourne Materials Institute will establish a critical research mass in Physics, Engineering and Biosciences, with state-of-the-art laboratories, equipment and facilities.

The Institute will develop novel technologies by combining established capabilities in new ways, collaborating on large-scale interdisciplinary projects. Already, the Institute is working with University-wide partners to establish a multi-million dollar Neuroimaging Institute and it is a key partner in the multi-disciplinary development of the Bionic Eye.

The Melbourne Materials Institute is the entry point for University and industry partners seeking to invest in and collaborate on materials research that will deliver innovative, enabling technologies. We lead the University's engagement with Better Place Australia and the Defence Science and Technology Organisation resulting in major research agreements and partnerships. In the latest ARC round, we received a major grant to work with Hewlett-Packard to build diamond-based applications for quantum computing. Other projects funded include the development of new and flexible processes for the design and construction of advanced materials for future applications in nano- and biotechnology, tuning membrane chemistry for desalination and water reuse applications, and solving fundamental problems of friction and lubrication to enable miniaturizing machines and mechanical devices below the micron scale.

In late-2009, the Melbourne Materials Institute will move into its new purpose-built home in the School of Physics, giving a physical home to ventures addressing the compelling materials-based problems of the new century.

CXS FINALIST FOR SCHOOLS FIRST AWARD

GROWING TALL POPPIES PROGRAM

Santa Maria College Northcote, in collaboration with CXS, has been announced as the State Finalist of the Schools First Award 2009 for their educational outreach program, Growing Tall Poppies (GTP). Schools First is a new grant system funded by the National Australia Bank in a partnership with the ACER and the Federation of Young Australians. Out of over 1500 applications (15% of schools in Australia applied), 68 grants were awarded of which 16 went to Victorian schools.

Initially it was announced that the CXS partnership, via Santa Maria College, was a Victorian Impact Grant winner and that GTP had been awarded a \$50,000 local impact grant – complete with giant novelty cheque! Within a few weeks the 16 Victorian winners were invited to a workshop and cocktail party in which the winner of the State award was announced. GTP was delighted to discover that it was again successful and awarded a further \$50,000 for the program.

"This is a remarkable achievement, especially in the light of the truly superb partnerships that were in contention. It was very humbling to see such great work going on in the community. It was also great to see the National Australia Bank recognising work that is trying to promote the sciences," said CXS Director Professor Keith Nugent. The Growing Tall Poppies program, which aims to encourage more students to the study of physics through working with active working scientists, has been supported by the Catholic Education Office, Akorn Educational Services, and a grant from the Knowledge Transfer Office of the University of Melbourne.

The program is now in contention for the National Award and a grant of \$500K - \$1M, which will be announced at a dinner with Ms Julia Gillard, Australia's Deputy Prime Minister, and other luminaries in late November.

BEST OF LUCK GTP!

UNDERGRADUATE LAB REFURBISHMENT

A major redevelopment of the Part II/III (2nd & 3rd year) undergraduate student laboratories was completed in time for the second half of semester one 2009.

The recently appointed Dean of Science, Professor Rob Saint officially opened the labs later that year on 24 June. While it was great to see the completion of this large open plan flexible learning space on the ground level, we still aim to press on with a future development of the level above and continue to seek funds for the project.

The area outside the Laby/Hercus theatres would be enlarged to include the external walkway with the area flowing east into the student laboratories. The space would provide world class conference facilities with the Museum being incorporated into the open plan area, and provide magnificent flexible group learning and social interaction spaces for graduate or undergraduate students.

We need support to make this project a reality and continue to investigate all possibilities.



Photo credits: Natalie Pestana, Faculty of Science, University of Melbourne

Top: Theoretical Condensed Matter Physics postgraduate student Adrian D'Alfonso

Above: Professors Geoff Taylor, Keith Nugent, Rob Saint (Dean of Science), Ms Helen Conley, Professors Steven Praver, Rachel Webster

**IF YOU HAVE ANY ADVICE OR
SUGGESTIONS, PLEASE CONTACT:**

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