Director’s Message

IPAS is no more and no less than the research conducted by our members, and as such, IPAS has had a productive start to 2012. We have established 6 Research Themes in areas identified as building on our strengths and as important to our future success. The recently filmed video describing the 6 Research Themes can be viewed via this link.

In April, IPAS hosted a networking showcase for 80 key IPAS stakeholders, including University leaders, State Government, Industry and academic collaborators. The event showcased our 6 Research Themes' strengths, capabilities and collaborative research solutions. The Vice-Chancellor took the opportunity to announce the new Chair of Experimental Physics, Professor Andre Luiten, currently at University of Western Australia. The State Government is providing start up funding of $1M to support the new Chair. We look forward to welcoming Andre and his team of researchers in February 2013 and to the establishment of a world-leading suite of facilities for precision measurement.

The research being conducted by IPAS members has attracted a great deal of interest from international researchers. This has led to several collaborations being formed both nationally and internationally with visiting academics and students from Germany, Italy, Belgium, China and Brazil calling Adelaide home over the next few months for periods of up to one year. As a result we look forward to some exciting research outputs and publications.

Each year IPAS provides $1,000 Transdisciplinary and Disciplinary Prizes to the student who prepares the best presentation in each category. The recipient of the Transdisciplinary Prize this year is Karina Martin from The School of Molecular and Biomedical Science and Witold Bloch from the School of Chemistry & Physics was awarded the Disciplinary Prize. I would like to thank Merry Wickes for her support of the IPAS Transdisciplinary Prize.

Work on the new illumin8 building is on schedule with handover planned for 28 February 2013. To view live progress please go to the webcam link below:

http://illumin8or.services.adelaide.edu.au/

I hope you enjoy the snapshot of the IPAS research provided in this Newsletter and look forward to sharing with you many more successes from the IPAS team in the future.

Tanya Monro
Talking Paper Papers Series

Our Talking Papers Series has been created to highlight research within our research themes with the potential for high impact. Below are a couple of recent examples of papers published.

Talking Paper #3

Medical Diagnostics & Biological Sensing Theme

*A new sensing architecture for use in-vivo?*

The whisper is that IPAS is looking to work with people who need to measure proteins or other bio-molecules “in-Vivo” thanks to a new sensing architecture demonstrated in the paper “Highly efficient excitation and detection of whispering gallery modes in a dye-doped microsphere using a microstructured optical fiber”.

Full article from the IPAS blog.

Listen to the [audio interview](#) which accompanies the article.

Talking Paper #4

Optical Materials & Structures Theme

*Diamonds inside, new medium for quantum information.*

Quantum information science promises to be a next big thing. Diamond nano-crystals can be made to exhibit quantum behaviour through single photon emission but are extremely fiddly to manipulate. Microstructured optical fibres provide a great platform for interacting light with matter and transmitting information over potentially large distances at very low cost. By mixing diamond nano-crystal powder into tellurite glass & taking it through a well established process to create microstructured fibres, IPAS researchers have paved the way for future work that might give us ways to create simple, effective, cheap technologies that bridge quantum/classical, photonic/electronic & nano/micro/macro scale environments. These technologies could well provide Industry with new tools for the creation of devices that can send perfectly secure quantum messages, re-define the standard for how we measure light intensity & create new types of sensors.

The paper “*Diamond in Tellurite Glass: a New Medium for Quantum Information*” was published in and appeared on the cover of *Advanced Materials*. It shows the world a new hybrid material with implications for quantum information processing and is understandably attracting quite a lot of attention.

Full article on the IPAS blog.
Degree’s Awarded

Congratulations to the following 6 PhD and 1 MSc graduates on being awarded their degrees.

Doctor of Philosophy

Michael Oermann  Sean Manning  Erick Schartner  Wen Qi Zhang  Ove Johan Gustafsson  William Tieu

MD Samiul Sarker

Master of Science

IPAS Award Recipients

Tanya Monro elected to the Australian Academy of Science and recipient of the AAS Pawsey Medal for 2012

Congratulations to Tanya for being among the new Fellows to be admitted to the Australian Academy of Science!

Representing Australia’s leading research scientists, the Australian Academy of Science annually honours a small number of Australian scientists for their outstanding contributions to Science by election to the Academy.

Tanya has been acknowledged for her internationally significant achievements in “Developing nanophotonics for nonlinear optics and sensing, resulting in novel solutions to diverse measurement problems.”

Tanya was also awarded the Pawsey Medal for research in Physics for 2012.

VESPR: finalist in the Australian Innovation Challenge

Congratulations to Alexandre François and Tanya Monro, inventors of the VESPR (Versatile Enhanced Surface Plasmon Resonance) sensor, shortlisted as one of the top 5 inventions in the Australian Innovation Challenge in the Health category.

The VESPR sensor will enable patients to get rapid diagnoses of diseases such as cancer, HIV and influenza from their GP. The device is cheap to manufacture and easy to use and the team hopes it will be on the international market within a few years.

IPAS Students win University Prizes

Congratulations to Stephen Warren-Smith and Shaghik Atakaramians who were presented with the prestigious University Doctoral Research Medals for 2011 at the University’s March Graduations Ceremonies. Stephen was also a joint winner of the Harold Woolhouse Prize for the best PhD in the Faculty of Sciences.

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Director

Mr Piers Lincoln  piers.lincoln@adelaide.edu.au
Institute Manager
Funding Successes

In 2011 IPAS members successfully secured new competitive grants totaling over $8M. Institute members also secured over $1M from Industry Partners through collaborative research projects.

Examples of funding recently won by IPAS researchers are shown below.

$150k funding won for Waveguide Laser Project

Congratulations to David Lancaster who has been awarded $150k from the DVCR managed by Adelaide Research & Innovation (ARI) through the Commercialisation Accelerator Scheme (CAS). The funding is to help accelerate the commercialisation of a new class of compact efficient inexpensive laser.

$120k funding awarded for Silica and Germanate Glass High Power Fiber Laser Sources Project

Congratulations to Tanya Monro, Jesper Munch, Heike Ebendorff-Heidepriem, David Lancaster and David Ottaway for being awarded $120k from the Asian Office of Aerospace R&D to work on the development of Silica and Germanate Glass High Power Fiber Laser Sources.

$100k Funding won for Bioscience Labs

Congratulations to Jeremy Austin, Linh Nguyen, Tanya Monro and team for winning $100k to fund the Adelaide Integrated Bioscience Laboratories, part of BioInnovation SA.

This funding will help build the Advanced DNA Forensics Facility within the Australian Centre for Ancient DNA and develop and implement quality accreditation and method validation for a range of DNA-based methods focussing on degraded human skeletal remains.

IPAS wins first grant for mining technology

Congratulations to Tanya Monro and Stephen Warren-Smith for their successful application to the Deep Exploration Technologies CRC. They will receive $50k to work in collaboration with the School of Earth & Environmental Sciences on optical fibre sensors to measure trace metallic elements within drilling fluids.
Funding Successes cont.

Sir Ross Smith & Sir Keith Smith Fund Award

Congratulations to Murray Hamilton for being awarded a total of $29k over two years from The Sir Ross & Sir Keith Smith Fund for his project entitled “Polarsonde: a meteorological sensor to detect aircraft icing hazard”. This fund commemorates the achievements of the two distinguished South Australian pioneer aviators and is dedicated to the advancement in the State of the science of aeronautics and of education therein.

Funding won for Luminescence research

Congratulations to Nigel Spooner for his successful application at the Australian Institute of Nuclear Science and Engineering Research Award. Nigel and his team will receive $15k to work on low level uranium, thorium and potassium determinations for luminescence research.

German research students to visit IPAS

Congratulations to Heike Ebendorff-Heidepriem, Murray Hamilton and Gavin Rowell on their success in being funded under the DAAD_RISE program to host 5 German students. The students will arrive in early August and complete an 8 week internship at IPAS under this program.

Research Abroad Scholarship

Congratulations to Jiafang Bei, PhD student working on mid infrared glass development, who has been awarded an Adelaide University Graduate Centre Research Abroad Scholarship. Jiafang will use these funds to visit labs in France and China in June.

IPAS Visiting Speakers

IPAS continues to build collaborations with international and interstate researchers and teams and in the past few months IPAS has hosted the following speakers:

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<th>Date</th>
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<td>Prof Igor MeGlinski</td>
<td>University of Otago, NZ</td>
<td>Modern Methods in Experimental Bio-Photonics</td>
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<td>9 January</td>
<td>Prof Andre Luiten</td>
<td>University of Western Australia</td>
<td>Laser-Assisted Measurement</td>
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<td>10 January</td>
<td>Dr Jean-Jacques Zondy</td>
<td>Laboratorie Commun de Metrologie, France</td>
<td>Contribution of Nonlinear Optics to Precision Measurements and high-Resolution Spectroscopy</td>
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<td>10 January</td>
<td>Dr Gunter Steinmeyer</td>
<td>Max-Born-Institut, Germany</td>
<td>An Expedition Through Nonlinear Optics: From Kerr Saturation to Fiber-based Guiding of 10fs Pulses</td>
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<td>15 February</td>
<td>Dr Yonggang Zhu</td>
<td>CSIRO, Melbourne</td>
<td>Lab-on-chip devices for Chemistry &amp; Biology</td>
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<td>2 April</td>
<td>Dr Ewa Goldys</td>
<td>Macquarie University, NSW</td>
<td>Nanodiamond in Glass: A New Approach to Nanosensing</td>
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