



SUPA NEWS

5 NOVEMBER 2007

THREE IN A ROW FOR IOP

A hat-trick of recent successes for the Institute of Photonics at the University of Strathclyde has reinforced its position as an exciting centre of laser expertise and useful research.

Dr Stephane Calvez is the IOP lead in a three year award for £760,000 from EPSRC as part of a £3.5M consortium with Cambridge and led by St Andrews. The project will develop femtosecond lasers in a modular format. This allows lasers built for one application to be easily transferred to another as the uses range widely from high-speed communications to eye surgery.

The Solid State Laser Development team undertake research which will produce practical improvements to laser performance, be that in beam quality, functionality or cost. Their 'Low cost, high performance lasers' project, will build on new techniques possible and components available which could radically extend the uptake and uses of the Ti:Sapphire laser, currently a versatile but expensive luxury in the laboratory. This £385,000 award from EPSRC to the IOP has already attracted significant interest from industry.

The 'Advanced Disk Lasers: New horizons in solid-state and semiconductor lasers' programme is worth a further £327,000 from EPSRC to the Institute. Dr Alan Kemp will lead in this project and his expertise in thermal modelling and management will be a prominent part of the research. This project brings together both semiconductor and solid state laser expertise from across the IoP.

Dr David Burns, who leads the SSLD team, said 'These new projects will bring 3 new post-doc positions and 4 PhD students and includes contributions from several teams in the Institute of Photonics.'

Allied to one of the Institute's two prestigious Platform Grants, this portfolio of work sits alongside DTI, EU and industrially funded programmes giving a strategic blend of academic excellence and commercial value.

Tim Holt, Chief Executive of the IOP added 'This latest round of good news strengthens our research portfolio, develops our cross-team working and really delivers on our vision of strategic and applied research.'

simon.andrews@strath.ac.uk

ADAPTIVE MICROSCOPY- INSTITUTE OF PHOTONICS GAINS THIRD FELLOWSHIP

Dr Amanda Wright has recently been awarded a Royal Academy of Engineering/ EPSRC Research Fellowship in Adaptive Microscopy.

After completing her PhD in Force Measurement of an Optical Trap at the University of Manchester, Amanda took the road north to join the Institute of Photonics in February 2004. Since then she has been promoted to Associate Team Leader in Prof. John Girkin's Applications Team.

Over the next five years, Amanda will be building on the team's work in adaptive optics and in advanced microscopy techniques. Her objectives include investigating equivalents to the 'guide star' technique used in astronomy where much of the early work in adaptive optics originated. Ultimately, she expects to bring together a range of techniques to demonstrate active aberration correction in a combined imaging and particle manipulation system.

Amanda said 'This technol-

ogy will be developed with the primary aim of improving image quality and resolution when imaging at depth into biological samples. So it will directly benefit biologists and life scientists who wish to make 3D images of biological media and monitor biological processes that occur below the surface of a sample. It will be very important in this project to involve multidisciplinary collaboration with biologists and life scientists.'

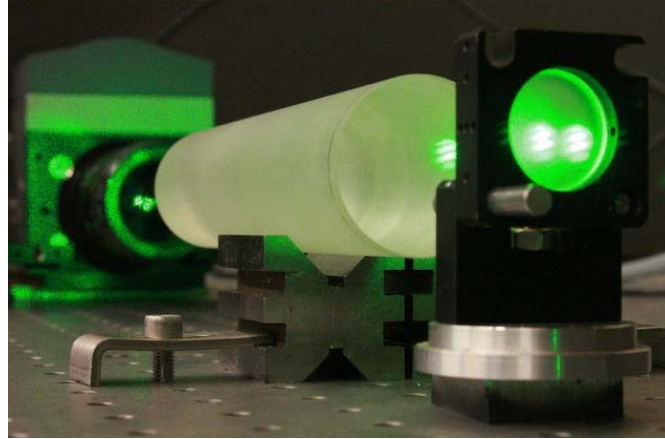
The Chief Executive of the IOP, Tim Holt added 'This award is a real testament to Amanda's hard work and successes in the last three years and it is great to have her further potential recognised in this way. Her work also fits well with the Institute's remit of conducting commercially oriented research.'

Amanda joins Dr Jennifer Hastie and Dr Alan Kemp as holders of Fellowships at the Institute.

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WORLD THROUGH A SPINNING WINDOW

Following presentations at the recent SPIE conference in San Diego, USA, the work of SUPA researchers is to be reported in the SPIE newsroom. Together, Dr Jonathan Leach (Optics group, University of Glasgow) and Dr Amanda Wright (Institute of Photonics at the University of Strathclyde), are currently investigating how the World look if it was viewed through a spinning window. The project is an EPSRC funded component of the research programs of Prof Padgett, Prof Girkin and Prof Barnett. Perhaps surprisingly, if viewed through as spin-



Two moving interference patterns incident on a ground-glass screen. The screen is imaged onto the camera such that one of these interference patterns is imaged through the 20cm long glass bar and one is

ning window, the World is in fact rotated.

The mechanism for this effect was termed "ether drag" by R.~V.~Jones who

investigated the influence of moving dielectric media on the properties of light in the 1970s. We have taken two approaches to

investigating this problem. Firstly, at the Institute of Photonics, University of Strathclyde, we are rotating a 20cm glass bar at approximately 200Hz using a geared system built upon a washing machine motor and attempting to measure the rotation of transmitted images. Our second approach is to rotate or translate the light, rather than the dielectric medium, and use a camera with a 5ns shutter to freeze the motion, see figure. The initial results using this technique are very promising, confirming predictions relating to image rotation.