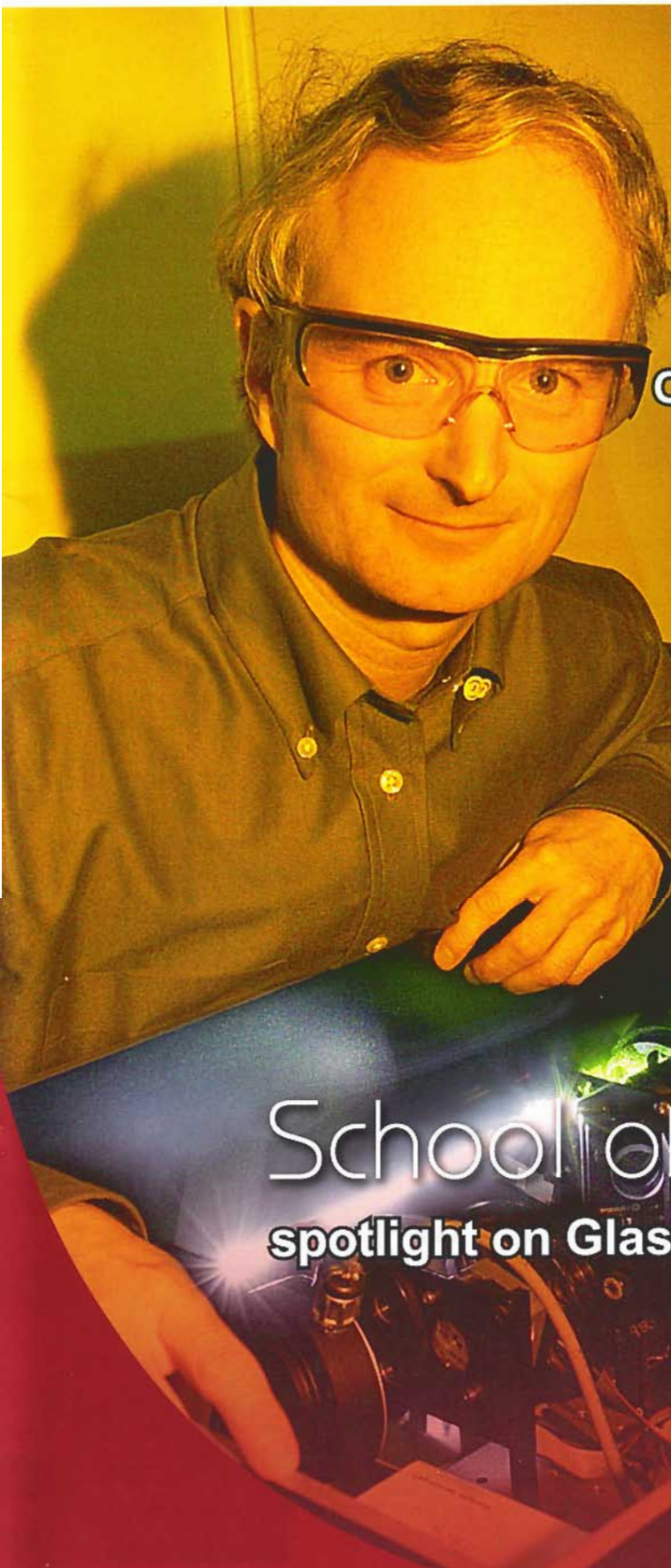


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The future is bright

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Ten years strong



John Girkin

LAST YEAR marked the 10th anniversary of Strathclyde University's highly successful Institute of Photonics. The brainchild of Professor Allister Ferguson, Deputy Principal of the University and Technical Director of the Institute, the Institute was set up to bridge the gap between academic research and the needs of industry and, within this, to actively promote interaction with life sciences.

The appointment of a business-oriented Chief Executive (as opposed to the traditional research active Head of Department) has been a key element in the success of the Institute. The first, Karen Ness, brought technical consultancy and economic development expertise and the current, Tim Holt, brings more than 20 year's experience in the laser industry. A full time Business Development Manager, Simon Andrews, is tasked with interfacing with industrial collaborators and driving the commercialisation of the Institute's technology.

Professor Ferguson explains 'It's an approach which has paid off. To date the 40 strong

research unit has worked with more than 150 companies - from local SMEs to global multinationals - and the Institute has raised more than £12M in research funding.'

Life science applications

The Institute's Application's Team, guided by Professor John Girkin who has a background in medical devices, spearheads the application of photonics to the challenges presented by life sciences. Among its aims the group hopes to improve medical diagnostics through superior imaging techniques and develop advanced microscopic imaging methods based upon laser excitation.

Close collaboration with clinicians and life science researchers has necessitated both the development of novel instruments, based upon known technology, and the progression of new areas of photonics research with ideas and technology sometimes being borrowed from other areas. Examples of current projects include novel dental imaging techniques being pursued in collaboration with

Dundee Dental School and a multinational company; development of light sources to create structured light and enable imaging deeper into cells; and detection of parts per trillion of chemicals inside a laser cavity. Meantime adaptive optics, originally developed for astronomers to improve the quality of their images, have been integrated into microscopy to allow greater resolution of cellular images. Dr David Burns' Solid State Laser Development Team is also using components from these optics inside laser cavities to optimise the performance of lasers and extend their useful life. More recently, work on adaptive optics outside the laser cavity has led to an improvement in the effectiveness of free-space optical communication systems.

Cross-disciplinary collaborations

Many of the Institute's successes stem from linkages across disciplines. Within the University of Strathclyde itself there are currently links with Bioscience, Pharmacy, Bioengineering, Chemistry, Physics, Electronic and Electrical Engineering, and Marketing. Strathclyde's Centre for Biophotonics meantime was co-founded by Professor Girkin as realisation of the potential applications of photonics to life sciences grew. The Institute also has links with other Universities worldwide, successfully collaborating with colleagues from life sciences, chemistry and material development areas.

Engaging with industry

An Industrial Membership Programme (IMP) run by the Institute aims to stimulate better understanding of different industry sector's needs and

to keep the Institute in touch with the realities of industrial applications. The programme offers companies with an interest in, or need to be engaged in, photonics to participate in the wider Institute community. Initial meetings between Thales (a large international defence company) and Astra Zeneca, for example, have shown great potential for the sharing of ideas and the cross fertilisation of innovation.

Future plans

The Institute intends to continue to seek out challenges to mix the purely academic with the real world requirements of industry. The granting of a Proof of Concept award by Scottish Enterprise to the Institute and the Department of Chemistry for example will enable them to work together on 'Novel and functional UV transmissive polymers'. This will open up access to low cost UV LEDs - now available in the 250 to 350nm wavelength range - to a wide range of chemical and biological sensing, removing the need for an expensive light source.

Whatever challenges the Institute faces, it's obvious that the future is bright - the future is photonics.

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