External Grants & Commercialisation Activities

In 2003, the School derived about 40% of its income (around $11 million) from external sources that included competitive research grants from various ARC Schemes, involvement with Co-operative Research Centres, other Government (DITR, DCITA and DEST, as well as ACT government) and non-government grants and direct industry contracts. There were more than 70 active ARC grants in 2003 and the total number of individual grants/contracts exceeded 230. The School's engagement with industry ranged from involvement in the Australian Photonics and the Functional Communication Surfaces Cooperative Research Centres, through successful joint grant applications with industry (ARC Linkage, ACT Knowledge Fund, IR & D Board), direct industry contracts/joint ventures and involvement with spin-off companies.

The School's interactions with industry not only bring income into the School but help to build long term relationships that benefit the School's research profile and often stimulate commercialisation of the School's research. This approach supports the School's strategy of pursuing research that covers both fundamental and applied (pre-commercialisation) activities. Such a broad research profile and overlap between the fundamental and applied programs can often provide some surprising results in which fundamental research achievement can lead to important commercial opportunities. For example, three spin-off companies have arisen from quite fundamental research in the School. Such spin-off companies include: RPO P/L, which is commercializsng innovative polymer/glass composites with a range of applications in optical communications and as smart optical films, and Vimed P/L, which is commercialising novel nanoparticles that have applications in medical diagnosis. A further spin-off opportunity developed out of nanoindentation in silicon that has prospects for an entirely new memory technology. A company, Wriota, is to be established in 2004 to commercialise this research.

The following applied research projects in the School are being explored for potential commercialisation. Patents have been granted or provisional patents lodged in all of these areas.

High Brightness Helicon Plasma

A revised contract has been negotiated with FEI and rolled over into an ARC Linkage grant. A new patent for a design method for ion extraction devices has been lodged and it is proposed that FEI Corporation will take over the patent. The project is progressing well with the achievement of good brightness in devices designed by the Helicon Plasma Group and engineered by FEI, the industrial partner.

Modulated Solid State Spectrometer (Moss)

Two MOSS instruments, that provide a temperature image and other properties of high density plasma streams, were sold during the year – one multi-channel instrument to Max Planck Institute of Physics and one single channel instrument to Associazione Euratom-Eneasulla Fusione.

Optical Temperature Measurement

A Knowledge Fund grant was obtained in conjunction with BHP Steel (now Bluescope) to develop an industrial radiation thermometer for the assessment of temperature of streams of molten steel and slag exiting a blast furnace. If successful, it is likely that Bluescope will enter into a Linkage grant for the further development of this technology for high temperature measurements. Dr Howard has also progressed the technology during the year and has developed a space domain method of measurement of temperature that complements the frequency domain method. A new patent is being considered to protect this technology development.

Suppression of Voltage Drops in Power Systems

There is some interest from a potential commercial partner for this development that resulted from construction of stable high voltage supplies for the H1 heliac instrument.

Visualisation and Modelling of Porous Media

Further major contracts for the evaluation and modelling of oil bearing rock and for the evaluation of porous materials using a novel X-ray CT scanning instrument and developed analysis and modelling software have been received. Part of this work has been done in conjunction with the CRC for Functional Communication Surfaces. A commercialisation pathway is currently being explored.

Bush Lan

A Knowledge Fund grant was obtained to assist with the development of this innovative technology that is being applied to cost-effective internet access for remote subscribers. In addition two ARC Linkage grants have been obtained to commence in 2004. These will investigate aspects of the market for Bushlan and assist with the development of the technology. Several complete Bushlan boxes have been built and a wireless link to test the technology has been established across campus to the Engineering Building.

Carbon & Bn Nanotubes

Sales of Boron Nitride nanotubes continue to be made in small amounts. A potential industrial partner Alminco (a supplier of mining equipment) has agreed to enter into an ARC Linkage grant to assist with the scale-up of the laboratory equipment to manufacture these materials on a large scale.

Ion Thruster Rocket

Interest is being expressed by NASA in this plasma technology that has potential for rocket propulsion.

Nanotitre Plates

A Knowledge Fund grant has been applied for to progress this technology that involves development of a multi-cell plate for the screening reaction to a range of drugs, proteins and naturally-occurring chemicals by living cells. If this is successful then we will explore commercialisation with a potential supplier of the plates.

Quantum Computing

A patent on the concept of a novel optical-based quantum computing method has been lodged. Funding is being sought for the further development of the technology and progressing of the patent.

Mechanical Phase Changes in Silicon as Information Storage

Intel and Allen & Buckeridge and the School have come to an agreement to develop this technology. A patent has been lodged and an application has been made for an ARC Linkage grant which will proceed in 2004.

It is anticipated that a company will be set up to exploit the technology and that the School's IP will be assigned to the company in return for shares.

Super Efficient Dc Motor

A Knowledge Fund grant has been applied for to progress this technology which it is hoped will result in a motor suitable for solar racers and other high performance applications.

Laser Guide Star

An ARC Linkage grant has been received in conjunction with Electro Optic Systems. This is to develop an active optic system for adjustment of optical telescopes to remove the "twinkle" from stars when observed from Earth.