External Grants and Commersialisation Activities

In 2005, the School derived close to $20 million from external sources that included competitive research grants from various ARC Schemes, involvement with Co-operative Research Centres, other Government and non-government grants and direct industry contracts. There were around 105 active ARC grants and the total number of individual external grants/contracts was around 300. 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, DITR and AusIndustry), direct industry contracts/joint ventures and involvement with spin-off companies. External funding from industry engagement brought around $7 million to the School in 2005.

Interactions with industry are assisting the School to build long term relationships with the commercial sector that not only stimulate commercialisation of the School's research but provide flow on benefits to the School's more fundamental 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 has resulted in some surprising outcomes in which quite fundamental research has led to important commercial opportunities. For example, three spin-off companies have arisen from quite fundamental research in the School. RPO P/L is commercialising innovative polymer/glass composites with a range of applications in optical communications and as smart optical films for displays and this company completed a second funding round of more than $10 million in December 2005. The commercialisation of novel radioactive nanoparticles that have applications in medical diagnosis is occurring through Radiosol P/L, and this company expects to be in a position to seek further funds in 2006. WRiota P/L is exploiting applications of novel phase changes resulting from nanoindentation in silicon that can lead to ultra-high density memory, pattern-less lithography and improved flat panel displays: a new funding round is planned for 2006.

The following additional applied research projects in the School are being explored for potential commercialisation. In all of these projects, IP has been secured including patents granted or provisional patents lodged.

High Brightness Helicon Plasma

The contract research with FEI Corporation, leveraged with an ARC Linkage Grant, continued apace in 2005. The project is progressing well with the achievement of high brightness in devices designed by the Helicon Plasma Group. These are currently being engineered by FEI into commercial prototypes such as a novel plasma focused ion beam instrument.

Specrometers and Optical Temperature Measurement Instruments

These instruments, that provide a temperature image and other properties of high density plasma streams, have been developed in the School for commercial sale, including

broader applications for temperature and material profiling of high temperature industrial processes such as steel production and in smelters. Instruments were delivered to Europe and Korea in 2005 and further instruments are in train for Japan and local industry in 2006. A project, with Bluescope Steel to develop an industrial radiation thermometer for the assessment of temperature of streams of molten steel and slag exiting a blast furnace, has progressed very well.m Steps will be taken in 2006 to investigate the viability of a commercial business opportunity in this area.

Visualisation and Modeling of Porous Media

Contracts for the evaluation and modeling of oil bearing rock and for the evaluation of porous materials continue to come in with the major oil and gas companies world-wide. A contract between ANU and UNSW has been negotiated for the duplication of the ANU mocro-CT Scanner (two machines, one at each institution) and provide significant funds for further research and development. The interest from the oil and gas sector in this technology has led to the concept of an R&D Consortium. During 2006, a Consortium will be launched whereby the major oil and gas companies are encouraged to join for an annual fee that will give access to the technology and some analytical services. If the Consortium is successful, the launch of an analytical spin off company will be considered.

Bushlan

This innovative technology continues to be applied to cost-effective internet access for remote subscribers. Two ARC Linkage grants support the R&D and the demonstrator instruments and projects, as well as aspects of the market for Bushlan concept. A demonstrator is in place in an area of regional NSW adjoining the ACT. The technology has recently been extended to higher frequencies with considerable success.

Carbon & Bn Nanotubes

Sales of Boron Nitride nanotubes continue to be made in small amounts. Although we are able to manufacture large amounts of these materials compared to other methods, we still are limited in our capacity to make them. We are attempting to establish a pathway for commercialising this technology.

Ion Thruster Rocket

During 2005, interactions with both NASA and the European Space Agency (ESA) continued in this area of plasma technology that has potential for rocket propulsion. The progress has been strong and a demonstrator has been successfully tested in Europe. Further development of this technology as well as commercialisation will be explored in 2006.

Implant Isolation of III-V Compound Semiconductor Devices

This technology developed in the School has led to the successful application for an ARC Linkage grant with Epitax P/L as industry partner. The project is now well underway and is progressing well.

Advanced Siloxane Waveguide Devices for Telecommunications

This area of technology was developed in the School and has attracted the attention of one of the School's spin off companies, RPO P/L who successfully applied with us for an ARC Linkage project. This project is progressing well and looks likely to have significant commercial potential.