Postdoctoral position available

7 February 2003

CONDUCTING POLYMERS AND ORGANIC ELECTRONICS

A 1-year postdoctoral position (with possibility of renewal for a further year) is available immediately at the University of New South Wales, to design, test and operate a crystal growth facility for high quality organic semiconductor crystals, to assist with the establishment of UNSW's Organic Electronic and Optoelectronic Device Fabrication Facility, and fabricate high quality organic transistor devices.

Postdoctoral Fellow/Research Fellow (Organic Electronics)

We have an opening for a postdoctoral researcher to play a key role in establishing a new $0.5M ARC funded Organic Electronics Laboratory in the School of Physics. This is a joint facility supported by the Schools of Physics and Chemistry at UNSW, working in collaboration with the Universities of Queensland and Wollongong.

The project involves growing high quality organic single crystals (such as polyacenes and fullerenes), fabricating organic electronic and optoelectronic devices, and characterising them in collaboration with researchers at UNSW and UQ.

The applicant should hold a Ph.D. or equiv. in Chemistry or Physics. Experience in growth of molecular crystals and/or thin-films; conducting polymers or solution-casting is highly desirable.

Further details of both positions and application procedures can be found on the web at www.phys.unsw.edu.au/QED
Specific enquiries may be directed to Associate Professor Alex Hamilton on telephone (61 2) 9385 5736 or email alex.hamilton@unsw.edu.au Applications close 14 March 2003.

Background Information: The field of organic electronics[1] has gained international attention in recent years as a possible replacement for current inorganic-based electronic and optoelectronic technologies ranging from light-emitting diodes[2] to large-scale integrated circuits[3]. Of particular interest are high quality organic single crystals[4] and thin-films[5] that will allow development of devices that require high electrical mobilities to operate and may display novel electrical transport properties. Facilities available to this research program include:

- A new dedicated polymer device laboratory will be established, including a physical vapour crystal growth system[4], spin-coating system and a UHV sputtering system.
- Extensive structural characterisation capabilities including atomic force microscopy and transmission/scanning electron microscopy at the Electron Microscope Unit (UNSW) and X-ray analysis systems at the School of Chemistry.
- In addition to a dedicated He-4 cryostat with a 12T superconducting magnet, numerous low temperature electrical measurement systems are available in UNSW's School of Physics, providing temperatures down to 0.01K and magnetic fields up to 18T.
- Optical characterisation is provided by the photoluminescence and photonics laboratory in the School of Physics at UNSW.
- Unique far-infrared and cyclotron resonance capabilities are available through a formal collaboration with the University of Wollongong. A collaboration also exists with the Soft CMP group at the University of Queensland.

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[1] *Nobel Lectures on Conducting Polymers*, A.J. Heeger, A.G. MacDiarmid and H. Shirakawa, Rev. Mod. Phys. **73**, 681 (2001).

[2] *Light-emitting Diodes based on Conjugated Polymers*, J.H. Burroughes *et al.*, Nature **347**, 539 (1990).

[3] *Large-scale Complementary Integrated Circuits based on Organic Transistors*, B. Crone *et al.*, Nature **403**, 521 (2000).

[4] *Physical Vapor Growth of Organic Semiconductors*, R.A. Laudise *et al*, J. Cryst. Growth **187**, 449 (1998) and *Free and Trapped Injected Carriers in C_{60} Crystals*, Y. Butko *et al.*, Cond-mat/0210029.

[5] *Soluble and Processable Regioregular poly(3-hexylthiophene) for Thin Film Field-effect Transistor Applications with High Mobility*, Z. Bao *et al.*, Appl. Phys. Lett. **69**, 4108 (1996).