POSITION DESCRIPTION

Job Title: Postdoctoral Research Fellow: Physical Deposition of Transparent Electrodes for Plastic Optoelectronics

Organisation: Centre for Organic Photonics & Electronics

Position Number: 3023561

Type of Employment: Full time, fixed term for 3 years

Classification: Academic Research Level A

Closing Date: 13 May 2011

BACKGROUND

Organisational Environment

The Centre for Organic Photonics & Electronics (COPE) draws together expertise from Chemistry and Physics in a combined facility (www.physics.uq.edu.au/cope). COPE has >40 senior research staff, postdoctoral fellows and research students and is housed in newly refurbished laboratories on the 9th Floor of the Chemistry Building that include state-of-the-art synthesis and materials characterisation facilities; a Class 1000 clean room incorporating gloveboxes with integral evaporators for device fabrication; and prototype measurement capability. The laboratory is located on the St. Lucia campus, one of the most spacious and attractive university campuses in Australia. COPE is located within the School of Chemistry and Molecular Biosciences (SCMB), which combines the disciplines of Chemistry, Biochemistry & Molecular Biology, Microbiology and Parasitology into a single academic unit.

The Centre has extensive experimental and theoretical research programs in optoelectronic organic materials for organic photovoltaics, organic light emitting diodes, organic field effect transistors and circuit elements, organic chemisensors and unconventional superconductors. Along with its partners Flinders University and University of Technology Sydney, the Centre has just been successful in gaining funding through the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Flagship Cluster Program to develop next generation transparent electrodes for use in plastic (organic) optoelectronics. This postdoctoral research fellow position is directly associated with this Flagship Cluster.

Information for Prospective Staff

Information about the University, State of Queensland, living in Brisbane and employment at the University is at the University’s web site. (http://www.uq.edu.au/) For a comprehensive guide to family friendly work practices and services visit the Work and Family web site at http://www.uq.edu.au/gender_equity/famwork.html

The University of Queensland Enterprise agreement (Academic Staff) outlines the position classification standards for Levels A to E.
DUTY STATEMENT

Primary Purpose of Position

The main area of study will be the fabrication and characterisation of transparent, electrically conducting thin films for use as transparent electrodes in plastic (organic optoelectronics). The position will focus on physical vapour deposition techniques and is part of the CSIRO Flagship Cluster Project: Physical Deposition of Transparent Electrodes.

Duties

Duties and responsibilities include, but are not limited to:

- Conduct research in the area agreed with the supervisor and publish scholarly papers.
- Work with colleagues and postgraduates in the development and carrying out of joint research projects.

Administration

- Comply with the University’s Code of Conduct (see the University’s web site at http://www.uq.edu.au/staff/employment/)

Occupational Health and Safety:

- Comply with requirements of Queensland occupational health and safety (OH&S) legislation and related OH&S responsibilities and procedures developed by the University or School.

Reporting Relationships

The position reports to Dr Muhsen Aljada for operational matters and Prof Paul Meredith for overall project responsibility, Centre for Organic Photonics & Electronics.

SELECTION CRITERIA

Qualifications

Essential

- Hold a PhD in a relevant area of physical vapour deposition of optical and/or electrical thin films (preferably mixed oxides) and their relevant characterisation.

Knowledge and Skills

Essential

- Have recent and extensive experience in the deposition of optical and/or electrical thin films by methods such as DC/RF sputtering, electron beam evaporation, laser or ion assisted deposition, plasma enhanced chemical vapour deposition;
- Have experience in physical, electrical and optoelectronic property characterisation of evaporated thin films (particularly electrical conductance, optical constant determination, optical transmission);
- Have an in depth understanding of electrical processes in inorganic transparent conducting materials;
- Have experience in using and/or constructing multi-layer thin film optical models and ellipsometric reconstruction;
- Be expected to be able to demonstrate competence/success in any of these areas, eg as judged by publications (or papers in press) in peer reviewed journals;
- Be able to plan and execute fabrication and testing protocols successfully and safely with minimal supervision;
- Have the ability to take accurate and reliable records of work carried out;
- Have demonstrated capacity to work in large multi-disciplinary teams across multiple sites in
an integrated program of work;

- Have a general broad working knowledge of modern transparent electrode science and technology, and the ability to convey this understanding, and the awareness of current important trends and developments reported in the recent literature. Particular evidence will be sought of deeper understanding of the applicant’s previous fields of research and evidence of independent intellectual and practical contributions to previous research projects - as evidence that such attributes can be brought to bear on the present project.

Desirable

- Familiarity with online database searching;
- The ability to work supportively in a laboratory environment with junior co-workers;
- The ability to present work to other scientists in the field in a clear and concise manner;
- Knowledge and experience with modern clean room practices, vacuum systems, deposition monitoring, spectrophotometry equipment and principles, use of methodologies for measurements of sheet resistance and other electrical properties;
- Knowledge and experience in physical characterisation techniques particularly film adhesion and barrier layer properties (gas / liquid permeability).

Personal Qualities

**Essential**

- Ability to work collaboratively with colleagues;
- High level communication, inter-personal and communication skills.