POSITION DESCRIPTION

Job Title: Postdoctoral Research Fellow: Nanoparticles for Transparent Electrodes for Plastic Optoelectronics

Organisation Position Number: Centre for Organic Photonics & Electronics 3023570
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.

The ARC Centre of Excellence for Functional Nanomaterials (ARCCFN) was funded as part of the ARC Centre of Excellence Scheme and at UQ is associated with the Australian Institute of Bioengineering and Nanotechnology and the School of Chemical Engineering. The Centre’s research programs focus on the novel synthesis, characterisation and applications of functional nanomaterials such as nanoparticles, nanotubes, thin films, and nanocomposite materials for applications in clean energy, environment and health care.

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 the preparation of new transparent conducting oxide (TCO) nanoparticles and is part of the CSIRO Flagship Cluster Project: Solution processed 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 A/Prof. Lianzhou Wang (ARCCFN) for operational matters and Prof Paul Burn (COPE) for overall project responsibility.

SELECTION CRITERIA

Qualifications

Essential

- PhD qualification in Chemistry, Materials Science, Materials Physics or Chemical Engineering.

Knowledge and Skills

Essential

- Knowledge of the wet-chemical synthesis of functional nanomaterials especially in respect to semiconducting and/or conducting nanoparticles;
- Knowledge of the chemistry, physical chemistry and colloidal chemistry of functional nanomaterials;
- Extensive research experience in the area required, particularly wet-chemical synthesis (sol-gel, hydrothermal and solvent-thermal process) of nanoparticles;
Experience in the controlled synthesis and characterisation of nanostructured materials;
Experience in dip-coating, spin-coating and/or ink-printing of metal oxide thin films;
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.

Personal Qualities

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