Applications invited for a Ph D position in the Research Project entitled 'Light-Harvesting Antenna System for Molecular Electronics' at the Centre for Nano and Material Sciences, Jain University

Centre for Nano and Material Sciences, Jain University, Bangalore invites applications for the Ph D position for an outstanding candidate for research in "Design, Synthesis & Fundamental Characterisations of pi-Conjugated Macromolecules/ Polymers" for Solar cell and Transistor device applications in the research group of Dr. Ranjith Krishna Pai, Associate Professor, CNMS, Jain University.

About the Research Group

Research is conducted on functional nanomaterials, polymers/ macromolecules, and organic-inorganic hybrids (design, synthesis, and characterisation) for thin-film device applications spanning solar cells, transistors, memories, and charge-storage devices such as flexible batteries and super capacitors (device assembly, testing, and performance optimisations). Bridging Materials Science and Chemistry, the research benefits from a strong network of collaborative interactions with several other groups in major academic institutions worldwide (Brookhaven National Lab, New York, USA, Stony Brook University, USA, Max Planck Institute, Germany).

The energy crisis is probably the most important problem facing the world today. Solar power is by far the most abundant renewable energy source. However, its adoption is slowed by its high cost. Organic solar cells provide a possible solution to this problem, but their efficiency needs improvement. We are working on new measurements to understand organic solar cell operation, and new materials to improve it. We are interested in high calibre candidates who can bring excellent skills to this pressing area of research.

About the Project

Molecular electronics based on donor-acceptor antenna (DAA) system have emerged as excellent candidates for promising applications in next-generation electronic and optoelectronic devices. Among the various types of molecular electronic based devices, organic electronic devices fabricated utilizing organic donor-bridge-acceptor (DBA)

supramolecules have currently been receiving broad attention because of their excellent performance with high mechanical flexibility, simple fabrication and low cost. The PhD Fellow will have the aim of developing molecular scale electronic device based on DAA system composed of an electron donating Quantum Dots and electron accepting fullerenecoupled via an aminoalkanethiol bridge. The work includes device fabrication, possibly some organic synthesis, and device characterisation with scanning probe and advance spectroscopic techniques.

The challenge is to design and synthesise newfullerene/ quantum dots for organic solar cells. This entails the preparation of novel conjugated polymers/fullerene that can be used in conjunction with quantum dots (nano-structured materials). Improved coverage of the solar spectrum and carrier transport properties are important goals to improve the solar cell efficiency and stability. An important aspect/ challenge are to develop new materials that can be used in large modules that are prepared by multi-layer printing techniques.

Qualification

A Master degree in Chemistry/ Polymer chemistry, physics, materials science, engineering or similar. Experience with organic photovoltaic (OPV) device fabrication, organic synthesis, and characterisation of OPV performance and properties are desirable. The ability to work closely and collaborate with colleagues is a must. Proficiency with the English language is required.

Emoluments and Conditions of employment

The position offers a salary of INR 15,000 per month. The salary and appointment terms are consistent with the current rules of University and project. The position is available immediately and should be filled no later than 1 January 2014. The assessment of the applicants will be made by the Ph D Supervisor.

How to Apply

Send your detailed resume along with a cover letter, contacts of at least two references and scanned copies of the M.Sc. mark sheets (all semesters/ years) to:

Prof. Ranjith Krishna Pai
Associate Professor

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Last Date of Application: 15 December 2013