PhD Scholarship in Electronic Transport Properties of Hybrid Metal Halide Perovskites

Position Summary

We are looking for a prospective graduate student interested in the fundamental electronic and magnetic properties of hybrid metal halide perovskite thin films. The specific focus of the project will be on fabricating nanoscale devices from metal halide thin films and studying the electrical resistivity, Hall effect and magnetoresistance in these materials. Ultimately, the project aims to move closer to developing low energy electronic and data storage devices using these materials.

Project Outline: Given the explosion of data produced each year, low power, high density, high performance, data storage technologies are a key priority to advanced electronics. The materials used in current data storage technologies are generally metals. However, hybrid metal halide perovskites offer enormous potential to develop low power consumption devices; specifically, a critical electronic property (e.g. Rashba splitting) exhibits one of the largest reported values and can be easily modified by application of a voltage. The implementation of these materials for memory devices is in the early stages. Experimental studies have primarily utilised optical techniques to study material behaviour. However, most emerging low power memory and logic devices require all electrical operation. Therefore, an understanding of the electronic transport (resistivity) and development of all-electrical methods to probe and manipulate these materials remain key challenges. In this project, you will work within a team of materials engineers, physicists and chemists to fabricate and study the electronic properties in a series of hybrid metal halide perovskite thin films. This exciting and multi-disciplinary project is the state-of-the-art and calls for somebody who is inquisitive, committed and wants to make a difference.

Selection criteria

ESSENTIAL

- Undergrad in Eng/Science with a background in materials, electronic devices or related areas;
- H1 or equivalent GPA in studies.
- Demonstrated research experience.
- Demonstrated ability to work independently and as part of a team;
- Demonstrated organisation skills, time management and ability to work to priorities;
- Excellent written and oral communication skills.

DESIRABLE

- One or more publications in a high impact journal.
- Experience in the functional materials, thin film deposition and characterisation, nanofabrication.

SALARY LEVEL

A$29,000 p.a. stipend (tax-free)

START DATE

Available now.

EMPLOYMENT TYPE

Stipends are available for minimum 3 years, subject to satisfactory progress.

CONTACT

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