

## Undergraduate Student Research Award (USRA) – Summer 2024

### **Printed Circuit Board and 3D Printed enclosure design for sensing applications**

in the School of Engineering Science, Simon Fraser University, Burnaby, BC

During this internship, the undergraduate USRA researcher will gain hands-on experience or layout design experience for sensing applications such as gas detection and biomarker detection in the Nanodevice Fabrication team. The group is investigating ultrathin nanomaterials called 2D materials for new device applications. 2D materials have gained a lot of interest due to their unique material properties (e.g. high carrier mobility, high surface-to-volume ratio, piezoelectricity, ultra-high absorption coefficient, etc.). The student will be supervised by Dr. Michael Adachi, School of Engineering Science, Simon Fraser University, and work with a multidisciplinary team of researchers.

### **Project 1: Printed Circuit Board and 3D Printed enclosure design and characterization for sensing applications**

The SFU Nanodevice Fabrication team developed sensors for the detection of gases and biomarkers. The USRA student will help create a sensor readout module by designing the layout of a printed circuit board (PCB) and 3D printed enclosures and integrate fabricated sensors into the readout module. The 3D printed enclosure will be fabricated using 3D printing facilities at SFU and the PCB will be made by a PCB manufacturer. The USRA student will also update the programming code of an existing software application to readout and display the sensor readout data.

#### **Desired qualifications:**

- Interest in electronic circuit design.
- Have taken electronic circuits/microelectronics courses (e.g. Ensc 220, 225).
- Experience in PCB layout design.
- Experience in Solidworks.
- Experience with software programming (Android app development or python).

The above project is suitable for a co-op or BAsC thesis project in the areas of Biomedical Engineering or Engineering Physics.

More information about the group's activities can be found on the group website

<http://nanodevice.fas.sfu.ca>.

Interested students are asked to email applications (resume and transcript) directly to Dr. Adachi (Email address: [mmadachi@sfu.ca](mailto:mmadachi@sfu.ca)) by Feb. 1<sup>st</sup>, 2024.