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**FACULTY MENTOR**

Tse Nga Tina Ng

**PROJECT TITLE**

Organic Infrared Photodetectors

**PROJECT DESCRIPTION**

This project aims to develop short-wavelength infrared photosensors by using a new generation of narrow bandgap conjugated polymers. The polymer semiconductors are processed by solution processing techniques and allow printing deposition to bypass the limitations of die transfer and bonding in conventional devices. The proposed research will involve device characterization to identify the fundamental constraints in the exciton dissociation and charge collection processes as polymer bandgaps are reduced. The resulting knowledge will be applicable not only to infrared sensing applications but also to other areas, including photovoltaics and optical communications. It will be essential to theoretical efforts to rapidly predict better photo-active polymers.

This project will be in person.

**INTERNS NEEDED**

1

**PREREQUISITES**

- Had taken at least one ECE lab class.



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#### **FACULTY MENTOR**

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#### **PROJECT TITLE**

Ocean Sensors Based on Organic Electrochemical Transistors

#### **PROJECT DESCRIPTION**

Low-cost sensors for in situ monitoring of ocean conditions will provide critical information to understand how nutrients and oxygen levels correlate to fish kills and aquaculture issues. The compatibility of organic electrochemical transistors (OECTs) with aqueous environments makes them promising sensor components in an ocean sensing platform. This project involves designing the sensor for detecting phosphates and explaining the challenges in balancing the redox reaction with the doping/dedoping process in OECTs to improve device sensitivity and stability for the marine environment.

This project will be in person.

#### **INTERNS NEEDED**

➤ 1

#### **PREREQUISITES**

➤ Had taken at least one ECE lab class



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#### **FACULTY MENTOR**

Tse Nga Tina Ng

#### **PROJECT TITLE**

Objective Assessment of Motor Disorder

#### **PROJECT DESCRIPTION**

The project is to incorporate wearable sensors for objective assessment of motor disorders in children with cerebral palsy.

This project will be in person.

#### **INTERNS NEEDED**

- 1

#### **PREREQUISITES**

- Know how to code in Matlab