Centre for Advanced Food Enginomics

Advanced Food Enginomics Research Scholarship

Research Areas: Sensor for Smart Food Packaging

Project Description

Project A: Sensor Design for Food Safety, Quality and Traceability

Future food packaging will not be limited to containing a product. Rather, it will play a pivotal role in providing information about the authenticity, quality, and history of the packaged food.

This interdisciplinary project aims to design sensors that are necessary for monitoring food quality. Incorporating sensors into packaging will offer new opportunities to reduce food waste, improve efficiency, and prevent food-related illnesses.

The overarching goal of this project is to design sensors that can be used for the detection of markers from food deterioration and bacterial contamination to vastly improve the efficiency, sustainability and informatics of the whole food supply chain. A significant part of the project will be the design, development of active- intelligent- highly sensitive and selective integrated biosensors.

Project eligibility:

- Applicants must have a first-class honours degree or equivalent in Biochemistry and preferably with experience in bacterial detection and genetic medication.
- Interest in material processing, biosensor design and food safety.
- A demonstrated knowledge of material engineering, electrochemistry, biophysics, chemistry and the use of analytics system and equipment.
- An ability to work both independently and collaboratively across different research disciplines and industry.
- Excellent communication and interpersonal skills with high levels of competency in both written and spoken English.
- A proven record of exceptional academic and extracurricular performance.

Project B: Food Sensors Integrated in the Internet of Things (IoT):

There is a fast-growing interest in developing stimuli-responsive materials, which are printable to create novel sensors via inkjet printing. The sensors made of these active inks will be used for rapid testing of various analytes for environmental, food safety, and clinical applications.

This project aims to create a library of new stimuli-responsive inks for detection of certain gases, fatty acids, and food biomarkers. The inks will be used to print flexible sensor arrays capable of detecting various signals.

The overarching goal of this project is to design chemical sensors coupled with the Internet of Things (IoT) and apply them to monitor food safety and traceability, to vastly improve the efficiency, sustainability and informatics of the food along supply chain. A significant part of the project will be the design and development of active and intelligent biodegradable sensors incorporated in an IoT technology.

Project eligibility:

- Applicants must hold degree in Physics or Chemical Engineering or Bioengineering or Chemistry.
- A demonstrated knowledge of material engineering, polymer chemistry, nanotechnology and biophysics.
- Experience with the fabrication of plastic opto-electronic materials.
- An ability to work both independently and collaboratively across different research disciplines and industry.
- Excellent communication and interpersonal skills with high levels of competency in both written and spoken English.
- A proven record of exceptional academic and extracurricular performance.

For further information, please contact:

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