

JOB POSTING – Verschuren Centre for Sustainability and the Environment

Position: Systems Technology Specialist

Company Background: The Verschuren Centre (VC) is an industrial solutions, development and deployment centre, advancing sustainable resource management in our key fields of expertise – renewable energy, bio-processing, aquaculture and nano materials.

General Description: The goal of the project is to demonstrate the automated real time detection unit, Kraken, in close to field conditions. The unit will be installed in a controlled environment in order to develop and validate the control system operations of the unit. The unit will be assembled, installed, electrically connected and attached to the fluid source that can be used to mimic green house and industrial food processing operations. The unit will need to be connected to local WIFI network and set-up to take readings at regular intervals.

Primary Job Functions: The operation of the unit should be periodically observed and recorded. Any issues should be identified, recorded and shared with the Ecoli Sense team. The unit will be put through a range of operating conditions, including variable sampling rate, regular cartridge changes with different number of sensors, and different concentration, sampling and cleaning regimes. At regular intervals main parts of the system should be inspected and, in some cases, disassembled (as in the case of the concentrator) to record and observe the condition of components. Once validated in the controlled setup the unit may be moved to a green-house like space to further test the unit in the environment more closely matching the one that will be encountered in the field.

Required skills:

- Experience with mechanical and electrical system design and prototyping
- Experience with fluid systems and components
- Knowledge of mechanical, electrical and fluid engineering principles
- Experience with setup and maintenance of mechanical, hydraulic and electrical systems

Desired skills:

- Previous experience in DFMA review and application of the methodology
- Previous experience in prototype development

Experience: Previous experience with design and prototyping of mechanical, fluid and electrical components and assemblies.

Education: Undergraduate in Mechanical or Electrical engineering or related field. Masters preferred.

Work status: Full time

Location: Sydney, Nova Scotia

Reporting: Direct to CEO

Compensation: Commensurate with experience

Contact: Send CV and cover letter to verschurencentre@cbu.ca by **November 30th, 2020**

JOB POSTING – The Verschuren Centre for Sustainability and the Environment

Position: Post-Doctoral Research Fellow

Company Background: The Verschuren Centre (VC) is an industrial solutions, development and deployment centre, advancing sustainable resource management in our key fields of expertise – renewable energy, bio-processing, aquaculture and nano materials.

General Description: The goal of the project is to create new Salmonella specific sensors based on the existing MWCNT/MNP/Antibody technology and investigation of use of aptamers in place of antibodies for the same purpose. The new bioink formula will be developed. New and existing aptamers specific to Salmonella will be researched and created. The resulting bioinks will be used to create sensors that will be tested against various Salmonella concentrations ($10^1 - 10^5$ CFU / 1mL). The sensors will be used together with the handheld unit that will be supplied by Ecoli Sense to measure the voltage curves generated by the sensors when exposed to water samples.

Primary Job Functions: Create new bioink formulation specific to Salmonella strains based on the formulation developed for E. coli specific bio ink. Optimize the bioink formulation for higher sensitivity and specificity by examining the effects of the variation of shape of MWCNTs, the functionalization methods, presence and absence of MNP and their deposition or precipitation methods, evaluation of antibodies and aptamers in pathogen capture and the electrical signal signatures generated when exposed to various levels of pathogen concentration. Test existing and if necessary, develop new aptamers that can be used in place of antibodies as the active ingredient in the bioink.

Required skills:

- **Experience working in BSL 1 and BSL 2 facilities**
- **Experience with bio-chemical, microbiology and immunology research**
- **Practical experience with culture protocols for pathogenic bacteria including Salmonella and E. coli**

Desired skills:

- **Experience working with or developing novel aptamers**
- **Experience working with Carbon Nano Tubes**
- **Sensor development experience**

Experience: Post-Doctoral experience with pathogen detection, sensor development and aptamer research will be considered an asset.

Education: PhD in bio-chemistry, microbiology, immunology or related discipline

Work status: Full time

Location: Sydney, Nova Scotia

Reporting: Direct to CEO

Compensation: Commensurate with experience

Contact: Send CV and cover letter to verschurencentre@cbu.ca by **November 30th, 2020**