Virtual

Seminar

Shawn Lewenza

Athabasca University
University of Caglary
Luminous BioSolutions

11 am MT, March 5, 2026

Biosensors are a biological detection method for simple, rapid, specific, and quantitative naphthenic acids monitoring

GROW

Genomics Research for Optimization of Constructed Treatment Wetlands for Water Remediation

Connect

www.grow-genomics.ca
grow@ucalgary.ca

ABSTRACT

Bacterial biosensors directly sense naphthenic acids (NA) and induce the expression of genes required to degrade or defend against NA toxicity. A panel of NA biosensors was developed where each responds to a unique subset of naphthenic acids within the complex NAFC mixtures. Bacterial gene expression is coupled to luminescence where light is produced in direct proportion to the amount of NA in a sample. A qualitative method can detect NA within 24 hrs and the quantitative method uses solid phase extraction of NA to produce an estimate of the concentration (mg/L). Biosensors confirmed orbitrap mass spectrometry monitoring of NA remediation in both mesocosm and constructed wetland water treatment systems. This simple, rapid, and specific NA detection method could be used as a high throughput NA monitoring technology during the eventual treatment and remediation of NA within oil sands tailings.

Click to join the Zoom meeting

University of Calgary · Athabasca University · Brock University · INRS · University of Saskatchewan · SFU Simon Fraser University

Genome Canada · Genome Alberta · Genome Québec · Natural Resources Canada · Environment and Climate Change Canada · Alberta · Alberta Innovates · Imperial