

# MINIATURE DEVICE INCORPORATING MULTIPLE DETECTION TECHNOLOGIES TO ASSESS WATER TOXICITY

UQAM-069 - Université du Québec à Montréal

**ALIGO**  
INNOVATION



## BACKGROUND

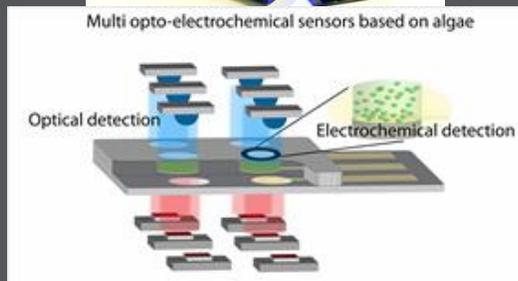
The use of microalgae for toxicity testing is already known to be a sensitive approach. It is therefore, not surprising that government accredited laboratories are using these type tests to assess for toxicity of water.

## TECHNOLOGY

The invention is different to existing microalgae type water toxicity tests in that it is a miniature device which integrates multiple sensors (electrochemical or fluorescence) and living microalgae species onto a single chip and allows to determine water toxicity within minutes as opposed to the existing tests which take hours or even days. The presence of a pollutant causes an inhibition in the photosynthetic pathway of the microalgae. The sensors allow the rapid and clear measurement in this physiological change which is then correlated to the presence of the pollutant. The data can even be sorted out quantitatively or qualitatively.



Multi opto-electrochemical sensors based on algae



*Legend: Miniature device integrating multiple types of sensors onto a single chip*

The invention can be used as a water/sediment contamination sensor, to determine if the water is polluted or not.

## COMPETITIVE ADVANTAGES

- Fast, robust, sensitive, portable, small and low cost device
- Multiplexing (different pollutants measured simultaneously)
- Multiple samples can be treated simultaneously
- Can be used by minimally trained people at point of need)
- Can be used upstream of the marketing of new chemicals/pesticides to determine non-lethal limit detection

## APPLICATIONS

Environment and public health, government and academic institutions, laboratories, food industry, independent consumers or organization.

## DEVELOPMENTAL STAGE

Fully functional prototype tested successfully on herbicides, pesticides and metals ions.

## PATENT STATUS

Inventors: Dr. F. Lefèvre, Dr. P. Juneau, Dr. R. Izquierdo. Full filing in Canada CA2013/000383 and PCT WO/2013/159189A1. A second patent was filed (US provisional) in Oct 2013 on fabrication of electrodes.

## BUSINESS OPPORTUNITY

Licensing opportunity for any field – may be licensed on an exclusive basis related to a specific field of use.

## CONTACT

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