SINGLE REACTOR FORREMOVAL OF CARBON, PHOSPHOROUS, NITROGEN AND HEAVY METALS IN CONTAMINATED WATER, SOIL OR SEDIMENTS

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ALIGO INNOVATION

Partner institution :

CONCORDIA UNIVERSITY

TECHNOLOGY

The technology is a Submerged Membrane Elector- Bioreactor System (SMEBR) which is able to treat a mixture comprising for instance wastewater and an activated sludge, in a single reactor, with an intermittent ON/OFF electric current (the OFF period of time is about 1 to about 10 times longer than an ON period of time); and maintaining an adequate oxidation-reduction potential in the single reactor, thereby allowing for substantial removal of carbon, nitrogen and phosphorus or heavy metals from the wastewater. This process comprises adjusting electro kinetics and dissolved oxygen concentration so as to control activity of different types of microorganisms that are responsible for at least one biological process in the reactor. This can be done as a continuous or batch process.

COMPETITIVE ADVANTAGES

- Single-reactor setup
- Mobile units
- High efficiency removal of several contaminants
- Reduces membrane fouling
- Improves sludge dewatering
- Small footprint
- Multiple decontamination in one unit
- Continuous or batch process

TECHNOLOGY DEVELOPMENTAL STAGE

Successful pilot scale study to decontaminate municipal used water (550 L per day). Successful proof of concept with industrial effluents in the chemicals industry, including substantial removal of compounds with organic nitrogen, as shown by Kjeldahl assay.

SOME RESULTS

- 92-99.8% less chemical oxygen demand
- 99% - 100% P removal
- 90-99.7% NH3 removal
- 97-99.6% Total nitrogen removal (complete removal of NO3)
- 80-100% of metal removal

PATENT STATUS

Inventors: Dr. Maria Elektorowicz, Dr. Sharif Ibeid (Concordia University) and Dr. Jan Oleszkiewicz (University of Manitoba).
Pending PCT patent application:
WO2013116935

BUSINESS OPPORTUNITY

Licensing/co-development opportunity for any field worldwide– maybe licensed on an exclusive basis related to a specific field of use and for specific territory.

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