

DCEA - Department of Environmental Sciences and Engineering

Electrokinetic treatment of sewage sludge

Center for Environmental and Sustainability Research
Environmental assessment, monitoring and remediation
Lab. 347 – Remediation Group



FUNDAÇÃO
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ELECTROACROSS



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MSc in Chemistry - Evaluation of bioremediation strategies in beaches affected by oil spills.

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Objectives

Development of a technology based on the electrokinetic process (EK) that promotes the removal of organic contaminants from sewage sludge, as well as the removal of heavy metals from the sewage sludge and sewage sludge ashes. Access the potential of the EK for phosphorus recovery.

Promote an integrated, safe and sustainable sequence in wastewater treatment plants trying to effectively contribute for a sustainable management of wastes and P-nutrient cycle.

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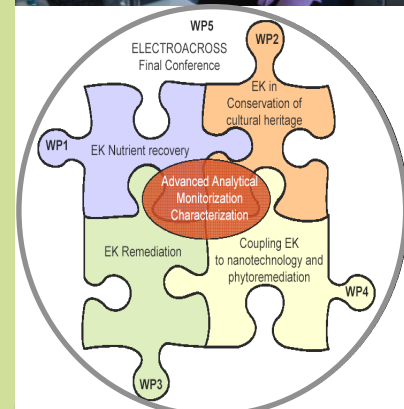


Our team in the lab

Methodology

EK uses a low level direct current density between electrodes, which induce physicochemical changes in the applied media. These changes leads to species transport by coupled mechanisms, and acts as the “cleaning agent” by which the contaminants are moved out of the matrix towards one of the electrode compartments, where they concentrate and may be removed.

In order to study the process, analytical methods will be developed/implemented for testing and determining the contaminants in the analytes, using techniques such as HPLC, LC/MS and GC-FID and advanced analytical technologies like GCxGC-FID.



ELECTROACROSS - Electrokinetics across disciplines and continents: an integrated approach to finding new strategies to sustainable development

Expected Results

Upgrade of particulate waste products while recovering secondary resources for industrial use. For that, expected results are:

- Development/optimization of the EK for the separation of contaminants from sewage sludge or their ashes, so they can be re-used aiming the recycling of elements with value as fertilizer;
- Improve the knowledge regarding the main mechanisms and reactions that occur during EK remediation;
- Optimize and implement analytical methodologies for contaminants determination.



Partners in the ELECTROACROSS project

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