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FACULDADE DE CIÊNCIAS E TECNOLOGIA
UNIVERSIDADE NOVA DE LISBOA

Department of Chemistry

Monitoring of Water Treatment Processes

Biochemical and Process Engineering Group

requimte
rede de química e tecnologia

bpeg
biochemical and process engineering group

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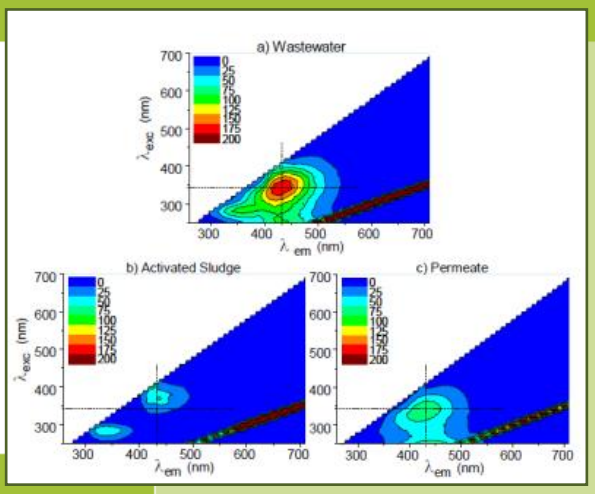
(Post-Doc, since 2012)

- 2012: PhD in Biochemical Engineering
- 2005-2006: Researcher
- 2004: Graduation in Biological Engineering

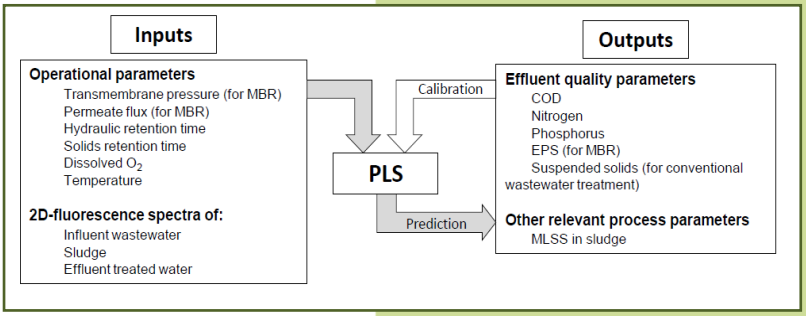
Objectives

Development and validation of a monitoring tool based on 2D fluorescence spectroscopy and statistically-based models that can monitor the performance of water and wastewater treatment processes on-line.



Methodology

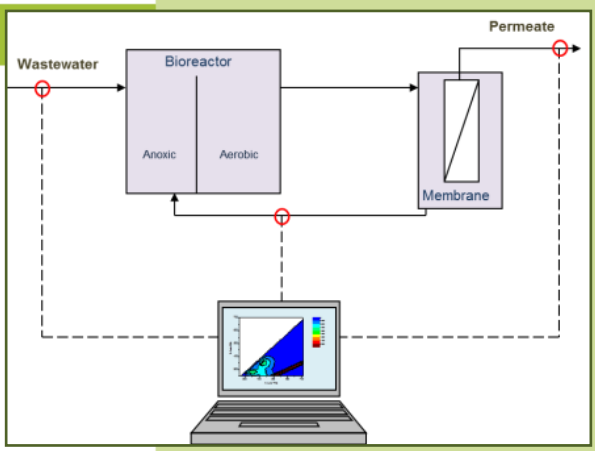
Statistically-based models are being developed to correlate process data and fluorescence spectra in order to obtain mathematical models able to predict key process and performance parameters (the outputs). Fluorescence spectra, acquired in different process streams, is processed with principal component analysis (PCA) and then correlated with other on-line and operating parameters (inputs), using projection to latent structures (PLS) modelling.



Expected Results

With this work is expected to obtain multivariate equations able to predict key performance parameters of wastewater treatment processes (conventional activated sludge systems and membrane bioreactors) based only on on-line data, in particular, 2D fluorescence spectroscopy data.

2D fluorescence will also be used to monitor reverse osmosis systems on-line without the need to monitor the membranes inside the pressure vessel directly. It is then expected to obtain a support decision tool for the rational addition of anti-fouling compounds in real-time and minimal dosage.



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EUROMBRA

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