PhD Candidate Profile

Name:
Marco De Carluccio

Research Group:
N/A

Research Centre:
N/A

Department/School(s):
Department of Civil Engineering (DICIV)

College:
University of Salerno

Supervisor(s):
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Funding body:
N/A

Area (field) of study:
Environmental engineering

Thesis Title:
Combination of advanced oxidation processes and biological processes for industrial wastewater treatment

Abstract:
Industrial wastewaters often are difficult to treat due to their characteristics of poor biodegradability, high toxicity and high organic load. Indeed, conventional treatment processes are not very effective, often with high energy consumption and high sludge production with a significant impact on health, environment and economy.

The development of new technologies in recent years, like advanced oxidation processes (AOPs) makes very interesting the study of their combination with biological processes. Therefore, the aim of this research project is to study new process combinations, such as Fenton, photo-Fenton, electro-Fenton and electro-coagulation, respectively combined with moving bed biofilm reactor (MBBR) and conventional activated sludge (CAS).

The effect of AOPs will be especially evaluated in terms of biodegradability (BOD_5 / COD). At the same time, the effect of AOPs on biological processes will be evaluated by characterizing the bacterial community. Finally, the different combinations will be compared by using the Life cycle assessment (LCA) technique.

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AOPs PhD School

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Collaborations:

N/A

Publications:

- M. De Carluccio, A. Fiorentino, L. Rizzo, “Multi-barrier treatment of mature landfill leachate: effect of Fenton oxidation and air stripping on activated sludge process and cost analysis”. Journal of Environmental Chemical Engineering, Volume 8, Issue 5 (2020), 104444
- Di Cesare, M. De Carluccio, E. Eckert, D. Fontaneto, A. Fiorentino, G. Corno, P. Prete, R. Cucciniello, A. Proto., L. Rizzo, “Combination of flow cytometry and molecular analysis to monitor the effect of UVC/H_2O_2 vs UVC/H_2O_2/Cu-IDS processes on pathogens and antibiotic resistant genes in secondary wastewater effluents”. Water Research, Volume 184 (2020) 116194

Presentations:

N/A