



POLITECNICO
MILANO 1863

SEMINAR ANNOUNCEMENT

Aula Bianca, Building 21, 6th floor
Via Golgi 39, Campus Leonardo

Wednesday, 13 June 2018 – 10:00-13:00

Fate and removal of micropollutants in wastewater treatment plants

Prof. Juan M. Lema
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A wide number of organic micropollutants (OMPs) arrive to sewage treatment plants (STPs), which were not designed to deal with these contaminants. Consequently, water and sludge effluents of STPs are considered important sources of OMPs release into the environment as many compounds are also partially removed or even hardly removed (Carballa et al 2004).

The controversial results reported into literature reveal a poor understanding of the mechanisms and factors behind OMPs biotransformations. In the seminar, the four different removal mechanisms will be analysed and the effect of operational parameters such as solid and hydraulic retention time, temperature and organic loading rate on removal efficiency will be considered (Suarez et al, 2008).

Finally, enzymatic co-metabolism will be considered as a major mechanism that could explain better the fate of the different OMS on STPs (Fernandez-Fontaina et al 2014, Gonzalez-Gil et al 2017). Also, some hypothesis about why biotransformations are not complete will be analysed by a modelling approach.

Concerning methodology, along the seminar some questions will be addressed to the attendees, some of them to be solved immediately and other to be discussed into groups.

References

Carballa et al. (2004). Behavior of pharmaceuticals, cosmetics and hormones in a sewage treatment plant. *Water Research* 38, 2918-2926

Suarez et al. (2008). How are pharmaceutical and personal care products (PPCPs) removed from urban wastewaters? <https://www.scopus.com/sourceid/16136?origin=recordpage> 7(2), 125-138.

Fernandez-Fontaina et al. (2014). Modelling cometabolic biotransformation of organic micropollutants in nitrifying reactors. *Water Research* 65, 371-383

Gonzalez-Gil et al. (2017). Cometabolic Enzymatic Transformation of organic Micropollutants under methanogenic conditions. *Environmental Science and Technology* 51, 2963-2971

Reference: **Prof. Roberto Canziani** (roberto.canziani@polimi.it)

Prof. Juan M. Lema is Full Professor at University of Santiago de Compostela (USC) since 1985. He has published more than 360 papers on ISI-indexed international Journals (h index = 52).

His research areas span from removal of micropollutants (pharmaceuticals) from wastewaters to advanced control of anaerobic treatment plants, enzymatic reactors for degradation of recalcitrant compounds, bio-plastics (PHB) production by fermentation.

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