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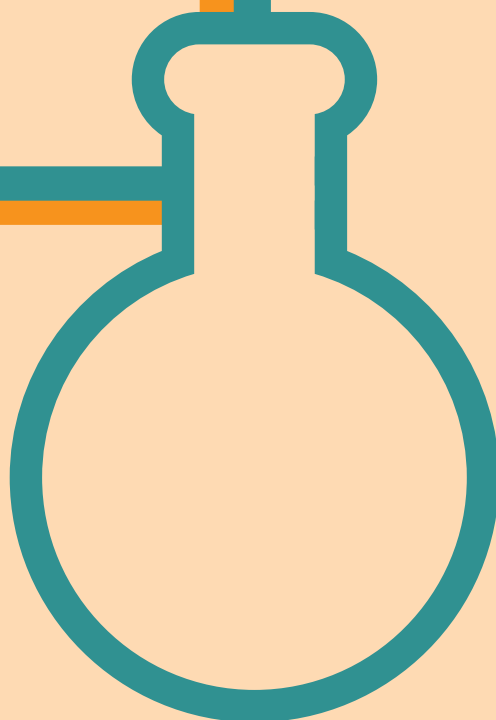
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**BOOK OF
ABSTRACTS**



MONITORING SOIL/WATER INTERFACE: DEVELOPMENT OF AN INTEGRATED SEQUENTIAL INJECTION SYSTEM APPLIED TO LABORATORY SCALE SOIL CORE COLUMN AND MICRO SOIL COLUMN

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Monitoring soil leaching of nutrients and contaminants has become essential for environmental and agricultural studies. With a growing concern on soil contamination and increasing awareness of inorganic and organic contaminants effects on soil quality, the study of soil leaching is vital. The leachates from soil have a huge impact on the quality of surface and ground waters. Conventional soil testing can hardly keep up with this ever-increasing demand of sample analysis frequency as it is based on manual or mechanical soil sampling and atomic absorption/emission spectroscopy detection, leading to costly and time-consuming assays.

In this context, the work developed aimed to tackle this issue by setting a laboratory scale soil core (LSSC) column and developing a sequential injection (SI) method for soil leachates monitoring. The LSSC and micro soil columns (μ SC) were set with soil from different locations. Rain water, well water and iron complexes solutions, namely the commercially available iron fertilizer FeEDDHA and two new fertilizers from the hydroxypyridinones family of complexes Fe(mpp)₃, Fe(dmpp)₃ [1, 2], were passed through the columns, and the impact in the leachate evaluated. So, the water/iron complexes solutions were assessed before and after perfusing the LSSC and μ SC.

The SI method proved to be advantageous, in terms of cost, time consumption and waste production, in comparison to conventional methods. With the developed method, an efficient monitoring of soil leachate process can be attained.

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[1] Burgess, J.; Rangel, M. *Adv. Inorg. Chem.* **2008**, *60*, 167-243.

[2] Santos, C.; Carvalho, S.; Leite, A.; Moniz, T.; Roriz, M.; Rangel, A. O. O. S.; Rangel, M.; Vasconcelos, M. *Plant Physiol. Biochem.* **2016**, *106*, 91-100.