



Winter School on Contaminants of Emerging Concern (CECs) and Disinfection By-Products (DBPs)

Occurrence, Impact and Elimination

BOOK OF ABSTRACTS

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PC 74: Production and Characterisation of Biomaterials for the Capture of Pharmaceuticals in Aqueous Effluents

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The increase in pollution levels across the globe is having a detrimental impact on the environment and human health, which is a matter of global concern. New effective techniques have been studied to capture and eliminate different emerging pollutants, such as pharmaceuticals, using promising activated carbons (AC). Plant biomass has been identified as a potential source for AC synthesis, offering the dual benefit of reducing AC production costs and promoting a circular economy. The pyrolysis process is employed in the production of ACs, which are then subjected to chemical (such as K_2CO_3 or $ZnCl_2$) and physical (such as CO_2) treatments to enhance their textual characteristics. Four activated carbons have been produced from different biomass sources (Phragmites Australis, Juncus Maritimus and Coconut Shell) using chemical and physical treatments. These ACs were characterized using elemental and textual analysis to determine their surface area and pore size. Besides, the thermal characterization was accessed by a thermogravimetric analysis (TGA). These four biomaterials were used for adsorption tests with three different pharmaceuticals (diclofenac, valsartan and iopromide) with the aim of defining the different adsorption capacities of these biomaterials and the time taken to reach equilibrium.