

Development of Filling Material in 3D Printer with the Aid of Computer Software for Supported with Natural Zeolite for the Removal of Nitrogen and Phosphorus

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Abstract : Focusing on the elimination of nitrogen and phosphorus from sewage, the study proposes to face the challenges of eutrophication and to optimize the effectiveness of sewage treatment through biofilms and filling produced by a 3D printer, seeking to identify the most effective Polylactic Acid (PLA), Acrylonitrile Butadiene Styrene (ABS). The study also proposes to evaluate the nitrification process in a Submerged Aerated Biological Filter (FBAS) on a pilot plant scale, quantifying the removal of nitrogen and phosphorus. The experiment will consist of two distinct phases, namely, a bench stage and the implementation of a pilot plant. During the bench stage, samples will be collected at five points to characterize the microbiota. Samples will be collected, and the microbiota will be investigated using Fluorescence In Situ Hybridization (FISH), deepening the understanding of the performance of biofilms in the face of multiple variables. In this context, the study contributes to the search for effective solutions to mitigate eutrophication and, thus, strengthen initiatives to improve effluent treatment.

Keywords : eutrophication, sewage treatment, biofilms, nitrogen and phosphorus removal, 3d printer, environmental efficiency

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