



# Use of banana pulp to remove microplastics from contaminated water

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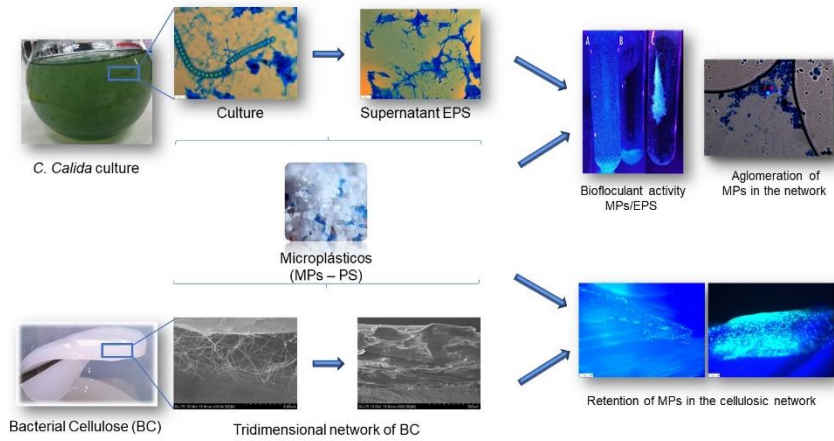
## Advisor

Ângela Morais,

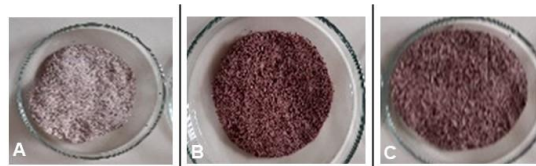
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## Scientific Support

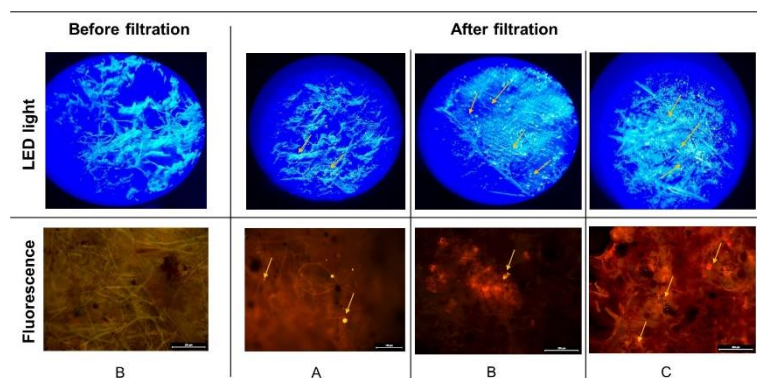
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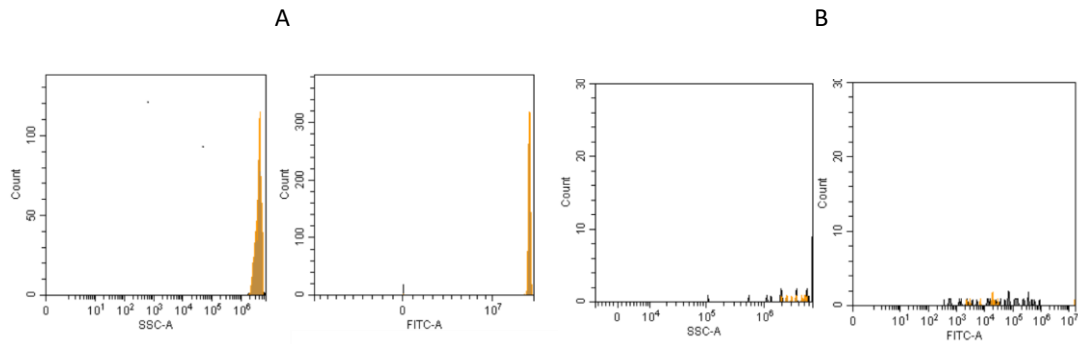
**Figure 1.** Summary scheme of the reinforcement matrices used and their potential for the aggregation/flocculation of MPs in the network.



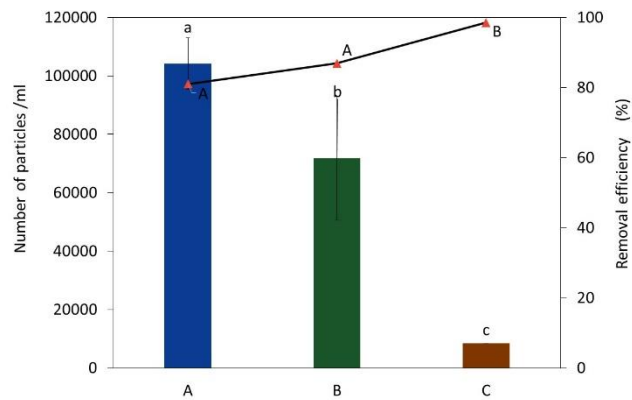
**Figure 2.** Cellulose pulp biofilters from banana stalks with different masses: (A) 0.2 g; (B) 0.6 g and (C) 0.8 g.



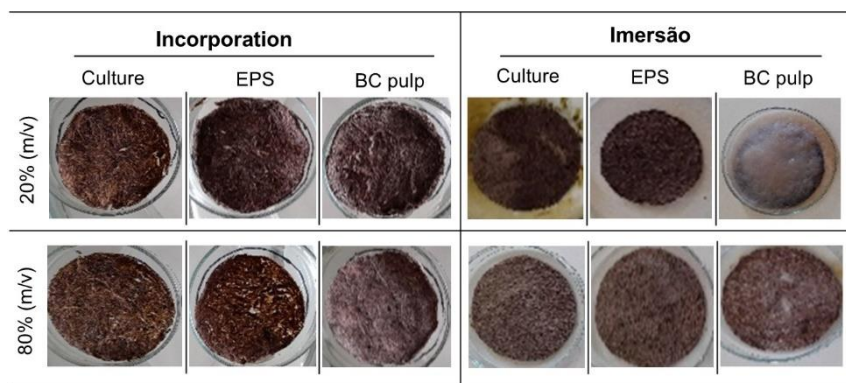
**Figure 3.** Observation of the biofilters (unmodified) under a binocular magnifying glass (10x magnification) with LED light and under a fluorescence microscope (100x magnification), before and after filtration of water contaminated by MPs. The yellow arrows indicate the MPs retained in the cellulosic network



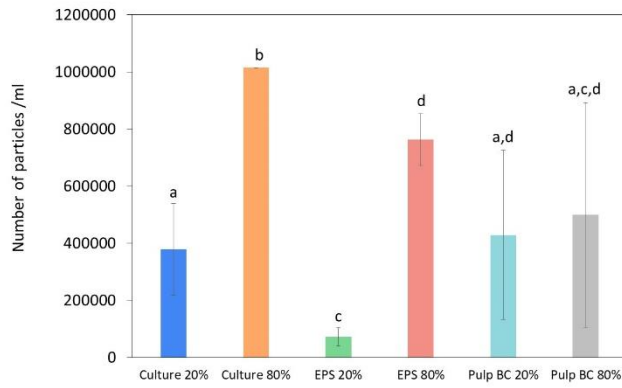
**Figure 4.** Results obtained by flow cytometry on contaminated water before (A) and after (B) filtration using the biofilters.



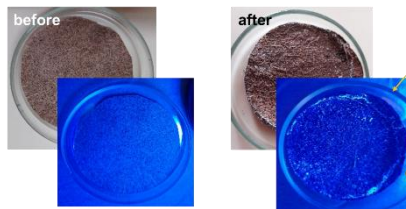
**Figure 5.** Removal efficiency and number of MP particles not removed by unmodified biofilters. Different letters indicate significant differences ( $p < 0.05$ ). Capital letters refer to removal efficiency and lowercase letters to the number of MP particles not removed.



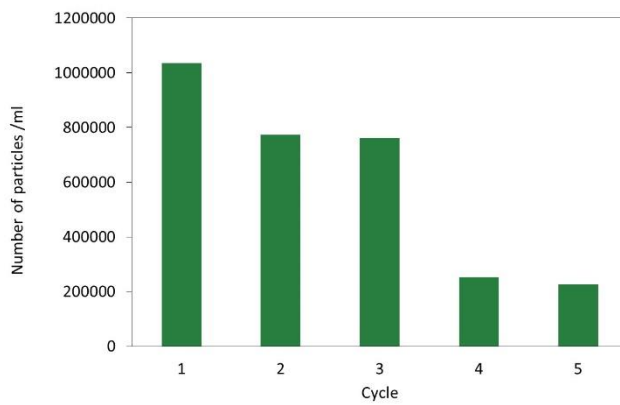
**Figure 6** Biofilters produced from banana stem cellulosic pulp with different matrices and two processes: incorporation and immersion.



**Figure 7.** MPs not retained in the network of biofilters modified through the immersion process. Different letters indicate significant differences ( $p < 0.05$ ).



**Figure 8.** Biofilter before and after 5 filtrations, macroscopically observed under optical and ultraviolet light.



**Figure 9.** MPs not retained in the net of unmodified biofilters after each filtration cycle.