Removal of Microplastics from Watery Environments with 3D Printed Wax Filters

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Microplastic pollution is becoming an increasing threat to the viability of marine organisms and ecosystems. The concentration of these particles actively parallels humanity's increasing need for consumable plastic products and disregard for environmental health. Therefore, the mitigation and removal of these substances are essential in ensuring a healthy and flourishing ecosystem. To remove microplastics from the environment, this project explored a novel solution by combining the chemical properties of waxes with the flexibility of 3d printing software to create customized filters tailored to removing microplastics from marine environments. The methodology is as follows: a dosing pump was used to pass microplastics suspended in water through various 3D printed filters to determine if the material composition and pore size had a significant effect on removing 300-355um microspheres. Statistical analysis, which included one-way ANOVA tests and Tukey Post-hoc tests, were conducted on the data. The results show that pore size has a statistically significant effect on the percentage of microplastics removed, while material composition, such as wax or resin filter composites, do not differ significantly in microplastic removal.

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