

Advances in Sampling and Detection Techniques for Microplastics in Aquatic Environments [†]

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Abstract: Microplastic pollution poses a significant threat to aquatic ecosystems and human health, prompting the need for robust sampling and detection methodologies. This abstract provides an overview of recent advances in the field of microplastic sampling and detection in water environments. Various sampling techniques, ranging from traditional filtration methods to innovative passive sampling approaches, are discussed in detail. These techniques enable the collection of water samples from diverse aquatic habitats, including oceans, rivers, lakes, and wastewater treatment plants, facilitating comprehensive assessments of microplastic contamination levels. Detection methods encompass visual identification using microscopy and advanced analytical techniques such as Fourier-transform infrared spectroscopy (FTIR) and Raman spectroscopy. These analytical methods offer insights into the molecular composition and sources of microplastics present in water samples. Moreover, emerging technologies such as microplastic sensors and automated image analysis systems enhance the efficiency and accuracy of microplastic detection and monitoring. Understanding the distribution and dynamics of microplastics in aquatic environments is critical for developing effective mitigation strategies and regulatory policies to address this pressing environmental issue.

Keywords: microplastics; aquatic; detection; pollution.

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Conflicts of Interest

The authors declare no conflict of interest.