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Front Cover Story (see: Shengdong Liu, Enxiang Shang, Jingnan Liu, Yining Wang, Nanthi Bolan, M.B. Kirkham, Yang Li, 2022, 16(1): 8

The growing production and consumption of plastic products over the past decades, leading to the accumulation of plastic in environmental matrixes, including freshwater, ocean, terrestrial and atmospheric systems. Once these plastic products are discharged into the natural environment, large particles may be fractured, weathered, or degraded into microplastics (MPs, diameter smaller than 5 mm) via biodegradation, physical and chemical weathering processes. However, understanding the fate and toxicity of microplastics is limited by quantification methods. A number of instruments have been applied to characterize MPs such as Scanning electron microscopy, Fourier transform infrared spectroscopy, Raman spectroscopy and Gas chromatography-mass spectrometry. But all the above methods require expensive instruments, experienced operators, time-consuming pretreatment processes, and complex data analysis. In view of this, our study highlights the development of fluorescence staining and quantification methods for MPs, which provide a straightforward, cheap and reliable techniques for the study of abundance and fate of MPs in the environment.

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Fluorescence staining and quantification of microplastics

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