

# Effective Py-GC/MS Analysis Method for the Quantification of Microplastics in Various Kinds of Environmental Matrix

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## Abstract

Pyrolysis-gas chromatography/mass spectrometry (Py-GC/MS) is being considered as a typical instrument for the analysis of hazardous materials, such as phthalates, additives, and plastics in complex organic materials. With the increased concern for microplastics contamination, the additional use of Py-GC/MS as a proper system for the qualification and quantification of microplastics is being emphasized recently prior to the toxicology study of microplastics. However, the quantification of different kinds of microplastics using Py-GC/MS system in sub microgram level was not easy due to insufficient matrix elimination study, reference material, optimized filtration system, and so on.

Recently, several improvements on microplastics filtration, reference material, and Py-GC/MS methods, were achieved by our research team and are being applied to worldwide research area for the analysis of microplastics using Py-GC/MS analysis. Based on our experiments, the higher recovery than 90 % in weight dimension and the quantification for 11 kinds of microplastics, ranging from 0.1 to 2.0 µg level as minimum detection limit, were able to be achieved by the use of our filtration system and reference material on Py-GC/MS



analysis. In this presentation, we propose the open discussion for our recent improvement with the basic talk for microplastics analysis principle using a micro furnace type Py-GC/MS system together with the introduction of our recent publications.

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