Micro- and nanoplastic quantification using pyrolysis GC-MS: the hidden complexity.

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To accurately assess the extent and impact of micro- and nanoplastic pollution in the environment, as well as their potential toxicity, robust analytical techniques are essential. Among existing methods, pyrolysis–gas chromatography–mass spectrometry (Py-GC-MS) has emerged as a promising tool for the identification and quantification of micro- and nanoplastics.

However, behind the apparent simplicity of this technique lies a hidden complexity. A thorough understanding and careful optimization of the pyrolysis process are required for reliable GC-MS analysis. Critical factors—such as matrix effects, particle size, and selection of quantificatier ions—are often overlooked, despite their substantial influence on measurement accuracy. This presentation will highlight these key parameters and discuss ongoing developments aimed at enhancing the robustness of micro- and nanoplastic assessments.