

Plastic Content Spectrometer



AI Overview

Plastic content spectrometers are instruments designed to identify and analyze plastic materials quickly and accurately, ranging from portable NIR devices to benchtop FTIR systems. Overview Plastic content spectrometers are specialized devices that detect and quantify the type and composition of plastics in various forms, including granules, flakes, films, and finished parts. They operate by measuring how plastics interact with light across specific wavelengths, producing a spectral fingerprint unique to each polymer type. These instruments are widely used in recycling, quality control, environmental research, and manufacturing. Types of Plastic Spectrometers

1. Near-Infrared (NIR) Spectrometers Portable NIR spectrometers, such as the MicroNIR OnSite-W or trinamiX PAL One, allow on-site, rapid identification of plastics without sample preparation. They can detect common polymers like PET, PVC, PE, PP, PS, ABS, and PU, as well as complex blends and multilayer films. Key advantages include: Immediate, easy-to-read results with minimal training Battery operation for flexible field use Compatibility with colored, transparent, or white plastics Support for quality control in production and recycling environments
2. Fourier Transform Infrared (FTIR) Spectrometers Benchtop FTIR instruments, such as the Agilent Cary 630, provide high-resolution analysis suitable for environmental research and laboratory QA. FTIR spectrometers can identify plastics in complex matrices and offer quantitative and qualitative data. Features include: Interchangeable sampling modules for diverse sample types Robust performance in humid or tropical conditions User-friendly software for guided analysis and reporting
3. Plastic-Based Spectrometers Recent developments in plastic spectrometer design use polymer materials for optical components, making instruments lighter, more durable, and cost-effective compared to traditional glass or silica spectrometers. These devices are suitable for educational purposes, fieldwork...

Article Content

Material Identification of Plastics Throughout Their Life ...

Fourier transform infrared (FTIR) spectroscopy is well suited to the identification of different types of plastic, providing reliable, high-quality data, and cost-effective analyses. This application note

Determination of Microplastic Mass Content by Thermal Extraction ...

A novel analysis technique has been developed for the determination of microplastics (MPs) in complex environmental samples using thermal extraction desorption gas

Accurate characterization of mix plastic waste using ATR-FTIR ...

This study develops a robust methodology using Attenuated Total Reflectance-Fourier Transform Infrared (ATR-FTIR) spectroscopy combined with optimized machine learning to

Preliminary study to characterize plastic polymers using elemental ...

The advantages offered by isotope ratio mass spectrometry with respect to other analytical methods used to characterize the composition of plastic polymers are: high sensitivity, small amount

Spectroscopy: A promising tool for plastic waste management

The present status of the application of these spectroscopic methods and their scope in developing an industry-oriented plastic sorting system for recycling of plastic waste is discussed.

APPLICATION NOTE Plastics Identification Using ATR-FTIR Spectroscopy

FTIR is a powerful qualitative and quantitative analysis tool. When a plastic absorbs IR radiation, the resulting signal is a spectrum that represents its molecular “fingerprint”. Different plastic samples

Recycled Plastic Content Quantified through Aggregation-Induced ...

The linearity of the plastics economy is wasteful and polluting. To encourage recycling and decrease diversion to landfill, new legislation within the EU and UK will tax single-use plastic

C10G-E083A Analytical Solutions for Microplastics

Shimadzu provides analytical and measuring instruments for the study of a variety of plastic materials: for R& D, characteristic evaluation of raw materials, quality control for plastic products, and

Plastics Identification Using ATR-FTIR Spectroscopy

However, the massive production of plastics has led to a throw-away culture rendering plastic pollution one of the most ubiquitous environmental issues. One solution to prevent plastic pollution is

Spectroscopy for Plastics Recycling

Optimize plastics recycling through precise spectroscopic identification, streamlining sorting processes for various polymer types.

FTIR in Plastics and Polymer Identification: Key Applications and ...

Explore the power of Fourier Transform Infrared Spectroscopy (FTIR) for plastics and polymers. Rapidly identify raw materials, analyze blends and composites, monitor aging, detect

Plastic-based spectrometers offer low-cost, compact solution for ...

Plastic-based spectrometers offer low-cost, compact solution for broadband spectral imaging July 11 2025, by Michael Shuff Birefringence of plastic products in the lab (scale bar: 1 cm).

FTIR Analysis of Recycled Plastics Using the Spectrum Advisor Function

In particular, FTIR spectrophotometer used for infrared sorting, allows for accurate qualitative analysis of polymers and can identify polymers regardless of their color or form (powder/solid), making it useful

Plastic Analyzer

Shimadzu provides analytical and measuring instruments for the study of a variety of plastic materials: for R& D, characteristic evaluation of raw materials, quality

Detect plastics use mobile spectrometers

Are you looking for an analyzer for Plastics? Our team of experts will be happy to support you and answer your questions about application, technology and options.

Methods for the detection and quantification of micro

The review discusses the application of spectroscopic methods such as Fourier transform infrared (FTIR) spectroscopy and Raman spectroscopy that remain the most widely used techniques,

Chemical characterization of polymer and chloride content in waste ...

There is a need for rapid plastic identification to improve the mechanical waste plastic sorting process. This study presents a novel application of Temperature-Programmed Desorption

Plastic-based spectrometers offer low-cost, compact solution for ...

Plastic-based spectrometers offer low-cost, compact solution for broadband spectral imaging by Michael Shuff, University of Cambridge edited by Sadie Harley, reviewed by Andrew Zinin

Exploring Plastic Spectrometers: Design and Applications

Plastic spectrometers represent a significant advancement in spectroscopy. Their use of lightweight materials, coupled with effective manufacturing techniques,

Microplastics Analysis | Thermo Fisher Scientific

Learn about our FTIR and Raman spectroscopy solutions that can help you identify, characterize, and quantify microplastics from a variety of sample sources (bottled

Global-Scale Detection of Plastic From Space With the EMIT Imaging ...

Using observations from NASA's Earth Surface Mineral Dust Source Investigation (EMIT) imaging spectrometer aboard the International Space Station, we present continental-scale maps

Combining spectroscopy and machine learning for rapid identification

Recently, Aidene et al. (2020) quantified the carbon, oxygen, and hydrogen content of plastics using energy-dispersive X-ray fluorescence (EDX) spectroscopy and machine learning

Fast, On-Site Plastics Identification: trinamiX NIR

Identify plastics quickly and easily with our mobile and robust NIR spectrometer. Get fast, on-site results and accurate plastic identification. Learn how NIR

Quantification of the composition of pyrolysis oils of complex plastic ...

Quantification of the composition of pyrolysis oils of complex plastic waste by gas chromatography coupled with mass spectrometer detector † A. Serras-Malillos;

Identification of Plastics in Mixtures and Blends through ...

In this paper, the possibility of detecting polymers in plastic mixtures and extruded blends has been investigated. Pyrolysis-gas chromatography/mass spectrometry (py-GC/MS) allows

Mass Spectrometry as an Analytical Tool for Detection of ...

Plastic particles smaller than 5 mm accumulate in aqueous, terrestrial, and atmospheric environments and their discovery has been a serious concern when it comes to eco-toxicology and

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