

Spectrometer for carbon-containing materials



Overview

Raman spectroscopy has become an essential tool for analyzing carbon materials, offering insight into their defects, crystallinity, and interactions with other substances. To analyze the elements in metals with cordless handheld instruments, Fraunhofer ILT is developing a method and conceptual setup to use laser-induced breakdown spectrometry (LIBS) with highly integrated components; furthermore, it is investigating its analytical performance in the laboratory. Carbon nanomaterials such as graphene, graphite, and carbon nanotubes each have unique physical and thermal properties that make them important in industries as varied as battery manufacturing, construction, and sports equipment. Structure of some of some representative carbon carbon allotropes. spectroscopy is highly sensitive to these T e materials and able carbon-carbon bonds to provide a. 1) Raman spectroscopy, on the other hand, can identify the presence of carbon and also obtain structural information (Figure 1), and has the advantage of being a non-destructive, non-contact measurement method applicable to submicron regions. This application note discusses challenges with traditional analysis methods and introduces HORIBA's advanced solutions: ParticleFinder™ for carbon particle morphology and QCarbon for D/G.



Article Content

Hot

Raman Spectroscopy: A Potential Characterization Tool for Carbon Materials

Raman spectroscopy technique has become an important characterization tool for investigating the band structure and size of low-dimension materials such as carbon nanotube and

May 15, 2026 Hot

Mobile spectroscopy for determining carbon content in steel

Mobile, hand-held spectroscopy systems allow fast elemental analysis of metals in metal production, processing and recycling industries. Applications include the monitoring of production processes,

Sep 10, 2025 Hot

Structural analysis of carbon materials by X-ray photoelectron ...

X-ray photoelectron spectroscopy (XPS) has been frequently utilized to analyze the structures of carbon materials. However, few types of defects such as functional groups have been identified and

Sep 17, 2025 Hot

Characterization of carbon materials with Raman

Using a high-quantum-efficiency CCD array detector with TE deep cooling (-25 °C) and high dynamic range, this portable Raman spectrometer delivers research

Feb 26, 2026 Hot

Analysis of Carbon-Based Materials by Raman Spectroscopy

Abstract Today, Raman spectroscopy is the main tool for investigating carbon-based materials. In the present work, the results of Raman spectroscopy are generalized for the basic

Oct 03, 2025 Hot

Raman Spectroscopy in the Research of Carbon Materials

zed Raman scattering measurements on carbon materials. By using a sharp metal tip to concentrate the incident laser light, TERS provides nanoscale spatial resolution, enabling the characterization of

Jan 02, 2026 Hot

(PDF) Raman spectroscopy of carbon materials

This feature summarizes the use of Raman spectroscopy as a principal tool to investigate the vibrational dynamics of carbon materials and to provide

Dec 24, 2025 Hot

Spectroscopy of Filled Single-Walled Carbon Nanotubes

Many envisaged applications, such as nanoelectronics, photovoltaics, thermoelectric power generation, light-emission devices, energy storage and

Sep 11, 2025 Hot

Raman Spectroscopy Characterization of Carbon Materials: From

Raman spectroscopy is a non-destructive analysis technique which is particularly well suited to characterization of carbon (nano)materials. It is highly sensitive to carbon-carbon bonds

Oct 23, 2025 Hot

Analysis of Carbon Materials with Infrared Photoacoustic

Measurement of infrared spectroscopy has emerged as a significant challenge for carbon materials due to the sampling problem. To overcome this issue, in this

Aug 08, 2025 Hot

Characterization of carbon materials with Raman

Raman spectroscopy is a valuable tool for the characterization of carbon nanomaterials due to its selectivity, speed, and ability to measure samples

Dec 14, 2025 Hot

Analysis of carbon-based nanomaterials using Raman spectroscopy ...

We present a brief account on the unprecedented opportunity of Raman spectroscopy for insight into the behaviour of electrons and phonons in carbon nanomaterials.

Dec 22, 2025 Hot

Analysis of Carbon and Carbon-Containing Materials by X-Ray

Abstract The results of the analysis of carbon-containing materials are presented based on an analysis of the peaks of X-ray photoelectron spectroscopy (XPS) formed by the electrons

Jul 17, 2025 Hot

Unlocking the Secrets of Carbon Materials with Raman Spectroscopy

Unlocking the Secrets of Carbon Materials with Raman Spectroscopy Carbon materials play a pivotal role in numerous industries, from energy storage to polymer composites. Understanding their

Jun 15, 2026 Hot

Analysis of Carbon Products using Raman Spectroscopy

Raman spectroscopy is therefore effective for evaluating the material properties of carbon in localized regions, which is difficult with other analytical

Jul 22, 2025 Hot

Analysis of Carbon Materials with Infrared Photoacoustic

Considering that the IR-PAS scheme may be useful and feasible to study carbon materials, we performed measurements of IR spectra using the PAS procedure for materials including C 60, C 70,

May 05, 2026 Hot

Mobile spectroscopy for determining carbon content in steel

Fraunhofer ILT has focused on carbon detection since determining its content in steel is not only economically important, but poses technical challenges. Concentrations down to the range of 0.01

Jan 09, 2026 Hot

Raman Spectroscopy: A Key Technique in Investigating

Raman spectroscopy provides a quick, nondestructive method for identifying and characterizing different types of carbon with little to no sample

Nov 03, 2025 Hot

Optimizing Carbon Material with Raman Spectroscopy

Given the structural diversity and presence of various defects and functional groups in carbon materials, precise characterization is crucial for optimizing their performance for high energy or power density.

Apr 12, 2026 Hot

Optimizing Carbon Material Analysis with Raman Spectroscopy

We demonstrate the precision and efficiency of this integrated approach by characterizing an unknown carbon powder sample. Carbon materials are crucial due to their widespread application in industries

Feb 19, 2026 Hot

Raman spectroscopy of carbon materials and their composites:

Raman spectroscopy is now an extremely important technique for the analysis of carbon-based materials. It is demonstrated how it can be used to give a unique insight into characterising

Jun 18, 2026 Hot

Optimizing Carbon Material Analysis with Raman Spectroscopy

Optimizing Carbon Material Analysis with Raman Spectroscopy QCarbon and ParticleFinder: revolutionizing carbon analysis with unmatched speed and automation for industry needs

Dec 11, 2025 Hot

Unlocking the Secrets of Carbon Materials with Raman Spectroscopy

In this article, we explore how HORIBA's Raman solutions help characterize carbon materials through recent research, covering polymer composites, structural defects, aging effects, and a new tool that

May 15, 2026 Hot

Analysis of carbon-based nanomaterials using Raman spectroscopy ...

Abstract. The advent of new instrumentation techniques provides the breakthrough for Raman spectroscopy to establish as powerful non-invasive method for material characterization. In recent

Jan 06, 2026 Hot

Characterizing Carbon Materials with

troscopy is particularly well suited to molecular morphology characterization of carbon materials. Every band in the Ram. n spectrum corresponds directly to a specific vibrational frequency of a bond within

Jan 22, 2026

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://www.eedenmarketing.co.za>

Email: info@moletenare-ew.co.za

Phone: +86 138 1658 3346

Address: Ningbo, China

This document is for informational purposes only. Specifications subject to change without notice.

