The function of the vacuum generator in a spectrometer

Overview

The primary function of a vacuum system in mass spectrometry is to create and maintain a low-pressure environment within the instrument. This low-pressure condition is vital for several key processes integral to mass spectrometric analysis, including ionization, ion manipulation . Mass Spectrometry (MS) stands as a foundation in modern analytical chemistry, offering unparalleled capabilities in identifying and quantifying molecules with remarkable precision. Molecular ions are produced in a conventional source by electron bombardment of hydrogen gas. 451] The. A vacuum system is indispensable to the free flight of ions in a mass analyzer. Beginning with the simple question 'Why do we need vacuum' we will move on to discuss the types of vacuum technology typically used on mass specs, and then review the evolution of vacuum subsystems from the. Mass Spectrometry is used for many analytical purposes including: In analytical laboratories, the most common applications involving a mass spectrometer are Pharmaceutical, Biopharma, Drug screening, Environmental testing, Food & beverage testing, Petrochemical.

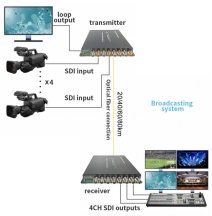
The function of the vacuum generator in a spectrometer

The vacuum system in a mass spectrometer typically operates below in the micron range to allow the free flight of molecular fragments to travel to the detector. Mass spectrometers can analyze atoms, ...

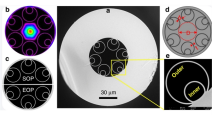
Wherever and whenever a vacuum needs to be created, it is essential to ensure as far as possible, the integrity (i.e. the leak-tightness or simply “tightness”) of the system.

The primary function of a vacuum system in mass spectrometry is to create and maintain a low-pressure environment within the instrument. This low-pressure condition is vital for several key processes ...

All mass spectrometers operate at very low pressure (high vacuum). This reduces the chance of ions colliding with other molecules in the mass analyzer. Any ...



A turbomolecular pump is a clean vacuum pump suitable as the main pump of a mass spectrometer. The blades of a turbomolecular pump (TMP), rotating with high speed, for example 60,000 RPM, hit ...

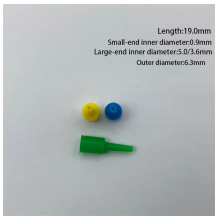


A turbomolecular pump is a clean vacuum pump suitable as the main pump of a mass spectrometer. The blades of a turbomolecular pump (TMP), rotating with high speed, for example 60,000 RPM, hit ...

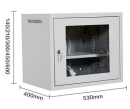
[Pg.134] Mass spectrometers, workhorse instmments described in Chapter 2, require a vacuum to function. A mass spectrometer generates a beam of ions that is sorted according to specifications of ...

One of the most critical areas in a mass spectrometer is the vacuum chamber where the fundamental mass to charge separation takes place. The vacuum chamber must be free of any scratches or ...

In this article, we will explore why vacuum is needed in mass spectrometry, discussing the implications of pressure on ion behavior, instrument design, and overall analytical performance.



The new vacuum-compatible area detector allows quantification of the aberration functions contributing to the observed line shape and in situ alignment of the crystal optics. This latter procedure is ...



It measures the mass to charge ratio (m/z) of a sample and usually displays a resulting mass spectrum as a plot of component intensity as a function of m/z.

	Beginning with the simple question ''Why do we need vacuum'' we will move on to discuss the types of vacuum technology typically used on mass specs, and then review the evolution of vacuum ...
	Among the critical components of a mass spectrometer, the vacuum system plays a pivotal role in producing accurate and reliable results. In this article, we will explore why a mass ...

Contact Us

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

Website: https://www.indzawo.co.za
Email: sales@indzawo.co.za
Phone: +27 71 296 8473
Address: 22 Quantum Street, Midrand, 1685, Gauteng, South Africa

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