

Function of the lc-ms interface

Article Overview

The LC-MS interface serves as the critical coupling mechanism that transfers analytes from the liquid chromatography system into the mass spectrometer while ionizing them and maintaining vacuum compatibility.

Role and Importance

The LC-MS interface is essential because liquid chromatography and mass spectrometry operate under fundamentally different conditions. LC uses a pressurized liquid mobile phase to separate compounds, whereas MS requires a high-vacuum environment to detect ions accurately. The interface efficiently transfers the separated analytes from the LC column into the MS ion source, removes most of the mobile phase, and preserves the chemical identity of the analytes without interfering with ionization or vacuum conditions .

Mechanism of Action

The interface typically performs three key functions:

- **Solvent Removal and Ionization:** The interface converts the liquid effluent from the LC into gas-phase ions suitable for MS detection. This is achieved using atmospheric pressure ionization (API) techniques, such as electrospray ionization (ESI), atmospheric pressure chemical ionization (APCI), or atmospheric pressure photoionization (APPI) .
- **Ion Focusing and Transfer:** Once ionized, the analyte ions are focused into a beam using an ion guide and directed into the mass analyzer. This ensures minimal loss of analyte and maintains sensitivity

Article Content

Oct 29, 2025

LC-MS Interfaces | Max Planck Institute for Dynamics of Complex ...

LC-MS Interfaces Motivation The analysis of biomolecules by mass spectrometry (MS) put rather severe constraints on the ionization

May 03, 2026

Liquid chromatography-mass spectrometry

Overall, the interface is a mechanically simple part of the LC-MS system that transfers the maximum amount of analyte, removes a

Oct 09, 2025

LC-MS Interfaces

Abstract Liquid chromatography (LC) coupled to mass spectrometry (MS) is a well-established analytical technique

Aug 19, 2025

Liquid Chromatography Mass Spectrometry (LCMS): Principle,

Liquid Chromatography-Mass Spectrometry (LC-MS) is the integration of the two systems, HPLC and MS, through an

Nov 07, 2025

Interfaces for LC-MS : Shimadzu (Deutschland)

Therefore, it is crucial to have an interface to connect the LC outlet to the MS inlet that can efficiently transfer the LC mobile phase to

Aug 26, 2025

Liquid Chromatography-Mass Spectrometry

LC-MS is defined as a hyphenated technique that combines liquid chromatography (LC) with mass spectrometry (MS) for the

Apr 14, 2026

Basic instrumentation of LC-MS

2D-LCMS combines two chromatography modes to improve separation selectivity. It enables better cleanup and pre-concentration of

May 18, 2026

Basics of LC/MS (5988-2045EN)

Earlier LC/MS systems used interfaces that either did not separate the mobile phase molecules from the analyte molecules (direct

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LC-MS Explained: Principles, Platforms, and a Reproducible Workflow ...

LC-MS instruments differ in resolving power, mass accuracy, duty cycle, and therefore in the analytical problems they solve. A

Sep 21, 2025

"AN ANALYTICAL OVERVIEW OF LIQUID CHROMATOGRAPHY-MASS SPECTROSCOPY (LC ...

Abstract: LC-MS is a technique that combines physical separation capabilities of liquid chromatography with mass analysis

Jul 07, 2026

LC-MS - What Is LC-MS, LC-MS Analysis and LC-MS/MS

In this article, we consider how LC-MS works, what it tells us and highlight some of the technique's strengths and

Jan 17, 2026

PowerPoint Presentation

The thermospray interface overcame many of the problems encountered with the moving-belt and direct-liquid-introduction interfaces

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Recent Advances in Liquid Chromatography-Mass Spectrometry (LC-MS ...

Liquid chromatography-mass spectrometry (LC-MS) is a highly sophisticated analytical technique that has become

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Basic instrumentation of LC-MS : Shimadzu (Europe)

The ion guide, mass analyzer and detector are all housed in a vacuum in the MS. By holding it in a vacuum, the generated ions are

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Integrating LC and MS

It generally consists of a LC separating system, a mass analyzer and the LCMS interface API unit. Generation of gaseous ions is

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Basic instrumentation of LC-MS : Shimadzu (United Kingdom)

For a LCMS system (Figure 5), the instrumentation comprises of: (1) a LC unit, (2) an interface between the LC and MS, (3) an ion

Jan 24, 2026

Basic instrumentation of LCMS : Shimadzu Scientific Instruments

Basic instrumentation of LCMS and HPLC. The basic components of a LC unit consist of: (1) Pump - delivers the mobile phase at a

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Integrating LC and MS : Shimadzu (Europe)

Integrating LC and MS Chapter 2 introduces the detailed configuration of the LCMS instrumentation. It generally consists of a LC

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Basic instrumentation of LC-MS : Shimadzu SOPS

The basic components of a LC unit consist of: (1) Pump - delivers the mobile phase at a required flow rate, (2) Autosampler - injects

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Integrating LC and MS : Shimadzu (Asia Pacific)

Integrating LC and MS Chapter 2 introduces the detailed configuration of the LCMS instrumentation. It generally consists of a LC

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Interfaces for LC-MS

The moving-belt interface separates the condensed liquid-phase side of the LC from the high vacuum of the MS and uses a belt to

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Interfaces for LC-MS

Therefore, it is crucial to have an interface to connect the LC outlet to the MS inlet that can efficiently transfer the LC mobile phase to

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Liquid chromatography-tandem mass spectrometry for clinical

These techniques of clinical LC-MS/MS will be the focus of the current Primer, with most examples utilizing ESI triple

Mar 22, 2026

Basic instrumentation of LC-MS : Shimadzu (Deutschland)

For a LCMS system (Figure 5), the instrumentation comprises of: (1) a LC unit, (2) an interface between the LC and MS, (3) an ion

Apr 02, 2026

A Comprehensive Review on Liquid Chromatography

Modern LC-MS systems offer enhanced resolution, improved ionization methods, and sophisticated mass analysers that facilitate

Oct 26, 2025

Liquid Chromatography Mass Spectrometry (LC-MS) Information

Our liquid chromatography mass spectrometry (LC-MS) overview explains how this technology is used to identify and quantify larger

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