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Calibration Specification for Organic High Resolution Magnetic Sector Mass Spectrometers

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(English Translation)

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Preview: page 1 of 4 shown, 15 in the full document. Complete English PDF, instant download:
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Table of Contents

1 Scope(1)
2 References (1)
3 Terms and units of measurement(1)
3.1 Mass Resolution(1)
3.2 Mass-to-charge ratio (1)
3.3 Selected ion detection(1)
3.4 Mass Accuracy(1)
3.5 Quality Stability(1)
3.6 SNR(1)
3.7 Scanning speed(1)
4 Overview(1)
5 Metrology Characteristics(2)
6 Calibration Conditions(2)
6.1 Laboratory environment(2)
6.2 Measuring standards and other instruments (3)
6.3 Reagents(3)
7 Calibration items and calibration methods (3)
7.1 Mass range(3)
7.2 Mass accuracy(3)
7.3 Quality stability(4)
7.4 Mass spectral resolution(4)
7.5 Signal-to-noise ratio(4)
7.6 Repeatability of isotopic abundance ratios (5)
7.7 Retention time repeatability(5)
8 Expression of calibration results (5)
9 Recalibration interval(6)
Introduction

9 Recalibration interval(6)

Appendix A Calibration Raw Record Format(7)

Appendix B Calibration Certificate Inside Page Format (9)

Preview: page 2 of 4 shown, 15 in the full document. Complete English PDF, instant download:
https://chinastandards.org/standards/jjf-1930-2021

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Appendix C Signal-to-Noise Ratio Uncertainty Evaluation Example(11)

Appendix D Theoretical mass-to-charge ratio of the main ions of perfluorotributylamine (FC43) (15)

Appendix E Theoretical mass-to-charge ratio of main ions of perfluorokerosene (PFK) (16)

Introduction

This specification is based on JJF 1071-2010 "Rules for Compilation of National Metrology Calibration Specifications", JJF 1001-2011 "General Compiled with Measurement Terms and Definitions", JJF 1059.1-2012 "Measurement Uncertainty Evaluation and Representation".

The formulation of this specification mainly refers to GB/T 33864-2017 "General Specification for Mass Spectrometer", GB/T 6041-2020 "General Principles of Mass Spectrometry Analysis Methods", JJF 1164-2018 "Gas Chromatography-Mass Spectrometry Calibration Specifications", GB/T 32267-2015 "Analytical Instrument Performance Measurement Terminology" and other documents.

This specification is published for the first time.

Specification for calibration of organic high-resolution sector magnetic field mass spectrometers

1 Scope

This specification applies to the calibration of organic high-resolution sector magnetic field mass spectrometers.

2 Reference documents this specification references the following documents.

JJG196-2006 Verification rules for commonly used glass measuring instruments JJG646-2006 Pipette Verification Regulations GB/T 6041-2020 General rules for mass spectrometry analysis methods GB/T 32267-2015 Analytical Instrument Performance Determination Terms GB/T 33864-2017 General Specification for Mass Spectrometer for dated references, only the dated version applies to this specification; for undated references the latest version (including all amendments) applies to this specification.

3 Terminology and units of measurement the terms and definitions defined in GB/T 32267-2015 and the following apply to this specification.

3.1 Mass resolution the ability of a mass spectrometer to resolve the difference in mass between two adjacent mass spectral peaks. When M is the average mass of two adjacent peaks, deltaM is the mass difference between adjacent peaks. When the peak valley of two adjacent peaks is 10% of the peak height, the average quality of the two peaks is expressed.

Preview: page 3 of 4 shown, 15 in the full document. Complete English PDF, instant download:
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The ratio of the mean to the quality difference, that is, R= deltaM

3.2 Masschargeratio

The ratio of the mass (m) of an ion to the number of charges (z) it carries, expressed as m/z.

The process of selecting only one or more ions of a specific mass for detection.

3.4 Massaccuracy

The deviation between the mass spectrometer's measurement of the mass of an ion and the theoretical value.

3.5 Massstability

The mass spectrometer is calibrated with a standard mass scale, over a period of time, the change in the measured value of the specified ion mass.

3.6 Signal-to-noise ratio the ratio of the signal intensity S of the tested sample to the baseline noise intensity N, denoted as beta.

3.7 Scan speed the speed at which the number of ion masses is scanned (acquired) per unit time.

4 Overview

The principle of the organic high-resolution sector magnetic field mass spectrometer (hereinafter referred to as the mass spectrometer) is that the sample molecules are absorbed by the ionization source when they enter the ionization source.

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