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**Calibration Specification for Stable Isotope Gas Mass
Spectrometer
(English Translation)**

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Stable isotope gas mass spectrometer calibration specification

1 Scope

This specification applies to the calibration of stable isotope gas mass spectrometers (hereinafter referred to as mass spectrometers), other types of gases.

The mass spectrometer can be calibrated with reference to this specification.

2 Citations

JJF 1001-1998 General Terms and Definitions JJF 1059-1999 "Measurement and Expression of Measurement Uncertainty" GB/T 15481-2000 "General requirements for testing and calibration laboratory capabilities" Use of this specification should be done with the current valid version of the above cited documents.

3 terms and units of measure

3.1 Isotope abundance isotope abundance the atomic share of the various isotopes possessed by an element in the element. Isotope abundance representation There are. (1) atomic fraction. the number of moles of a certain stable isotope and the total number of moles of the element Ratio; (2) atomic percentage. the atomic fraction expressed in percentage.

3.2 isotope abundance ratio isotopic abundance ratio the ratio of the isotopic abundance of an element to the other isotopic abundance of that element.

3.3 delta value the specific isotope abundance ratio of two specific isotopic abundances of a certain element of the sample to be compared with their standard sample isotope abundance Ratio, except for the ratio of the latter, dimensionless. The delta value is expressed in thousands of fractions, namely.

$$\delta = \frac{R_u - R_s}{R_s} \times 1000$$

3 per mille (1)

Where. R_u ---the ratio of the abundance of a particular isotope of an element of a sample to the maximum isotope of the element;

R_s ---the isotope abundance ratio corresponding to the sample to be tested in the standard.

3.4 Mass range the mass range represents the interval from the smallest to the largest mass of the mass spectrometer that can be measured by the mass spectrometer. The unit is the atomic mass list.

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3.5 resolution Resolution Characterization The ability of a mass spectrometer to identify two adjacent masses of ion beams, defined as the mass range of the mass spectrometer the extent to which a particular mass M position is separated from the two ion beams at the M ΔM position and expressed as $M/\Delta M$ the resolution of the mass spectrometer. Dimensionless.

3.6 peak shape factor factor of peak shape