

**INDUSTRY STANDARD OF THE  
PEOPLE'S REPUBLIC OF CHINA**

**JJF 1120-2004**

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**Calibration specification for thermal ionization isotope mass  
spectrometers**

**(English Translation)**

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## 9 Re-study interval (8)

Appendix A Calibration Record Format (9)

Appendix B Thermal Ionization Isotope Mass Spectrometer Calibration Certificate Format (11)

Thermal ionization isotope mass spectrometer calibration specification

### 1 Scope

This specification applies to the calibration of various types of thermal ionization isotope mass spectrometers (hereinafter referred to as mass spectrometers).

### 2 Citations

JJF 1001-1998 General measurement terms and definitions JJF 1059-1999 Measurement Uncertainty Evaluation and Representation 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 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 the ratio of the isotopic abundance of an element to the other isotopic abundance of that element.

### 3.3 Quality range

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

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### 3.4 resolution

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

3.5 peak shape factor the peak shape factor characterizes the ion beam imaging characteristics, it is associated with the entrance and exit slits of the mass spectrometer, and the ion optics field shape it is closely related to the structure of the analyzer.

Dimensionless.

3.6 System Stability System stability characterizes the stability of the mass spectrometer power supply system, which is measured by the stability of the ion beam. main Dependent on the ion source's accelerating voltage, magnetic field strength and stability of the sample strip, ionization strap supply current, and mass spectrometer the resolution is closely related and dimensionless.

3.7 Sensitivity (ion yield) Sensitivity characterizes the conversion efficiency of atoms (or molecules) with atomic ions (or molecular ions). Mass spectrometer when the receiver detects an isotope ion of an element, the number of atoms of the isotope to be introduced in the ion source.