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Calibration Specification for Calibration Device of Raman Spectrometers

拉曼光谱仪校准装置校准规范

(English Translation)

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Introduction

The compilation of this specification is based on JJF 1071-2010 "Rules for the Compilation of National Metrology and Calibration Specifications", JJF 1001-2011 "General Metrology Terms and Definitions" and JJF 1059.1-2012 "Evaluation and Expression of Measurement Uncertainty" as the basis and basis According to data, and mainly refer to JJF 1544-2015 "Raman Spectrometer Calibration Specification" and ASTME1683-02 (2014) "Standard Practice for Testing the Scanning Raman Spectrometer" (Standard Practice for Testing the PerformanceofScanningRamanSpectrometers).

This specification is released for the first time.

Calibration specification for Raman spectrometer calibration device

1 Scope

This specification applies to the calibration of Raman spectrometer calibration devices.

2 Reference documents this specification refers to the following documents.

JJF 1544-2015 Raman Spectrometer Calibration Specification ASTME1683-02 (2014) Scanning Raman Spectrometer Performance Test Standard Operation Specification (Standard PracticeforTestingthePerformanceofScanningRamanSpectrometers) for dated reference documents, only the dated version applies to this specification; for undated references the latest version (including all amendments) is applicable to this specification.

3 Terms and units of measurement the terms and definitions specified in JJF 1544-2015 "Raman Spectrometer Calibration Specification" and the following terms and definitions apply to this specification.

3.1 Raman shift Ramanshift the frequency change of Raman scattered light relative to the excitation light, referred to as "frequency shift", in cm-1.

3.2 relative intensity relative intensity the normalized result of Raman scattering intensity relative to the maximum intensity value.

4 overview

The Raman spectrometer calibration device is composed of standard silicon wafers, standard glass and atomic line lamps.

The Raman peak of the standard silicon wafer near 520cm-1 is used to calibrate the frequency shift indication error of the Raman spectrometer. standard Glass is a glass doped with metal oxides, which can generate a stable and continuous spectral signal under laser excitation for calibration the relative intensity of the Raman spectrometer. The atomic spectrum emitted by the atomic spectrum lamp is a natural reference and is used to calibrate the Raman spectrometer Spectral resolution, frequency shift repeatability and

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other parameters.

5 Metrological characteristics

5.1 Standard silicon wafer Raman frequency shift the expanded uncertainty of the center frequency shift of the Raman peak near 520cm-1 is U<=0.5cm-1 (k=2).

5.2 Relative strength of standard glass the expanded uncertainty of relative strength U<=5% (k=2).

Note: The above indicators are not used as eligibility criteria, only for reference.

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