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**Test Methods of Infrared Transmittance for
Infrared Optical Glass - Fourier Transform Method**

红外光学玻璃红外透过率测试方法

傅里叶变换法

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Test Methods of Infrared Transmittance for Infrared Optical Glass - Fourier Transform Method

1 Scope

This Standard specifies the terms, definitions, test principle, test equipment, test samples, test environment, test procedure, data processing, measurement uncertainty and test report of the test of infrared transmittance for infrared optical glass through Fourier transform method.

This Standard is applicable to the test of infrared transmittance of infrared optical glass (wavelength: $\leq 2.5 \mu\text{m}$); infrared optical materials, such as crystal and porcelain, can also take this Standard as a reference.

2 Terms and Definitions

The following terms and definitions are application to this Standard.

2.1 Infrared Transmittance

Infrared transmittance refers to the transmittance of infrared optical glass on the infrared band. It is expressed as the percentage of radiant (light) flux that transmits the front and back side of the sample.

3 Test Principle

The test principle of the test of infrared transmittance for infrared optical glass through Fourier transform method is demonstrated in Figure 1 below.

Generally speaking, the exit wavelength of infrared source adopted in instrument shall be within the range of $2.5\ \mu\text{m} \sim 25\ \mu\text{m}$. Before radiating into the interferometer, the light source shall pass collimated beam expander and uniform beam expander. The effective caliber of the instrument shall be $\geq 30\ \text{mm}$, and the resolution shall be $\geq 5 \times 10^6\ \text{cm}^{-1}$.

5 Test Sample

5.1 Dimension requirement: the sample shall be $>$ effective caliber of the light hole; the thickness shall be $\geq 2\ \text{mm}$.

5.2 Processing requirement: sample shall be processed into parallel plate; the two luminous surfaces shall be polished; surface requirement: aperture N shall be ≤ 1 , partial aperture ΔN shall be ≤ 0.5 ; parallelism shall be $\leq 1'$; surface rickets V , the remaining surfaces shall be thoroughly grinded.

6 Test Environment

6.1 Ambient Temperature

Ambient temperature shall be within $20\ ^\circ\text{C} \pm 5\ ^\circ\text{C}$.

6.2 Relative Humidity

The relative humidity of test environment shall be $\leq 70\%$.

7 Test Procedure

7.1 Switch on the instrument, pre-heat to stability.

7.2 Open the test software, input certain parameters, such as the range of wave number, the number of scanning and resolution.

7.3 Test cavity baseline.

7.4 Wipe the sample clean; put it into the sample room.

7.5 Test the transmittance of the sample; record the test data and curves.

7.6 Take out the sample, close the software; switch off the computer and the instrument.

8 Data Processing

Export the transmittance data and curves of various wavelengths. Generally speaking,

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