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LABORATORY REPORT

Adjust and use of the spectrometer

INTRODUCTORY SUMMARY&PURPOSE

1 Understand the basic principle of spectrometer structure

2. TO learn Adjustment method of spectrometer

3. Measures a vertical angle of prism

EXPERIMENT EQUIPMENT

light spectrometer prism

EXPERIMENT PRINCIPLE

The spectrometer is used in optical experiment instrument for precise measurement of deflection of light angle, light in the process of communication, interface to meet different medium reflection and refraction, thus changing the direction of propagation, there is a certain angle between the incident light and reflected light or refraction of light。

Their relationship must seek the law of reflection, refraction and diffraction law. With the help of the spectrometer and the use of reflection, refraction, diffraction and other physical phenomena, can measure the complete polarization angle, refractive index of the crystal, the wavelength and other physical quantities, its use is very extensive.

The spectrometer must meet two requirements of subordinates:

The incident light and the exit light should be parallel light.

The incident light, out of plane radiation light and reflection of the normal form should be parallel with the dial disc spectrometer.

EXPERIMENT RECORD

Adjusting the telescope optical axis and the spectrometer vertical spindle

Regulation of parallel light tube in parallel with the optical axis of the telescope

Measuring three prism

The number

LAB PROCEDURE

1.Familiar with the structure

The control structure diagram and object spectrometer, familiar with each part of the concrete structure and the adjustment of the spectrometer, using method.

2.Visual coarse

In order to adjust the telescope and parallel to the optical axis and the spectrometer central axis strictly vertical, can be the first to use visual method for the coarse, the telescope, a parallel light tube and the stage surface substantially perpendicular to the central axis.

3.Adjusting the telescope with a straight alignment method

(1) light source, so that the light from the telescope reticle through sufficient lighting division (2) light emitting diode, an optical surface of the three prism lens telescope attached to the end of the mouth, and the proper moment telescope focusing handwheel, from the telescope to find from the green cross beam of the reflected.

4.Adjust the telescope, which are perpendicular to the central axis of the spectrometer

The three prism is placed in the stage, is a side is perpendicular to the side of the stage, reticle, is then adjusted telescope, telescope, pitch adjusting the telescope near, stage pitch adjusting screws and the side below the line.

5.Adjust collimator

The telescope has been adjusted to regulate parallel light pipe, if the collimator exit parallel light, then slit image at the focal surface of the telescope objective lens, telescope can clearly see the slit image, and there is no parallax and fork silk.

CONCLUSION

Spectrometer is A precision instruments which is commonly used on optical experiments , and its structure is complex, the adjustment is difficult. but as long as we mastering method of adjustment , careful and meticulous, we could accomplish tasks. From the experiment, it should be realized that the precision instrument must be carefully adjusted to display the function of the instrument measuring precision. So the adjustment of the instrument is the main part of this experiment.

Sincerely,
Guangwei Hong