

ICS 71.040.40
CCS G 04



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

GB/T 19502-2023

Replacing GB/T 19502-2004

**Surface chemical analysis - General rules for glow discharge
optical emission spectrometry(GD-OES)**

表面化学分析 辉光放电发射光谱方法通则

(English Translation)

Issued on: December 28, 2023

Implemented on: July 1, 2024

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and Definitions	2
4 Principle	2
5 Instruments	4
6 Analysis steps	6
Appendix A (Informative) Safety Matters	9
Reference	10

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents" Drafting:

This document replaces GB/T 19502-2004 "General Principles of Glow Discharge Emission Spectroscopy Methods for Surface Chemical Analysis" and is consistent with GB/T 19502-Compared with:2004, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

- a) Added the application of CCD detector (see Chapter 4);
- b) Changed the applicable scope of light source parameters such as discharge current, discharge voltage, gas flow and radio frequency [see 5.1a),:2004 edition 5:1:1];
- c) Delete special instructions for using CCD and CID detectors (see 5.2 of the:2004 edition);
- d) Added the application of CCD and CID detectors (see 5.3);
- e) Added the requirement that the working curve sample selected for depth profiling quantitative analysis "should have a measurable and reproducible sputtering rate" (see 6.2:2);
- f) Added requirements for calculating the working curve function (see 6.2:3):

This document is equivalent to ISO 14707:2021 "Introduction to the use of glow discharge emission spectrometry for surface chemical analysis":

This document has made the following minimal editorial changes:

---In order to coordinate with the existing standards, the name of the standard is changed to

"General Principles of Glow Discharge Emission Spectroscopy Methods for Surface Chemical Analysis":

Please note that some content in this document may be subject to patents: The publisher of this document assumes no responsibility for identifying patents:

1 Scope

GD-OES,) A guide to depth and bulk analysis: This document is limited to discussing the analysis of rigid solid samples and does not include powders, gases analysis of solids or solutions: In conjunction with existing and future specific standard methods, this document is intended to enable standardized management of instruments and measurement conditions:

control:

Although different types of glow discharge emission light sources have been introduced in recent years, the vast majority of glow discharge emission sources currently use DC and radio frequency light sources:

Electric spectroscopy equipment is still dominated by the Grimm type with hollow anodes: However, unlike the original Grimm-type light source where the cathode contacts the front of the sample, for some light sources, the cathode contact is often placed on the back of the sample, such as the Marcus type light source: The terms contained in this document also apply to the above 2 and other types of light sources, the Grimm type light source is only used as an example:

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, the dated quotations for undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document:

ISO 3497 Metalliccoatings-MeasurementofMetaliccoatings-Measurementof Note: GB/T 16921-2005 X-ray spectroscopy method for measuring the thickness of metal coatings (ISO 3497:2000, IDT) ISO 5725-1 Accuracy of measurement methods and results (correctness and precision) Part 1: General principles and definitions [Accuracy Note: GB/T 6379.1-2004 Accuracy of measurement methods and results (correctness and precision) Part 1: General principles and definitions (ISO 5725-1: 1994,IDT)

ISO 5725-2 Accuracy of measurement methods and results (correctness and precision) Part 2: Determination of repeatability of standard measurement methods mentmethod]

Note: GB/T 6379.2-2004 Accuracy of measurement methods and results (correctness and precision) Part 2: Determining the repeatability and reproducibility of standard measurement methods Basic methods of visibility (ISO 5725-2:1994, IDT) ISO 5725-3 Accuracy of measurement methods and results (correctness and precision) Part 3: Intermediate precision of standard measurement methods Note: GB/T 6379.3-2012 Accuracy of measurement methods and results (correctness and precision) Part 3: Intermediate degree of precision of standard measurement methods Quantity (ISO 5725-3:1994, IDT) ISO 5725-4 Accuracy of measurement methods and results (correctness and precision) Part 4: Determining the correctness of standard measurement methods Note: GB/T 6379.4-2006 Accuracy of measurement methods and results (correctness and precision) Part 4: Basis for determining the accuracy of standard measurement methods this method (ISO 5725-4:1994, IDT)