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**Recommended practice for  
chemical analysis by atomic  
absorption spectrometry**

**Part 2: Graphite furnace  
spectrometry**

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The following interests are represented on Committee CH/16:

Bureau of Steel Manufacturers of Australia  
Confederation of Australian Industry  
CSIRO, Division of Energy Chemistry  
CSIRO, Division of Materials Science and Technology  
CSIRO, Division of Mineral Chemistry  
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## PREFACE

This Standard was prepared by the Standards Australia Committee on Spectroscopy under the direction of the Chemical Standards Board as an additional part of the AS 2134 series of Standards on atomic absorption spectrometry. Part 1 covers flame atomic absorption spectrometry while a further part, not yet published, will deal with vapour generation atomic absorption spectrometry.

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## STANDARDS AUSTRALIA

## Australian Standard

## Recommended practice for chemical analysis by atomic absorption spectrometry

## Part 2: Graphite furnace atomic absorption spectrometry

## SECTION 1. SCOPE AND GENERAL

**1.1 SCOPE.** This Standard sets out recommendations for instrumentation and operating techniques suitable for chemical analysis by graphite furnace atomic absorption spectrometry (AAS) and includes a summary of testing procedures and requirements for safe operation. While this Standard is written primarily for graphite furnace, the principles are applicable to alternative types of electrothermal atomization; and while written substantially for liquid sample introduction, the principles discussed are of application to solid sample introduction.

## NOTES:

1. Flame atomization and vapour generation techniques are dealt with in other parts of the AS 2134 series of Standards.
2. This Standard should be read in conjunction with the instrument manufacturer's recommendations.

**1.2 PRINCIPLE.** Graphite furnace AAS relies upon—

- (a) heating a sample sufficiently to produce free atoms;
- (b) free atoms of an element being able to absorb energy only at certain discrete wavelengths (usually resonance wavelengths: refer Clause 1.4); and

(c) the energy absorbed being a function of the concentration of the absorbing atoms.

The technique described in this Standard involves the introduction of a sample, usually a solution of the sample, into a graphite furnace, heating of the furnace by an electric current and measurement of the absorption of energy at a specified wavelength.

**1.3 REFERENCED DOCUMENTS.** The documents below are referred to in this Standard:

## AS

2135 Glossary of terms used in flame atomic absorption spectroscopy

2850 Chemical analysis—Interlaboratory test programs—For determining precision of analytical method(s)—Guide to the planning and conduct

**1.4 DEFINITIONS.** For the purpose of this Standard the definitions in AS 2135 and the following apply.

**1.4.1 Resonance wavelength**—a wavelength corresponding to the transfer of an electron between the ground state and a higher energy level in a specified atom.