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Australian Standard 2135—1978

GLOSSARY OF TERMS USED IN FLAME ATOMIC ABSORPTION SPECTROSCOPY

STANDARDS ASSOCIATION OF AUSTRALIA
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THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL organizations and departments were officially represented on the committee entrusted with the preparation of this standard:

Australian Atomic Energy Commission

Australian Mineral Development Laboratories

Bureau of Steel Manufacturers of Australia

CSIRO, Division of Chemical Physics

Department of Defence

National Association of Testing Authorities

Railways of Australia Committee

Royal Australian Chemical Institute

State Electricity Commission of Victoria

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GLOSSARY OF TERMS USED IN FLAME ATOMIC ABSORPTION SPECTROSCOPY

AS 2135—1978

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PREFACE

This standard was prepared by the Association's Committee on Spectroscopy as a revision of AS K206—1970, which it accordingly supersedes. AS K206 was compiled primarily for use with AS CK18, Code of Practice for the Chemical Analysis of Materials by Atomic Absorption Spectroscopy, now superseded by AS 2134.

AS K206 was based on a document entitled 'Tentative Proposals for the Definition of Terms used in Atomic Absorption Spectroscopy', which was prepared by the Atomic Absorption Group of the Society for Analytical Chemistry for consideration by the Second International Atomic Absorption Spectroscopy Conference, Sheffield, 1969.

In the course of preparation of this revised glossary, several additional documents were considered, including—

Groupement pour l'Avancement des Methodes Spectrographiques: 'Terminologie en Absorption Atomique', *Methodes Physiques d'Analyse (GAMS)*, 1970, **6**, 361.

American Society for Testing and Materials: 'Proposed Recommended Practices for Atomic Absorption Spectrometry' (1971 *Annual Book of ASTM Standards*, Part 30, p. 1414).

International Union of Pure and Applied Chemistry: Nomenclature, Symbols, Units and their Usage in Spectrochemical Analysis—III. Analytical Flame Spectroscopy and Associated Non-flame Procedures. *Pure and Applied Chemistry*, 1976, **45**, 105.

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

GLOSSARY OF TERMS USED IN FLAME ATOMIC ABSORPTION SPECTROSCOPY

SECTION 1. GENERAL

1.1 atomic absorption spectroscopy — An analytical method for the determination of elements, based on measurement of the absorption of radiant energy by free atoms.

1.2 atomic fluorescence spectroscopy — An analytical method for the determination of elements, based on the absorption of radiant energy by free atoms of the element and subsequent measurement of radiant energy emitted by these atoms. Such emitted radiant energy corresponds to the transfer of an electron from a higher energy level in the atom to a lower energy level, often the ground state, in the atom.

1.3 characteristic concentration — A quantity frequently used to describe the performance of an atomic absorption spectrometer for an element at a particular wavelength. It is the concentration, in solution, of analyte which will produce a net absorbance of 0.0044 units. (The term 'sensitivity' has frequently, but incorrectly, been used in the past for this concentration value.)

1.4 limit of detection — The concentration of an element in solution which can be detected with a probability of 0.95, *viz* that concentration of the element that gives a reading equal to twice the standard deviation of a series of at least ten measurements at or near blank level.

1.5 analyte — The element to be determined.

1.6 concomitant — Any substance accompanying the analyte.

1.7 noise level — The maximum displacement peak to peak, about the median line, on a recording of the instrument output for a period of not less than 30 s. This is reported as a fraction of the signal.

1.8 transmittance (T) — The ratio of the transmitted intensity of radiation to the incident intensity of radiation.

$$T = \frac{\text{transmitted intensity}}{\text{incident intensity}}$$

1.9 absorbance (A) — A measure of the decrease in the intensity of radiation when it passes through matter. Absorbance is related to transmittance by the formula—

$$A = \log_{10} \frac{1}{T}$$