Terminology of separation methods (IUPAC Recommendations 2017)

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Pure and Applied Chemistry, 2018
Volume 90, Issue 1, pp. 181–231

This chapter contains terms and definitions of concepts relating to analytical aspects of separation. Most of the terms have been drawn from papers published in *Pure and Applied Chemistry.* A number of new sections and terms have been included, using terms proposed as definitions in the literature. To complete these areas, a number of new terms have been proposed for acceptance.

The capitalization of previously accepted terms has been corrected to bring them up to date with current practice. Terms have also been amended, in certain cases, to link the definitions specifically to chromatography "(in chromatography)". In a few cases, minor changes have been made to include both LC and GC in a term, or to reflect significant changes in practice, such as the universal change from chart recorders to electronic integration.

This Recommendation is part of the update of the Orange Book [IUPAC project 2012-005-1-500] and will be the basis for a chapter in the forthcoming fourth edition.

https://doi.org/10.1515/pac-2017-0111

Interpreting and propagating the uncertainty of the standard atomic weights (IUPAC Technical Report)

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Pure and Applied Chemistry, 2018
Volume 90, Issue 2, pp. 395-424

In 2009, the IUPAC Commission on Isotopic Abundances and Atomic Weights (CIAAW) introduced the interval notation to express the standard atomic weights of elements whose isotopic composition varies significantly in nature. However, it has become apparent that additional guidance on how representative values should be derived from these intervals would be helpful, as well as on how the associated uncertainty should be characterized and propagated to cognate quantities, such as relative molecular masses. The assignment of suitable probability distributions to the atomic weight intervals is consistent with the CIAAW's goal of emphasizing the variability of the atomic weight values in nature. These distributions, however, are not intended to reflect the natural variability of the abundances of the different isotopes in the earth's crust or in any other environment. Rather, they convey states of knowledge about the elemental composition of "normal" materials generally, or about specific classes of such materials. In the absence of detailed knowledge about the isotopic composition of a material, or when such details may safely be ignored, the probability distribution assigned to the standard atomic weight intervals may be taken as rectangular (or, uniform). This modeling choice is a reasonable and convenient default choice when a representative value of the atomic weight and associated uncertainty are needed in calculations involving atomic and relative molecular masses. When information about the provenance of the material or other information about the isotopic composition needs to be taken into account, then this distribution may be non-uniform. In this report, several examples are presented of how the probability distribution of an atomic weight or relative molecular mass may be characterized, and also how it may be used to evaluate the associated uncertainty.

https://doi.org/10.1515/pac-2016-0402

Mass and volume in analytical chemistry (IUPAC Technical Report)

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Pure and Applied Chemistry, 2018
Volume 90, Issue 3, pp. 563-603

This technical report reviews measurements of mass and volume, including a review of the SI for mass, length, and amount of substance; principles of mass measurement; the calibration of masses and glassware; gravimetry; volumetry; and titrimetry. Measurement uncertainty, metrological traceability, and aspects of quality assurance are also treated.

The text will become the basis for a chapter in the fourth edition of the IUPAC Orange Book [IUPAC project 2012-005-1-500].

https://doi.org/10.1515/pac-2017-0410