IUPAC Recommendations approved by the Interdivisional Committee on Terminology, Nomenclature and Symbols (ICTNS) and published, or scheduled to be published, in *Pure and Applied Chemistry* from Sept 2023 to June 2025.

Published in PAC Feb 2025

Camões, Maria F., Christian, Gary D. and Hibbert, David Brynn.
"**Glossary of terms for mass and volume in analytical chemistry (IUPAC Recommendations 2024)**"
Pure and Applied Chemistry, vol. 97, no. 2, 2025, pp. 137-147.
https://doi.org/10.1515/pac-2023-0903

Abstract

A glossary of terms and definitions for concepts in the use of mass and volume in analytical chemistry is presented. These include definitions for analytical methods of measurement (gravimetry, volumetry, and titrimetry) and supporting terms. Terms are updates of earlier recommendations or Orange Book entries.

{See project 2021-018-1-500}

Published in PAC Dec 2024

Drábik, Milan, Macaluso, Robin T., Krivosudský, Lukáš and Armelao, Lidia.
"**Definition of materials chemistry (IUPAC Recommendations 2024)**"
Pure and Applied Chemistry, vol. 96, no. 12, 2024, pp. 1693-1698.
https://doi.org/10.1515/pac-2023-0215

Abstract

Materials chemistry is focused on the design, preparation, and understanding of innovative materials. It is an emerging area of research where definitions are not well established. This document defines the area of materials chemistry for the benefit of chemistry communities and the general public worldwide interested in this discipline. This recommendation defines the term “materials chemistry” as the “scientific discipline that designs, synthesizes, and characterizes materials, with particular interest on processing and understanding of useful or potentially useful properties displayed by the materials designed and synthesized for specific applications.”

{See project 2020-022-1-200}

Published in PAC Jan 2024

Resnati, Giuseppe, Bryce, David L., Desiraju, Gautam R., Frontera, Antonio, Krossing, Ingo, Legon, Anthony C., Metrangolo, Pierangelo, Nicotra, Francesco, Rissanen, Kari, Scheiner, Steve and Terraneo, Giancarlo.

"Definition of the pnictogen bond (IUPAC Recommendations 2023)"
Pure and Applied Chemistry, vol. 96, no. 1, 2024, pp. 135-145.
https://doi.org/10.1515/pac-2020-1002

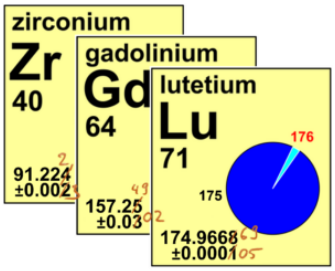
Abstract

This recommendation proposes a definition for the term “pnictogen bond”; the term pnictogen bond designates a subset of the attractive interactions between an electrophilic region on a pnictogen atom in a molecular entity and a nucleophilic region in another, or the same, molecular entity.
{See https://iupac.org/project/2016-001-2-300/}

Released by Commission on Isotopic Abundances and Atomic Weights, 23 Oct 2024

CIAAW recommends changes to the standard atomic weights of gadolinium, lutetium, and zirconium based on recent determinations and evaluations of their terrestrial isotopic abundances

The IUPAC Commission on Isotopic Abundances and Atomic Weights (IUPAC CIAAW) regularly reviews literature data, leading to the identification of advancements in measurement science which leads to formal revisions of the recommended atomic weights of the elements (known as the standard atomic weight). This occurs rather infrequently, each element being affected, on average, once every two decades.



The CIAAW met in August 2023 in the Hague, the Netherlands, under the leadership of Prof. Johanna Irrgeher (Montanuniversität Leoben, Austria). Following this meeting, the CIAAW recommends changes to the standard atomic weights of gadolinium (Gd), lutetium

(Lu), and zirconium (Zr) based on recent determinations and evaluations of their terrestrial isotopic abundances:

gadolinium: to 157.249 ± 0.002 from 157.25 ± 0.03
lutetium: to 174.966 69 ± 0.000 05 from 174.9668 ± 0.0001
zirconium: to 91.222 ± 0.003 from 91.224 ± 0.002

The CIAAW notes that the standard atomic weight of gadolinium was last revised in 1969 based on isotopic abundance measurements made in the 1940s. Since then, several studies dedicated to the measurement of the isotopic composition of gadolinium have been published which warrant a revised standard atomic weight. For lutetium and zirconium, there are more recent measurements available and their standard atomic weights were last revised by IUPAC in 2007 and 1983, respectively. These changes and considerations will be published in Pure and Applied Chemistry and can be found online at the website of the IUPAC Commission on Isotopic Abundances and Atomic Weights (ciaaw.org).

The importance of determining precise atomic weights has long been recognized, resulting in the creation of the International Atomic Weights Committee in 1899, now known as the IUPAC Commission on Isotopic Abundances and Atomic Weights.

IUPAC (www.iupac.org) was formed in 1919 by chemists from industry and academia, who recognized the need for international standardization in chemistry. Its most visible activity to most chemists is the standardization of the names and symbols of chemical elements and also the standardization of their atomic weights which is essential to the well-being and continued success of the scientific enterprise and to the smooth development and growth of international trade and commerce.

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<https://iupac.org/standard-atomic-weights-of-three-technology-critical-elements-revised/>