

Isotope-Abundance Variations and Atomic Weights of Selected Elements: 2016 (IUPAC Technical Report)

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Pure and Applied Chemistry, 2016
Volume 88, Issue 12, pp. 1203-1224

There are 63 chemical elements that have two or more isotopes that are used to determine their standard atomic weights. The isotopic abundances and atomic weights of these elements can vary in normal materials due to physical and chemical fractionation processes (not due to radioactive decay). These variations are well known for 12 elements (hydrogen, lithium, boron, carbon, nitrogen, oxygen, magnesium, silicon, sulfur, chlorine, bromine, and thallium), and the standard atomic weight of each of these elements is given by IUPAC as an interval with lower and upper bounds. Graphical plots of selected materials and compounds of each of these elements have been published previously. This report provides isotopic abundances, isotope-delta values, and atomic weights for each of the upper and lower bounds of these materials and compounds.

<https://doi.org/10.1515/pac-2016-0302>

Names and Symbols of the Elements with Atomic Numbers 113, 115, 117 and 118 (IUPAC Recommendations 2016)

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Pure and Applied Chemistry, 2016
Volume 88, Issue 12, pp. 1225-1229

A joint IUPAC/IUPAP Working Party (JWP) has confirmed the discovery of the elements with atomic numbers (Z) 113, 115, 117 and 118. In accordance with the 2016 IUPAC guideline for naming new elements, the discoverers were invited to propose names and symbols for the elements. Claims have been assigned to them and the following are proposed: (a) nihonium and symbol Nh, for the element with $Z=113$, (b) moscovium with the symbol Mc, for the element with $Z=115$, (c) tennessine with the symbol Ts, for the element with $Z=117$, and oganesson with the symbol Og, for the element with $Z=118$. After careful deliberation on these names and symbols, considering the 2016 rules and a public review period, the Inorganic Chemistry Division

recommended these proposals for acceptance by the IUPAC Council.

<https://doi.org/10.1515/pac-2016-0501>

On the Naming of Recently Discovered Chemical Elements—the 2016 Experience

by Jan Reedijk

In the period of 8 June to 8 November 2016, the “general” public was invited to comment on the draft document in which names and symbols for four new chemical elements were presented. In this short article, I want to sum up a few highlights illustrating that the possibility to comment on the proposed new names was widely used and has been an exciting process.

In the final document on the new names and symbols, [1] we could only acknowledge in general terms the input of so many people, varying from scientist to layman, from school kid to journalist, and from single person up to petitions of over 150 000 signatures. In this article, I would like to present some specific highlights.

According to the current practice, the President of the Inorganic Chemistry Division, in consultation with the members of the Division, considered each comment received during the five months of public review. In addition to regular email correspondence, the Division had the opportunity to debate all pertinent issues during the Division's annual meeting. The process is summarized below.

Reactions from the public

Initially, it appeared that many people and groups of people—in petitions—were proposing alternatives to the names submitted by the discoverers. This resulted from misreading the invitation to comment, or simply not liking the proposed names. Several people did not realize, or were not aware of, the fact that ONLY the discoverers can propose names and symbols; they were also unaware of the fact that the proposed names had to meet specific criteria. [2, 3] So, in responding to proposers of “alternative names”, we explained that the right to propose the name of a new element is afforded to the discoverers, largely because of the enormous effort required to produce and verify the existence of a new element. Given that there are few benefits to the discoverers from this sort of science, at the very least