CIAAW

COMMISSION ON ISOTOPIC ABUNDANCES AND ATOMIC WEIGHTS

INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY

Johanna Irrgeher and Jochen Vogl

CIAAW MEMBERS 2022-2023

CHAIRWOMAN: Irrgeher J. (Montanuniversität Leoben, AT); SECRETARY: Vogl J. (Federal Institute for Materials Research and Testing, DE)
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THE COMMISSION

The Commission on Isotopic Abundances and Atomic Weights (CIAAW) is an international scientific committee of IUPAC under its Inorganic Chemistry Division.

The idea of creating CIAAW came in 1897 from soon-to-be Nobel Laureate Hermann Emil Fischer. Since 1899, CIAAW is entrusted with periodic critical evaluation of atomic weights of elements. Since the 1970s, CIAAW evaluates other cognate data, such as the isotopic composition of elements. Evaluation of data is not always simple or trivial and CIAAW relies on the judgement of volunteer experts to make decisions on the quality of published data. Since 1902, the International Committee has been shaped by 120+ volunteers.

CIAAW is recognized as the international authority in the VIM and its recommendations are used throughout science. For example, the current definition of the kelvin relies on CIAAW data.

The 2021 Atomic Weights Commission biennual meeting (virtual) (© CIAAW)

PRINCIPAL TASKS

Nowadays, CIAAW accounts for critical evaluation of published atomic weight, isotope ratio, and isotopic abundance data and is in charge for publications related to

- **Standard Atomic Weights**
- **Isotopic Compositions of the Elements**
- **Isotopic Reference Materials**
- **Natural Variations of Isotopic Composition**

Before 1947, CIAAW was responsible for matters relating to the names and symbols of the elements.

Wikimedia Commons

Francis W. Aston (1877-1945) received the 1922 Nobel Prize in Chemistry while member of the Commission.

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Marie Curie (1867-1934) was a member of the Commission from 1930 until her death in 1934.

Flerov Laboratory of Nuclear Reactions

Georgii Flerov (1913-1990) was a member of the Commission during the 1970s. Element 114, flerovium, bears his name.

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Jules Guéron (1907-1990) was the Secretary of the Commission during the 1960s. He played a key role in the development of atomic energy in France.

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Henri Moissan (1852-1907) was one of the early members of the Commission, elected in 1903. He was awarded the 1906 Nobel Prize in Chemistry for his work on fluorine compounds.

Heurema

Marguerite Perey (1909-1975) was a doctoral student of Marie Curie, and was a member of the Commission from 1950-1963. She discovered the element francium and became the first woman in the french Academy of Sciences.

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Theodore W. Richards (1868-1928) was the first US scientist to be awarded the Nobel Prize in chemistry for his accurate determinations of atomic weights.

CIAAW

Frederick Soddy (1877-1956) was awarded the 1921 Nobel Prize in Chemistry for his work on isotopes and radioactivity, and he was elected member of the Commission same year.

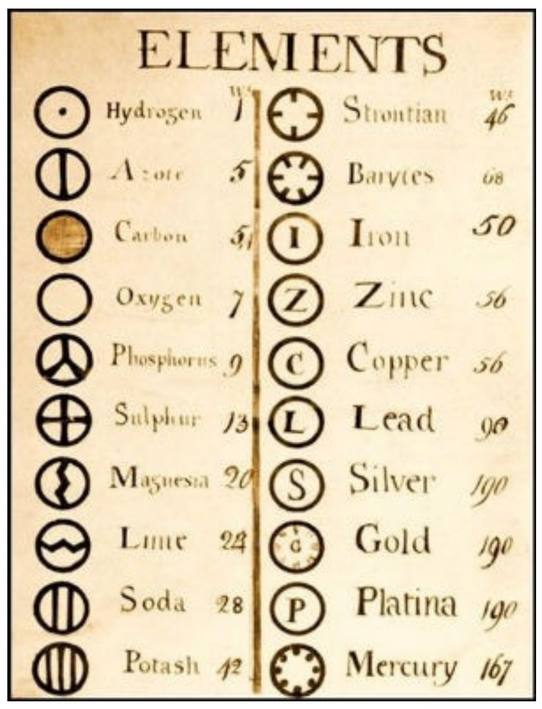
Roger Violett

Georges Urbain (1872-1938) discovered lutetium, and was first to isolate dysprosium. Urbain was the Chairman of the Commission from 1922-1929.

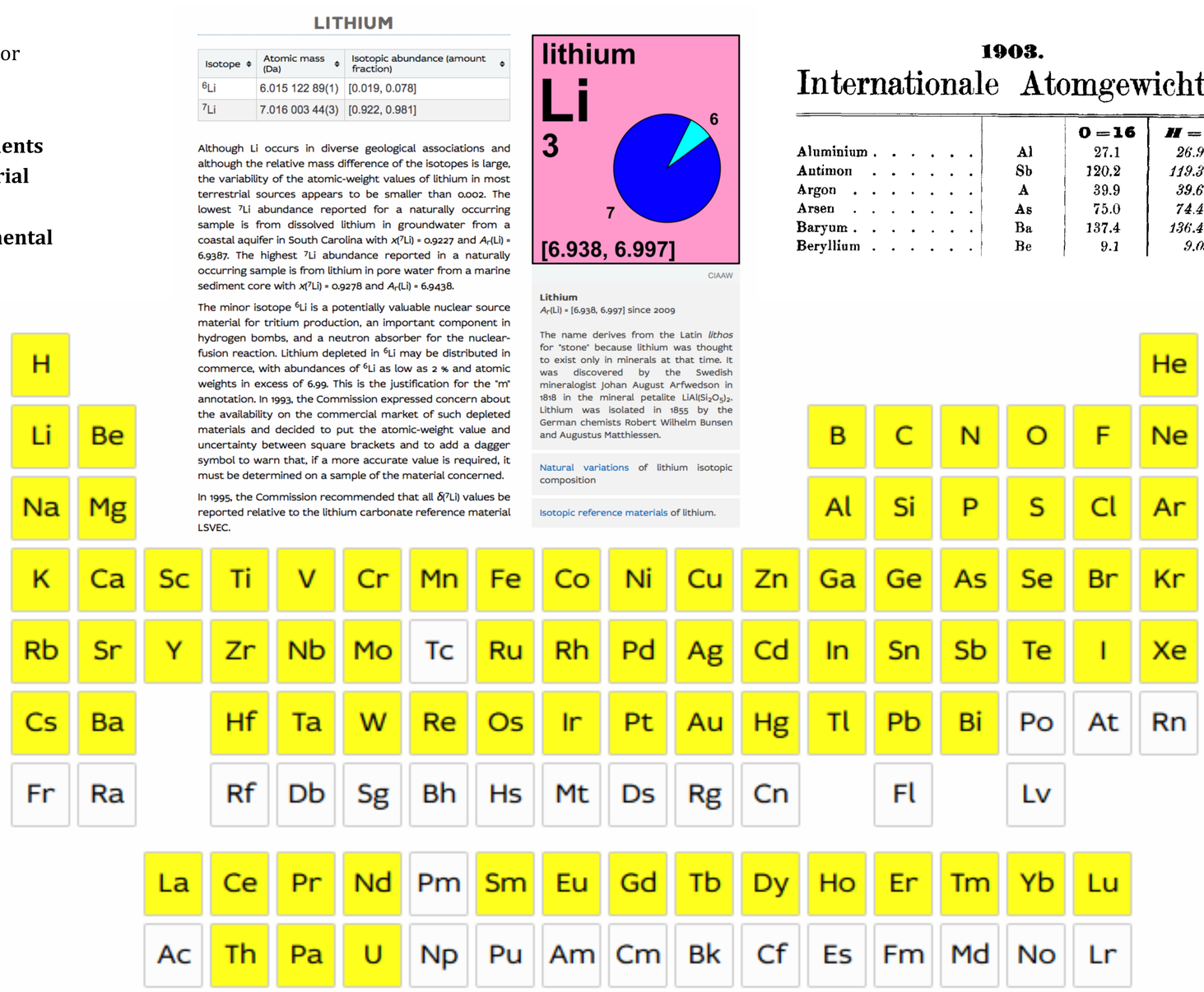
SUBCOMMITTEES & PROJECTS

CIAAW conducts most of its work through its three major subcommittees or in dedicated projects:

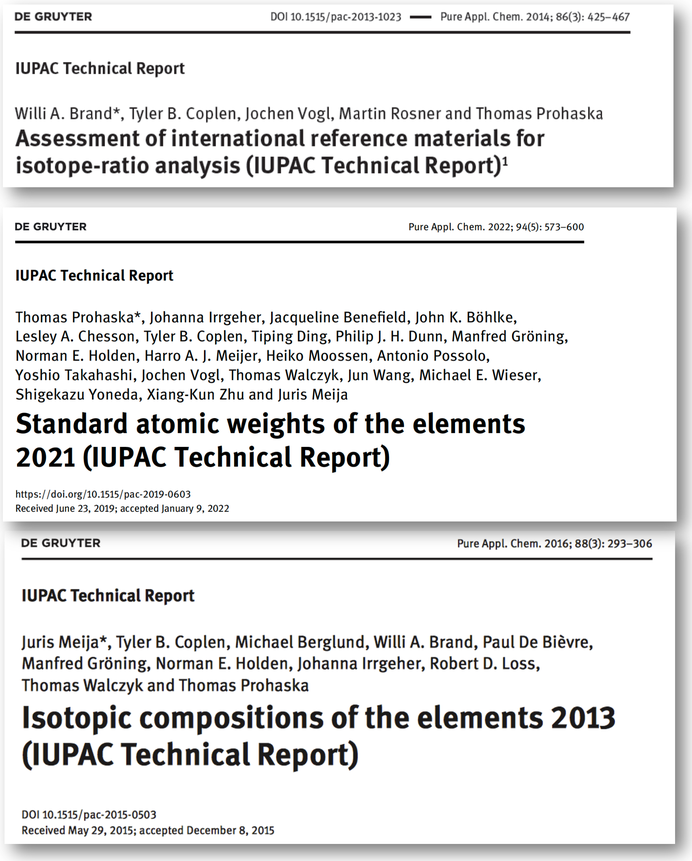
- **Subcommittee on Isotopic Abundance Measurements**
- **Subcommittee on Stable Isotope Reference Material Assessment**
- **Subcommittee on Natural Assessment of Fundamental Understanding of Isotopes**

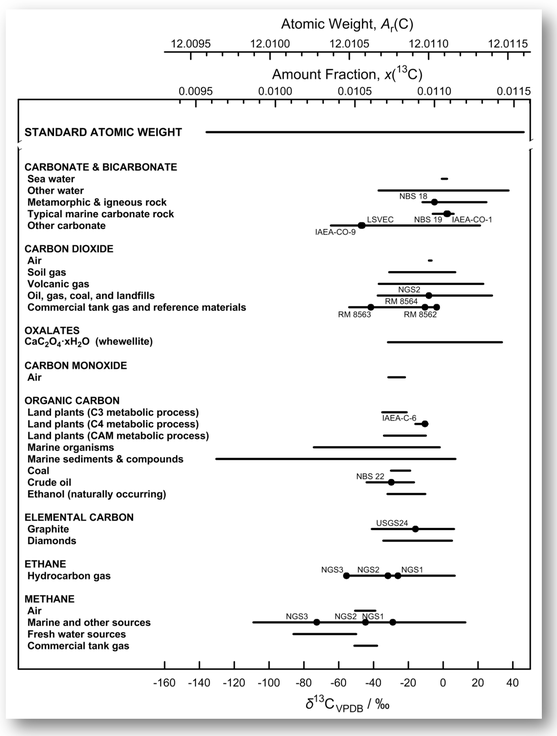


John Dalton (1766-1844) published the first atomic-weight table of the elements in the early 19th century. Source: Wikipedia Commons



PUBLICATIONS BY CIAAW (www.ciaaw.org)





CURRENT PROJECTS & ACTIVITIES (selection)

Project 2014-002-1-200 Assessment of Stable Isotopic Reference Materials

Project 2014-016-2-200 Compilation of the variation of the isotopic composition of the elements via crowdsourcing

Project 2015-030-2-200 Assessment of fundamental understanding of isotopic abundances and atomic weights of the chemical elements (2016-2017)

Project 2015-037-2-200 IUPAC Molecular Weight Calculator

Project 2017-017-2-200 Evaluated Published Isotope Ratio Data

Project 2017-023-2-200 Collection, compilation and evaluation of elemental and isotopic data of calcium carbonate and hydroxyapatite materials

Project 2019-020-2-024 Machine-Accessible Periodic Table

Project 2019-024-1-200 Statistical Models and Data Reductions to Estimate Standard Atomic Weights and Isotopic Ratios for the Elements, and to Evaluate the Associated Uncertainties

Project 2020-013-1-200 Assessment of absolute isotope ratios for the international isotope delta measurement standards

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Jochen Vogl (Secretary): jochen.vogl@bam.de

MEDIA COVERAGE

Our work has been covered or highlighted by many press outlets and institutions throughout the world.

C&EN Chemical & Engineering News · American Scientist · RSC Advancing the Chemical Sciences · NewScientist · Yahoo! News · Popular Science · Fox News · CBC news · The Telegraph · npr · The Huffington Post · NBC News · BBC Russian · The Sydney Morning Herald · Los Angeles Times · Real.gr