

The periodic table was originally put together by the Russian chemist Dmitri Mendeleev. He originally set up the periodic table around the existing 63 elements in 1869. He organized them in increasing atomic mass, and in periods (rows) and groups (columns) or specific properties. Sometime single and multiple groups can be classified into families according to common properties. In his original periodic table no noble gases were present as none had been discovered. Mendeleev correctly predicted the discovery of a variety of elements due to gaps in his table. His table, which is still accepted today, although much larger, also separates metals and non-metals.

History

Explore the discoverer's biography, including general facts about his life and anecdotes regarding how he made this particular discovery. Also see other significant scientific discoveries built largely on this concept and other real-world applications in history that may not still be relevant.

Discoverer/Developer

Dmitri Ivanovich Mendeleev (1834-1907) was born in the small Siberian town of Tobolsk as the last of 14 children. His father died shortly after his birth, so he grew up most of his life relocated to St. Petersburg with his mother. Mendeleev stayed in St. Petersburg to continue his education, eventually receiving a Master's Degree in Organic Chemistry. He traveled throughout Europe to centers of knowledge including the University of Heidelberg and the International Chemistry Congress of 1860 in Karlsruhe, Germany. Here he was initially introduced to the crucial issues at the time of calculating atomic weights, creating chemical symbols, and developing chemical formulas. After returning from abroad, Mendeleev was appointed professor at the University of St. Petersburg, where he began to teach general chemistry. It was as a professor that Mendeleev truly began to discover periodic law. Finding no adequate textbook present to use in his classes, he proceeded to write one, *The Principles of Chemistry*, which was published in 1868. Mendeleev realized the similarities between certain elements when he was creating this textbook, and was able to arrange these elements into groups, as well as these groups into a table. After comparing all the known elements on the table and listing them into their respective groups, which was based on atomic weight, he was able to predict the discovery of more elements, as well as some characteristics that they will exhibit. His work was announced to the Russian Chemical Society in 1869. Initially somewhat ignored, when many of these elements that he predicted eventually were discovered, it became clear that Mendeleev's periodic theory was correct.

Mendeleev worked in a multitude of fields of chemistry besides periodic law. He continued to research his entire life, and proposed many theories, some of which were proved to be false such as classifying ether as an element. He viewed his job as helping assist the Russian people gain scientific knowledge that would boost them on the world front. He did research in agriculture, energy and coal mining as well to help stimulate the Russian economy.

Use/Application through History

Mendeleev's work with the periodic table helped create the information ties between European chemists and American chemists at the time. New findings on both sides helped the universal understanding on topics.

The elements of gallium, scandium, and germanium were all discovered after Mendeleev's predictions of them as well as some of their properties. These discoveries were the start of the acceptance by the scientific community of periodic law.

Vocabulary

Learn important vocabulary for this concept, including words that might appear in assessments (tests, quizzes, homework, etc.) that indicate the use of this concept.

Important Vocabulary	Term	Context
	Periodic Table	
	-	The noble gases are on the far right of the periodic table next to the halogens.

Videos

Browse relevant videos from the Journal of Chemical Education's (JCE) Chemistry Comes Alive! library and other video sources.

The Elements Animation

A fun song about the elements!

The Mendeleev Song

A quick song that helps students remember who created the periodic table, as well as a little history behind its creation.

Works Cited

Review the works cited to write the researched parts of this page, such as the discoverer's biographical information and other areas.

Works Cited

[LINK URL: <http://www.britannica.com/EBchecked/topic/374765/Dmitry-Ivanovich-Mendeleyev>]