

One hundred and fifty years ago, on March 6, 1869, the Russian chemist Dmitry Mendeleev presented the first Periodic Table to the Russian Chemical Society, already structurally clear and predictive.

He illustrated periodic trends in the properties of the then-known 63 elements. Mendeleev also predicted some properties of then-unknown elements that would be expected to fill gaps in his table. Most of his predictions were proved correct when the elements in question were subsequently discovered.

Mendeleev's Periodic Table has since been expanded and refined with the discovery or synthesis of further new elements and the development of new theoretical models to explain chemical behavior and the structure of matter. The first 94 elements exist naturally. Elements with atomic numbers from 95 to 118 have only been synthesized.

Mendeleev was the first to discover the periodicity of the properties of the chemical elements. Subsequently, this made possible to understand that these properties are due to atoms being made up of electrons, protons and neutrons. These particles were unknown at the time.

Mendeleev was the first to place chemical elements according to a precise order, their atomic weight, on a table, discovering that their properties regularly repeated: he was also able to predict the existence and the properties of some elements not known, yet. Scandium, Gallium and Germanium were discovered later, and it was observed that they shared those physical and chemical properties theoretically conceived by Mendeleev thanks to his model. At the time, analytical knowledge was not accurate enough to determine the atomic weights precisely, and the purification of the elements was conducted with very primitive methods. A model is recognized to have scientific validity when it is able to foresee properties and functions of the elements. This was the case: the Periodic Table gained an immediate success and thanks to it, it was possible to understand the structure of the atom, composed of electrons, neutrons and protons.

The celebration of the discovery of the Periodic Table was proclaimed by the UN. It was the beginning of the story with happy end on December 20th, 2017, when the United Nations General Assembly during its 74th Plenary Meeting, at the 72nd Session proclaimed 2019 as the International Year of the Periodic Table of Chemical Elements (IYPT 2019). In proclaiming an International Year focusing on the Periodic Table of Chemical Elements and its applications, the United Nations has recognized the importance of raising global awareness of how chemistry promotes sustainable development and provides solutions to global challenges in energy, education, agriculture and health. Indeed, the resolution was adopted as part of a more general Agenda item on Science and Technology for Development. This International Year will bring together many different stakeholders including UNESCO, scientific societies and unions, educational and research institutions, technology platforms, non-profit organizations and private sector partners to promote and celebrate the significance of the Periodic Table of Elements and its applications to society during 2019.

The International Year of the Periodic Table of Chemical Elements will give a greater resonance to the celebration of the International Day of Women and Girls in Science on 11 February 2019 by highlighting women role models who substantially contributed significantly to the discovery of elements of the Periodic Table. The examples of Marie Curie, who was awarded Nobel Prizes in 1903 and 1911 for the discovery of Radium (Ra) and Polonium (Po), Berta Karlik for the discovery of Astatine (At), Lise Meitner, who identified an isotope of Protactinium (Pa), Ida Noddack for the discovery of Rhenium (Re), and Marguerite Perey, who discovered the Francium (Fr), will be celebrated in line with the gender equality priority of UNESCO in view of the advancement of the 2030 Agenda for Sustainable Development.