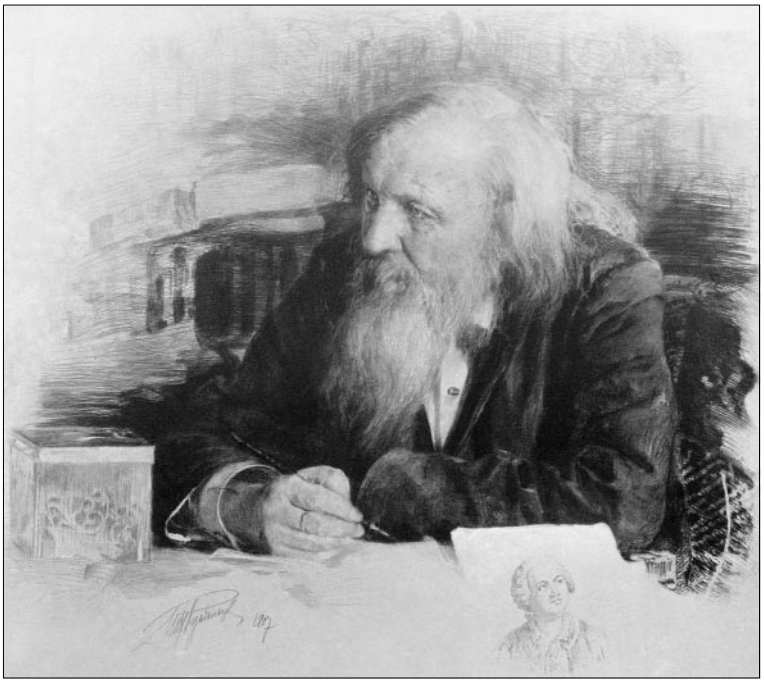
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140 years to the D I Mendeleev Periodic System of Elements



This portrait of D I Mendeleev is a photographic print of the engraving owned by the Royal Chemical Society, Burlington House, Piccadilly, London. This was presented to the USSR Academy of Sciences by the Royal Chemical Society in July, 1990.

When the original engraving was prepared for photographic copying, the following text was found overleaf:

'*This proof etching of Dmitri Ivanowich Mendeleeff the Author of the 'Periodic Law' was given to me by the Great Chemist himself. It is one of an impression of 20 copies of which about 6 found their way to England, the others being distributed according to his directions in France, Germany and Russia. The 'remarque' represents Lomonosoff a forerunner of Mendeleeff. T E Thorpe*'.

Sir Thomas Edward Thorpe (1845 – 1925) was President of the Royal Chemical Society from 1899 to 1901.

February, 2009, marked the 175th birthday of great Russian Scientist D I Mendeleev and 140 years since his outstanding discovery, the Periodic Law and the Periodic System of Chemical Elements. According to a decree of Russian Federation President and order of the Russian Government, an Organizing Committee headed by Minister for Education and Science A A Fursenko was formed to prepare for, and carry out, the celebration of D I Mendeleev's 175th birthday. An extensive plan of relevant actions was approved with active participation of the Russian Academy of Sciences, the Ministry of Education and Science, the D I Mendeleev Russian Chemical Society, International Union of Pure and Applied Chemistry in particular IUPAC President, Professor Jung-Il Jin (Korea) and Vice President Professor N Moreau (France), leading Russian and foreign scientists.

The scientific part of the celebration arrangements started with the International Symposium named 'D I Mendeleev's Periodic Table, its Role and Development. New Superheavy Elements', which was held on January 20 – 21, 2009, in Dubna.

On February 11, 2009, a solemn meeting devoted to D I Mendeleev was held in Moscow in the Great Hall of the Russian Academy of Sciences. The meeting was addressed by President of the RAS, Academician Yu S Osipov, Minister of Science and Industrial Policy of Moscow Government E A Panteleev, IUPAC President, Professor Jung-Il Jin, President of the D I Mendeleev Russian Chemical Society Academician P D Sarkisov and others.

On February 9, enlarged session of the Presidium of the St Petersburg Scientific Centre of the Russian Academy of Sciences devoted to the D I Mendeleev anniversary took place. The opening speech was delivered by Chairman of the Centre, Nobel Prize Laureate Academician Zh I Alferov, and St Petersburg Vice-Governor A Yu Manilova, who noted the special role of St Petersburg in D I Mendeleev's life and creative work.

On September 16 to 19, 2009, a scientific conference with international participation named 'D I Mendeleev and his Contribution to the Development of World Science' was held in D I Mendeleev's town of birth, Tobolsk (Tyumen Region). President of the Russian Academy of Sciences Academician Yu S Osipov (also born in Tobolsk) and Governor of the Tyumen Region V V Yakushev were Co-Chairmen of the Organizing Committee of the Conference. The Conference was attended by more than 70 leading Russian and foreign scientists including 14 members of the Russian Academy of Sciences with its President at the head,

IUPAC administration members, Heads of administrations of the Tobolsk town and Region. The participants heard 19 scientific reports presented by authors from Russia, USA, Germany, Canada, Korea, France, Switzerland and Japan.

Within the framework of anniversary arrangements, conferences for young scientists were held, in particular, XIX Mendeleev Conference of Young Scientists (June 29 – July 3, 2009, St Petersburg) and V International Congress of Young Scientists on Chemistry and Chemical Technology (November 10 – 15, 2009, Moscow).

D I Mendeleev's discovery in 1869 of the Periodic Law of Chemical Elements as one of fundamental laws of Nature and publication of the Periodic Table of Elements laid the foundation of modern chemistry by making it an integrated science. Since then, it has been possible to perform targeted search for new chemical elements and to predict their properties. Thus gallium, germanium and scandium predicted by D I Mendeleev were discovered while he was alive. Today, 140 years after the discovery of periodicity in the properties of chemical elements, the number of known elements nearly doubled.

In recent decade, it was possible to move far beyond the 100th element — new superheavy elements up to the 118th were synthesized and studied. An enormous contribution to these investigations was made by scientists of the Laboratory of Nuclear Reactions named after Academician G N Flerov (FLNR) and headed by Academician Yu Ts Oganessian and Professor S N Dmitriev at the Joint Institute for Nuclear Research (JINR) in Dubna (Moscow Region). At this laboratory, more than 35 isotopes of new chemical elements with atomic numbers of 104 to 118 were synthesized, the half-lives of some of them reaching 30 h. This was the first experimental proof for the existence of the 'island of stability' of superheavy elements, allowing their direct chemical identification and studying the chemical properties in comparison with their analogues, which provides grounds for targeted search for superheavy elements in nature.

As recognition of the outstanding role of D I Mendeleev in the creation of the Periodic System of Elements and the priority of the FLNR JINR in the discovery of new elements 102 – 105, the element 101 obtained in 1955 by a group of radiochemists headed by G T Seaborg (USA) was named mendelevium and element 105 synthesized in Dubna was called dubnium.

The International Symposium in Dubna was attended by more than 100 scientists from Russia, Germany, Italy, China, Poland, USA, France, Switzerland and Japan who represented almost all of leading scientific centres and laboratories in the field of nuclear reactions and new superheavy elements such as the Flerov Laboratory of Nuclear Reactions (FLNR JINR, Dubna), Gesellschaft für Schwerionenforschung (GSI, Darmstadt, Germany), Lawrence Livermore National Laboratory (LLNL, Livermore, USA), Grand Accélérateur National d'Ions Lourds (GANIL, Caen, France), The Institute of Physical and Chemical Research (RIKEN, Wako, Japan), Department of Radiochemistry of the Paul Scherrer Institute (PSI, Willigen, Switzerland), Technische Universität München (Germany), Institute of Modern Physics (Lanjou, China), National Nuclear Energy Centre of Japan (JAERI). The participants of the Symposium engaged in the experimental and theoretical investigation of new elements were able not only to compose a whole picture of presently obtained results, but also to outline the future research in this important field.

The current issue of *Russian Chemical Reviews* is composed of reviews based on eight of the fourteen reports presented at the Symposium. In our opinion, this provides grounds for supporting the main conclusion made by the Symposium participants: D I Mendeleev's Table is far from being completed and the Periodic Law of Chemical Elements preserves its value, being an important directing factor for researchers in the field of new chemical elements.

Academician O M Nefedov
Chairman of the National Committee
of Russian Chemists