

**Budget professional educational institution  
Cheboksary medical College  
Kanashsky branch**

# **D.I.Mendeleev and his great creation**

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**In 2019 year performed the 150th anniversary of the publication of the periodic table**

**The purpose of the presentation: to acquaint students with the structure and laws of the periodic system**

# Great Russian scientist

**Dmitriy Ivanovich Mendeleev is a great Russian scientist, talented chemist. He is best known for his development of the periodic law of the properties of the chemical elements. This law states that elements show the periodicity of properties when they are arranged according to atomic weight.**

# Life path of scientist

- **Mendeleev was born near Tobolsk, Sibiria. He was the seventeenth child in his family. Dmitriy was mother's favourite son. Later he studied Chemistry at the University of St.Petersburg. Then he was sent to study at the University of Heidelberg. There he met an Italian chemist Stanislao Canizarro, whose views influenced his thinking very much.**

# Life path of scientist

- **Mendeleev returned to St.Petersburg and became the professor of Chemistry at the Technical Institute and then at the University of St.Petersburg. Because of no good textbooks in chemistry were available at that time, he decided to write the two – volume work Principles of Chemistry, which became a classic.**

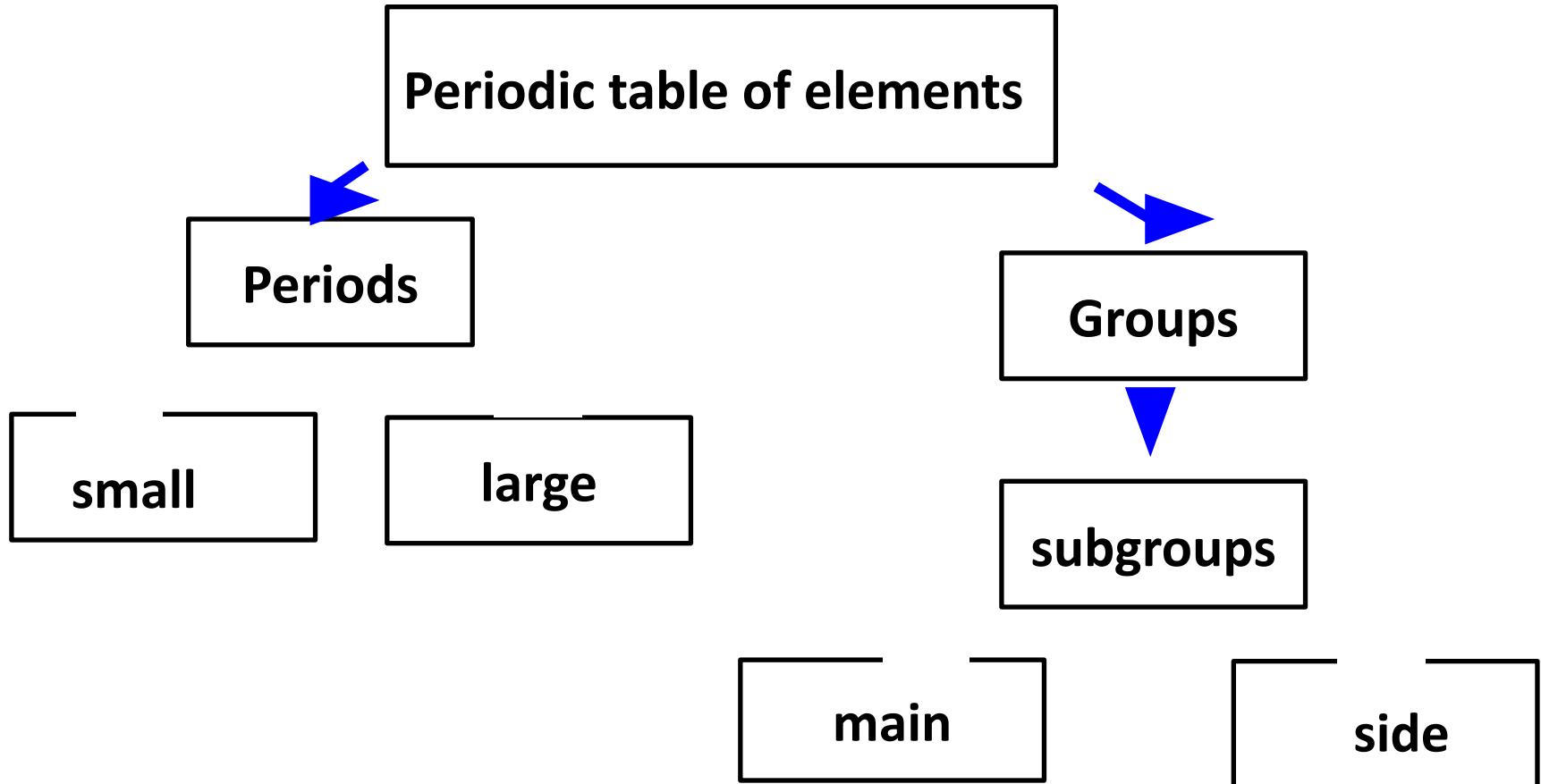
# Life path of scientist

- **During the writing of his book, Mendeleev tried to classify the elements according to their chemical properties. In 1869 he published his first version of what later became known as the Periodic table, in which he demonstrated the Periodic law. Two years later he published the second version of Periodic, in which he left the gaps for elements that were not yet known.**

# Periodic law of Mendeleev

**The properties of the chemical elements formed by them of simple and complex substances are periodically dependent on the atomic weights of the elements.**

# Structure of the periodic table of elements





# What is the element period?

- Elements as Building Blocks of the periodic table are organized like a big grid. The periodic table has rows and columns, and each of them means something different.
- The period is the number of elements starting with alkali metal and ending with the halogens and inert gases.

alkali metal



halogen



inert gases



# Small and large periods

**Small periods consist of 2-8 elements. There are – 1,2,3.**

**Large periods consist of 18-32 elements. There are – 4-7. The seventh period is incomplete**

# Number of electronic layers

Every element on the top row (the first period) has one of its electrons. All the elements in the second row (the second period) have two layers for their electrons. The largest number of electron layers is in the seventh period.

electronic  
layers



charge  
of the  
nucleus

# Changing item properties in a period (across)

- 1) The charge of the nucleus increases
- 2) The radius of the atom decreases
- 3) The number of electronic layers does not change
- 4) The number of electrons in the outer electron layer increases.
- 5) Metallic properties decrease, non-metallic properties increase.



# About groups of elements

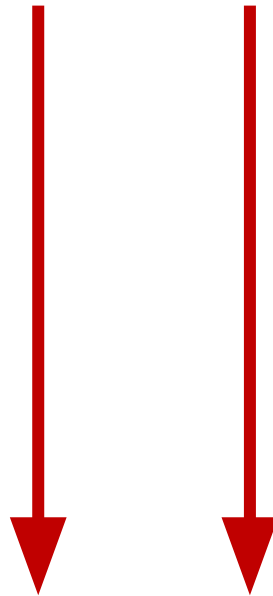
The periodic table has a special name for its columns. When a column goes down ( from top to bottom) it\*s called a group. As for the number of electrons in a group they are the same in number in the outer layer.



the electrons  
of the outer  
layer

# Changing item properties in the main subgroups (down)

- 1) The charge of the nucleus increases
- 2) The radius of the atom increases too
- 3) The number of electronic layers increases
- 4) The number of electrons in the outer electron layer does not change
- 5) Metallic properties increase , non-metallic properties decrease



# Quiz

## «Travel through the Mendeleev`s periodic table»

- 1) What names of chemical elements are connected with Russia?
- 2) What names of chemical elements are connected with geographical items?
- 3) What names of chemical elements are connected with the names of scientists?
- 4) The names of which chemical elements contain the names of space objects?
- 5) The names of which chemical elements are connected with colors?
- 6) What is the Russian name of the element nitrogen?
- 7) This element is named after the mythical hero who gave people fire.

- **What names of chemical elements are connected with Russia?**



- **What names of chemical elements are connected with geographical items?**

**Scandinavian peninsula**

**Gaul – ancient Latin name  
of France**

**Polonius-Poland**

**California-California  
in the USA**

**France-France**

# What names of chemical elements are connected with the names of scientists?

- **Gadolinium (Gd)** — after the Finnish chemist Johan Gadolin.
- **Curie (Cm)** — in honor of the French scientist, physicist Pierre Curie.
- **Einstein (Es)** — in honor of the German physicist Albert Einstein.
- **Fermi (Fm)**-in honor of Italian physicist from America Enrico Fermi.
- **Mendeleev (Md)** - in honor of the famous Russian chemist, author of the Periodic table of chemical elements Dmitry Ivanovich Mendeleev.
- **Nobel (No)** - in honor of the Swedish scientist Alfred Nobel (the name is controversial, there are other versions of the origin of the word "Nobel").
- **Lawrence (Lr)** — in honor of the American physicist Ernest Orlando Lawrence.
- **Rutherfordium (Rf)** - in honor of the British physicist of New Zealand origin Ernest Rutherford.
- **Seaborgium (Sg)** — in honor of the American physicist Glenn Seaborg.
- **Borh (Bh)** - in honor of the Danish scientist, physicist Niels Bohr.
- **Meitnerium (Mt)** — named after the Austrian physicist Lisa Meitner. Lisa Meitner, Actually.
- **X-ray (Rg)** - in honor of the German physicist Wilhelm Conrad X-Ray. More Correctly — X-Rays.
- **Copernicus (Cn)** - in honor of the Polish astronomer Nicolaus Copernicus.

**The names of which chemical elements  
contain the names of space objects?**

**The names of which chemical elements  
are connected with colors?**

**Silver -  
серебристы  
й**

**Фиолетовый -purple**

**желтый-yellow**

**What does the Russian name of the  
element nitrogen?**

**Nitrogen - lifeless**

**This element is named after the  
mythical hero who gave people fire**

**Thank you!**

**All the best to you!**

# Source of information

- [https://ru.wikipedia.org/wiki/Менделеев, Дмитрий Иван ОВИЧ](https://ru.wikipedia.org/wiki/Менделеев,_Дмитрий_Иванович)
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