

Periodic Table Basic (Speedy Study Guide)

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PERIODIC TABLE BASIC

Reading the Periodic Table:

Objectives:

1. Explain why elements in a group have similar properties.
2. Identify the four blocks of the periodic table.

The Periodic Table:

Our current periodic table lists 118 elements. It is arranged according to the periodic law:

- Elements are arranged in order of increasing atomic number; their physical and chemical properties show a periodic pattern.
- Elements that have similar properties are arranged in groups or families – vertical columns.
- The horizontal rows are called periods.
- Each period contains more elements than the previous one. This has to do with the increasing energy levels (n^2, \dots) of the atom.
- period 1 - 2 elements
- period 2 & 3 - 8 elements
- period 4 & 5 - 18 elements
- period 6 - 32 elements

Labeling and Naming:

There are currently 3 numbering systems used in chemistry for the ordering of groups.

- Roman - IA, VIIIA & 0-VIIB
- Arabic - 1A-2A, 3B-8B, 1B-2B, 3A-8A
- Number - 1-18

Families:

- 1A - alkali metals
- 2A - alkaline earth metals
- 7A - halogens
- 8A - noble gases
- 4A - sometimes known as the Carbon group

Exception - Hydrogen can be better placed in group 1A. Although, some books place it in 2A.

Metals & Non-metals:

Metals include the area shaded light blue and include the families 1A & 2A. They share many characteristics.

- better conductors of heat and electricity
- good conductors of heat and electricity
- typically solid at room temperature
- most are malleable and ductile

Non-metals are shaded light red in most periodic tables and form a diagonal from C-S to Rn-At and include all the elements of that corner including In. They share some of these characteristics.

- do not possess luster
- poor conductors of heat and electricity
- neither malleable or ductile
- many are gases at room temperature
- can be solid, semisolid, gas, or liquid (Br). One is the hardest material on Earth.

Semimetals or metalloids are shaded light purple in most periodic tables and form a diagonal from B-Si to At-At and include all the elements Ge-Te and Sn-Pb. They share some of these characteristics.

Have some properties of metals and some of non-metals.

Electron Configuration:

As you learned earlier, the number of protons in an atom is equal to the number of electrons in the atom if it is neutral. The periodic table allows you to predict the bonding of an atom by allowing you to see the number of electrons in the valence orbital. The valence orbital is the highest, outermost orbital of the atom and is the only one involved in the bonding of the atom. Here are some hints for predicting valence electrons:

- Elements of the same group (column) have the same valence electrons or configuration
- s-block in group 1A & 2A
- p-block in group 3A to 8A
- These are the representative elements or main-group elements
- d-block in group 3B to 2B (look at the periodic table above because the numbers are not sequential)
- These are the transition metals
- f-block is located below the main table
- These are the inner transition metals or rare earth elements

To save space an electron configuration notation you can use for abbreviated notation is using the noble gas one and then the valence electrons.

Filesize: 9.23 MB

Reviews

Here is the very best book i have study until now. It is rally fascinating through looking at period of time. It is extremely difficult to leave it before concluding, once you begin to read the book.
(Dr. Blaze Runolfsson IV)

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