

Introduction to Physical Science

The Periodic Table
Presented by Robert Wagner

- As scientists studied elements, they learned that they could be grouped together by their chemical properties
- Predicted existence of elements not yet discovered

History

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Periodic Table

- Periodic Law: The properties of the elements are periodic functions of their atomic numbers
- Modern periodic table:
 - Orders elements by increasing atomic number
 - Atoms with similar properties are grouped in vertical columns (groups)
 - Rows are called periods or series

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Periodic Table (2)

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Periodic Table (3)

- Each box represents a specific element
- Contains information on some of the properties of the element

Atomic number	1		Symbol
		H	
		1.008	Atomic mass
Name		hydrogen	

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Metals, Metalloids and Non-Metals

- Metals - shiny, malleable, good conductors of heat and electricity
- Non-Metals - dull in appearance, not good conductors of heat and electricity
- Metalloids - Have some properties of both metals and non-metals

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Groupings

- Main group elements - Columns 1-2 and 13-18
- Transition metals - columns 3-12
- Lanthanides & Actinides
- Hydrogen - has properties of Group 1 and Group 17 - unique element

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Example

- Chlorine: Halogen (Group 17)
 - Calcium: Alkaline Earth Metal (Group 2)
 - Sodium: Alkali Metal (Group 1)
 - Sulfur: Chalcogen (Group 16)
- Identify the group name for the following elements:
 - Chlorine
 - Calcium
 - Sodium
 - Sulfur

More Properties

- Why do these properties exist?
- We can look at this more when we study how electrons are grouped in the atoms - we will look at this in a future lesson.

Summary

- Certain elements were found to have similar chemical properties to other elements
- The Periodic Table groups these elements together such that those with similar properties fall in the same columns
- Different parts of the periodic table have different properties in terms of metals and non-metals.