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Electronic structures and the periodic table

Specification references:

- C1.1.6 Electronic structure
- C1.2.1 The periodic table
- WS 1.2

Aims

In this activity you will explore how the electron structure of an element is linked to its position in the periodic table.

Learning outcomes

After completing this activity, you should be able to:

- describe how atomic structure is linked to the periodic table
- explain why the noble gases are so unreactive.

Task

Annotate the section of the periodic table you have been given by writing down information related to the elements and their position in the periodic table. Some points to include in your annotations could be:

- How the electronic structure of an atom relates to its position in the periodic table.
- How you can predict the electronic structure of an atom.
- Why noble gases are unreactive.
- The difference in electronic structure of simple ions for the elements shown.
- The trend in boiling point of noble gases.
- Which of the elements are metals and non-metals.

Student Follow-up

1 Lithium, sodium and potassium all belong to the same group of the periodic table.

a Which group do they belong to?

..... (1)

b What is the link between their electron structure and the group they belong to?

..... (1)

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2 Fluorine and chlorine belong to the same group of the periodic table.

a Which group do they belong to?

..... (1)

b What is the link between their electron structure and the group they belong to?

..... (1)

3 Sodium, magnesium and sulfur belong to the same period of the periodic table.

a What period do they belong to?

..... (1)

b What is the link between their electron structure and the period they belong to?

..... (1)

4 Metals have special properties that make them very useful. The properties of metals include them being 'malleable' and 'ductile'. Explain these terms.

.....
.....
..... (2)

5 Fluorine is a non-metal. A fluorine atom has nine electrons. In terms of electrons, what happens when fluorine atoms react?

.....
..... (2)

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group		group								
		1	2	3	4	5	6	7	0	
period	1									
	2									
	3									
	4									