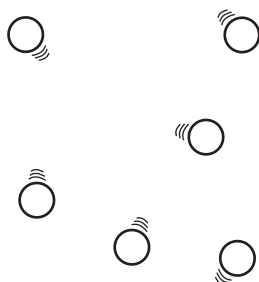


C4.9b Electron arrangements and the noble gases

The noble gases

The elements in Group 0 in the Periodic Table are called the **noble gases**. These are a very special group of elements. The Group 0 elements are all non-metals. They are colourless gases that are very unreactive. Few compounds of the noble gases have been made, and none of the compounds has been found to have any uses. All the noble gases have a **monatomic** structure.



A noble gas.

Like other elements, the properties of the noble gases are due in part to the structure of their atoms. In particular, the **inert** properties of these elements is due to their special electron arrangements.

The electron arrangements of the noble gases:

He	2
Ne	2, 8
Ar	2, 8, 8
Kr	2, 8, 18, 8

- 1 Describe the main properties of the noble gases in just **three** words.
- 2 What do the following words mean:
 - a monatomic
 - b inert?
- 3 Look at the electron arrangements of the noble gases.
 - a Which element has a different outer shell from the others? Briefly describe the difference.
 - b Write down the symbols and electron arrangements of the elements that come just after each of the noble gases in the Periodic Table. (For example, after helium comes lithium.)
 - c Looking at the electron arrangements of the noble gases and these elements, explain what is the **same** about all noble gases.
- 4 The noble gases are usually described as Group 0. However, sometimes they are described as Group 8.
 - a Why can they be described as 'Group 0' or 'Group 8'?
 - b Why do you think that 'Group 0' is a better name for this group?
- 5 Although the compounds of noble gases have little use, the gases are used in several places. Find out about some uses of a noble gas and write a short paragraph about them.