

Answer on Question #84317 – Chemistry – Inorganic Chemistry

Explain why all the periods in the periodic table do not have the same number of elements in them

Solution:

The periodic table of the elements contains all of the chemical elements that have been discovered or made; they are arranged, in the order of their atomic numbers, in seven horizontal periods, with the lanthanoids (lanthanum, 57, to lutetium, 71) and the actinoids (actinium, 89, to lawrencium, 103) indicated separately below. The periods are of varying lengths. First there is the hydrogen period, consisting of the two elements hydrogen, 1, and helium, 2. Then there are two periods of eight elements each: the first short period, from lithium, 3, to neon, 10; and the second short period, from sodium, 11, to argon, 18. There follow two periods of 18 elements each: the first long period, from potassium 19, to krypton, 36; and the second long period, from rubidium, 37, to xenon, 54. The first very long period of 32 elements, from cesium 55, to radon, 86, is condensed into 18 columns by the omission of the lanthanoids (which are indicated separately below), permitting the remaining 18 elements, which are closely similar in their properties to corresponding elements of the first and second long periods, to be placed directly below these elements. The second very long period, from francium, 87, to oganesson, 118, is likewise condensed into 18 columns by the omission of the actinoids.

All the elements in the period have the same number of shells. The number of electrons in this last shell increase by one across any given period.

The first period has just two elements because the 1s level is being filled.

The second one you have 2s and 2p, therefore 8.

The third period fills 3s and 3p, therefore 8

The fourth period fills the 4s the 4p and 3d, therefore 18

The fifth period fills the 5s the 5p and 4d, therefore 18

The sixth period fills the 6s the 6p and 5d and 4f, therefore 32

The seventh period fills the 7s the 7p and 6d and 5f, therefore 32