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POSITION OF HYDROGEN IN PERIODIC TABLE

S.I. POTHEN
School of Studies in Chemistry,
Vikram University, Ujjain, 456 010, India

The position of hydrogen is not clear in the Periodic Table. This paper presents a new approach to solve this problem.

The periodic law is expressed by the periodic system of the elements. A similar system was thought out by Lothar Meyer on the basis of periodicity of atomic volumes[1]. Since 1869, more than hundred forms of the Periodic Table have been designed in the pursue of perfection.[2] Mazurs published a summary of the various forms of the periodic table.[3]

Position of Hydrogen in Short Form of Periodic Table

In all these classification the position of hydrogen is not clear. Hydrogen resembles both the alkali metals and halogens. Hence, its position in the Periodic Table is undecided. Hydrogen can be placed in the I group as well as in VII group. Antropoff put hydrogen in IV group.[4]

From all these observations hydrogen can be placed in I group, IV group and VII group. But it is not justifiable to allot three places for a single element. To overcome this difficulty one can consider that hydrogen is in a simple harmonic motion in the vacant first period. Thus hydrogen will occupy only one place at a particular time and hydrogen can be placed in I group, IV group and VII group periodically.[5]

The motion is said to be simple harmonic motion when it possesses the following characteristics.

(1) Motion is periodic

(2) Motion is to and fro along a straight line about the mean position.

(3) Acceleration is proportional to displacement.

(4) Acceleration is directed toward the mean position.

The motion of hydrogen satisfies all the characteristics of simple harmonic motion is the following ways:

(1) Hydrogen can be detected in I group, IV group and VII group, after equal intervals of distance.

(2) IV group is the mean position between I group and VII group.

(3) Hydrogen is moving to and fro along the first period about the IV group.

(4) Due to acceleration hydrogen can not be detected in II group, III group, V group and VI group.

Evidences

(1) Hydrogen shows characteristics of *s* and *p* orbitals. So it can represent I, IV and VII group. The uniqueness of the first quantum shell resides in the peculiarity that while hydrogen and helium both belong to *s* orbitals they exhibit chemical properties typical of *p* orbitals.[6]

(2) Due to simple harmonic motion of hydrogen helium is pushed out to zero group from its original position in II group.

(3) The oscillating hydrogen fills the vacuum of the first period in short form periodic table.

Now we can say that hydrogen is oscillating in the first period. The oscillation of hydrogen in first period makes it possible to accommodate I group, IV group and VII group respectively. Thus hydrogen is getting only one place at a time.

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