Answer on Question #77322 - Chemistry - Inorganic Chemistry

Question:

consider a Be atom.Its electronic configuration is given by 1s2,2s2.I read that both the electrons of the 2s orbital will have the same energy.But the 2s orbital is spherical in shape.Hence we can say that it occupies a spherical volume around the nucleus.Suppose the 2 electrons are present at different places in that spherical volume i.e the distance of both electrons from the nucleus is different and hence they should have different energies.where am i going wrong?

Solution:

Within each energy level are sub-levels that are specific locations within the energy level, where there is a high probability of finding electron. These areas within the energy level are called atomic orbitals. Atomic orbitals have special shapes and can hold a maximum two electrons. Nearest to the core is the lowest energy level with the value of n = 1. A certain type of orbit inside the level n = 1 is called from the orbit. Since it is in the n = 1 energy level, it is called the 1s orbit. The S-orbit has a spherical shape.

We can define the orbit 1s as a spherical region of space close to surrounding the nucleus, where there is a high probability of finding electron. A small black spot in the center of each chart represents an atom of an atom. The chart is not scaled. Most the space outside the nucleus of the atom is empty. Indeed, the radius the nucleus is about one tenth of a thousandth of the size of the entire atom.

The second energy level (n = 2) has a slightly higher energy than the first. In the second energy level in space, there are two types of regions where you can find an electron. One of these areas is the spherical orbital as on the first energy level. However, the name of this orbitals is 2s because he is at the second energy level. The second type of atomic orbitals at this energy level (n = 2) is called p orbitals. Within the energy level, there are three p-orbitals, and each p The orbital has a definite orientation along the x, y, or z axis. p-orbitals Are areas in space that have the form of a figure-eight or dumbbell. Labels labeled with three p-orbitals on the second level 2px, 2py and 2pz. When we move farther from the core, the levels become more and more high in energy and orbitals inside them become more complex and numerous.

There are some important rules governing the electrons that fill the energy levels and orbitals.

• The electrons first fill the orbitals of the lowest energy. Thus, the first level (n = 1) with its 1-orbital orbit is filled before the electron can occupy the second level.

• Within the energy level, electrons fill the orbitals with the lowest energy first. s-orbitals represent a lower energy configuration than p-orbitals and therefore the electrons will fill the orbital s within the energy level up to filling of p-orbitals.

• Individual orbitals can contain a maximum of two electrons. Each orbital orbital (1s, 2s, 3s, etc.). They can contain a maximum of 2 electrons. When two electrons occupy the same orbit, they rotate in opposite directions, otherwise their negative charges would cause them to separate.

It is difficult to draw electronic orbitals, but it is much easier to think about As electrons fill the orbitals as "electrons in boxes". It usually called the electron configuration of an atom.

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