

## Organic Chemistry Fundamentals (Speedy Study Guides)

Speedy  
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Guides


### ORGANIC CHEMISTRY FUNDAMENTALS


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**ELECTRONIC STRUCTURE AND ATOMIC ORBITALS**

**A simple view**

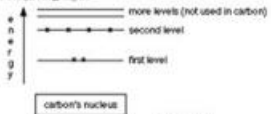
In any introductory chemistry course you will have come across the electronic structures of hydrogen and carbon drawn as:





Note: There are many places where you could still make use of this model of the atoms of H and C, however, it is a simplification and can be misleading. It gives the impression that the electrons are circling the nucleus in orbits like planets around the sun. In you will see in a moment, it is impossible to know exactly how they are actually moving.

The circles show energy levels - representing increasing distances from the nucleus. You could straighten the circles out and draw the electronic structure as a simple energy diagram:



**Atomic orbitals**

Orbits and orbitals sound similar, but they have quite different meanings. It is essential that you understand the difference between them.

**The impossibility of drawing orbits for electrons**

To plot a path for something you need to know exactly where the object is and be able to work out exactly where it's going to be an instant later. You can't do this for electrons.

Note: It would be great to plot a planet's course, if it is not knowing its exact location in real distance if you don't know its direction or speed. Equally it's not easy knowing that it is travelling at 500 mph due west if you have to show whether it is near London or the shores of that particular ocean.

The Heisenberg Uncertainty Principle (just required at A-level) says - basically - that you can't know with certainty both where an electron is and where it's going next. That makes it impossible to plot an orbit for an electron around a nucleus. In this a big problem! The if something is impossible, you have to accept it and find a way around it.

**Hydrogen's electron - the 1s orbital**

Note: In this diagram (and the orbital diagrams that follow), the nucleus is drawn very much larger than it really is. This is just for clarity.

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### Reviews

*It is simple in study easier to comprehend. It is one of the most awesome ebook i have read through. You wont truly feel monotony at at any moment of your respective time (that's what catalogs are for concerning in the event you question me).*  
(Clint Sporer)

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