

Bohr Models

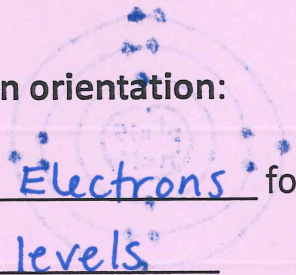
Recall:

- In 1913, Niels Bohr gives us the Planetary model of the atom
- Studying the light spectrum of the elements, he discovered that electrons travel in specific orbits around the positive nucleus

Note: For the purpose of this class we will assume that the Bohr model is correct, and therefore, that electrons travel in circular orbits also known as energy levels.

This is kind of a lie though; take later chemistry classes to find out why!

Electron orientation:

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- Electrons for the most part move in specific paths called energy levels
 - The energy levels of an atom exist whether or not they are occupied by electrons
 - Each atom has its own electron configuration
 - Although more than 3 electron shells exist, we are not drawing Bohr diagrams beyond the first 18 elements
 - A rule for placing electrons in their energy levels:
 - 1st energy level holds 2 electrons
 - 2nd energy level holds 8 electrons
 - 3rd energy level holds 8 electrons
 - It actually can hold 18, but after the first 18 elements, the levels follow different rules

- Each energy level must be filled before the next level is started

Steps for creating Bohr Models:

1. Determine the number of protons, neutrons and electrons found in an atom of the element

eg) P $p^+ = 15$

$n = 16$

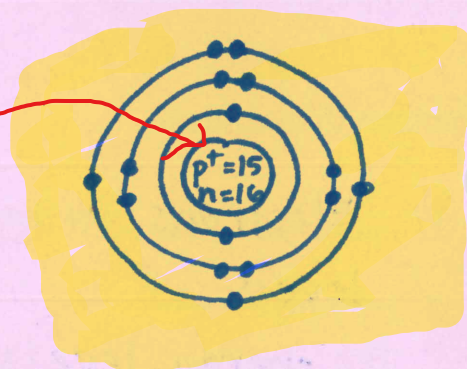
$e^- = 15$

2. Draw a circular nucleus with the correct number of and symbol for both protons and neutrons.

Note that we now add a nucleus with the # of protons and neutrons (USE CORRECT SYMBOLS)



Common error: DO NOT place electrons on the nucleus. Make sure the first orbital is separate from the nucleus.



3. Draw the correct number of electron shells.

4. Place electrons on the diagram, ALWAYS filling from the inside out (shell 1 first, then 2 and 3 if needed)

➤ Electrons should be placed individually at first before pairing; first 4 of 8 are single then pair remaining.