

Nested Globes Bohr Atom Model

Demonstration designed by Deborah Scherrer, Stanford Solar Center

Materials:

- 3 different sizes of clear plastic acrylic ball ornaments that are made up of two semi-spheres (available at craft stores such as Michael's). Make sure the 3 can nest inside each other. You may have to cut off the hanging tabs.
- 1 wooden bead or ball that will fit in your smallest sphere. This will serve as the nucleus.
- 1 tiny bead that will represent an electron. Make sure it is small enough to fit in the nesting area between balls 1 and 2 as well as balls 2 and 3. Try to use the same beads that you will later use for the Spectra Straw activity.



Activity:

1. Place the wooden bead inside your smallest globe, then nest the medium and larger globes around those. You now have an atom with a nucleus and 3 “energy levels” that can hold electrons.
2. Add the tiny bead electron to the central globe, the one with your nucleus. Point out to the students that this is the electron’s natural resting state. It can move around and “circle” the nucleus, but must stay within that one energy level.
3. Now, “add energy” to the atom model by using your hands to open the globes and move the electron from the central ball to the middle ball. The nucleus, of course, remains in the central ball. This represents the electron in its 1st extended energy state. Show again that the electron can “circle” the nucleus, but only within the confines of the 2nd energy level.
4. Repeat for your final energy level state.
5. Discuss your findings with the students.