

RAFT IDEAS

Topics: Atoms, Matter,
Periodic Table

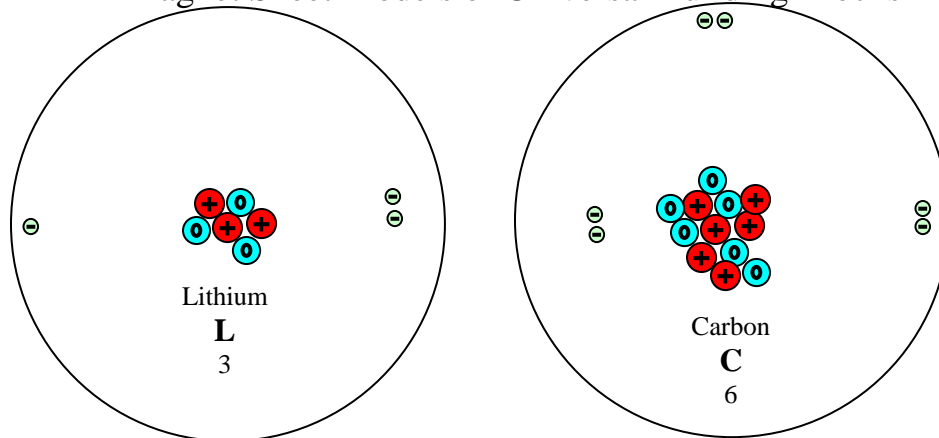
Materials List

- ✓ Magnet sheet (3 different colors)
- ✓ Rubber steel or other magnetic backboard
- ✓ Permanent marker
- ✓ Die cuts for large and small circles (available at RAFT)
Variation: use a hole punch instead of small die-cut)

This activity can be used to teach:

- Elements of matter and atomic structures (CA Science Standards: Grade 8, 3.0 & 3.a)
- Atomic mass located within the nucleus (CA Science Standards: HS Chemistry, 1.e)

Attractive Atomic Models Magnet Sheet Models of Universal Building Blocks



Atomic structure becomes clear when using these magnetic pieces to represent protons, neutrons, and electrons.

Assembly

1. Hand cut or die-cut large circles from a chosen color of magnet sheet to represent the protons in the models. Label each circle with a plus sign (“+”).
2. Hand cut or die-cut large circles from a chosen color of magnet sheet (different from the color used for protons) to represent the neutrons in the models. Label each circle with a neutral sign (“0”).
3. Hole punch or die-cut small circles from magnet sheet (different from the colors used for protons and neutrons) to represent the electrons in the models. Label each circle with a negative sign (“-”).

To Do and Notice

The elements are arranged on the periodic table by atomic number, the number of protons in each atom. For example, each atom of iron has 26 protons – ALWAYS. The number of neutrons and electrons might vary, but the number of protons cannot. Use these magnet circles to build atomic models of the simplest elements: 1 proton, 1 neutron, and 1 electron = 1 atom of Hydrogen. Now, try Helium (atomic number 2), Lithium (atomic number 3), and Carbon (atomic number 6).

The Science Behind the Activity

All matter in the universe is made from the same “building blocks”: the elements. These 92 naturally occurring substances are organized and presented in the periodic table. At the Big Bang, all matter was almost exclusively Hydrogen. Atoms of all other elements were created over the last 13.5 billion years by nuclear reactions inside stars (nucleosynthesis). By nature of their atomic structures, some elements are more stable than others, some are inert, and some tend to form compounds (molecules) more readily than others (i.e. – Carbon and iron). The model of the atom demonstrated in this activity, the Bohr Model, is NOT to scale. Atoms are mostly empty space, with the more massive protons and neutrons located within the positively charged nucleus. The tiny, negatively charged electrons whiz around the nucleus at varying levels, depending on the energy state of the atom.

Web Resources (Visit www.raft.net/more for how-to videos and more ideas!)
Extensive information on each element is available at: www.webelements.com