

## LAB: Constructing Bohr Models and Determining Trends

### **BACKGROUND**

Bohr diagrams are used to illustrate the probable location of electrons in atoms. The rows on the periodic table are called periods. The columns are called families.

### **Procedure:**

1. Cut out the attached element cards.
2. Draw the Bohr models for each element around the element's symbol.
3. Arrange the cards so they resemble the periodic table. I will check it in class.

**Questions:** (As you answer the questions about the Bohr diagrams, look at the number of electrons in the outer energy level and the number of energy levels in the atom.)

1. Turn the following cards over: H, Li, Na, K.
  - a) In what way is each Bohr diagram similar? \_\_\_\_\_
  - b) In what way is each Bohr diagram different? \_\_\_\_\_
2. Turn the following cards over: Be, Mg, Ca.
  - a) In what way is each Bohr diagram similar? \_\_\_\_\_
  - b) In what way is each Bohr diagram different? \_\_\_\_\_
3. Turn the following pairs of cards over: (B, Al) (C, Si) (N, P) (O, S) (F, Cl)
  - a) In what way is the Bohr diagram for each pair similar? \_\_\_\_\_
  - b) In what way is the Bohr diagram for each pair different? \_\_\_\_\_
4. In general what can be said about every element in the same family of the periodic table?  
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5. Turn the following cards over: He, Ne, Ar.
  - a) In what way is each Bohr diagram similar? \_\_\_\_\_
  - b) In what way is each Bohr diagram different? \_\_\_\_\_
6. Turn the following cards over: H, He.
  - a) In what way is each Bohr diagram similar? \_\_\_\_\_
  - b) In what way is each Bohr diagram different? \_\_\_\_\_
7. Turn the following cards over: Li, Be, B, C, N, O, F, Ne.
  - a) In what way is each Bohr diagram similar? \_\_\_\_\_
  - b) In what way is each Bohr diagram different? \_\_\_\_\_
9. Turn the following cards over: Na, Mg, Al, Si, P, S, Cl, Ar.
  - a) In what way is each Bohr diagram similar? \_\_\_\_\_
  - b) In what way is each Bohr diagram different? \_\_\_\_\_
11. In general what can we say about all elements in the same period of the periodic table?  
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1 1.0079 H Hydrogen	2 4.0026 He Helium	3 6.941 Li Lithium
5 10.811 B Boron	6 12.011 C Carbon	7 14.007 N Nitrogen
9 18.988 F Fluorine	10 20.180 Ne Neon	11 22.990 Na Sodium
13 26.982 Al Aluminum	14 28.086 Si Silicon	15 30.974 P Phosphorus

17 35.435  Cl  Chlorine	18 39.948  Ar  Argon	19 39.098  K  Potassium
4 9.0122  Be  Beryllium	8 15.994  O  Oxygen	12 24.305  Mg  Magnesium
16 32.067  S  Sulfur	20 40.078  Ca  Calcium	