

# Unit 9 – Particle Interactions

## Essential Questions

What gives an element its properties?

How does the composition of an element determine the element's placement on the periodic table?

What are the particles that make up an atom?

How are elements arranged on the periodic table?

Why do different elements have different properties?

How does the structure of an atom determine the properties of an element?

What characteristics of elements contribute to the organization of the periodic table?

## Instructional goals

### 1. Elemental properties

List properties that distinguish metals from non-metals.

Identify the valence electrons for each Family/Group 1-8.

### 2. Bonding and formulas

Describe the evidence that distinguishes ionic from molecular or atomic solids.

Given the formula of an ionic or molecular substance, state its name.

Given the name of an ionic or molecular substance, write its formula.

From the name or formula of a substance determine whether that substance is ionic or molecular.

## Sequence

1. Activity 1 - Crystal Structure of Elements

2. Activity 2 – Crystal Structure of Compounds

3. Exercise 1 – Why structure is important

4. Exercise 2 part 1 – Implications of structure – Class discussion and revisit of Bohr models

5. Exercise 2 part 2 – Stability – Why do elements gain and lose electrons – Introduction to ion formation

6. Exercise 3 - Ionic nomenclature

7. Exercise 4 - Molecular nomenclature

8. Exercise 5 – Writing and naming compounds (more practice)

9. Test