

Properties and Structure of Matter

CH11-8

4 inquiry questions • 14 dot points

1 How do the properties of substances help us to classify and separate them?

- explore homogeneous mixtures and heterogeneous mixtures through practical investigations:...
- investigate the nomenclature of inorganic substances using International Union of Pure and Applied Chemistry (IUPAC) naming conventions
- classify the elements based on their properties and position in the periodic table through their:...

2 Why are atoms of elements different from one another?

- investigate the basic structure of stable and unstable isotopes by examining:...
- model the atom's discrete energy levels, including electronic configuration and spdf notation
- calculate the relative atomic mass from isotopic composition
- investigate energy levels in atoms and ions through:...
- investigate the properties of unstable isotopes using natural and human-made radioisotopes as examples, including but not limited to:...

3 Are there patterns in the properties of elements?

- demonstrate, explain and predict the relationships in the observable trends in the physical and chemical properties of elements in periods and groups in the periodic table, including but not limited to:...

4 What binds atoms together in elements and compounds?

- investigate the role of electronegativity in determining the ionic or covalent nature of bonds between atoms
- investigate the differences between ionic and covalent compounds through:...
- investigate elements that possess the physical property of allotropy
- investigate the different chemical structures of atoms and elements, including but not limited to:...
- explore the similarities and differences between the nature of intermolecular and intramolecular bonds and the strength of the forces associated with each, in order to explain the:...