

Introduction for Module 3 – Ions and Molecules

Textbook: [Open Stax Chemistry 2e](#)

Suggested Reading: Chapter 2.4-2.6 (**Especially 2.6**)

Learning Objectives:

- **Begin to review ionic compounds – in contrast with molecules**
- **Learn to predict charges of ions based on periodic table**
- **Understand polyatomic ions and begin to memorize common ones**

Captions and Attributions:

- 1) Carbon dioxide is a gas at room temperature and takes the form of molecules, in which the covalent bonds that connect oxygen to carbon are characteristically unique from the attractive forces between CO₂ molecules.
- 2) Sodium Chloride and other ionic compounds are arranged in a lattice - not molecules. Space filling diagram (left) shows a more realistic image of the structure, while ball and stick (right) shows interactions more clearly. [Figure 7.3, The atoms in sodium chloride \(common table salt\)](#) by [Open Stax](#) is licensed under [CC BY 4.0](#).
- 3) Many molecules will adopt a common charge when forming monatomic ions, which can be determined by group on the periodic table. [Figure 2.29, Some elements exhibit a regular pattern](#) by [Open Stax](#) is licensed under [CC BY 4.0](#).
- 4) Monatomic ions are defined as a single element that has lost or gained electrons to acquire a positive or negative charge. Polyatomic ions are covalently bonded atoms that as a group have gained or lost electrons.



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