

Introduction for Module 3 – Ions and Molecules

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

Suggested Reading: [Chapter 2.4-2.7](#) (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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The creation of this work, “Open Chemistry Online: Module 3” was supported by Open CU Boulder 2021-2022, a grant funded by the Colorado Department of Higher Education with additional support from the CU Office of the President, CU Office of Academic Affairs, CU Boulder Office of the Provost, and CU Boulder University Libraries.