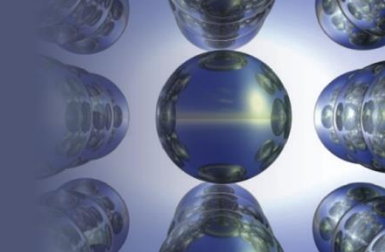


Section 1.1

Chemistry: An Overview



- A main challenge of chemistry is to understand the connection between the macroscopic world that we experience and the microscopic world of atoms and molecules.
- You must learn to think on the atomic level.

Section 1.1

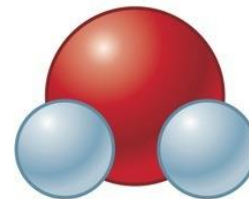
Chemistry: An Overview

Atoms vs. Molecules

- Matter is composed of tiny particles called atoms.
- Atom: smallest part of an element that is still that element.
- Molecule: Two or more atoms joined and acting as a unit.



oxygen atom



water molecule



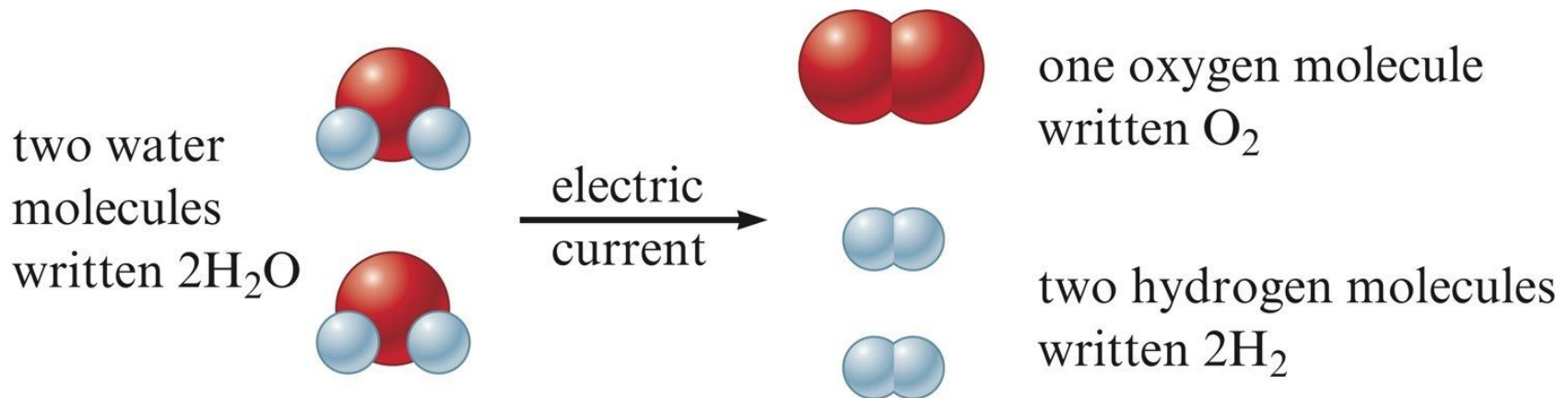
hydrogen atom

Section 1.1

Chemistry: An Overview

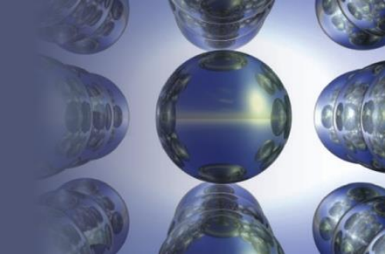
A Chemical Reaction

- One substance changes to another by reorganizing the way the atoms are attached to each other.



Section 1.2

The Scientific Method

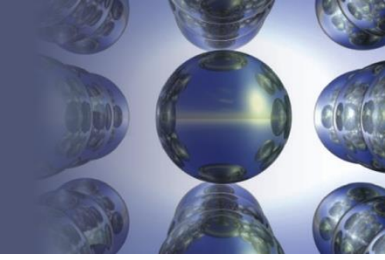


Science

- Science is a framework for gaining and organizing knowledge.
- Science is a plan of action — a procedure for processing and understanding certain types of information.
- Scientists are always challenging our current beliefs about science, asking questions, and experimenting to gain new knowledge.
- Scientific method is needed.

Section 1.3

Units of Measurement



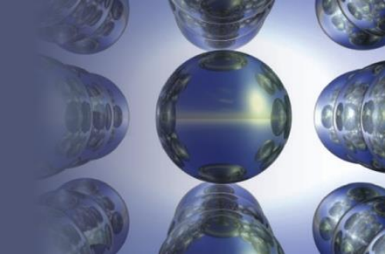
Nature of Measurement

Measurement

- Quantitative observation consisting of two parts.
 - number
 - scale (unit)
- Examples
 - 20 grams
 - 6.63×10^{-34} joule·second

Section 1.3

Units of Measurement

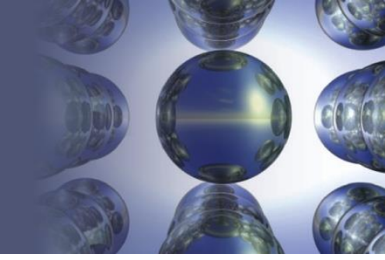


The Fundamental SI Units

<u>Physical Quantity</u>	<u>Name of Unit</u>	<u>Abbreviation</u>
Mass	kilogram	kg
Length	meter	m
Time	second	s
Temperature	kelvin	K
Electric current	ampere	A
Amount of substance	mole	mol
Luminous intensity	candela	cd

Section 1.4

Uncertainty in Measurement



Precision and Accuracy

Accuracy

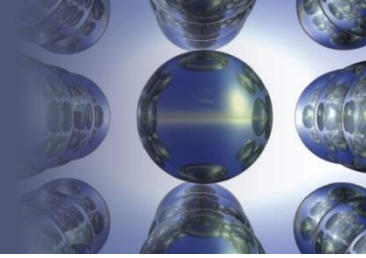
- Agreement of a particular value with the true value.

Precision

- Degree of agreement among several measurements of the same quantity.

Section 1.8

Temperature



Three Systems for Measuring Temperature

- Fahrenheit
- Celsius
- Kelvin