

Ch. 6.1 (particle theory)

- matter
 - two properties (特性)
 - mass
 - take up space
 - no matter
 - light
- basic idea
 - Democritus
 - matter was divided into smaller and smaller pieces
 - at some points, get very tiny pieces -- couldn't be further divided
 - called particles
 - particles -- building blocks of matter
 - Robert Brown
 - pollen grains move randomly on their own in still water
 - called Brownian motion
 - Albert Einstein
 - water -- made up of very small water particles
 - water particles -- much smaller than pollen grains
 - move in different directions
 - hit pollen grains in different directions from time to time
 - pollen grains -- move randomly in zigzag paths
- particle theory
 - all matter -- made up of particles
 - particles -- very small
 - different matter -- made up of different particles
 - different particles
 - different sizes
 - different masses
 - particles -- move all the time
 - empty spaces between particles

- different types of particles

- atoms(原子)

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- basic types of particles making up matter
 - some substances → made up of only 1 kind of atom
 - gold → gold atoms
 - iron → iron atoms

- molecule (分子)

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- some substances → made up of molecules
 - consists of two/ more atoms joined together
 - some molecules consist of same kind of atom
 - 1 water molecule → 2 hydrogen atoms & 1 oxygen atom
 - 1 oxygen molecule → 2 oxygen atoms
 - carbon dioxide molecule → 2 oxygen atoms & 1 carbon atom

- particles of different substances

- different sizes
 - different masses

- chemical formula of a molecule

- each molecule → own chemical formula (化學式)
 - show → types & number of atoms
 - example
 - O₂
 - O → 1 oxygen atom
 - 2 → 2 oxygen atoms in 1 oxygen molecule