Chemical Principles EMI course
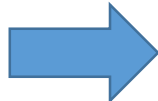## 普通化學EMI英語教學

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What is chemistry?

Dalton's Atomic Theory: Each element is made up of tiny particles called *atoms*

creates →

The Period Table

- **Teaching of chemical experiments**

Boyle's law: $V = \dfrac{k}{P}$ (at constant T and n)

Charles's law: $V = bT$ (at constant P and n)

Avogadro's law: $V = an$ (at constant T and P)

From experiments →

- $PV = nRT$

- **Explanation of chemical equations**

- Derivation of PV = nRT

$$P = \frac{2}{3}\left[\frac{nN_A(\frac{1}{2}m\overline{u^2})}{V}\right]$$

From theory ↓

$$\frac{PV}{n} = \frac{2}{3}(KE)_{avg} \propto T$$

- **Grading**
- Midterm exam*2   25% each
- Final exam*1 30%
- Quiz*7 20% in total

- **Historical examples for the meaning of difficult equations**

- Heisenberg uncertainty principle

$$\Delta x \cdot \Delta p \geq \frac{\hbar}{2}$$

- *Example*: How does our sun shine ?
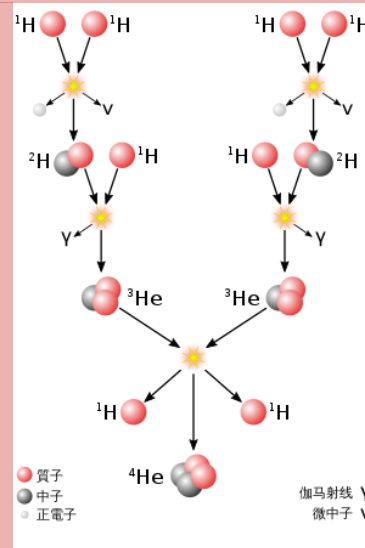
- Nuclear fusion proposed (1920)

opposition ↓

- Not enough heat

- Heisenberg uncertainty principle proposed (1933)

explained ↓

- Nuclear fusion of sun through Quantum tunneling effect

- **Alternatives**
- Coursera online English course also available