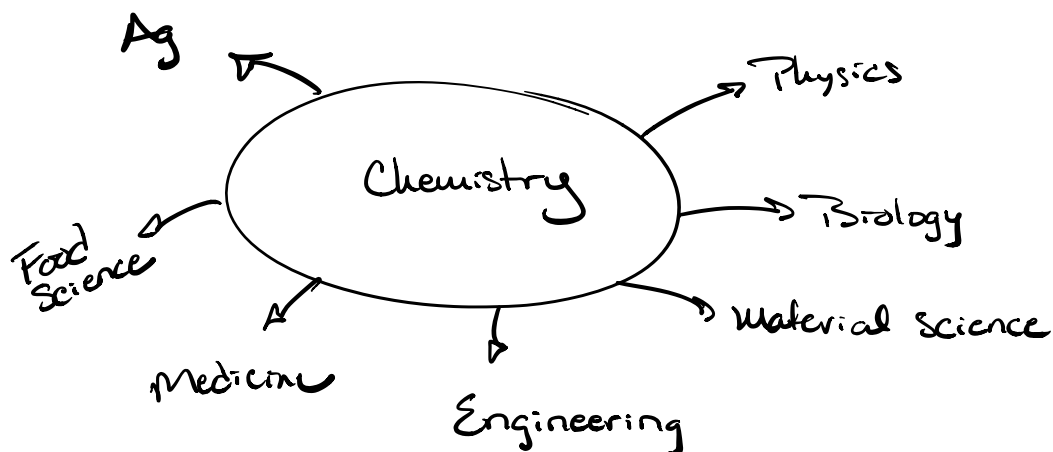


# Chem 3 - Introductory Inorganic Chemistry

## Chapter 1.1

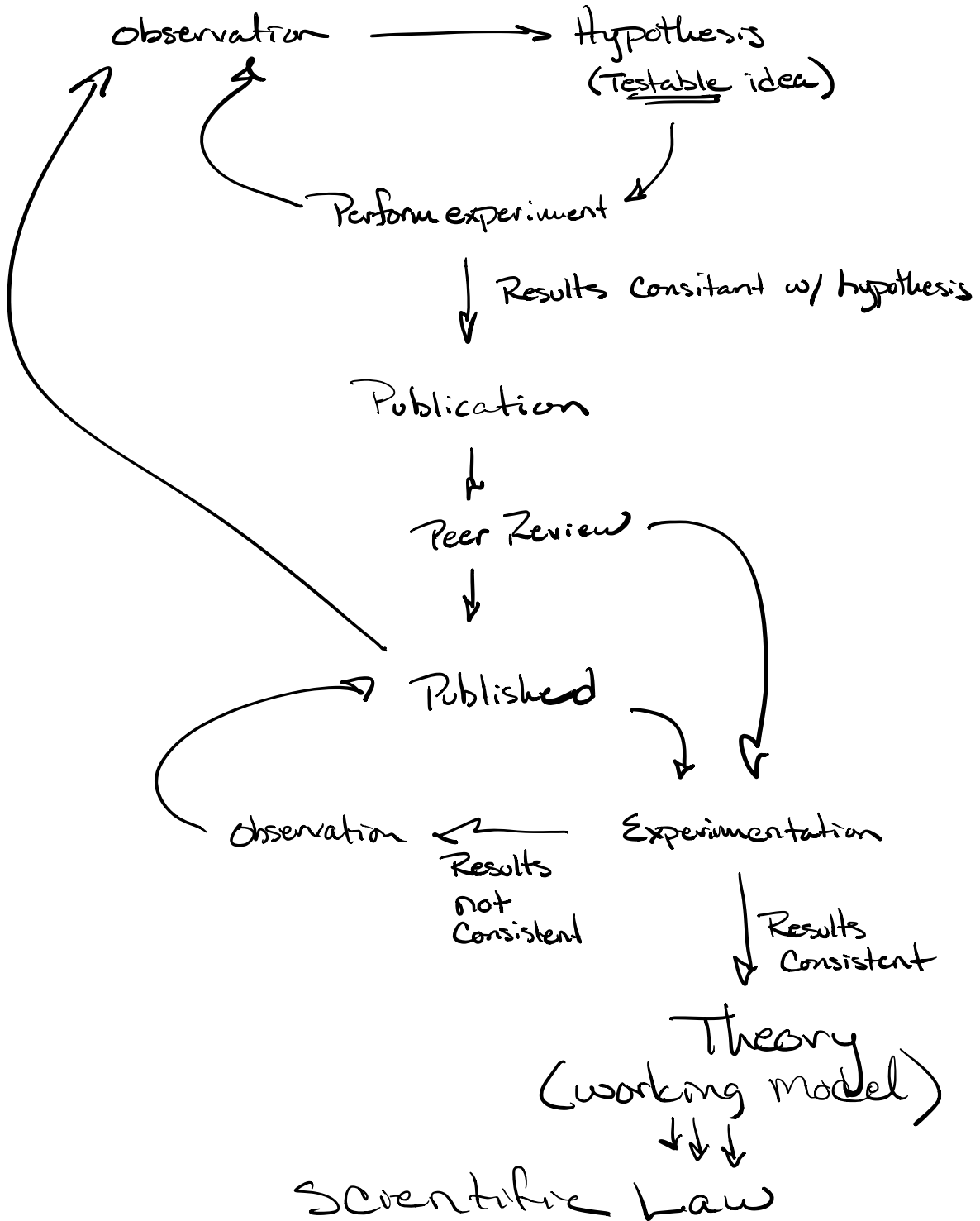
Central Science



Models are Core to Chemistry

Conceptual models → Simplified Approximations  
that are useful to predict chemical reactivity  
or behaviour.

# How we work - The scientific Method



## Chapter 1.2 Matter

Chemistry is the Study of Matter & Energy

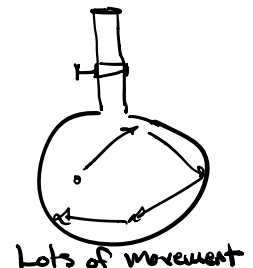
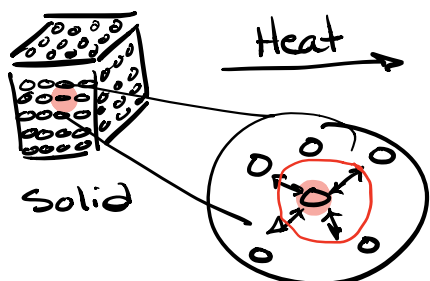
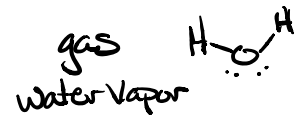
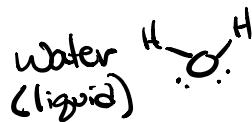
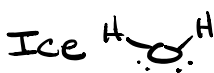
Matter - Anything that occupies volume & has mass.

← motion ⇒ Matter in motion

First Model - Kinetic Molecular Theory (KMT)

### KMT

- All matter is made of small particles (Atoms or Molecules)
- Matter is always in motion
- Motion is proportional to temperature  
Cold → move slowly  
Hot → move fast



Solid

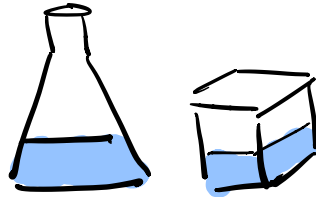


fixed dimensions

Particles occupy ~85-90% of total volume

15-10% Empty space

liquid

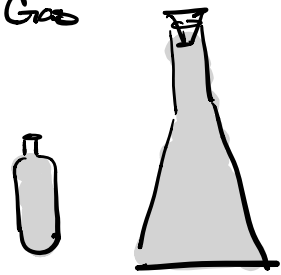


fixed volume but variable shape

Particle occupy 75-80% total volume

20-25% Empty space

Gas

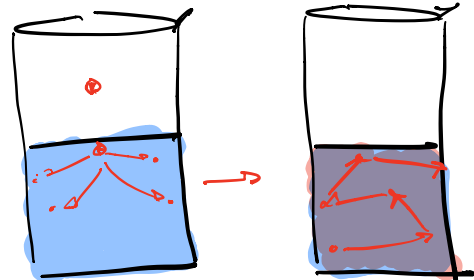
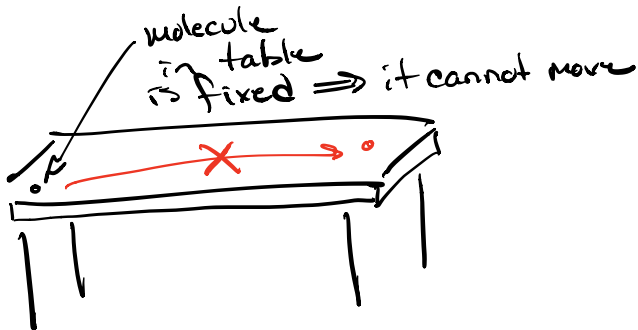


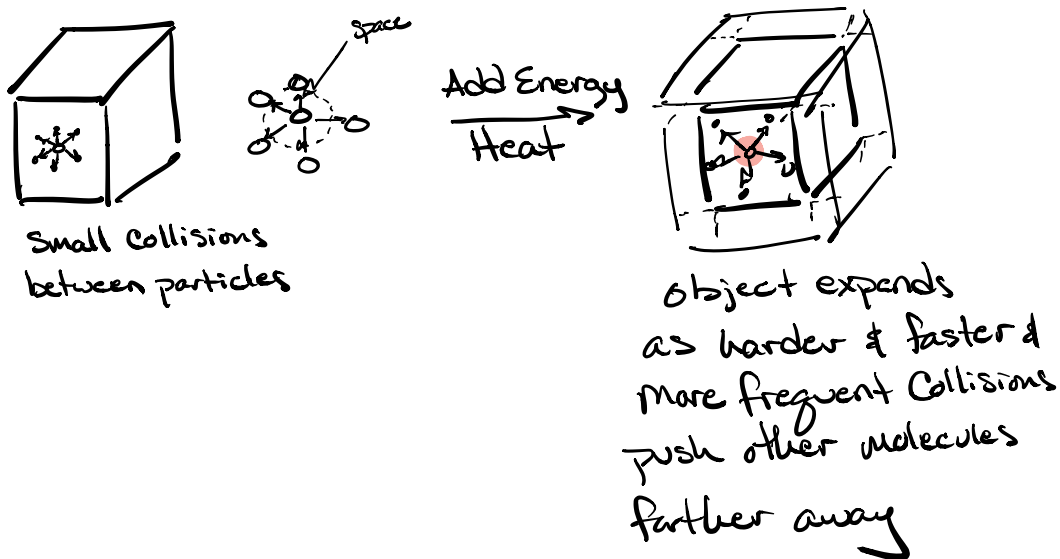
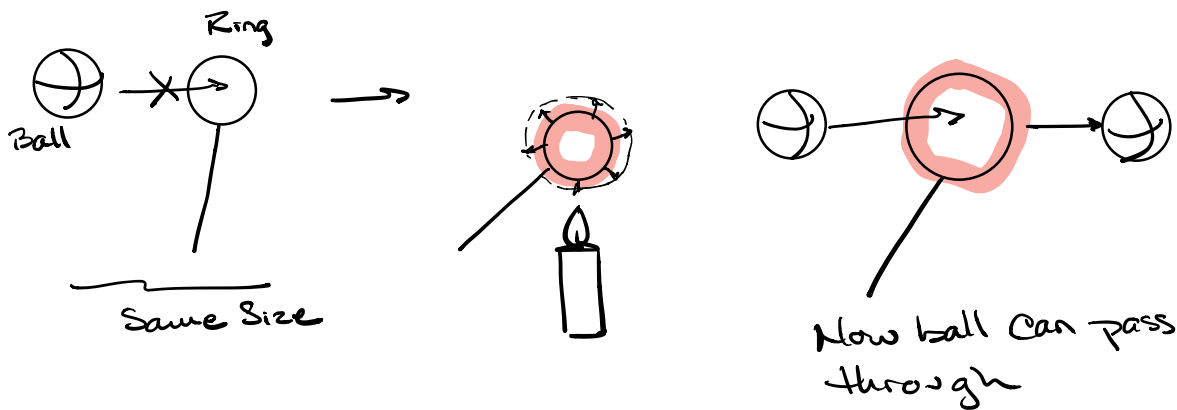
Variable Volume  
Variable shape

Particles occupy 0.1% of total volume

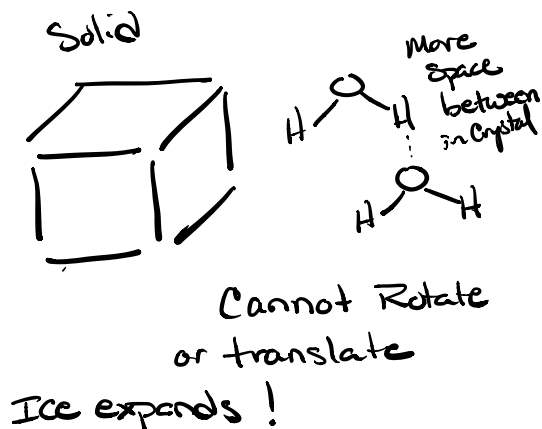
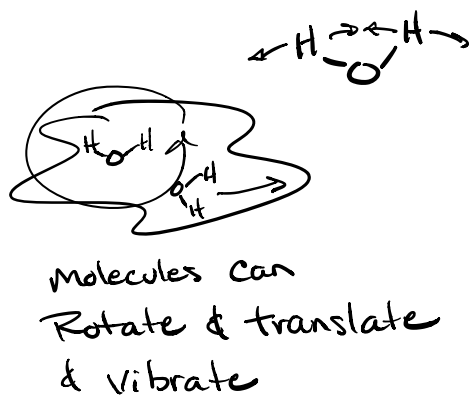
99.9% Empty

### Degrees of freedom





Ice & water are an exception (Phase Change  
Change from liquid to solid)



Mass - mass is the measure of the amount of matter in an object  
=> independent of gravity.

Weight - A measure of force acting on a mass through gravity.  
=> dependent on gravity

