

Nova's Guide to the States of Matter

Join Nova the Owl on a voyage through the particles of our world!

- Solids maintain a fixed shape and volume because their particles are held together by strong forces in a rigid structure.
- Liquids take the shape of their container because particles can flow freely, yet they remain close together with a constant volume.
- Gases have no fixed shape or volume; they expand to fill the entire space available because their particles move rapidly in all directions.
- When a substance is heated, particles gain kinetic energy, which causes them to move more vigorously and can lead to a change of state, such as melting or evaporation.
- Cooling a substance removes kinetic energy from the particles, causing them to slow down and move closer together, resulting in freezing or condensation.

Did you know? Did you know? Everything you see around you is made of tiny, invisible particles! In a solid, these particles are packed tightly together and vibrate in a fixed position. In a liquid, they have more energy and can slide past one another. In a gas, particles are far apart and zoom around at high speeds, filling any space they can find!

Key vocabulary: Solid · Liquid · Gas · Particle · Evaporation · Condensation · Melting · Freezing