



How atoms stick together to form ionic compounds

KS4 CHEMISTRY

KS3 SCIENCE

Ages 11-16 ⌚ 3 min read

What are atoms and electrons?

Atoms are the tiny building blocks that make up everything around us. Inside every atom are even tinier particles called **electrons**, which carry a negative electrical charge. Atoms generally want to have the right number of electrons to feel stable and happy.

Think of it like this: some atoms are like people who have too many snacks and want to get rid of some, while others are like people who don't have enough snacks and want to collect more.

Think of it like a playground where some children have too many toys and others want toys. When they trade, both feel happier.

How do atoms transfer electrons?

An **ionic compound** forms when one atom gives electrons to another atom. When an atom loses electrons, it becomes positively charged (called a **cation**). When an atom gains electrons, it becomes negatively charged (called an **anion**). These opposite charges attract each other powerfully, like magnets, and stick together.

For example, when **sodium** (a silvery metal) meets **chlorine** (a poisonous yellow gas), sodium gives one electron to chlorine. This creates **sodium chloride** — which is just ordinary table salt! Sodium becomes positively charged and chlorine becomes negatively charged, and they attract each other so strongly they form a solid crystal.

Why does this happen?

Atoms do this because having a full outer shell of electrons makes them very stable and safe. Some atoms have nearly full shells and just need a few more electrons, while others have a few extra electrons they don't really need. When these atoms meet, the ones with extra electrons give them away to the ones that need them. Both atoms end up happy and stable.

Think of it like completing a puzzle. Each atom wants to complete its outer puzzle piece, so they help each other finish the picture.

What are ionic compounds like?

Ionic compounds are usually hard, solid crystals. Salt, limestone, and chalk are all ionic compounds. They have high melting points because the positive and negative charges hold the atoms together very tightly. When dissolved in water, these compounds split into their separate charged particles.