

# Chemistry for the gifted and talented

## Ionic bonding

An explanation often given for ionic bonding is that atoms lose or gain electrons to achieve noble gas configurations. In this activity you will evaluate that as a complete explanation.

Read through the information in the box in the middle of the page, and then the four opinions expressed A, B, C and D.

Decide in your group whether you agree with all, or any, of each of the opinions and then what your own response to the information is.

What do you think?

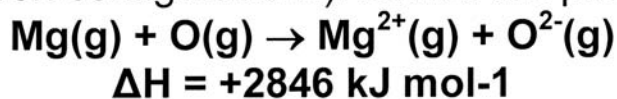
We know by experience that magnesium burns exothermically so electron transfer cannot be the only thing going on.

A

The bonding in magnesium oxide must not be ionic – it must be covalent.

B

We sometimes explain the formation of ions in terms of atoms transferring electrons in order to gain a full outer shell of electrons (noble gas electron configurations). But for the process:



The process is extremely endothermic! It requires a large investment of energy to transfer the electrons from Mg to O.

Ionic bonding occurs because oppositely charged ions attract each other. Energy is given out when the ions come together in a lattice.

C

When you react magnesium and oxygen you do not actually have separate atoms. The magnesium is in a giant lattice and the oxygen is in O<sub>2</sub> molecules.

D