## Chemistry for the IB Diploma Programme





## **Guiding Question revisited**

What happens when reactants share their electron pairs with others?

In this chapter we have seen that the donation of an electron pair from an electronrich species to an electron-deficient species results in the formation of a coordination bond. Curly arrows are used to show the movement of electron pairs in these electron sharing reactions.



A nucleophile forms a bond by donating a pair of electrons to its reaction partner.



In a nucleophilic substitution reaction, a leaving group forms as another bond breaks.



Heterolytic fission of a covalent bond produces two oppositely charged ions



An electrophile forms a bond by accepting a pair of electrons from its reaction partner.



Alkenes undergo electrophilic addition reactions in which the carbon-carbon double bond breaks.

Electron-pair sharing reactions between nucleophiles and electrophiles were then examined in the context of two important reactions of organic compounds:



Nucleophilic substitution reactions, with the specific example of halogenoalkanes reacting with nucleophiles.

Electrophilic addition reactions, with the specific example of alkenes reacting with electrophiles.