Reactivity 3.4 · Electron-pair sharing reactions

International Baccalaureate · IB Diploma · Chemistry · HL · Vocabulary in context

Word	Example
nucleophile /'nju:klɪəfaɪl/	The hydroxide ion acts as a **nucleophile**.
electrophile /ɪˌlektrəʊ'faɪl/	Bromine acts as an **electrophile** when it attacks a double bond.
heterolytic fission /ˌhetrə'lɪtɪk 'fɪʃn/	In **heterolytic fission**, one atom takes both electrons from the bond.
curly arrow /'kɜ:li 'ærəʊ/	A **curly arrow** shows where a pair of electrons moves.
halogenoalkane /'heɪlədʒnəʊlkeɪn/	Bromoethane is a **halogenoalkane**.
nucleophilic substitution /ˌnju:klɪə'fɪlɪk ˌsʌbstɪ'tju:ʃn/	A halogenoalkane reacts with hydroxide ions by **nucleophilic substitution**.
leaving group /'li:vɪŋ gru:p/	A **leaving group** takes a bonding electron pair when it departs.
electrophilic addition /ɪˌlektrəʊ'fɪlɪk ə'dɪʃn/	Ethene reacts with bromine by **electrophilic addition**.
functional group /'fʌŋkʃənl gru:p/	The –OH **functional group** makes a compound an alcohol. –OH
Lewis acid	A **Lewis acid** accepts an electron pair.
Lewis base	A **Lewis base** donates an electron pair.

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coordination bond	A **coordination bond** uses two electrons from the same atom.
ligand /'lɪgænd/	Water is a **ligand** in [Cu(H2O)6]2+. [Cu(H2O)6]2+
complex ion /'kɒmpleks 'aɪɒn/	[Cu(H2O)6]2+ is a **complex ion**. [Cu(H2O)6]2+
coordination number /kəʊ'ɔ:dɪneɪʃn 'nʌmbə/	[Cu(H2O)6]2+ has a **coordination number** of 6. [Cu(H2O)6]2+ 6
primary /'praɪməri/	In a **primary** alcohol, the –OH carbon is joined to one other carbon. –OH
tertiary /'tɜ:ʃəri/	In a **tertiary** alcohol, the –OH carbon is joined to three other carbons. –OH
transition state /træn'sɪʃn steɪt/	The **transition state** is at the top of the energy curve.
stereospecific	A **stereospecific** reaction always gives one particular shape of product.
inversion of configuration	**Inversion of configuration** turns the molecule inside out, like an umbrella in the wind.
carbocation /ˌkɑ:bə'keɪʃn/	A **carbocation** has a positive charge on a carbon atom.
rate-determining step /reɪt dɪ'tɜ:mɪnɪŋ step/	The slowest step is the **rate-determining step**.
Markovnikov's rule /'mɑ:kəvnɪkɒvz ru:l/	**Markovnikov's rule** predicts the main product of adding HBr to propene. HBr

Word	Example
delocalized /dɪˈlɒkəlaɪzd/	**Delocalized** electrons spread over several atoms.
electrophilic substitution /ɪˌlektrəʊˈfɪlɪk ˌsʌbstɪˈtjuːʃn/	Benzene reacts by **electrophilic substitution**.
nitronium ion	The **nitronium ion**, NO2+, attacks benzene. NO2+

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