Learning Tracker; Ozone

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| **Topics** | **R** | **Y** | **G** |
| **Bonding and structure** |  |  |  |
| Recall the term electronegativity and predict the bond polarity in a covalent molecule |  |  |  |
| Describe the formation of instantaneous dipole- induced dipole (including dependence on branching and Mr) |  |  |  |
| Describe the formation of permanent-permanent dipole intermolecular bonds. |  |  |  |
| Describe the formation of hydrogen bonds as intermolecular bonds |  |  |  |
| Explain the relative boiling points of substances in terms of intermolecular bonds |  |  |  |
| **Kinetics** |  |  |  |
| Recall the term activation enthalpy and how it applies to enthalpy profiles |  |  |  |
| Describe the effect of pressure and concentration on the rate of a reaction in terms of collision theory. |  |  |  |
| Describe how the Boltzmann distribution can explain qualitative effect of temperature changes on the rate of a reaction |  |  |  |
| Describe the role of catalysts in providing alternative routes of lower activation enthalpy |  |  |  |
| Recall the term *homogeneous catalysis* and the formation of intermediates |  |  |  |
| **Inorganic Chemistry and the Periodic Table** |  |  |  |
| Calculate, from given data, of values for composition by volume of a component in a gas mixture measured in percentage concentration and in parts per million (ppm) |  |  |  |
| **Organic functional groups** |  |  |  |
| Recognise and recall the following homologous series: haloalkanes and amines |  |  |  |
| **Organic Reactions** |  |  |  |
| Describe characteristic properties of the haloalkanes, comparing boiling points and reactions with water / ammonia |  |  |  |
| Reaction Mechanisms |  |  |  |
| **Recall** the terms *substitution* and *nucleophile* |  |  |  |
| Explain nucleophilic substitution reactions of haloalkanes using ‘curly arrows’ and partial  charges |  |  |  |
| Explain reactivity of haloalkanes in terms of strength of C-Hal bond rather than bond polarity. |  |  |  |
| Describe homolytic and heterolytic bond fission |  |  |  |
| Recall the formation, nature and reactivity of radicals |  |  |  |
| Explain of the mechanism of a radical chain reaction involving initiation, propagation and termination |  |  |  |
| Draw the radical mechanism for the reaction of alkanes with halogens including use of ‘half curly arrows’ |  |  |  |
| Explain the depletion of ozone in the stratosphere due to haloalkanes |  |  |  |
| Sustainability |  |  |  |
| Recall ozone’s importance as a sunscreen in the stratosphere (and the effects of high energy UV, including on human skin) |  |  |  |
| Recall the polluting effects of ozone in the troposphere, causing problems including  photochemical smog |  |  |  |
| **Energy and matter** |  |  |  |
| Recall the principal radiations of the Earth and the Sun in terms of the following regions of the electromagnetic spectrum: infrared, visible, ultraviolet |  |  |  |
| Describe the effect of UV and visible radiation promoting electrons to higher energy levels, sometimes causing bond breaking |  |  |  |
| Calculate of values for frequency, wavelength and energy of electromagnetic radiation from given data. |  |  |  |

**How can I improve?**

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