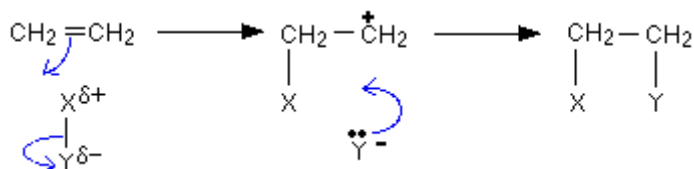



Chemguide – questions

ELECTROPHILIC ADDITION – SYMMETRICAL ALKENES

1. Ethene reacts with an electrophile XY to undergo an addition reaction represented by this mechanism, known as electrophilic addition:



- a) Explain the term *addition reaction*.
- b) An electrophile is something that is attracted to an electron-rich region of another molecule or ion.
- Explain why ethene is attractive to an electrophile.
 - A simple example of a molecule of the type XY might be HCl. Explain why HCl might behave as an electrophile.
- c) What name is given to ions such as the one formed in the middle of the mechanism in which a carbon atom carries a positive charge?
- d) Describe briefly in words what is happening during the two stages of the mechanism.
2. Cyclohexene has the skeletal formula 
- Write the mechanism for the electrophilic addition of HBr to cyclohexene.
 - Considering all the hydrogen halides (HF, HCl, HBr and HI), what is the order of reactivity of these with cyclohexene? Explain your answer.
3. a) Draw the structure of a molecule of sulphuric acid.
- b) Write the mechanism for the reaction of concentrated sulphuric acid with but-2-ene.



4. Write the mechanism for the reaction between ethene and bromine. (Use the version involving a bromonium ion unless you are *certain* that your examiners will accept the simplified version.) Make sure that you explain clearly why bromine is an electrophile.