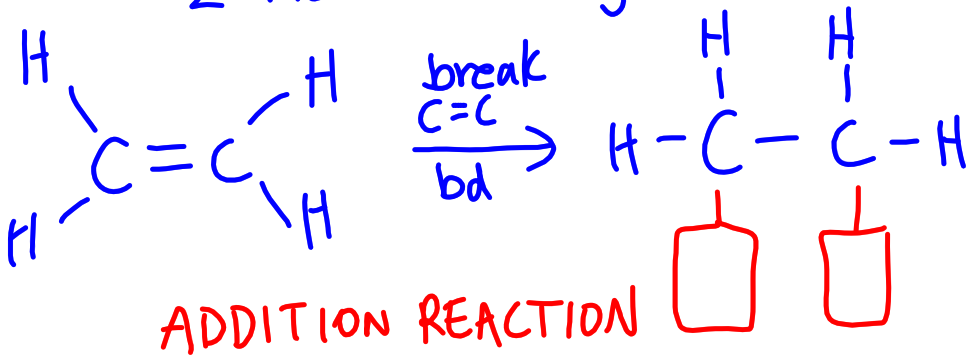
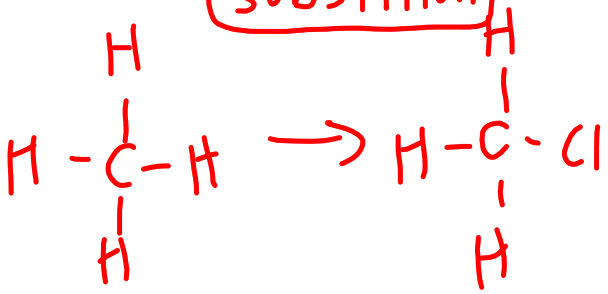
ALKENES

- C_nH_{2n}
- contain at least 1 C=C (carbon-carbon double bd)
- unsaturated hydrocarbons
- double bond is highly reactive;
  C=C can be broken + create 2 new bonding sites



ADDITION REACTION

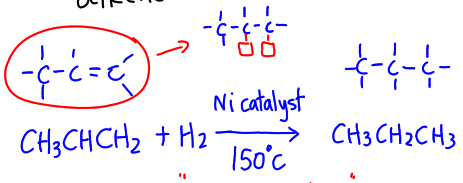
Substition



ADDITION REACTIONS

- with H_2 (hydrogen)

alkene → alkane

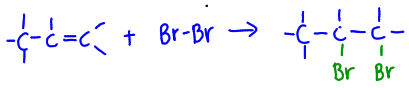


$CH_3CHCH_2 + H_2 \xrightarrow[150^\circ C]{\text{Ni catalyst}} CH_3CH_2CH_3$

called hydrogenation

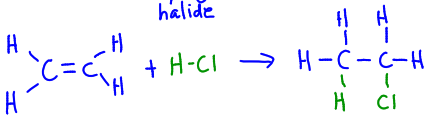
- with halogens

$CH_3CHCH_2 + Br_2 \rightarrow CH_3CHBrCH_2Br$



- with hydrogen halides

$CH_2CH_2 + HCl$ (hydrogen halide)



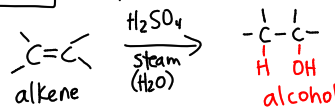
ethene chloroethane

reactivity with hydrogen halides

most reactive $HI > HBr > HCl > HF$ least reactive

weakest bd Strongest bd

with H_2O – hydration



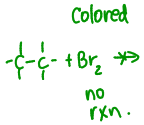
alkene alcohol – (ethanol)

think of H_2O as HOH

Test to distinguish alkanes from alkenes (alkynes)

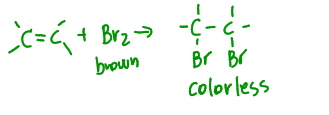
- mix bromine H_2O (brown) w/ your alkane or alkene

↓ remains colored



no rxn.

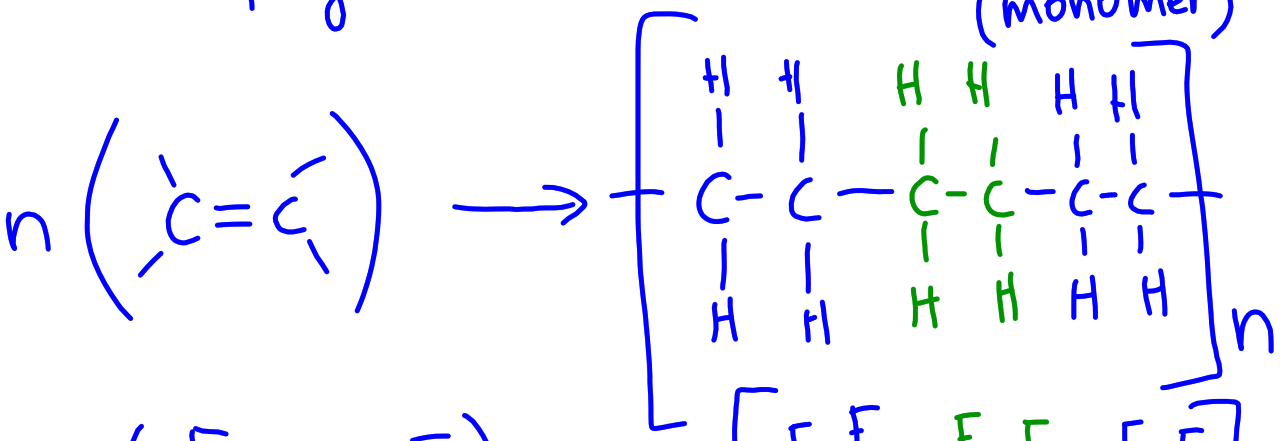
↓ decolorizes

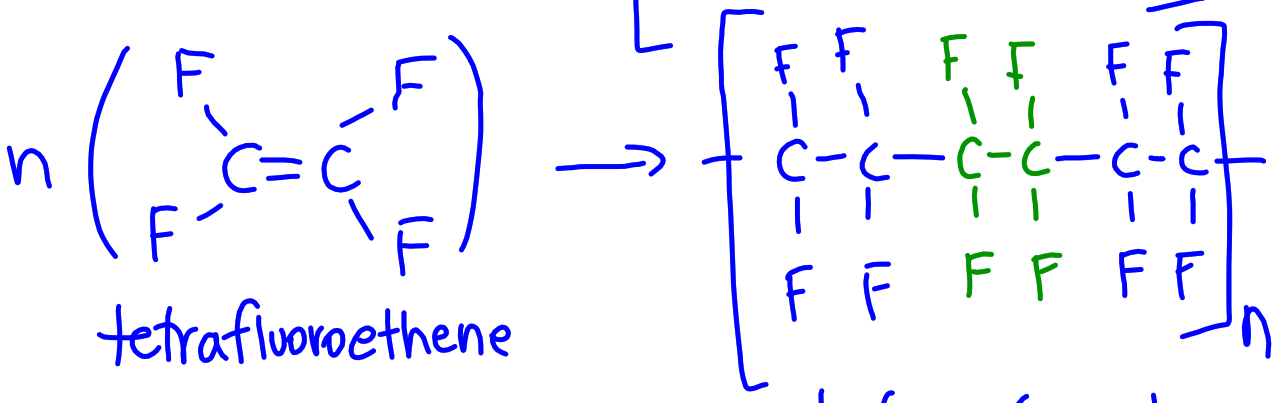


1,2-dibromoethane

Polymerization of alkenes

Polymer - long chain of repeated units (monomer)





tetrafluoroethene

teflon (nonstick coating)