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ADDITION POLYMERS

Some definitions

Polymer

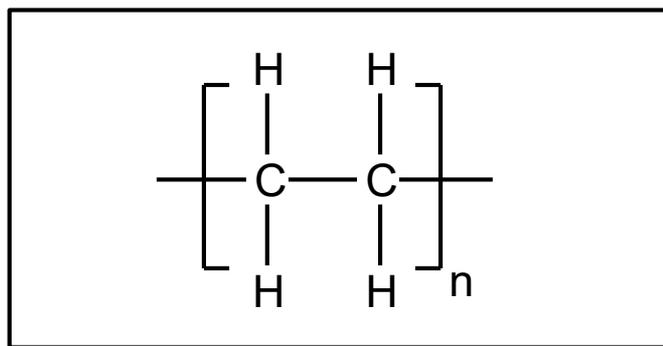
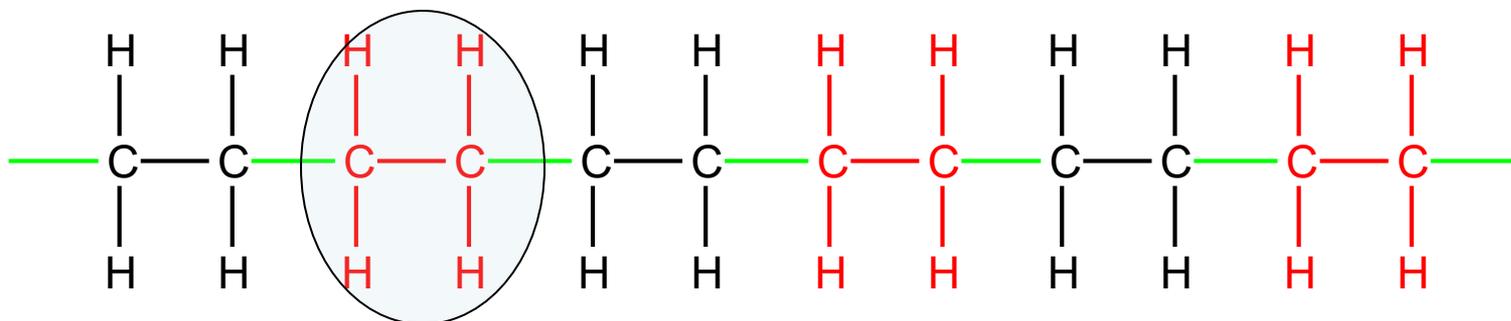
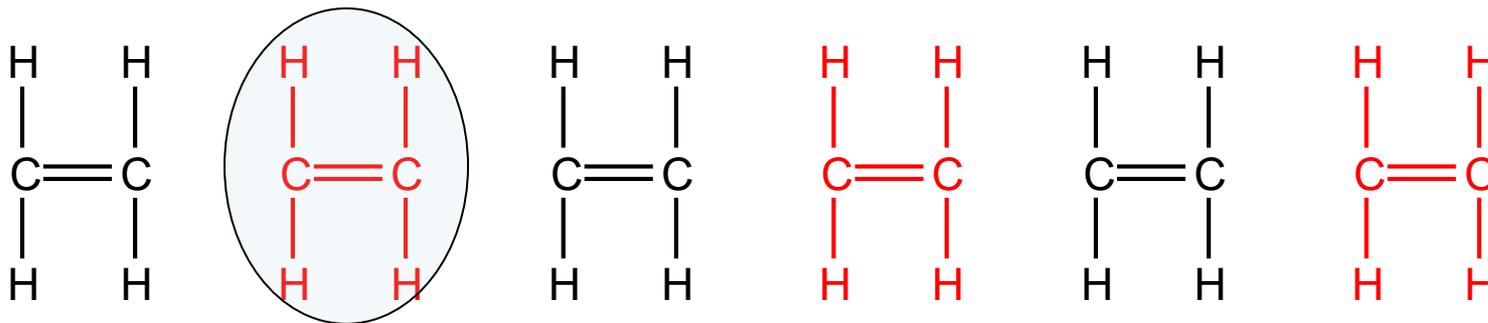
long chain molecule made from lots of small molecules joined together

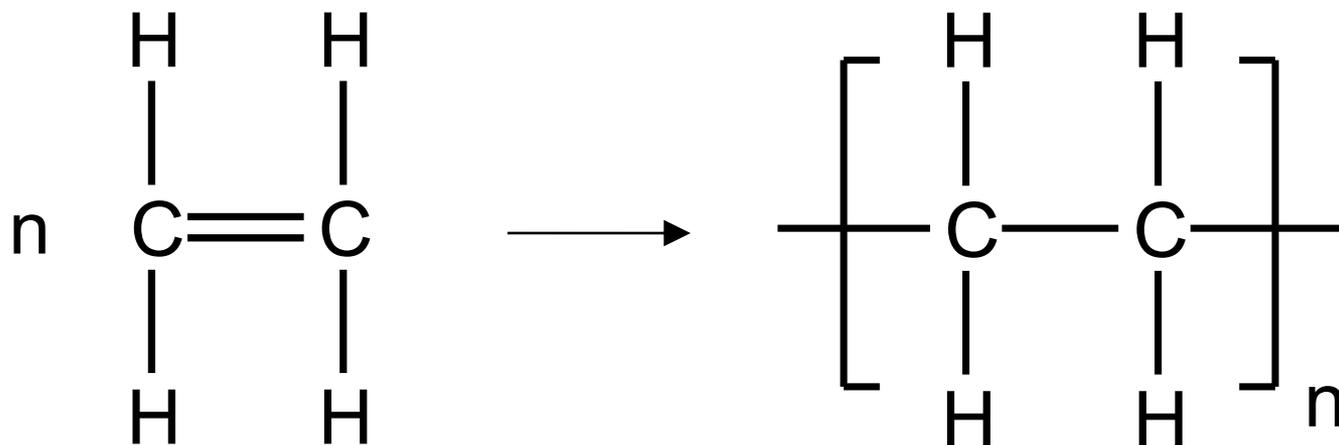
Monomer

small molecules that join together to make polymers

Addition Polymerisation

formation of long chain molecules from lots of small molecules joining together with no other products





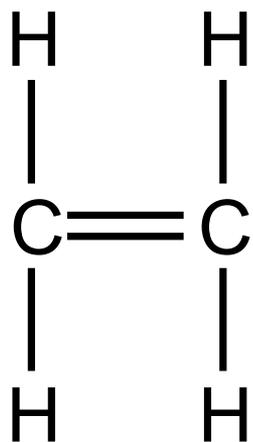
ethene

poly(ethene)

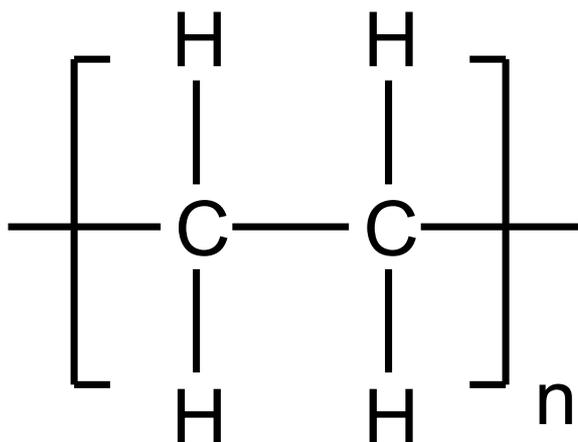
polythene

poly(ethene)

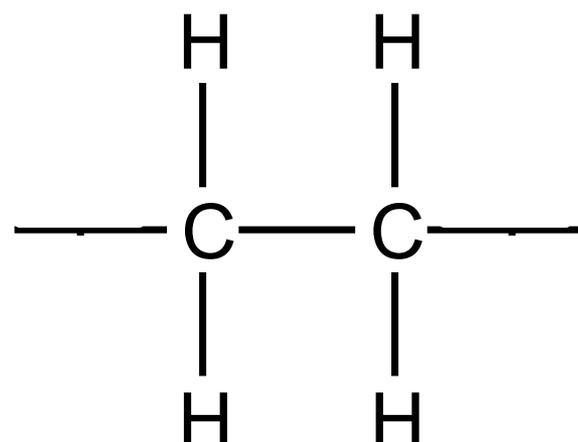
polythene



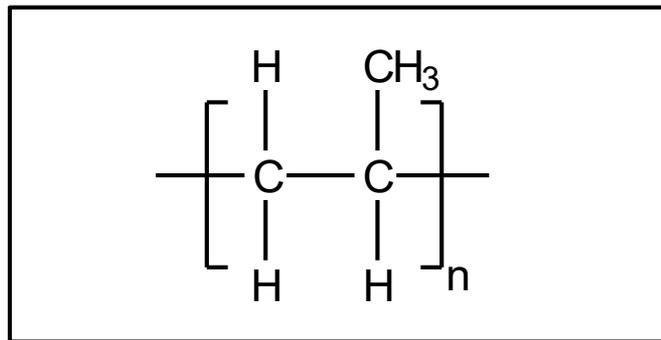
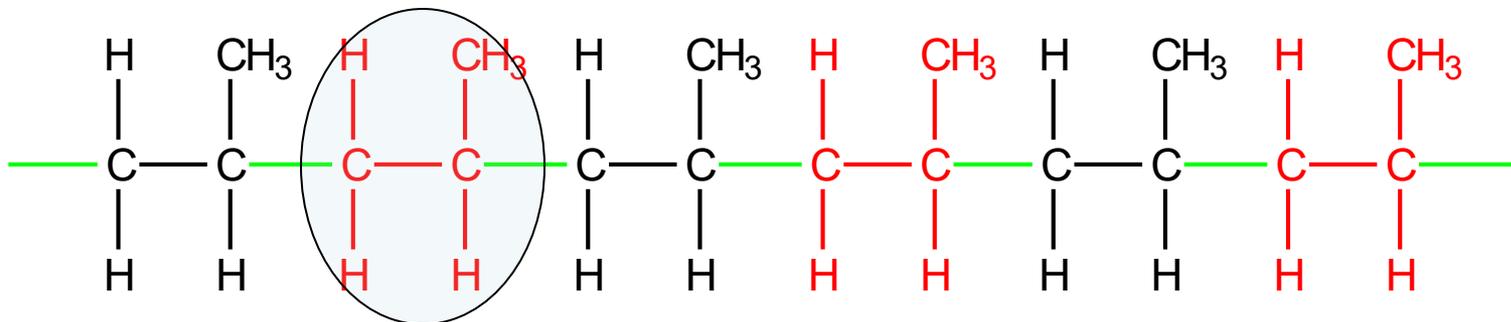
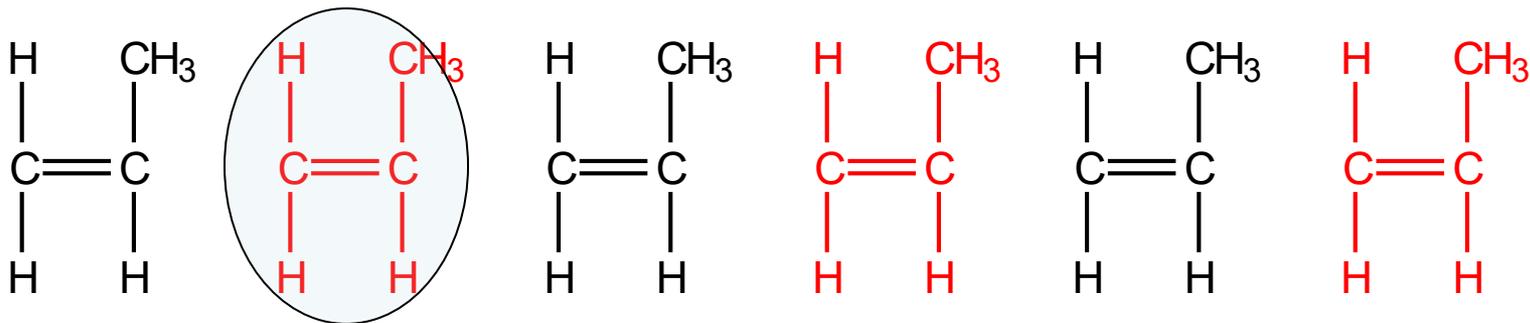
monomer
structure

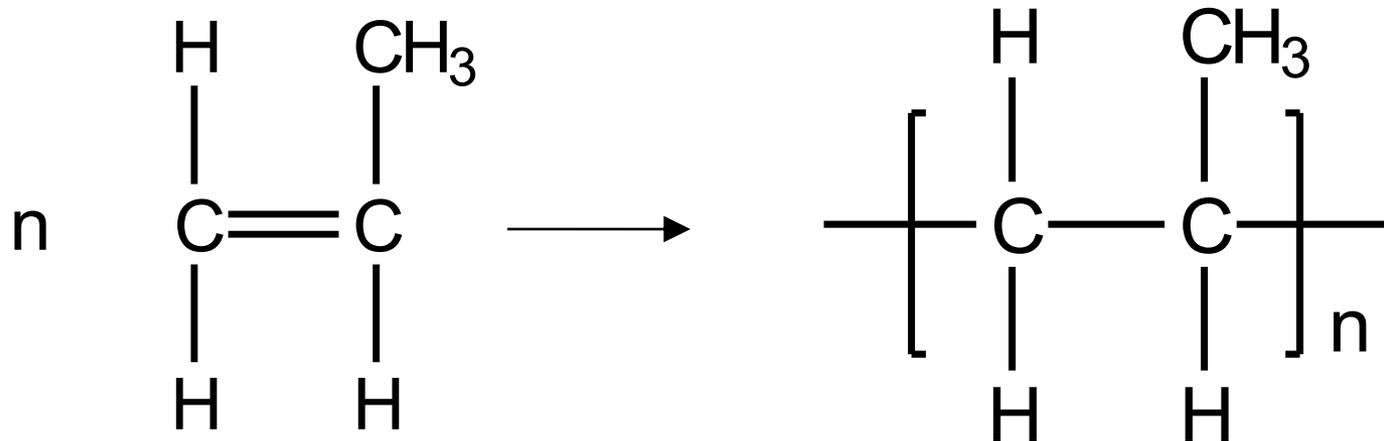


polymer
structure



repeating
unit

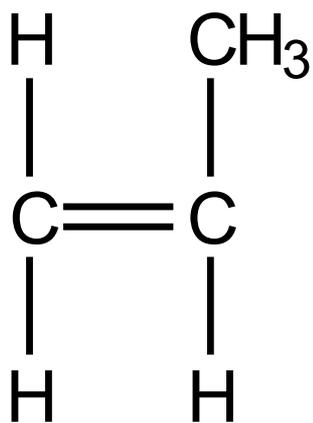




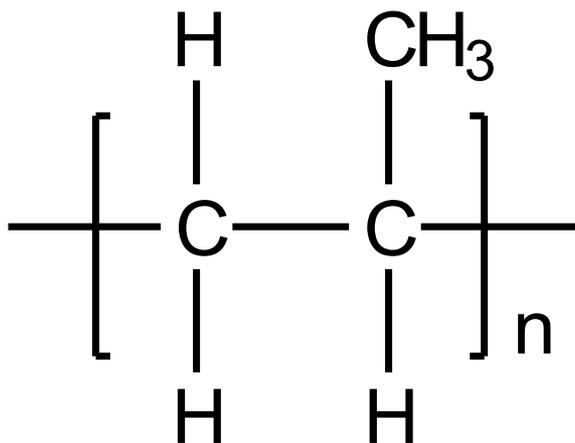
propene

poly(propene)

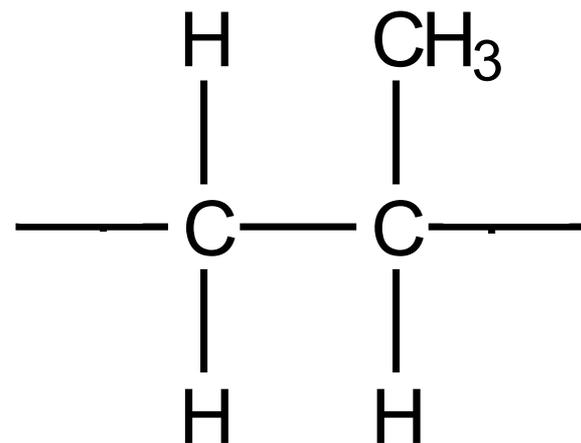
Poly(propene)



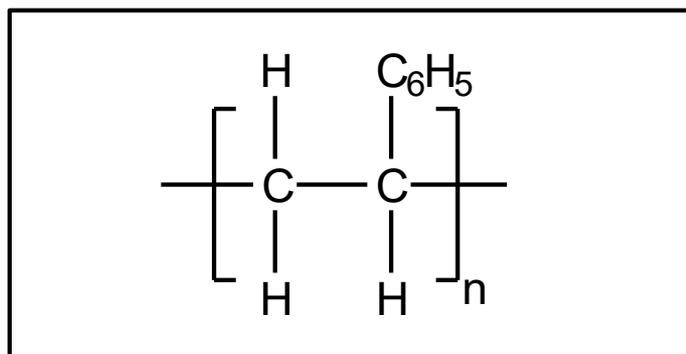
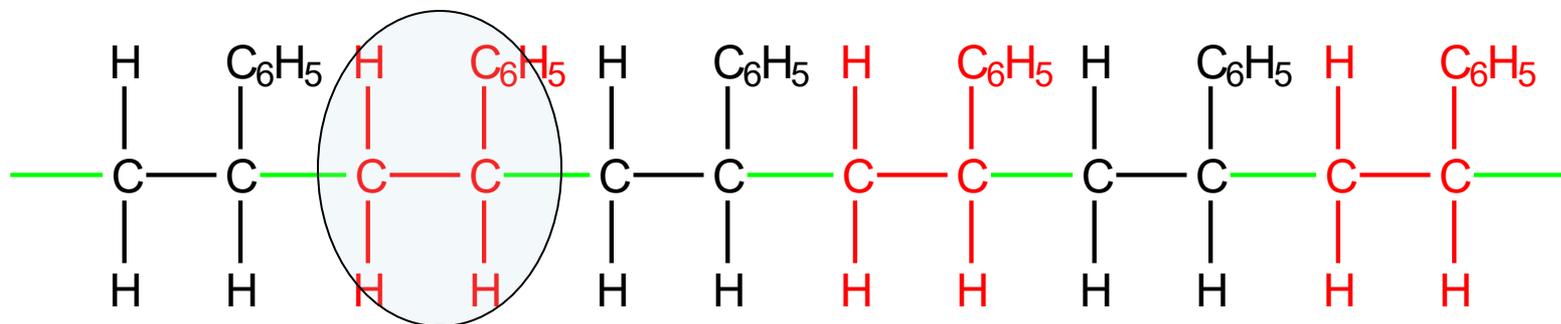
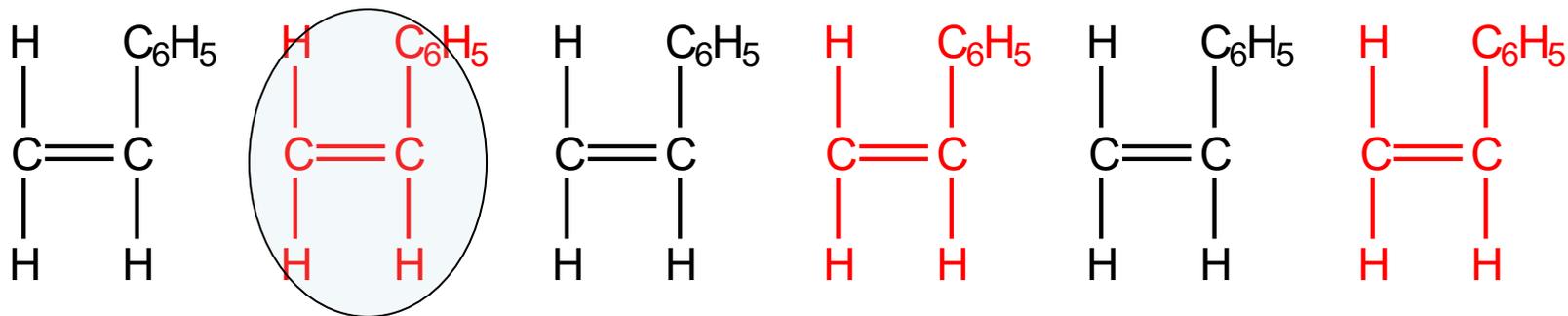
monomer
structure

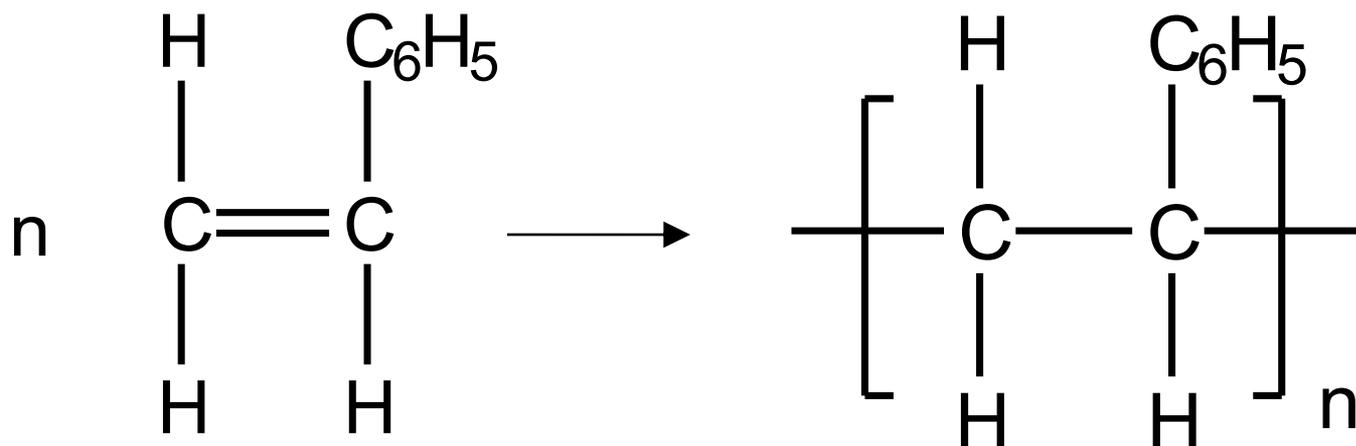


polymer
structure



repeating
unit





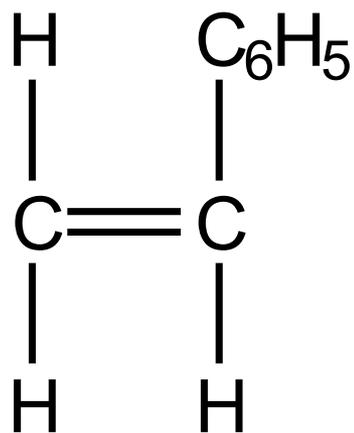
phenylethene

poly(phenylethene)

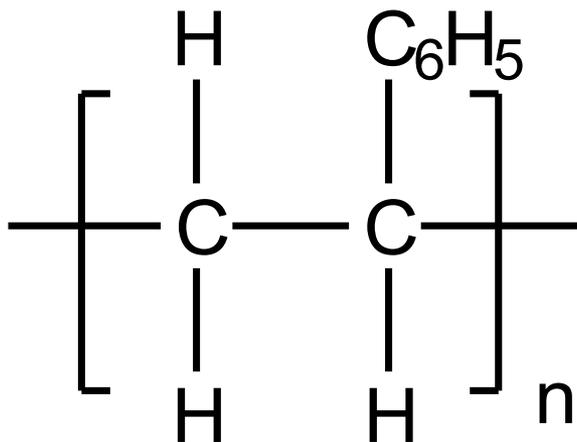
polystyrene

Poly(phenylethene)

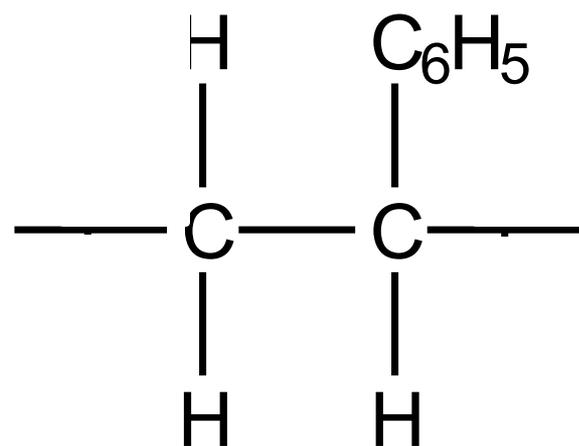
polystyrene



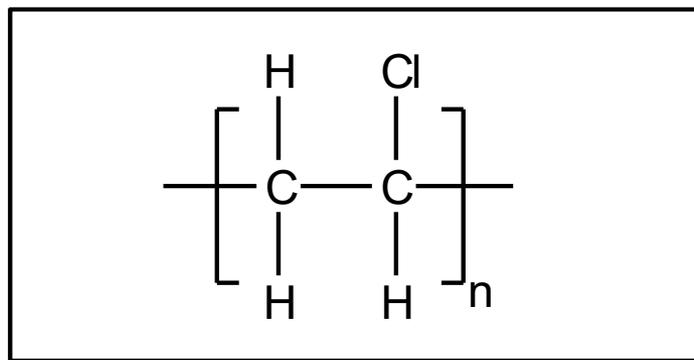
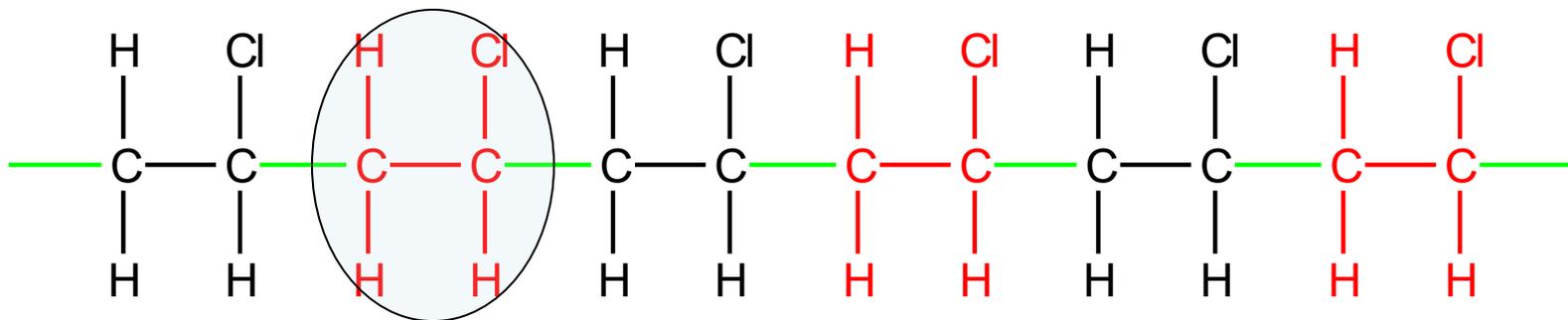
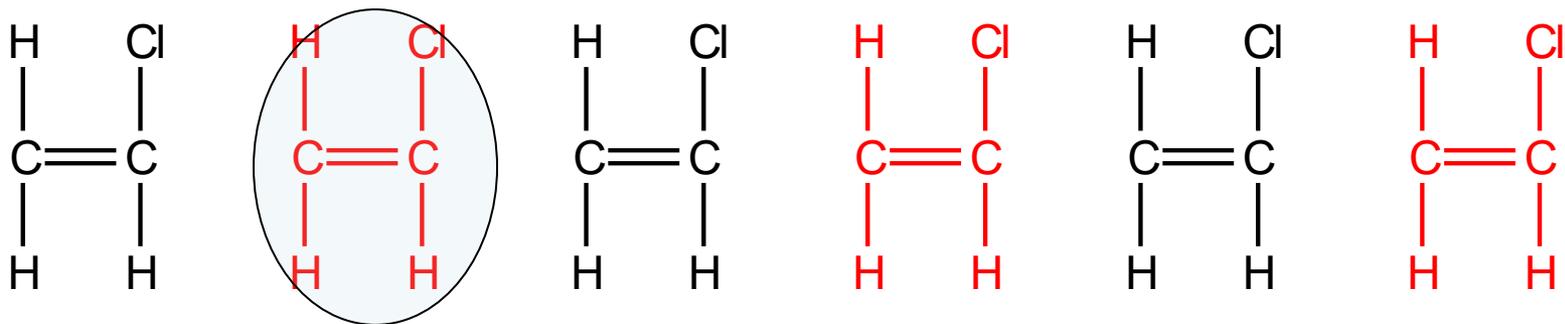
monomer
structure

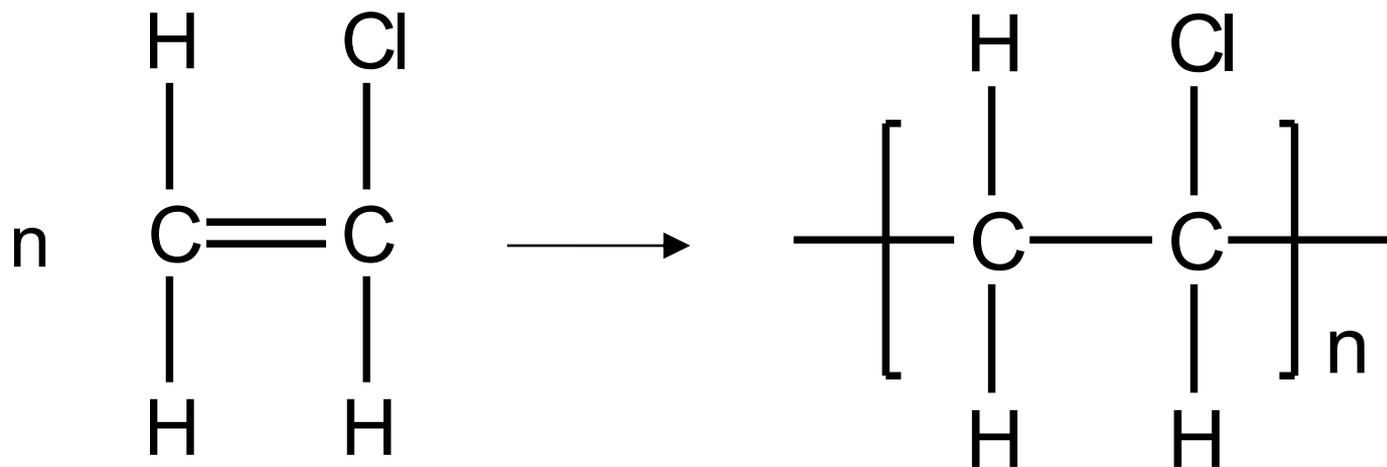


polymer
structure



repeating
unit





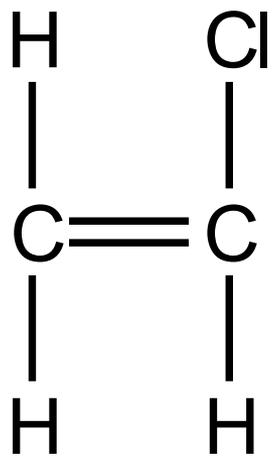
chloroethene

poly(chloroethene)

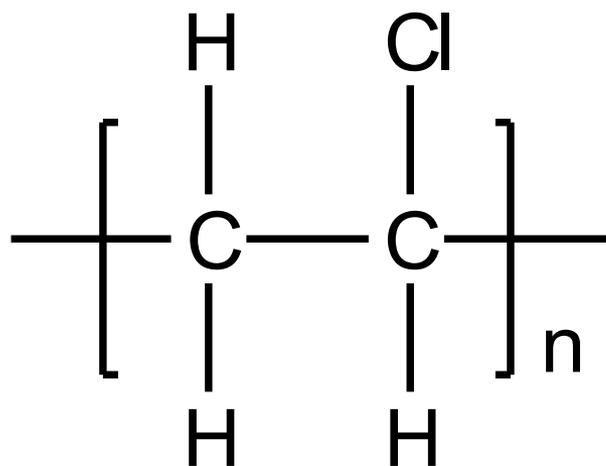
PVC

Poly(chloroethene)

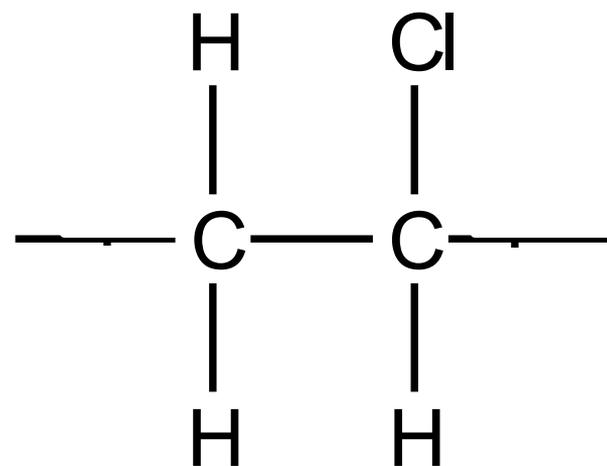
PVC



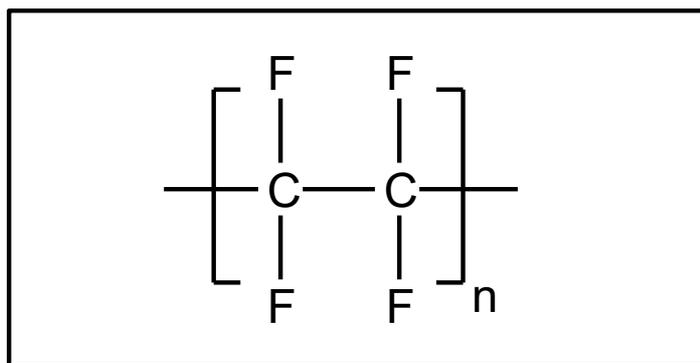
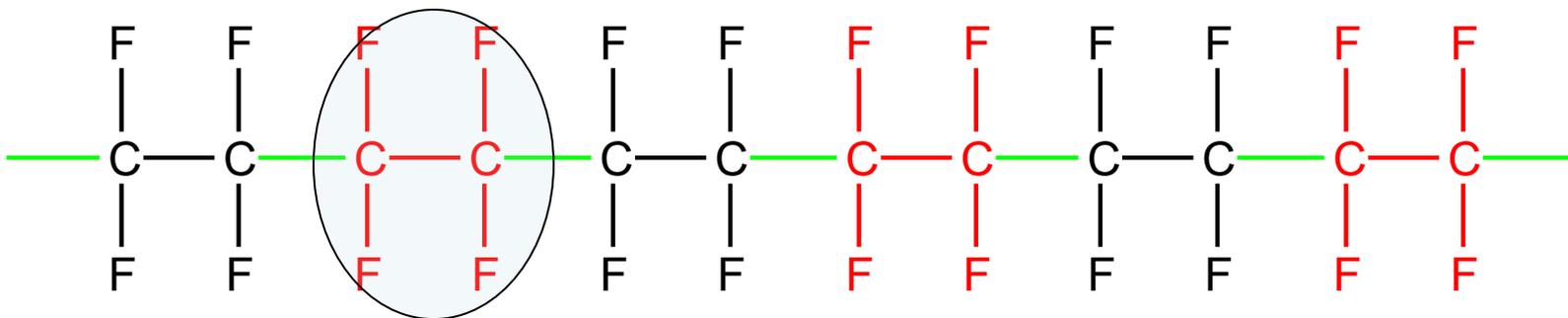
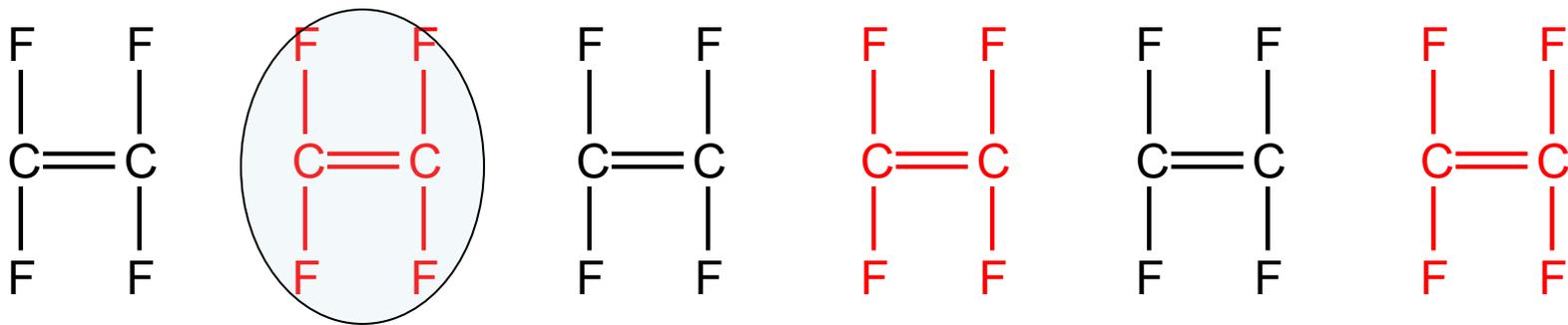
monomer
structure

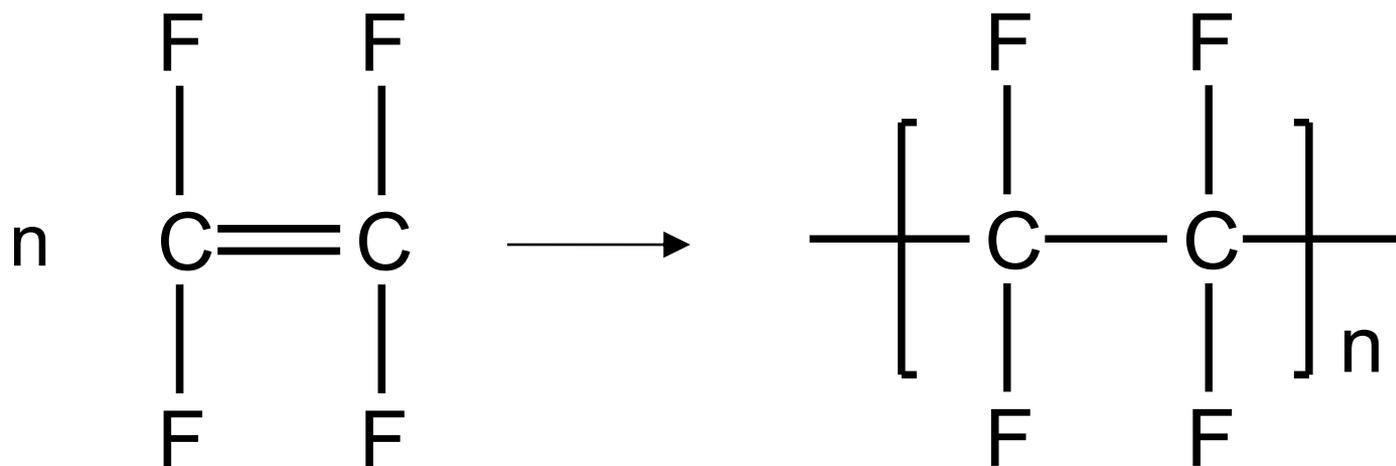


polymer
structure



repeating
unit





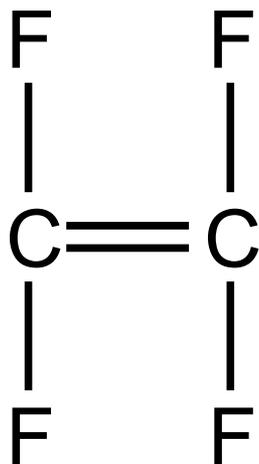
tetrafluoroethene

poly(tetrafluoroethene)

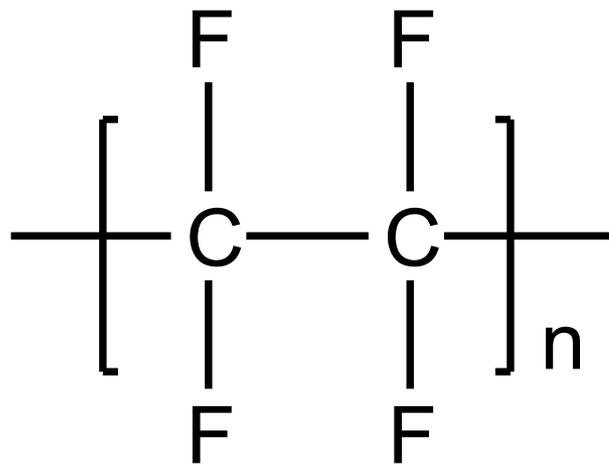
PTFE / Teflon

Poly(tetrafluoroethene)

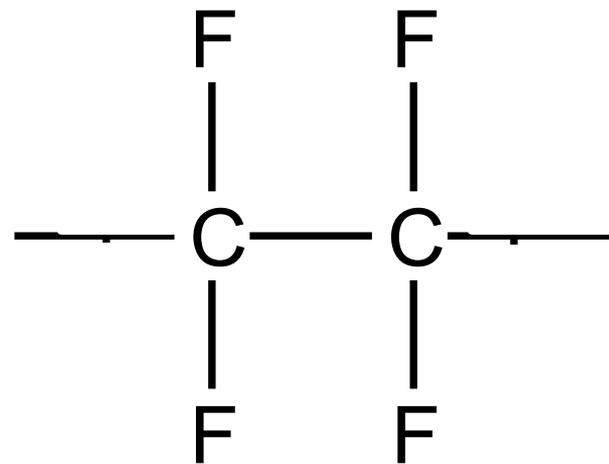
Teflon



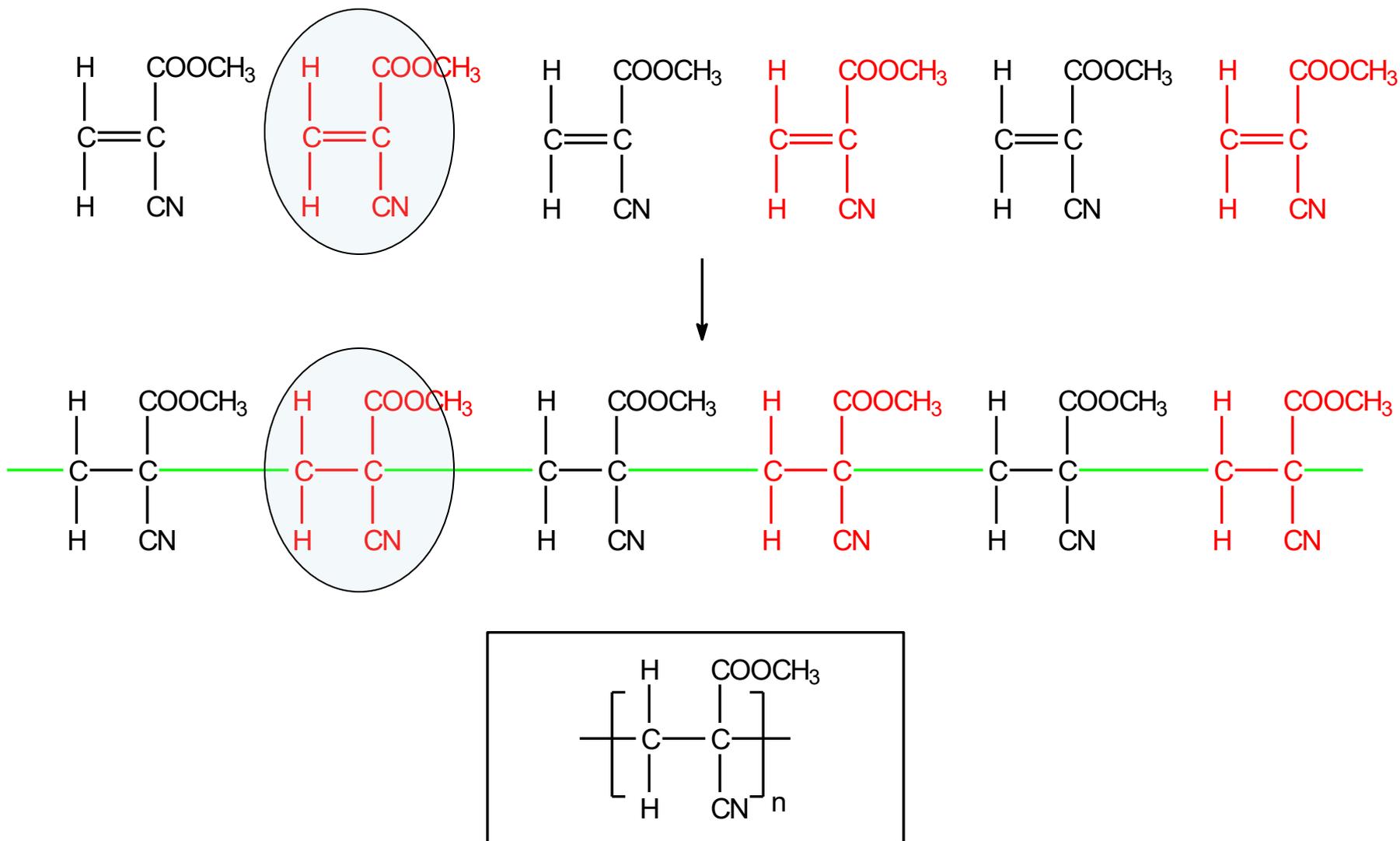
monomer
structure

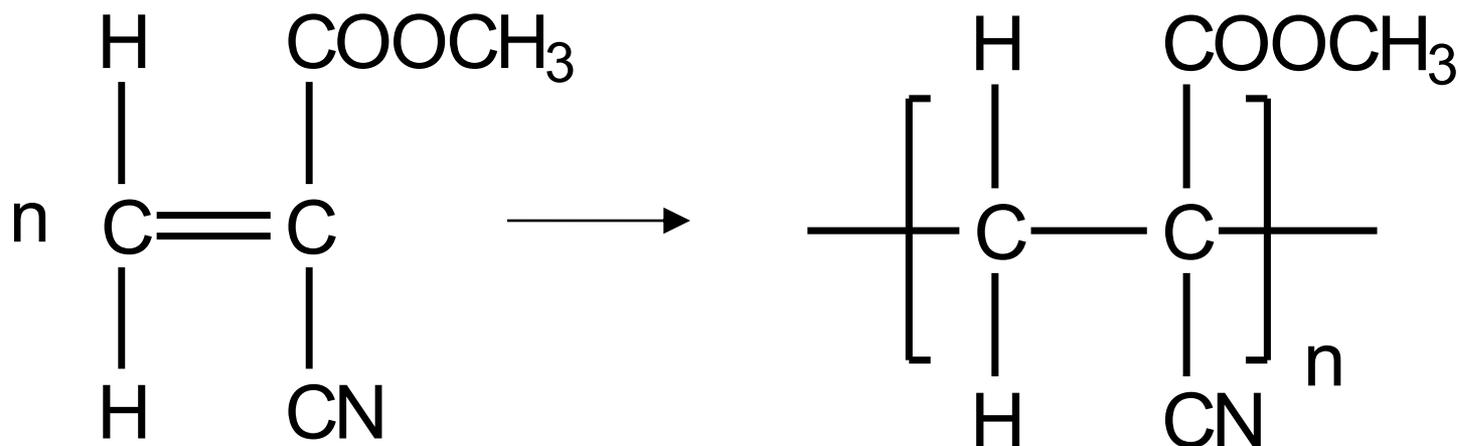


polymer
structure



repeating
unit





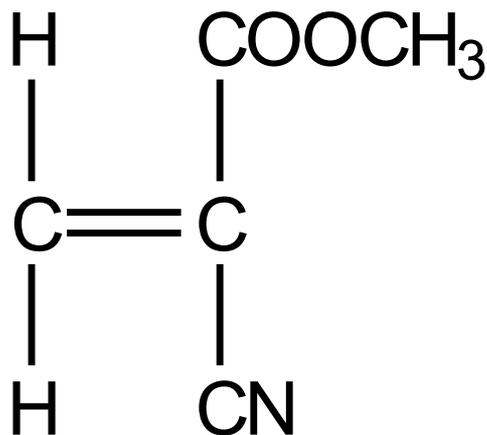
methyl 2-cyanopropenoate

poly(methyl 2-cyanopropenoate)

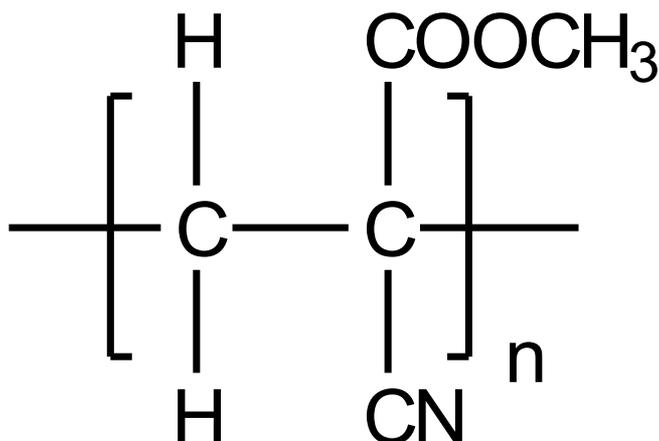
superglue

poly(methyl 2-cyanopropenoate)

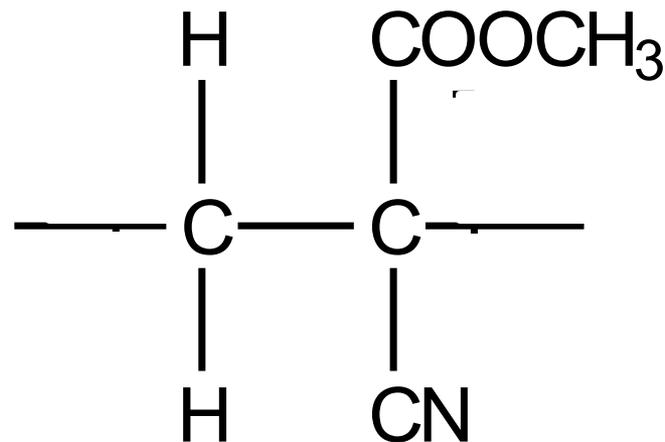
superglue



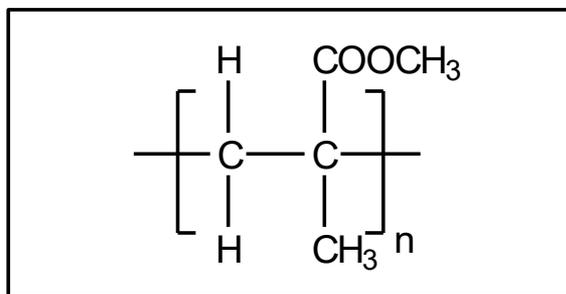
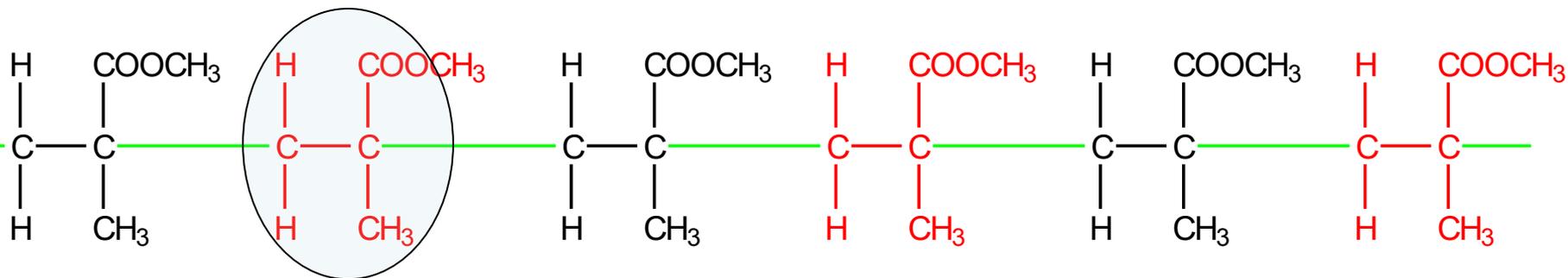
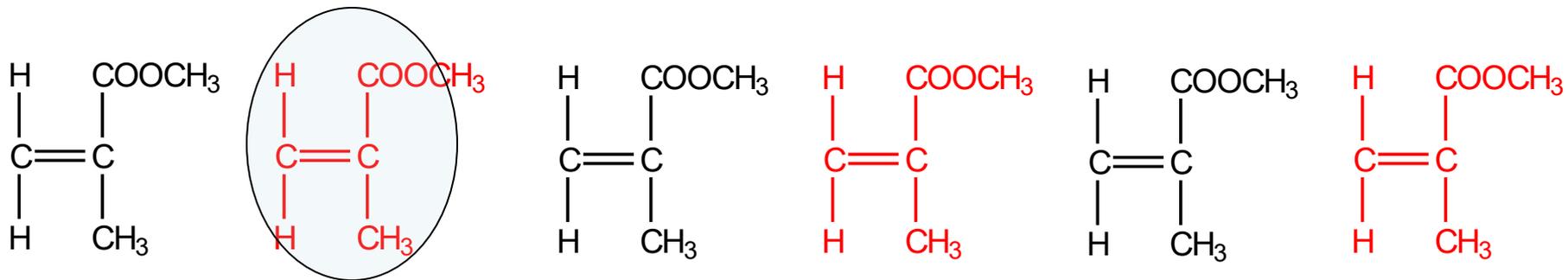
monomer
structure

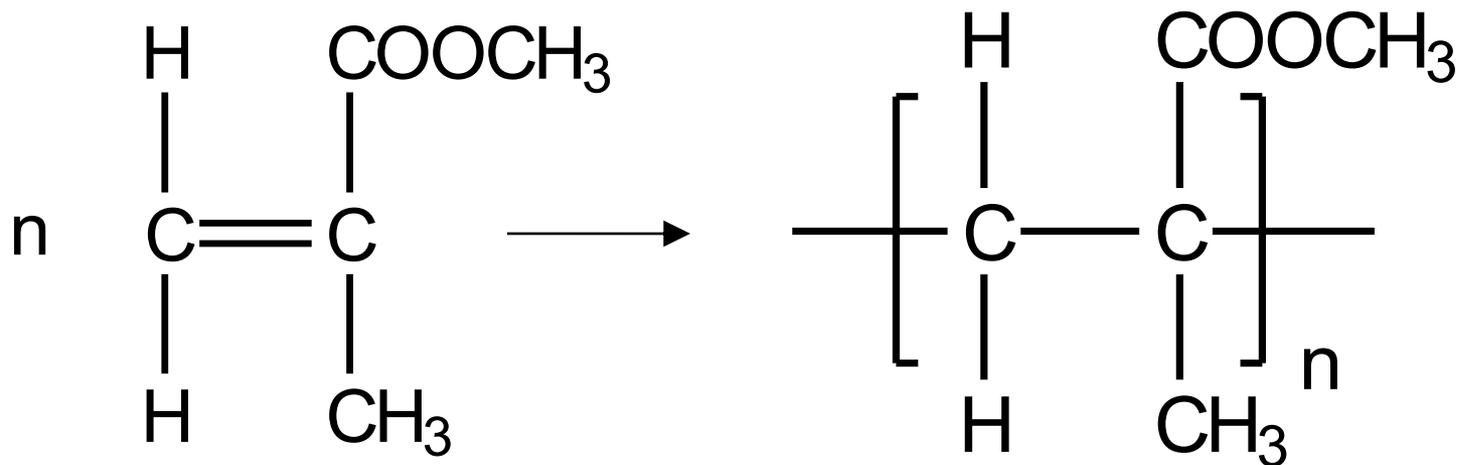


polymer
structure



repeating
unit





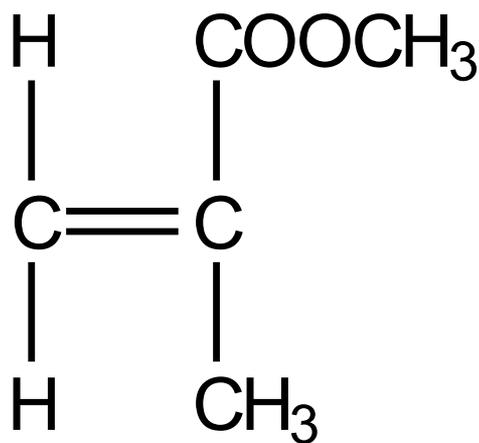
methyl 2-propenoate

poly(methyl 2-propenoate)

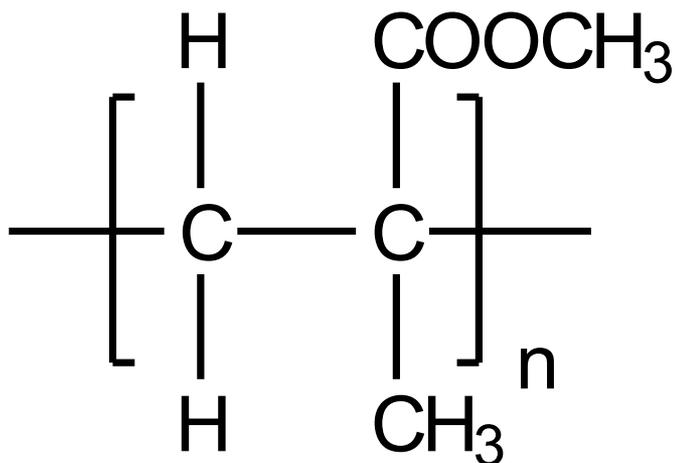
perspex

poly(methyl 2-propenoate)

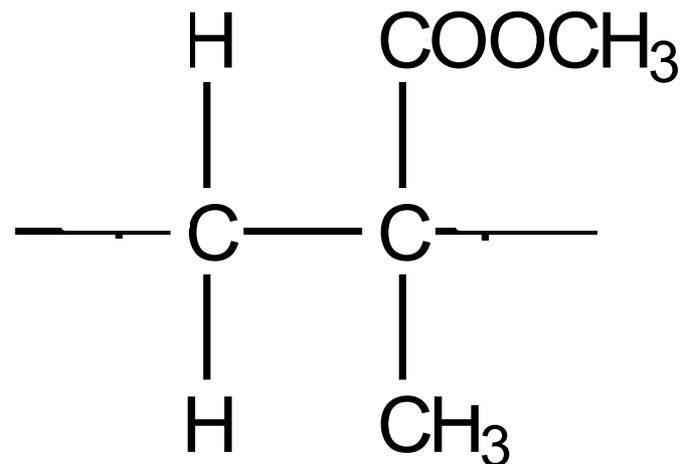
Perspex



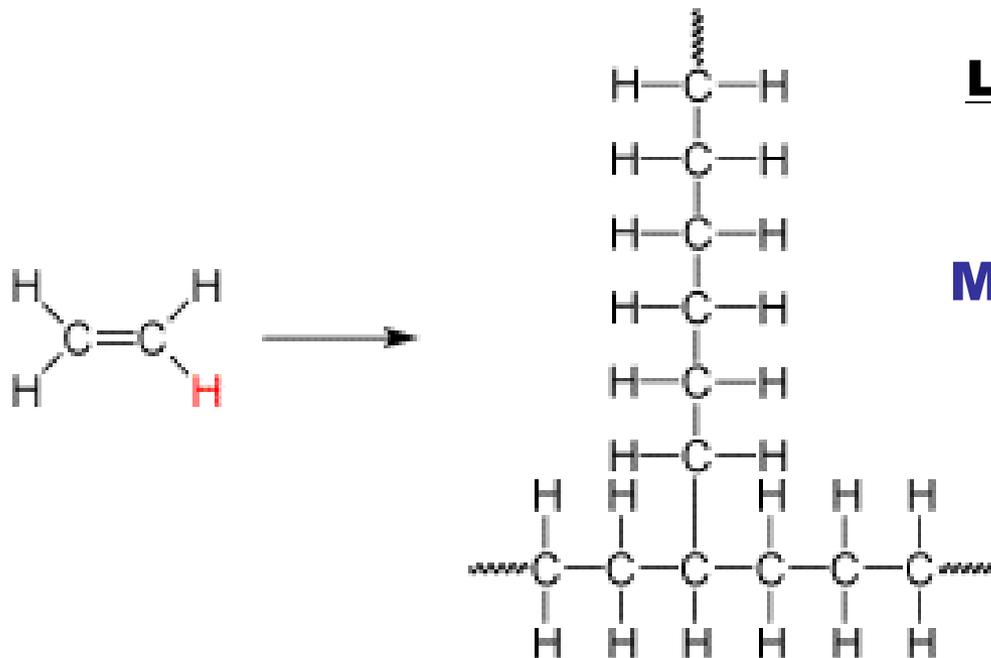
monomer
structure



polymer
structure



repeating
unit



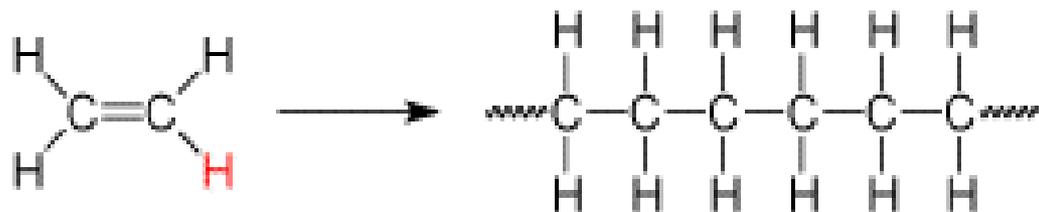
Low density poly(ethene) LDPE

200°C, 2000 atm, O₂

Molecules loosely packed due to branching

Flexible & soft

Bags, cling flim



High density poly(ethene) HDPE

60°C, 2 atm, Ziegla-Natta

Molecules tightly packed

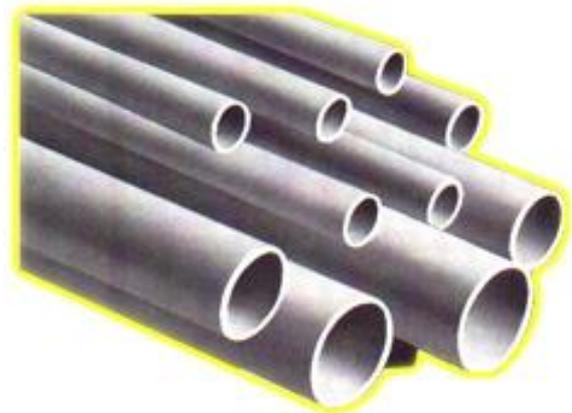
Stiffer & harder

Buckets, bottles

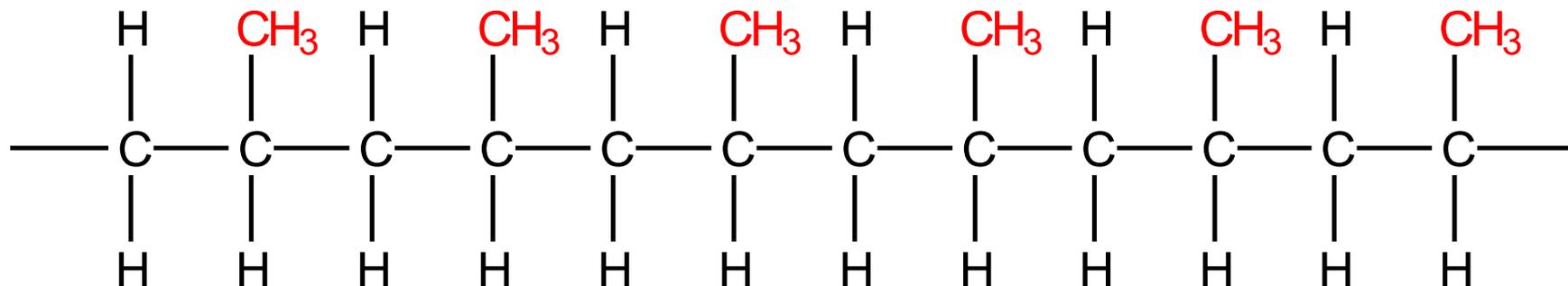
Low density poly(ethene) LDPE



High density poly(ethene) HDPE



isotactic poly(propene)



properties: **strong**

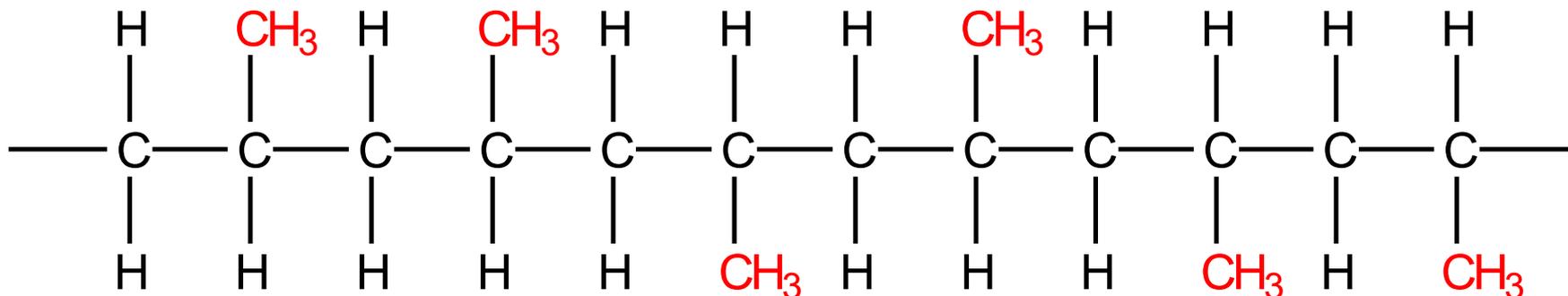
uses: **crates, ropes, carpet**



**isotactic
poly(propene)**



atactic poly(propene)



properties:

softer, lower melting point

uses:

less uses (e.g. tape, sealants, waterproof coatings)



atactic poly(propene)

