

MINISTRY OF EDUCATION
SECONDARY ENGAGEMENT PROGRAMME
GRADE 11
CHEMISTRY

WEEK 11

LESSON 1

Topic: Macromolecules

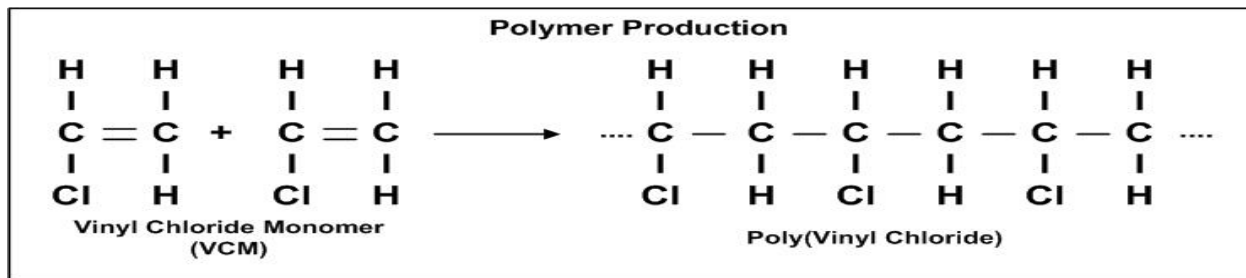
Sub-topic: Addition Polymerization

Objective: Given the information, students will describe the addition polymerization reactions, citing examples.

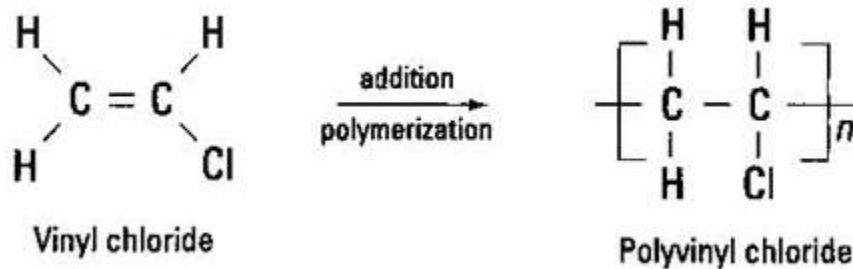
Content

Addition polymerization is generally achieved by subjecting the unsaturated monomer to heat and pressure in the presence of a suitable catalyst. Let's look at some examples.

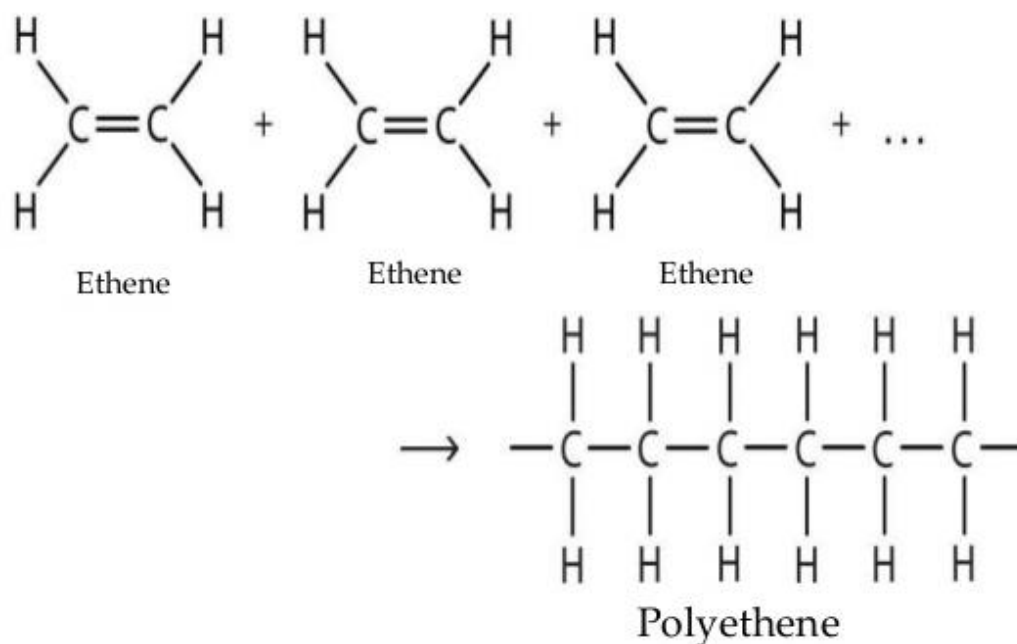
- (i) Formation of Polyvinylchloride (PVC)



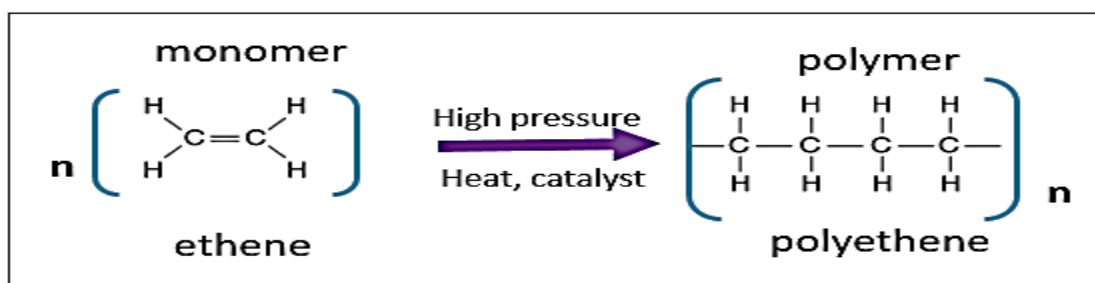
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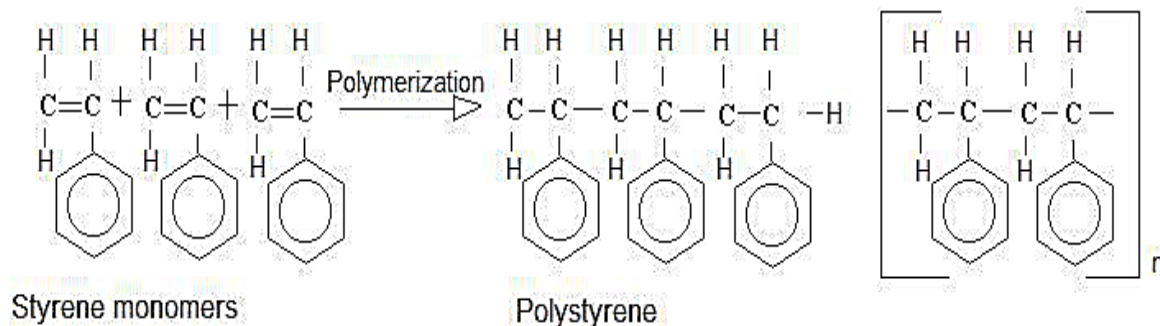
(ii) Formation of Polythene



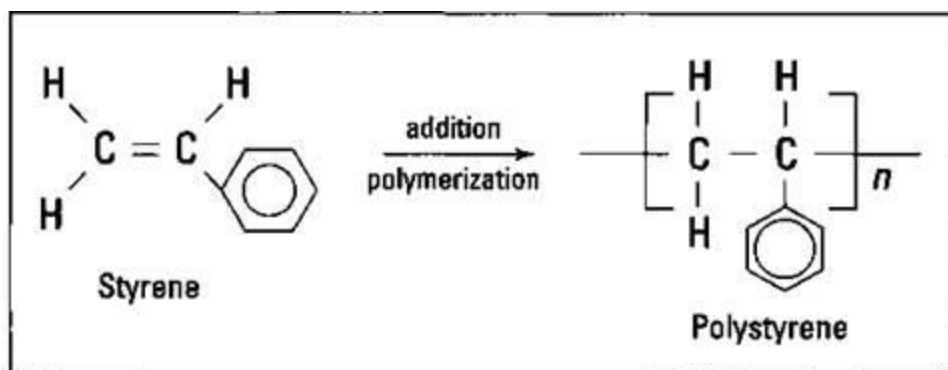
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(iii) Formation of Polystyrene



Simplified Structure

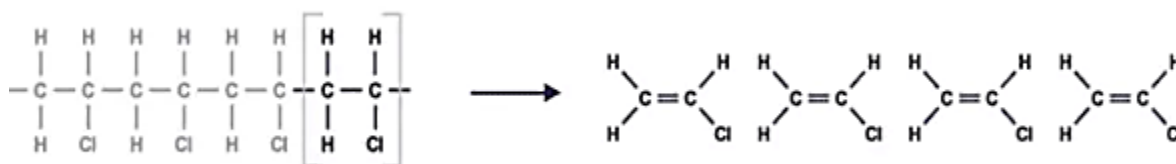


Deducing Monomer Structure

- Identify the **repeat units** in the polymer.
- Do this visually by looking for identical units that repeat and then **highlight** or draw a circle around one.
- Change the **single** bond between the carbon atoms in the repeat unit to a **double** bond.
- Add on the other atoms or groups that are bonded to each carbon atom, making sure you arrange them in the **correct positions**.
- You can then draw the monomer out using shorthand notation.

Example

Deduce the structure of chloroethene from polychloroethene.



References

4. <https://www.toppr.com/guides/chemistry/polymers/classification-of-polymers/>
5. <https://slideplayer.com/slide/6019693/>
6. <https://www.bbc.co.uk/bitesize/guides/z3v4xfr/revision/6>