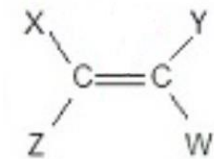
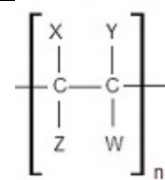
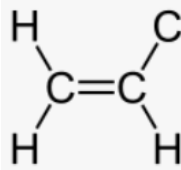
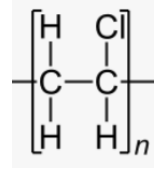
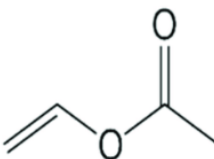
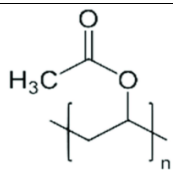
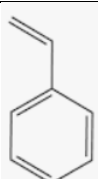
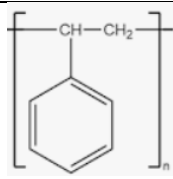
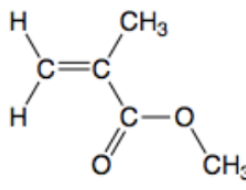
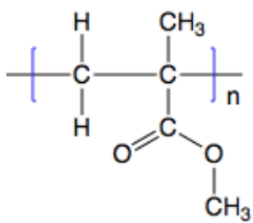
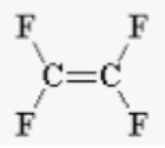
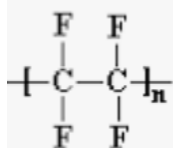

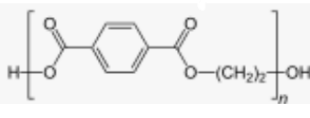
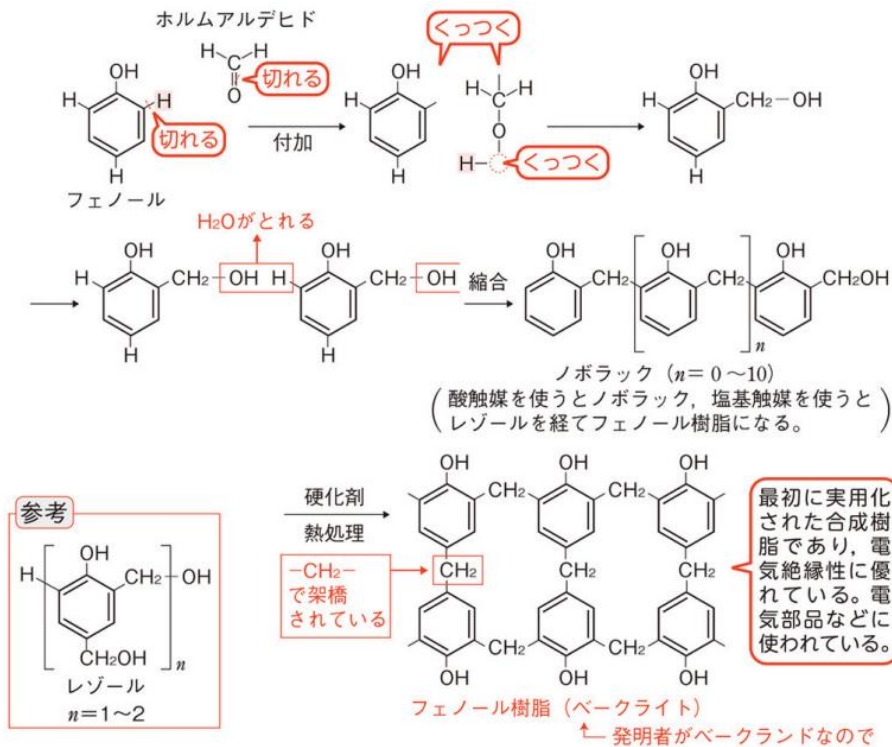


Addition polymers		
Name	Monomer	Product
Polyalkene		
Poly(vinyl chloride) (PVC)		
Poly(vinyl acetate)		
Polystyrene (PS)		
Poly(methyl methacrylate) (Acrylic)		
Polytetrafluoroethylene (Teflon)		

Condensation polymers			
Name	Monomer (1)	Monomer (2)	Product
6,6-Nylon	$\text{HO}_2\text{C}-(\text{CH}_2)_4-\text{CO}_2\text{H}$	$\text{H}_2\text{N}-(\text{CH}_2)_6-\text{NH}_2$	$\left[\text{C}(=\text{O})(\text{CH}_2)_4\text{C}(=\text{O})\text{NH}(\text{CH}_2)_6\text{NH} \right]_n$
Poly(ethylene terephthalate) (PET)		$\text{HO}-(\text{CH}_2)_2-\text{OH}$	

Thermosetting Plastics

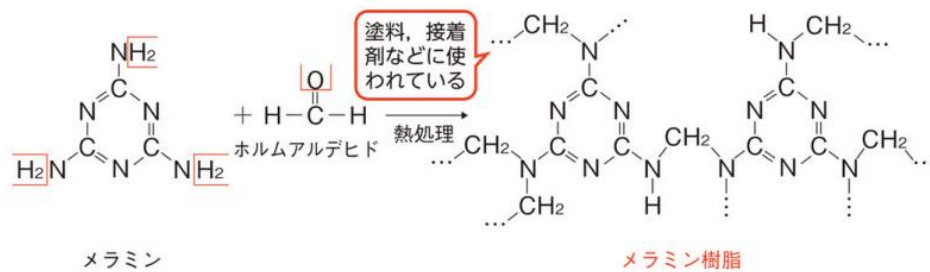
-Phenol formaldehyde resin (Bakelite)



-Urea-formaldehyde resin



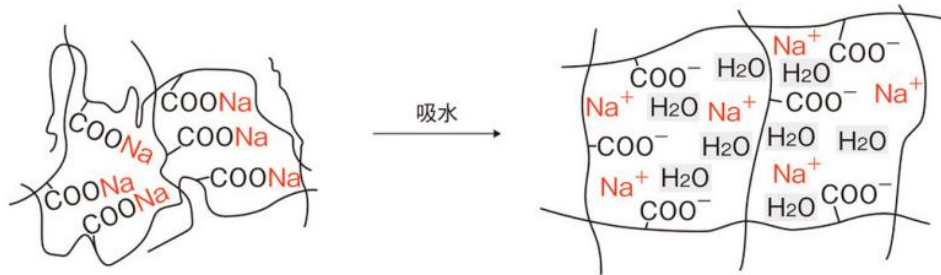
-Melamine resin



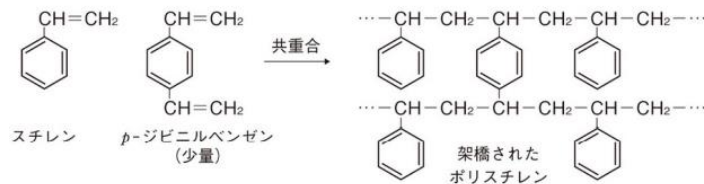
Note: All syntheses of thermosetting resin require formaldehyde.

Functional Polymers

-Water-absorbing polymer: $\left[\text{CH}_2 - \underset{\text{COONa}}{\text{CH}} \right]_n$

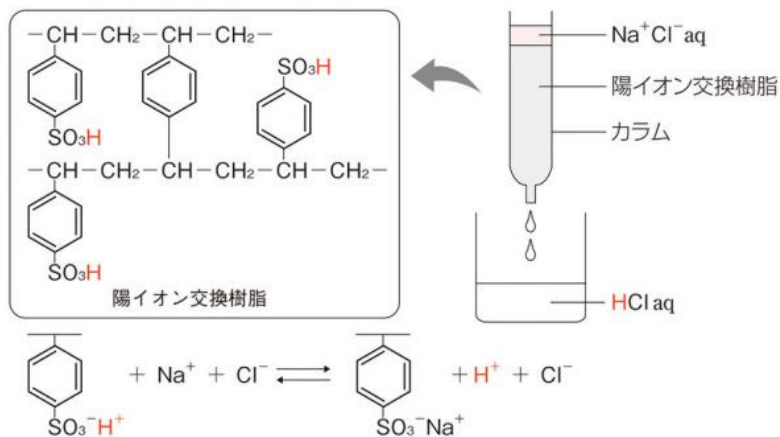


-Electrical conducting polymer: $\left[\text{CH} = \text{CH} \right]_n$ + Bromine/Iodine

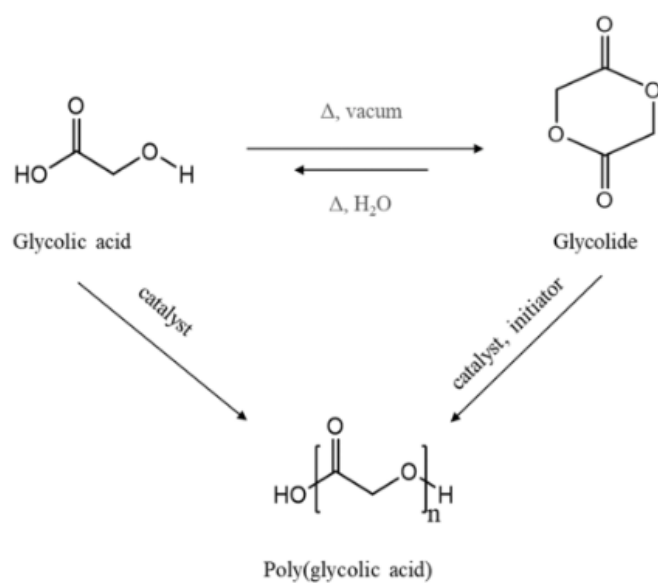
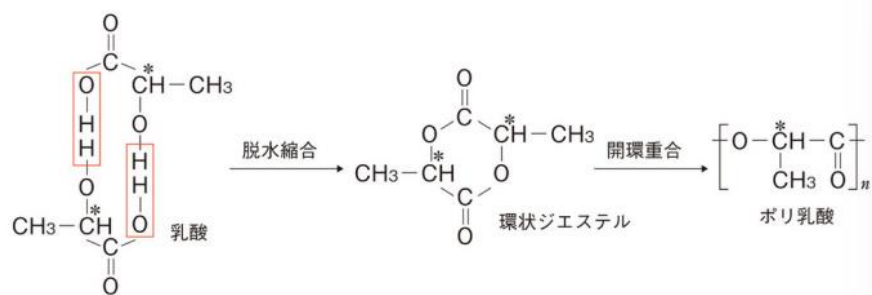
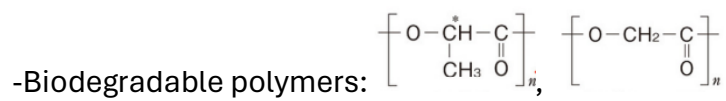


-Ion exchange resins:

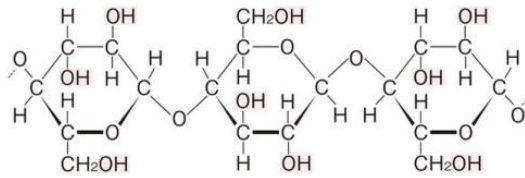
Cation exchange: Introduce a $-\text{SO}_3$ group:



Anion exchange: Introduce an alkylammonium ($-\text{N}^+\text{R}_3\text{OH}^-$) group:

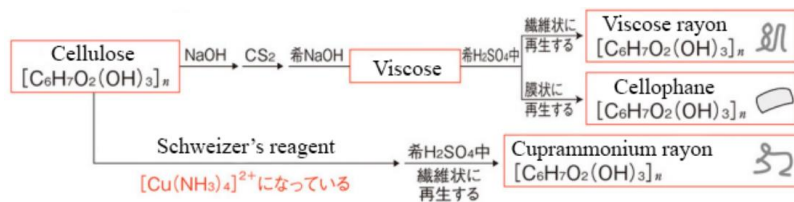


Fibres

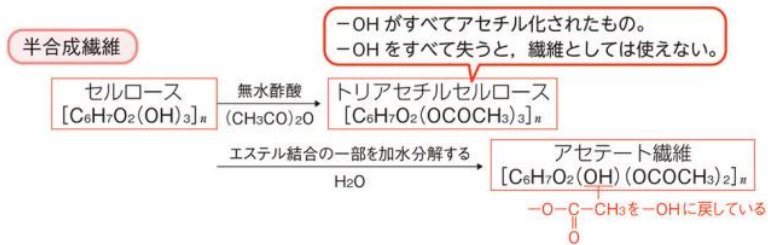


-Cellulose:

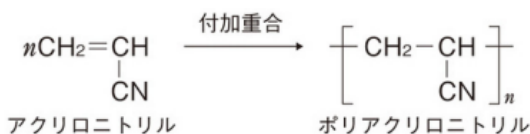
-Rayon fibres (Regenerating fibre):



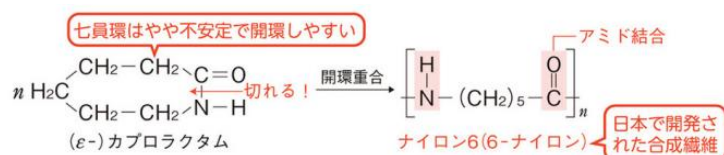
-Acetate fibre (Semi-synthetic fibre):



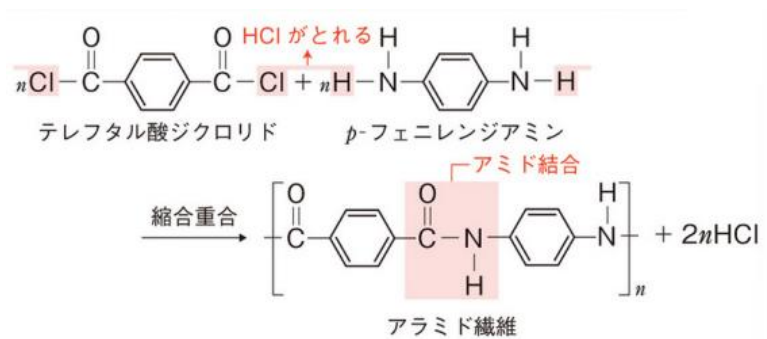
-Acrylic fibre (Synthetic fibre): Acrylonitrile



-6-Nylon (Polyamide fibre): ϵ -Caprolactam

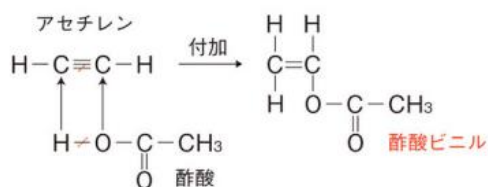


-Aramid fibre (Polyamide fibre): Terephthaloyl Dichloride + p-phenyldiamine

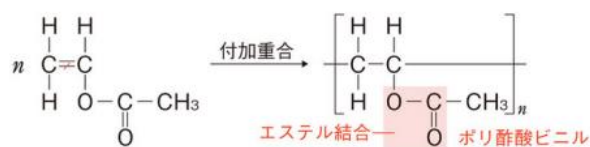


-Vinylon fibre (Synthetic fibre): Acetylation of poly(vinyl alcohol)

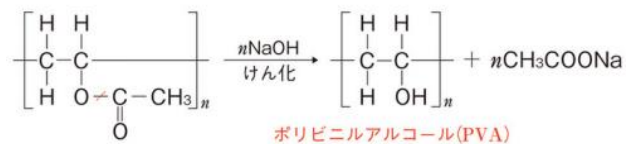
Step 1: Produce vinyl acetate



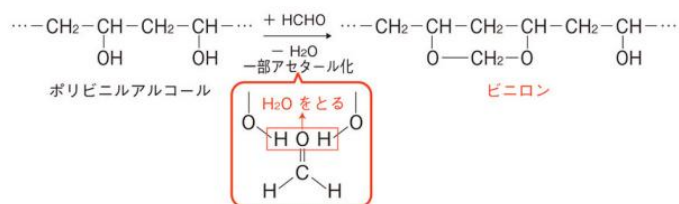
Step 2: Produce poly(vinyl acetate)



Step 3: Obtain poly(vinyl alcohol) by hydrolysis

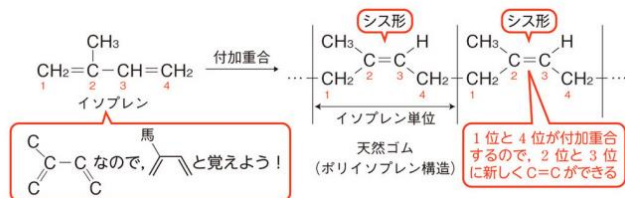


Step 4: Obtain Vinylon by acetylation



Rubbers

-Gum Rubber: Isoprene

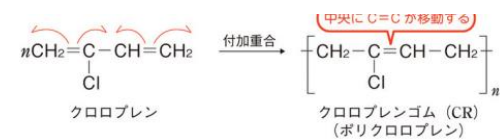


Heat with S to increase its elasticity (the gum obtained is called Ebonite).

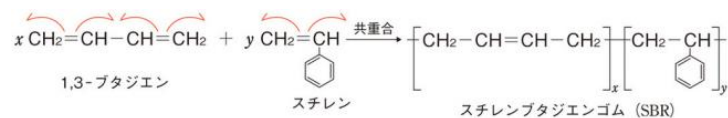
-Butadiene Rubber (BR): 1,3-butadiene



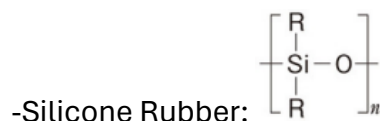
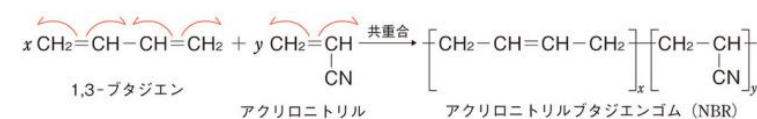
-Chloroprene Rubber (CR): Chloroprene



-Styrene-Butadiene Rubber (SBR): Styrene + Butadiene



-Nitrile Rubber (acrylonitrile butadiene rubber) (NBR): Acrylonitrile + Butadiene



Note: All rubbers synthesised by copolymerisation require butadiene as a monomer.