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## Experiment No. 7

### Preparation of Nylon 6,10 and draw it in the form of thread.

* Aim - To prepare Nylon 6,10 and draw it in the form of thread.

* objective - To prepare the nylon by interfacial polymerization techniqve in which two monomers are mixed in immiscible solvents and the polymerization takes place at the interface. The polymer film formed at interface is insoluble in both the solvents and can be drawn out in the form of a thread or arope.

* Apparatus: 250 ml Beakers, glass rod or test tube, pipette, watch glass, forcep

* Chemicals:- Sebacoyl chloride, Hexamethylene diamine, $CCl_4$ or $CH_2Cl_2$, Distilled water, Methanol etc.

* Questions -

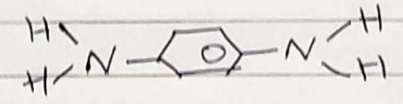
Q 1) Explain the terms - Addition and condensation Polymerization.

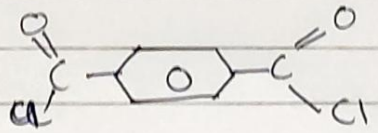
Ans → ① Addition polymerization: Involves addition of monomers with double or triple bonds by simple co-linking without the formation of any by products.

② Condensation polymerization: Involves repeated condensation reactions between bi/tri functional monomers in a step-growth reaction fashion forming large structural units while releasing small molecular as by products such as methanol or water.

Q 2) What is Kevlar? Name the monomers used for its preparation.

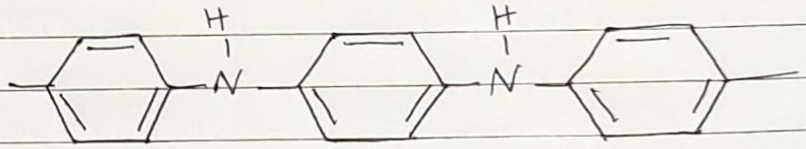
Ans → Kevlar: Poly-Paraphinylene Terephalanide is a heat resistant and strong synthetic fiber. The monomers used to synthesize it are:

① 1,4 phenylene diamine: 

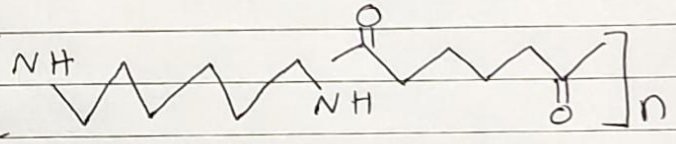
② Terepthabyl chloride (benzene dicarbonyl acid) [By products formed: HCl] 

Q3) Name the polymers which can be synthesized by interfacial polymerization technique.

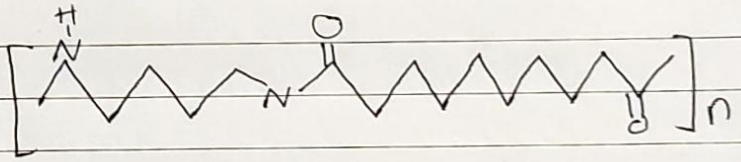
Ans → (I) Polyaniline:



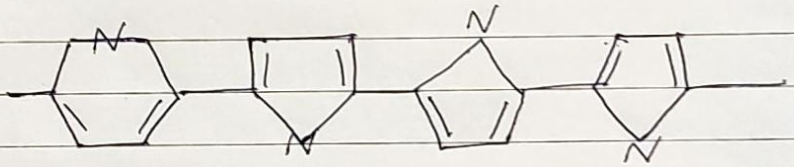
(II) Nylon 6-6 :



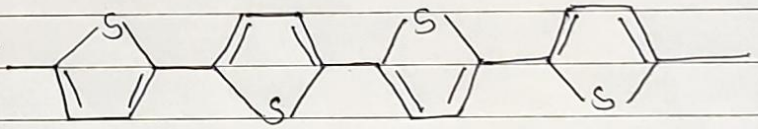
(III) Nylon 6-10 :



(IV) Polypyrate :



(V) Polythiophene :



Q4) Why thread or / rope of nylons can be synthesized withdrawn from the reaction mixture in interfaced polymer.

Ans → Rope like structures formed in the beaker because of the presence of two phases present inside : on the virtue of two different immiscible solvents in the beaker namely

water (which dissolves amine) & an organic solvent (which dissolves the diacid chloride). The interface of both solvents gives way for the polymerization of flexible films.

Q 5) Is stoichiometric balance important for the success of interfacial polymerization? why?

Ans → Nope Because of monomers differing from the organic & aqueous places respectively in an ambiguous and random fashion of stichiometery automatically exists on the solvent interface in a balanced sense.