Introduction to Materials Science and Engineering
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Lecture – 38
Vinyl Polymers

Let us look at some example of ethylene-based polymer, we have already seen polyethylene which is an example of an ethylene-based polymer, but there are bi substitution of hydrogen atom by some other atoms, other related polymers are obtained which are all called the vinyl polymers. So, let us look at some examples of vinyl polymers.

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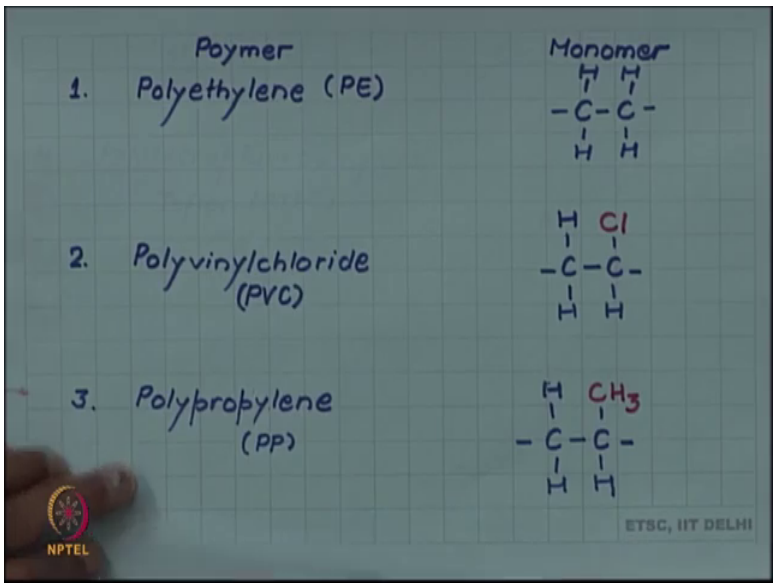

Polyethylene was our starting example with a monomer of 2 carbon atoms, joined with hydrogen atoms.

So, 2 bonds are free and these will keep connecting to other monomers, to give you a polymer if one of the hydrogen is substituted by chlorine atom, then what we get is a polyvinyl chloride. So, this is the monomer of one polyvinyl chloride with one of the hydrogen atom substituted by chlorine atom. We can have one of the hydrogen atom substituted by the CH 3 group in which case we have a polymer known as poly propylene.

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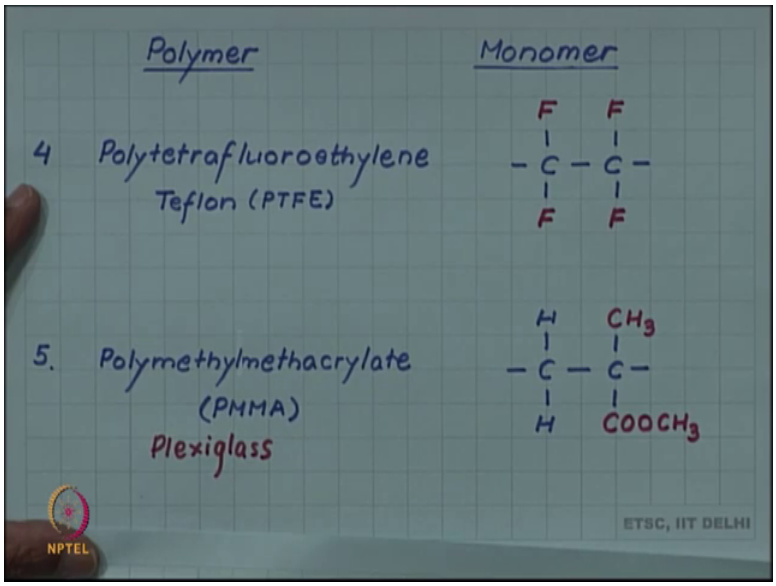

If all the hydrogen atom are replaced by fluorine, we have poly tetra fluoro ethylene or teflon, this is what is called a teflon is a commercial polymer. Then if 2 hydrogens are substituted 1 on the same carbon atom 1 by CH 3 group and another COOCH 3 group then we have the polymer called polymethylmethacrylate, PMMA the commercial name for this is plexiglass also called as.

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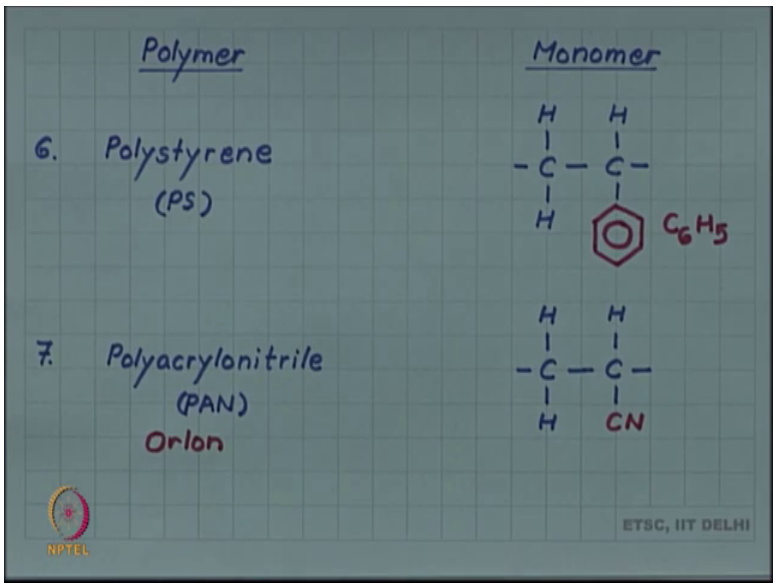

Then we are polystyrene in which this C 6 H 5 ring, this will be C6H5, C6H6 remember is a benzene molecule one hydrogen if it is replaced, then it has a free bond here to join with the carbon atom in the ethylene molecule.

So, this gives us the monomer of polystyrene and finally, we have poly acrylonitrile where one of the hydrogen is substituted by the cn group, the one carbon and nitrogen. So, this is polyacrylonitrile the commercial name for this is Orlon, this is used as synthetic world.