



## Importance of Polymer Chemistry and its Classification

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**DESCRIPTION:** A polymer is any of a category of herbal or artificial materials composed of very massive molecules, referred to as macromolecules, which might be multiples of less complicated chemical devices referred to as monomers. Polymer chemistry is a sub-subject of chemistry that makes a speciality of the chemical synthesis, structure, and chemical and bodily homes of polymers and macromolecules. The ideas and techniques used inside polymer chemistry also are relevant via an extensive variety of different chemistry sub-disciplines like natural chemistry, analytical chemistry, and bodily chemistry. Many substances have polymeric structures, from completely inorganic metals and ceramics to DNA and different organic molecules, however, polymer chemistry is usually mentioned with inside the context of artificial, natural compositions. Synthetic polymers are ubiquitous in business substances and merchandise in ordinary use, normally called plastics, and rubbers, and are most important additives of composite substances. Polymer chemistry also can be

covered with inside the broader fields of polymer technology or maybe nanotechnology, each of which may be defined as encompassing polymer physics and polymer engineering. Polymers are excessive molecular mass compounds shaped with the aid of using polymerization of monomers. The easy reactive molecule from which the repeating structural devices of a polymer are derived is referred to as a monomer.

A polymer may be defined in lots of approaches: its diploma of polymerisation, molar mass distribution, tacticity, copolymer distribution, the diploma of branching, with the aid of using its end-groups, crosslinks, crystallinity and thermal homes along with its glass transition temperature and melting temperature. Polymers in answer have unique traits with recognize to solubility, viscosity, and gelation. Illustrative of the quantitative components of polymer chemistry, unique interest is paid to the number-common and weight-common molecular weights. The take a look at of polymer thermodynamics enables enhance the cloth homes of diverse polymer-primarily based totally substances along with polystyrene (Styrofoam) and polycarbonate. Common enhancements consist of toughening, enhancing effect resistance, enhancing biodegradability, and changing a cloth's solubility. As polymers get longer and their molecular

weight increases, their viscosity has a tendency to increase. Thus, the measured viscosity of polymers can offer precious statistics approximately the common duration of the polymer, the development of reactions, and in what approaches the polymer branches. Biopolymers are the structural and purposeful substances that include maximum of the natural count in organisms. One main elegance of biopolymers is proteins, which might be derived from amino acids. Polysaccharides, along with cellulose, chitin, and starch, are biopolymers derived from sugars. The polynucleic acids DNA and RNA are derived from phosphorylated sugars with pendant nucleotides that bring genetic statistics. Synthetic polymers are the structural substances manifested in plastics, artificial fibers, paints, constructing substances, furniture, mechanical parts, and adhesives. Synthetic polymers can be divided into thermoplastic polymers and thermoset plastics. Thermoplastic polymers encompass polyethylene, Teflon, polystyrene, polypropylene, polyester, polyurethane, Poly (methyl methacrylate), polyvinyl chloride, nylons, and rayon. Thermoset plastics encompass vulcanized rubber, bakelite, Kevlar, and polyepoxide. Almost all artificial polymers are derived from petrochemicals.

**CONCLUSION:** Polymer chemistry and polymer thermodynamics is extensively studied for sustainability and existence cycle assessments (LCA). Polymer electrolyte membranes are taken into consideration vital for sustainability due to their giant use in gas cells. The polymer electrolyte membrane (PEM) gas mobileular is a hydrogen gas mobileular that immediately converts hydrogen and oxygen into electric energy, water, and waste heat, without producing dangerous gases emitted via way of means of traditional inner combustion engines. In general, PEM to maintain gas cells have the benefits of compact structure, low working temperature, speedy begin up speed, lengthy running existence and pollution.

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