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Editorial on Biodegradable Polymers

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Editorial Note

In non-industrial nations, ecological contamination by manufactured polymers has accepted risky extents. Oil determined plastics are not promptly biodegradable and due to their protection from microbial corruption, they aggregate in the climate. Furthermore as of late oil costs have expanded particularly. These realities have assisted with invigorating interest in biodegradable polymers. Polymers from sustainable assets have pulled in an expanding measure of consideration in the course of the most recent twenty years, dominatingly because of two significant reasons: initially natural concerns, and furthermore the acknowledgment that our oil assets are limited. There are numerous wellsprings of biodegradable plastics, from manufactured to common polymers. Characteristic polymers are accessible in huge amounts from sustainable sources, while engineered polymers are created from non-inexhaustible oil assets. Biodegradation of polymeric biomaterials includes cleavage of hydrolytically or enzymatically touchy bonds in the polymer prompting polymer disintegration. Countless biodegradable polymers have been integrated as of late and a few microorganisms and compounds fit for debasing them have been distinguished.

The objective is to classification of biodegradable polymers. The chemical structure, sources, production and synthesis methods, physical properties (mechanical, barrier and thermal properties) and applications of most important biodegradable polymers would be discussed.

Classification and properties of biodegradable polymers

The biodegradable polymers can be classified according to their chemical composition, origin and synthesis method, processing method, economic importance, application, etc. Biodegradable polymers classified according to their origin into two groups: natural polymers which obtained from natural resources and synthetic polymers which produced from oil.

Natural biodegradable polymers

Biopolymers are polymers formed in nature during the development patterns, all things considered; consequently, they are additionally alluded to as characteristic polymers. Their union for the most part includes catalyst catalyzed, chain development polymerization responses of initiated monomers, which are commonly shaped inside cells by complex metabolic cycles.

Biopolymers extracted from biomass

Polysaccharides-Thermoplastic starch, Cellulose and its derivatives, Fibers (Lignocellolosic complex), Chitin and chitosan, Gums.

Polypeptides (Proteins) - Corn zein, Wheat gluten, Soy protein, Collagen and gelatin, Casein and caseinates, Whey proteins, Other proteins.

Biopolymers produced by natural or genetically modified organisms

Microbial polyesters-Polyhydroxyalcanoates (PHAs), Poly-3-hydroxybutyrate (PHB), Poly (Hydroxybutyrate-Hydroxyvalerate) (PHB/HV), Poly- ε-Caprolactones (PCL).

Bacterial Cellulose (BC)

Biopolymers (Polyesters) synthesized from bio-derived monomers-Polylactic Acid or polylactide (PLA), Polyglycolic Acid (PGA).

Synthetic biodegradable polymers

Aliphatic polyesters-Polyglycolic Acid (PGA), Polylactic Acids (PLA) and their copolymers, Polybutylene Succinate (PBS), Polybutylene Succinate Adipate (PBSA), Poly (Vinyl Alcohol) (PVOH) and Poly (Vinyl Acetate) (PVA).

Factors affecting biodegradation

A few variables influence extent of polymer biodegradation that most impotents of them are:

- Polymer structure,
- Polymer morphology,
- Atomic weight,
- Radiation and compound therapies.

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