

Paper 74

Developing Biodegradable Plastics from Natural Polymers

As plastic pollution becomes an increasingly severe issue, especially with its long-term impacts on the environment and ecosystems, it has drawn widespread global attention. The use of traditional plastics has resulted in serious pollution of oceans, soil, and air, with a long degradation cycle that never fully breaks down, posing significant threats to biodiversity. In response to this issue, the development of biodegradable plastics has become a crucial topic in today's society. Biodegradable plastics, made from natural materials and polymers, not only help reduce plastic pollution effectively but also degrade quickly in natural environments, avoiding the long-term burden of traditional plastics on the environment.

Natural polymers refer to materials with polymer structures extracted from nature, such as polysaccharides and proteins derived from plants, animals, or microorganisms. Due to their biodegradable properties, natural polymer materials are widely considered ideal for producing biodegradable plastics. By combining natural polymers with modern polymer technologies, we can develop an environmentally friendly plastic alternative that meets both ecological requirements and industrial or everyday use needs.

In this context, this article will explore the research progress in developing biodegradable plastics from natural polymers. We will analyze the applications of various natural polymer materials (such as starch, cellulose, chitosan, etc.) in biodegradable plastics and evaluate their degradation performance, mechanical properties, and economic feasibility. Furthermore, this article will discuss the challenges and future directions in the development and application of these materials. By advancing the research and application of natural polymer materials, we hope to achieve more sustainable plastic alternatives and reduce environmental pollution.