

Biomass to Biopolymers

Biopolymers Team,
National Metal and Materials Technology Center (MTEC),
National Science and Technology Development Agency (NSTDA),
114 Thailand Science Park, Paholyothin Road, Klong 1, Klong Luang,
Patumthani, Thailand

Abstract

Most plastic manufactured today are made from synthetic polymers which are inert to microbial attack. But polymers also occur in nature. Some polymers can be produced by plants, animals and microorganisms through biochemical reactions. They are biological polymers, or simple Biopolymers. Most biopolymer production is by extract from the natural plant or animal materials, such as carbohydrate or chitin. Some biopolymers can be made commercially using microorganisms, such as polyhydroxyalkanoates (PHAs). There are also polymers that are not found in nature but are made commercially from monomers that occur naturally in the biomass. These resulting polymers have the properties of biopolymers and their monomers originate in living organisms. Most important, they are biodegradable. Lactic acid is example of important polymerizable bio-molecule. Biopolymers are inherently biodegradable, as they must be in order to take part in nature's cycle of renewal. Biopolymers almost always have oxygen or nitrogen atoms I their polymer backbones; that is the feature that is mainly responsible for their biodegradability.