Bioplastics for use in Orthopedics and Implantable Devices

Published date: Aug. 18, 2014

Technology description

Plastic polyhydroxyalkanoate (PHA) microstructures can be formed in bacterial hosts and have applications in orthopedic devices, orthopedic implants, and other implantable medical devices. These materials are biocompatible and can degrade after being implanted. The biopolymers are synthesized in microbial hosts (bacteria) using a polymerase enzyme within the organisms, the biopolymers are then extracted from the organisms. The microbes are also flexible as they can intake a variety of renewable feedstocks. The polyhydroxyalkanoates form as core-and-shell biopolymers or copolymers so the created bioplastics can be easily tweaked by controlling the creation of polymer layers in order to tailor the plastics for specific applications. This tailoring of plastic properties, the biopolymers' small sizes, and PHAs' biodegradable and biocompatible nature make these bioplastics especially useful in orthopedic devices, orthopedic implants, and other implantable medical devices. The created biopolymers are water resistant and stable under normal conditions so can they be easily stored.

Institution

University of Minnesota

Inventors

Friedrich Srienc

联系我们

叶先生

电 话：021-65679356

手 机：13414935137

邮 箱：yeyingsheng@zf-ym.com