A Biodegradable Polymer for Medical Applications

A biodegradable polymer for use in medical implants

Studies into the properties of methyl methacrylate (MMA) networks have led Georgia Tech and Emory University scientists to develop biodegradable polymers that can be tailored to a wide array of precise medical uses. Unlike the formulation of existing biomedical polymers, the ability to alter the ratio of acrylate compounds within the polymer permits wide variation in elastic modulus, tensile strengths, and strain at break. This allows the production of polymers whose mechanical properties vary from rubbery to glasslike, thus improving their tissue-mimicking abilities. The ability to easily design and manufacture biocompatible medical polymers based on their application and location within the body possesses significant potential to minimize invasiveness and patient recovery times.

Summary Bullets

- **Adaptive and applicable** – mechanical properties can be tailored to the desired medical application
- **Controlled biodegradation**- biodegradation profile is easily adjustable

Solution Advantages

- **Adaptive and applicable** – mechanical properties can be tailored to the desired medical application
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Potential Commercial Applications

- Biotechnology
- Medical Implants
- Biocompatibles

Background and More Information

Classical methods of controlling biomaterial degradation rates involve synthetic modification of molecular structures. This is time consuming, research intensive, and often yields unforeseen toxic biodegradation products. In contrast, the hydrolysis of MMA macromers is dependent on MMA concentration; biodegradation profiles of these macromers can be tailored to individual concentrations simply by varying MMA concentration

The ease at which not only biodegradation but also biocompatibility can be altered by varying MMA concentration therefore makes these networks ideal in the development of biomaterials.

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IP Status

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