Bioplastics and hydrogels made from Jellyfish (Ramot)

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Technology

A process for efficient and low-cost production of bio-plastics from jellyfish. This is done by crosslinking
the active components in the jellyfish and optimization of the ratio between the active components in the material (Mucins, Collagens) in order to control the mechanical properties of the resulting polymer. Nano-materials are added to the mucin protein thus allowing the engineering of the
plastic material.

The Need

It is known that jellyfish directly interfere with several human enterprises – specifically, tourism (by stinging swimmers), fishing (by clogging fishing nets), aquaculture (by killing fish in net pens) and power production and desalination (by clogging water-intake filters). Though systematic research on the cause of the phenomenon and its impact on economics are still in initial stages, it is clear that humans cannot ignore this problem. The recently discovered jellyfish mucin, can be used in a variety of
pharmaceutical, medical, food and cosmetic products. An additional important component of the Jellyfish is Collagen. Collagen is a common protein found in fibrous tissues found in many types of organisms. From a material science perspective, this combination of proteins allows treating these creatures as resources for the production of complex materials.

Advantages

Bioplastics are environmentally friendly, degrading into fertilizing components. They are also biocompatible
and may be used for health and wound care. The raw material (jellyfish) is an unwanted commodity and should be supplied at little or no cost.

Potential Applications

Jellyfish plastics for food packaging industry (wrapping , anti oxidant plastic, anti bacterial plastic etc..)
Jellyfish plastics for agricultural uses (greenhouse covers, compastable plastics etc)
Jellyfish plastics for passive opotoelectronics uses (light emiting signs, displays)

Patents

Provisional Patent submitted in US

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