



AGRITECH & FOODTECH

CHEMICALS & NEW MATERIALS

COSMETIC, NUTRACEUTICALS & SUPPLEMENTS

Functional materials of deacetylated chitin

ADVANCED MATERIALS - COMPOSITES | NOVEL INGREDIENTS |
PACKAGING - BIODEGRADABLE

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PATENT STATUS

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LICENSE

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TRL

4

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The invention focuses on novel compositions based on deacetylated chitin nanowhiskers derived from chitin and chitosan, 100% natural and biodegradable. It defines the development of an optimized method for the fabrication of functional materials, such as biocompatible and biodegradable films or coatings, with desired properties suitable for medical, cosmetic, active food packaging, sensing and preservation applications.

Technical Features

Nanostructured nanowhiskers (NWs) are highly sought after due to their nanometric conformation, which allows their chemical-physical properties to be amplified. There is, however, still a need for efficient protocols to produce functional materials out of these compounds, such as films or coatings, which could conjugate optimized mechanical-physical properties with greater industrial versatility and scalability. A compound containing surface deacetylated chitin NWs, an acidifying agent, an aqueous solvent and a plasticizer is created. This compound can include polyphenols to enhance antioxidant, antibacterial, and anti-UV properties, favoring its application as active food packaging, as chitosan has also antimicrobial properties. These properties along with its biocompatibility, and non-toxicity, makes it suitable for drug delivery, tissue engineering, and personal care products. The composition can also be used to prevent degradation of paper, such as in ancient manuscripts. TRL 3-4 depending on the application.

Possible Applications

- Particularly suitable for application in the medical or cosmetic sector, for example to produce protective patches in the form of film (es. Water based nail polish)
- Economic, biodegradable, natural-origin active/intelligent food packaging
- Biocompatible and biodegradable conductive films for biological applications and in the sensing sector.

Advantages

- Bio- and hemocompatibility promote platelet adhesion to materials
- Simple modulation of antithrombotic properties
- Biocompatibility
- High versatility and scalability
- Economic scale up

PATENT OWNERS

Università Ca' Foscari Venezia
Università degli Studi di Pavia

knowledge share

UIBM

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Difesa e Territorio

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