

Method for Preparing Cellulose-Branched Fluorinated Acid Esters

CSIC has developed a method for preparing cellulose-branched 5-fluorinated acid esters by reaction of cellulose with a multibranched fluorinated carboxylic acid. This method can be useful for the preparation of waterproof-breathable films, coatings in textiles and food packaging.

Industrial partners from looking for waterproof-breathable films/coatings in textile products, and for food packaging industry are being sought to collaborate through a patent licence agreement.

An offer for Patent Licensing

Preparation of cellulose-branched 5-fluorinated acid esters (C-BRFA) films

The objective of the invention is to exploit the inherent properties of biocompatible, biodegradable multi-branched fluorocompounds, increasing their biodegradability and applicability at large scale, by their grafting to cellulose to obtain the corresponding multi-branched fluorinated cellulose esters.

The introduction of fluorinated side chains on cellulose allows to obtain omniphobic materials. However, the presence of fluorinated chains longer than C6 raises environmental concerns. The key challenge is to elaborate omniphobic cellulose-based materials by using fluorinated chains shorter than C6. In this sense, the use of new short-chain branched fluorinated substances for more sustainable fabrication is a smart strategy.

The first aspect of the present invention relates to a novel method for preparing cellulose-branched fluorinated acid esters by reaction of cellulose with a multibranched fluorinated carboxylic acid in presence of anhydride system trifluoroacetic.



The micromorphology of C-BRFA at different ratios of microcellulose versus BRFA characterized by Scanning Electron Microscope

Main innovations and advantages

- Fluoropolymers show many valuable properties, including chemical inertness, high dielectric constant, flame retardancy, low friction, non-stick behavior, exceptional weatherability, and excellent barrier properties.
- The cellulose-branched fluorinated acid esters could be use for the preparation of waterproof-breathable films or coatings in textile products, and for food packaging.

Patent Status

Priority patent application filed suitable for international extension

For more information, please contact:

Antonio Jiménez

Deputy Vice-Presidency for Knowledge Transfer

Spanish National Research Council (CSIC)

Tel.: 915681930

E-mail: a.jimenez.escrig@csic.es
comercializacion@csic.es