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PROVA SCRITTA – 14 DICEMBRE 2023

Il candidato dovrà scrivere il proprio elaborato con carattere Arial, dimensione 12, colore nero, senza l'uso del grassetto, di sottolineature o del corsivo e testo allineato come "giustificato". Il candidato deve riportare il numero della domanda a cui vuole rispondere indicando "DOMANDA 1 / 2". Conclusa la prova il candidato dovrà salvare nella chiavetta il proprio elaborato con il nome "prova scritta".

TRACCIA A

Premessa. Al/la candidato/a non è richiesto di dissertare sul contenuto tecnico scientifico del caso tipo proposto, ma di concentrarsi sulle procedure di tutela e valorizzazione della proprietà intellettuale.

1) Un dottorando si rivolge all'Ufficio di trasferimento di conoscenza, ritenendo di aver conseguito un'invenzione nell'ambito della sua ricerca di dottorato insieme al professore suo responsabile scientifico/supervisore. Il dottorando trasmette il documento allegato che si riferisce al conseguimento di:

un'invenzione che consiste in una combinazione di sensori, celle solari e batterie che possono essere integrate nei telai delle finestre, in grado di analizzare dati, come la temperatura, la luce e la qualità dell'aria, utilizzando un algoritmo di autoapprendimento che controlla autonomamente gli impianti climatici di un edificio (come le tende solari, l'illuminazione, la ventilazione e l'aria condizionata). L'invenzione sarebbe in grado di trasformare il vetro da involucro inerte a superficie sensibile, incorporando tecnologie di rivestimento, solari e sensori in vetrate isolanti trasparenti al 100%.

Il/la candidato/a esponga i passaggi necessari per procedere alla tutela della suddetta invenzione, identificando in particolare:

- chi è/chi sono i titolari dell'invenzione;
- come fare ricerca di anteriorità;
- quali sono i passaggi per tutelare l'invenzione.
- la gestione della comunicazione interna ed esterna.

2) Elaborate and illustrate a valorisation strategy for the innovation above described and considering, among others, the following:

- the role of the university in the process
- the role of the inventors
- valorisation possibilities;

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- possible impact indicators of a protection and valorisation plan.

ALLEGATO

Alla **Commissione Tecnica Brevetti**

Università Ca' Foscari di Venezia

c/o ARic - Ufficio Promozione dell'Innovazione e del Know How

Palazzo Ca' Bottacin

Calle Crosera Dorsoduro 3911

30123 Venezia

RICHIESTA DI DEPOSITO DI DOMANDA DI BREVETTO, REGISTRAZIONE O ALTRA FORMA DI TUTELA DI RISULTATO DELLA RICERCA

In base al Regolamento di Ateneo per la "Valorizzazione della conoscenza"

Emanato con D.R. n. 948 del 15/11/2022, in vigore dal 22/11/2022.

Titolo dell'invenzione/Idea brevettuale

Fornire un titolo, anche provvisorio, che esprima brevemente contenuti e scopo senza rivelare dettagli specifici che potrebbero consentire di riprodurre l'invenzione (ad esempio: nuovo composto anticancro, metodo per la fabbricazione di chip etc.)

Inorganic luminescent materials for solar radiation conversion devices

Inventori dell'università Ca' Foscari Venezia

Lista di tutto il personale strutturato e non dell'Ateneo che ha intellettualmente contribuito all'invenzione. Indicare il ruolo che hanno ricoperto i partecipanti al progetto (ad esempio: inventore, co-inventore etc..)

Nome:	XXXX
Cognome	XXXX
Data e Luogo di nascita	
Codice Fiscale	
Qualifica	dottorando
Dipartimento	
Telefono	
e-mail	

Ruolo e Quota di partecipazione	Inventore 60%

Nome:	YYYY
Cognome	YYYY
Data e Luogo di nascita	
Codice Fiscale	
Qualifica	Professore associato
Dipartimento	
Telefono	
e-mail	
Ruolo e Quota di partecipazione	Inventore 40%

Descrizione degli eventi:

Eventi	**Data**	**Documenti e passaggi di informazioni**	**Destinatari informazioni**
Ideazione dell'invenzione	01/09/2023		
Prima descrizione completa dell'invenzione	30/09/2023		Ufficio PINK

Descrizione dell'invenzione/novità e originalità dell'idea brevettuale[1]

Tipo di invenzione che si vuole proteggere	
X□	Prodotto/Dispositivo
□	Tecnologia
□	Metodo
□	Un'applicazione nuova dei precedenti
□	Software
□	Altro (…….)

[1] Le informazioni saranno usate per determinare la brevettabilità del trovato, valutarne il potenziale e/o contattare potenziali clienti o partner, di conseguenza è opportuno che i campi siano compilati in maniera chiara e completa. Si ricorda che i requisiti per la brevettabilità comprendono: i) novità; ii) originalità (attività inventiva o non-ovvietà rispetto all'arte nota); iii) applicabilità industriale).

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Stato dell'arte

Brevetti esistenti, letteratura tecnico-scientifica esistente, definizione dei limiti dello stato dell'arte

Luminescent solar concentrators (LSCs) aim at lowering cost of solar energy generation using a cheap luminescent plate to concentrate sunlight onto small-area strip-type photovoltaic devices at the sides of the plate. In such scheme sunlight is absorbed by the luminescent material in the plate and re-emitted in all directions. A considerable fraction of the light is trapped in the plate by total internal reflection. This way the plate acts as a light guide wherein the re-emitted light is guided to the perimeter of the plate where photovoltaic devices convert the light into electric power. Similarly, simple luminescent conversion layers (LCL) on top of or integrated in a photovoltaic device, e.g. a solar cell, may be used to increase the overall conversion efficiency of the device. In such scheme (part of the) sunlight is absorbed by the luminescent material of the conversion layer and re-emitted in all directions. A considerable fraction of the light is coupled into the device either directly or indirectly by total internal reflection. This way the absorption efficiency in the cell is enhanced due to an enhanced optical path length and photovoltaic device has a higher external quantum efficiency (EQE) at the emitted wavelength of luminescent material.

While solar panels are already contributing to the world energy production, LSCs and LCLs are still not commercially available. Although the concept is appealing, the production of large-sized LSCs and LCLs that have sufficient efficiency is a considerable challenge and include solving a number of non-trivial problems. These problems mainly concern shortcomings associated with the luminescent materials that are used in an LSC or LCL.

Ideally, an efficient luminescent material that can be used for large-scale LSC and LCL applications should meet certain requirements. The material should have advantageous luminescent properties, including: a broad spectral absorption, a high absorption efficiency over the whole absorption spectrum, non-overlapping absorption and emission spectra (i.e. a large Stokes' shift), a high luminescent quantum efficiency (i.e. the ratio between emitted and absorbed photons) and a photon emission that matches the spectral response of the PV-cell it is coupled to. Additionally, the material should have optical and structural properties that are compatible with the materials and/or applications of the optical devices in which the luminescent material is used.

State of the art luminescent materials do not meet these requirements thus inhibiting large scale applications of these materials. A detailed description of these problems is provided in the article by de Boer et al., Progress in phosphors and filters for luminescent solar concentrators, 29 March 2012, vol. 20, No. 53, Optics Express.

An interesting group of luminescent materials that are currently under investigation for applications in LCSs are the inorganic rare-earth compounds. Typically, these materials include a polycrystalline host material that is doped with inorganic rare-earth ions. These materials can exhibit relatively large shifts between absorption and emission.

Descrizione

Descrivere i contenuti, le caratteristiche peculiari dell'invenzione

The technology is a combination of sensors, solar cells, and battery system integrated into the window frames. This technology analyzes data, such as temperature, light, and air quality, using a self-learning algorithm that independently controls the building's climate installations (such as sun blinds, lighting, ventilation, and air conditioning).

Aesthetically appealing and versatile, the use of glass in the building sector continues to grow in popularity. But glass is largely an energy inefficient material as a lot of heat goes in or out through it, resulting in energy loss as well as a poor indoor climate. SmartSkin changes glass from inert shell to living skin by incorporating coating, solar and sensor technology in 100 %

transparent insulated glass units. Thanks to this solution, windows become an energy source instead of an energy sink, offering a payback time instead of remaining an expensive cost.

In more detail, this a device for converting solar radiation wherein the device comprises an inorganic luminescent material comprising a host material doped with Mn5+ ions for converting radiation of the UV and/or visible part of the electromagnetic spectrum into radiation of the near-infrared radiation part of the electromagnetic spectrum, preferably the infrared part between 1150 nm and 1250 nm, preferably around 1190 nm (the infrared emission peak of Mn5+); or, an amorphous host material doped with Sm2+ or Tm2+ ions, the amorphous host material including the elements Al, Si, O and N (SiAION) for converting radiation of the UV and/or visible part of the electromagnetic spectrum into radiation of a longer wavelength, preferably a longer wavelength between 650 nm and 800 nm or a longer wavelength of around 1140 nm; and, at least one photovoltaic device for converting at least part of the converted radiation into electrical power.

DATA		**FIRMA DEGLI NVENTORI**
15/10/2023		**XXXXX**
15/10/2023		**YYYYY**

Si autorizza il trattamento dei dati personali ex D.Lgs n. 196/03 nell'ambito delle finalità di cui alla presente richiesta.

DATA		**FIRMA DEGLI INVENTORI**
15/10/2023		**XXXXX**
15/10/2023		**YYYYY**

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TRACCIA B

***Premessa**. Al candidato/a non è richiesto di dissertare sul contenuto tecnico scientifico del caso tipo proposto, ma di concentrarsi sulle procedure di tutela e valorizzazione della proprietà intellettuale.*

1) Ispirandosi al documento allegato che si riferisce a un brevetto concesso per una invenzione così sinteticamente descritta:

L'invenzione consistente in una soluzione antimicrobica che può essere applicata sulla superficie dell'imballaggio per prodotti ortofrutticoli che rilascia lentamente nell'imballaggio molecole naturali che rallentano il processo di maturazione del prodotto contenuto, inibendo pertanto processi di marcescenza, degradamento cromatico e proliferazione microbica che rimane sull'imballaggio così da ritardare fenomeni di senescenza ed alterazione dei prodotti ortofrutticoli contenuti nell'imballaggio,

il/la candidato/a descriva le principali informazioni di carattere giuridico e tecnico brevettuale contenute nel documento, considerando tra l'altro i requisiti di brevettabilità.

2) Elaborate and illustrate a business strategy for the invention (as if the invention was owned by Ca' Foscari University) and considering among others

- current possibilities according to the the mission of the university
- university-industry relationships
- indicators of the business plan

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 3 380 413 B1

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A23B 7/154 *(2006.01)*

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PCT/EP2016/078287

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WO 2017/089292 (01.06.2017 Gazette 2017/22)

(54) **PACKAGING FOR FRUIT AND VEGETABLE PRODUCTS TREATED WITH AN ANTIMICROBIAL SOLUTION**

MIT EINER ANTIMIKROBIELLEN LÖSUNG BEHANDELTE VERPACKUNG FÜR OBST- UND GEMÜSEPRODUKTE

EMBALLAGE POUR FRUITS ET LÉGUMES TRAITÉ PAR UNE SOLUTION ANTIMICROBIENNE

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
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Designated Validation States:
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(56) References cited:
WO-A1-2015/006671 **WO-A1-2015/107089**
FR-A- 1 049 655

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 3 380 413 B1

Description

Technical field

[0001] The present invention relates to a packaging for fruit and vegetable products treated with an antimicrobial solution.

[0002] In particular, the present packing has been developed with reference to the sector of the logistics of easily perishable fruit and vegetable products.

[0003] Therefore, the invention is used mainly in the fruit and vegetable product food sector.

Background art

[0004] In the identified industrial sector and in particular in the case of packaging for fruit and vegetable products, it is more and more industrially strategic to bring in optimum organoleptic conditions the fruit and vegetable products on the table of those who buy them. This condition is particularly important in the case of perishable products, even more if these products have to travel long distances, for example to be exported. Therefore, it is strategic, in order to increase even more the competitiveness of the sector, to offer quality products able to reach the consumer's table at the best stage of ripening. It is therefore a priority to try to slow down the degradative effects of perishable products such as fruit and vegetable products, reduce their deployment time and increase their so-called shelf life, *i.e.* the time within which the product can be sold in the best possible conditions. All of this without forgetting the importance of being able to offer the product at the best possible quality degree in terms of organoleptic and microbiological quality. In fact, the microorganisms present on the surface of the fruit can contribute significantly to its degradation but also to its safety, if they are pathogenic microorganisms. In fact, more and more fresh fruit and vegetable products are implicated in food poisoning.

[0005] Solutions directly acting on the product in a post-harvest phase and allowing to lengthen the shelf life are since long time available on the market, but they are available only for some products. Unfortunately, there is often the risk of completely arresting the ripening process with the consequent reduction of the quality level of the product for sale.

[0006] Therefore, there is a strong need to make available a packaging which, treated with an antimicrobial solution, slows downthe alteration process of the fruit and vegetable products put inside of it, so as to ensure a sufficient long period of time between harvesting and the final sale of the product, before the first signs of degradation appear, even in the presence of fruit and vegetable products harvested in the optimum period of ripening and therefore more easily perishable under normal conditions, so as to be consumed at the best degree of maturation and with the best microbiological quality.

[0007] WO 2015/107089 discloses a transport package for food products wherein an active coating which protects the products is sprayed on the package.

Summary of the invention

[0008] The object of the present invention is to provide a packaging for fruit and vegetable products having characteristics such as to satisfy the above mentioned requirements and at the same time to overcome the drawbacks mentioned above with reference to the known technique.

[0009] Another object is to provide an antimicrobial solution to delay alteration phenomena linked to the development of spoilage micoorganisms (molds, yeasts, bacteria, agents for rot) of fruit and vegetable products and a method for its application to a packaging.

[0010] The above mentioned problems are solved by the transport packaging according to claim 1.

[0011] Further characteristics and advantages will become more apparent from the detailed description given hereinafter of some preferred, but not exclusive, embodiments of the present invention, with reference to the appended drawings, given by way of example but not of limitation.

Brief description of the drawings

[0012]

- Figure 1 shows two photos of a group of apples taken after 9 days at room temperature, in a traditional packaging (left) and in a packaging treated according to the present invention (right), respectively;
- Figure 2 shows two photos of a group of peaches taken after 3 days at room temperature, in a traditional packaging (left) and in a packaging treated according to the present invention (right), respectively;
- Figure 3 shows two photos of a group of strawberries taken after 1 day at room temperature, in a traditional packaging (left) and in a packaging treated according to the present invention (right), respectively.

Detailed description

[0013] The transport packaging for fruit and vegetable products according to the present invention, is supplemented, by spreading on its surface, with an antimicrobial solution which lasts on the packaging itself as long as packing, supplying and purchasing by consumers occur, so to reduce alteration phenomena linked to the development of spoilage microorganisms of the fruit and vegetable products contained in the packaging. Moreover, these substances which are active against many food pathogenic microorganisms, increase the safety of the packaged products, delaying the development of possible pathogenic microorganisms present on packaged fruit. The antimicrobial substances in object, in addition to slow down the development of the microorganisms present on the packaged product, due to their gradual release over time, have also the function of reducing surface contamination of packaging themselves by wide-spread environmental microorganisms, both pathogens and spoilage agents, with consequent reduction of cross-contamination of the packaged product.

[0014] The active substances contained in the antimicrobial solution and which will be discussed in more detail below, slowly release in the packaging natural molecules that slow down the alteration process of the product contained therein, by inhibiting the decay processes, the colour degradation and the microbial proliferation.

[0015] This allows for the harvesting of the fruit and vegetable products at a more advanced ripening degree than usual with consequent higher sugar degrees, lower acidity and best profiles in molecules having sensory impact that allow to obtain a product with high organoleptic quality on the table of the consumer. However, the riper products are notoriously more perishable because they facilitate the microbial development, with consequent reduction of the commercial life of the product but also with increased risk of development of food-borne microbial agents.

[0016] The differences in the appended figures can be visually appreciated, among packaged product with traditional packaging (left) and the same product, in the same conditions, placed in the packaging according to the present invention (right).

[0017] The antimicrobial solution is in liquid form and it is composed of water with specific active substances, reported below, diluted in ethanol or conveyed in propylene glycol and Tween 20 or homogenized, due to their lack of solubility in water. In the case of ethanol use, the ethanol solution with antimicrobial active substances is added to drinking water in quantities of 1 to 5%.

[0018] According to the present invention the mixture is formed by: Citral, Hexanal and 2-(E)-Hexenal.

[0019] Other substances employable in antimicrobial solutions which are not part of the present invention are: Neral, Geranial, Linalool, α-Pinene, β-Pinene, Limonene, Terpineol, Cinnamaldehyde, Gamma-Butyrolactone, Thymol, Carvacrol, Carvone, Myrcene, p-Cymene, gamma-Terpinene.

[0020] In order to obtain a synergistic effect and therefore multiplicative of the effects beside that in consequence of the different volatility and the optimal temperatures of use, it is preferable that different active substances are employed. In the context of the usable substances three aldehydes have been chosen because notoriously they have a broad spectrum of antimicrobial action (they are active against many spoilage and pathogenic microorganisms) and because organoleptically compatible with the packaged fruit and vegetable products. In fact, they are substances that are part of the essential oils or of the aroma constituents of many plant products. For example, hexanal and Trans-2 hexenal are essential components of apple, grape and many other vegetable aroma. Citral especially characterizes the aroma of citrus fruits.

[0021] The amount of used antimicrobial solution may vary depending on the needs, sizes, shapes,quantities and the type of product packaged inside the packaging, as well as the range of antimicrobial solution to be distributed is defined comprised between 7 and 50 ml per m^2 of surface packaging equivalent developed into a plane. The definition of such a quantity will involve different concentrations of the antimicrobial solution.

[0022] In particular, the total concentration of the active substances of the antimicrobial solution is comprised between 420 and 107,000 mg/L, depending on the volume distributed on a packaging and of the desired concentration per m^2 of packaging.

[0023] Expressing the data with reference to the packaging dimension we have the following: the total amount of active substances is usually comprised between 21 and 750 mg/m^2, where m^2 is the surface of the packaging developed into a plane.

[0024] Each of the active substances taken individually is distributed in a quantity comprised between 7 and 250 mg/m^2, more preferably between 30 and 140 mg/m^2, where m^2 is always the surface of the packaging developed into a plane.

[0025] Therefore, the total concentration of the active substances forming the antimicrobial solution will be dependent on the desired concentration on the packaging (21-750 mg/m^2) and the distributed volume of antimicrobial solution (7-50 ml/m^2).

[0026] The composition in terms of active substances and the concentration of each of them in the antimicrobial solution may vary depending on the type of the considered fruit or vegetable product and the ripening degree thereof.

[0027] By way of example, for the packaging of apples, pears, strawberries and peaches, the antimicrobial solution

is made with the active substance: Citral, Hexanal and 2-(E)-Hexenal, each active ingredient preferably having a concentration comprised between 30 and 140 mg/m^2.

[0028] As an example, in the table below some of the most common packaging formats in the fruit and vegetable sector and the development into a plane thereof are listed in m^2.

Format	Size in cm				Development into a plane in m^2
	Base lenght	Base width	Head height	Sideboard height	
60x40x10	60	40	10.6	7	0.485
40x30x20	40	30	19.7	16	0.546
50x30x16.7	50	30	16.7	12	0.499

[0029] Further, in the following table the exemplifying intervals of the amounts of each active substance and the resulting antimicrobial solution concentrations thereof for the various packaging formats considered are indicated. The analytical data are shown in the table below:

Substance	**Optimal amounts for packaging format 60x40x10 cm (mg)**		**Optimal amounts for packaging format 40x30x20 cm (mg)**		**Optimal amounts for packaging format 50x30x16.7cm (mg)**	
	Min.	**Max.**	**Min.**	**Max.**	**Min.**	**Max.**
-Citral	14.6	67.9	16.4	76.4	15.0	69.9
-Hexanal	14.6	67.9	16.4	76.4	15.0	69.9
-2-(E)-Hexenal	14.6	67.9	16.4	76.4	15.0	69.9
Total concentration mg	**43.7**	**203.7**	**49.1**	**229.3**	**44.9**	**209.6**

[0030] Effectively, the antimicrobial solution is deployed on the inside of the packaging just before the fruit and vegetable product to be contained is inserted in the latter. The activation times are strictly dependent on the concentration of the active substances and on the distribution dynamics of the active packaging and must be optimized case by case.

[0031] Also, the ways in which they are distributed can be of various types; by way of example they can occur by a roller, spray or brush, preferably spray on porous surfaces, such as those of the corrugated cardboard, wood or plastic. The application is done to the still empty packaging, in the case of wood, preferably after the latter has been assembled. The application can take place at different points of the distribution chain of the corrugated cardboard packaging: from the immediate production of the flat die-cutter to the box assembled immediately before product packaging.

[0032] By way of example in the case of cardboard packaging, the latter arrive in the form of die-board cut by the packaging manufacturer to the manufacturer/packager of fruit and vegetable products. The latter loads the corrugated cardboard die-cut in a traditional editor machine, which through a jig, a plate which descends on the die-cut and the glue points provided by the system, mounts the case that forms the packaging. The latter comes out of the jig and passes through a conveyor in a tunnel in which the antimicrobial solution is sprayed, by spray-misting the same. Subsequently, the thus treated case is sent at the packaging line product. These antimicrobial solutions and distribution techniques thereof can also be applied for the surface sanitization of plastic packaging with folding sideboard.

[0033] Based on the distribution data of the antimicrobial solution on the packaging, the volume of mixture to be distributed per m^2 equivalent to the development into a plane of the packaging, for single format, is reported in the following table.

[0034] Table showing the minimum and maximum volumes of antimicrobial solution in ml:

	Volume of the mixture in ml	
	Min.	**Max**
For 1 m^2 of equivalent packaging surface	7	50

(continued)

	Volume of the mixture in ml	
	Min.	Max
60x40x10	3.4	24.3
40x30x20	3.8	27.3
50x30x16.7	3.5	25.0

[0035] Based on these data, the number, minimum and maximum, of packaging which can be treated with one liter of antimicrobial solution is reported:
Minimum and maximum number of packaging treatable with 11 of antimicrobial solution

Format	Minimum number	Maximum number
60x40x10	41	295
40x30x20	37	262
50x30x16.7	40	286

[0036] As can be appreciated from what described, the transport packaging for fruit and vegetable products according to the present invention allows to meet the needs and to overcome the drawbacks described in the introductive part of the present description with reference to the background art.

[0037] In particular, the thus treated packaging allows to slow down the alteration process of the vegetables contained therein, so as to consequently increase the shelf life of the products themselves, so as to be able to distribute products, compared to the packaging without treatment, harvested with the right degree of physiological ripening.

[0038] Obviously, to the above described packaging, a person skilled in the art, in order to satisfy contingent and specific requirements, may make numerous modifications and variants, all anyway contained within the scope of the invention, as defined by the following claims.

Claims

1. Transport packaging for fruit and vegetable products wherein the packaging is supplemented, by spreading on its surface, with an antimicrobial solution which lasts on the packaging as long as packing, supplying and purchasing by consumers occur, so to reduce the microbial load thereof and the role in the cross-contamination of the packaged products as well as delay spoilage and alteration phenomena of the fruit and vegetable products contained in the packaging, **characterized in that** said antimicrobial solution consists of the following three active substances: Citral, Hexanal and 2-(E)-Hexenal.

2. Packaging according to claim 1, wherein the packaging is made of corrugated cardboard.

Patentansprüche

1. Transportverpackung für Obst- und Gemüseprodukte, wobei die Verpackung mit einer antimikrobiellen Lösung, die auf der Verpackung verbleibt solange Verpacken, Lieferung und Erwerb durch Konsumenten stattfinden, durch Verteilen auf ihrer Oberfläche beaufschlagt wird, um ihre mikrobielle Belastung und die Rolle bei der gegenseitigen Kontamination der verpackten Produkte zu verringern sowie den Verderb und Veränderungsphänomene der Obst- und Gemüseprodukte, die in der Verpackung enthalten sind, zu verzögern, **dadurch gekennzeichnet, dass** die antimikrobielle Lösung aus den folgenden drei Wirkstoffen besteht: Citral, Hexanal und 2-(E)-Hexenal.

2. Verpackung nach Anspruch 1, wobei die Verpackung aus Wellpappe hergestellt ist.

Revendications

1. Emballage de transport pour des produits fruitiers et végétaux dans lequel l'emballage est complété, par étalement sur sa surface, par une solution antimicrobienne qui perdure sur l'emballage tout au long de l'emballage, de la distribution et de l'achat par des consommateurs, de manière à réduire la charge microbienne de celui-ci et le rôle dans la contamination croisée des produits emballés ainsi qu'à retarder des phénomènes de dégradation et d'altération des produits fruitiers et végétaux contenus dans l'emballage, **caractérisé en ce que** ladite solution antimicrobienne est constituée des trois substances actives suivantes : Citral, Hexanal et 2-(E)-Hexenal.

2. Emballage selon la revendication 1, dans lequel l'emballage est constitué de carton ondulé.

Apples after 9 days in ambient temperature

FIG. 1

Peaches after 3 days in ambient temperature

FIG. 2

Strawberries after 1 day in ambient temperature

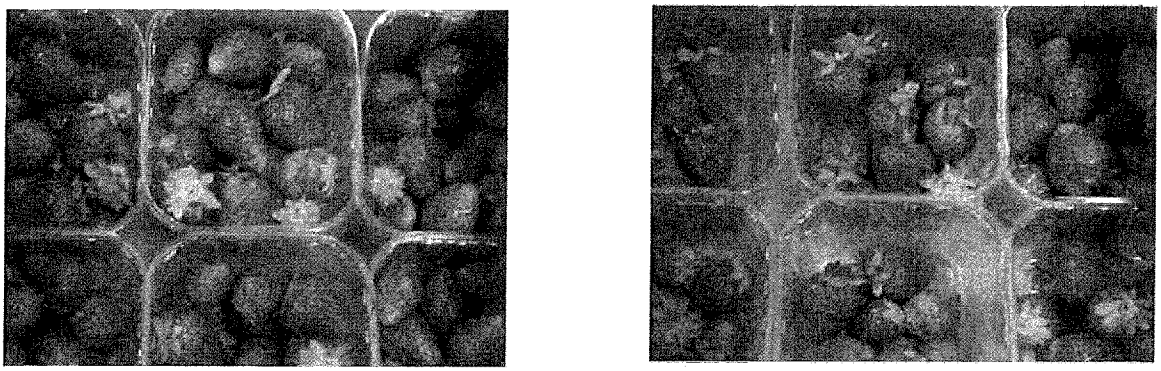

FIG. 3

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 2015107089 A **[0007]**

Università
Ca'Foscari
Venezia

Concorso pubblico, per esami, per la copertura di n.1 posto a tempo indeterminato di categoria D, posizione economica D1, area tecnica, tecnico scientifica ed elaborazione dati, profilo Knowledge Transfer Manager, per le esigenze dell'Ufficio Promozione dell'Innovazione e del Know How dell'Area Ricerca (ARic) dell'Università Ca' Foscari Venezia, prioritariamente riservato ai volontari delle FF.AA., bandito con DDG n. 974/ prot.n. 234842 del 16/10/2023

PROVA SCRITTA – 14 DICEMBRE 2023

Il candidato dovrà scrivere il proprio elaborato con carattere Arial, dimensione 12, colore nero, senza l'uso del grassetto, di sottolineature o del corsivo e testo allineato come "giustificato". Il candidato deve riportare il numero della domanda a cui vuole rispondere indicando "DOMANDA 1 / 2". Conclusa la prova il candidato dovrà salvare nella chiavetta il proprio elaborato con il nome "prova scritta".

TRACCIA C

***Premessa**. Al candidato/a non è richiesto di dissertare sul contenuto tecnico scientifico del caso tipo proposto, ma di concentrarsi sulle procedure di tutela e valorizzazione della proprietà intellettuale.*

1) Il/la candidato/a descriva i requisiti per la brevettabilità dell'invenzione e spieghi altresì la funzione e la struttura di un rapporto di ricerca su una domanda di brevetto e le possibili azioni da intraprendere al ricevimento del rapporto.
Con riferimento al documento allegato, relativo alla prima pagina della domanda di brevetto e al rapporto di ricerca che riguarda

un'invenzione che consiste nella messa a punto di processi di lavorazione di biomasse residue e/o materiali fossili per ottenere una miscela di biopolimeri idrosolubili comprendente una frazione organica e una frazione minerale che possano essere utilizzati al posto dei prodotti chimici derivati dal petrolio.

e che contiene complessivamente 24 rivendicazioni, il candidato descriva:

- le principali informazioni di carattere giuridico e tecnico brevettuale in esso contenute;
- le valutazioni da fare per procedere, le criticità, i punti di attenzione;
- in linea generale altre possibilità di tutelare risultati della ricerca oltre la brevettazione per la loro valorizzazione

2) The search report mentions one or more scientific publications by one or more inventors as particularly relevant for the purposes of determining novelty and inventive step: what measures could the University plan and implement to monitor and prevent a similar case from happening again?

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
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B09C 1/00 (2006.01) *C05F 11/00* (2006.01)
C02F 1/56 (2006.01) *C08H 99/00* (2010.01)
C09J 201/00 (2006.01) *C08H 7/00* (2011.01)

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(74) Agent: **GARAVELLI, Paolo**; A.BRE.MAR. S.R.L., Via Servais 27, I-10146 Torino (IT).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report (Art. 21(3))*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(54) Title: BIOPOLYMERS ISOLATED FROM RESIDUAL BIOMASS AND FOSSIL SOURCE; PRODUCTION PROCESSES AND PRODUCT USE

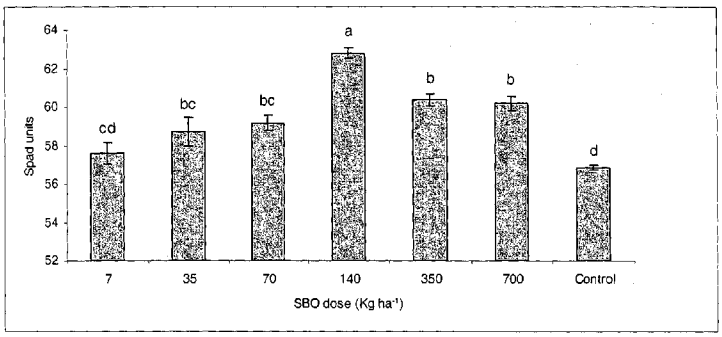

Figure 1. Leaf chlorophyl content (Spad units) for red pepper plants grown on soil treated with variable water soluble biopolymers kg ha^{-1} doses.

(57) Abstract: Composition, and processes for the production and use of mixture of water soluble biopolymers, said mixture comprising an organic fraction and a mineral fraction, the organic fraction comprising polymer molecules having a molecular weight included between 5 and 500 kDalton and a polydispersion index included between 6 and 53, wherein the organic fraction contains, in % weight of dry substance, $37 \leq C \leq 65$; $3 < N \leq 7$, and N and C mean nitrogen and organic carbon being distributed among the following types of carbon atoms and functional groups with the following composition expressed as molar fraction of the total organic carbon: $0.3 < C_{al} \leq 0.6$; $CN \leq 0.1$; $OMe \leq 0.1$; $0.3 \leq OR \leq 0.6$; $0.02 \leq OCO \leq 0.08$; $0.07 \leq Ph \leq 0.30$; $0.02 \leq PhOH \leq 0.06$; $PhOR/Ar \leq 0.09$; $0.04 \leq COOH \leq 0.12$; $CON \leq 0.12$; $C{=}O \leq 0.05$; and the mineral fraction contains, in % weight of dry substance, ashes ≤ 30; $Si \leq 3.0$; $Fe \leq 0.9$; $Al \leq 0.8$;' $Mg \leq 1.2$; $Ca \leq 6.5$;. $K \leq 10$; $Na \leq 10$; $Cu \leq 0.03$; $Ni \leq 0.01$; $Zn \leq 0.05$; $Cr \leq 0.003$; $Pb \leq 0.01$.

WO 2013/093951 A1

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
BPC1633		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/IT2012/000399	21/12/2012	22/12/2011
Applicant		
UNIVERSITA' DEGLI STUDI DI TORINO		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 6 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**
   a. With regard to the **language,** the international search was carried out on the basis of:
      [X] the international application in the language in which it was filed
      [ ] a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))
   b. [ ] This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).
   c. [ ] With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. [ ] **Certain claims were found unsearchable** (See Box No. II)

3. [ ] **Unity of invention is lacking** (see Box No III)

4. With regard to the **title,**
   [X] the text is approved as submitted by the applicant
   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**
   [X] the text is approved as submitted by the applicant
   [ ] the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings,**
   a. the figure of the **drawings** to be published with the abstract is Figure No. fig.1
      [X] as suggested by the applicant
      [ ] as selected by this Authority, because the applicant failed to suggest a figure
      [ ] as selected by this Authority, because this figure better characterizes the invention
   b. [ ] none of the figures is to be published with the abstract

INTERNATIONAL SEARCH REPORT

International application No
PCT/IT2012/000399

A. CLASSIFICATION OF SUBJECT MATTER
INV. A23K1/00 B09B3/00 B09C1/00 C02F1/56 C09J201/00
C12P7/00 A01N61/00 C05F11/00 C08H99/00 C08H7/00
ADD.
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A23K B09B B09C C02F C09J C12P A01N C05F C08H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	MONTONERI E ET AL: "Acid soluble bio-organic substances isolated from urban bio-waste. Chemical composition and properties of products", WASTE MANAGEMENT, ELSEVIER, NEW YORK, NY, US, vol. 31, no. 1, 2 October 2010 (2010-10-02), pages 10-17, XP027476376, ISSN: 0956-053X, DOI: 10.1016/J.WASMAN.2010.08.029 [retrieved on 2010-11-04]	1-19,21, 22
Y	abstract; table 3 page 10, left-hand column page 17, left-hand column	20,23,24

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

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Date of the actual completion of the international search	Date of mailing of the international search report
10 April 2013	22/04/2013

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Lanz, Sandra

1

Form PCT/ISA/210 (second sheet) (April 2005)

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

International application No
PCT/IT2012/000399

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IT2012/000399

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