VT BIOMASA PARA LA BIOECONOMÍA 42

NIPO: 116-19-007-8 PATENTES

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BOLETÍN BIOENERGÍA Y BIOPRODUCTOS

El papel de la biomasa en la evaporación solar interfacial: Patentes

En la introducción de la última edición de este boletín, se puso de manifiesto el gran interés existente actualmente, sobre todo en los países asiáticos, por el uso de la biomasa para el desarrollo de evaporadores solares interfaciales y su utilización en el tratamiento de aguas residuales, desalinización, destilación, etc. En esta ocasión, se va a abordar cuál es la situación en el área de patentes, lo que permitirá dilucidar su proximidad al mercado. Para ello, se hará uso de la herramienta Global Patent Index con acceso a las bases de datos de la EPO (Oficina Europea de Patentes), previo diseño de las correspondientes ecuaciones de búsqueda basadas en palabras clave.

En la base de datos de la EPO, sin limitación de horizonte temporal, se identificaron 38 familias de patente (invenciones) que se recogen en la Tabla 1, pudiéndose acceder a su texto completo a través del link insertado en el número de publicación de cada documento. El 36,8 % de estas solicitudes se publicaron en 2020, el 28,9% en 2019 y 2018, y el 5,4% en 2017.

Tabla 1. Familias de patente (nº publicación, título, solicitante y país del solicitante)

Nº Publicación representante	Título	Solicitante	País del solicitante
CN112551625A	Preparation method of wood-based solar seawater desalination material	Univ China Mining	China
CN112250126A	Photo-thermal film, preparation method and application thereof	Univ Nanjing	China
CN112374497A	Preparation method of porous carbonized sawdust accumulation bed material based on alkali activation and application of porous carbonized sawdust accumulation bed material in solar desalination of seawater	Univ China Mining	China
CN112225277A	Seawater desalination method based on biomass base	Univ Nanjing Information Science & Tech	China
CN112093790A	Preparation method and application of porous carbonized sugarcane capable of realizing efficient photo-thermal conversion	Univ Guilin Electronic Tech	China
CN111977734A	Photo-thermal evaporation and waste heat recovery integrated device and application thereof	Univ Zhejiang	China
CN111874887A	Three-dimensional structure photothermal conversion material for water treatment	Univ Ludong	China
CN111844307A	Carbonized wood, preparation method thereof and solar steam generation device	Univ Northeast Forestry	China
CN111675275A	Preparation method of material with solar water evaporation and efficient metal ion adsorption functions	Univ North China	China
CN111518309A	Biomass nanocellulose/polypyrrole composite aerogel, and preparation method and application thereof	Univ Hunan; Univ Northeast Forestry	China
CN111453801A	Bio-based photothermal conversion material and preparation method and application thereof	Harbin Inst Technology	China
CN111439803A	Photo-thermal interface evaporation structure and method based on capillary fiber woven water supply	Zhejiang Energy Group Res Inst	China
CN111285704A	Cellulose source carbon-based photothermal conversion material for sea water desalination and preparation method thereof	Univ Shaanxi Science & Tech	China
CN110844959A	Photo-thermal water evaporation device based on loofah sponge biomass	Univ Ludong	China
CN110746657A	Preparation method and application of composite biomass aerogel photothermal conversion material	Univ Guilin Electronic Tech	China
CN110513668A	Super-hydrophilic carbonized potato foam, preparation method thereof and application of super-hydrophilic carbonized potato foam in solar steam generation	Univ Shaanxi Science & Tech	China
CN110498464A	Carbon nanotube aerogel wood chip double-layer structured photo-thermal conversion material	Univ Guilin Electronic Tech	China
CN110479230A	TiO2-loaded self-supporting suspended biomass carbon-based photo-thermal microreactor with photocatalytic activity as well as preparation method and application thereof	Univ Shanghai	China
CN110358143A	Carbon-based absorbing material, and preparation method and application thereof	Univ Shaanxi Science & Tech	China
CN110255526A	Biomass charcoal solar energy water evaporating material and preparation method thereof	Univ Qingdao Science & Tech	China

Nº Publicación representante	Título	Solicitante	País del solicitante
CN110126043A	Method for preparing thermal conduction enhanced phase change energy storage wood based on photothermal response	Univ Beijing Forestry	China
CN110030743A	Preparation method and application of MOFs/ biomass-based carbon composite photothermal conversion material based on interface photothermal conversion	Univ Heze	China
CN110015649A	Carbon-based material and preparation method thereof	Univ Shaanxi Science & Tech	China
CN109879344A	Photothermal evaporation surface, and preparation method and application thereof	Univ North China Electric Power	China
CN109734148A	Preparation method of biomass carbon material for solar evaporated water and application of biomass carbon material	Univ Heze	China
CN109607650A	Preparation method of nanogold/graphene wooden structure photothermal conversion material	Changshu Inst Tech	China
CN109485115A	Solar photothermal purification method of water based on corncob integral carbon material	Univ Dalian Tech	China
CN109437351A	Preparation method of foamed titanium dioxide loaded activated carbon photothermal conversion material	Univ Ludong	China
CN109266315A	Carbon spot based photo-thermal conversion material preparation method	Univ North China	China
CN109176790A	Efficient photo-thermal water vapour conversion method based on wood	Univ Hainan	China
CN109092248A	Biochar material and preparation method and application thereof	Univ Shenzhen	China
CN109053938A	Preparation method of biochar/polymer composite film applied to solar water evaporation	Univ Heilongjiang	China
CN108554381A	Solidago canadensis carbide and preparing method and application thereof	Shanghai Jiao Tong University	China
CN107572626A	Black composite material with hydrophily and self-floating property, preparation method and application	Univ Qingdao	China
CN107487801A	Method for preparing porous charcoal pieces capable of realizing efficient photo-thermal steam converting	Univ Guilin Electronic Tech	China
CN212198577U	Photo-thermal interface evaporation structure based on capillary fiber weaving water supply	Zhejiang Energy Group Res Inst	China
US2018356127A1	Wood-based solar thermal devices, and methods for fabrication and use thereof	Univ Maryland	EE.UU.
WO2018187238A1	Flexible wood structures and devices, and methods for fabricating and use thereof	Univ Maryland	EE.UU.

En la Figura 1 se recogen los solicitantes principales y el número de familias de patente de que disponen. El 94,7% de las solicitudes pertenecen a entidades chinas. Entre ellas destacan la *Guilin University of Electronic Technology* y la *Shaanxi University of Science and Technology*, ambas con 4 solicitudes.

En la Tabla 2 se recoge el tipo de biomasa utilizada en las invenciones pertenecientes a los principales solicitantes. Generalmente, antes de su utilización, la biomasa se somete a procesos de carbonización a temperaturas entre 300 ºC y 1000 ºC. Sin embargo, en algunas invenciones pertenecientes a la *Guilin University of Electronic Technology*, la *Ludong University*, la *Northeast Forestry University* y la *China University of Mining* utilizan una carbonización hidrotérmica (100 ºC-200ºC).

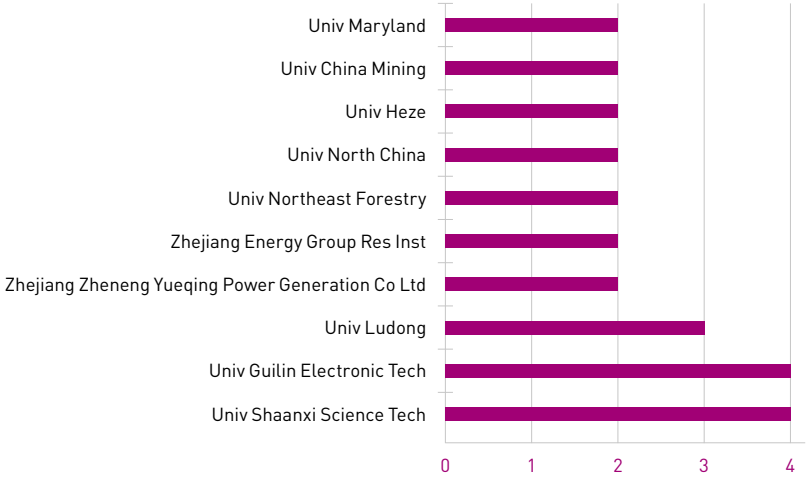

Figura 1. Instituciones líderes en patentes (>1 familia de patentes)

Tabla 2. Tipo de biomasa utilizada por las instituciones líderes (>1 familia de patentes)

Instituciones	Tipo de biomasa	
Univ Shaanxi Science Tech	• Potato • Starch	• Leaves • Orange peel
Univ Guilin Electronic Tech	• Grapefruit peel • Coconut shell • Banana peel • Watermelon peel • Plant roots	• Leaves seeds • Sugar cane • Wood chip • Wood blocks
Univ Ludong	• Loofah • Grape ssking • Cherry core	• Apple core • Citrus peel • Cattails
Zhejiang Zheneng Yueqing Power Generation Co Ltd	• Cotton threads • Hem	• Wool
Zhejiang Energy Group Res Inst	• Cotton threads • Hem	• Wool
Univ Northeast Forestry	• Cotton	• Wood: beech, oak, phoebe, camphor, pine, fir, birch, maple or poplar
Univ North China	• Wood	
Univ Heze	• Corn cob • Corn stover • Corn cob thin skin • Coybean straw	• Crop loofah • Bamboo stalk • peanut Shell • Lotus root
Univ China Mining	• Wood	
Univ Maryland	• Wood block	

PATENTES BIOENERGÍA

Biocombustibles sólidos (pellets, biochars, bio RDFs, bio SRFs, etc.)		
Nº Publicación	Solicitante (País)	Contenido técnico
EP 3913038 A1 20211124	Electricite de France (FR)	**Method for manufacturing pellets or fuel briquettes from waste wood.** The present invention relates to a process for manufacturing fuel pellets or briquettes from wood, according to which: fragments of this wood are subjected to a first treatment in an enclosure, by injection of steam of between 200 and 300 ° C. and pressure increase up to 10 to 30 bar, - then to a second explosive decompression treatment by sudden drop in said pressure so as to cause the bursting of said fragments; - said fragments are recovered and they are transformed into pellets or briquettes, after a preliminary drying step, characterized in that said wood fragments are wood fragments comprising at least one exogenous pollutant, which one determines the nature and the proportion of said at least one pollutant before implementation of said first treatment and that the duration of this first treatment is adapted as a function of the nature of the major pollutant.
WO 2021229173 A1 20211118	Europeenne de Biomasse (FR)	**Improved method for producing black pellets by managing the moisture content during granulation.** The invention relates to the field of solid biofuels obtained by the steam cracking of a lignocellulosic biomass. More particularly, it relates to a method for producing black pellets in which granulation is carried out at a humidity of between 12 and 20%.
WO 2021209725 A1 20211021	Europeenne de Biomasse (FR)	**Method for producing combustible pellets by improved steam cracking using heterogeneous biomass.** The invention relates to the production of steam-cracked biomass in the form of black pellets in the field of solid biofuels. More particularly, the invention relates to the production of black pellets from a heterogeneous biomass. The aim of the invention is to produce black pellets having good mechanical strength, good water resistance and an increased calorific value.
WO 2021230007 A1 20211118	Idemitsu Kosan Co (JP)	**Biobiomass solid fuel production method and biomass solid fuel.** A biomass solid fuel production method in which a biomass solid fuel is produced by heating a massive material containing a biomass powder in a reactor, the method comprising a first heating step (ST10) for preheating the massive material containing the biomass powder at a temperature that is equal to or higher than a temperature lower by 2ºC than the dew point temperature of the atmosphere in the reactor prior to the charge of the massive material into the reactor and a second heating step (ST20) for charging the massive material that has been heated in the first heating step (ST10) into the reactor and then heating the massive material at 200 to 300ºC, inclusive, for 10 to 240 minutes, inclusive, in which the heating temperature in the first heating step (ST10) is lower than the heating temperature in the second heating step (ST20).
WO 2021246857 A1 20211209	Mavor Imp Sarl (MA)	**Anti-freeze device for agricultural use.** The present invention relates to an anti-freeze device operating with wood pellets or dried wood chips, comprising a storage hopper, a combustion grate located at the end of a channel forming an angle of about 30 to 45° to the horizontal, the plane of the grate being arranged at the outlet of the channel parallel to the lower plane of the channel, with an offset of at least 2 cm to prevent the propagation of fire towards the hopper, and a chimney for discharging the heat to the outside; said device being controlled by a system for automatically starting the combustion.
WO 2021226703 A1 20211118	Mcrae Glenn Aldon et al. (CA)	**Apparatus and process for catalyzed steam biofuel production.** A method and apparatus for producing a solid biofuel from hydrocarbonaceous feedstock is described. The process includes loading a hydrocarbonaceous feedstock into a reactor vessel, adding an aqueous catalyst solution into the reactor vessel, wherein the catalyst solution resides at the bottom of the reactor vessel under the hydrocarbonaceous feedstock position, heating the reactor vessel at or above 170 °C to catalyze a reaction of hydrocarbonaceous feedstock under saturated steam conditions for a time sufficient to yield a polymeric biofuel, and isolating the polymeric biofuel from the reactor vessel.
WO 2021250604 A1 20211216	Stora Enso OYJ (FI)	**Process for producing carbon from heat treated lignin.** The present invention is directed to production of granular carbon, prepared from lignin. The process comprises the steps of providing agglomerated lignin, heating the agglomerated lignin to obtain thermally stabilized lignin and subjecting the thermally stabilized agglomerated lignin to heat treatment to obtain granular carbon.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021250603 A1 20211216	Stora Enso OYJ (FI)	**Process for producing thermally stabilized lignin.** The present invention is directed to a process for the production of thermally stabilized agglomerated lignin, which avoids melting and/or significant foaming during subsequent thermal processing. The process comprises the steps of providing agglomerated lignin and heating the agglomerated lignin to obtain thermally stabilized agglomerated lignin. The thermally stabilized lignin can be further processed to a carbon enriched material.
WO 2021221759 A1 20211104	Univ Colorado State Res Found et al. (US)	**Biomass dehydration system.** Various implementations include a biomass dehydration system including a wet biomass chamber containing wet biomass, a belt or chain defining one or more cavities, two or more pulleys including a drive pulley that the belt or chain extend around and that are configured such that the cavities are disposable within the wet biomass chamber as the belt or chain moves along the pulleys to cause wet biomass to enter the cavities, and a drying chamber for dehydrating wet biomass disposed in the cavities into solid pellets. The drive pulley engages the belt or chain and causes the belt or chain to move around the pulleys. At least a portion of the belt or chain extends from the wet biomass chamber through the drying chamber. One of the pulleys includes one or more ejection protrusions for engaging the cavities and ejecting solid pellets from the cavities.
WO 2021246927 A1 20211209	Valmet OY (SE)	**Continuous steam explosion method and a defibration system.** The present invention relates to a method for defibrating a lignocellulosic material in a steam explosion process, the method comprising: - supplying lignocellulosic material to a reactor, - treating the lignocellulosic material in the reactor at a first pressure, - discharging the lignocellulosic material from the reactor to a vessel, wherein the vessel is at a second pressure that is lower than the first pressure so that the lignocellulosic material is defibrated through steam explosion as it passes from the reactor, wherein lignocellulosic material is continuously supplied to and discharged from the reactor in such a way that the first pressure is constant. The invention also relates to a defibration system for defibrating a lignocellulosic material in a steam explosion process.

Syngas

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021191924 A1 20210930	Amol Carbons Private Ltd et al. (IN)	**Tar free cross flow gasification system for moisture containing feed.** The present disclosure relates to a modified gasification system for producing syngas from waste materials having moisture content. The gasification system has crossflow arrangement for circulation of gases across the solids present and has well-defined drying, pyrolysis and gasification zones. A burner of the gasification system situated downstream of the pyrolysis zone is configured to receive the pyrolysis product and a secondary oxidizer to produce a burner output gas and to supply the burner output gas to the pyrolysis zone and gasification zone. The gasification zone is additionally configured to receive a primary oxidizer gas and a tertiary oxidizer gas to aid gasification. The present disclosure overcomes limitation of the prior-arts and provides means of isolating the drying, pyrolysis, and gasification zones and eliminates tar formation during gasification. The gasification system disclosed herein is a fully scalable equipment.
WO 2021221163 A1 20211104	Japan Blue Energy Co Ltd et al. (JP)	**Biomass gasification device.** A biomass gasification device equipped with: a preheater which preheats a heat carrier medium; a thermal decomposition device which receives the supply of the heat carrier medium that has been preheated with the preheater and performs the thermal decomposition of a biomass with heat of the heat carrier medium; a thermally decomposed gas reformer which at least partially combusts a thermally decomposed gas generated as the result of the thermal decomposition with air or oxygen; and a supply mechanism which is arranged between the preheater and the thermal decomposition device and is configured to supply the heat carrier medium from the preheater to the thermal decomposition device. The supply mechanism has: an opening/closing unit for storing the heat carrier medium temporality; and a regulation unit which is arranged below the opening/closing unit and can be slid to supply the heat carrier medium supplied from the opening/closing unit to the thermal decomposition device.
WO 2021221164 A1 20211104	Japan Blue Energy Co Ltd et al. (JP)	**Biomass gasification device.** This biomass gasification device is provided with: a preheater which preheats a heat carrier medium; a pyrolyzer which is supplied with the heat carrier medium preheated by the preheater and pyrolyzes biomass with the heat of the heat carrier medium; a pyrolysis gas reformer which, by means of air or oxygen, at least partially burns a pyrolysis gas generated by the pyrolysis; and a supply unit which supplies air or oxygen to the pyrolysis gas reformer. The supply unit has a first valve for supplying air or oxygen continuously to the pyrolysis gas reformer, and a second valve for supplying air or oxygen intermittently to the pyrolysis gas reformer.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021221165 A1 20211104	Japan Blue Energy Co Ltd et al. (JP)	**Biomass gasification device.** A biomass gasification device equipped with a temporary storage unit in which a heat carrier medium is stored temporality and from which the heat carrier medium is discharged. The temporary storage unit comprises a housing and a discharge unit for discharging the heat carrier medium. In the housing a partitioning wall is provided for forming a gap which the heat carrier medium can pass through between the partitioning wall and a side-part inner wall of the housing or, alternatively, a tubular part through which the heat carrier medium can pass is provided at a side-part inner wall of the housing.
WO 2021204608 A1 20211014	SCFI Ltd (IE)	**Gasification of organic waste streams.** Supercritical gasification of a waste stream uses a supercritical finned tubular reactor with optional oxidant injection at a plurality of injection points, the injection rates being chosen according to the nature of the stream material and downstream process control parameters. After the reactor there is heat recovery from the effluent stream, subsequent cooling followed by pressure reduction to provide a first reduced-pressure stream which is separated into gas and liquid components. Hydrogen peroxide is injected into the liquid stream ensuring near complete oxidation of residual COD still contained within the treated liquid effluent stream. The liquid component is cooled and there is a further pressure reduction to provide a reduced-pressure liquid stream. There is then separation of the reduced-pressure liquid component to provide a further gas component and liquid component. Gas components from the first gas and liquid separation step are distributed based on the requirement of the process or downstream processes.

Biogás

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021228616 A1 20211118	Air Liquide (FR)	**Facility and method for producing biomethane with limited methane loss and limited CO2 emissions.** Disclosed are a facility and a method using the facility for treating a feed gas stream comprising at least methane and carbon dioxide by membrane permeation, the facility comprising: - a first membrane separation unit capable of receiving the feed gas stream and providing a first permeate and a first retentate, - a second membrane separation unit capable of receiving the first retentate and providing a second permeate and a second retentate, - a compressor for compressing the first permeate to a pressure of between 17 bar and 25 bar, - a means for cooling the first compressed permeate to a temperature lower than -40°C, - a distillation column for separating the first cooled permeate into a gas stream and a liquid stream, - at least one means for recycling the gas stream exiting the distillation column to the inlet of the first membrane separation unit, - a means for measuring the concentration of methane and/or carbon dioxide in the gas stream exiting the distillation column, - a means for comparing the concentration of methane and/or carbon dioxide measured by the measurement means with a target value, and - a means for adjusting the pressure and/or the temperature of the first permeate depending on the comparison carried out by the comparison means.
EP 3892357 A1 20211013	Air Liquide (FR)	**System for treating biogas by membrane permeation with adaptation of the membrane surface according to the pressure of biogas.** Installation for the treatment by membrane permeation of a gas feed stream comprising at least methane and carbon dioxide, said installation comprising: - means for measuring (M) the pressure P of the gas feed stream, - a means for comparing the pressure P with a target value, - at least two membrane separation units and - a means (T) for adding and removing at least one membrane in at least a membrane separation unit based on the comparison of the pressure P with the target value.
EP 3925684 A1 20211222	Airco Process Tech A/S (DK)	**Method for reducing methane emissions from biogas upgrading.** The present invention relates to a method for upgrading biogas generated by a biological process wherein at least carbon dioxide is removed from the biogas. More specifically the present invention relates to method for upgrading a biogas comprising a first absorption step wherein the liquid effluent is subjected to a second absorption step and flash step and the gas streams resulting therefrom are recycled. The present invention also relates a biogas upgrading plant.

Nº Publicación	Solicitante (País)	Contenido técnico
EP 3919606 A1 20211208	Algae & Algae Tech Ltd (GB)	**Conversion of algae to biomethane.** Technical field the invention pertains to high yield cultivation of microalgae biomass in outdoor raceways through careful control of all growth parameters and the adjustment of the algae internal composition in order to obtain a superior volume of methane per unit of biomass through anaerobic digestion.a selected species of microalgae is seeded in covered raceways and grown under strictly controlled conditions of nutrient and micronutrient addition, CO2 addition, artificial light of specific spectrum for the algal species and the application of a pulsed magnetic field. The raceway solution is constantly agitated to ensure sunlight reaches all of the microalgae in the raceway. the objective of controlling all growth parameters is to maximize the creation of biomass by providing, in a timely fashion, the elements needed by the microalgae as identified in laboratory studies.the pulsed magnetic field improves the growth rate of the algae while maintaining a good cell density (stimulation of growth and metabolic cascades) by controlling biochemical pathways. In addition the phototropic cellular communication is enhanced leading to a higher content of light harvesting primary and accessory pigments. this results in an important increase in lipid content of the algae biomass which in turn yields a higher production of methane compared to the carbohydrate and protein contents in the biomass. The process recycles the maximum quantity of water possible as well as capturing all the CO2 removed from the scrubbing of the biogas and recycling it to the raceways to promote algae growth.
WO 2021205095 A1 20211014	Association pour la Rech et Le Developpement des Methodes et Processus Industriels Armines et al. (FR)	**Method for storing a biogas in a tank and associated system.** The invention relates essentially to a method for storing a biogas in a tank, said method comprising the following steps: - bringing the biogas and a hydrocarbon of the C3 to C7 family directly into contact under conditions which make it possible to at least partly liquefy the biogas, so as to obtain a biogas-at least partly liquid hydrocarbon mixture, and - storing (S260) the biogas-hydrocarbon mixture in the tank.
WO 2021201763 A1 20211007	Biofrigas Sweden AB Publ (SE)	**Method and system for the production of liquid biogas.** The present invention describes a method for the production of liquid biogas (LBG), said method comprising the following steps: - inflow of crude gas comprising mainly methane and carbon dioxide; - removal of trace elements like hydrogen sulphide, siloxanes and VOC's from the crude gas; - dehumidification; - particle purification; for the production of a treated biogas; - separation of carbon dioxide from the treated biogas; - condensation of the treated biogas with a low content of carbon dioxide, for the production of LBG with a carbon dioxide content of maximum 100 ppm, preferably at or close to atmospheric pressure the LBG is close to 100% pure methane with a carbon dioxide content of maximum 100 ppm, wherein the separation of carbon dioxide from the treated biogas involves freezing carbon dioxide in the treated biogas.
EP 3901241 A1 20211027	Indian Oil Corp Ltd (IN)	**A device and process for converting organic waste to biogas.** The invention relates to a device and process for converting organic waste to biogas with high methane content and improved organic conversion efficiency. Disclosed process consists of two stages and in the first stage, shredded organic waste is digested in primary digester in which biodegradable organic fractions present in waste gets converted to volatile fatty acids and alcohols dissolved in aqueous solution by hydrolytic and acidogenic microorganisms. Primary digester effluent pH is adjusted to about 6.8-7.5 by addition of controlled alkali solution. Neutralized waste slurry is separated into liquid solution called as leachate and digested solid sludge. In the second stage, liquid leachate comprising volatile fatty acids are converted to biogas with methane content in the range 80-86% by methanogenic microbial culture in main digester under anaerobic conditions. This invention further describes optimized primary and main digester configurations with operating conditions to improve organic conversion efficiency in both the digesters.
EP 3895783 A1 20211020	Indian Oil Corp Ltd (IN)	**Process for biogas upgradation.** The present invention relates to a biomimetic-hybrid solvent system for simultaneous capture of H2S and CO2 from any gaseous composition. The present invention also relates to a process for upgradation of biogas to bio CNG by removing gaseous contaminants, including microbial removal of H2S, to obtained purified CO2. The biomimetic-hybrid solvent system contains three components selected from tertiary amine compounds, a functional colloidal fluid, and an enzyme mimic.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021228428 A1 20211118	Nefigmann Sven (DE)	**Carbon dioxide-neutral bio converter facilities for producing biogas using hydrogen and activated carbon compositions in the fermentation liquid of the bio converter.** The invention relates to a carbon dioxide-neutral bio converter facility (BKA) according to figure 1, comprising: - at least one bio converter (BK) for a single-stage or multistage production of biogas (BG) by fermenting biomass (BM) in a fermentation liquid (GF) which is moved using agitation means in the presence of elemental hydrogen, hydrogenotrophic and methanogenic archaea, and activated carbon compositions (K; KM), - an ammonia store (NH3) which, by means of an ammonia line (NH3L), is connected to - an ammonia cracker (AC) for producing hydrogen and nitrogen (H2/N2) by catalytically cracking ammonia, and - a line (LH2/N2) for introducing the generated hydrogen (H2) or the hydrogen-nitrogen mixture (H2/N2) into the at least one bio converter (BK), and/or - a device (VBK) for treating the activated carbon compositions (K; KM) with hydrogen (H2) at a high pressure, comprising a pressure line (25) and an injection lance (28) for injecting the hydrogen-containing carbon compositions (K; KM) into the fermentation liquid (GF), wherein the ammonia is produced using renewable energy, and the ammonia cracker (AC) is operated using the renewable energy. The invention also relates to a conversion method, to a method for injecting hydrogen-containing carbon compositions (H2K; H2KM), and to the use of the fermentation products (KBM).
WO 2021234971 A1 20211125	Shinko Tecnos Co Ltd (JP)	**Apparaus for converting waste to biogas and method for converting waste to biogas.** The purpose of the present invention is to reduce various costs including an apparatus production cost, an energy cost and a running cost by making some steps unnecessary, said some steps being a drying step of a hydrolysis product by means of the steam of waste, a pellet formation step and an exhaust treatment step by means of the combustion of pellets. An apparatus for converting waste to a biogas, by said apparatus a starting material containing organic waste being hydrolyzed and converted into a biogas, is provided with: a hydrolysis device which comprises a processing vessel that has a starting material feed port and a product discharge port, a stirring means that is arranged within the processing vessel so as to stir the starting material, a steam supply pipe that supplies steam to the processing vessel, and a steam discharge pipe that discharges steam from the processing vessel; and a biogas conversion/recovery device which converts the hydrolysis product into a biogas and recovers the biogas.

Bioalcoholes (bioetanol, biometanol, etc.)

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021206573 A1 20211014	Biotechnika Tomasz Kapela (PL)	**A method for processing raw plant material, especially legumes into protein having a nutritional and feed value, bioethanol, biogas and fertiliser materials.** A method for processing raw plant material, especially legumes into protein having a nu-tritional and feed value, bioethanol, biogas and fertiliser materials characterised in that the rawplant material is subjected to a dehusking process, followed by the dehusked raw material being crushed and subjected to extraction with stirring, wherein the insoluble solid fraction is separated and subjected to enzymatic hydrolysis using liquefying and saccharifying enzymes, then subjected to ethanol fermentation, where the produced ethanol is distilled and the digestate is transferred as a substrate for biogas production, and the liquid fraction after the extraction process is subjected to a process of precipitation to a solid form in the form of protein precipitate,which is washed with extraction buffer, after which the liquid residue is removed and subjected to a biogasification process, and the wet biogas residue is used as a fertiliser or formed into dry pellets and used as an organic fertiliser.
AT 523815 A1 20211115	GS Gruber Schmidt (AT)	**Process for producing the mixture of dibutyl ether and dihexyl ether (77) from synthesis gas.** The process for producing the mixture of dibutyl ether and dihexyl ether (77) from synthesis gas (8) composed of hydrogen, carbon monoxide and carbon dioxide, which is fermented by microbacteria in a bioreactor (11) into higher-quality alcohols. The cell mass is roughly separated off using a centrifuge (22). The downstream evaporator (116) with the blowdown (117) and the condenser (118) is used to sanitize the material flow (25) obtained from the bioreactor (11). The remaining solids and colloids are separated off via an ultrafiltration (UF) membrane system (31). The mixture of water and alcohol is separated into water and alcohol butanol and hexanol via a nanofiltration (NF) membrane system (42). The mixture of alcohol (51) is evaporated and fed to a dehydration reactor (57), which is cooled externally with warm water (56), in which the alcohols are converted to ether. The mixture of water, alcohols and ethers (58) is condensed, stored in a tank (62) and fed to a distillation tower (69) in which the ethers, alcohols and water (75) are separated.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021200451 A1 20211007	Honda Motor Co Ltd (JP)	**Glucose production method and ethanol production method.** The present invention can: efficiently and readily produce glucose from microalgae that accumulate starch in their cells; and obtain ethanol. During a preparation step of the glucose production method, microalgae are prepared on which a saccharifying enzyme acts on starch accumulated inside the microalgae cells, without disrupting the cell walls. In a saccharification step, starch inside the cells is saccharified and glucose is generated, by adding a saccharifying enzyme to the microalgae without a disruption treatment. The ethanol production method has a step in which, after the saccharification step, the glucose undergoes alcoholic fermentation and ethanol is generated.
WO 2021232143 A1 20211125	Iogen Corp (CA)	**Converting lignocellulosic feedstock to fuel.** A process for converting lignocellulosic biomass to fuel, wherein lignocellulosic feedstock is soaked in a sulfuric acid solution to demineralize the feedstock, the demineralized feedstock is pretreated at a temperature between 150°C and 230°C and a pH between 1 and 2.5, at least part of the pretreated material is converted to a fermentation production such as ethanol, and at least a portion of a secondary stream, such as still bottoms from the distillation of ethanol, is converted to biogas by anaerobic digestion. Soaking the lignocellulosic feedstock in sulfuric acid solution reduces the amount of sulfuric acid required for the pretreatment, and thus the amount of sulfate carried downstream to the anaerobic digestion. This increases the biogas yield and/or xylose yield. A recycling process, wherein mineralized soaking liquid produced in the soaking process is fed to cation exchange to remove minerals, reduces excess waste of the sulfuric acid and water usage.
WO 2021231096 A1 20211118	National Tech and Engineering Solutions of Sandia Llc et al. (US)	**Use of alkanolamines for lignin extraction in the pretreatment of biomass.** The present invention provides for a method to produce a sugar compound from a biomass, the method comprising: (a) providing a first mixture comprising a solubilized biomass and an alkanolamine; (b) recovering at least part of the alkanolamine from the first mixture in order to separate the at least part of the alkanolamine from the first mixture; (c) optionally introducing an enzyme and/or a microbe to the first mixture such that the enzyme and/or microbe produce a sugar from the solubilized biomass; and, (d) optionally the sugar is separated from the first mixture.
WO 2021231623 A1 20211118	Novozymes AS (DK) et al.	**Engineered microorganism for improved pentose fermentation.** Described herein are recombinant host organisms having an active pentose fermentation pathway and further comprising a heterologous polynucleotide encoding a non- phosphorylating NADP-dependent glyceraldehyde-3-phosphate dehydrogenase (GAPN). Also described are processes for producing a fermentation product, such as ethanol, from starch or cellulosic-containing material with the recombinant host organisms.
WO 2021193572 A1 20210930	Sekisui Chemical Co Ltd (JP)	**Production method for organic substance and organic substance production device.** This production method for an organic substance comprises: a step in which waste (G0) is supplied to a dryer (13); a step in which the waste (G0) is dried in the dryer (13); a step in which the waste (G0) that was dried in the dryer (13) is supplied to a gasification device (14); a step in which the waste (G0) is gasified in the gasification device (14) to generate a synthetic gas (G1); and a step in which the synthetic gas (G1) is brought into contact with a microbial catalyst to generate an organic substance.
WO 2021207584 A2 20211014	Univ Illinois (US)	**Plant sweet and yeast msf transporters capable of transporting different sugars simultaneously.** The present disclosure provides genetically engineered microorganisms for the simultaneous fermentation of pentose and hexose sugars, for example, glucose and xylose. The microorganisms can be modified to express AtSWEET polypeptides, LST1 polypeptides, mutants thereof, homologs thereof or combinations thereof. Also provided are methods of co-fermenting hexose and pentose sugars, methods of increasing the conversion of lignocellulosic biomass via microbial fermentation, and methods of generating biofuel.
WO 2021226094 A1 20211111	Univ Ramot (IT) et al.	**Process for conversion of cellulose recycling or waste material to ethanol, nanocellulose and biosorbent material.** Low dose/short duration ozone treatment of cellulosic biomass waste, such as from the paper, cardboard and cotton fabric and textile recycling and waste or from agricultural waste, is used in a process for producing ethanol, optionally including using a solid remnant byproduct of the process as a biosorbent to treat wastewater, according to the present invention or in a process for producing nanocellulose according to the present invention.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021224829 A1 20211111	Univ Stellenbosch (ZA)	**Method of modifying a yeast strain, modified yeast strains obtained thereby and uses thereof.** A method of producing a modified Saccharomyces cerevisiae yeast strain with enhanced resistance (or tolerance) to pretreatment-derived microbial inhibitors such as furans, phenolics and weak acids is provided, which comprises integrating at least one copy of the TAL1 gene and at least one copy of two or more of the FDH1, ARI1 and ADH6 genes into the S. cerevisiae genome. A modified yeast strain so obtained is also provided, the modified yeast strain being capable of simultaneously overexpressing these genes relative to a yeast strain which hasn't been modified in the same manner. S. cerevisiae strains which have been modified as described herein can be used to ferment lignocellulosic hydrolysates containing pretreatment inhibitors such as furans, phenolics and weak acids. Suitable lignocellulosic hydrolysates include sugarcane bagasse (SCB) and waste streams from the pulp and paper industry, such as spent sulphite liquor (SSL).

Biodiésel

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021204610 A1 20211014	BASF (SE)	**Energy efficient biodiesel production from natural or industrial waste oil.** A method of producing fatty acid alkyl ester from an organic oil source containing at least one free fatty acid, wherein the vegetable and/or animal waste oil has an acid number of at least 30 mg KOH/g and wherein the method comprises the steps of a) reacting the oil source with glycerol at a temperature, which is at least 110°C and does not exceed 180°C during the reaction, in the presence of a catalyst comprising at least methane sulfonic acid or the homo anhydride thereof; and b) acidic transesterification at a temperature, which is at least 110°C and does not exceed 160°C during the reaction of the reaction product from step a) with an alkanol; and c) isolating the fatty acid alkyl ester from the reaction product of step b).
WO 2021193887 A1 20210930	Biofuel Tech Research Co Ltd (JP)	**Method for producing biodiesel fuel.** This method comprises: a first separation step for mixing an inorganic acid or enzyme and a raw material containing at least one among a glycerin fatty acid ester and a free fatty acid to thus separate a first oil and a first glycerin liquid; a catalytic cracking step for bringing an oil or a fatty acid alkyl ester into contact with a catalyst to obtain a hydrocarbon, wherein (a) in the catalytic cracking step, the first oil is used, or (b) the method further comprises an esterification step for causing the first oil obtained from the first separation step to react with a monohydric alcohol to obtain a fatty acid alkyl ester by using a method other than an alkali catalyst method, and the obtained fatty acid alkyl ester is used as a raw material in the catalytic cracking step. The present invention provides a new method for producing a biodiesel fuel having a hydrocarbon as a main component, the method being capable of using a raw material containing at least one among a glycerin fatty acid ester and a free fatty acid.
TN 2019000343 A1 20210507	Ecole Nat Dingenieurs de Sfax Enls (TN)	**Production of an innovative biodiesel from vegetable oil.** Production of an innovative biodiesel from vegetable oil not intended for human or animal consumption. The seeds of "Moringa oléifèra" were used as a new primary material. This new exploitation of "Moringa oléifèra" seeds has several advantages including high biomass productivity as well as the possibility of cultivating them on non-arable land. The oil extraction process has two intermittent stages generating vegetable oil and cake. The conversion of this oil into biodiesel by a chemical transesterification reaction has made it possible to make its characteristics similar to those of diesel fuel and to comply with American (ASTMD6751) or European (EN14214) standards.
MY 171709 A 20191024	Malaysian Palm Oil Board (MY)	**A process for treating used frying oil from vegetable and animal fats and the oil obtained therefrom.** The present invention relates to inter alia a method for the pre-treatment of used frying oil from vegetable and animal fats with silica gel. Other inexpensive adsorbents such as activated carbon , aluminium oxide and acid activated bleaching earth can also be used for this purpose. Among the four adsorbents used, silica gel remains the best adsorbent in terms of the colour and the quality of the pre-treated oil. The used frying oil is treated with silica gel in a preferred ratio of 1:1w/w. The pre-treated used frying oil has much lower free fatty acids (FFA) and peroxide value (P.V.) values as compared to the oil before the silica gel treatment. The pre-treatment process is particularly useful for removal of polar components from used frying oil. The pre-treated used frying oil can be refined for non-food applications including biofuel, lubricant , soap and other oleochemical derivatives , or converted into its methyl esters via esterification and transesterification preferably using RH resin and sodium hydroxide. The methyl esters derived from the used frying oil can be used in the production of biodiesel. The invention also discloses a method of regenerating the used adsorbent utilised in, for example, pre-treating the used frying oil.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021231506 A1 20211118	Mokvist Anders (US)	**Method and system for conversion of biomass to biofuel and extraction of carbon-containing products.** Disclosed herein is a method and system for converting biomass to biofuel, comprising a reaction apparatus including: a reaction tank configured to hold a process fluid; at least one mechanical rotating device comprising: a submergible chamber configured to operate within process, the submergible chamber having a first section including a first rotatable member and configured to receive biomass feedstock; a second section including a second rotatable member and configured to process biomass feedstock; and a third section including a third rotatable member and configured to treat the processed biomass feedstock effective to convert the processed biomass feedstock; a shaft in operable communication with each of the first, second, and third rotatable members for rotating said rotatable members about an axis; and a drive source for driving the shaft about said axis. Also disclosed herein are kits and methods for using the disclosed system to produce biofuel.
US 2021355419 A1 20211118	Sophies Bionutrients Pte Ltd (SG)	**Bioreactor system for cultivating microalgae.** A bioreactor system for cultivating microalgae is described. The bioreactor system includes a bioreactor. The bioreactor includes one or more holes. One or more light sources are implanted into each of the one or more holes. A culture media comprising a carbon source is located inside of the bioreactor. A microalgae comprising a photoreceptor sensitive to a region of a visible spectrum is located in the culture media. Each of the one or more light sources produce an irradiance of light including the region of the visible spectrum in a sufficient intensity to transduce the photoreceptor of the microalgae.
MY 127141 A 20061130	Taiwan Biotech Co Ltd (TW)	**Method of preparing lower alkyl fatty acid esters and in particular biodiesel.** The present invention relates to a techinique for enhancing the activity of an inmobilized lipase, and a technique for regenerating a deactivated immobilized lipase, in which an alcohol with a carbon atom number not less than three is used to swell and/or clean said immobilized lipase. Said immobilized lipase particularly useful in a method of preparing biodiesel by transesterification of triglycerides and a lower alcohol.
ES 2857448 A1 20210928	Univ La Laguna (ES)	**Energy farming coal for the production of biodiesel.** The present invention refers to the use of carbon (unactivated) synthesized from the husks of the energetic cultivar of Pongamia pinnata as an adsorbent to reduce the content of free fatty acids present in the oils, serving as a stage prior to the transesterification reaction for the biodiesel production.

Biohidrógeno

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021189137 A1 20210930	G4 Insights Inc (CA)	**Hydrogen production with sequestration.** Disclosed herein is a method for making hydrogen with carbon sequestration. The method may comprise using a biomass hydroconverter product to fuel a steam reformer that converts a hydrocarbon fuel stream into a gas mixture that contains at least hydrogen and carbon dioxide. The gas stream is separated to form a hydrogen-enriched gas stream and at least one hydrogen-depleted stream. The hydrogen-depleted stream may be stored or further processed to sequester the carbon contained therein. Additionally, or alternatively, the solid residue from the biomass hydroconverter also may be stored for further sequester carbon generated by the method.
WO 2021199057 A1 20211007	Patra Snehangshu (IN)	**Hydrogen generation from waste water using self- healing electrodes.** Hydrogen generation from waste water using self-healing electrodes The invention discloses a process by which H2, O2 and/or mixture of H2+O2 can efficiently be extracted from domestic waste water by a smart waste water (ww) electrolyzer. The present invention discloses the synthesis of electrocatalytic ww- electrodes by utilizing the biochemical reactions of sulfate reducing bacteria (SRBs) present in waste water. The heterogenous waste water splitted by a ww-electrolyzer in to H2/O2/mixture of H2+O2 which is possible energy application in cooking/soldering/home heating etc. The ww-electrodes when packed in to stack of multiple electrodes produces 625-650 litre of H2 in the expense of 1 unit of electricity (1 kWh) from waste water. The ww-electrolyzer ran continuously for 5 days without decreasing the efficiency of gas production.
WO 2021195705 A1 20211007	Univ Macquarie (AU)	**Recombinant microorganisms and process.** The present invention relates to recombinant microorganisms for producing biological hydrogen. In addition, the invention relates to nucleic acid constructs and processes for modifying microorganisms for enabling the production of hydrogen therefrom.

Otros biocombustibles (hidrobiodiésel, biopropano, biocrudos, etc.)		
Nº Publicación	Solicitante (País)	Contenido técnico
US 2021300799 A1 20210930	Battelle Memorial Institute (US)	**Electrocatalytic bio-oil and wastewater treatment.** An anode, a flow cell including the anode, and a method for electrocatalytic treatment of bio-oil and/or wastewater are disclosed. The anode comprises RuO2 particles on a titanium support. The method includes flowing a process stream through the flow cell in the absence of added hydrogen, at a temperature of 0° C. to 50° C. and atmospheric pressure, and applying a potential across the flow cell such that the anode is positive with respect to the cathode, thereby electrocatalytically oxidizing compounds in the process stream to produce a treated process stream at the anode and generating hydrogen gas as a byproduct at the cathode.
WO 2021252171 A1 20211216	Exxonmobil Res & Eng Co (US)	**Marine fuel compositions.** Fuel or fuel blending compositions corresponding to blends of a resid-containing fraction one or more fatty acid alkyl esters are provided, along with methods for forming such a fuel or fuel blending composition are also provided. Optionally, the fuel or fuel blending composition can further include a secondary flux. The secondary flux can correspond to additional renewable flux or conventional distillate flux. Optionally, the amount of renewable flux can correspond to 25 vol% or more of the fuel or fuel blending composition. Optionally, the resulting fuel or fuel blending composition can have a BMCI - TE difference value of 15 or less.
WO 2021222823 A1 20211104	Fulcrum Bioenergy Inc (US)	**Feedstock processing systems and methods for producing Fischer-Tropsch liquids and transportation fuels.** A method for processing feedstock is described, characterized in that incoming feedstock is processed to selectively recover biogenic carbon material from the incoming feedstock. In some embodiments the incoming feedstock is comprised of mixed solid waste, such as municipal solid waste (MSW). In other embodiments the incoming feedstock is comprised of woody biomass. In some instances, the incoming feedstock is processed to selectively recover biogenic carbon material from the incoming feedstock to produce a processed feedstock having biogenic carbon content of 50% and greater suitable for conversion into biogenic carbon Fischer Tropsch liquids. The high biogenic carbon Fischer Tropsch liquids may be upgraded to biogenic carbon liquid fuels. Alternatively, the incoming feedstock is processed to selectively recover plastic material from the incoming feedstock to produce a processed feedstock having biogenic carbon content of 50% or less.

PATENTES BIOPRODUCTOS

Biomateriales (de construcción, medicina, embalaje, etc.)		
Biocomposites y biofibras		
Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021207515 A1 20211014	Arkema Inc (US)	**Non-polymeric coupling agent formulations for wood polymer composites.** Non-polymeric coupling agent formulation for producing wood-polymer composites include at least one organic peroxide and a non-polymeric bio-based additive that includes at least one of a bio-based oil or a bio-based acid or derivatives of bio-based oils or acid is provided. The coupling agent formulations are capable of producing polymer matrix composites having improved strength and aging characteristics. The improved strength may be related to physical properties such as improved stiffness, toughness or tensile strength. A masterbatch utilizing the non-polymeric coupling agent formulation is provided, as well as a method making the masterbatch.
EP 3919265 A1 20211208	Deutsch Zentr Luft & Raumfahrt et al. (DE)	**Exterior wall segment for a railway vehicle, railway vehicle and method for manufacturing an exterior wall segment.** The invention relates to an exterior wall segment for an exterior wall arrangement of a railway vehicle comprising a plurality of exterior wall segments, the exterior wall segment comprising a sandwich composite structure comprising a core element, an outer cover element and an inner cover element, the outer and inner cover elements covering the core element at least in sections, preferably entirely or substantially entirely, on mutually remote sides thereof, wherein the core element is made of a wooden material. The present invention also relates to a railway vehicle and to a method for manufacturing an exterior wall segment of a railway vehicle.
WO 2021196075 A1 20211007	Hewlett Packard Development Co (US) et al.	**Reinforced bio-fibre composites.** A reinforced bio-fibre composite for injection molding comprising: a bleached, neutralized and spray dried bio-fibre; and a resin. A process for preparing a reinforced bio-fibre composite for injection molding and an enclosure for an electrical device comprising an injection molded reinforced bio-fibre composite are also described.
WO 2021241539 A1 20211202	Mitsubishi Gas Chemical Co (JP)	**Cellulose fibers, fiber-reinforced resin composition, method for producing cellulose fibers, and method for producing fiber-reinforced resin composition.** Provided are: cellulose fibers including cellulose II and having improved heat resistance; a fiber-reinforced resin composition; a method for producing the cellulose fibers; and a method for producing the fiber-reinforced resin composition. The cellulose fibers include cellulose II and have an imidazolium salt content of 1 mass% or less.
WO 2021213894 A1 20211028	Sika Tech AG (CH)	**Reinforced roof panel for mobile homes and refrigerated lorries.** The invention relates to a flat composite material with a base made of a flat, porous, rigid material and one or more elongated elements of a fibre-reinforced plastic material for reinforcing the base material, wherein the thickness of the elongated element is less than that of the flat, porous, rigid material. The invention also relates to sandwich panels, containing a composite material of this type, and a method for producing sandwich panels and composite materials of this type, as well as the use of elongated elements made of fibre-reinforced plastic material for reinforcing corresponding sandwich panels.
WO 2021209918 A1 20211021	Stora Enso OYJ (FI)	**Multilayer film comprising highly refined cellulose fibers.** The present invention relates to a method for manufacturing a multilayer film comprising highly refined cellulose fibers, the method comprising the steps of: a) forming a first wet web by applying a first pulp suspension comprising highly refined cellulose fibers on a first wire; b) partially dewatering the first wet web to obtain a first partially dewatered web; c) forming a second wet web by applying a second pulp suspension comprising highly refined cellulose fibers on a second wire; d) partially dewatering the second wet web to obtain a second partially dewatered web; e) joining the first and second partially dewatered web to obtain a multilayer web; and f) further dewatering, and optionally drying, the multilayer web to obtain a multilayer film comprising highly refined cellulose fibers; wherein at least one of said first and second pulp suspension comprises lignin at a concentration in the range of 0.1-50 wt%, based on the total dry weight of the pulp suspension.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021226722 A1 20211118	Univ Guelph (CA)	**Compostable oxygen barrier comprising a biodegradable polymer matrix and biocarbon.** A biodegradable composite comprising a polymeric matrix including but not limited to poly lactide (PLA), poly (butylene succinate) 20 (PBS), poly(butylene succinate adipate) (PBSA), including bio-based PBSA (BioPBSA), poly(butylene adipate-co-terephthalate) (PBAT), polycaprolactone (PCL), polyhydroxyalkanoate (PHA(s)), poly(3-hydroxy)butyrate (PHB), poly(3-hydroxybutyrate-hydroxyvalerate) (PHBV), copolyester of the monomers 1.4-butanediol, adipic acid and terephthalic acid (Ecoflex™) and polypropylene carbonate (PPC), and biocarbon, a.k.a. biochar or pyrolyzed biomass as a sustainable filler. The biodegradable composite achieves high oxygen barrier with balanced water barrier. Also, a method of manufacturing the biodegradable composite and articles of manufacturing comprising the biodegradable composite. The articles of manufacturing have application in limiting gas permeation into a package and extending shelf life of a material.
WO 2021208062 A1 20211021	Univ South China Tech (CN)	**Dynamically covalently cross-linked cellulose-based bioplastic, wood-plastic composite material, preparation method therefor, and use thereof.** The present invention belongs to the field of material chemistry, and specifically discloses a dynamically covalently cross-linked cellulose-based bioplastic, a wood-plastic composite material, and a preparation method therefor. Said method reconstructs a hydrogen bond network between cellulose molecular chains into a dynamic covalent bond link network, thereby preparing a cellulose-based bio-based plastic that is heat-processable, has a high strength and a high modulus, and is degradable and recyclable. Compared with most existing cellulose-based materials linked by hydrogen bonds, the cellulose-based bioplastic prepared by the present invention is cross-linked by dynamic covalent bonds, which enables the cellulose-based plastic to have excellent reprocessing, thermal processing and degradable properties. In addition, because interface compatibility can be improved by means of hydrogen bond interaction between the two phases, the present novel wood-plastic composite material prepared from cellulose- and bio-based plastic and biomass has higher tensile strength and a higher Young's modulus.
WO 2021211050 A1 20211021	Vaelinge Innovation AB (SE)	**A method for producing a building element, a pressing device and a method of embossing a wooden surface.** The present disclosure relates to a method for producing a building element, including providing a substrate, applying a thermosetting binder on the substrate or on a wood veneer layer, arranging the wood veneer layer on the substrate with the thermosetting binder intermediate the substrate and the wood veneer layer, arranging an elastic or formable sheet including a polymeric material between the wood veneer layer and a press surface of a pressing device, applying heat and pressure by the pressing device on the elastic or formable sheet, the wood veneer layer, the thermosetting binder, and the substrate, thereby forming a building element including the substrate and the wood veneer layer attached to the substrate by the thermosetting binder, after applying heat and pressure, removing the elastic or formable sheet from the wood veneer layer. The disclosure also relates to a pressing device for embossing a wooden surface and a method of embossing a wooden surface.
EP 3904447 A1 20211103	Zouping Damei Rubber And Plastic Tech Co Ltd (CN)	**Multi-color wood-plastic molded material, a process for producing the same and a wood-plastic composite board.** Provided is a multi-color wood-plastic molded material, which is made of a color masterbatch and a wood-plastic base material, wherein a ratio λ of a modulus of elasticity in tension (Et) of the color masterbatch to a modulus of elasticity in tension (Et) of the base material is from 0.26 to 1.47. A process for producing the multi-color wood-plastic molded material is also provided, comprising mixing and melt-extruding the color masterbatch and the base material. A wood-plastic composite board comprising the multi-color wood-plastic molded material is further provided. The multi-color wood-plastic molded material has two or more colors and exhibits a texture which is mixed and changes gradually and is similar to textures of natural woods on the outer surfaces and in the interior.

Bioplásticos

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021201830 A1 20211007	Common Grounds Lab Inc (US)	**Three-dimensional printed compositions using organic substrates such as coffee, pistachio shells and coconut shells, with bacteria-based binders, coatings for three-dimensional printed compositions, and processes related to the same.** The use of bacteria-based binders to bind and strengthen 3D printed compositions; bio-plastic 3D printing materials comprised of combinations of particles of organic substrates such as coffee, pistachio shells and coconut shells, as well as sand (and combinations of one or more of the foregoing); processes for creating scent-free bio-plastic 3D printing material and products from such particles; the application of a copper finish, chrome finish and powder finish to bio-plastics made from such particles; and products and fixtures, such as sinks, toilets, faucets, coffee mug molds, lighting fixtures, and coffee cups, comprising non-flammable bio-plastic created by a process of 3D printing from such particles. Processes for imparting color or structure or surface texture to these and binding and strengthening them using enzyme-secreting bacteria.
WO 2021251049 A1 20211216	Kaneka Corp (JP)	**Method for producing polyhydroxyalkanoic acid and use of same.** The purpose of the present invention is to provide a production method by which a PHA having a large particle size (for example, a PHA powder) can be obtained at a lower hot-air temperature. To solve this problem, provided is a method for producing a PHA, said method comprising a step for spray-drying an aqueous suspension that contains a polyhydroxybutyric acid copolymer (A) having a composition ratio of 3HB unit/3HH unit of from 92/8 to 100/0 and a polyhydroxybutyric acid copolymer (B) having a composition ratio of 3HB unit/3HH unit of from 75/25 to 91/9, and step (b) for spray-drying the aqueous suspension prepared in step (a).
WO 2021207700 A1 20211014	Poly Med Inc (US)	**Methods and compositions comprising degradable polylactide polymer blends.** Disclosed herein polylactide polymer blend compositions, and methods of making and using such compositions.
WO 2021193846 A1 20210930	Sumitomo Forestry (JP)	**Method for producing PHA using agricultural waste.** A method for producing a polyhydroxyalkanoate that includes the following steps: (a) a step for culturing a micro-organism with a culture medium containing agricultural waste that has not been chemically or biologically pre-treated; and (b) a step for obtaining a polyhydroxyalkanoate as product of the culture.
WO 2021193847 A1 20210930	Sumitomo Forestry (JP)	**Method for producing PHA using sea water.** A method for producing a polyhydroxyalkanoate that includes the following steps: (a) a step for culturing halobacteria with a culture medium containing sea water; and (b) a step for obtaining a polyhydroxyalkanoate as product of the culture.
WO 2021191503 A1 20210930	Teknologian Tutkimuskeskus VTT OY (FI)	**Methods for depolymerisation of polylactic acid.** The present invention relates to a method of polylactic acid (PLA) depolymerisation. PLA is partially depolymerised with volatile solvent and acid. This step may be followed by enzymatic hydrolysis.
WO 2021214120 A1 20211028	Total Res & Technology Feluy (BE)	**Process for polymerising lactide into polylactic acid.** The present invention relates to a process for polymerising lactide into polylactic acid. The present invention also relates to reactor configuration for polymerising lactide into polylactic acid.
WO 2021247245 A1 20211209	Univ Texas Tech System (US)	**Method of making cellulose bioplastics.** The present invention includes a bioplastic and a method of making a bioplastic comprising the steps of: dissolving a low quality cellulose biomass in a solvent, wherein low quality is defined as having little to no textile value; regenerating cellulose fibers by removing the solvent; plasticizing the cellulose fibers in the presence of a polyol into a plasticized film; and hot pressing the plasticized film into the bioplastic.
WO 2021233935 A1 20211125	Venvirotech Biotechnology SL (ES)	**Process for isolating PHA from a PHA-rich bacterial biomass.** The present invention relates to a method for isolating polyhydroxyalkanoate (PHA) from a PHA-rich bacterial biomass, to the PHA isolated by said method and to a PHA having specific properties. The method comprises treating an aqueous suspension of the PHA-rich bacterial biomass with a minimal amount of sodium hypochlorite, a methanol wash and extraction of PHA from the biomass with dimethyl carbonate (DMC).

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021217299 A1 20211104	Wanhua Chemical Sichuan Co Ltd et al. (CN)	**Production method for preparing polylactic acid by means of ring-opening polymerization method, and prepolymer mixture and polylactic acid.** The present invention relates to the technical field of the production of polylactic acid, and in particular to a production method for preparing polylactic acid by means of a ring-opening polymerization method, and a prepolymer mixture and the polylactic acid. The production method comprises: (1) enabling an initiator, a catalyst and a monomer I to be in contact in a production device to undergo a ring-opening polymerization reaction, so as to generate a prepolymer mixture containing a polylactic acid prepolymer; and (2) enabling the prepolymer mixture and a monomer II to be in contact with one another to undergo a reaction, so as to generate a high molecular weight polylactic acid. The monomer I and the monomer II are the same or are different, and each independently comprises lactide. The production method provided by the present invention can reduce the fluctuation in the feeding quality of the initiator and the catalyst, and can improve the production stability during the production process.

Bioproductos químicos (biofertilizantes, biocosméticos, biofarmaceúticos...)

Biofertilizantes, bioadhesivos, etc.

Nº Publicación	Solicitante (País)	Contenido técnico
EP 3892716 A1 20211013	Biofor System DOO (RS)	**Novel plant growth promoting bacterial strains, an improved method for encapsulation of bacteria and a biofertilizer comprising encapsulated bacteria prepared by the said method.** The present invention belongs to the field of agriculture, more particularly to the field of organic fertilizers which contain cultures of live and active microorganisms. The invention relates to novel bacterial strains simultaneously exhibiting production of phosphatases for mineralization of organic phosphorus compounds, and phosphorus solubilisation for solubilizing insoluble phosphorus salts. Further, the invention also relates to an improved method for encapsulation of bacteria and a bio fertilizer comprising encapsulated bacteria prepared by the said process. Sodium alginate, calcium chloride, starch and optionally a colouring are used as external encapsulation media, wherein the bacteria are added to the encapsulation mixture with their whole microbial media (cells plus media containing unprocessed components and microbial products). This is essential, since microbial products have stimulus effects on plants while residual components of medium can bust microbial activity and help microbial culture activation. A further characteristic of the process is slow drying of encapsulates at mild temperatures, which results in evaporated water and further cell stabilization.
WO 2021249899 A1 20211216	Borealis AG (AT)	**Stable lignin-phenol blend for use in lignin modified phenol-formaldehyde resins.** The invention refers to a stable lignin-phenol blend for use in lignin modified phenol-formaldehyde resins comprising lignin in an amount between 10-80 wt%, phenol in an amount between 15-90 wt%, and a solubilizer in an amount between 0% - 25 wt%. The invention refers also to a method obtaining such a stable lignin-phenol blend and the use of thereof.
WO 2021221075 A1 20211104	Bridgestone Corp (JP)	**Adhesive composition for organic fiber cord, rubber-organic fiber cord composite, and tire.** The present invention addresses the problem of providing: an adhesive composition that is for an organic fiber cord, that has excellent adhesion even when resorcin and formalin are not included therein, that has a light impact on the environment, and that also has excellent mechanical stability and storage stability; and a rubber-organic fiber cord composite and a tire that have a light impact on the environment, high producibility, and excellent adhesion between the rubber and the organic fiber cord. This problem is solved by: an adhesive composition that is for an organic fiber cord and that is characterized by containing an epoxy compound (A), a compound (B) containing an amide group and an amino group per molecule, and rubber latex (C); a rubber-organic fiber cord composite characterized by comprising a rubber member and an organic fiber cord and by having at least a portion of the organic fiber cord coated with said adhesive composition; and a tire characterized by comprising said rubber-organic fiber cord composite.
WO 2021243235 A1 20211202	Cargill Inc (US)	**Engineered wood adhesives and engineered wood therefrom.** According to various examples of the present disclosure, an engineered wood precursor mixture includes a plurality of wood substrates and a binder reaction mixture present in a range of from 3 parts to 25 parts per 100 parts of the dry weight of the plurality of wood substrates. The binder composition includes an aqueous portion. The aqueous portion includes a carbohydrate-containing component in a range of from 2 wt% to 85 wt% based on a dry weight of the binder reaction mixture. The carbohydrate-containing component includes glucose, fructose, or a mixture thereof. The combined wt% of glucose, fructose, or mixture thereof in the carbohydrate-containing component is at least 60 wt%. The aqueous portion further includes 0.1 wt% to 10 wt% sodium trimetaphosphate based on a dry weight of the binder reaction mixture.

Nº Publicación	Solicitante (País)	Contenido técnico
EP 3929251 A1 20211229	Clariant Int Ltd (CH)	**Bio-based additives based on micronised rice bran waxes.** The invention relates to rice bran wax oxidates, which have been optionally derivatized, and micronized wax additives (mWA), comprising optionally derivatized rice bran wax oxidate, with a volume-average particle size d50 between 1 and 50 µm, their production and their use in printing inks, varnishes and coatings.
WO 2021230546 A1 20211118	Korea Res Inst Chemical Tech (KR)	**Chitosan nanofiber-based bioadhesive composition modified with guanidinium ion, and method for producing same.** The present invention relates to a bioadhesive composition and a method for producing same, wherein the bioadhesive composition comprises: a chitin or a chitosan nanofiber modified with a substituent including a guanidinium ion; and a solvent. The bioadhesive composition has the properties of a low-viscosity sprayable liquid, provides excellent adhesion even when exposed to UV, heat, and oxygen, and can be used as a hydrogel having hemostatic properties or an adhesive for use in living tissue.
WO 2021245531 A1 20211209	Stora Enso OYJ (FI)	**A method to produce an adhesive component comprising starch and microfibrillated cellulose, an adhesive and products.** The present invention relates to a method for the production of an adhesive component wherein said method comprises the following steps: providing a suspension comprising starch granules, adding a suspension comprising microfibrillated cellulose to the suspension comprising starch granules, drying the starch granules and microfibrillated cellulose suspension to a dry content above 70 wt-% to form said adhesive component. The invention also relates to an adhesive, a corrugated board, paper and paperboard comprising said adhesive and to the adhesive component produced according to the method.
WO 2021220363 A1 20211104	Teraoka Seisakusho KK (JP)	**Adhesive tape.** In order to provide an adhesive tape that is unlikely to deform, that is capable of suppressing stickiness on the lateral surfaces of a tape, that satisfies required characteristics, and that can reduce greenhouse gas emissions, this adhesive tape is provided with, on a base material obtained by laminating polyolefin on plant-derived fibers, an adhesive agent layer containing natural rubber, a wood-base filler, a plant-derived plasticizing agent, and a tackifier. The biobased content of the adhesive tape is 50% or more, but can be set to 90% or more by using bio-polyolefin as the polyolefin for the substrate and by using, as the tackifier, a plant-derived tackifier.
EP 3889234 A1 20211006	Tereos Starch & Sweeteners Europe (FR)	**Adhesive composition containing beetroot pulp.** The present invention relates to an adhesive composition, preferably for corrugated board, comprising: cellulose; hemicellulose; starch; sodium hydroxide; boric acid or a derivative thereof, such as borate or borax; and water.
WO 2021203188 A1 20211014	Univ Western Ontario (CA)	**Process for the production of bio-based formaldehyde-free wood adhesives from lignocellulosic biomass.** The present disclosure provides a process for the synthesis of bio-based formaldehyde-free wood adhesive with lignin and cellulose derived bio-oil which can be generated from the fractionation/liquefaction of lignocellulose biomass such as agricultural and forestry wastes. Curable groups are introduced onto the bio oil through functionalization reaction with cyclic anhydrides such as maleic anhydride, citric anhydride, phthalic anhydride, succinic anhydride, methyl succinic anhydride. Wood adhesives are formulated with the functionalized bio oil by addition of water and curing agents. Two-ply plywood samples were prepared following the ASTM International Standard 2017, D2339-98 and cured on a hot press between 190-200 °C for 3-4 min under 3 MPa pressure. The plywood samples have dry and wet strengths in the range of up to 3.5 MPa with over 80% wood failure.

Biocosméticos, Biofarmaceúticos

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021198051 A1 20211007	Covestro Deutschland AG (DE)	**Bio-based polyurethane dispersions for decorative cosmetic applications.** The invention relates to decorative cosmetic compositions containing specific polyurethanes or aqueous dispersions thereof and containing constituents that produce decorative effects.
WO 2021242070 A1 20211202	D R Nano Co Ltd (KR)	**Photoreactive cosmetic composition for enhancing skin elasticity and reducing skin wrinkles, and preparation method therefor.** The present invention relates to a photoreactive cosmetic composition for reducing wrinkles, and a preparation method therefor, and, more specifically, provides a photoreactive cosmetic composition for enhancing skin elasticity and reducing skin wrinkles, the composition containing, as an active ingredient, hypericin, which is in a Hypericum perforatum extract, and thus enhances collagen synthesis during light irradiation.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021245081 A1 20211209	Oreal (FR)	**Composition comprising at least three types of polysaccharides, at least one pasty compound of plant origin and water.** The present application relates to a cosmetic composition comprising: - at least three types of polysaccharides (PS): a- A branched homopolysaccharide, such as a scleroglucan; b- A linear polysaccharide, preferably a linear heteropolysaccharide, such as a pectin; and c- A branched heteropolysaccharide, such as a xanthan gum; - at least one pasty compound of plant origin, and - water. Another subject of the present invention is the use, as a thickener and/or gelling agent in a cosmetic and/or dermatological composition, of at least three types of specific polysaccharides, for improving the consistency of the composition, in particular its in-jar hold, while at the same time making it lighter and/or less tacky when taken up with the finger.
WO 2021246862 A1 20211209	Petroliam Nasional Berhad Petronas (MY)	**Polyol esters from biobased feedstocks for use as emollient in personal care applications.** Provided are personal care compositions comprising ester polyol esters, ester polyol esters, manufacturing methods thereof, and the use of ester polyol esters in personal care compositions.
WO 2021217241 A1 20211104	Purcann Pharma Inc (CA)	**Method for producing a purified cannabaceae biomass extract.** The present disclosure relates to a method for producing a purified cannabaceae biomass extract, wherein a crude alcoholic cannabaceae biomass extract comprising at least two cannabinoid compounds in an alcoholic solvent is circulating through a powdered layer of activated carbon and the purified cannabaceae biomass extract is recovered with a ratio of cannabinoid compounds in the purified cannabaceae biomass extract is higher than the ratio of the cannabinoid compounds in the crude alcoholic cannabaceae biomass extract.
WO 2021191548 A1 20210930	Roquette Freres et al. (FR)	**Emulsifying and texturing composition based on starches and gums, for cosmetics.** The application relates to a solid composition for use in cosmetics, comprising at least one modified starch carrying at least one hydrophobic and/or amphiphilic functional group, at least one modified starch carrying at least one hydrophilic functional group, at least one gum of microbial or fungal origin, and at least two plant-based gums. Such a composition has emulsifying and texturing properties.
WO 2021224575 A1 20211111	Setalg (FR)	**Cosmetic composition comprising at least one calcareous red algae.** The invention relates to a cosmetic care and/or makeup composition characterised in that it comprises at least one calcareous red algae, at least one filler, and at least one fatty substance, and in that the composition is in the form of powder and is free of talc, mica, silica and titanium dioxide. The invention also relates to the use of a calcareous red algae as an agent promoting moisturising or as a mattifying agent for the skin.
WO 2021209593 A1 20211021	Soc Ind Limousine Dapplication Biologique (FR)	**Active principle comprising a peel extract of immature punica granatum fruit and uses for preventing and/or combatting acne.** The invention relates to a cosmetic or dermatological active principle comprising at least one peel hydrolysate of immature Punica granatum fruit, which may be in liquid form, in solid form or in the form of a film. The invention also relates to a composition including same, to a preparation method and also to the use of this active principle for preventing and/or combatting acne.
WO 2021237215 A1 20211125	Univ Louisville Res Found Inc (US)	**Compositions and methods for preventing and/or treating microbial infections.** Provided are methods for inhibiting immune responses against microbial antigens. In some embodiments, the methods include administering to the subject a composition containing a plurality of plant-derived exosome-like particles to inhibit immune responses against microbial antigens. Also provided are methods for inhibiting development of septic shock in subjects, for inhibiting development of cytokine storm in subjects, and for inhibiting S ARS-Co V -2-induced cytopathogenic effect. Also provided are compositions that include an exosome-derived nanoparticle comprising a first lipid bilayer and a second lipid bilayer coating the exosome-like nanoparticle and/or fused with the first lipid bilayer, wherein the second lipid bilayer comprises a targeting molecule, and methods for using the compositions to treat diseases, disorders, and conditions and/or to target a therapeutic agent to a cell, tissue, and/or organ of interest.
WO 2021222105 A1 20211104	Zera Inc (US)	**Plant-based absorbent article.** An absorbent article, such as, for example, a diaper, that is toxin-free and made from plant-based, biobased, all natural, clean ingredients. In one embodiment, the absorbent article is a diaper made from plant-based resin, comprising: (i) a first layer, wherein the first layer is a cotton top sheet with a wax-based coating deposited on an exterior surface of the first layer (adjacent to the wearer's skin, or "user-facing"); and (ii) a second layer, wherein the second layer is an acquisition/distribution layer (ADL), and wherein the ADL is comprised of two sub-layers of different materials, a first sublayer (210) comprising an apertured film acquisition sub-layer disposed on top of, and laminated to, a second sub-layer (2 comprising a non-woven acquisition layer.

Bioaditivos alimentarios

Nº Publicación	Solicitante (País)	Contenido técnico
EP 3799723 A1 20210407	ADM Wild Europe GmbH & Co Kg (DE)	**Foamable composition and foam.** The present invention relates to a foamable composition comprising 0.05 to 10 wt% of a plant germ flour, 0.1 to 15 wt% of a thickening agent; 0.1 to 35 wt% of a natural fiber and water, based on the total weight of the composition. The invention further relates to a foam obtainable from said foamable composition, a method for producing said foamable composition comprising mixing the ingredients with water, the use of said foamable composition or said foam in a food product and a food product comprising said foamable composition or said foam.
WO 2021097025 A1 20210520	Dupont Nutrition Biosci APS (DK) et al.	**Process for reducing oxidation of a foodstuff and related compositions.** This specification relates to a process for reducing oxidation of a foodstuff, an antioxidant composition for use in such a process, and a foodstuff wherein oxidation is reduced by such a process.
WO 2021056085 A1 20210401	Ecopartners Eood (BG)	**Method and installation for flavoring of vegetable oils/olive oils by utilization of natural volatile organic aroma compounds emitted by vegetable products, and products obtained by the method.** The present invention relates to the food industry field and in particular to a method, technology and installation for flavoring of natural vegetable oils / olive oils for the needs of the gourmet industry. The process according to the invention relates to the natural flavoring of oils / olive oils with highly volatile aroma organic compounds and comprises the extraction the highly volatile aroma organic compounds as a gas stream and their complete transfer into vegetable oils / olive oils subject to flavoring. The transfer of the highly volatile aroma organic compounds in their full volume is carried out by bubbling these compounds in a gaseous state in oil / olive oil in a liquid state under the conditions of regulated liquid and gas phase.
WO 2021111396 A1 20210610	Good Srl (IT)	**Product, or preparation, to flavor dishes.** Product, or preparation, to flavor dishes, both hot and cold, in particular consisting of appetizers, vegetables, sauces, first courses and/or main courses, in particular based on meat and fish, or other; including a flavoring agent comprising, or consisting of, fish.
WO 2021081049 A1 20210429	Kalamazoo Holdings Inc (US)	**Light stable natural yellow colorant systems in pickled and fermented vegetable applications.** The present invention comprises a novel natural yellow colorant system to enhance the appearance of pickled and/or fermented vegetable products. Individually ail-natural yellow pigments failed light stability investigations in pickled and/or fermented vegetable products - either the yellow hue of the brine solution faded, or the pulp/skin of the vegetable turned white, or both. Surprisingly combinations of these same individual natural yellow pigments not only created brine hues and vegetable coloring comparable to FD&C Yellow # 5 products but remained stable in accelerated Sight stability investigations designed to mimic the real-time shelf-life of the products.
WO 2021076550 A1 20210422	Sensient Colors LLC (US)	**Beverages with improved particle suspension properties, and methods of making the same.** Beverages with improved particle suspension properties are disclose, along with methods of making the same. The beverages include a low-acyl gellan gum and insoluble particles. The low- acyl gellan gum undergoes a gel transition that provides adequate gelation to maintain the particles in suspension. The low-acyl gellan gum undergoes the gel transition below a threshold above which the particles and/or a gelled portion of the gum would rise to the top of the beverage via bubbles moving upward through the beverage.
WO 2021106839 A1 20210603	Taiyokagaku Co Ltd (JP)	**Squid-like texture composition.** [Problem] To provide a squid-like texture composition. [Solution] A squid-like texture composition comprising a curdlan (A), a saccharide (B), and insoluble fibers (C), wherein the mass ratio of A:B:C is 100 : 5 to 450 : 1 to 100. In this case, the particle size of the insoluble fibers (C) is preferably such that 80 percent or more thereof passes through a 300-μm mesh, the average particle size thereof is preferably 100 μm or less. The saccharide (B) is preferably starch syrup.
WO 2021076608 A1 20210422	Tate & Lyle Ingedients Americas Llc (US)	**Flavor altering and/or sweetness enhancing compositions and methods and food and beverage products based thereon.** The present disclosure provides flavor altering and/or sweetness enhancing compositions, methods, and food and beverage products using a soluble oligomeric component selected from soluble dietary fiber and polydextrose to alter flavor and/or enhance sweetness.
WO 2021067568 A1 20210408	Univ California (US)	**Soy proteins for preparation of gels, fibers and films.** The present invention provides compositions of soy protein gel fibers, soy protein fiber membranes, and soy protein films. The present invention also provides methods of making the soy protein compositions and also uses of the compositions.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021105953 A1 20210603	Univ Catolica Portuguesa et al. (PT)	**Multifunctional extracts of sugarcane straw or bagasse and uses thereof.** Provided herein are extracts of sugarcane straw or bagasse, methods of preparing the extracts, and the use of the extracts in compositions that have antioxidant activity, anti-inflammation activity, and antimicrobial activity that can be used as multifunctional ingredients. Further provided are methods of using the extracts to treat or ameliorate conditions involving oxidation, inflammation, skin and food enzymes inhibition activity capacity and microbial growth.
WO 2021053259 A1 20210325	Univ Sevilla (ES)	**Method for extracting, from olive leaf, oleuropein in a phenolic fraction; functional food composition; and use.** The present invention relates to a method for extracting, from olive leaf, a phenolic fraction containing oleuropein, which comprises: heating a mixture of crushed dry olive leaf and a deep eutectic solvent of edible natural sugars and water; and filtering to obtain a precipitate and an aqueous phase, wherein the aqueous phase contains the phenolic fraction with the oleuropein. The invention also relates to a functional food composition with an oleuropein content of 80-85% by weight with respect to the weight of the total phenolic extract, and to the use thereof in the food, cosmetic or pharmaceutical industry.

Bioproductos alimenticios para animales

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021126121 A1 20210624	Ankara Ueniversitesi Rektoerluegue (TR)	**Herbal feed additive.** The present invention relates to a product that is made of an herbal mixture comprising saturated and unsaturated fatty acids together with components with bioactive sulfur content and can be used in fish feeds as suspension.
WO 2021138403 A1 20210708	Calyxt Inc (US)	**High oleic acid soybean oil.** The present disclosure relates to materials and methods for improving the oxidative stability and performance attributes of soybean oil. For example, provided are soybean oil compositions containing soybean oil derived from seed of a soybean plant comprising an induced deletion in at least one FAD2-1A allele and at least one FAD2-1B allele, having an oleic acid content of at least about 80% based on the weight of the total fatty acids of the oil, and having an oxidative stability index (OSI) value of greater than 25 hours to about 190 hours at 110° C.
WO 2021159182 A1 20210819	Crowe Michael (AU)	**A system and method for producing fodder.** The present invention relates to the devices, methods and systems for producing fodder. The invention provides an apparatus for processing trays of fodder comprised of germinated seed. The apparatus includes a harvesting zone in which fodder is separated from a tray, a seed depositing zone in which fresh seed is deposited onto the tray, and a conveyer for translating the tray between the harvesting zone and the seed depositing zone. The invention is adapted for use in the production of fodder from germinated seed for use in meat production or for the production of milk or other by-products of animal husbandry.
WO 2021127360 A1 20210624	Dupont Nutrition Biosci APS (DK) et al.	**Diet formulations.** Provided herein are poultry diets containing phytase polypeptides or fragments thereof wherein the diet contains no or substantially no inorganic phosphate.
WO 2021158927 A1 20210812	Dupont Nutrition Biosci APS (DK) et al.	**Feed compositions for animal health.** Provided herein, inter alia, are compositions comprising oxygen tolerant strains of Megasphaera elsdenii and methods of making and using the same to promote improvement of one or more metrics in an animal, such as increased bodyweight/carcass gain, increased feed intake, decreased feed conversion ratio (FCR), decreased medical costs, decreased transition period, decrease use of antibiotics, and reduced mortality.
WO 2021156332 A1 20210812	Embion Tech SA (CH)	**Use of ionic polymers in biomass processing for preparation of animal feed additive.** The invention relates to an animal feed additive comprising oligosaccharides, proteins, lipids, phenolic compounds and minerals, wherein the oligosaccharides comprise glucans, xylans, arabinans and mannans, and wherein degree of polymerisation (DP) of the oligosaccharides is DP1 to DP30 and to a method for preparing thereof from biomass.
WO 2021126159 A1 20210624	Hills Pet Nutrition Inc (US)	**Pet food compositions.** Described herein are pet food compositions comprising - in relevant part - effective amounts of betaine and carnitine. Methods of making and using these compositions are also described.
WO 2021163148 A1 20210819	Locus IP Co Llc (US)	**Methods and compositions for reducing deleterious enteric atmospheric gases in livestock.** The subject invention provides compositions and methods for reducing deleterious atmospheric gas emissions produced in livestock animals' digestive systems and/or waste. In preferred embodiments, a composition comprising one or more beneficial microorganisms and/or one or more microbial growth by-products is contacted with the livestock animal's digestive system and/or waste in order to, for example, control methanogenic bacteria therein.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021150521 A1 20210729	Minnemma John Murray (US)	**Methods of incorporating sustainable carbon supplements into animal feed.** The embodiments herein are directed to methods for incorporating high quality, sustainable carbon product into animal feed. In particular, the sustainable carbon product described herein for use in animal feed may be produced as byproducts of efficient, clean energy processes. Utilization of sustainable carbon product produced by such clean energy solutions can provide long-term benefits to the environment, while providing a high quality feed supplement for detoxification of animals.
WO 2021155104 A1 20210805	Provital Inc (US)	**Edible pet chew.** An edible pet chew (100) with a generally spherical first portion (102) is surrounded by a second portion (110), and in an implementation the second portion is surrounded by a third portion (120). The portions include components from plant and animal derived materials that are palatable to pets, and are mixed and combined to not create an excess of debris when consumed.
WO 2021173814 A1 20210902	Ralco Nutrition Inc (US)	**Compositions based on dietary fibers and essential oils.** Embodiments of the present disclosure describe a composition comprising a dietary fiber, one or more essential oils, and a carrier. Embodiments of the present disclosure describe a method of preparing a composition comprising contacting a dietary fiber and one or more essential oils with a carrier sufficient to form a composition for enhancing immune responses in subjects having or susceptible to having infections and/or diseases caused by gastrointestinal pathogens. Embodiments of the present disclosure further describe a method of administering a composition comprising administering a composition to a subject having or susceptible to having an infection and/or disease caused by a pathogen, wherein the composition comprises a dietary fiber, one or more essential oils, and a carrier.

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VT BIOMASA PARA LA BIOECONOMÍA

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