

## OBJETIVOS DE DESARROLLO SOSTENIBLE



## BOLETÍN BIOENERGÍA Y BIOPRODUCTOS

### El potencial innovador de la biomasa en la industria de la construcción

Actualmente, la integración de biomasa en la fabricación de materiales para la construcción es un campo en expansión, gracias a su capacidad para mitigar el impacto ambiental de los materiales tradicionales y fomentar la sostenibilidad.

La madera es uno de los materiales de construcción más comunes y versátiles derivados de la biomasa. Se utiliza en una amplia gama de aplicaciones, desde estructuras de madera maciza hasta la producción de biocomposites que combinan fibras de madera —como virutas, serrín o fibras naturales de cáñamo, lino o bambú— con resinas de origen biológico, tales como resinas epoxi a base de aceites vegetales o poliuretanos derivados de fuentes renovables. Los biocomposites combinan las propiedades naturales de la madera, como su aspecto estético y su capacidad para ser trabajada, junto con las ventajas de los materiales compuestos, como la resistencia y la durabilidad mejoradas. Además, ayudan a reducir el consumo de madera sólida, lo que los convierte en una opción más sostenible en algunas aplicaciones de construcción, como paneles estructurales, revestimientos o piezas de mobiliario.

Otro material utilizado en la construcción de viviendas es la paja. Comúnmente se utiliza en forma de balas comprimidas para crear muros aislantes y estructurales. Estos muros proporcionan una excelente capacidad de aislamiento térmico y pueden ser una opción económica y ecológica para la construcción de edificios energéticamente eficientes. También cabe destacar el cáñamo, que por ser un cultivo de rápido crecimiento y requerir menos agua y productos químicos que muchos otros cultivos, lo convierte en una opción sostenible para la construcción



Ladrillos ecológicos de cenizas.

Fuente: <https://materialesecologicos.es/ladrillos-ecologicos/>

En los últimos años ha aumentado significativamente el desarrollo de plantas de combustión de biomasa y, por consiguiente, la generación de cenizas de biomasa. Estos residuos pueden ser sustitutos parciales del cemento y de los áridos que componen el hormigón, dando lugar a hormigones eco-eficientes con una huella de carbono inferior a la de los convencionales. Igualmente, las fibras naturales derivadas de la biomasa como el lino o la celulosa, entre otros, se han estudiado como refuerzos en la matriz de cemento. Estas fibras pueden mejorar las propiedades mecánicas del hormigón, como la resistencia a la tracción y la tenacidad, y reducir la aparición de grietas.

Otro material derivado de la biomasa es el biochar o biocarbón, una sustancia similar al carbón vegetal que se produce mediante la descomposición de materia orgánica a altas temperaturas en ausencia de oxígeno. Este material lleva años utilizándose en el sector agrícola para tratar el suelo, en el ganadero como suplemento alimenticio o en el metalúrgico, entre otros muchos de sus usos. Actualmente, se utiliza como material de construcción para crear nuevos revestimientos interiores que están obteniendo excelentes resultados. Estos materiales permiten regular la humedad ambiental en los espacios interiores dada su gran capacidad para almacenar agua, creando un ambiente agradable tanto en invierno como en verano. Asimismo, proporcionan un eficiente aislamiento térmico y acústico, además de absorber la radiación electromagnética y reducir la carga electrostática. Son antibacterianos y fungicidas, reducen la presencia de ácaros y tienen propiedades desodorantes. Junto a las propiedades mencionadas, la aplicación de este material en exteriores mejora la calidad del aire, convirtiendo a los edificios en consumidores de carbono.

En esta introducción se pretende ofrecer una visión del grado de desarrollo de la tecnología, de modo que la Tabla 1 recoge numerosos ejemplos de documentos de patente referidos a los materiales antes mencionados, pertenecientes a solicitantes europeos y que se publicaron en los últimos tres años. Haciendo doble click en el número de publicación puede accederse al texto completo en espacenet de estos documentos.

**Tabla 1.** Documentos de patente

Nº Publicación	Solicitante (País)	Título
<a href="#">FI20195614A1</a>	Prefere Resins Finland OY (Finlandia)	Resin composition
<a href="#">WO2021005270A1</a>	UPM Kymmene Corp (Finlandia)	An aqueous binder composition for curtain coating or extrusion coating
<a href="#">WO2021047802A1</a>	Ecobrain AG (Suiza)	Manufacturing process for components from coffee grounds and their use
<a href="#">WO2021173018A1</a>	Politechnika Gdanska (Polonia)	The method of obtaining reactive polyols from wood-based waste, the method of manufacturing polyurethane materials from the obtained reactive polyols and reactive polyols obtained from wood-based materials
<a href="#">EP3930932A1</a>	CRH Nederland BV et al. (Países Bajos)	A composite
<a href="#">GB2598764A</a>	IP Parking International Ltd (Gran Bretaña)	Aggregate and methods for producing aggregate
<a href="#">ES2901848A1</a>	Tristancho Tello Maria del Carmen et al (España)	Composición de mortero y su uso en construcción
<a href="#">WO2022101163A1</a>	Freudenberg Performance Mat SE & Co KG (Alemania)	Bituminous membranes with biodegradable binder
<a href="#">RO134965A2</a>	Univ Babes Bolyai (Rumania)	Process for preparing fly ash-based composite cement reinforced with hemp fibers, with applications in the field of building materials
<a href="#">WO2022132077A1</a>	Kastamonu Ueniversitesi Rekoerluegue (Turquía)	Using whey protein-based natural adhesive in the production of MDF and composite board
<a href="#">EP4032943A1</a>	Ecobrain AG (Suiza)	Manufacturing process for components from sunflower seed shells, particle/polymer biocomposites, moldings and laminates comprising sunflower seed shells, and their use
<a href="#">WO2022185275A1</a>	Becchis Osiride SRL (Italia)	Acoustic damper material
<a href="#">WO2022258505A1</a>	BASF SE (Alemania)	Process of producing a lignocellulosic composite, corresponding lignocellulosic composite, and use thereof
<a href="#">WO2023277718A1</a>	Inst Superior Tecnico (Portugal)	High performance unsaturated polyester resins based on renewable resources
<a href="#">WO2023009093A2</a>	Tobb Ekonomi ve Teknoloji Univ (Turquia)	A construction block
<a href="#">CN115784702A</a>	Biocarbon Building GmbH (Alemania) et al.	Preparation method of carbon negative gypsum-based charcoal thermal insulation plastering mortar
<a href="#">ES2940129A1</a>	Univ Madrid Politecnica (España)	Procedure for obtaining a plaster-based construction material

Nº Publicación	Solicitante (País)	Título
<a href="#">WO2023108185A1</a>	Univ Wien Bodenkultur et al. (Austria)	Method for producing a composite material
<a href="#">WO2023117648A1</a>	BASF SE (Alemania)	Process of producing a lignocellulosic composite or a product thereof using dielectric heating
<a href="#">EP4215505A1</a>	Sika Tech AG (Suiza)	Cementitious compositions having biomass ashes, especially bagasse ashes, and uses thereof
<a href="#">WO2023143856A2</a>	Kuse Kolja et al. (Alemania)	Construction materials made of carbon fibres produced from CO2
<a href="#">EP4223719A1</a>	Lambda al Cuadrado SL (España)	Building material
<a href="#">EP4227072A1</a>	Empa Eidgenossische Mat & Forschungsanstalt (Suiza)	Acoustically insulating composite material
<a href="#">WO2023156738A1</a>	VICAT (Francia)	Binder comprising carbonated biomass ash
<a href="#">WO2023161663A2</a>	Kiss House Ltd (Gran Bretaña)	Material arid method
<a href="#">WO2023177279A1</a>	Atvasināta Publiska Persona Latvijas Valsts Koksnes Ķīmijas Institūts (Letonia)	A method for the production of lignocellulose loose-fill thermal insulation material
<a href="#">WO2023180116A1</a>	Poplac Dev SL (España)	Building material
<a href="#">WO2023227630A1</a>	Holcim Technology Ltd (Suiza)	Low carbon concrete composition and a method to produce a low carbon concrete composition
<a href="#">EP4286470A1</a>	Raiz Instituto de Investig da Floresta e Papel et al. (Portugal)	Biocomposite of micronized fibers of eucalyptus kraft pulp, bioplastics and additives and its production process
<a href="#">WO2023232683A1</a>	Hyperion BV (Países Bajos)	Component, in particular a railway sleeper, for use in track construction and method for producing components, in particular railway sleepers, for use in track construction
<a href="#">EP4289935A1</a>	Green Floor IP BV (Países Bajos)	Process of producing a building floor

# PATENTES BIOENERGÍA

Biocombustibles sólidos (pellets, biochars, bio RDFs, bio SRFs, etc.)		
Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">WO 2024034745</a> <a href="#">A1 20240215</a>	BKT Co Ltd (KR)	<b>System and method for converting organic waste into solid fuel by hydrothermal carbonization and producing energy.</b> Disclosed are a system and method for converting an organic waste into a solid fuel by hydrothermal carbonization and producing energy, in which energy consumption efficiency is improved. According to an aspect of the present invention, provided is an apparatus for the treatment of an organic waste, which is a treatment apparatus that decomposes an organic waste by a hydrothermal carbonization reaction and increases energy density, the apparatus comprising: a hydrothermal carbonization device which receives and carbonizes an organic waste; and a dehydrator which secondarily dehydrates the hydrothermally carbonized organic waste in a mechanical manner.
<a href="#">GB 2622593 A</a> <a href="#">20240327</a>	Hong Mei Bai (HK)	<b>Solid biomass fuel anti-coking additive.</b> A solid biomass fuel is derived from one or more sources of biomass, wherein the one or more sources of biomass comprise: straw, palm-derived material, nut shells, hemp, bamboo, corn cob, rice husk, fruit shells, crop residues, seaweed, calliandra calothyrsus, acacia mangium, albizia chinensis, hevea brasiliensis, grass, or any combination thereof; wherein the solid biomass fuel further comprises one or more aluminosilicate-containing clays (e.g. kaolin), one or more aluminosilicates (e.g. zeolites or feldspars), one or more pulverised fuel ashes, or a combination thereof, as an anti-coking additive.
<a href="#">ES 2961971 A1</a> <a href="#">20240314</a>	Imecnor Oficina Tecnica SL et al. (ES)	<b>Proceso de generación de energía eléctrica de alto rendimiento a partir del residuo del consumo del café.</b> Proceso de generación de energía eléctrica de alto rendimiento a partir del residuo del consumo del café. El proceso consiste en la recogida de la borra del café en establecimientos de hostelería mediante vehículos a motor y posterior almacenamiento de la materia prima húmeda o volcado directo a la tolva o tolvas de alimentación del proceso de secado. La materia prima circula a través del intercambiador o los intercambiadores de calor en paralelo simultáneamente al proceso de secado facilitando la homogeneización de la materia prima por un tornillo de transporte helicoidal hasta la cámara intermedia precedente a la alimentación de la caldera. Dicha cámara mantiene la combustión independiente del tubo de alimentación para evitar mezclas indeseadas de combustible y comburente en condiciones de combustión. Posteriormente se realiza la alimentación de la caldera y con ello la combustión del residuo y catálisis de los gases contaminantes según normativa de aplicación.
<a href="#">WO 2024058305</a> <a href="#">A1 20240321</a>	Gyuwon Tech Co Ltd (KR)	<b>Apparatus for drying solid fuel.</b> The present invention relates to an apparatus for drying a solid fuel and, more particularly, to an apparatus for drying a solid fuel capable of easily drying a solid fuel having a high moisture content. The present invention provides an apparatus for drying a solid fuel, comprising: a housing having a solid fuel inlet and a solid fuel outlet; a drying container disposed inside the housing and having a drying container inlet through which the solid fuel injected from the solid fuel inlet passes, and a drying container outlet through which the dried solid fuel is discharged, wherein the drying container has a heating medium flow space in which a heating medium flows between the inner surface and the outer surface thereof; a stirring device installed inside the drying container to be rotatable with respect to the drying container; a combustion chamber disposed below the drying container inside the housing and configured to transfer combustion heat generated during combustion of fuel to the heating medium in the heating medium flow space; and a flow passage that guides a combustion gas generated in the combustion chamber to the inside of the drying container.

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">WO 2024043805</a> <a href="#">A2 20240229</a>	Khripach Nikolaj Pavlovich et al. (RU)	<b>Method for decontaminating and recycling waste.</b> The invention relates to the field of processing different kinds of waste having a high moisture content and different particle sizes (fine, medium or coarse). A method for decontaminating and recycling waste includes compacting waste under pressure and producing briquettes, wherein waste having a moisture content of up to 10% is compacted in a mould, into which a layer of a heat-shrinkable polymer material is first placed, and then a layer of waste is placed over said polymer material. The value of the compaction pressure can be variable according to the type of waste and its subsequent purpose, taking into account that the minimum compaction pressure value can be equal to 1 MPa, and the maximum value can be equal to 20 MPa. In the waste compaction process, briquettes are produced which are coated with a protective layer in the form of a polymer film formed when the polymer material is heated under the effect of the compaction pressure thereon. The technical result of the invention is the creation of a versatile technology for decontaminating and recycling (processing) waste, which allows for the decontamination and recycling of many different kinds of waste and the production of a highly ecological end product that is suitable for long-term storage without having a negative impact on the environment, and is also suitable for a wide range of uses or for subsequent processing to allow reuse depending on the purpose.
<a href="#">WO 2024034349</a> <a href="#">A1 20240215</a>	Mitsubishi Heavy Ind Ltd et al. (JP)	<b>Biomass grinding system and operating method for biomass grinding system.</b> Provided is a boiler system comprising: a biomass mill that grinds a biomass fuel; a boiler that combusts the biomass fuel ground by the biomass mill in a combustion device to generate vapor; an air preheater that heats air by means of exhaust gas discharged from the boiler; a first air supply path that supplies the heated air heated by the air preheater to the biomass mill; a first branch supply path that branches part of the heated air from the first air supply path; and a furnace bottom ash processing facility for using the heated air supplied from the first branch supply path to dry a non-combusted biomass fuel discharged from the boiler, and supplying the resultant to the combustion device again.
<a href="#">EP 4332436 A1</a> <a href="#">20240306</a>	SL Technik GmbH (AT)	<b>Biomass heating system with an improved electrostatic filter device.</b> It is a biomass heating plant for the combustion of fuel in the form of pellets and/or wood chips disclosed, the biomass heating plant having the following: a boiler with a casing; a firing device with a combustion chamber; a heat exchanger located downstream of the combustion chamber and flow-connected to the combustion chamber; an electrostatic filter device for filtering a flue gas produced in the combustion device, the filter device being located downstream of the heat exchanger and connected to the heat exchanger in terms of flow; a control device for controlling the electrostatic filter device; wherein the electrostatic filter device has the following: a tubular internal volume in which the flue gas flows; a first rod-shaped electrode, which is designed as a spray electrode; and a second tubular electrode, which is designed as a counter electrode; and an insulator to support the spray electrode; and a filter inlet through which the flue gas can enter the filter device; and a filter outlet through which the flue gas can escape from the filter device.
<a href="#">WO 2024018648</a> <a href="#">A1 20240125</a>	Tao Eng Co Ltd (JP)	<b>Waste food-residue reuse device, waste food- residue reuse method, waste food-residue hydrolyzed raw material, method of producing pellets or acquiring value information by producing pellets, dirty plastic waste treatment system and method, and resource recovery system and method.</b> [Problem] To remove the need for a high-temperature/high-pressure treatment environment in the use of hydrolysis treatment to treat waste food-residue that is discharged in large quantities, and enable suitable, inexpensive hydrolysis treatment at high treatment efficiency, in a manner suitable for the soft but viscous properties of the waste food-residue that is to be treated. [Solution] The invention comprises: a granulate mixture formation step in which, within a cylindrical body, waste food-residue and dewatered sludge are mixed by stirring to form a mixture, and during that formation the waste food-residue and the dewatered sludge are granulated, thus forming a granulate mixture in which the granulated waste food-residue is dispersed in the granulate dewatered sludge; and a recycling raw material formation step in which the granulate mixture and steam are introduced into a reactor, and mixed by stirring, and the waste food-residue in the granulate mixture is hydrolyzed into a low-molecular-weight material, thus forming a granulate pelletized raw material in which the hydrolyzed waste food-residue is dispersed in the hydrolyzed granulate dewatered sludge.

## Syngas

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">WO 2024002953</a> <a href="#">A1 20240104</a>	Bioeb (FR)	<p><b>Lignocellulose biomass extract, and method for obtaining a green synthesis gas.</b> The present invention relates to an extract obtained from lignocellulose biomass, a process for manufacturing said extract, and uses thereof. In particular, the present invention relates to an extract obtained from a lignocellulose biomass comprising cellulose and at least 1%, preferably at least 5% by weight of the total weight of the extract, of residual lignin.</p>
<a href="#">WO 2024008835</a> <a href="#">A1 20240111</a>	Denkgruen Energie und Ressourcen GmbH (AT)	<p><b>Method for producing fuel gas and/or synthesis gas.</b> The invention relates to a method for producing fuel gas and/or synthesis gas from: - one or more plastic(s) generated as waste; - one or more biopolymer(s) generated as waste; - one or more monosaccharide(s) generated as waste; or - any mixture of these wastes, the method comprising the following steps: a) forming a reaction mixture by mixing the waste or wastes with at least one basic hydrolysis agent or at least one basic hydrolysis agent dissolved in water; b) transporting the reaction mixture through a heated tube reactor (2), operated according to the counter current principle and having an inlet opening (3) and an outlet opening (4), wherein the reaction mixture is transported from the inlet opening (3) to the outlet opening (4) and, in the process, heated in the tube reactor (2) such that a gas flow, which comprises fuel gas and/or synthesis gas or which is fuel gas and/or synthesis gas, and a non-gaseous material fraction are formed from the reaction mixture; and c) drawing off the gas flow from the tube reactor (2) and removing the non-gaseous material fraction from the tube reactor (2).</p>
<a href="#">WO 2024046741</a> <a href="#">A1 20240307</a>	Fritsche Andreas (AT)	<p><b>Gasifier apparatus for obtaining combustible gas.</b> A gasifier apparatus (1) for obtaining combustible gas (2) from combustible material (3), especially from biomass, comprising - a reactor vessel (4) surrounding a reactor cavity (5), and - at least one introduction lock (6) for introducing the material (3) into the reactor cavity (5), and - at least one grid (7) in the reactor cavity (5), and - at least one gas outlet (8) for removal of the combustible gas (2) generated from the combustible material (3) from the reactor cavity (5), and - at least one discharge shaft (9) for discharging noncombustible foreign bodies (10) from the reactor cavity (5), wherein the gas outlet (8) and the discharge shaft (9) are disposed on the opposite side of the grid (7) from the introduction lock (6), wherein the grid (7) has at least one fixed grid element (11) and at least one grid element (14) which is disposed on the side of the fixed grid element (11) facing the introduction lock (6) and is rotatable about an axis of rotation (13) by means of a rotation device (12).</p>
<a href="#">WO 2024041663</a> <a href="#">A1 20240229</a>	Guangzhou Inst Energy Conversion Cas (CN)	<p><b>Device and method for preparing clean synthesis gas by means of organic solid waste pyrolysis-chemical chain reforming.</b> The present invention relates to the technical field of environmental protection and chemical chain application, and disclosed are a device and a method for preparing clean synthesis gas by means of organic solid waste pyrolysis-chemical chain reforming. The device comprises an electric motor, a pyrolysis gas pipeline, a chemical chain reforming area, a pyrolysis gasification area and a coke combustion area, wherein the chemical chain reforming area is provided with a honeycomb reactor, two argon inlets and an air outlet, and comprises both an air reaction area and a fuel reaction area. The pyrolysis gasification area is provided with a coke outlet, an organic solid waste inlet, a pipe opening, a grate furnace and a quartz baffle. The coke combustion area is provided with an argon inlet, an air inlet, an inclined plate and a vertical baffle. Compared with a traditional organic solid waste treatment device, the device of the present invention not only provides effective reduction, hazard-free and energy regeneration treatment of organic solid waste, but also realizes great reduction of the disposal cost during the treatment process. In addition, the device further has the characteristics of small initial investment, low operation difficulty, etc., and is applicable for a scenario with small handling capacity.</p>
<a href="#">WO 2024011005</a> <a href="#">A2 20240111</a>	Keller Arnold et al. (US)	<p><b>Systems and methods of producing synthesis gas and bio-oil from biomass.</b> A system and method of producing synthesis gas and bio-oil from biomass. The method comprises producing, in a gasification unit, synthesis gas from a carbonaceous feedstock, optionally cooling the synthesis gas discharged from the gasification unit, channeling the synthesis gas towards a hydrothermal processing unit, wherein the hydrothermal processing unit is configured to process a biomass feedstock contained in a pressurized water stream, transferring, in the hydrothermal processing unit, heat from the synthesis gas to the biomass feedstock, and producing a hydrothermal product from the biomass feedstock in the pressurized water stream.</p>

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">WO 2024002442</a> <a href="#">A1 20240104</a>	Sempercycle Aps (DK)	<b>Syngas production from waste materials.</b> The invention relates to a method for producing syngas from carbonaceous feedstock comprising two or more different compositions of carbonaceous material (e.g., plastics, textiles, biomass, organic matter, natural gas, biogas, carbon dioxide, waste gases), the method comprising; Gasification of the waste feedstock in one or more gasifiers by feeding the feedstock into a gasifier primary reaction zone with a temperature of 500-1000 °C, hereby generating: a first output stream; Feeding the first output stream from the first reaction zone into a gasifier secondary reaction zone 800460Q AC, hereby generating a second output stream comprising the syngas; Feeding the second output stream from the secondary reaction zone into a product synthesis reaction zone, hereby generating a fourth output stream; Separating the fourth output stream from the product reaction into a fifth liquid crude product stream, which is sent for further treatment (e.g., distillation) and at least a sixth and a seventh gas stream; At least part of the sixth gas stream is recycled to the product synthesis reaction zone for further conversion of CO and H <sub>2</sub> to the desired product; At least part of the seventh gas stream is looped; back to the primary reaction zone; Gasification parameters for the first and the second reaction zones are controlled to take into account the composition and amount of the recycled gas streams.
<a href="#">EP 4342962 A1</a> <a href="#">20240327</a>	Sintokogio Ltd (JP)	<b>Biomass gasification furnace.</b> [Problem] To provide a biomass gasification furnace that can efficiently produce high-quality fuel gas, and that can be realized with a compact structure.[Solution] A biomass gasification furnace 1 provided with an outer tube 10, an inner tube 20 provided inside the outer tube 10 so that a lower end 20b thereof is located higher than a lower end 10b of the outer tube 10, and a reactor 30 that heats the outer tube 10 from outside, wherein a combustion air supply portion 40 that supplies combustion air A is provided inside the inner tube 20 so as to be spaced from the lower end 20b of the inner tube 20, a biomass raw material F is supplied from above to the inside of the inner tube 20 so as to form an accumulation portion 100 in which the biomass raw material F has accumulated from the lower end 10b of the outer tube 10 to a location higher than the combustion air supply portion 40 inside the inner tube 20, a fuel gas G is produced in the accumulation portion 100, and the fuel gas G that has been produced is discharged through a space S between the inner tube 20 and the outer tube 10.

## Biogás

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">WO 2024034743</a> <a href="#">A1 20240215</a>	BKT Co Ltd (KR)	<b>Anaerobic digestion system for organic waste combined with thermal hydrolysis device and having improved energy consumption efficiency.</b> Disclosed is an anaerobic digestion system for organic waste, combined with a thermal hydrolysis device and having improved energy consumption efficiency. According to one aspect of the present invention, provided is an anaerobic digestion system for organic waste, combined with a thermal hydrolysis device, the anaerobic digestion system comprising: a thermal hydrolysis device that receives organic waste and thermally hydrolyzes the organic waste; a first storage tank that receives and stores liquid components discharged from the thermal hydrolysis device; an anaerobic digestion tank that receives the liquid components from the first storage tank to digest organic matter and generate biogas; and a dehydrator that mechanically dehydrates digested sludge discharged from the anaerobic digestion tank.
<a href="#">WO 2024024837</a> <a href="#">A1 20240201</a>	Inpex Corp (JP)	<b>Method and equipment for reducing flare gas, and method and equipment for reducing disposal amount of biogas.</b> A flare gas reduction method for reducing the amount of associated gas that is disposed of through flaring among associated gas generated during crude oil production, the method comprising a step in which hydrocarbons contained in a gas phase obtained through the gas-liquid separation of fluid from oil and gas production wells are decomposed into hydrogen and carbon materials. Flare gas reduction equipment for reducing the amount of associated gas that is disposed of through flaring among associated gas generated during crude oil production, the equipment comprising: a first transfer pipe for transporting at least a portion of a first gas phase obtained through the gas-liquid separation of fluid from oil and gas production wells; and a decomposition device for decomposing hydrocarbons contained in at least a portion of the first gas phase supplied from the first transfer pipe into hydrogen and carbon materials.

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">WO 2024047302</a> <a href="#">A1 20240307</a>	Institut National de Rech pour Lagriculture Lalimentation et Lenvironnement (FR)	<b>Treatment facility, in particular for the treatment of organic waste by fermentation.</b> The invention relates to a treatment facility for the treatment of fermentable solid products by fermentation, the facility comprising a reactor supported by a frame and a cartridge having an apertured region for storing the product, the reactor being provided with an inlet for products to be treated, an outlet for discharging the treated products, a biogas outlet, an opening for inserting an inoculum and an opening for discharging the leachate, the facility also comprising a tubular body and a liquid/solid separator, the body being closed at both ends by a closing element movable between an open position and a closed position, wherein one of the ends receives the products to be treated and the other of the ends discharges the treated products, each cartridge being slidably movable inside the body and the liquid/solid separator comprising a filter.
<a href="#">WO 2024043605</a> <a href="#">A1 20240229</a>	IUCF HYU (KR)	<b>Low-temperature distillation separation membrane process for separating carbon dioxide from high-concentration carbon dioxide gas mixture.</b> The present disclosure discloses a low-temperature distillation separation membrane process which, in order to separate carbon dioxide from a gas mixture containing a high concentration of carbon dioxide, such as biogas and exhaust gas generated from reformed hydrogen production, an integrated gasification combined cycle, etc., a separation membrane unit is used by being connected to/integrated with a low-temperature distillation unit, and energy required for cooling the gas mixture to a low temperature is supplied through a self-cooling method, and further, low-temperature heat exchange equipment is used in order to minimize energy consumption in the carbon dioxide separation process.
<a href="#">WO 2024003456</a> <a href="#">A1 20240104</a>	Kalmari Erkki et al. (FI)	<b>Arrangement and method for producing biogas from biomass.</b> The invention relates to an arrangement for producing biogas from biomass, which arrangement includes • a solid-structure dry reactor for processing biomass, the dry reactor having a fixed roof and a reactor chamber for digesting the biomass and the volume of the reactor chamber being defined by an intermediate cover, and • peripheral devices. In the dry reactor • the intermediate cover is configured to be lowered down onto the biomass in the reactor chamber and • a fan system is arranged in the space between the fixed roof and the intermediate cover in order to create a negative pressure in the space between the fixed roof and the intermediate cover in relation to the reactor chamber and to the outside air, by means of which negative pressure the intermediate cover is configured to rise. The invention also relates to a corresponding method for producing biogas from biomass.
<a href="#">WO 2024043768</a> <a href="#">A2 20240229</a>	Smart Power Co Ltd (KR)	<b>Variable intercooler having improved heat exchange efficiency, engine for power generator equipped with same, and biogas power generator.</b> The present invention relates to an intercooler which cools supply air that is to be provided to an engine and then provides same, an engine for a power generator equipped with same, and a biogas power generator. The variable intercooler having improved heat exchange efficiency, according to an embodiment of the present invention, comprises: a heat exchanger that carries out heat exchange between external air and supply air that is to be provided to an engine main body; and a cooling fan that provides external air so that the supply air passing through the heat exchanger and external air can undergo heat exchange, wherein the heat exchanger comprises a main heat exchange part through which the supply air passes and undergoes heat exchange with external air, and an expanding heat exchange part which, according to the efficiency of the heat exchanger, is inserted into or protrudes from the main heat exchange part so as to expand or reduce the size of the heat exchanger. Thus, the heat exchange efficiency is increased and the output of the engine can be increased.
<a href="#">WO 2024032884</a> <a href="#">A1 20240215</a>	Strabag Umwelttechnik GmbH (DE)	<b>Method of operating a fermentation device.</b> A method of operating a fermentation device having an elongated vessel and multiple stirrer devices comprises the following steps: - introducing substrate containing organic material via the at least one introduction opening, - moving and mixing the substrate in the vessel by means of the rotationally driven stirrer devices, - removing treated material via the at least one discharge opening, and - withdrawing biogas via the at least one draw opening. It is envisaged that the stirrer devices are driven by a drive device in at least two groups. Each group comprises at least one stirrer device. The stirrer devices of a first group are driven in at least one first time interval. Stirrer devices of a second group are stationary in the first time interval.



Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">WO 2024044785</a> <a href="#">A2 20240229</a>	Streamline Innovations Inc (US)	<b>Gas treatment unit, redox system and method for desulfurization of gases including biogas.</b> A gas treatment system configured to purify an influent gas stream including a hydrocarbon gas and a hydrogen sulfide gas comprises a reduction unit and an oxidation unit. The reduction unit includes at least one eductor configured to contact the influent gas stream with a primary stream including aqueous reducing reagent and release a purified hydrocarbon gas stream and a contacted primary stream including elemental sulfur. The oxidation unit includes at least one eductor configured to contact an oxidizing agent stream and a secondary stream including the primary stream and contacted primary stream and output a regenerated redox reagent stream.
<a href="#">EP 4310170 A2</a> <a href="#">20240124</a>	Trane Int Inc (US)	<b>Anaerobic waste digestion system.</b> A system and method are each directed to generating a biogas including methane by bacterial digestion of waste materials under anaerobic conditions. The waste digestion system includes three processing stages and a biogas production unit. The waste material is provided in the form of a water based slurry including solid particles having a distribution of particle sizes. The three processing stages are configured to remove and/or process the solid particles in the slurry, such that the biogas production unit receives a feedstock enriched in solid particles having a particle size suited for efficient digestion. The method generally includes processing the waste material in the three processing stages, digesting the waste material under anaerobic conditions, thereby generating the biogas.
<a href="#">EP 4339275 A1</a> <a href="#">20240320</a>	Univ Berlin Tech (DE) et al.	<b>Use of biomagnetism for biogas production with a recirculation of fermentation broth.</b> The invention relates to a method for producing biogas. An organic substrate and an enzyme are provided for this purpose. In addition, fermentation broth from a fermenter is recirculated to the enzyme and substrate to form a fermentation broth-enzyme-substrate complex. The fermentation broth-enzyme-substrate complex is exposed to a magnetic field and then returned to the fermenter.

### Bioalcoholes (bioetanol, biometanol, etc.)

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">WO 2024040321</a> <a href="#">A1-20240229</a>	Braskem SA (BR)	<b>Process for the recovery of low-boiling point components from an ethanol stream.</b> The disclosure provides a process for the production of ethanol and one or more low boiling compound from a fermentable carbon source. The ethanol and the low boiling compound(s) are produced using an ethanol-producing yeast modified to further produce the one or more low boiling point compounds. In one embodiment, the low boiling compound(s) are acetone, 1-propanol, and/or 2-propanol. Additionally, the disclosure provides a process for the isolation and purification of the one or more low boiling compounds from ethanol.
<a href="#">WO 2024039857</a> <a href="#">A1 20240222</a>	Dartmouth College (US)	<b>Cascade continuous fermentation of cellulosic biomass via consolidated bioprocessing.</b> A system for converting biomass to ethanol and other desired products is disclosed. The system comprises a plurality of bioreactors connected in series with mills between each bioreactor. This configuration leads to shorter reaction times, which is beneficial to industrial processes. The present disclosure relates to systems and methods for converting biomass efficiently using consolidated bioprocessing (CBP) for conversion of cellulosic biomass into fuels and/or chemicals without added enzymes and without thermochemical pretreatment.
<a href="#">WO 2024057333</a> <a href="#">A1 20240321</a>	Khaitan Rohit (N)	<b>A process for preparing bio products from biomass for a low carbon economy.</b> The present disclosure relates to a process for preparing bio-products from biomass. The present disclosure relates to ecologically sustainable process for preparation of 2nd generation ethanol by hydrolysis of celluloses of ligno-cellulosic biomass followed by co-fermentation of pentose and hexose sugars along with valorization of lignin to generate heat to produce steam & power and simultaneously produce precipitated silica and gypsum as additional bio-products. The present disclosure provides an efficient, cost-effective, eco-friendly, bio-safe and a circular biochemical process with recovery and reuse of chemicals and which is suitable for industrial preparation and providing a high yield process. There is zero liquid discharge and substantial reduction in carbon dioxide emissions as compared to burning fossil fuels. The main product from the process of this disclosure provides the platform for aviation fuels and preparation of green biodegradable plastics.

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">CN 117384774 A</a> <a href="#">20240112</a>	SDIC Biology Tech Investment Co Ltd (CN)	<b>Recombinant saccharomyces cerevisiae, construction method thereof and application of recombinant saccharomyces cerevisiae in production of ethanol by fermentation.</b> The invention relates to the field of microbial fermentation, and discloses recombinant saccharomyces cerevisiae, a construction method thereof and application of the recombinant saccharomyces cerevisiae in ethanol production through fermentation, and the recombinant saccharomyces cerevisiae contains an overexpressed xylose isomerase XI gene, an overexpressed xylose transporter TrXlt1 gene and an overexpressed xylulokinase XKS1 gene. The recombinant saccharomyces cerevisiae preferably comprises at least one non-synonymous mutation located on the Ccw14 gene, the Cox14 gene, the Atg33 gene, the Atp10 gene and the Ccc1 gene. The recombinant saccharomyces cerevisiae disclosed by the invention can efficiently utilize a cellulose raw material to ferment and produce ethanol, can tolerate the stress of high-concentration mash and inhibitors, has the advantages of high fermentation speed, high sugar consumption and high ethanol yield, and solves the problems of low xylose consumption speed, low ethanol yield and poor stress tolerance in the cellulosic ethanol industry.
<a href="#">WO 2024033858</a> <a href="#">A1 20240215</a>	Stam Agro NV (BE)	<b>Lignin binder.</b> Method for preparing a fermentation product from a fermentable mixture comprising the steps of: (i) bringing the fermentable mixture, comprising lignocellulosic biomass, into contact with microorganisms, enzymes, or a combination thereof; (ii) allowing at least part of the fermentable mixture to be processed by the microorganisms, the enzymes, or the combination thereof, whereby the fermentation product is obtained; (iii) purifying the fermentation product, wherein the fermentable mixture comprises a keratin-containing material, a hydrolysate of a keratin-containing material, or a mixture thereof, in an amount of between 0.01 and 15 m%, expressed in total amount of keratin-containing material and hydrolysate of keratin-containing material in g per g of fermentable mixture. The invention also relates to the use of a keratin-containing material, a hydrolysate of keratin-containing material, or a combination thereof for the fermentation of a fermentable mixture, comprising lignocellulose, to bioethanol.
<a href="#">WO 2024042186</a> <a href="#">A1 20240229</a>	Sund Group SRO (CZ)	<b>A process for production of alcohol from biomass comprising the steps of pretreatment, treatment and fermentation.</b> The present invention relates to the fermentation process for the production of alcohol from biomass comprising the steps of Pretreatment of the biomass comprising the steps of 1. steaming chips of biomass using water, 2. prehydrolysing the steamed biomass using NH <sub>4</sub> HSO <sub>3</sub> , cleaning the prehydrolysed product. Treatment of the prehydrolysed product comprising the steps of 8. hydrolysing the prehydrolysed product, 9. afterhydrolysing the obtained the hydrolysed product, cleaning the hydrolysed product. Fermentation of the hydrolysed product comprising the steps of 15. fermenting of hexose using yeast, 17. fermenting of pentose using yeast, and cleaning the fermented liquid to obtain a solution of 90 to 98 vol% ethanol.
<a href="#">CN 117402918 A</a> <a href="#">20240116</a>	Univ Dalian Tech et al. (CN)	<b>Method for efficient carbon sequestration and alcohol production through fermentation of aeromonas.</b> The invention discloses a method for high-efficiency carbon sequestration and alcohol production by using aeromonas fermentation, and belongs to the technical field of microbial fermentation. The method disclosed by the invention comprises the following steps: inoculating activated clostridium per dali into a fermentation tank filled with an improved CGM fermentation culture medium, performing anaerobic fermentation for 6-10 hours, then inoculating activated clostridium tyrobutyricum into fermentation liquor, supplementing H <sub>2</sub> into the fermentation tank, and continuing anaerobic fermentation for 30-70 hours, thereby obtaining the clostridium tyrobutyricum fermentation broth. According to the method, a mixed bacterium co-culture fermentation system of the clostridium tyrobutyricum and the clostridium per dali is constructed, the clostridium tyrobutyricum consumes glucose to generate butyric acid and acetic acid and releases CO <sub>2</sub> and H <sub>2</sub> at the same time, and the clostridium per dali survives with gas released by the clostridium tyrobutyricum as an energy source and generates acetic acid, ethyl alcohol and butanol. According to the invention, the carbon utilization close to the electron availability limit of the substrate is realized, and the maximum value of the carbon recovery rate is achieved; the clostridium tyrobutyricum and clostridium per dali co-culture system generates a new substance butanol.

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">CN 117384978 A</a> <a href="#">20240112</a>	Univ Sichuan (CN)	<b>Production process for preparing ethanol by coupling cassava thick mash fermentation-pervaporation membrane separation.</b> The invention provides a production process for preparing ethanol through fermentation-pervaporation membrane separation coupling by taking high-sugar-concentration cassava liquefied mash as a raw material. Comprising two processes of preparation of high-sugar-concentration cassava liquefied mash and thick mash fermentation-membrane separation coupling, and belongs to the field of fermentation engineering. The preparation process of the high-sugar-concentration liquefied mash comprises two steps of cassava liquefaction, specifically, clear liquid of the cassava liquefied mash subjected to primary conventional liquefaction is used as a solvent, cassava slurry is prepared with cassava flour again, secondary liquefaction is completed, and the high-sugar-concentration cassava liquefied mash is obtained. The fermentation-membrane separation coupling technology comprises a fermentation unit, a membrane separation unit and an ethanol recovery unit, in the operation process, fermentation liquor enters the membrane separation unit from the fermentation unit through a circulating pump, ethanol contained in the fermentation liquor is selectively separated, and product inhibition is removed. By adding the high-sugar-concentration cassava liquefied mash, the volume reduction of the fermentation liquid caused by the membrane separation effect is supplemented, the volume expansion problem of the fermentation liquid is avoided, the fermentation time is prolonged, and the final yield of ethanol is improved.
<a href="#">CN 117402760 A</a> <a href="#">20240116</a>	Univ Tangshan Normal (CN)	<b>Heat-resistant saccharomyces cerevisiae strain and application thereof.</b> The invention discloses a heat-resistant saccharomyces cerevisiae strain and application thereof. The preservation number of the heat-resistant saccharomyces cerevisiae strain XK-01 is CGMCC (China General Microbiological Culture Collection Center) The heat-resistant saccharomyces cerevisiae strain disclosed by the invention still has relatively high fermentation efficiency at 40 DEG C, and can meet industrial production requirements. Compared with a control strain, the saccharomyces cerevisiae strain disclosed by the invention has the advantages that the ethanol yield and the cell survival rate are obviously improved, the stability of bioethanol production can be ensured under the condition of 40 DEG C, the ethanol production efficiency is improved, the production cost is reduced, and the saccharomyces cerevisiae strain is suitable for large-scale production of industrial ethanol. In addition, the invention also discloses application of the heat-resistant saccharomyces cerevisiae strain in preparation of industrial ethanol or cosmetics.
<a href="#">WO 2024036189</a> <a href="#">A2 20240215</a>	Xylogenics Inc (US)	<b>Strains of saccharomyces cerevisiae that exhibit an increased ability to hydrolyze polysaccharides and ferment resulting oligosaccharides into ethanol without supplemental glucoamylase and methods of making and using the same.</b> Disclosed herein is a yeast strain capable of fermenting corn mash into ethanol with no exogenous glucoamylase resulting in greater speed and efficiency than the leading industrial strain. Said yeast strain causes enhanced polysaccharide breakdown along with cofermentation of DP3 sugars, maltose and glucose in strains otherwise identical to commercial fuel ethanol yeast strains.

## Biodiésel

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">KR 20240014312 A</a> <a href="#">20240201</a>	Artec Co Ltd (KR)	<b>Eco-friendly biodiesel oil-water separation device using centrifugal separation.</b>
<a href="#">WO 2024017722</a> <a href="#">A1 20240125</a>	Basf SE (DE)	<b>Mixed alkoxide catalyst for biodiesel production.</b> A process for producing fatty acid C1-C4-alkyl esters, useful as biofuel, from an organic oil source is provided, wherein the oil source contains a triglyceride and a free fatty acid in an amount of at least 0.1 wt%, based on the total weight of the organic oil source, the process comprising a) reacting the organic oil source with a C1-C4-alkanol in the presence of an alkaline catalyst to form an ester phase and a glycerol phase; and b) isolating the fatty acid C1-C4-alkyl esters from the ester phase; wherein the alkaline catalyst is a mixture of metal alkoxides.

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">BR 102022013590 A2 20240116</a>	Brasil Bio Fuels SA (BR)	<b>Proceso de producción de biodiesel a base de etanol, de producción de glicerina 96% e de producción de solución fertilizante e recuperación de ácido graso.</b> Proceso de producción de biodiesel a base de etanol, de producción de glicerina 96% e de producción de solución fertilizante e recuperación de ácido graso. trata-se a presente invenção de um processo de produção de biodiesel a base de etanol, pertencente ao setor técnico de química, mais particularmente a invenção se baseia no desenvolvimento e uso sinérgico de várias tecnologías capaz de produzir biodiesel a base de etanol viável comercialmente utilizando 100% de matérias primas renováveis sem emissão de nenhum poluente. especificamente este biodiesel (éster etílico de ácidos graxos de origem vegetal ou animal) tem performance superiores em itens críticos como menor higroscopicidade, maior capacidade de lubrificação, menor ponto de entupimento a frio comparado ao biodiesel base metanol que hoje é o padrão de mercado. o processo inovador para produção de biodiesel 100% feito a partir de matérias primas renováveis , que pode utilizar plantas industriais construídas para produção de biodiesel metanólico, com a produção concomitante de glicerina 96% isenta de impurezas como sais e solução fertilizante pronta para ser aplicada em plantações de soja, cana de açúcar e/ou fertilizantes foliares em frutas , flores ornamentais, jardins e plantas residenciais.
<a href="#">WO 2024003656 A1 20240104</a>	Chevron USA Inc (US)	<b>Catalyst and process to make renewable diesel and sustainable aviation fuel.</b> A process for making a renewable product from a biofeedstock, in which a biofeedstock is contacted with a hydroconversion catalyst under hydroconversion conditions, the biofeedstock comprising one or more biocomponents, and the hydroconversion catalyst comprising a hydrotreating catalyst and a hydroisomerization catalyst.
<a href="#">KR 20240008111 A 20240118</a>	Inst for Advanced Engineering (KR)	<b>Method for manufacturing hydrogenated biodiesel and manufacturing apparatus thereof.</b>
<a href="#">CN 117487627 A 20240202</a>	Jiashan Weiming Environmental Prot Energy Co Ltd (CN)	<b>Kitchen garbage grease extraction process.</b> The invention discloses a kitchen garbage grease extraction process. The kitchen garbage grease extraction process comprises the following steps: performing solid-liquid separation on kitchen garbage; the liquid garbage is separated into small-particle impurities and filtrate through filtrate screening equipment; the screened solid garbage and filtered small-particle impurities are conveyed into a sand removing machine, the sand removing machine screens out large-particle substances through the hole diameter, overflows and conveys the large-particle substances out, and small-particle substances are conveyed into a pulping machine; the pulping machine is conveyed into the buffer water tank through a high-pressure pump; further removing impurities from the mixture in the buffer water tank through an impurity remover; the mixture subjected to impurity removal is washed by the middle water tank and then is conveyed into the horizontal feeder through the high-pressure pump; the horizontal feeder is conveyed to a three-phase separator through a high-pressure pump for screening work, and crude oil, solid and liquid are screened out; crude oil separated by the three-phase separator is transferred into a crude oil pool; crude oil is stored in the crude oil storage tank, detected for a period of time and then transferred outdoors for use, biodiesel is used in an environment-friendly mode, the structure is reasonable, and the extraction and utilization rate of kitchen garbage is increased.
<a href="#">CN 117339232 A 20240105</a>	Longyan Zhuoyue New Energy Dev Co Ltd (CN)	<b>Vacuum system tail gas treatment method in biodiesel production.</b> The invention discloses a method for treating tail gas of a vacuum system in biodiesel production, and a device comprises a distillation tower, a pump front condenser, a Roots water ring vacuum unit, a flame arrester, a biomass heat-conducting oil boiler, a water curtain dust remover, an induced draft fan, a wet electric dust remover, a chimney and a pipeline valve which are sequentially connected through a pipeline, the method comprises the following operation steps: starting vacuum when heat-conducting oil reaches 100 DEG C after a boiler is ignited, and feeding a distillation tower when the heat-conducting oil reaches 250 DEG C; after vacuum is formed in the distillation tower, the materials enter the distillation tower after being heated by heat conduction oil, uncondensed gas evaporated in the distillation tower enters a receiving tank after being condensed by a pre-pump condenser, and the uncondensed gas enters a boiler for combustion through a vacuum unit; due to the fact that negative pressure exists in the hearth, smoke generated after tail gas combustion and smoke generated after biomass particle fuel combustion are mixed together, pass through a water curtain dust remover, then pass through an induced draft fan, reach a wet electric dust remover and then are exhausted into the atmosphere through a chimney. The problems that biodiesel tail gas emission does not reach the standard, use is not safe, operation is not convenient, and energy consumption is large are solved.

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">EP 4321600 A1</a> <a href="#">20240214</a>	Shell Int Research (NL)	<b>Process for producing kerosene and/or diesel from renewable sources.</b> A process for improving yield of kerosene and/or diesel from a renewable feedstock involves hydrotreating a renewable feedstock and hydroisomerizing the hydrotreated liquid. The isomerized effluent is separated to produce an offgas stream, at least one fuel stream having a desired boiling point range, and a heavy fraction having a boiling point greater than the desired boiling point range. The heavy fraction is passed to a hydrocracking zone to produce a hydrocracked effluent. The hydrocracked effluent is passed to the hydrotreating zone.
<a href="#">CN 117304975 A</a> <a href="#">20231229</a>	Univ Dalian Tech (CN)	<b>Method for preparing biodiesel through hydrodeoxygenation and upgrading of biolipid.</b> The invention provides a method for preparing biodiesel by hydrodeoxygenation and upgrading of biolipid, which comprises the following steps: (a) mixing a pre-filtered raw material biolipid with hydrogen, and adding the mixture into a first fixed bed reactor at 150-300 DEG C for hydrogenation saturation and hydrodemetallization reaction; and (b) mixing the product obtained in the step (a) with a vulcanizing agent and hydrogen, and carrying out a hydrodeoxygenation upgrading reaction under the action of a hydrodeoxygenation upgrading catalyst. According to the method disclosed by the invention, the hydrogenation process is divided into two sections, and the effects of hydrogenation saturation and hydrodeoxygenation quality improvement of the biological oil and fat are improved and the quality of biodiesel is improved through grading configuration of the catalyst and grading control of the reaction temperature. In addition, the two-stage reaction process can alleviate the problems of violent heat release, difficult reaction temperature control, and easy coking and inactivation of the catalyst in the hydrogenation process, and prolongs the service life of the catalyst.
<a href="#">CN 117443239 A</a> <a href="#">20240126</a>	Yancheng Inst Tech (CN)	<b>Device for preparing biodiesel.</b> The invention discloses a device for preparing biodiesel, and belongs to the technical field of diesel preparation, the device comprises a main body module and a turning mixing module, the main body module comprises a supporting frame, a mounting ring is movably connected to the interior of the supporting frame, and a preparation tank is fixedly connected to the interior of the mounting ring; a feeding pipe is fixedly connected to the upper portion of the outer surface of the preparation tank, a discharging valve is fixedly connected to the center of the bottom of the preparation tank, a first motor is turned on, the first motor can drive a hollow transmission plate to rotate, the hollow transmission plate drives a swing rod to move in a track plate along a vortex-shaped line track, and the swing rod is driven to rotate. The universal ball is driven to move, so that the mixing rod and the mixing blades are driven to move along a vortex-shaped line track, the mixing rod and the mixing blades can continuously change and mix various different angles along the vortex-shaped line track to mix raw materials during working, the mixing angles are diversified, and the overall mixing effect is improved.

## Bio-jet fuels

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">WO 2024030611</a> <a href="#">A2 20240208</a>	Alliance Sustainable Energy et al. (US)	<b>Continuous hydrodeoxygenation of lignin to jet-range aromatic hydrocarbons.</b> Described herein are systems and methods for the catalytic deoxygenation of lignin to generate low-oxygen aromatics that may be useful as a sustainable aviation or marine fuel. The provided systems and methods may be performed continuously without the need for a solvent, increasing both efficiency and cost effectiveness.
<a href="#">WO 2024006239</a> <a href="#">A1 20240104</a>	Exxonmobil Technology & Engineering Company (US)	<b>Method and system for producing a renewable jet fuel.</b> Systems and methods are provided for production of renewable jet fuel and/or jet fuel blending component fractions using a single stage reaction system. Although only a single separation stage is used, the systems and methods can reduce or minimize the volume of feedstock that is exposed to hydrocracking conditions while still producing a jet boiling range fraction having beneficial cold flow properties.

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">WO 2024003467</a> <a href="#">A1 20240104</a>	Neste OYJ (FI)	<b>A process for producing a liquid transportation fuel component.</b> Here is provided processes for producing at least one liquid transportation fuel component. In a first mode of running one of the processes, a hydrocarbon feed comprising nitrogen impurities is subjected to a hydroprocessing in reactor A in the presence of a hydrotreatment catalyst A to obtain a hydroprocessing effluent A, which is subjected, after degassing, to a catalytic hydroprocessing in reactor B to obtain a hydrotratment effluent B, which is fractionated, optionally after degassing, to obtain at least one liquid transportation fuel component, preferably at least an aviation fuel component. In the process, parameters indicative of deactivation of the hydrotreatment catalyst A are monitored and when these reach predetermined values, the process is switched to a second mode of running wherein the order of reactors A and B is changed so that a degassed hydroprocessing effluent B is fed to the reactor A.
<a href="#">WO 2024025406</a> <a href="#">A1 20240201</a>	Petroliam Nasional Berhad Petronas (MY)	<b>Conversion of sustainable oil into jet fuel using low pressure green hydrogen.</b> Disclosed herein is a poorly crystalline metal sulfide catalyst, wherein the catalyst comprises Mo and/or W in a total amount of from 25 to 35 wt%, Ni and/or Co in a total amount of from 0 to 25 wt%, S in an amount of from 20 to 28 wt%, N or P in an amount of from 0 to 5 wt%, and C in an amount of from 10 to 54 wt.%. Also disclosed herein are methods of forming the catalyst, and generating a deoxygenated organic material.
<a href="#">WO 2024023447</a> <a href="#">A1 20240201</a>	Totalenergies Onetech (FR)	<b>Jet fuel composition of renewable origin, and method for producing same.</b> The invention relates to a method for producing a jet fuel of biological origin, comprising at least the steps consisting in: a) providing a hydrocarbon effluent of biological origin containing at least 95% by weight of C7-C24 paraffins, including C7-C24 isoparaffins; b) separating the hydrocarbon effluent obtained in step b) into (i) a first light fraction that complies with the specifications of ASTM D7566-20, annex A2, for aviation fuels, and (ii) a second fraction comprising at least 80% by weight of C18 isoparaffins; c) mixing the first and second fractions obtained in step b) in order to form a jet fuel having a final boiling point of at most 300°C and comprising at least 10% by weight of C18 isoparaffins.
<a href="#">CN 117363371 A</a> <a href="#">20240109</a>	Univ Nanjing Agricultural (CN)	<b>Method for co-producing aviation kerosene precursor and carbon nanotube by converting waste grease.</b> The invention discloses a method for co-producing an aviation kerosene precursor and a carbon nano tube by converting waste grease, which comprises the following steps: catalytic pyrolysis: performing catalytic pyrolysis on a grease compound under the action of a catalyst in an inert atmosphere, and condensing a product to obtain non-condensable gas and a liquid aviation kerosene precursor; purification of non-condensable gas: removing CO <sub>2</sub> and moisture in the non-condensable gas to obtain purified gas; and chemical vapor deposition: under the action of a foam metal catalyst, carrying out chemical vapor deposition on the purified gas to prepare the carbon nanotube. According to the method, the aviation kerosene precursor with hydrocarbon selectivity exceeding 80% is prepared through pyrolysis catalysis, and the method has high practicability in the aspect of fuel deoxidation; by reforming and upgrading the non-condensable gas, the preparation of the carbon nanotubes is realized, and the additional value of a pyrolysis product is greatly improved. The method is short in path and low in pollution degree, resource utilization of the waste grease is achieved, the purpose of environmental protection is achieved, and the application value in the fields of energy and environmental protection is considered.
<a href="#">CN 117327516 A</a> <a href="#">20240102</a>	Yancheng Inst Tech (CN)	<b>Hydrogenation method for producing aviation biofuel.</b> The invention discloses a hydrogenation method for producing aviation biofuel. The hydrogenation method specifically comprises the following steps: S1, providing a biomass raw material containing cellulose and water; the invention relates to the technical field of aviation biofuel. According to the hydrogenation method for producing the aviation biofuel, oil generated by hydrotreatment is degassed and dehydrated, so that the problem that subsequent molecular sieve catalyst poisoning is caused by water generated by hydrogenation of biological oil and fat is solved, the operation period of the device is greatly prolonged, the product is separated and cut by adopting the rectifying tower, overlapping between adjacent fractions is effectively avoided, and the yield of the product is improved. The separation precision is improved, the quality and yield of biological aviation kerosene fractions are guaranteed, a series hydrogenation process is adopted, hydrotreating products can enter a series hydro-conversion unit without great pressure rise, a large amount of energy loss caused by temperature and pressure reduction and then temperature and pressure rise in a conventional two-stage process is avoided, the energy consumption of the device is saved, and the production cost is reduced. The hydrotreating high-pressure separation gas is purified through the pressure swing adsorption unit and then is recycled.

## Biohidrógeno

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">CN 117487861 A</a> <a href="#">20240202</a>	Biocarbon Building GmbH (CN)	<b>Method for improving hydrogen production through clostridium fermentation in sludge mixed bacteria source by utilizing wood biochar.</b> The invention discloses a method for improving hydrogen production through clostridium fermentation in a sludge mixed bacteria source by utilizing wood biochar, relates to a method for producing hydrogen through fermentation, and aims to solve the technical problems of low clostridium enrichment efficiency and low hydrogen production in the prior art. The method comprises the following steps: culturing an inoculation flora solution by using sludge of an anaerobic digester; the method comprises the following steps: drying, crushing, pyrolyzing, grinding and sieving wood waste, and then cleaning and drying to obtain clean charcoal powder; adding the clean charcoal powder into a dark fermentation reactor, adding a dark fermentation culture medium and an inoculation flora solution, and carrying out anaerobic culture for dark fermentation hydrogen production. In the fermentation liquor obtained by the method, the abundance of clostridium reaches 53.0%, and the cumulative hydrogen yield is increased by more than three times compared with the cumulative hydrogen yield of the fermentation liquor without the biochar. The method can be used in the dark fermentation hydrogen production field.
<a href="#">CN 117363462 A</a> <a href="#">20240109</a>	Hangkong Energy Tech Xian Co Ltd (CN)	<b>Biomass hydrogen production system and hydrogen production method.</b> The invention discloses a biomass hydrogen production system and method, the biomass hydrogen production system comprises a pretreatment unit, a dark fermentation hydrogen production unit and a light fermentation hydrogen production unit, the pretreatment unit comprises a hydrogenogen pretreatment module and a fermentation substrate pretreatment module, a hydrogenogen pretreatment module in the pretreatment unit is used for separating, enriching, culturing and domesticating dark fermentation hydrogenogens and light fermentation hydrogenogens, and a fermentation substrate pretreatment module in the pretreatment unit is used for pretreating rice straws and water hyacinth so as to destroy a lignin-cellulose-hemicellulose composite structure of the rice straws and the water hyacinth. According to the method, the hydrogen-producing strain is cultured and domesticated, so that the hydrogen-producing capability of the hydrogen-producing strain on a specific substrate is improved; a method for producing hydrogen by coupling dark fermentation and light fermentation is adopted, so that the yield of hydrogen produced by microbial fermentation is increased, and the pollution of organic acid in dark fermentation tail liquid to the environment is eliminated; the lignin-cellulose-hemicellulose composite structure in the rice straw and the water hyacinth is destroyed, and the hydrogen production efficiency of the cellulose biomass is greatly improved.
<a href="#">CN 117467526 A</a> <a href="#">20240130</a>	Harbin Inst Technology (CN)	<b>Corn straw biological hydrogen production device based on synchronous saccharification and fermentation and hydrogen production method thereof.</b> The invention discloses a corn straw biological hydrogen production device based on synchronous saccharification and fermentation and a hydrogen production method thereof, belongs to the technical field of biological energy sources, and aims to solve the problems of poor hydrogen energy conversion efficiency of substrate organic matters, high emission of organic wastes, poor quality of produced hydrogen and high hydrogen production cost in the existing dark fermentation hydrogen production process. The hydrogen production device comprises a vertical fermentation tank, an irradiation pretreatment unit, an enzymolysis saccharification unit, a dark fermentation unit, a light fermentation unit, an electric power supply box and a hydrogen storage tank, the high specificity of different microorganisms to a substrate is utilized, dark fermentation and light fermentation hydrogen production processes are combined, the hydrogen energy conversion efficiency of organic matter of the substrate can be greatly improved, and the hydrogen production efficiency is improved; the method realizes thorough decomposition treatment of the substrate and preparation of high-quality hydrogen, also can realize resource utilization of agricultural wastes, reduces the hydrogen production cost, and achieves the purpose of emission reduction of productivity. The method is mainly used for preparing hydrogen.

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">CN 117448132 A</a> <a href="#">20240126</a>	Harbin Inst Technology (CN)	<b>High-load organic wastewater dark fermentation biological hydrogen production device and hydrogen production method.</b> The invention discloses a high-load organic wastewater dark fermentation biological hydrogen production device and a hydrogen production method, and aims to solve the problems that solid, liquid and gas cannot be quickly separated by microbial floc anaerobic activated sludge and the hydrogen production efficiency is not high in the traditional fermentation biological hydrogen production reaction equipment. According to the dark fermentation biological hydrogen production device, an exhaust port of the dark fermentation biological hydrogen production device is communicated with a gas collecting area through a gas pipe, a backflow inlet is formed in the bottom of the dark fermentation biological hydrogen production device, and a flow baffle is arranged in a two-phase separation device and is in a spiral shape, so that inlet water forms a spiral centripetal water flow path; one end of the inert gas communicating pipe is connected with a gas hole in the bottom of the gas collecting area, the other end of the inert gas communicating pipe is communicated with the gas inlet disc, a connecting hole and a gas pump are arranged on the inert gas communicating pipe, and the gas collecting area is sequentially connected with a gas buffer tank and a hydrogen storage tank. The fermentation biological hydrogen production reactor and the two-phase separation unit are independently arranged, the two-phase separation unit can better play a gas-liquid separation role, and the hydrogen production efficiency is improved.
<a href="#">CN 117402655 A</a> <a href="#">20240116</a>	Inst Process Eng, CAS (CN)	<b>Method and device system for coupling calcium carbonate vacuum decomposition for trapping carbon dioxide and biomass gasification for hydrogen production.</b> The invention provides a method and a device system for coupling calcium carbonate vacuum decomposition trapping carbon dioxide and biomass gasification hydrogen production, and the method comprises the following steps: (1) mixing biomass, O <sub>2</sub> and water vapor, and carrying out gasification reaction to obtain coal gas; (2) carrying out carbonation reaction on the mixed gas, CaO and water vapor to obtain CaCO <sub>3</sub> and hydrogen-rich gas; (3) performing vacuum decomposition on CaCO <sub>3</sub> to obtain CaO and CO <sub>2</sub> , and recycling the CaO in the step (2); (4) carrying out H <sub>2</sub> separation on the hydrogen-rich fuel gas to obtain fuel gas and H <sub>2</sub> ; wherein the gasification reaction and the carbonation reaction are independently carried out in different reactors, or are simultaneously carried out in the same reactor. According to the method provided by the invention, CaCO <sub>3</sub> vacuum decomposition and biomass gasification hydrogen production are organically coupled, the yield and concentration of green hydrogen are improved by reducing CO <sub>2</sub> emission, the heat energy demand of the process is reduced, CaO sintering is avoided, and large-scale popularization and application are facilitated.
<a href="#">CN 117326525 A</a> <a href="#">20240102</a>	Univ Qingdao Science & Technology (CN)	<b>Coal and biomass co-plasma gasification coupling chemical looping hydrogen production process.</b> The invention relates to a coal and biomass co-plasma gasification coupling chemical looping hydrogen production process. The process consists of a plasma gasification unit, a waste heat recycling unit, a reduction reactor unit, an oxidation reactor unit and an air reactor unit. The method comprises the following steps: taking coal and biomass as a mixed raw material, taking steam as a gasifying agent, entering a plasma gasifier, and carrying out a series of gasification reactions to obtain a high-temperature gaseous product rich in CO, CO <sub>2</sub> and hydrogen; the obtained high-temperature gaseous product enters a waste heat recycling unit, and cooling water exchanges heat with the gaseous product and then is used for preheating the raw materials; the gaseous product subjected to waste heat recovery enters a reduction reactor unit and is in contact with a high-temperature oxygen carrier Fe <sub>2</sub> O <sub>3</sub> , so that the high-temperature oxygen carrier Fe <sub>2</sub> O <sub>3</sub> is subjected to a reduction reaction to generate FeO and Fe, and CO and H <sub>2</sub> in the gaseous product are oxidized into CO <sub>2</sub> and H <sub>2</sub> O; the material flow carrying FeO and Fe enters an oxidation reactor unit and is subjected to an oxidation reaction with water to generate Fe <sub>3</sub> O <sub>4</sub> and Fe <sub>2</sub> O <sub>3</sub> , and H <sub>2</sub> with the purity of 99.95% or above is prepared; and the oxidized oxygen carrier enters the air reactor unit and is oxidized by air to generate Fe <sub>2</sub> O <sub>3</sub> , and the Fe <sub>2</sub> O <sub>3</sub> is fed into the reduction reactor unit for recycling. The co-plasma gasification of the coal and the biomass not only is beneficial to sustainable utilization of the coal, but also can make up for the defects of independent gasification of the biomass, reduces the emission of greenhouse gases, and greatly improves the carbon conversion rate of raw materials and combustible components in gaseous products. The process has the advantages of simplified process, energy conservation and emission reduction.



Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">CN 117415144 A</a> <a href="#">20240119</a>	Univ Shaanxi Science & Tech (CN)	<b>Method for producing hydrogen through synergistic anaerobic digestion of municipal sludge and kitchen waste by using iron-based catalyst.</b> The invention discloses a method for producing hydrogen through synergistic anaerobic digestion of municipal sludge and kitchen waste by using an iron-based catalyst. The method comprises the following steps: drying the taken-back municipal sludge in a drying oven at 105 DEG C, uniformly mixing deionized water, the dried sludge and a proper amount of anhydrous FeCl <sub>3</sub> , adjusting the pH value of the mixture to 8.5-9.5 by using a NaOH solution, carrying out ultrasonic treatment, heating in a constant-temperature water bath kettle, centrifuging and washing the obtained precipitate, drying, and calcining in a tubular furnace to obtain the novel iron-based catalyst. Adjusting the initial pH value to 8.5-9.5 according to the volume ratio of the kitchen waste to the municipal sludge of 1: 1, and carrying out anaerobic fermentation to obtain mixed organic solid waste; and putting the mixed organic solid waste and the novel iron-based catalyst into a solid waste fermentation tank to produce hydrogen. According to the invention, the anaerobic digestion efficiency and the gas production rate can be efficiently improved, and the purpose of resource utilization of wastes is achieved.
<a href="#">CN 117417966 A</a> <a href="#">20240119</a>	Univ Southwest Petroleum (CN)	<b>Method for improving hydrogen production rate of photosynthesis of chlamydomonas reinhardtii.</b> The invention provides a method for improving the hydrogen production rate of photosynthesis of chlamydomonas reinhardtii, and belongs to the technical field of biological hydrogen production, the method comprises the following steps: inoculating the chlamydomonas reinhardtii into a culture medium added with NaHSO <sub>3</sub> for dark induction culture to form a dark induction system; placing the dark induction system in a light environment for hydrogen production culture; wherein the concentration of the NaHSO <sub>3</sub> in the culture medium is 13mM/L; in the dark induction culture, the illumination intensity is less than or equal to 40 [mu] E.m <-2 >. S <-1 >, and in the hydrogen production culture, the illumination intensity is 200 [mu] E.m <-2 >. S <-1 >. According to the method, the hydrogenase activity of the chlamydomonas reinhardtii can be improved, so that the hydrogen production rate of photosynthesis of the chlamydomonas reinhardtii is

### Otros biocombustibles (hidrobiodiesel, etc.)

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">CN 117417773 A</a> <a href="#">20240119</a>	Henan Academy of Sciences Energy Res Institute Co Ltd (CN)	<b>Blend fuel and preparation method thereof.</b> The invention belongs to the technical field of biomass energy, and particularly relates to blended fuel and a preparation method thereof. The blended fuel comprises the following components in percentage by volume: 80-85% of E10 gasoline, 10-15% of dimethyl carbonate and 5% of a cosolvent. According to the E10 gasoline-dimethyl carbonate blended fuel provided by the invention, the combustion efficiency can be improved, the tail gas emission is reduced, and the emission of volatile organic compounds is reduced. The physical and chemical properties and the dynamic performance of the blend oil meet the national standard GB/18351-2017 blend oil quality requirements; the emission of pollutants harmful to human health and the environment, such as carbon monoxide, nitrogen oxide and particulate matters which are not completely combusted in a gasoline engine, is obviously reduced compared with that of gasoline combustion, and the gasoline can be used for a gasoline engine for a vehicle, so that energy conservation and emission reduction are realized.
<a href="#">CN 117431100 A</a> <a href="#">20240123</a>	Liu Sihan (CN)	<b>Plant palm oil alcohol hydrocarbon new energy fuel and production process thereof.</b> The invention discloses a plant palm oil alcohol hydrocarbon new energy fuel and a production process thereof, and the plant palm oil alcohol hydrocarbon new energy fuel comprises the following components in parts by mass: 50-60 parts of a motor octane number improver; 10 to 20 parts of isoheptane; 5-8 parts of a combustion improver; 8 to 15 parts of isooctane; 3-10 parts of light hydrocarbon; the sum of the mass parts of the components is 100 parts. When the plant palm oil alcohol hydrocarbon new energy fuel is added into gasoline, precipitates related to a fuel oil system can be decomposed into small particles, and the small particles are fused in fuel oil and finally combusted together with the fuel oil, so that the purposes of cleaning an oil way, fully atomizing and combusting, saving the fuel oil and improving tail gas emission are achieved; a detection result shows that when the plant palm oil alcohol hydrocarbon new energy fuel provided by the invention is used, gasoline automobile exhaust is detected to be close to zero emission, HC (hydrocarbon) is lower than 28.5 times of a national specified limit value, and CO (carbon monoxide) is lower than 20 times of the national specified limit value.

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">CN 117417772 A</a> <a href="#">20240119</a>	Univ Anshan Normal (CN)	<b>Nanometer biofuel as well as preparation method and application thereof.</b> The invention provides nano biofuel as well as a preparation method and application thereof, and belongs to the technical field of new energy. The preparation method of the nano biological fuel oil comprises the following steps: mixing straws with an acid solution, and carrying out hydrolysis treatment to obtain a hydrolysis product; mixing the hydrolysis product with a basic catalyst, and carrying out a ring-opening reaction to obtain a ring-opening product; mixing the ring-opening product with a hydrogenation reduction catalyst, and carrying out hydrogenation reaction to obtain modified bio-oil; distilling the modified bio-oil to obtain refined bio-oil; and mixing the refined bio-oil with a nano additive and an activating factor to obtain the nano bio-fuel oil. The preparation method provided by the invention is low in energy consumption and low in cost, the utilization rate of the straws is relatively high, and the high-energy nano biofuel oil is obtained.

## PATENTES BIOPRODUCTOS

Biomateriales (de construcción, medicina, embalaje, etc.)		
Biocomposites y biofibras		
Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">EP 4332151 A1</a> <a href="#">20240306</a>	Aquapak Ip Ltd (GB)	<b>Cellulose fibre reinforced polyvinyl alcohol composite materials.</b> A composite material comprising a reaction product of homopolymeric polyvinyl alcohol and a fibrous cellulosic material; wherein the amount of cellulosic material is in the range from about 0.1 wt% to about 50 wt% of the total weight of the composition. The composite material of this invention may be isotropic.
<a href="#">WO 2024058659</a> <a href="#">A1 20240321</a>	Beyondwood BV (NL)	<b>Plant fibre product.</b> The invention relates in general to working or preserving a plant-fibre material, such as a wood-like material, and processing said material, such as in a plastic state in general, and may likewise be considered to be a technology of managing solid or solid-like waste materials, the waste materials comprising plant-fibre material.
<a href="#">WO 2024038006</a> <a href="#">A1 20240222</a>	Corkconcept SA (BE)	<b>Expanded moulded parts made of natural fibres.</b> The invention relates to the manufacture of rigid insulating materials, preferably 100% natural and/or biosourced, having a better thermal coefficient than existing sheets made of natural and/or plant fibres, which materials are biodegradable and easy to work with (cutting, grooving, machining, coating, etc.). The aim is to manufacture an expanded moulded part using cellulosic and/or lignocellulosic fibres, the surfaces of which are a crust enclosing an open-porosity structure, the components of the crust and of the open-porosity structure being identical.
<a href="#">WO 2024037967</a> <a href="#">A1 20240222</a>	DR Schumacher GmbH (DE)	<b>Method for producing a multi-layered cloth product.</b> The invention relates to a method for producing a multi-layered cloth product comprising at least a cleaning layer and a core layer, each containing cellulose and/or consisting entirely of natural fibres and/or regenerated fibres, wherein the cleaning layer and the core layer are bonded together by means of hydroentanglement.
<a href="#">EP 4299296 A1</a> <a href="#">20240103</a>	Papershell AB (SE)	<b>Alternative for FR-4 material.</b> The present invention relates to a printed circuit board (PCB) substrate, comprising at least one top surface, at least one bottom surface. The printed circuit board (PCB) further comprises: 60 to 90 wt% of cellulosic fibers having a length of maximum 10mm, an acidic curing catalyst and 10 to 40 wt% of a binding agent selected from the group consisting of: cellulose, hemicellulose, furan, lignin and combinations thereof.
<a href="#">WO 2024033596</a> <a href="#">A2 20240215</a>	Sas Woodoo (FR)	<b>Method for obtaining a lignocellulosic composite material and composite material obtained by this method.</b> The present invention relates to a method for obtaining a lignocellulosic composite material, a lignocellulosic composite material capable of being obtained by this method, and the use of this lignocellulosic composite material.

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">EP 4310250 A1</a> <a href="#">20240124</a>	Tetra Laval Holdings & Finance (CH)	<b>Barrier-coated cellulose-based substrate, laminated packaging material and packaging container comprising the cellulose-based substrate.</b> The present invention relates to a high-quality, heat-sealable gas barrier-coated cellulose-based substrate. The invention further relates to a laminated packaging material comprising the barrier-coated cellulose-based substrate, suitable for heat-sealable packaging of oxygen-sensitive products, and to packaging containers made from the laminated packaging material.
<a href="#">EP 4331832 A1</a> <a href="#">20240306</a>	Trocellen GmbH (DE)	<b>Multilayer material for thermal insulation.</b> A Multilayer material for a thermal insulation, comprises a fire-resistant layer comprising expandible graphite, a vapor-barrier layer comprising a metal foil or polymeric foil, and an insulating layer comprising combustible hemp fibers, the vapor-barrier layer is arranged between the fire-resistant layer and the insulating layer, and the insulating layer is thicker than the fire-resistant layer.
<a href="#">WO 2024002398</a> <a href="#">A1 20240104</a>	Univ V Liberci Tecch (CZ)	<b>Method of preparation of hierarchically structured self-reinforcing composite systems based on biopolymers of polylactic acid, and such composite systems.</b> The invention relates to a method of preparation of hierarchically structured self-reinforcing composite systems based on biopolymers of polylactic acid, in which a polymer solution is prepared, containing 5 to 15 wt. % of poly(L- lactide) or symmetric or asymmetric mixtures of poly(L-lactide) and poly(D- lactide) and 85 to 95 wt. % of a solvent system consisting of a mixture of dichloromethane, dimethyl sulfoxide and pyridine in the ratio (3 to 7.5) : (1.5 to 4) : (0.5 to 3.5). This solution is transformed into nanofibers of poly(L-lactide) or mixtures of poly(L-lactide) and poly(D-lactide) by spinning, wherein these nanofibers, after their formation, are deposited on the surface of a fibrous core (2) made from polylactic acid biopolymer, which rotates or balloons around its longitudinal axis, whereby a two-component core yarn based on polylactic acid is prepared. Subsequently, a flat fabric is formed from this yarn, wherein at least one layer of the flat fabric is deposited at elevated temperature and pressure in a matrix (5) based on a polylactic acid biopolymer with a melting temperature lower than or equal to the melting temperature of a nanofibrous sheath (3) of the two- component core yarn, wherein during deposition the structure of the flat fabric is saturated with the matrix (5), thereby creating a hierarchically structured self- reinforcing composite system based on polylactic acid biopolymers, which consists of 5 to 35 wt. % of a two-component core yarn based on polylactic acid.
<a href="#">EP 4342904 A1</a> <a href="#">20240327</a>	Univ Wien (AT)	<b>Black liquor epoxy resin.</b> The present invention relates to a method for preparing a black liquor epoxy resin from a mixture of black liquor, epichlorohydrin, and a primary or a heterocyclic amine, in the presence of a base. The invention further relates to the use of the black liquor epoxy resin, e.g., as a coating resin, matrix for the production of composite materials, thermosetting polymeric material, polymer blend, or as a lacquer or varnish.

## Bioplásticos

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">EP 4335892 A1</a> <a href="#">20240313</a>	Bzeos Switzerland SA (CH)	<b>Seaweed and cellulose based film.</b> The present invention relates to a film comprising seaweed polysaccharides, in particular alginate and carrageenan, as well as microcrystalline cellulose and carboxymethyl cellulose and bio-based plasticizers (glycerol and optionally triacetin); to an aqueous precursor composition; to a process for the manufacture of said films from the aqueous precursor composition; and to uses of the films in packaging.
<a href="#">WO 2024013134</a> <a href="#">A1 20240118</a>	Centre Nat Rech Scient et al. (FR)	<b>Method for preparing poly-beta-hydroxyalkanoate films.</b> The application relates to a method for preparing a PHA film, comprising the steps consisting of: a) mixing a PHA in powder form and an aqueous solution in order to obtain a PHA suspension, b) leaving the PHA suspension to rest, by means of which a portion of the PHA settles out and a pellet is obtained, above which floats a supernatant, c) collecting at least part of the supernatant, d) applying the collected supernatant to at least one flat horizontal portion of a surface of a first substrate, e) evaporating the water from the applied supernatant, f) heating at least one region of the portion of the surface of the first substrate to which the supernatant was applied, by means of which a first substrate is obtained having said at least one region covered with a PHA film. PHA films from 1 to 60 µm thick can be obtained using this method.

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">EP 4335875 A1</a> <a href="#">20240313</a>	Consejo Superior Investigación et al. (ES)	Chemically modified bacterial cellulose core-shell microparticles and their use for the encapsulation of bioactive elements. New core-shell microparticles based on bacterial cellulose (BC) and polyhydroxyalkanoates (PHAs) have been obtained by coaxial electrospinning. These particles are spherical, reproducible and stable. The core-shell of the particle is composed of a BC-PHA grafted polymer that ensures a good environment for encapsulating bioactive cargos. The polyhydroxyalkanoates (PHAs) shell provides the thin film that maintains the spherical shape of the particle.
<a href="#">WO 2024028420</a> <a href="#">A1 20240208</a>	Fitesa Germany GmbH (DE)	Nonwoven fabric and process for forming the same. The present invention provides a nonwoven fabric comprising a spunbond nonwoven layer which comprises spunbond fibers, wherein the spunbond fibers are bicomponent spunbond fibers which each comprise a first component and a second component, wherein the first component comprises a polylactic acid and the second component comprises a polylactic acid and a polybutylene succinate-based polyester, and wherein the first component is present in an amount in the range of from 50-80% by weight and the second component is present in an amount in the range of from 20-50% by weight, both amounts based on the total weight of each bicomponent spunbond fiber, and wherein the amount of polybutylene succinate-based polyester is in the range of from 0.2-5% by weight, based on the total weight of each multicomponent spunbond fiber. In addition, the invention further provides a process for preparing the nonwoven fabric, and absorbent article comprising the nonwoven fabric.
<a href="#">WO 2024047187</a> <a href="#">A1 20240307</a>	Omya Int AG (CH)	Nucleating agent for polylactic acid formulation. The invention relates to a composition comprising ground natural calcium carbonate being surface treated with phenylphosphonic acid and/or one or more salt(s) thereof, a process for manufacturing the same, its use as a nucleating agent in the production of a polymer formulation, a method for producing the polymer formulation, a nucleating agent comprising the composition, as well as a polymer formulation comprising the composition, and its use.
<a href="#">WO 2024033455</a> <a href="#">A1 20240215</a>	Polypea Srl et al. (BE)	Thermoplastic starch forming compositions and uses thereof. The invention concerns a composition suitable for forming a bioplastic or thermoplastic starch derived from pulse starch, and its use in producing biodegradable films and packaging, more particularly to cold water-soluble starch-based films for packaging.
<a href="#">WO 2023248096</a> <a href="#">A1 20231228</a>	Stora Enso Oyj (FI)	A barrier film for a packaging material and a packaging material. A barrier film for a paper or paperboard-based packaging material, said barrier film comprising a, MFC layer, with a grammage in the range 20-100 g/m <sup>2</sup> , and a density higher than 650 kg/m <sup>3</sup> . The barrier film further comprises a PHA, dispersion coated, primer layer coated on at least one side of the MFC layer, wherein the primer layer has a coating weight 0.5-12 g/m <sup>2</sup> ; the primer layer comprises a PHA type selected from the group consisting of PHB, PHBV, PHBH, P(3HB4HB), other co- polymers of PHB, other homopolymers such as PHO, PHH, P3HP, and combinations thereof; and a - a thin DLC coating layer coated on the primer layer which DLC coating layer has a thickness of 2-100 nm, preferably 2-50 nm and most preferred 2-30 nm.

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">WO 2024030021</a> <a href="#">A1 20240208</a>	Univ Eindhoven Tech (NL)	<p><b>Method of producing a polylactic acid (pla)-based material.</b> The present invention relates to a method of producing a polylactic acid (PLA)-based material comprising the steps of: a) providing an amorphous blend comprising poly(L- lactic acid) (PLLA) and poly(D-lactic acid) (PDLA); b) bringing the blend provided in step (a) to a temperature (TC,HC) of between glass transition temperature (Tg) and homocrystalline phase melting temperature (Tm,HC) and maintaining the temperature within this range until at least 5 J/g of homocrystallites are formed with a melting temperature below 180 °C; and c) bringing the resulting material of step (b) to a temperature (TSC) above melting temperature of homocrystalline phase and maintaining the temperature within this range for a sufficient time tSC to generate a poly(lactic acid)-based material with nano-sized stereocomplex crystals having a melting temperature higher than Tm,HC. The invention further relates to a PLA-based material obtained or obtainable via said method. The invention further relates to a PLA- based material comprising PLLA and PDLA and/or copolymers thereof, wherein the material contains at least 2% by weight of nano-sized stereocomplex crystals, based on the total weight of the material. The invention further relates to a PLA-based material comprising PLLA and PDLA, wherein the combined weight of PLLA and PDLA forms at least 80 wt.% of the total weight of the material; and wherein the material has a Heat Deflection Temperature of above 115°C; and/or a melt strength of above 5.6 MPa at 190°C; and/or drawability of more than 40% at 190°C; and/or the material is optically clear. The invention further relates to a PLA-based material comprising PLLA and PDLA, wherein the combined weight of PLLA and PDLA forms at least 80 wt.% of the total weight of the material, and wherein a sample of the PLA material exhibits strain-hardening behaviour when subjected to strain or deformation at a temperature above 160 °C, and wherein the same sample of the PLA material no longer exhibits strain-hardening behaviour when subjected to strain or deformation subsequent to being heated to a minimum temperature of 210°C. The invention further relates to a fiber, film, foam or sheet comprising said PLA-based material and a method of producing said fiber, film, foam or sheet. The invention also to use of said PLA-based material in packaging, automotive parts, textiles, medical equipment, agricultural equipment and electrical equipment.</p>
<a href="#">WO 2024003698</a> <a href="#">A1 20240104</a>	Versalis Spa (IT)	<p><b>Process for recovering and purifying polyhydroxyalkanoates from a fermentation broth.</b> Process for recovering and purifying polyhydroxyalkanoate (PHA) from a fermentation broth deriving from the fermentation of microorganisms comprising the following steps: (a) subjecting the fermentation broth as such to heat treatment in the presence of at least one acid; (b) subjecting the fermentation broth obtained in step (a), directly or after storage, to separation obtaining an aqueous suspension of cellular biomass comprising polyhydroxyalkanoate (PHA) and an aqueous phase comprising fermentation residues; (c) subjecting the aqueous suspension of cellular biomass comprising polyhydroxyalkanoate (PHA) obtained in step (b) to extraction, purification and drying; characterized in that said step (a) is carried out at a pH comprised between 4 and 6, preferably comprised between 4.5 and 5.5, more preferably at a pH equal to 5, at a temperature comprised between 50°C and 70°C, preferably comprised between 55°C and 65°C, more preferably at a temperature equal to 60°C, for a time comprised between 5 minutes and 30 minutes, preferably comprised between 8 minutes and 20 minutes, more preferably for a time equal to 10 minutes. The aforementioned polyhydroxyalkanoate (PHA) can be advantageously used in various applications, in particular in the medical, pharmacological, cosmetic, agricultural, engineering and food packaging fields.</p>

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">WO 2024028911 A1 20240208</a>	Zambaiti Parati Spa (IT)	<b>Process for producing ecological and biocompatible wallpaper based on pla, and corresponding wallpaper produced by this process and plant for the production of wallpaper from ecological and biocompatible material.</b> A new process for producing ecological and biocompatible wallpaper, comprising the following steps: a) a preparation step for preparing a biodegradable material suitable for being spread on a support sheet, in turn comprising: na-1) a solubilization step for solubilizing lactic acid or PLA, or PolyLActide or PolyLActic acid, supplied in granular form, in ethyl acetate so as to obtain a medium viscous resin; a-2) a plasticizing step for plasticizing the PLA resin with a biodegradable plasticizer, in particular ATBC (AcetylTriButylCitrate), so as to obtain a homogeneous resin of biodegradable material; and a-3) a filling or charging step to add bio rice starch and inorganic glass fillers consisting in particular of 3M "Glass Bubbles" to the resin of biodegradable material; b) a spreading step for spreading the resin of biodegradable material on the support sheet, in particular consisting of a sheet of paper or a sheet of non woven fabric, so as to form on this support sheet a decorative layer; C) an evaporation step to evaporate the ethyl acetate present in the decorative layer spread on the support sheet, so as to make this decorative layer embossable; and d) an embossing step for embossing, after the evaporation step, the decorative layer formed on the support sheet, so as to obtain the ecological and biocompatible wallpaper. The wallpaper produced by this process has the advantage, compared to known wallpapers, of having zero environmental impact, being made up of easily disposable and totally biodegradable materials (PLA, ATBC), and furthermore of being producible by a process which can be carried out with the same plants currently used to produce conventional, non-biodegradable wallpaper.

## Bioproductos químicos (biofertilizantes, biocosméticos, biofarmacéuticos...)

### Biofertilizantes, bioadhesivos, etc.

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">EP 4307412 A1 20240117</a>	BEFC (FR)	<b>Hydrophobic biobinder for cathodic formulation.</b> The present invention concerns manufacturing of a hydrophobic double emulsion (hydrophobic bio binder) to be integrated in a biocathode ink in order to provide a cathodic ink formulation for a hydrophobic biocathode.
<a href="#">EP 4342874 A1 20240327</a>	Bloom Biorenewables SA (CH)	<b>Biobased surfactant and antioxidant.</b> The invention relates to a method for isolating of a substituted guaiacol and/or a substituted syringol of formula (I) from a mixture containing lignin fragments, wherein R1 is hydrogen or -OCH3; R2 is a linear or branched C1 - C4 alkyl or a linear or branched C1 - C4 hydroxyalkyl; R3 is hydrogen or Na; R4 is a C1 - C4 alkyl, a C6 - C12 aryl or a C5 - C12 cycloalkyl; comprising at least the steps of: a) Providing a mixture containing lignin fragments; b) Separation of the mixture of step a) into a lignin oligomer enriched fraction and a lignin monomer enriched fraction; c) Separating a solution comprising the compound according to formula (I) by fraction distillation, wherein R3 is hydrogen, from the lignin monomer enriched fraction of step b); d) Adding an aqueous NaOH solution having a pH of 11 or more to the solution of step c) comprising compound according to formula (I), wherein R3 is a cation; e) Isolating of the precipitated compound of step d); optionally followed by; f) Dissolve the isolated compound of step e) in water and lowering the pH of the aqueous solution to a value below pH 10 using an acid; g) Isolation of a compound according to formula (I), wherein R3 is hydrogen, from the solution of step f).
<a href="#">EP 4311831 A1 20240131</a>	Ecole Polytechnique Fed Lausanne, EPFL (CH)	<b>Biobased surfactant.</b> The present invention relates to a compound of the general formula (I), (II) and (III), more specifically of formula (Ia), (Ib), (Ic) wherein R11 and R12 or R21 and R22 or R31 and R32 are both hydrogen or form together with CHR50 a cyclic moiety or one of R11 and R12 or R21 and R22 or R31 and R32 is hydrogen and the other is -CH2R70 and/or wherein R13 and R14 or R23 and R24 or R33 and R34 are both hydrogen or form together with CHR60 a cyclic moiety, R50 and R60 are different from each other and are selected from the group consisting of -R70, -ZR70, -Z-OH, -Z-NH2, -Z-SH, -Z-OC(O)R70, -OC(O)R70, -COOH, -C(O)NH2, -C(O)NH-R70, -C(O)N-(R70)2, -COOR70, -Z-COOH, -Z-C(O)NH-R70, -Z-C(O)NH2, -Z-C(O)N-(R70)2, -Z-COOR70, -CH(COOH)2, -CH(COOR70)2, and -Z-SO3-, wherein R70 is a linear or branched C1 to C20 alkyl, [C1 to C10]-alkyloxy-[C1 to C10]-alkyl, C2 to C10 alkenyl, C6 to C12 aryl, C3 to C10 cycloalkyl, cycloalkylalkyl and cycloalkylalkenyl, wherein Z is a linear or branched C1 to C10 alkyl, linear or branched C3 to C10 cycloalkyl, cycloalkylalkyl and cycloalkylalkenyl, a linear or branched C6 to C10 aryl or a [C1 to C10]-alkyloxy-[C1 to C10]-alkyl, with the proviso that not all of R11, R12, R13 and R14 or R21, R22, R23 and R24 or R31, R32, R33 and R34 are hydrogen and if one of R11 and R12 or R21 and R22 or R31 and R32 is hydrogen and the other is -CH2R70, R13 and R14 or R23 and R24 or R33 and R34 form together with -CHR60 a cyclic moiety, wherein R60 is R70. Those compounds are useful as biobased surfactants.

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">WO 2024042067</a> <a href="#">A1 20240229</a>	Foresa Tech SLU (ES)	<b>Adhesive compositions, and their use for manufacturing woodbased composites, fibreglass or rock wool insulations, or woven or non-woven fibre mats for compression molding.</b> The present invention refers to novel formaldehyde-free adhesive compositions comprising at least one polyflavonoid-based polymer adhesive, adhesive systems comprising, isolated one of another, an adhesive composition (component A) and at least one hardener agent (component B), as well as an adhesive mixture comprising both the adhesive composition and the at least one hardener agent. These adhesive compositions, systems and mixtures described in this document can be used for manufacturing wood composite boards such as wood fibreboards, particleboards, chipboards, oriented strand boards, plywood and paperboards, but also of fibreglass insulations or rock wool insulations, or woven or non-woven fibre mats for compression molding.
<a href="#">WO 2024042055</a> <a href="#">A1 20240229</a>	Fraunhofer Ges Forschung (DE)	<b>Binders for wood materials, based on renewable raw materials.</b> The present invention relates to a dispersion containing at least one protein- and/or starch-containing binder and at least one hydrophobing agent selected from tall oil derivatives, tall resin, balsam resin or mixtures thereof, a method for producing the dispersion, wood material bonded by means of the dispersion, and the use of the dispersion as an adhesive for wood materials.
<a href="#">WO 2024035920</a> <a href="#">A1 20240215</a>	Pilot Chemical Corp (US)	<b>Synergistic combination of polysaccharide-based surfactants and bio-based surfactants.</b> Surfactant blends are disclosed which exhibit improved stability over a wide pH range. The surfactant blends include a polysaccharide-based surfactant and a bio-based surfactant. Methods of making and using the surfactant blends are further provided.
<a href="#">EP 4335835 A1</a> <a href="#">20240313</a>	Politechnika Wroclawska et al. (PL)	<b>Method and system for producing a micronutrient fertilizer.</b> The invention relates to a method for producing a micronutrient fertiliser, whereby biomass selected from a group consisting of currant seeds, press cakes, rapeseed meal, soybean meal or waste after supercritical CO2 extraction of alfalfa and goldenrod, and combinations thereof, is intensively sprayed with an aerosol of a solution of sulphate salts of trace elements, containing Cu(II) ions at a concentration of 500 to 30,000 mg/L, Mn(II) at a concentration of 500 to 30,000 mg/L and Zn(II) at a concentration of 500 to 30,000 mg/L, with a pH in the range from 3.0 to 6.0, preferably generated at a pressure of 0.5 to 5 bar. The biomass is possibly enriched in Fe(III) ions, by spraying with an aerosol of a solution of iron sulphate salt, containing Fe(III) ions at a concentration of 500 to 30,000 mg/L. The subject of the invention is also a system for producing the micronutrient fertiliser, which is equipped with devices for dosing and feeding of biosorption substrates, cooperating with an aerosol generating module. Wherein the module for dosing and feeding of the micronutrient solution comprises a tank (RZ), connected to the module generating aerosol from the micronutrient solution, pumped using a pump (RW), and a module for dosing and feeding of the biomass comprises a weigher (BW), from which the biomass is introduced to a ribbon conveyor (BP), above which spraying nozzles (BD) are located, to which the micronutrient solution is fed simultaneously with compressed air pumped in a spray module from a compressor (NS). In a variant of the invention, the system for producing micronutrient fertilizer comprises a fluidized bed column to which the module for dosing and feeding of the micronutrient solution and the aerosol generating module are connected. Wherein the column is provided with an opening for biomass loading and a biomass fluidization assembly, which is equipped with a fan, connected to a heater, from which air is introduced into the fluidized bed column. The module for dosing and feeding of the micronutrient solution comprises a tank from which the micronutrient solution is supplied to a spray nozzle located in the fluidized bed column, the aerosol generating module comprises a compressor from which compressed air is pumped to the spray nozzle located in the fluidized bed column.
<a href="#">WO 2024048531</a> <a href="#">A1 20240307</a>	Ryux Inc (JP)	<b>Compost production method and compost.</b> The present invention can provide: a compost production method by which workability can be improved; and compost. A compost production method according to the present invention is a compost production method in which compost is produced through a mixing step for mixing an animal-derived nitrogen source material with a plant-derived carbon source material. The compost production method according to the present invention involves: performing a nitrogen source modifying step for mixing biomass combustion ash, which is combustion ash discharged by thermal power generation using a combusted plant-based biomass fuel, with the nitrogen source material to obtain a modified nitrogen source material; and mixing the modified nitrogen source material with the carbon source material as the mixing step after the nitrogen source modifying step.

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">WO 2024003602</a> <a href="#">A1 20240104</a>	Univ Aveiro (PT)	<b>Bioadhesives, method of preparation and uses thereof.</b> The present disclosure relates to bioadhesives, their method of preparation and uses thereof. Taking in consideration the mussels bioinspired adhesion mechanism, the present disclosure is related to the fabrication of a bioadhesive composed of two natural derived molecules, the polyphenol tannic acid (TA) and the natural derived polymer pullulan (PUL). Methacrylated PUL(PUL-MA) and TA water-soluble solutions are simply mixed and the two are connected through supramolecular bonding, rendering the formation of a coacervate phase with adhesive properties – TAPUL-MA bioadhesive. TA, in addition to acting as an adhesion molecule, works as crosslinker between PUL-MA molecules, conferring also cohesion to the bioadhesive. To increase the biocompatibility of the bioadhesives, a catalase enzyme was added to the formulations. The production method is easy, low-cost and easily scalable, and TAPUL-MA does not imply the use of any curing agent for application. The TAPUL-MA bioadhesive produced by the methods disclosed in this application have low toxicity, are biodegradable, provide adhesion even in humid conditions, as well as antibacterial and hemostatic properties. Therefore, the adhesive composition may be used as a medical adhesive, namely as a hemostatic agent in surgery, to stop bleeding.
<a href="#">WO 2024033397</a> <a href="#">A1 20240215</a>	Univ Danmarks Tekniske (DK)	<b>Water-resistant adhesive.</b> A method for preparing an adhesive, said method comprising - mixing chitosan and tannic acid in an aqueous solution, and adjusting the pH value of the resulting mixture to a pH that induces the formation of a polymer-rich phase and a polymer-poor phase, preferably in a pH range of from 4.5 to 6, such as from 5 to 5.5 to obtain a polymer-rich phase and a polymer-poor phase; and - isolating the polymer-rich phase to obtain said adhesive. Described is also an adhesive obtainable from said method and uses thereof.

## Biocosméticos, Biofarmacéuticos

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">EP 4309512 A1</a> <a href="#">20240124</a>	Argiolas Spa (IT)	<b>One shot process for the simultaneous extraction of phytocomplex from agro-industrial processing waste and loading in extractive vesicles and their use.</b> The present invention relates to a process for the treatment and valorisation of agro-food production waste such as pomace and to the products thus obtained. In particular, the invention refers to a process for the extraction of phytocomplexes from agro-industrial waste by the addition of phospholipids and the simultaneous formation of phospholipidic vesicles loaded with said phytocomplexes. The extraction and delivery take place one-shot and make it possible to obtain pomace phytocomplexes delivered in phospholipidic vesicles by simply adding the phospholipids directly into the extraction solution. The products thus obtained can be used in the pharmaceutical, cosmetic and nutraceutical fields.
<a href="#">WO 2024052870</a> <a href="#">A1 20240314</a>	Art Cosmetics Srl (IT)	<b>Solid aqueous gel for cosmetic use.</b> The present invention relates to a solid cosmetic composition in stick form consisting of a continuous aqueous solid phase comprising no more than two hydrophilic gelling agents selected from natural or naturally-derived polysaccharides, and one or more polyols. The cosmetic composition is used in products designed for body and/or facial skin care and/or make-up.
<a href="#">WO 2024018037</a> <a href="#">A1 20240125</a>	Bioinnova Srls et al. (IT)	<b>Microalgae expressing GLP-2 and uses thereof.</b> The present invention relates to a microalgae product capable of expressing glucagon-like peptide (GLP), preferably GLP-2, and its use in the pharmaceutical or nutraceutical field in the treatment and prevention of disorders affecting the gastrointestinal system, including in particular acute and chronic inflammatory diseases.
<a href="#">WO 2024012787</a> <a href="#">A1 20240118</a>	Clariant Int Ltd (CH)	<b>Composition comprising an extract of jasminum sambac and use thereof.</b> The present invention relates to an extract of the leaves of Jasminum sambac comprising iridoid glycosides comprising sambacoside A and at least two molihuasides, a composition comprising such extract and uses thereof. Furthermore, the present invention refers to a cosmetic or pharmaceutical composition comprising such extract as an active ingredient for skin and for inhibiting hair growth.



Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">WO 2024013655</a> <a href="#">A1 20240118</a>	Eni Spa (IT)	<b>Process for producing polyunsaturated fatty acids in the form of esters.</b> The present invention relates to an integrated process for the simultaneous production of polyunsaturated fatty acids, in particular in the form of esters, and of esters of palmitic acid from algae. The compounds of the present invention can be used in the pharmaceutical industry (products for the prevention of cardio-circulatory problems) and in the cosmetic industry (emollients and moisturizers). In particular, the present invention is directed to a process for obtaining eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) esters from algal material, comprising the steps of: a) treating the algal material with an extraction solvent to give a liquid phase containing said solvent and algal oil and a solid phase comprising cellulose, sugars and proteins; b) separating the solid phase from the liquid phase of step a); c) separating the algal oil from the extraction solvent in the liquid phase of step b); d) subjecting the algal oil of step c) to a low-temperature treatment so as to obtain the precipitation of saturated and monounsaturated fatty acid triglycerides and a liquid phase containing or consisting of polyunsaturated fatty acid triglycerides; e1) separating, isolating and purifying DHA and EPA triglycerides from the liquid phase of step d), or e2) transesterification with ethanol of DHA and EPA triglycerides and isolating the respective DHA and EPA ethyl esters; f) optionally, isolating and purifying the palmitic acid triglyceride from the phase containing the saturated and monounsaturated fatty acid triglycerides of step d); g) optionally, transesterification of the palmitic acid triglyceride of step f) with a linear or branched C1-C4 alcohol, to give a C1-C4 alkyl ester of the palmitic acid and glycerol; h) optionally, hydrogenating the glycerol of step g) to give isopropanol.
<a href="#">WO 2024041724</a> <a href="#">A1 20240229</a>	Givaudan SA (CH) et al.	<b>Composition comprising curcuminoids, modified starch and/or acacia gum and saponins for use as a medicament.</b> The present invention relates to the use of an improved curcuminoids composition for reducing IPS levels in blood, reducing endotoxemia, protecting the integrity of the intestinal barrier, treating, decreasing and/or preventing leaky gut syndrome, reducing intestinal lipids absorption, reducing ApoB48 levels in blood and/or for in treating, decreasing and/or preventing dyslipidemia in a subject.
<a href="#">WO 2024009041</a> <a href="#">A1 20240111</a>	Laboratoires de Biologie Vegetale Yves Rocher (FR)	Extract from meristematic cells of <i>Otanthus maritimus</i> and uses thereof, in particular in cosmetics. The present invention relates to an extract from meristematic cells of <i>Otanthus maritimus</i> , as well as to the non-therapeutic use thereof in cosmetics. The present invention also relates to a cosmetic or dermatological composition comprising the <i>Otanthus maritimus</i> extract, to a preparation method, and to a device comprising the <i>Otanthus maritimus</i> extract.
<a href="#">EP 4302772 A1</a> <a href="#">20240110</a>	Mueller Jan Allan et al. (DK)	<b>Composition for oral administration and supplement comprising such a composition.</b> A composition for oral administration, comprising fucoidan from a first source of fucoidan and from a second source of fucoidan, the first source of fucoidan being dried seaweed, and the second source of fucoidan being a fucoidan extract from seaweed. The composition has a weight ratio of the second source to the first source of fucoidan in the range 10 % to 50 % and the first source and second source constitutes at least 60 % by weight of the composition.
<a href="#">WO 2024008769</a> <a href="#">A1 20240111</a>	Oreal (FR)	<b>Cosmetic composition comprising a natural resin.</b> The present invention relates to a cosmetic composition comprising, in a physiologically acceptable medium: at least one volatile oil, at least one volatile alcohol, at least one natural resin, and at least one modified polysaccharide; and to the use of such a composition for improving the persistence and/or the resistance to friction without increasing the tacky effect of a film obtained by applying said composition to the keratin materials.
<a href="#">WO 2024049366</a> <a href="#">A1 20240307</a>	Ozcelik Bitkisel Urunler Kozmetik Gida Kimyevi Madde Ithalat Ihracat Sanayi Ve Ticaret Ltd Sirketi (TR)	<b>A depilatory mixture with natural ingredients.</b> A hair reducing mixture with natural ingredients that reduces the hair growth on the human body, and is characterised in that; including - water (aqua), which ensures that the components in the mixture dissolve and mix with each other, - isopropyl alcohol, which dissolves the components in the mixture and ensures viscosity control, - walnut leaf extract ( <i>juglans regia</i> extract), which provides skin care and hair removal, - orange peel extract ( <i>citrus aurantium</i> peel extract), which provides skin care and hair removal, - lemon peel extract ( <i>citrus limon</i> peel extract), which provides skin care and hair removal.

## Bioaditivos alimentarios

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">WO 2023249549</a> <a href="#">A1 20231228</a>	AAK AB Publ (SE)	<b>Process for preparing a plant-based food dough.</b> Disclosed herein is a process for preparing a plant-based food dough using an extruder, said extruder comprising an extruder barrel and a cooling die, the process comprising the steps of : A). feeding the extruder barrel with less than 35wt% by weight of non-animal protein relative to the total weight of the plant-based food dough; B). feeding the extruder barrel with from 35 to 80wt% by weight of water relative to the total weight of the plant-based food dough, C). feeding the extruder barrel with less than 45% by weight of a starch relative to the total weight of the plant-based food dough; D). feeding the extruder barrel with from 1 to 30wt% by weight of a melted fat composition relative to the total weight of the plant-based food dough so as to form a plant-based food mixture; E). extruding the plant-based food mixture through the cooling die.
<a href="#">ES 2957538 A1</a> <a href="#">20240122</a>	Agrosingularity SL (ES)	<b>Procedure for obtaining a food ingredient with dietary fiber and food ingredient obtained through the same.</b> Procedure for obtaining a food ingredient with dietary fiber, from an agri-food by-product, which includes cleaning of the by-product; a dehydration; a pasteurization; a micronization, to a size less than 100 µm; an enzymatic treatment, using a cellulase endoglucanase enzyme; evaporation of water, and packaging. Food ingredient with dietary fiber, obtained by said procedure that comprises a ratio between soluble and insoluble fiber greater than the ratio existing in the original by-product, the amount of soluble fiber being between 2 and 5 times greater than that of the original by-product and where, the The amount of ingredient obtained by weight is between 80 and 95% of the weight of the initial by-product.
<a href="#">EP 4316247 A1</a> <a href="#">20240207</a>	Dreamfarm Srl (IT)	<b>Vegetable stretched-curd cheese and method of production.</b> The present invention relates to the preparation of a food product that is proposed as a vegetable-based alternative to dairy products. Specifically, the invention relates to a method for obtaining a vegetable-based and/or vegan cheese derived from nuts, preferably from almonds and/or cashews, and/or seeds, characterised by being a vegetable stretched-curd cheese, preferably with a protective liquid, with organoleptic properties (appearance and consistency) similar to that of a dairy-derived mozzarella Furthermore, the invention relates to a vegetable stretched-curd cheese, preferably with a protective liquid, obtained with the method of the invention, a vegetable stretched-curd cheese, preferably with a protective liquid, and the use of combinations of food texturizing agents, preferably of natural origin, and even more preferably the use of combinations of natural dietary fibres, which allow for performing the step of stretching a vegetable-based cheese derived from nuts, in particular from almonds or cashews, and/or seeds.
<a href="#">WO 2024002816</a> <a href="#">A1 20240104</a>	Frieslandcampina Nederland BV (NL)	<b>Fat composition to prevent infantile regurgitation.</b> A synthetic nutritional composition comprising a carbohydrate fraction, a protein fraction and a lipid fraction wherein the amount of butyrate in the lipid fraction is at least 0.2 wt% as determined to the total amount of fatty acids in the lipid fraction; and wherein amount of butyrate (i.e. C4:0) linked to sn-1,3 is more than 70% of the total amount of butyrate for use in the treatment and/or prevention of infantile regurgitation.
<a href="#">WO 2024023311</a> <a href="#">A1 20240201</a>	Goethe Biotechnology GmbH (DE)	<b>Orodispersible tablet, in particular for use as a food supplement.</b> The invention relates to an orodispersible tablet, in particular for use as a food supplement, comprising as the main ingredients: an active substance, a disaccharide, and a phosphatidyl choline.
<a href="#">WO 2024028439</a> <a href="#">A1 20240208</a>	Novelty for Them GmbH (DE)	<b>Complexed astaxanthin undergoing a hypsochromic shift upon heating and application in food products.</b> The present invention discloses food products that include bound astaxanthin. The food products are capable of changing color by altering the binding state of the astaxanthin. The invention also includes a method of altering one or more properties of a food product, compositions for use in such methods, a method of forming the food products including bound astaxanthin and the use of exogenous bound astaxanthin to form a food product that undergoes a hypsochromic shift when heated.
<a href="#">WO 2024056784</a> <a href="#">A1 20240321</a>	Nutricia NV (NL) et al.	<b>Nutritional composition.</b> A nutritional composition comprising sn-2 palmitic acid and A2 beta-casein for use in improving the gut microbiota in a human subject.

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">EP 4311433 A1</a> <a href="#">20240131</a>	Stefan Cel Mare Univ of Suceava (RO)	<b>Nutritionally enriched gingerbread and process for obtaining it.</b> The invention refers to an assortment of gingerbread, with an improved nutritional value, with a high protein and fiber content, intended for all categories of consumers. The nutritionally enriched gingerbread, according to the invention, is obtained from the following ingredients: wheat flour, millet flour, spent grain flour, dandelion syrup, hemp oil, yeast flakes, ginger, fenugreek, turmeric, sodium bicarbonate and ammonium carbonate. Obtaining nutritionally enriched gingerbread, according to the invention, includes the following stages: qualitative and quantitative reception of raw and auxiliary materials, dosing and preparation of raw and auxiliary materials, mixing of components to obtain the dough, rolling the dough to homogenize and improve the internal structure, modelling (cutting) in pieces, baking in an electric oven at 150°C for 20 minutes, cooling and glazing with a sugar syrup at 60°C and packaging the finished product.
<a href="#">WO 2024028584</a> <a href="#">A1 20240208</a>	Univ Leeds Innovations Ltd (GB)	<b>Formulation.</b> This invention relates to a food product comprising an additive formulation, the additive formulation comprising a proteinaceous microgel and a biopolymeric hydrogel. The invention also relates to methods for preparing such food products. The invention also relates to a use of an additive formulation as a fat replacement and/or an astringency reducer and/or a mouthfeel enhancer, the additive formulation comprising a proteinaceous microgel and a biopolymeric hydrogel.

## Bioproductos alimenticios para animales

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">WO 2024018413</a> <a href="#">A1 20240125</a>	Ittinsect SRL (IT)	<b>Fish feed.</b> The fish feed comprises at least one derivative of ichthyic origin, at least one derivative of plant origin and a mixture of one or more insect flours which are at least partly hydrolyzed.
<a href="#">EP 4309510 A1</a> <a href="#">20240124</a>	Macsumsuk Gm Co Ltd (KR)	<b>Method of producing vacuum extrusion pellet for fish feed or formulated feed supplement using livestock blood, macsumsuk, and legal calcium.</b> Disclosed is a method of producing pellets for fish feed or a formulated feed supplement in that citric acid, wood vinegar, sodium chloride, yucca extract, nano silver, and zirconium are added and mixed to livestock blood to prepare a primary mixture and bentonite and zeolite are prepared and mixed with the primary mixture, calcined legal calcium, and mineral powder and then, it is vacuum-extruded and dried by dry heat (200 to 500 ° C) for 15 to 40 minutes and cuts and is pulverized to a certain size with a moisture content of 12% or less to fully satisfy the mass production, the slow disintegration of the formulation, excellent preservability, conditions for increasing a weight gain of a feeding target, and the like.
<a href="#">WO 2024003643</a> <a href="#">A1 20240104</a>	Nestle SA (CH)	<b>Methods of enhancing palatability and/or reducing sugar in wet pet foods.</b> A method of making a wet food formulated for administration to a pet includes incorporating at least one of spinach or tomato into the wet food in an amount effective to enhance palatability of the wet food and/or reduce added sugar in the wet food. The method may include producing the wet food as a chunks-in-gravy composition and may include one or more of the following steps: (i) producing the gravy by a process comprising adding spinach to one or more other ingredients of the gravy; (ii) producing the gravy by a process comprising adding tomato to one or more other ingredients of the gravy, and preferably also incorporating free form cysteine into in the gravy; and (iii) producing the chunks by a process comprising adding both spinach and tomato to one or more other ingredients of the chunks. The method may include producing the wet food as a loaf composition, preferably by incorporating both spinach and tomato into the loaf composition.
<a href="#">WO 2024033825</a> <a href="#">A1 20240215</a>	Panificazione Malagrino Srl (IT)	<b>Food composition for monogastric animals.</b> The present invention relates to a method for preparing a food composition for animals, in particular monogastric animals. The method comprises preparing a certain amount of stale bread and removing residual moisture from the stale bread. After removing residual moisture, the bread is shredded, e.g. ground to powder or to flour form. After shredding the bread, the method comprises mixing the bread with soybean, wheat, bran, corn, barley and optionally one or more supplements, thus forming the food composition.

Nº Publicación	Solicitante (País)	Contenido técnico
<a href="#">WO 2024013060</a> <a href="#">A1 20240118</a>	Purac Biochem BV (NL)	<b>Method for manufacturing shrimp feed pellets.</b> The invention pertains to a process for manufacturing shrimp feed pellets with a bulk density of at least 550 g/l and a particle diameter of 0.25-5 mm comprising the steps of - providing a biomass product with a water content of at most 10 wt.% (calculated on the biomass product) and a DHA content of at least 20 wt.% (calculated on the biomass product), the biomass product being derived from microorganisms of the family Thraustochytriaceae or the family Cryptecondiniaceae, - preparing a mixture comprising 0.1-10 wt.% (calculated on dry weight of the shrimp feed pellet) of said biomass and the balance further feed components, - subjecting the mixture thus obtained to a pellet pressing step, to form shrimp feed pellets with a bulk density of at least 550 g/l and a particle diameter of 0.25-5 mm. It has been found that the incorporation of the specified biomass product in the specified amount in the composition provided to a pellet press makes it possible to obtain shrimp feed pellets with desirable properties in a single step pelletising process. As compared to the addition of fish oil, the addition of biomass product to the composition for the pellet press results to lesser - or no - degradation of the DHA. It also does not result in excessive lubrication of the press.
<a href="#">WO 2024058188</a> <a href="#">A1 20240321</a>	Sumitomo Chemical Co (JP) et al.	<b>Ingredient for feed for aquatic animals.</b> Provided is an ingredient for a feed for aquatic animals, the ingredient serving as an ingredient in fish-meal substitute. This ingredient for a feed for aquatic animals contains secretions from insects of the infraorder Muscomorpha.
<a href="#">WO 2024020203</a> <a href="#">A1 20240125</a>	Univ Auburn et al. (US)	<b>Using liberated and modified fibers, micro-fibers, nano-fibers, and cellulose from lignocellulosic plant fibers, combined with algae, as feed binders in compound feeds.</b> Animal feed binders made from defibrillated lignocellulosic fibers, animal feeds comprising the defibrillated lignocellulosic fibers, and methods to make animal feeds using the defibrillated lignocellulosic fibers.
<a href="#">WO 2024012141</a> <a href="#">A1 20240118</a>	Univ West Anhui (CN)	<b>Feed additive rich in stachyose extract and bacillus licheniformis.</b> A feed additive rich in stachyose extract and Bacillus licheniformis, and a preparation method therefor. The method comprises: crushing Stachys japonica, Rehmanniae radix, and Stachys floridana to obtain a mixed dry powder, adding ethanol thereto, performing ultrasonic extraction to obtain a filtrate component 1 and a filtration residue component 1, adding an ethanol aqueous solution to a flask filled with the filtration residue, performing heating, refluxing, rotary evaporation, concentrating and filtering on same to obtain a filtrate component 2, and mixing the filtrate component 1 with the filtrate component 2 to obtain a high-precision stachyose extract. The method further comprises uniformly mixing the stachyose extract, Bacillus licheniformis, soybean meal, crude protein, etc., to obtain the feed additive rich in stachyose extract and Bacillus licheniformis. The feed additive prepared by means of the method has the effects of preventing and treating intestinal diseases and reducing the mortality rate in broilers, piglets and cows.
<a href="#">WO 2024057907</a> <a href="#">A1 20240321</a>	Usui Co Ltd (JP)	<b>Rotifer feed and production method of rotifer feed.</b> The purpose of the present invention is to provide a rotifer feed and a production method of a rotifer feed that reduce the burden of contamination control during culture. The rotifer feed (YFU3 strain concentrate feed F) contains a microalga (Cyanidium C) belonging to the class Cyanidiophyceae, the microalga being able to be cultured in a medium in an environment of freshwater or seawater or a liquid containing sodium chloride equivalent to seawater and in an acidic environment. The production method of the rotifer feed (YFU3 strain concentrate feed F) includes a culture step for culturing the microalga (Cyanidium C) belonging to the class Cyanidiophyceae in a medium that is freshwater or seawater or a liquid containing sodium chloride equivalent to seawater and adjusted to an acidic condition, and a liquid removal step for, after culturing in the culture step, removing at least a portion of the culture liquid contained in the medium.
<a href="#">WO 2024031124</a> <a href="#">A1 20240215</a>	Utas Nexus Aquasciences Pty Ltd (AU)	<b>Nutritional formulations and uses thereof.</b> The present invention relates generally to a nutritional composition for the development of aquatic crustaceans and fish species. More specifically, a nutritional formulation comprising n-3 and n-6 fatty acids and live Artemia for the tropical spiny rock lobster.

**NIPO: 116-19-007-8**



**Boletín elaborado con la colaboración de:**

**Agencia Estatal  
de Investigación**

C/ Torrelaguna, 58  
28071 Madrid

**Bioplat**

C/ Doctor Castelo 10, 4ºD  
28009 Madrid  
Tel.: 91 074 54 28  
E-mail: [secretaria@bioplat.org](mailto:secretaria@bioplat.org)  
[www.bioplat.org](http://www.bioplat.org)

**CIEMAT**

Avda. Complutense,40  
28040 Madrid  
Tel: 91 346 08 99  
E-mail:[uip@ciemat.es](mailto:uip@ciemat.es)  
[www.ciemat.es](http://www.ciemat.es)

**OEPM**

Paseo de la Castellana, 75  
28071 Madrid  
Tel: 91 349 53 00  
E-mail:[carmen.toledo@oepm.es](mailto:carmen.toledo@oepm.es)  
[www.oepm.es](http://www.oepm.es)



Esta publicación está bajo licencia Creative Commons Reconocimiento, Nocomercial, Compartirigual, (by-nc-sa). Usted puede usar, copiar y difundir este documento o parte del mismo siempre y cuando se mencione su origen, no se use de forma comercial y no se modifique su licencia. Más información: <http://creativecommons.org/licenses/by-nc-sa/3.0/>