VT PATENTES
BIOMASA PARA LA BIOECONOMÍA
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BOLETÍN BIOENERGÍA Y BIOPRODUCTOS

Nanocristales de celulosa: Publicaciones

En la introducción de la última Edición de este Boletín se puso de manifiesto, mediante un estudio de patentes, que durante los últimos años los nanocristales de celulosa han atraído un gran interés en campos tan importantes y diversos como la medicina, el tratamiento de aguas e incluso la electrónica. En esta ocasión, se va a realizar un breve análisis bibliométrico de los artículos científicos publicados entre 2019 y 2021. Para ello, se hará uso de la colección principal de la base de datos Web of Science.

En este periodo, se publicaron más de 2500 artículos científicos. En la Figura 1 se muestran los países líderes. China se sitúa a la cabeza de las publicaciones mundiales con el 33.5% del total. En segundo y tercer lugar se encuentran Estados Unidos y Canadá, a los que corresponde el 16.2% y el 13.3%, respectivamente. Entre los top-ten se encuentran cuatro países europeos, Francia, Finlandia, Suecia y España con el 5.0%, el 3.7%, 3.7% y el 3.5% de las publicaciones totales, respectivamente. Italia, Alemania y Suiza, por ejemplo, son otros países europeos con actividad en este campo, aunque de menor intensidad.

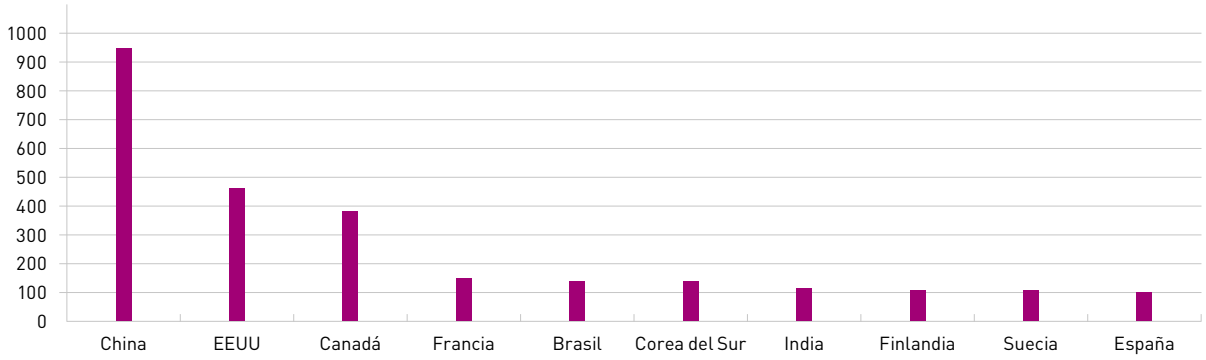

Figura 1. Países líderes en publicaciones

Se han identificado más de 500 organismos trabajando en este campo, en la Tabla 1 figuran las 10 instituciones líderes a nivel mundial. A pesar de que China es el país que más publicaciones tiene, el *Centre National de la Recherche Scientifique* (CNRS) es el situado a la cabeza de los organismos con mayor número de publicaciones (Tabla1). En segundo lugar, se sitúa la *University Brithish of Columbia* de Canadá. A continuación, destacan la Nanjing Forestry University y la South China University of Technology, en tercera y cuarta posición, respectivamente. Cabe resaltar que en el 3.5% de las publicaciones participa al menos alguna entidad española.

En la Tabla 2 se recoge el título de los artículos científicos en que participa algún centro español y cuyo número de citas recibidas es ⩾ 20. Entre los centros españoles destacan la Universidad del País Vasco con el 1.0% de las publicaciones totales y el Consejo Superior de Investigaciones Científicas (CSIC) con el 0.7%. En la Tabla 3 se muestran algunas de las líneas de trabajo más relevante de estos dos organismos, atendiendo a la temática de sus publicaciones.

Tabla 1. Instituciones líderes a nivel mundial

Institución (País)	Nº Publicaciones
Centre National de la Recherche Scientifique-CNRS (Francia)	108
Univ British Columbia (Canadá)	98
Nanjing Forestry Univ (China)	79
South China Univ Technol (China)	78
Aalto Univ (Finlandia)	70
Chinese Academy of Sciences (China)	69
Univ Grenoble Alpes (Francia)	61
Univ Waterloo (Canadá)	61
United States Department of Agriculture (EE.UU.)	49
Royal Institute of Technology (Suecia)	47

Tabla 2. Artículos científicos de centros españoles cuyo número de citas recibidas es ≥ 20

Título	Nº Citas recibidas	Autor	Centros
An organic cathode based dual-ion aqueous zinc battery enabled by a cellulose membrane	60	Glatz, H et al.	• Swiss Fed Inst Technol, Switzerland • Univ País Vasco • BC Materiales
Cellulose nanocrystal based multifunctional nanohybrids	57	Lizundia, E et al.	• Univ País Vasco • Univ Perugia, Italy • Univ British Columbia, Canada • Univ Tuscia, Italy
Industrial application of nanocelluloses in papermaking: A review of challenges, technical solutions, and market perspectives	54	Balea, A et al.	• Univ Complutense Madrid • Univ Politécnica Madrid
Black titania with nanoscale helicity	32	Nguyen, TD et al.	• Univ British Columbia, Canada • Swiss Fed Inst Technol, Switzerland • Univ País Vasco • BC Materiales • FPInnovations, Canada
Nanocellulose films with multiple functional nanoparticles in confined spatial distribution	30	Roig-Sanchez, S et al.	• Inst Ciencia Materiales Barcelona • Royal Inst Technol KTH, Sweden
Mesoporous cellulose nanocrystal membranes as battery separators for environmentally safer Lithium-ion batteries	29	Goncalves, R et al.	• Univ Minho, Portugal • Univ País Vasco • Swiss Fed Inst Technol, Switzerland • BC Materiales
Improving mechanical and barrier properties of thermoplastic starch and polysaccharide nanocrystals nanocomposites	28	Gonzalez, K et al.	• Univ País Vasco
A single Li-ion conductor based on cellulose	27	Nguyen, TD et al.	• Swiss Fed Inst Technol, Switzerland • Univ País Vasco
Effect of nanocelluloses on the microstructure and mechanical performance of CAC cementitious matrices	25	Claramunt, J et al.	• Univ Politécnica Cataluña • Univ Fed Rio de Janeiro, Brazil
A reproducible method to characterize the bulk morphology of cellulose nanocrystals and nanofibers by transmission electron microscopy	20	Campano, C et al.	• Univ Complutense Madrid
Biphasic hydrogels integrating mineralized and anisotropic features for interfacial tissue engineering	20	Echave, MC et al.	• Univ País Vaco • Biomed Res Networking Ctr • Univ Minho, Portugal • ICVS 3Bs PT Govt Associate Lab, Portugal
Self-Assembly route to TiO2 and TiC with a liquid crystalline order	20	Nguyen, TD	• Univ British Columbia, Canada • Univ País Vasco • Swiss Fed Inst Technol, Switzerland • FPInnovations, Canada • Kanazawa Univ, Japan

Tabla 3. Líneas de trabajo de las principales instituciones españolas

Título	Centros
Univ. País Vasco	• Reinforcement: Starch-based nanocomposite hydrogels, waterborne polyurethanes, poly(ethylene brassylate), poly (vinylidene fluoride), iota-carrageenan nanocomposites, Poly[(3-hydroxybutyrate)-ran-(3-hydroxyvalerate)], sustained drug delivery systems • CNC armored latex particles: conventional coatings applications • Mesoporous membranes CNCs: cobalt ferrite and graphite nanoparticle • Aerogels: CNCs, GeO2 nanoparticles, supercapacitor materials • Nanocomposite films: Waxy starch nanocrystals (WSNC) + CNCs • Imitation of bone or tendon tissue: CNCs + enzymatically cross-linked gelatin • Li-ion battery: CNCs membranes, separators, anode electrodes, energy store • Photonic films: CNCs, peroxotitanate • Synthesis of CNCs: walnut shells, almond shells as
CSIC	• Nanocomposites: CNCs + Pd nanoparticles • CNCs synthesis: waste biomass from Posidonia oceanica leaves • Amaranth protein isolate -based films +CNCs • Active multilayer films • Food packaging • Molecular structure • Reinforced Concrete • Pectin-cellulose nanocrystal biocomposites

PATENTES BIOENERGÍA

Biocombustibles sólidos (pellets, biochars, bio RDFs, bio SRFs, etc.)		
Nº Publicación	Solicitante (País)	Contenido técnico
EP 4036470 A1 20220803	Beltrame Giovanni (IT)	**Heat production plant supplied with wood fuel, wood-shell fruit residues and other similar vegetable residues.** The present invention relates to a heat production plant supplied with wood fuel, wood-shell fruit residues and other similar vegetable residues, comprising:- a first containment tank for storing standard wood chips (A);- a shredding mill, or refiner configured to reduce the size of said standard wood chips (A), having an outlet chamber for collecting reduced wood chips (B);- first transfer means for conveying the standard wood chips (A) from the bottom of the first containment tank to the shredding mill, or refiner;- a second containment tank, for the reduced wood chips (B);- second transfer means for conveying the reduced wood chips (B) from the outlet chamber to the second containment tank;- a combustion module, comprising a pellet burner;- third transfer means for conveying the reduced wood chips (B) from the bottom of the second containment tank to the pellet burner;- a heat exchange module, for heat exchange between the flue gases exiting the combustion module and a flow of a fluid to be heated;- a module for pumping the fluid to be heated.
EP 4026624 A1 20220713	Bradley WC Co (US)	**Improved method of handling wood fuel pellets.** A filter insert is sized to fit into a fuel pellet handling bucket and has a filter floor elevated by a plurality of standoffs to define a space below the screen mesh fuel insert.
WO 2022140859 A1 20220707	Carbon Lock Tech Inc (CA)	**Organic waste carbonization system.** Described herein is a method of carbonizing organic waste to produce a stable form of biocarbon for the purposes of carbon sequestration. In some embodiments, the method is a continuous method wherein organic waste is added at a top of a carbonization system and biocarbon is recovered from a bottom thereof.
WO 2022159602 A1 20220728	Carbon Tech Holdings Llc (US)	**Reactivity-moderated biocarbon pellets.** In some variations, the invention provides a biocarbon pellet comprising: 35 wt% to 99 wt% of a biogenic reagent, wherein the biogenic reagent comprises, on a dry basis, at least 60 wt% carbon; 0 wt% to 35 wt% water moisture; and 1 wt% to 30 wt% of a binder, wherein the biocarbon pellet is characterized by an adjustable Hard grove Grindability Index (HGI) from about 30 to about 120, as shown in the Examples. The pellet HGI is adjustable by controlling process conditions and the pellet binder. The binder can be an organic binder or an inorganic binder. The carbon is renewable as determined from a measurement of the 14C/12C isotopic ratio. Many processes of making and using the biocarbon pellets are described. Applications of the biocarbon pellets include pulverized coal boilers, furnaces for making metals such as iron or silicon, and gasifiers for producing reducing gas.
WO 2022171966 A1 20220818	Europeenne de Biomasse (FR)	**Use of steam-cracked biomass as alternative fuel by direct injection into a furnace.** The invention relates to a pulverulent biofuel that is obtained by steam cracking a biomass and is capable of being injected directly into a furnace. More specifically, the invention relates to the use of a steam-cracked biomass in the form of a dry powder intended to be used as a fuel in fluid mode in a facility such as a direct feed boiler.
WO 2022154210 A1 20220721	Gabehouse Co Ltd (KR)	**Method for manufacturing camping pellets by using coffee grounds.** The present invention relates to a method for manufacturing camping pellets by using coffee grounds and, more specifically, to a method for manufacturing camping pellets by using coffee grounds obtained after extracting a coffee beverage from coffee powder formed by grinding roasted coffee beans, the method comprising: a drying step of drying the coffee grounds; an addition step of adding a natural binder to the coffee grounds, having been dried in the drying step, in order to provide viscosity thereto; and a pellet manufacturing step of injecting the coffee grounds, in which the natural binder has been added in the addition step, into a pellet molding machine to manufacture pellets, and since the natural binder for reducing pollutants is added to the manufactured pellets, the generation of pollutants can be reduced during burning of the manufactured pellets. Additionally, in the present invention, the natural binder comprises phytoncide oil and hazelnut oil and the outer surface is coated with coffee oil so that uniquely mild coffee flavors are provided during burning of the manufactured pellets, and thus camping with a nice atmosphere can be enjoyed.
WO 2022153830 A1 20220721	Idemitsu Kosan Co (JP)	**Biomass solid fuel manufacturing method.** A biomass solid fuel manufacturing method comprising: a step for obtaining blasted biomass by blasting biomass using steam; a step for obtaining biomass pellets by molding said blasted biomass; and a pellet heating step for heating the biomass pellets at 180°C or more for at least 5 minutes.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2022172936 A1 20220818	Jujo Paper Co Ltd (JP)	**Solid fuel.** The present invention addresses the problem of providing a solid fuel made of a molded product of crushed hardwood that has high material yield and calorific value yield, is easy to handle from the viewpoint of recycling and environmental protection, has improved transportability, and has excellent crushability by mill. In a solid fuel made from a molded product that includes crushed hardwood, the fraction of the solid fuel molded product that passes through a sieve having 1-mm square holes in the particle size after dry shredding is 60 mass% or more.
WO 2022174186 A1 20220818	Mosaic Co (US)	**Compaction of potash into briquettes.** A roller press comprising including a roller face defining a plurality of individual reliefs shaped and sized to compress feed material into a plurality of discrete briquettes, each of the individual reliefs defining a quadrilateral shaped depression having rounded comers to reduce stress concentrations in the resulting briquettes, wherein a pair of leading edge rounded comers are defined by a first radius and a pair of trailing edge rounded comers are defined by a second radius, the first radius being smaller than the second radius.
EP 4056895 A1 20220914	SL Technik GmbH (AT)	**Biomass heating system for fuel flexible combustion of biogenic fuels and process of operating the system.** The invention relates to a biomass heating system for fuel-flexible burning of biogenic fuels, for example pellets and/or chips, comprising: a boiler having a combustion apparatus; a heat exchanger having an inlet and an outlet; wherein the combustion apparatus comprises a combustion chamber having a primary combustion zone and a secondary combustion zone provided downstream thereof; wherein the secondary combustion zone of the combustion chamber is fluidically connected to the inlet of the heat exchanger; and a recirculation apparatus for recirculating a portion of the flue gas produced during the burning of the fuel in the combustion apparatus; wherein the biomass heating system is designed in such a way that the recirculation apparatus adjusts the recirculation of the flue gas in accordance with the fuel.

Syngas

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2022144942 A1 20220707	Benzi & Partners Srl (IT)	**Method and plant for disposing of wastes composed of plastic materials or biomasses.** A pyrolysis plant for the treatment of solid and liquid waste materials is described, comprising: a first section, suitable for carrying out a pyrolysis of this solid and liquid waste materials, this pyrolysis producing synthesis gas, syngas, and residual ash; a second section adapted to carry out a separation of the lighter fraction of this ash, coal dust or carbon black, from the syngas, the lighter fraction being transported by the syngas; a third section, suitable for carrying out a fractional distillation of the syngas, obtaining the separation of the volatile fraction of the syngas from a bituminous residue, tar; a fourth section, adapted to carry out a recycling of the bituminous residue of the fractional distillation, for a further treatment; and a fifth final emergency section, including, in addition to safety pumps which will automatically intervene in the event of a system failure, all safety systems.
WO 2022133527 A1 20220630	Clean Energy Resources Pty Ltd (AU)	**A process for converting waste into clean energy and value-added products.** The invention is broadly directed to a continuous recycling process comprising: providing a homogenised waste material; forming the homogenised waste material into briquettes having a consistent size and density; feeding the briquettes into a first reactor and pyrolysing the briquettes so as to provide carbon and syngas, wherein heat from the syngas is used to drive further pyrolysis. The syngas may be subjected to a high-temperature water-gas shift reaction to enrich the hydrogen continent of the syngas, and scrubbed to remove contaminants, wherein heat is then exchanged from the syngas with water so as to provide superheated steam which is used in the high-temperature water-gas shift reaction and a cooled syngas.
EP 4039779 A1 20220810	Doosan Lentjes GmbH (DE)	**Method and system for processing biomass.** The present invention relates to a method and a system for processing biomass. The system comprises a gasifier for the gasification of biomass to a gas mixture and a reactor for treating particulate metal with the gas mixture or with a fraction of the gas mixture.
EP 4026886 A1 20220713	Gidara Energy BV (NL)	**Process and apparatus for producing synthesis gas through thermochemical conversion of biomass and waste materials.** The present invention provides a process and apparatus for converting feedstock comprising biomass and/or carbon-containing solid waste material to synthesis gas. The process comprises supplying the feedstock to a gasifier comprising a fluidized bed zone and a post-gasification zone and contacting the feedstock with a gasification agent at a plurality of different operating temperatures based on the ash softening temperature of the feedstock and finally recovering the synthesis gas. The apparatus is configured to perform the process and comprises a plurality of nozzles arranged at an acute angle relative to a horizontal plane of the gasifier.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2022159188 A1 20220728	Praxair Technology Inc (US)	**Method to control syngas composition by reactor temperature.** Disclosed is methodology for controlling the H2:CO ratio of the product produced in a partial oxidation reactor, by carrying out the partial oxidation under temperature conditions that produce less than maximum conversion.
WO 2022150601 A1 20220714	Res Triangle Inst (US)	**Method to control syngas composition from an engine-based syngas generator.** The present disclosure provides a process for controlling syngas composition from an internal combustion engine-based syngas generator. While air is typically used as an oxidant, with nitrogen (N2) as a diluent, this results in expensive downstream compression, and low feedstock conversion efficiencies. This disclosure provides CO2 as a diluent to reduce N2 concentration in the syngas. In some embodiments, the CO2 diluent may be from either a biogas processing coupled with methanol, DME, and/or hydrocarbon production; or natural gas processing coupled with Fischer-Tropsch (FT) synthesis and/or other hydrocarbon synthesis.
WO 2022136718 A1 20220630	Waste to Energy Advanced Solutions SL (ES)	**Installation and method for thermochemically converting a solid fuel into a synthesis gas.** The invention can be included in the technical field of installations and/or methods for thermochemically converting at least one solid fuel into a synthesis gas in a bubbling fluidised bed reactor, the installation and the method being designed to operate with fuels such as biomasses and waste such as wood chips, agricultural waste, meat and bone meal, sewage sludge, plastics, solid recovered fuels and refuse-derived fuels, in particular fuels containing complex ashes and/or contaminating elements such as chlorine and/or sulphur.

Biogás

Nº Publicación	Solicitante (País)	Contenido técnico
EP 4039354 A1 20220810	Air Liquide (FR)	**Purification of gas streams by adsorption with closed-loop pre-regeneration.** Process for the production of liquid biomethane implementing a liquid biomethane production facility comprising:- A digester for producing biogas,- A membrane separation unit for producing biomethane from biogas,- A facility P for purifying the biomethane by TSA-type adsorption making it possible to produce purified biomethane from the biomethane leaving the membrane separation unit, and- A unit for liquefying the purified biomethane; the method comprising the following steps: a) Anaerobic digestion of biomass in a to produce biogas, b) Membrane separation of the biogas so as to produce biomethane, c) Purification of the biomethane in the purification installation P, and d) Liquefaction of the purified biomethane.
EP 4062998 A1 20220928	Air Liquide (FR)	**Installation and method for obtaining biomethane in accordance with the specific features of a transport network.** Methane and carbon dioxide-containing feed gas stream is compressed and cooled to condense and remove a portion of water therein, separated with a membrane separation unit into a permeate enriched in carbon dioxide and a biomethane stream scrubbed of CO2 that is subsequently scrubbed of water in an adsorption purification unit.
EP 4063479 A1 20220928	Alvus SRL (IT)	**Digester structure for a biogas production plants.** A digester structure for a biogas production plant comprising: a plurality of basins configured to receive an amount of organic matter to generate biogas following bacterial fermentation in anaerobiosis; a base associated to a support soil; a perimeter wall extended between a lower portion associated to the base and an opposite upper portion spaced apart from the lower portion along a height direction (X-X) perpendicular to the base, said perimeter wall with the base defining a cavity; an inner wall extended between a lower portion associated to the base and an opposite upper portion spaced apart from the lower portion along a height direction (X-X) and configured to subdivide said cavity into the plurality of basins.
WO 2022191589 A1 20220915	Korea Inst Mach & Materials (KR)	**Biogas Reformer.** The present invention provides a biogas reformer in which a portion of biogas feed can be combusted in a burner to supply the required amount of heat to a catalytic reaction part without supplying heat from an external heat source, and the CO_2:CH_4 ratio can be adjusted to be advantageous for a catalytic reforming reaction of the biogas by supplying combustion effluent together with the biogas feed to the catalytic reaction part.
EP 4056289 A1 20220914	NR Nebel Entreprenoerforret-ning As (DK)	**Method and system for removing sand from biological slurry tanks, and use thereof in biogas production plants.** For removing sand from a slurry tank, a pipe is inserted into the bottom region of the tank through an access port, and the sand is removed by suction through the pipe after stirring-up the sand by a water jet from a water tank. The pipe comprises at the front end of the pipe, a suction duct located centrally and a water conduit peripherally around the suction duct.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2022180165 A1 20220901	Planet Biogas Group GmbH (DE)	**Biogas digester tank heating method and system, and modular heating rack for the same.** A biogas digester tank heating method, system and modular heating rack is provided. The method can include providing a digester tank having a base and a vertical wall surrounding the base. A plurality of heating racks can be provided, where each of the plurality of heating racks is a pre- assembled unit including a plurality of parallel pipes and a stand configured to secure the plurality of parallel pipes to the base of the biogas digester tank. The plurality of heating racks can be secured to the base, adjacent to the vertical wall. Each of the plurality of heating racks can be connected to a heating manifold arranged outside of the digester tank in parallel such that a heat exchange fluid is configured to independently flow from the heating manifold through the plurality of parallel pipes of each individual heating rack of the plurality of heating racks.
WO 2022162279 A1 20220804	Rautiainen Mika (FI)	**Reactor for manufacturing biogas from organic raw material using anaerobic digestion.** The invention relates to a reactor for manufacturing biogas from organic raw material using anaerobic digestion, the reactor including a tubular reaction chamber composed of a bottom, walls and a ceiling for processing the raw material into end products, and agitation and transfer equipment arranged in the reaction chamber. The reactor includes an external support frame structure arranged on the outer surface included in the reaction chamber for stiffening and supporting the reaction chamber externally against the forces generated by the raw material. The shell of the reactor chamber is composed of outer shell elements and inner shell elements placed apart from each other inside a space defined by the support frame structure, which together form the housing structure of the shell, and the filling space or housing between which is concreted.
WO 2022189324 A1 20220915	Suez Int (FR) et al.	**Reduced-headspace digester.** The invention concerns a digester for performing a sludge methanization treatment for the purpose of generating biogas and a digestate, the digester comprising a device for discharging foaming and/or floating matter from the digestate, comprising: - a first tank delimited by a first wall having a first height, the first tank being intended to be fed with digestate and with foaming and/or floating matter from a volume of material by overflow over the first wall; - a second tank connected to the atmosphere and sited outside the enclosure of the digester, comprising: o a first zone delimited by a second wall having a second height; and o a second zone in communication with the reservoir; - a conduit connecting the first tank via a first orifice to the first zone of the second tank via a second orifice positioned higher than or level with the first orifice, - the first zone being intended to be fed with digestate and with foaming and/or floating matter from the first tank through the conduit; the second zone being intended to be fed with digestate from the first zone by overflow over the second wall; the first height and the second height being predefined such that a first mixture, containing variable proportions of digestate and foaming and/or floating matter in the first tank and having a first average density, is transferred by gravity into the first zone, which contains a second mixture containing variable proportions of digestate and foaming and/or floating matter and having a second density, the transfer operating such that the product of the first average density times the first height is greater than the product of the second average density times the second height times the first height.
WO 2022178574 A1 20220901	The Remediation Group Pty Ltd (AU)	**System, apparatus and method for landfill gas sensing.** An apparatus including: a housing configured for installation in a landfill; a differential pressure sensor and at least one gas sensor in the housing; and a first valve configured to control landfill gas (LFG) flow to the at least one gas sensor, wherein the first valve is configured to open when the differential pressure sensor detects a selected pressure difference or pressure difference change between the atmospheric air pressure and the LFG pressure.
WO 2022174844 A1 20220825	Unikasset Spol SRO et al. (CZ)	**A pulse detonation engine and a biogas energy recovery unit.** Pulse detonation engine for the combustion of a mixture of biogas and hydrogen, comprising a valve assembly and a combustion chamber connected to the valve assembly. The valve assembly comprises a suction diffuser, a fuel supply tube, a baffle, an air curtain with perforations for supplying air, a support plate and a valve with shutters. The shutters of the valve are bendable such that in a closed position of the valve, the shutters are adjacent to the air curtain, thus overlapping the perforations and blocking air supply into the combustion chamber as well as expansion of flue gases into the suction diffuser, and in an open position of the valve, the shutters are adjacent to the support plate, thereby leaving the perforations open and allowing air to flow into the combustion chamber. Also disclosed are a biogas energy recovery unit, comprising the pulse detonation engine, and a method of combustion of a mixture of biogas and hydrogen in the pulse detonation engine or in the biogas energy recovery unit.

Bioalcoholes (bioetanol, biometanol, etc.)		
Nº Publicación	Solicitante (País)	Contenido técnico
KR 20220111148 A 20220809	Andong City Hall et al. (KR)	**Alcohol fermentation enhancer comprising hempseed and alcoholic beverage using the same.** The alcohol fermentation promoter containing the hemp seeds of the present invention increases the final fermentation yield with an explosive increase in the fermentation rate, and has a strong effect of efficiently fermenting sugars in the fermentation broth into alcohol. A reduction in burden can be expected. In addition, the fermented liquor using the alcoholic fermentation promoter containing the hemp seed of the present invention has excellent swallowing and sensory properties, increases palatability due to its unique bitter taste, and exhibits excellent antioxidant and antidiabetic activity, making it a very useful invention in the fermented food industry.
MY 191933 A 20220719	Forest Res Institute Malaysia Frim (MY)	**A process of producing bioethanol from rice straw.** A process of producing bioethanol from rice straws comprising pre-treating the rice straws in a pressurized environment without resorting chemical treatment; hydrolyzing the pretreated rice straws with hydrolytic enzymes extracted from Lentinus sajor-caju, Pycnoporus sanguineus, Schizophyllum commune or any combination thereof in a temperature ranging from 30ºC to 45ºC to produce sugars; and fermenting the sugars to produce bioethanol.
US 2022290190 A1 20220915	Inscripta Inc (US)	**Multiplexed engineered cells and systems for biofuel production.** The present disclosure provides multiplexed engineered cells, automated multi-module instruments and methods of producing biofuel producing cells for enhanced production of biofuels. This platform empowers users to design genetic variant libraries of insertions, swaps, and/or deletions, that can be intentionally or randomly positioned across the entire genome to generate engineered cell populations with improved properties for several common biofuel applications including, but not limited to, improved tolerance to biomass inhibitors, increased thermo-tolerance, increased ethanol production and/or tolerance, expanded carbon utilization abilities, and increased utilization of heterologous proteins or pathways.
MY 192646 A 20220829	International Islamic Univ Malasya (MY)	**A method of producing biofuel.** The present invention relates to a method of producing bioethanol from empty fruit bunch (EFB) comprising the step of hydrolyzing cellulose in the EFB with ionic liquid (IL); degrading the cellulose with cellulase enzymes derived from Trichoderma reesei to obtain sugar; and fermenting the reducing sugars using Saccharomyces cervisiae yeast to obtain bioethanol.
US 2022235150 A1 20220728	Lee Tech LLC (US)	**System and method for improving the corn wet mill and dry mill process.** A novel dry mill process for producing pure starch, which can be used as a feed stock for bio tech processes. Corn feedstock is sent through a particle size reduction device, such as a hammer mill, to produce corn flour. The corn flour is screened into a small particle portion (which mainly contains "free" starch from the floury endosperm) and a larger particle portion (which mainly comprises the horny endosperm, germ pericarp and tip cap). The small particle potion is sent to a liquefication and a saccharification process to produce high Be corn syrup. A mud phase (mixture of oil, germ, and any light solid) is centrifuged. The light phase is sent to precoat drum filtration to produce clean corn syrup. Further, a novel wet mill process to produce starch and alcohol is disclosed. A three-section paddle screen can be used to separate starch from grit and fiber.
KR 20220094911 A 20220706	Nat Univ Chungbuk Ind Acad Coop Found (KR)	**Nanomaterials having cellulase enzyme-mimicking activity and methods of increasing bioethanol production from lignocellulosic biomass using the same.** The present invention relates to a nanomaterial having a cellulase enzyme mimic activity and a method for producing bioethanol from lignocellulosic biomass using the same, and more particularly, Fusarium verticilloidis isolated from corncob.
US 2022298531 A1 20220922	Univ Auburn et al. (US)	**Apparatus and process for treating biomass for on-site production of cellulolytic enzymes and method of using the enzymes to manufacture fuels and chemicals.** An integrated process and corresponding apparatus that produces a relatively clean, delignified cellulose product from lignocellulosic biomass. The method includes treating a portion of the delignified cellulose itself as a substrate to produce on-site cellulolytic enzymes, including further treating the remaining delignified cellulose with the resulting cellulolytic enzymes for in situ enzymatic hydrolysis. The process and apparatus are useful to produce fermentable sugars for cost-effective manufacturing of fermentable sugars, fuels, bioproducts and chemicals.

Nº Publicación	Solicitante (País)	Contenido técnico
EP 4043423 A1 20220817	Union Eng A/S (DK)	**Biomethanol production system and method.** A biomethanol production system and method is provided. The system comprises (a) a feed stream comprising methane, water, and carbon dioxide; (b) a reformer reactor capable of reacting the feed stream to form a syngas mixture comprising hydrogen, carbon monoxide, and carbon dioxide; (c) a methanol reactor capable of reacting the syngas mixture to form biomethanol product; (d) a wash column comprising the syngas mixture and the biomethanol product, wherein the biomethanol product is capable of absorbing carbon dioxide from the syngas mixture; and (e) a flash column comprising a vent capable of venting the absorbed carbon dioxide. A method for removing carbon dioxide from a biomethanol production system is also provided.
US 2022251610 A1 20220811	Univ Cincinnati (US)	**Prehydrolysate fermentability in biomass pretreatment.** A method for pretreating lignocellulosic biomass to improve fermentability is disclosed. The method involves reacting lignocellulosic biomass with an acidic mixture while heating at a temperature from about 120° C. to about 200° C. to produce a prehydrolysate mixture. The acidic mixture includes a dilute acid and nucleophilic proteins, hydrolyzed amino acids or combinations thereof.
CN 114854813 A 20220805	-	The invention belongs to the technical field of fermentation, and particularly relates to a method for fermenting and producing ethanol by using straw as a raw material. Including raw material pretreatment, hydrolysis, fermentation, distillation, wherein, cellulase, mannanase, xylanase and lignin peroxidase are added in the hydrolysis process for hydrolysis, and the fermentation process adopts intermittent multiple grinding of materials to improve The total acid yield was fermented by using a mixture of brewer's yeast culture broth and Zymomonas culture broth as a starter. The invention improves the total acid output through intermittent multi-material grinding, thereby promoting the ethanol output, and also prepares a starter by combining Saccharomyces cerevisiae and Zymomonas to promote fermentation, increase the ethanol output and shorten the cycle.

Biodiésel

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2022180273 A1 20220901	Novozymes AS (DK)	**Polystyrene/divinylbenzene particles for lipase immobilization.** The invention provides enzyme particles comprising an immobilized 1,3 specific lipase and a copolymer of styrene and divinylbenzene. The particles are suitable for enzymatic interesterification of triglycerides, and subsequent separation of the enzyme and triglycerides by filtration.
WO 2022170408 A1 20220818	Petroleo Brasileiro SA et al. (BR)	**Method for the coproduction of c10 to c13 olefins and esters from fatty acid methyl esters.** The present invention relates to a method for producing olefins and esters in the C10 to C13 range from fatty acid esters by means of a catalytic hydrogenation reaction followed by cross-metathesis of the hydrogenated product with light olefins.
EP 4036197 A1 20220803	Rigas Tehniska Univ (LV)	**Method for refining of soapstock by acidulation and solvent extraction.** The invention refers to the vegetable oil processing and energy sector, in particular the obtaining of raw material for the production of biodiesel from the oil refining process waste, called soapstock (SS), that is formed after the washing of the crude oil with an aqueous alkali solution. The invention is to be used for the industrial production of advanced biodiesel from the SS, which is generally considered a waste to be deposited and which cannot be used for the production of food. A high-yield high-quality acid oil, that can be used to produce modern biodiesel, is obtained via the developed two-stage process that includes the acidulation of the SS to pH 2-3 with subsequent high-temperature treatment in an ultrasound environment and the extraction of raw materials for the synthesis of advanced biodiesel from the resulting mixture using an ultrasound environment without prior separation of the aqueous phase.
WO 2022164888 A1 20220804	Rhi & Kristian LLC (US)	**Methods of producing low cloud point biodiesel from cocoa butter.** Methods of producing a biodiesel derived from cocoa butter and in which the biodiesel possesses a cloud point as low as -51°C generally include a two-step cold stabilization process in which at least two separate processes primarily aimed at reducing the cloud point of the resultant biodiesel are carried out.

Nº Publicación	Solicitante (País)	Contenido técnico
CN 114686312 A 20220701	Univ Inner Mongolia Agri (CN)	**Method for rapidly preparing biodiesel under low-temperature condition.** The invention discloses a method for rapidly preparing biodiesel under a low-temperature condition, and belongs to the technical field of chemical energy. The method comprises the following steps: adding a base catalyst, alcohol and an organic solvent into grease, and carrying out transesterification to obtain the biodiesel, according to the method, the organic solvent petroleum ether or normal hexane is added in the transesterification reaction, so that the compatibility of alcohol and grease can be greatly enhanced, the contact area of the alcohol and the grease is increased, the mass transfer resistance between the alcohol and the grease is reduced, grease molecules are promoted to enter a methanol solution, and the yield of the grease is increased. According to the method provided by the invention, the oil in the grease can be quickly dissolved in the alcohol, so that the ester exchange reaction can be carried out under the action of the base catalyst and under the condition of lower temperature, and the biodiesel with higher yield can be obtained within shorter time.
US 2022297107 A1 20220922	Univ Shandong Jianzhu et al. (CN)	**Preparation method of embedded alkaline earth metal oxide solid alkali and application thereof in biodiesel production.** A method for synthesizing and application embedded alkaline earth metal oxide solid alkali includes: firstly, synthesizing an alkaline earth metal organic skeleton with single or multiple alkaline earth metals (Mg, Ca and Sr) as central metal elements; and then controlling the heating process to carry out high-temperature pyrolysis in a non-oxidizing atmosphere, so that the alkaline earth metal oxide are embedded in the nano carbon sheet to obtain a solid alkali catalyst. Finally, the catalyst is used to catalyze the transesterification of palm oil and methanol to produce biodiesel. The active site of the solid alkali obtained by the method is anchored on the nano-like carbon sheet, so that the active site is directly exposed on the surface of the catalyst, the catalytic activity is improved, the loss of the active site is inhibited, and the stability of the solid alkali catalyst is enhanced.
MY 187579 A 20210930	Univ Teknologi Petronas (MY)	**System for the production of biodiesel using hydrodynamic cavitation.** The present invention relates to a system the production of biodiesel using hydrodynamic cavitation. The system comprises a holding tank (202), a double diaphragm pump (203), four control valves (204a, 204b, 204c, 204d), two pressure gauges (205a, 205b), a flowmeter (206) and a coupling of orifice plate (207). The suction of the double diaphragm pump (203) is connected with a bottom side of the holding tank (202). The two pressure gauges (205a, 205b) adjust a pressure upstream and downstream. The pressure is adjusted in a range of 1 ? 3 bar. The holding tank (202) is surrounded by a jacket. The holding tank (202) has a constant temperature at 55ºC by circulating a liquid in the jacket. The orifice is 1 mm hole and 20 mm thick. The fluid comprises at least two oils, methanol and a catalyst.
MY 192353 A 20220817	Univ Tenaga (MY)	**Production of biodiesel with improved fuel properties using microwave radiation.** The present invention relates to an improved method and system for producing a fuel composition from a biodiesel compound (a post-treatment process) using microwave irradiation. The method includes the steps of separating the biodiesel compound into fatty acid fractions by way of irradiating the biodiesel compound with microwave radiation in accordance to the respective boiling points of fatty acid and by way of fractional distillation. The fatty acids obtained therefore can be re-blended in a certain ratio to form the fuel composition to meet fuel property and performance requirements related to a fuel specification of a specific application such as gas turbine application.
CN 114989897 A 20220902	- (CN)	The invention discloses a low-acid value biodiesel and a preparation method thereof. Before or during the reaction, glycerol is added to a reaction system including raw material oil, short-chain alcohol and immobilized lipase; after the reaction, filtration is performed. The enzymatic method of the present invention prepares biodiesel, reacts at normal pressure in a solvent-free system, the reaction conditions are mild, the reaction system is simple, the product is easy to separate, and the recovered lipase and glycerol can be recycled and reused, and the obtained biodiesel yields high, free fatty acid removal rate, low acid value.
CN 114874133 A 20220809	- (CN)	The invention relates to the technical field of biodiesel preparation, and specifically discloses an ionic liquid and a preparation method and application thereof. Described ionic liquid is prepared from allyl pyridine chloride shown in formula 1 and metal chloride. The preparation method of the biodiesel comprises: crushing Pistacia chinensis seeds to obtain Pistacia chinensis seed powder; adding the ionic liquid and petroleum ether to the Pistacia chinensis seed powder, heating to 40°C-50°C, stirring and extracting for 40min- For 50 min, the petroleum ether in the extract was removed by rotary evaporation, short-chain alcohol was added, mixed evenly, and reacted at 40°C-50°C for 90min-100min to obtain biodiesel. The method can realize the one-pot preparation of biodiesel by using Pistacia chinensis seeds as raw materials, greatly simplifies the preparation process of biodiesel, also significantly reduces the use of the toxic solvent petroleum ether, reduces the energy consumption of removing petroleum ether in the system, and the biological The yield of diesel can reach 97.3%-99.6%

Bio-jet fuels		
Nº Publicación	Solicitante (País)	Contenido técnico
CN 114686288 A 20220701	Chinese Petrochemical Industry Ltd Company et al. (CN)	**Bio-based aviation fuel anti-wear agent and preparation method thereof.** The invention relates to a bio-based aviation fuel anti-wear agent and a preparation method thereof. The preparation method comprises the steps that 1, eleostearic acid serves as a raw material, nitrogen purging is conducted while stirring is conducted, the temperature is increased to 180-230 DEG C for a reaction, and single acid is removed after the reaction is completed; (2) mixing the product obtained in the step (1) with monocyclic fatty acid according to a mass ratio of (6-3): 1; and (3) mixing the product obtained in the step (2) with an antioxidant and a solvent in proportion to obtain the product. When the prepared anti-wear agent is used for aviation fuel, the dosage is small, and the anti-wear agent has good wear resistance and corrosion resistance.
CN 114669323 A 20220628	Guangzhou Institute of Energy Res Chinese Academy (CN)	**Preparation method of bio-based aviation fuel hydrofining catalyst.** The invention discloses a preparation method of a bio-based aviation fuel hydrofining catalyst. The catalyst has hydrodeoxygenation and long-chain alkane isomerization functions at the same time. The preparation method comprises the following steps: preparing a carrier composite oxide ZrO2-SiO2 by using a sol-gel method, synthesizing an SAPO-11 molecular sieve carrier by using a hydrothermal method, mixing the composite oxide carrier and SAPO-11, carrying out extrusion molding, and loading Ni as a metal active center. And the catalyst also has an alkane isomerization function of matching the SAPO-11 with a metal active center. The hydrogenation catalyst is loaded with non-noble metal, the catalyst is low in preparation price, relatively mild and simple in use condition, long in service life and high in activity, and the lignocellulose-based biological aviation oil crude oil can be effectively subjected to hydrodeoxygenation to form high-quality aviation fuel oil.
CN 114682263 A 20220701	Guangzhou Institute of Energy Res Chinese Academy (CN)	**Preparation method of sustainable aviation fuel hydrogenation catalyst.** The invention discloses a preparation method of a sustainable aviation fuel hydrogenation catalyst. The preparation method of the catalyst comprises the following steps: (1) stirring and mixing nickel salt, deionized water and an alcohol solvent for 1-5 hours under the conditions of normal temperature and normal pressure, then adding Al2O3 into the solution, continuously stirring and mixing for 1-10 hours, and finally adding niobium salt, and stirring and mixing for 1-10 hours; and (2) drying the obtained mixed solution for 12-48 hours at the temperature of 80-150 DEG C and normal pressure in an air atmosphere. And (3) roasting the dried catalyst in a muffle furnace in an air atmosphere at normal pressure at 380-450 DEG C for 8-24 hours to obtain the Ni-Nb loaded bimetallic catalyst. The hydrogenation catalyst disclosed by the invention is simple to prepare, low in price, relatively mild and simple in use condition, long in service life and high in activity, and oxygen in bio-based hydrogenated crude oil can be basically removed.
WO 2022162680 A1 20220804	Hindustan Petroleum Corp Ltd (IN)	**A multifunctional catalyst and its composition for single step conversion of triglycerides to transportation fuels.** The present invention discloses a multifunctional catalyst made up of a catalytic support of a Zeolite component, SiO2-Al2O3 and a binder selected from alumina or Pseudoboehmite alumina. The said catalytic support is in the form of extrudates and the said extrudates of the catalytic support are sequentially loaded with at least one active metal selected from tungsten (W), nickel (Ni) and at least one chelating agent. The at least one chelating agent is selected from citric acid, nitrilotriacetic acid, glutamic acid, hexamethylenetetramine, glucaric acids, amino acid, ethylenediaminetetraacetic acid, glutaric acid, succinic acid or a combination thereof. Further, the multifunctional catalyst of the present invention is subjected to sulfidation before using the said multifunctional catalyst for selectively preparing a plurality of transportation fuels such as the Sustainable Aviation Fuel (SAF), or the Green Diesel (GD).
WO 2022152900 A1 20220721	Topsoe AS (DK)	**Low temperature stabilization of liquid oils.** The invention relates to a process for hydrotreating a liquid oil stream such as pyrolysis oil stream by, in continuous operation, reacting the liquid oil stream with hydrogen in the presence of a nickel-molybdenum (Ni-Mo) based catalyst at a temperature of 20- 240°C, a pressure of 100-200 barg and a liquid hourly space velocity (LHSV) of 0.1 -1.1 h-1, and a hydrogen to liquid oil ratio, defined as the volume ratio of hydrogen to the flow of the liquid oil stream, of 1000-6000 NL/L thereby forming a stabilized liquid oil stream.

Biohidrógeno		
Nº Publicación	Solicitante (País)	Contenido técnico
EP 4026885 A1 20220713	KBI Invest & Man AG (CH)	**Reactor and process for gasifying and/or melting of feed materials and for the production of hydrogen.** The present invention relates to a reactor (100) for the gasifying and/or melting of feed materials. The reactor comprises:a co-current section (110). comprising a plenum section (111), comprising a feed section with a sluice (112), wherein feed materials are introduced into the reactor (100) from above via the feed section, a buffer section (113), a pre-treatment section (114), which adjoins a bottom of the buffer section (113) to create a cross-sectional enlargement, and an intermediate section (115) adjoining the pre-treatment section, an upper oxidation section (116) adjoining a bottom of the intermediate section and comprising tuyeres (117), and an upper reduction section (118) adjoining a bottom of the upper oxidation section (116), a gas outlet section (120) comprising at least one gas outlet (121) and at least one tuyere (151) for steam or water injection for creating a post-gasification section (150) within the gas outlet section, and a post-gasification section (150), and a countercurrent section (130) comprising a conical lower reduction section (138) adjoining the gas outlet section (120) and a conical lower oxidation section (136) adjoining the lower reduction section (138) comprising at least one tuyere (137) and at least one tapping (131).
US 2022204996 A1 20220630	Redding Kevin et al. (US)	**Photosystem I-hydrogenase chimeras for hydrogen production.** Provided herein, in some embodiments, are engineered cells and use of the same for increased hydrogen production. In particular, provided herein are genetically engineered cells comprising a polynucleotide encoding a fusion protein comprising a photosystem I (PSI) protein and an algal hydrogenase, as well as methods for producing such genetically engineered cells. Also provided herein are methods for increasing hydrogen (H2) production in cells.
CN 114671918 A 20220628	Shandong Science and Engineering Univ (CN)	**Lignin depolymerization method based on sub-molten salt oxidation system.** The invention belongs to the technical field of biomass resource utilization, and particularly relates to a lignin depolymerization method based on a sub-molten salt oxidation system. Carrying out oxidative depolymerization reaction on the sub-molten salt solution, a catalyst, lignin and an oxidizing agent to obtain a gas-phase product and a liquid-phase product; separating the gas-phase product to obtain hydrogen, and carrying out reduced-pressure cooling, pH value regulation, filtration, extraction, concentration and separation on the liquid-phase product to obtain a small-molecule compound; wherein the sub-molten salt solution is prepared from alkali, inorganic salt and water. According to the method, a novel lignin depolymerization system is constructed by using inorganic salt and strong base, lignin is effectively depolymerized under mild conditions, hydrogen and small molecular organic matters are generated, and a new conversion route is created for utilization of lignin resources.
CN 114695934 A 20220701	State Grid Jiangsu Electric Power Design Consultation Ltd Company et al. (CN)	**Hydrogen production and power generation dual-mode system utilizing renewable resources.** The embodiment of the invention provides a hydrogen production and power generation dual-mode system utilizing renewable resources, and relates to the technical field of hydrogen production. The hydrogen production and power generation dual-mode system utilizing the renewable resources comprises a renewable resource hydrogen production device and a fuel cell device which are connected with each other, and the fuel cell device is used for generating heat energy and electric energy by utilizing hydrogen generated by the renewable resource hydrogen production device and supplying the heat energy and the electric energy to the renewable resource hydrogen production device. The residual electric energy of the fuel cell device is provided for a power grid; the renewable resource hydrogen production device comprises a fermentation substrate pretreatment device, an inoculum pretreatment device, a dark fermentation continuous reactor and a microbial electrolysis continuous reactor, the fermentation substrate pretreatment device and the inoculum pretreatment device are both connected with the dark fermentation continuous reactor, and the dark fermentation continuous reactor is connected with the microbial electrolysis continuous reactor; the system can make full use of renewable resources, improves the hydrogen production efficiency, does not need external extra electric energy and heat energy, and can also synergistically convert electric energy to a power grid.
WO 2022186781 A1 20220909	Univ Nanyang Tech (SG)	**Electrochemical conversion of organic waste.** The present disclosure refers to a method of electrochemical conversion of organic waste to organic acid and hydrogen, comprising the steps of: (i) subjecting organic waste to ball milling under alkaline or acidic conditions to obtain pre-treated organic waste; (ii) introducing the pre-treated organic waste to a first compartment of an electrochemical cell, wherein the electrochemical cell comprises: the first compartment containing a nickel-based anode, a second compartment containing a cathode, and an electrolyte; and (iii) applying an electrical potential between the anode and the cathode, thereby producing organic acid at the anode, and hydrogen at the cathode. The present disclosure also refers to an organic acid or hydrogen produced from the method disclosed herein.

Nº Publicación	Solicitante (País)	Contenido técnico
MY 183339 A 20210218	Univ Putra Malaysia (MY)	**A catalyst applicable for gasification of biomass and a method using the same.** A method of producing hydrogen gas by decomposing lignocellulosic materials comprises the steps of providing a mixture of the cellulosic materials and a catalyst in a ratio of 0.2-1 to 0.2-1 by weight; heating the mixture at a temperature increasing rate of 5 to 200C min-1 to a temperature of 600 to 12000C to decompose the mixture to produce the hydrogen gas in the presence of an inert gas having partial oxygen of 0.5 to 10%, wherein the catalyst is calcined CaO-NiO solid doped with Ba-based derivative and/or Nd-based derivative.
CN 114890381 A 20220812	- (CN)	The invention discloses a method for preparing methanol and hydrogen by utilizing waste gas produced by dry distillation and pyrolysis of bamboo, comprising the following steps: S1. Collect waste gas from dry distillation and pyrolysis of bamboo; S2. The waste gas is subjected to high-temperature pyrolysis and methanol synthesis reaction to form methanol raw material gas, and the methanol raw material gas is passed into the methanol liquid slurry reaction bed device, and the generated residual gas is returned to the furnace for combustion support or power generation and heating, without repeated circulation, and is obtained after separation and purification. Liquid methanol that can be stored; S3. The liquid methanol and water vapor are cracked twice under the action of a catalyst, and hydrogen is obtained after purification by pressure swing adsorption and autothermal reforming. The method converts waste gas produced by dry distillation and pyrolysis of bamboo to prepare methanol, which is stored as biological liquid fuel. When necessary, methanol and hydrogen can be immediately prepared through simple steam catalysis. A small part of the remaining mixed gas in the preparation process can be returned to the furnace to support combustion, and most of the gas can be used for combustion. Combined heat and power generation, high energy utilization.

Otros biocombustibles (hidrobiodiésel, bio-oils, etc.)

Nº Publicación	Solicitante (País)	Contenido técnico
US 2022204867 A1 20220630	Chevron USA Inc (US)	**Processes for producing diesel from unconventional feedstocks.** Described herein are processes for hydroisomerising an unconventional feedstock using a hydroisomerisation catalyst comprising zeolite SSZ-91, zeolite SSZ-32, or zeolite SSZ-32x to provide a diesel fuel.
WO 2022173422 A1 20220818	Exxonmobil Tech and Engineering Company (US)	**Renewable arctic diesel production.** A method for producing renewable arctic diesel is provided herein. The method includes contacting a bio-derived feedstock with a hydrotreatment catalyst under effective hydrotreatment conditions to produce a hydrotreated feedstock and separating the hydrotreated feedstock into gas phase products and liquid phase products. The liquid phase products include an oxygen content of less than 0.4 wt% but greater than 10 ppm. The method also includes contacting the liquid phase products with a ZSM-48-based isomerization/dewaxing catalyst under effective isomerization/dewaxing conditions to produce an isomerized product stream including a change in cloud point (ΔCP) of 50 degrees °C or more. The method further includes separating the isomerized product stream into gas phase products and liquid phase products, as well as fractionating the liquid phase products to produce renewable naphtha and renewable arctic diesel with a cloud point of -20 °C or less and a yield of 80 wt% or more.
CN 114989872 A 20220902	- (CN)	The invention discloses a new energy green, environment-friendly and high-clean liquid fuel, which relates to the field of environment-friendly liquid fuels. In view of the problems that the existing fuel oil does not discharge nitrogen oxides up to the standard, the cleanliness is not enough, and the flash point of some fuel oils is low, there are potential safety hazards. The green and environmentally friendly high-clean liquid fuel is made by mixing light white oil, saturated fatty acid, unsaturated fatty acid, dienoic acid, polyenoic acid, fatty alcohol, Zhongshuo nano-cleaner and additives, in which light white oil is used as the base material. , through the modification of saturated fatty acid, unsaturated fatty acid, dienoic acid, polyenoic acid, fatty alcohol, Zhongshuo nano-cleaner and additives to obtain liquid fuel, which can be used in unlimited and diesel, heavy oil, biological Diesel oil, water, mutual solubility, green and clean combustion support. The new energy green, environment-friendly and high-clean liquid fuel has good mutual dissolution and combustion-supporting effect, wide range, high ignition point, and can fully burn, avoid damage to equipment, and improve overall safety performance.

Nº Publicación	Solicitante (País)	Contenido técnico
CN 114854462 A 20220805	- (CN)	The invention discloses a method for preparing second-generation biodiesel by hydrotreating a slurry bed process, and belongs to the technical field of chemical industry. The preparation method of the invention is as follows: firstly, the waste oil-based oil-soluble catalyst, the vulcanizing agent and the waste oil are mixed to prepare a catalyst mother liquor, then the catalyst mother liquor is pre-vulcanized, and the pre-vulcanized catalyst mother liquor is mixed with the waste oil and fat, and then added. The hydrogen deoxygenation reaction finally catalyzes the conversion of waste oil into biodiesel. In the present invention, firstly, the waste oil-based oil-soluble catalyst is prepared in situ from waste oil, which has good dissolving and dispersing properties in waste oil raw materials, high catalytic activity, and can be well adapted to the slurry bed hydrogenation process. The waste oil is hydrogenated into biodiesel; secondly, the catalyst is prepared into a catalyst mother liquor, which can ensure that the waste oil-based oil-soluble catalyst is completely converted into the sulfide active phase, thereby improving the activity of the catalyst and improving the conversion rate of biodiesel.
CN 114907890 A 20220816	- (CN)	The invention provides a method for preparing bio-oil and the obtained bio-oil, belonging to the technical field of bio-oil fuel production. The method comprises: mixing lignocellulose and a liquefaction solvent, feeding CO, and performing high-pressure liquefaction reaction on the lignocellulose , to obtain a bio-oil product. The present invention proposes in-situ hydrogenolysis and hydrogenation of lignocellulose using the hydrogen contained in lignocellulose. Based on the principle that CO reacts with hydroxyl groups contained in lignocellulose to release active hydrogen, high-quality bio-oil can be obtained with less use of hydrogen, and the cost is low. The obtained by-products can be used in autogenous systems or other chemical systems. It is of great significance in chemical industry applications, so it has a good industrial application prospect.
CN 114989853 A 20220902	- (CN)	The invention discloses a pretreatment method for improving the yield of liquefied bio-oil prepared from biomass materials. The steps of the pretreatment method are as follows: A. crushing the biomass material to be processed; B. putting the crushed biomass material into electromagnetic High temperature and high pressure steam treatment is carried out in the steam generator; C. The biomass material treated with high temperature and high pressure steam is put into the ion mixture in the reaction tank equipped with an ultrasonic generator or a microwave generator for immersion; D. Start the ultrasonic generator or The microwave generator performs ultrasonic treatment or microwave treatment on the soaked biomass material. The pretreatment method of the present invention combines high-temperature and high-pressure steam, mixed ionic liquid composed of electrolyte and peroxide, and high-frequency ultrasonic waves or microwaves for combined treatment, which can efficiently promote the enzymatic hydrolysis effect and greatly improve the yield of liquefied bio-oil. Suitable for promotion and use.

PATENTES BIOPRODUCTOS

Biomateriales (de construcción, medicina, embalaje, etc.)		
Biocomposites y biofibras		
Nº Publicación	Solicitante (País)	Contenido técnico
WO 2022180018 A1 20220901	Ensinger GmbH (DE)	**Fiber-Reinforced Composite Material Having Styrene (Co)Polymer And Natural Fibers.** A fiber-reinforced composite material (K), containing a thermoplastic polymer matrix and at least one natural-fiber component, is technically advantageous if it contains at least 45% (v/v) of a styrene (co)polymer (A) as polymer matrix, 30-55% (v/v) of a natural-fiber sheet material (B) as natural-fiber component, optionally 0-10% (v/v) of an additional polymer component (C), and optionally 0-10% of at least one additive (D), the volume percentages of components (A) to (D) adding up to 100 volume percent of the composite material (K).
WO 2022165406 A1 20220804	Felora Hemp Cat Litter (US)	**Hemp-based composite material.** The enclosed disclosure relates to a composite material formed of a mixture of hemp fibers and a clumping agent, to be used as filler material for a litter box. The different shapes and sizes of the mixture assist in forming a clump around the metabolic waste in the litter box to prevent odor from escaping into the atmosphere as well as to make it easier to clean the litter box.
WO 2022149508 A1 20220714	Furukawa Electric Co Ltd (JP)	**Cellulose fiber-reinforced thermoplastic resin molded body and method for producing same.** A cellulose fiber-reinforced thermoplastic resin molded body which comprises a thermoplastic resin, cellulose fibers and organic fibers that are different from the cellulose fibers, and which is characterized in that, in the resin molded body, the content of the thermoplastic resin is from 39% by mass to 80% by mass, the content of the cellulose fibers is from 5% by mass to 55% by mass, and the content of the organic fibers that are different from the cellulose fibers is from 4% by mass to 35% by mass; and a method for producing this cellulose fiber-reinforced thermoplastic resin molded body.
WO 2022194894 A1 20220922	Inst Nat Polytechnique Toulouse et al. (FR)	**Method for seeding a solid lignocellulosic material with a fungal biomass.** The invention relates to a method for preparing a material, referred to as a solid lignocellulosic composite material, seeded with at least one organism, referred to as a mycelium-forming multicellular eukaryote, filamentous fungus, wherein: at least one solid lignocellulosic material impregnated with an aqueous composition is subjected to a treatment, referred to as thermomechanical treatment, wherein; • said at least one impregnated lignocellulosic material is subjected to a succession of mechanical compression, expansion and shearing phases by mixing at least one solid lignocellulosic material of said at least one impregnated lignocellulosic material, in contact with the aqueous composition; • said at least one impregnated lignocellulosic material is brought to a temperature above 50°C; whereby a composition, referred to as a hydrated composition, comprising a solid lignocellulosic material, referred to as a hydrated lignocellulosic material, having a specific surface area and a degree of hydration that are increased relative to the specific surface area and degree of hydration of said at least one initial lignocellulosic material is formed, said hydrated lignocellulosic material being suitable for being colonized by said at least one filamentous fungus, then; a composition, referred to as a fungal composition, comprising said filamentous fungus is added to said hydrated composition while mixing; method wherein the successive steps are carried out continuously in at least one twin-screw extruder.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2022167957 A1 20220811	Italianwaves SRL (IT)	**A water sports board structure and a method for making the same.** In a water sports board structure (3), a composite material shell (20) encloses a core (10) including a shaped body (11) made of a foam material obtained by a mixture of polylactic acid, preferably between 60% and 80% by weight, and of a polymer selected between an aliphatic polyester and an aliphatic / aromatic co-polyester. For the foam material, a biodegradable Ecovio EA material is preferably used, in particular Ecovio® EA200 or ECOVIO® 80EA2394EXP. In an exemplary embodiment, the shaped body (11) incorporates at least one, or preferably two cork longitudinal stringers (13) spaced apart from each other by about half the cross width of the core (10). The shell (20) can comprise a fibre layer (21,24), preferably of basalt fibres, impregnating with a resin, which can optionally form a resin layer (23,26) outside the fibre layers (21,24). A further resin-impregnated fabric layer (22) can be present between the core (10) and the fibre layer (21) of the shell (20). The above foam materials allow manufacturing boards that are at least 20% lighter than the conventional boards including polystyrene foam cores, and that have suitable elasticity while having excellent impact strength and/or resistance to abrasion, such a combination leading to high-performance water sports boards. Moreover, polylactic acid as well as the above aliphatic polyesters or aliphatic/ aromatic co-polyesters are fully biodegradable, which allows environment-friendly disposal of the water sport boards of the invention, for instance, by composting, without forming any special waste.
EP 4032943 A1 20220727	Ecobrain AG (CH)	**Manufacturing process for components from sunflower seed shells, particle/polymer biocomposites, moldings and laminates comprising sunflower seed shells, and their use.** Disclosed is a process for producing a thermoformable and/or embossable particle/polymer biocomposite using a particulate biological substrate S and a polymer P, characterized in that(i) a substrate S and the polymer P are homogeneously mixed, then(ii) the substrate S/polymer P mixture is converted into a particle layer, thereafter(iii) the resulting structure is compressed at a temperature greater than or equal to the glass transition temperature of the polymer P [TgP] to form a thermoformable and/ or embossable particle/polymer composite,where(a) the substrate S comprises sunflower seed shells; and(b) the polymer P is thermoplastic and has a TgP ⩾ 20 °C measured according to DIN EN ISO 11357-2 (2013-09). Furthermore, a process for the manufacturing of a particle/polymer molding using said semi-finished biocomposite as a starting material, a particle/polymer molding and its use as an element in buildings or in furniture are disclosed.
EP 4039430 A1 20220810	Leko Labs SA (CH)	**Method for manufacturing a wood-polymer composite.** The present invention relates to the manufacturing a wood-polymer composite. It is directed to a method for manufacturing such a composite, including the provision of a wood element (1), the impregnation of the wood element with a lactic acid water-based solution (2), and then the thermal treatment of the impregnated wood element (3) at a heating temperature higher than a nominal temperature where the in-situ polymerization of the lactic acid is initiated, in order both to induce the diffusion of the lactic acid water-based solution within the impregnated wood element and to initiate the in-situ polymerization of the lactic acid. According to the invention, the thermal treatment (3) includes the acceleration of the increase of the heating temperature and/or the decreasing of the nominal temperature.
WO 2022163117 A1 20220804	Panasonic Ip Man Co Ltd (JP)	**Composite resin molded article and method for producing same.** The composite resin molded article contains a base resin and a plurality of natural fibers dispersed in the base resin. When the composite resin molded article is taken to be 100 mass%, the content of the plurality of natural fibers is 10-99 mass% (inclusive). At least one of the plurality of natural fibers has a defibrated site formed at the end in the fiber length direction. At least one of the plurality of natural fibers has a portion exposed on the surface of the composite resin molded article. The base resin is a biodegradable plastic including any selected from the group consisting of polyhydroxy acids, polyhydroxyalkanoates, polyalkylene dicarboxylates, and modified starches.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2022148925 A1 20220714	Saint Gobain Isover (FR)	**Method for improving the airtightness of buildings using a biopolymer-based membrane.** The invention relates to a method for improving the airtightness of a building or a room in a building, comprising the use of a vapour barrier membrane on the inner face of the walls of the building or the room in the building, characterised in that the vapour barrier membrane is a humidity-regulating membrane comprising an active portion which comprises: - a middle layer having a thickness of 2 µm to 200 µm, preferably 4 µm to 100 µm, and consisting of a biopolymer having a water vapour permeability coefficient P1 which increases with average relative humidity and which, when it is determined at 23°C and at an average relative humidity of 25.5%, is at least equal to 300 Barrers, and, on either side of the middle layer and preferably in contact with the latter, - two outer layers having a thickness of 100 nm to 20 µpm, preferably 200 nm to 2.5 µm, and consisting, independently of each other, of an organic polymer having both a water vapour permeability coefficient P2, determined at 23°C and at an average relative humidity of 25.5%, of at most equal to 250 Barrers, preferably 0.05 to 100 Barrers, in particular 1.0 to 20 Barrers.
WO 2022184188 A2 20220909	Yixing Hualong New Mat Lumber Co Ltd (CN)	**Wood plastic composite corner frame for pool wall top dedicated to wood plastic composite swimming pool.** The present invention relates to the technical field of wood plastic composite corner frames, and discloses a wood plastic composite corner frame for a pool wall top dedicated to a wood plastic composite swimming pool, which comprises a main body. A first connecting block is fixedly mounted on a lower side of one end of the main body, a snap slot is fixedly provided on a lower side of the first connecting block. A second connecting block is fixedly mounted on a lower side of the other end of the main body, and a snap tab is fixedly mounted on one side of the second connecting block, and the snap tab can be snapped into the snap slot. In the present invention, the provision of the snap slot and the snap tab solves the problem of insufficiently strong connection between traditional wood plastic composite corner frames due to the lack of connection members. The provision of an abutting tab and a spring solves the problem of reduced practical use of the present apparatus due to the lack of members for reinforcing the connection between a traditional wood plastic composite corner frame and a pool wall.

Bioplásticos

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2022167933 A1 20220811	Flexsea Ltd (GB)	**Bioplastic composition, bioplastic product including the same and relative production process.** The bioplastic composition comprises: at least one seaweed extract in a concentration by weight comprised between 30% and 80% with respect to the weight of the bioplastic composition; water in a concentration by weight comprised between 1% and 30% with respect to the weight of the bioplastic composition; at least four additives present in a total concentration by weight comprised between 20% and 70% with respect to the weight of the bioplastic composition; wherein the additives comprise at least one plasticizer, at least one antimicrobial agent, at least one gelling agent and at least one adjuvant.
WO 2022173465 A1 20220818	Newlight Tech Inc (US)	**Composition and method for production of a highly flexible pha sheet.** The present specification generally relates an aliphatic polyester material and a process for converting said aliphatic polyester material into a textile that is preferable for use as an artificial leather substrate. The present invention discloses: (i) a novel aliphatic polyester composition comprising a polyhydroxyalkanoate (referred to herein as PHA), an ethylene-vinyl acetate copolymer resin (referred to herein as EVA) or similarly functional such material, and an ester of citrate acid plasticizer or similarly functional such material; and (ii) an inventive process for converting the novel aliphatic polyester composition into a textile by (a) melt extruding the aliphatic polyester materi into an aliphatic polyester sheet; (b) heating said sheet; and (c) monoaxially or biaxially orienting said sheet in the machine direction followed by orientation in the transverse direction; and/or heating the monoaxially or biaxially oriented sheet at a temperature above the Tg of both the polyhydroxyalkanoate and ethylene-vinyl acetate resin components but below the melting point of the polyhydroxyalkanoat component.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2022173466 A1 20220818	Newlight Tech Inc (US)	**Polyhydroxyalkanoate-based compositions and articles made therefrom.** The present specification generally relates to a composition for the manufacture of bio-degradable, bio-compostable, ocean degradable, biocompatible articles that contain a bio-based thermoplastic component. In particular, it has been found, in accordance with the practice of this invention, that marked improvement in tensile strength, toughness and elongation of polyhydroxy alkanoate (PHA) can be achieved by dispersing in the PHA an elastomer, using a compatibilizer, and then optionally cross-linking the dispersed elastomer, The polyhydroxy alkanoate elastomer blends of the present invention comprise from 20-99 percent by weight of the PHA, from 3 - 40 percent by weight of the elastomer and 2-25 percent by weight of compatibilizer and can be used to produce a wide array of articles that as they degrade release active natural polymers that are beneficial to growth performance, intestinal digestive and immune function of an animal that may have ingested the article.
EP 4063456 A1 20220928	Parinaz Jabirian (DE)	**Bioplastic, its preparation and use.** The invention relates to a versatile biodegradable bioplastic comprising a resin from the plant Astragalus, glycerin and a swelling agent. The invention also relates to a production process for the bioplastic and its use, in particular as a packaging material, personal care product or medical product.
WO 2022157222 A1 20220728	Noosa (BE)	**Method for preparing a polylactic acid starting from lactic acid originating from the recycling of yarn or plastic film supports containing polylactic acid.** A method is described for preparing PLA by oligomerization and polymerization of lactic acid consisting, at the start, completely or partly, of lactic acid originating from supports containing PLA and that have been used as supports for reels of textile yarn and/or film, this PLA being recycled in the form of lactic acid. Also described is the use of these resulting supports as a support for textile yarn and/or plastic film.
EP 4063442 A1 20220928	The Eyes Republic La Repubblica Degli Occhi S Rls (IT)	**Process for the preparation of bioplastic from dairy waste.** The present invention relates to the field of bioplastics, in particular, of bioplastics from dairy waste and, even more particularly, the preparation of bioplastics from dairy waste.
EP 4026852 A1 20220713	The Eyes Republic La Repubblica Degli Occhi S Rls (IT)	**Process for the preparation of bioplastic based on crystalline cellulose nonanoate.** The present invention relates to the field of bioplastics, in particular, bioplastics from biomasses of esterified hemp cellulose and, even more particularly, the preparation of bioplastic based on crystalline cellulose nonanoate.
EP 4036227 A1 20220803	Univ Korea Res & Bus Found (KR)	**A mutant strain having polyhydroxybutytrate production ability and process for producing polyhydroxybutytrate using the strain.** Disclosed is a mutant strain having the ability to produce polyhydroxybutyrate. The novel strain has a significantly high growth rate and an improved ability to produce PHB compared to existing PHB-producing cyanobacterial strains. Therefore, the novel strain is suitable for use in the production of PHB and the development of various products using PHB. In addition, the novel strain is useful as a photosynthetic strain for developing a PHB production process using industrial flue gas due to its ability to produce PHB from only CO2 without any additional organic carbon source. Also disclosed is a method for producing polyhydroxybutyrate using the mutant strain.
WO 2022148738 A1 20220714	Univ Maastricht (NL)	**Flame retardant polymer composition.** The present invention relates to a flame retardant thermoplastic polymer composition comprising kapok husks, an acid source and a thermoplastic polymer. The use of kapok husks as a flame retardant offers an environmentally friendly, bio-based alternative for current flame retardants. The polymer can be a bio-based or biodegradable polymer such as polylactic acid. The compositions can be used in electronic and electrical applications.
WO 2022174894 A1 20220825	Wacker Chemie AG (DE)	**Additive-containing biopolymer compositions.** The invention relates to new compositions containing (A) 65 to 99.4 wt.% biopolymers selected from the group of polylactic acid (PLA), polybutylene succinate (PBS), polybutylene succinate adipate (PBSA), thermoplastic starch (TPS), polyhydroxyalkanoate (PHA), polybutylene adipate terephthalate (PBAT), polybutylene sebacinate terephthalate (PBST), polyhydroxybutyrate (PHB), polycaprolactone (PCL), cellophane (CA) and mixtures thereof, (B) 0.5 to 30 wt.% homopolymers, copolymers or terpolymers based on vinyl acetate, and (C) 0.1 to 5 wt.% organopolysiloxane granules containing (1) 100 parts by weight of at least one polyorganosiloxane from units of the general formula RrSiO(4-r/2) (I), where R is the same or different and denotes a substituted or unsubstituted hydrocarbon residue and r denotes 0, 1, 2 or 3, with the proviso that the average numerical value of r is in a range from 1.9 to 2.1, (2) 1 to 200 parts by weight of a reinforcing or non-reinforcing filler or mixtures thereof, (3) 0.01 to 20 parts by weight of an additive containing boric acid for producing the granular material, and (4) if necessary, additional auxiliary agents selected from the group of processing aids, softeners, pigments and stabilisers, wherein the organopolysiloxane granules have a particle size of from 1 to 100 mm.

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

Biofertilizantes, bioadhesivos, etc.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2022136740 A1 20220630	Aalto Univ Foundation SR (FI)	**Colloidal lignin-epoxy formulations.** The invention describes a method of forming aqueous lignin-epoxy hybrid nanoparticles with switchable surface characteristics. The invention is applicable to production of technical adhesives and covalent surface modification of lignin nanoparticles under harsh reaction conditions. Further, in terms of the covalent functionalization of lignin nanoparticles (LNPs), this invention presents the covalent cationization of LNPs by means of attached quaternary ammonium groups.
WO 2022136612 A1 20220630	Basf SE (DE)	**Binder composition comprising poly(amino acid)s for fiber composite.** The present invention relates to a binder composition comprising component A comprising polymer(s) A1 and optionally component B comprising component B1 which is selected from the group consisting of a mono-saccharides, disaccharides, hydroxyacetone, glycolaldehyde and mixtures thereof, wherein polymer(s) A1 comprises at least 70 wt.-% poly(amino acid)s based on the total weight of the polymers) A1 and has (have) a total weight average molecular weight Mw, total of 800 g/mol to 10.000 g/mol, wherein the binder composition comprises 60 to 100 wt.-% polymer(s) A1, and 0 to 40 wt.-% component B1, based on the total weight of the sum of polymer(s) A1 and component B1, wherein the weight amounts of the polymer(s) A1 and component B1 are selected such that the total weight of the sum of polymer(s) A1 and component B1 is 100 wt.-%.
WO 2022137861 A1 20220630	Bridgestone Corp (JP)	**Adhesive composition, and resin material, rubber article, organic fiber-rubber composite, and tire using same.** A purpose is to provide an adhesive composition that is capable of ensuring the desired adhesiveness without using resorcinol and without harming the workability at the time of use, and a resin material, a rubber article, an organic fiber-rubber composite, and a tire that use the same. An adhesive composition including (A) a rubber latex having an unsaturated diene and (B) polylysine. Also, a resin material, a rubber article, an organic fiber-rubber composite, and a tire that use this adhesive composition.
WO 2022173829 A1 20220818	Brigham & Womens Hospital Inc (US)	**Pectin compositions and methods of use.** The present disclosure describes bioadhesive polymer composition comprising: a first film comprising a polymer comprising: i) high-methoxyl pectin (HMP) and ii) an initial water content ranging from about 37% to about 43% (w/w); and a second film comprising a polymer comprising: i) HMP and ii) an initial water content ranging from about 9% to about 13% (w/w), wherein the first and second films are adhered to each other. Methods of preparing the bioadhesive polymer compositions and methods of sealing an ocular injury in an eye of a subject are also described.

Nº Publicación	Solicitante (País)	Contenido técnico
EP 4032871 A1 20220727	Ferulli marco (IT)	**Physical- chemical process for production of an organic fertilizer and a biodegradable self-supporting material and their use.** A particular reference of the invention is the aspect of carbon dioxide emissions (CO2), both for the chemical-physical process and for the nature of the reagents involved, which are zeroed with respect to the current solid organic waste and/or solid biomass treatment processes. Furthermore, the chemical-physical process of the present invention makes use of very short treatment times and does not need heat sources with impacting CO2 emissions; the process itself does not emit CO2, it totally recycles the water and leads to a structurally simple and economical treatment and transformation plant. This process has the advantage of not emitting odors and of using natural, renewable reagents, allowed in organic farming, with a neutral carbon footprint and which are easily manageable in terms of safety for health and the environment. The chemical-physical process aims to obtain two end products free of pathogenic microorganisms, free of phytotoxicity and free from vectors and/or viable seeds derived from solid organic waste and/or treated solid biomass, and these products are: an organic chelate of potassium fertilizer and a biodegradable self-supporting material, both innovative for their composition, structure and use. The use of the two aforementioned products in the agronomic field makes it possible to implement an agronomic technique that protects the soil and restores its fertility at each crop succession; this use allows to vary or not, according to the different agronomic needs, the pH value of the circulating solution, the C/N ratio of the soil, to maximize the nitrogen fixing process of the bacteria naturally present in the soil with dedicated crops in succession and in the at the same time increase the strength of the soil (soil depth). The chemical-physical process with zero CO2emissions for the treatment and transformation of solid organic waste and/or solid biomass, and the agronomic use of the fertilizing organic potassium chelate and the biodegradable self-supporting material, are functionally connected in a system of capture and storage of CO2 in the soil with significant technical, economic and environmental efficiencies. The transformation of solid organic waste and/or solid biomass into the aforementioned innovative products refers to the complete composition of solid organic waste and/or solid biomass and therefore not to parts, extracts or compounds isolated from them. The use of biodegradable self-supporting material in the pre-sown version in the agronomic field allows to maximize agricultural productions also with organic farming methods, bringing them on a par with the most recent soilless cultivation techniques, but with the advantage of being significantly cheaper, manageable and even more sustainable from an environmental point of view.
EP 4047071 A1 20220824	Foresa Tech SLU (ES)	**Adhesive compositions comprising bio-based adhesives, and their use for manufacturing wood-based composites and fibreglass or rock wool insulations.** The present invention refers to novel formaldehyde-free adhesive compositions comprising at least one bio-based adhesive from a renewable resource, 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.
EP 4047070 A1 20220824	Foresa Tech SLU (ES)	**Adhesive compositions comprising bio-based adhesives from renewable resources, and their use for manufacturing plywood.** The present invention refers to novel formaldehyde-free bio-based adhesive compositions, adhesive systems comprising, isolated one of another, said adhesive composition (component A) and at least one hardener agent (component B), and adhesive mixtures comprising the adhesive composition and the hardener agent. These adhesive compositions, systems and mixtures can be used for plywood manufacturing.
EP 4047069 A1 20220824	Foresa Tech SLU (ES)	**Adhesive compositions comprising bio-based adhesive and mixtures for curtain coating.** The present invention describes novel formaldehyde-free adhesive compositions, adhesive mixtures comprising said adhesive composition (component A) and at least one hardener agent (component B), and adhesive systems wherein the adhesive composition further comprising a thickener agent (component A) and the at least one hardener agent (component B) are isolated one of another. Said adhesive compositions, mixtures and systems may be used for curtain coating of a substrate and, in particular, for plywood manufacturing by curtain coating. The present invention also relates to a process for manufacturing a coated material by applying the adhesive mixture by curtain coating, to coated products, in particular plywood, obtainable or obtained by said process and to coated products, or plywood comprising the adhesive composition or mixture of the invention.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2022181141 A1 20220901	Nitto Denko Corp (JP)	**Adhesive composition and adhesive sheet.** Provided is an adhesive containing a polyester-based polymer synthesized using a biomass material, and more specifically, an adhesive composition achieving high shear adhesive force, and containing a polyester-based polymer, wherein 50% or more of the constituent carbon is a biomass-derived carbon. The adhesive composition further contains a tackifier resin and a crosslinking agent. The polyester-based polymer contains an aromatic ring, the tackifier resin also contains an aromatic ring, but the crosslinking agent does not contain an aromatic ring.
WO 2022139670 A1 20220630	Organoclick AB (SE)	**Binder compositions.** Compositions are disclosed suitable as biobased and compostable binders for fiber-based materials, paper, textiles, woven and nonwoven materials. The compositions are adjusted to a pH<7 and comprise a water soluble biobased polymer or a protein hydrolysate, a support agent selected from at least one in the group of saccharides and polyols, and tannic acid. Also disclosed is fiber-based materials, paper, textiles, woven and nonwoven materials treated with the compositions and methods for such treatment.

Biocosméticos, Biofarmaceúticos

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2022167183 A1 20220811	Beiersdorf AG (DE)	**Bio-based wound closure preparation.** The present invention relates to a wound closure preparation made of nature-based raw materials, in particular to a sprayable bio-based wound closure preparation.
EP 4062922 A1 20220928	Chanel Parfums Beaute (FR)	**Extract of swertia chirata and cosmetic compositions comprising same.** A Swertia chirata extract obtained by extracting with supercritical CO2 an alcoholic extract of Swertia chirata, and to a cosmetic composition including such an extract having in particular an anti-ageing effect for the skin. Also, administering such an extract in a cosmetic method for preventing and/or reducing skin ageing and a cosmetic method for hydrating the skin and/or improving the barrier function of the skin.
ES 2919234 A1 20220722	Cosmetica Cosbar SL (ES)	**Vegetable hydrolyzed for use in cosmetics.** The present invention refers to a vegetable hydrolyzed for use in cosmetics and a process for preparation from a mixture of rice protein, ginger root, lentil seeds, quinoa seeds and soybeans, where said process includes a First stage (a) of enzymatic hydrolysis of plant matter with a mixture of enzymes that comprises a protease and at least a second enzyme selected from an amylase, an xylanase, a pectinase and a cellulase; and a second stage (b) of fermentative hydrolysis with Saccharomyces cerevisiae. This vegetable hydrolyzed has cosmetic application due to its moisturizing, reaffirming and regenerator of skin and hair and for its effect on collagen biosynthesis. The present invention also refers to a cosmetic composition that includes said vegetable hydrolyzed.
WO 2022157457 A1 20220728	Expanscience Lab (FR)	**Extract of top growth of holy basil, and cosmetic or dermatological compositions containing same.** The invention relates to an extract of top growth of holy basil, in particular of Ocimum sanctum, a method for preparing the extract, and the extract obtainable by said method. The invention also relates to a composition comprising such an extract, the composition advantageously being a cosmetic, pharmaceutical or dermatological composition. The invention also relates to such a composition or such an extract for use in preventing or treating disorders or diseases of the skin, the mucous membranes or the skin appendages, and for use in preventing or treating vascular disorders. Finally, the invention relates to a cosmetic care method for the skin, skin appendages or mucous membranes, with a view to improving the condition or appearance thereof, which method consists in administering such a composition or such an extract.
WO 2022148562 A1 20220714	Henkel AG & CO KGAA (DE)	**Styling cream containing natural ingredients.** The present invention relates to a composition for shaping keratin fibers, comprising at least one vegetable butter, at least one vegetable oil and at least two different polyglyceryl esters.
WO 2022162412 A1 20220804	Keybiological SL (ES)	**Ozonised oil production method, reactor and oil produced.** The invention relates to a method and a reactor for the production of ozonised oil from olive oil or other oils or fats at 9-12 °C. The oil is treated by bubbling ozone inside a chamber (1), using a membrane diffuser, and all surplus ozone is destroyed. Ozone concentration is 250-300 g/Nm3, which is achieved by cold plasma generation. The oil thus produced has improved properties, with respect to the health of people, for the treatment of pathologies, and is not degraded.

Nº Publicación	Solicitante (País)	Contenido técnico
EP 4062901 A1 20220928	Lumene OY (FI)	**Cosmetic use of nordic berry ingredients for supporting a healthy skin microbiome.** According to an example aspect of the present invention, there is provided the non-therapeutic use of an effective amount of spray-dried berry powder from Nordic berries as a cosmetic agent supporting a healthy skin microbiome, and a corresponding method. The method of the invention preferably comprises increasing the ratio of S. epidermis to C. acnes and S. aureus in human skin microbiome by applying on a human skin an effective amount of cosmetic composition comprising spray-dried lingonberry powder, spray-dried cloudberry powder or both.
EP 4032525 A1 20220727	Miyoshi Europe (FR)	**Microalgae calcareous compositions and uses thereof.** The present invention relates to a process for producing a cosmetic, a pharmaceutical or a nutraceutical composition, the process comprising cultivating Thoracosphaera heimii microalgae cells, recovering and drying the Thoracosphaera heimii calcispheres and mixing them with at least one cosmetically, pharmaceutically or nutraceutically acceptable ingredient. The invention further relates to the use of Thoracosphaera heimii, microalgae as a cosmetically, pharmaceutically or nutraceutically acceptable ingredient. Lastly the invention relates to a cosmetic, pharmaceutical or nutraceutical composition comprising spherical Thoracosphaera heimii calcispheres of less than 15 µm average diameter and of sphere wall thickness of less than 1 µm, in association with at least one cosmetically, pharmaceutically or nutraceutically acceptable ingredient.
WO 2022175090 A1 20220825	Unilever IP Holdings BV (NL) et al.	**Antibacterial system with naturally derived ingredients and compositions comprising them.** Antibacterial systems with naturally derived ingredients and compositions comprising them are described. The systems have a first ingredient comprising thymol and a second natural ingredient that includes p-anisic acid, aloe, gluconolactone, tetrahydrocurcumin, 4-hydroxyacetophenone or a mixture thereof.
WO 2022184745 A1 20220909	Univ Nantes (FR) et al.	**Use of microalgal exopolysaccharides as texturizing agents.** The present invention relates to the use of an exopolysaccharide or a mixture of exopolysaccharides derived from microalga belonging to the genus Glossomastix as a texturizing agent.

Bioaditivos alimentarios

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2022192028 A1 20220915	Corn Products Dev Inc (US)	**Methods and products using sweet flour for encapsulation.** The technology disclosed in this specification pertains to encapsulating mixtures, encapsulating compositions, encapsulated products, and methods of their manufacture. The compositions and products comprise an emulsifier and a sweet flour and are useful for encapsulating oil-based ingredients. Such compositions and products can be formulated to have good oil retention and good oxidation resistance without the use of maltodextrins. In some embodiments the sweet flour is a sweet corn flour.
WO 2022197777 A1 20220922	Dawn Food Products Inc (US)	**Edible coating composition and method for making and producing the same.** The present disclosure relates generally to a shelf-stable and freeze-stable edible coating composition comprising a crystalline phase and a non-crystalline phase and methods of making and producing the same.
WO 2022159807 A1 20220728	Dupont Nutrition Bioasci APS (DK) et al.	**A stabilizer composition comprising microcrystalline cellulose.** The present invention relates to a stabilizer composition comprising colloidal microcrystalline cellulose coprocessed with unrefined and unmodified red seaweed flour derived from a red seaweed of the class Rhodophyta.
WO 2022192989 A1 20220922	Ilola Inc (CA)	**Moulded tea composition incorporating microbial cellulose as a binder.** A moulded tea composition is provided. The moulded tea composition is prepared from microbial cellulose as a binder and dehydrated plant material. The microbial cellulose may be kombucha membrane and the dehydrated plant material may be tealeaves. The moulded tea composition may include other ingredients and such ingredients may include probiotics and extracts. A method for preparing the moulded tea composition is also provided.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2022181759 A1 20220901	J Oil Mills Inc (JP)	**Emulsion composition.** This emulsion composition contains methylcellulose, a starch material, an edible oil/fat, and an emulsifying material. The emulsifying material contains a protein. The starch material is one or two components selected from the group consisting of components (A) and components (B). Components (A) are granular materials satisfying the following conditions (1)-(4): (1) having a starch content of 75% by mass or more; (2) containing 3-45% by mass of a low-molecular-weight starch (having a peak molecular weight of 3×103-5×104) with an amylose content of 5% by mass or more; (3) having a degree of swelling in cold water at 25°C of 5-20; and (4) containing a fraction that is not captured by a 3.35-mm-mesh sieve and is captured by a 0.038-mm-mesh sieve in an amount of 60-100 mass%. Components (B) are starch materials containing, as a raw material starch, one or more materials selected from corn starch, tapioca starch, wheat starch, and pea starch.
WO 2022168878 A1 20220811	Mirai Kasei Inc et al. (JP)	**Food modifier and method for manufacturing modified food.** The present invention provides a food modifier including a reversible thermal gelling agent and a thickener, whereby yield when a food is heated is enhanced and the outside appearance of the food is maintained, and a method for manufacturing a modified food.
WO 2022167533 A1 20220811	Nestle SA (CH)	**Enzyme cross-linked sugar beet pectin microgel particles for use in foods.** The invention relates to a method of making sugar beet cross-linked pectin microgel particles. Food products comprising said microgel particles are also provided, for example confectionery products, beverage products, and meat analogue products.
WO 2022187414 A1 20220909	Paragon Flavors Inc (US)	**Oleogel compositions and flavor delivery systems for plant-based meat analogues.** An oleogel composition and a method to create the oleogel composition are described. The method includes: combining a gelator with an oil, co-melting the gelator and the vegetable oil at a temperature to form a melt, dispersing at least one immiscible inclusion in the melt to form a mixture, cooling the mixture to create a solidified oleogel, and incorporating the solidified oleogel into a meat analogue mixture.
WO 2022171372 A1 20220818	Sonjal (FR)	**Method for preparing a sausage batter coating gel comprising a high-pressure treatment.** The invention relates to a method for preparing an aqueous coating composition intended to be applied via co-extrusion around a food preparation and brought into contact with a gelling agent such as calcium chloride, in order to form a casing around said food preparation. According to the invention, after mixing at least the water and the alginate of the composition, said mixture is exposed to a high pressure of at least 1400 bar, and preferably of at least 1800 bar, for at least 0.1 second.
EP 4059965 A1 20220921	Suedzucker AG (DE)	**Use of waxy wheat starch as viscosity improvers.** The invention relates to uses of waxy wheat starch as a viscosity enhancer in a liquid or viscous composition, the viscosity-enhanced composition exhibiting a substantially constant progression of the storage modulus (G') over a period of six weeks.

Bioproductos alimenticios para animales

Nº Publicación	Solicitante (País)	Contenido técnico
EP 4059351 A1 20220921	Georg August Univ Goettingen (DE)	**Dry pet food article and method for making the same.** The invention relates to a method for producing dry pet food articles, dry pet food articles obtained by said method, and the use of said dry pet food articles. The dry pet food articles are produced by a method at least comprising the steps: a) providing a moulding material by contacting popcorn with a binder composition, the binder composition at least comprising a protein, a sugar alcohol, and water; b) forming an article from the moulding material by administering heat and/or pressure to the moulding material in a mould. The dry pet food articles can be produced easily with the method according to the invention and the dry pet food articles provide very low caloric value per weight and particularly per volume, while also being well received by pets in terms of taste and mouthfeel.
EP 4052588 A1 20220907	Hamlet Protein AS (DK)	**Feed ingredient derived from biomasses of soybean meal.** The invention relates to a fermented feed ingredient derived from spent brewer's yeast and a biomass of proteinaceous plant parts, where said biomass comprises 50% by weight or more of dehulled and defatted soybean meal, wherein the crude protein content of said feed ingredient is in the range of from 35% to 65% by weight on dry matter basis, and wherein from 2% to 8% by weight on dry matter basis of the protein is derived from yeast, and wherein the feed ingredient comprises at least 10 % more of soluble non-starch polysaccharides (NSP) than the biomass from where the feed ingredient is derived. The invention also provide a method for preparing the feed ingredient and its use.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2022167771 A1 20220811	Innovafeed (FR)	**Improved food for breeding slow-growing meat-producing poultry, comprising insect oil.** The invention relates to the field of food for slow-growing meat-producing poultry. More particularly, the invention relates to the use of an improved food item comprising insect oil for breeding slow-growing meat-producing poultry; this food item makes it possible to improve the breeding performance as well as the health and well-being of the animal.
EP 4029382 A1 20220720	KWS SAAT SE & CO KGAA (DE)	**Enriched sugarbeet feedstuff.** The present invention relates to a process for making an animal feedstuff composition from a crop comprising Beta vulgaris plants or parts thereof and the animal feedstuff composition made by said process. Further, the invention encompasses a process for producing an enriched milk preferably containing a higher nutrient content, and a system for managing throughput in a production facility for processing a sugar-containing crop material.
WO 2022177924 A1 20220825	Mars Inc (US)	**Method for producing protein material.** The present disclosure relates to methods for treating at least one source of proteins, treated protein material obtainable by said method of treatment, and food compositions for animals, preferably for pets, including said treated protein material.
WO 2022159029 A1 20220728	Pearl Aqua Co Ltd (TH)	**Aquaculture feed and method for producing same.** An aquaculture feed and a method for producing the aquaculture feed are provided. The aquaculture feed includes a plurality of feed units. Each of the feed units includes a plurality of whole organisms bound together to form an individual feed unit.
WO 2022139653 A1 20220630	Repasko AB (SE)	**Blood meal comprising non-coagulated proteins.** The invention discloses a method for manufacturing a blood meal comprising non-coagulated proteins. The method (200) comprises the steps of heating (220) a first part of non-coagulated raw blood (1) to a temperature T above its coagulation temperature TC, such that proteins in the non-coagulated raw blood (1) coagulate and coagulated blood (2) is obtained. Secondly, the method comprises separating (230) water (3) from the coagulated blood (2) to obtain dewatered coagulated blood (4) and adding (240) the dewatered coagulated blood (4) and a second part of non-coagulated raw blood (1') to a dryer (100). The ratio between the second part of non-coagulated raw blood (1') and the first part of non-coagulated raw blood (1) is 1:10 to 2:3. Finally, the method (200) comprises drying (250) the dewatered coagulated blood (4) and the second part of non-coagulated raw blood (1') in the dryer (100), whereby a blood meal (10) partly comprising non-coagulated proteins is formed. The invention further relates to a blood meal (10) formed from the method (200) and the use of the blood meal (10) in a foodstuff.
WO 2022148449 A1 20220714	Singao Xiamen Agribusiness Dev Co Ltd et al. (CN)	**Pig raising method for reducing pig back-fat thickness and/or increasing lean meat percentage, composition, and use thereof in preparation of pig feed.** A pig raising method for reducing the pig back-fat thickness and/or increasing the lean meat percentage, a composition, and use thereof in preparation of a pig feed, relating to the field of feeds. The technical problem to be solved is to reduce the backfat thickness of finishing pigs. By adding an additive comprising butyrate, or a butyrate derivative, and an omega-3 fatty acid during pig raising, the pig back-fat thickness can be effectively reduced, and the present invention has important significance in improving meat quality.
WO 2022150037 A1 20220714	Spectrum Brands Inc (US)	**Pet chew formulation and methods of making same.** The present disclosure related generally to an edible pet chew. The edible pet chew comprises a first sheet of grain-based material and a second sheet of flavored material for example jerky that is laminated with the first sheet to form alternating layers in the edible pet chew. An edible pet chew may also include a layer of hardened chewy plant base material and a layer sheet of a chewy edible material. The first and second layers are superimposed adjacent each other into a composite assembly with the first layer and second layer forming alternating layers in the composite assembly. The present disclosure related generally to an edible pet chew has a first sheet of plant base material and a second protein of flavored material comprising a meat jerky and an anti-oxidant rich material that is wrapped with the first sheet to form alternating layers in the edible pet chew.
WO 2022197241 A1 20220922	Wilmar International Ltd (SG)	**A bacterial isolate and its use in the preparation of an enriched palm-based animal feed.** The present invention relates to a Bacillus subtilis strain isolate DSM33646 which is capable of propagating and secreting mannolytic enzymes to hydrolyse at least three forms of mannan polymers upon contact with solvent- extracted palm kernel meal. The present invention also relates to a method for producing an enriched palm- based animal feed having a reduced mannan polymer content by contacting palm kernel meal with the said bacteria strain isolate.

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