

OBJETIVOS DE DESARROLLO SOSTENIBLE



BOLETÍN BIOCIRCULARIDAD: BIOENERGÍA Y BIOPRODUCTOS

El impulso de la UE hacia combustibles sostenibles en la aviación

La Unión Europea (UE) impulsa activamente la investigación y el desarrollo de biocombustibles para la aviación como parte de su estrategia para reducir las emisiones de gases de efecto invernadero y alcanzar la neutralidad climática en 2050. En este contexto, el Parlamento Europeo aprobó en septiembre de 2023 la normativa ReFuelEU Aviation, que establece un calendario progresivo para incrementar el uso de combustibles sostenibles en la aviación.

A partir de 2025, al menos el 2% del combustible utilizado en los aeropuertos de la UE deberá ser sostenible, con aumentos graduales hasta alcanzar el 70% en 2050 (6% en 2030, 20% en 2035, 34% en 2040 y 42% en 2045). Para garantizar este cumplimiento, aeropuertos y proveedores de combustible deberán asegurar que una parte creciente del queroseno utilizado provenga de fuentes ecológicas, como aceites de cocina usados y otros bioresiduos. Sin embargo, alcanzar estos objetivos requiere un fuerte impulso en investigación, desarrollo e innovación.

En este sentido, la UE ha puesto en marcha diversas iniciativas y programas de financiación para fomentar el desarrollo de biocombustibles sostenibles. España participa activamente en varios de estos proyectos, que buscan mejorar las tecnologías de producción, aumentar la disponibilidad de estos combustibles y garantizar su viabilidad ambiental y económica.

A continuación, se presentan algunos de los proyectos en curso financiados por la UE y en los que participan entidades españolas.

Porcentaje mínimo de combustible sostenible

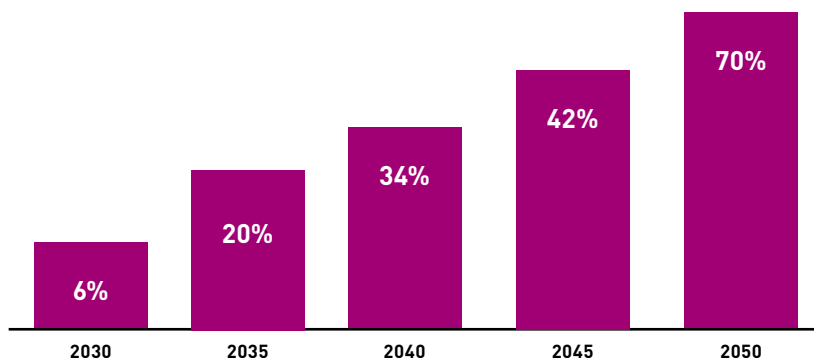


Tabla 1. Proyectos europeos en curso

ADVENTUROUS Fuelling the Future: Advancements in Trifunctional Catalysts for Renewable Biofuel Synthesis
Inicio: 1-02-2025 Finalización: 31-01-2027 Contribución UE: 181 152, 96 € Nº participantes: 1 Participantes españoles: • Universidad de Sevilla
ChemCon Chemical conversion of a Sustainable Aviation Fuel (SAF): p-cymene
Inicio: 1-01-2025 Finalización: 31-12-2026 Contribución UE: 181 152, 96 € Nº participantes: 1 Participantes españoles: • Universidad de Zaragoza
ABATE Advanced bio-based refinery intermediates
Inicio: 1-09-2024 Finalización: 31-08-2028 Contribución UE: 9 057 774, 78 € Nº participantes: 14 Participantes españoles: • Asociación de Industrias de Conocimiento y Tecnología • Fundación CENER
SusAlgaeFuel Exploring the synergies between direct carbon-capture, nutrient recovery and next-generation purification technologies for cost-competitive and sustainable microalgal aviation fuel
Inicio: 1-05-2024 Finalización: 30-04-2028 Contribución UE: 3 470 878, 75 € Nº participantes: 8 Participantes españoles: • IRIS Technology Solutions SL
ALGAESOL Sustainable aviation and shipping fuels from microalgae and direct solar BES technologies
Inicio: 1-05-2024 Finalización: 30-04-2027 Contribución UE: 3 997 156, 25 € Nº participantes: 7 Participantes españoles: • Acondicionamiento Tarrasense Associacion • Universidad de Gerona
ALFAFUELS sustainable jet fuels from CO2 by micro-algal cell factories in a zero waste approach
Inicio: 1-01-2024 Finalización: 31-12-2027 Contribución UE: 4 757 391, 33 € Nº participantes: 14 Participantes españoles: • Sustainable Innovations Europe SL • Idener Research & Development Agrupación de Interés Económico

YAF Yeast-based solutions for sustainable Aviation Fuels
Inicio: 1-12-2023 Finalización: 30-11-2027 Contribución UE: 2 637 583, 20 € Nº participantes: 8 Participantes españoles: • Fundación IMDEA Energía (Coordinador) • CIEMAT • Compañía Española de Petróleos SA
COCPIT sCalable solutions Optimisation and decision tool Creation for low impact SAF Production chain from a lipid-rich microalgae sTrain
Inicio: 1-10-2023 Finalización: 30-09-2027 Contribución UE: 4 999 487, 23 € Nº participantes: 11 Participantes españoles: • Universidad Rovira i Virgili • Acondicionamiento Tarrasense Associacio
ICARUS International cooperation for sustainable aviation biofuels
Inicio: 1-10-2023 Finalización: 30-09-2026 Contribución UE: 3 161 948, 75 € Nº participantes: 14 Participantes españoles: • Universidad del País Vasco
CIRCULAIR Circular fuel supply for air transport via negative emission HTL conversion
Inicio: 1-01-2023 Finalización: 31-10-2026 Contribución UE: 2 951 957, 50 € Nº participantes: 5 Participantes españoles: • Fundación IMDEA Energía (Coordinador) • Universidad Rey Juan Carlos
BIOCTANE Synergetic integration of BIOteChnology and thermochemical CaTalysis for the cAScade coNvErsion of organic waste to jet-fuel
Inicio: 1-11-2022 Finalización: 31-12-2026 Contribución UE: 4 999 915, 00 € Nº participantes: 10 Participantes españoles: • Universidad Complutense de Madrid
ALIGHT Copenhagen Airport: a Lighthouse for the introduction of sustainable aviation solutions for the future
Inicio: 1-11-2020 Finalización: 31-10-2025 Contribución UE: 11 957 081, 00 € Nº participantes: 19 Participantes españoles: • IATA España SL Sociedad Unipersonal

PATENTES BIOENERGÍA

Biocombustibles sólidos (pellets, biochars, bio RDFs, bio SRFs, etc.)		
Nº Publicación	Solicitante (País)	Contenido técnico
EP4520806A1	Agernomics Biotech Res Pte Ltd (SG)	Microwave biomass torrefaction. The invention is in the field of biomass processing. In particular, the present invention is directed to a method and system for torrefaction of biomass, and to bio-coal and/or bio-char obtainable by such torrefaction. There is provided a process for the production of bio-coal and/or bio-char, comprising a torrefaction step in which biomass is irradiated in a heating chamber using microwave radiation, wherein biomass is continuously fed to the heating chamber and torrefied biomass is continuously removed from the heating chamber.
WO2025041821A1	Aisin Takaoka Ltd (JP)	Method for producing molded biocoke. According to the present invention, a molded biocoke 23 is produced by a method comprising: a mixing step for mixing a coconut shell material (biomass raw material 21) that is coconut shell or coconut shell charcoal from which impurities have been removed and a caking agent 22 with a mixer 13 to obtain a mixture; a molding step for performing pressure molding on the mixture by a molding machine 14 to obtain a molded body; and a heating step for heating the molded body with a heating furnace 15 in a non-oxidizing atmosphere
WO2025000047A1	Foresta Group Holdings Ltd (AD)	Production methods. The present disclosure generally relates to methods of chemical extraction and biomass fuel production.
EP4524467A1	Froeling Heizkessel und Behälterbau GesmbH (AT)	Biomass boiler and method for operating a biomass boiler. The invention relates to a biomass heating boiler (1) for a biomass solid fuel (51), in particular pellets and/or wood chips, comprising a boiler housing (2), a combustion chamber (3), a solid fuel conveying device (4) for feeding the combustion chamber (3) with the biomass solid fuel (51), wherein the solid fuel conveying device (4) has a conveying channel (5) and a conveying unit (6) for conveying the biomass solid fuel (51) within the conveying channel (5), a combustion air supply device (15) within the boiler housing (2) for distributing and supplying combustion air V, in particular of primary (VP) and/or secondary (VS) and/or tertiary air (VT), into the combustion chamber 3 and an intake opening (24) for the combustion air (V), wherein the intake opening (24) is provided at the solid fuel conveying device (15) and a combustion air flow path (25) for the combustion air (V) leads from the intake opening (24) to the conveying duct (5) and further into the combustion air supply device (15), wherein the combustion air flow path (25) is guided at least in sections at the conveying duct (5). Furthermore, the invention relates to a method for operating a biomass heating boiler (1).
WO2025052726A1	Ihi Corp (JP)	Method for producing biomass fuel and system for producing biomass fuel. This method for producing a biomass fuel includes: a management step S130 for managing a carry-in date for a biomass to be carried into a stock yard; a dispensing step S140 for dispensing the biomass from the stock yard on the basis of the carry-in date; a squeezing step S160 for squeezing the biomass that has been dispensed by the dispensing step S140 to remove a squeeze liquid from the biomass; a first washing step S170 for washing the biomass that has been squeezed by the squeezing step 160 with water; and a first dehydrating step S180 for squeezing the biomass that has been washed by the first washing step S170 to dehydrate the biomass.
WO2025029165A1	Meshchaninov Mikhail Aleksandrovich (RU)	Fuel briquette. The invention relates to the field of solid fuel briquettes based on carbonaceous materials, which are suitable for domestic use for the independent, environmentally clean and economical heating of living and service spaces, as well as for cooking food on braziers, grills and barbecues. The technical result, which consists in providing environmental benefits and mitigating weed infestation of fertile land, is achieved by means of a fuel briquette containing a pre-ground carbonaceous filler and a biomass, wherein the biomass is comprised of ground, compacted and dried Sosnowsky's hogweed plants, and the briquette is dried and compacted to remove liquid content.

Nº Publicación	Solicitante (País)	Contenido técnico
WO2025035701A1	Tongren Poverty Alleviation and Development Invest Co Ltd et al. (CN)	Chicken manure biochar formed fuel and preparation method therefor. A chicken manure biochar formed fuel and a preparation method therefor. The raw materials used by the formed fuel comprise chicken manure and wood chips, wherein the adding amount of wood chips is less than or equal to 40 wt% calculated on the basis of dry weight. The preparation method for the formed fuel is as follows: raw material pretreatment: naturally airing fresh chicken manure until the water content is less than 20%, then drying same until the water content is 3-12%, sieving wood chips through a 7-mesh sieve, and then drying same until the water content is 3-12%; and crushing the chicken manure having a water content of 3-12%, and then sieving same through a 10- to 40-mesh sieve, so as to obtain undersize chicken manure; stirring and mixing: mechanically stirring and uniformly mixing the undersize chicken manure and the wood chips having a water content of 3-12% for 10-40 min, so as to obtain a mixture; fuel rod hot extrusion forming: subjecting the mixture to hot extrusion forming at a temperature of 190-320°C, and drying same, so as to obtain a fuel rod; and pyrolysis: subjecting the obtained fuel rod to heat preservation for 20-120 minutes at a heating rate of 3-10 min/°C and a pyrolysis temperature of 400-800°C under the condition of the protective gas being argon, so as to obtain a chicken manure biochar formed fuel. The fuel has high mechanical strength, a high density, is easy to store and transport, has a high calorific value and a low ash content, is odorless during a combustion process and has low flue gas.
WO2025004388A1	Tosoh Silica Corp (JP)	Processed rice husk ash and method for producing same. The present invention relates to processed rice husk ash. The present invention further relates to a method for producing processed rice husk ash. Rice husk ash as a raw material is processed into rice husk ash having an apparent density in a dry state of 400-800 g/L and a water content of 30% by mass or less.
WO2025046495A2	Wood Trade SP ZOO (PL)	Wood pellets. The subject of the invention is a wood pellet with increased resistance to biological factors and excellent mechanical strength. The wood pellet contains wood raw material with a fineness of 0 mm to 1 mm - 8% to 10%, from 1 mm to 3 mm - 75% to 77%, from 3 mm to 5 mm - 8% to 10%, and humidity up to 12% and from 0.9% to 1.3% gelatin and from 0.9% to 1.3% sugar and from 0.2% to 0.4% biocide, wherein the biocide is Acticide 14, containing a mixture of 5-chloro-2-methyl-2H-isothiazol-3 and 2-methyl-2H-isothiazol-3.
WO2025040761A1	Yilkins BV (NL)	Method of manufacturing densified, torrefied biomass particulates. A method of manufacturing densified, torrefied biomass particulates is disclosed. The method comprises at least : a torrefaction step of torrefying a particulate biomass material under torrefaction conditions; a densification step of densifying the torrefied particulate biomass material from the torrefaction step, thereby obtaining densified torrefied biomass particulates; and a thermal post treatment step of heat treating the densified and torrefied biomass material particulates from the densification step under torrefaction conditions. The thermal post treatment step improves the durability of the densified, torrefied biomass particulates.

Syngas		
Nº Publicación	Solicitante (País)	Contenido técnico
WO2025026801A1	Basf SE (DE)	Syngas production plant and method for continuous producing syngas by gasification. The present invention relates to a syngas producing plant for a continuous production of syngas with controlled properties by gasification of a feedstock having varying physical and/or chemical properties and a method for a continuous production of syngas by gasification of a feedstock having varying physical and/or chemical properties. The syngas plant comprises at least two pre-treatment units, wherein said pre-treatment units are different from each other, a first distributing unit, wherein the first distributing unit is upstream of and fluidically connected to each of the at least two pre-treatment units, and at least two gasifiers, wherein said gasifiers are different from each other.
WO2025026746A1	Basf SE (DE)	System and method for producing a chemical product having a biogenic carbon content from two or more feedstocks. The present invention relates to a system and a method for controlling biogenic carbon content in syngas made by gasification of a first feedstock and a second feedstock in at least one gasifier. The first feedstock has an undefined biogenic carbon content, and the second feedstock has an undefined biogenic carbon content. The biogenic carbon content of the syngas is controlled by measuring the biogenic carbon content of the syngas and then adjusting the flow rate of the first feedstock and/or the second feedstock into the at least one gasifier until a target biogenic carbon content in the syngas is reached. The system and method according to the pre-sent invention can be further used to produce a chemical product such as methane, methanol, and Fischer-Tropsch hydrocarbons having a target biogenic carbon content from the syngas made by gasification in at least one gasifier.
WO2025026748A1	Basf SE (DE)	System and method for controlling the biogenic carbon content of a chemical product. The present invention relates to a system and a method for controlling biogenic carbon content in a combined syngas stream made from a first syngas stream obtained by gasification of a first feedstock and a second syngas stream. The first feedstock has an undefined biogenic carbon content, and the second syngas stream has a defined biogenic carbon content. The biogenic carbon content of the combined syngas stream is controlled by measuring the biogenic carbon content of the syngas and then adjusting the flow rate of the first feedstock into the gasifier and/or the second syngas stream until a target biogenic carbon content in the syngas is reached. The system and method according to the present invention can be further used to produce a chemical product such as methane, methanol, and Fischer-Tropsch hydrocarbons having a target biogenic carbon content from the combined syngas stream.
WO2025030245A1	Char Tech Research Inc (CA)	Systems and methods for processing biomass. A method of processing biomass is disclosed. The method includes providing biomass to a pyrolysis kiln, where the biomass has a moisture content of less than 40% and an ash content of less than 50%, and where the biomass has a biomass input temperature of less than 125°C. The method continues with heating at least an upstream portion of the pyrolysis kiln to maintain an upstream kiln temperature of between 800°C and 1250°C, and feeding the biomass through the pyrolysis kiln for a pyrolysis duration of 5 to 60 minutes to produce a kiln output that includes biocarbon and syngas. The biomass increases from the biomass input temperature to a biomass reaction temperature of at least 800°C in less than 25% of the pyrolysis duration. The method continues with discharging at least the biocarbon and the syngas from the pyrolysis kiln. Other methods and pyrolysis kilns are also disclosed.
WO2025054529A1	Reformed Energy Inc (US)	Downdraft plasma gasifier. A gasifier system configured to generate synthesis gas via thermal decomposition of materials at elevated temperatures in an oxygen deprived atmosphere via pyrolysis is disclosed. The gasifier may include numerous subsystems configured to increase the operational efficiency of the gasifier. For example, and not by means of limitation, the gasifier may include a syngas recirculation system, a screenless ash removal system, a tar reduction system, a negative slope gasifier system and a syngas catalyzer system. The syngas recirculation system may increase efficiency of the gasifier system.

Nº Publicación	Solicitante (País)	Contenido técnico
WO2025003132A1	Shit2power GmbH (DE)	Downdraft fixed-bed gasification reactor assembly for the gasification of sludge. The invention relates to a downdraft fixed-bed gasification reactor assembly (10) for the gasification of dewatered or partially dewatered sludge having a sludge dry solids content of at least 20%, which is introduced into a gasification reactor (12) through an inlet (16), the assembly comprising a gasification reactor (12) having: a drying zone for further drying the sludge; a pyrolysis zone for chemically converting the organic components into pyrolysis products; an oxidation zone for the partial oxidation of the pyrolysis products; and a reduction zone for the reduction of the pyrolysis products and oxidation products to form syngas and ash. The downdraft fixed-bed gasification reactor assembly is characterized in that the interior of the gasification reactor (12) is cylindrical and has a constant cross-section across the entire height, and in the area of the oxidation zone, lateral openings (22, 24) are provided in the wall of the gasification reactor (12), through which openings gaseous oxygen, air or another oxygen-containing gas can be guided into the oxidation zone.
WO2025043162A1	Univ Michigan Regents et al. (US)	High efficiency gasification. A gasification reactor for conversion of a feedstock to syngas and biochar. The gasification reactor includes a biomass input configured to receive feedstock, a gasifying medium inlet adjacent to the biomass input and configured to receive a gasifying medium, and a reactor vessel configured to gasify the feedstock with the gasifying medium to generate syngas and biochar. The reactor vessel is disposed downstream of the gasifying medium inlet. The reactor vessel may comprise cement along an inner surface of the reactor vessel. The reactor vessel may further comprise a blower coupled to the gasifying medium inlet to drive the gasifying medium into the reactor vessel. The reactor vessel may further comprise a biomass movement instrument to regulate the flow of the feedstock.

Biogás

Nº Publicación	Solicitante (País)	Contenido técnico
WO2025023937A1	Air Liquide (FR) et al.	Biogas production with headspace vacuum. A system for producing biogas comprises a bioreactor, configured to produce the biogas under a reaction condition, including a main body that contains a sludge of a mixture of a biowaste, an alkaline chemical, a pH buffer agent and/or an iron-based additive, and a headspace that contains the produced biogas, a plurality of transducers, configured to measure a headspace pressure through communicating with a PLC for pressure control, installed at a plurality of locations in the bioreactor, and a vacuum pump, configured to extract the produced biogas out of the bioreactor and simultaneously to pump the headspace to a vacuum or a negative pressure, wherein, when the headspace pressure is above a set-point set by the PLC, the vacuum pump is turned on to extract the biogas out of the bioreactor; when the headspace pressure is below the set-point, the vacuum pump is turned off.
WO2025046265A1	Cenergy Solutions Inc (US)	A system for removing H2S and CO2 from biogas. The present disclosure generally relates to a processing system for methane gas mixtures from wellbore operations, anaerobic digesters, etc, and more particularly to the use of adsorbent material within a system to reduce the concentrations of H2S and CO2 in the gas mixture. The system has regeneration capabilities to allow the adsorbent material to be used repeatedly. The system consists of one or more vessels containing adsorbent materials. The vessels are connected to the gas supply and processed gas outlet using isolation valves. The vessels are connected to one or more blowers that can be used to blow air through the vessels to regenerate the adsorbent material. The gas from regeneration exits the vessel through a separate path than that for the processed gas. The regeneration inlet and outlet also have isolation valves. The isolation valves are operated so the vessel can be used to process or to be regenerated.
EP4527915A1	Corradi & Ghisolfi Srl (IT)	System for draining condensate in biogas pipelines. A system for draining condensate in biogas pipelines comprises a main pipeline (1) for biogas and a secondary pipeline (2) for collecting and draining condensate, which secondary pipeline (2) is located at a lower level than the main pipeline and communicates with it by means of appropriate check valves (3). Said primary (1) and secondary (2) pipelines connect the biogas production plant (IP) to the collection section for utilization away from the plant itself, or to the section for upgrading (UPG) to biomethane for inputting it into the distribution network

Nº Publicación	Solicitante (País)	Contenido técnico
WO2025046627A1	Council Scient Ind Res et al. (IN)	A bi-phasic solid-state anaerobic digester system for the generation of biogas with methane (bi-ads>90% CH₄). The present invention discloses a bi-phasic anaerobic digestion (AD) system [100] designed to produce biohydrogen, biohythane, and high-purity biogas with at least 90% methane content from various organic wastes, including lignocellulosic biomass. This system utilizes a single, closed, horizontal cylindrical reactor with two chambers: acidification chamber I and biomethanation chamber II. It facilitates high-pressure solid-state AD through optimal supplementation of nutrient nanoparticles and bioaugmented inoculum. The system's novel design, featuring a central duct, cones, and perforated plates, ensures efficient mixing and heat and mass transfer. The system can also generate biohythane, containing 15-25% hydrogen and 75-85% methane, by controlling the flow of gases between chambers. Additional features include micro-aeration to enhance hydrolysis, gravity settling chambers for slurry withdrawal, controlled gas passage between chambers to optimize methane production, and a programmable logic controller (PLC) for automated pH, temperature monitoring, and process control.
EP4488357A1	High Performance Composites AS (NO)	Bioreactor for producing biogas. A reactor for producing biogas from organic material, having a housing, and an assembly arranged inside the housing, the assembly being a combination of at least one perforated sheet and a plurality of random packing units. A method for maintaining a reactor including extracting the assembly from the housing, cleaning the assembly, and reintroducing the assembly into the housing.
WO2025027431A1	Milano Politecnico (IT)	Biogas upgrading system. The present invention relates to a biogas upgrading system, and plants comprising said system.
EP4484564A1	OQ Chemicals GmbH (DE)	Process for increasing the biogas yield of anaerobic fermentations and composition of short-chain branched monocarboxylic acids. The present invention relates to a method of increasing the biogas yield of an anaerobic biomass fermentation, at least comprising the method steps of: a) providing an anaerobically active bacteria population suitable for generation of biogas from fermentable biomass and/or non-biogenic waste materials and b) once or more than once adding the fermentable biomass and/or non-biogenic waste materials to the bacteria population, wherein a mixture of at least three different branched C ₄ -C ₅ monocarboxylic acids is added once or more than once to the bacteria population in method step a), in method step b) or in both method steps. The present invention further relates to a carboxylic acid composition at least comprising three different branched C ₄ -C ₅ monocarboxylic acids.
WO2025035201A1	Sixring Inc (CA)	Novel pretreatment for recalcitrant biomass for biogas generation. A method of using recalcitrant biomass in the production of methane from a bio-digester, said method comprising the steps of: - providing a recalcitrant biomass wherein said biomass comprises a lignin content above 10 % of the dry weight of said biomass; - exposing said highly recalcitrant biomass to a delignification reaction wherein said delignification reaction comprising the exposure of said highly recalcitrant biomass to an acidic composition comprising a modified Caro's acid for a period of time sufficient to yield a treated cellulose which has a final lignin content of up to 100% less than the initial lignin content of the biomass; - providing a digester whose contents comprises at least one inoculum comprising a microbial community capable of converting organic material into methane under anaerobic conditions; - adding said treated cellulose to said digester; - optionally, adding at least one organic material which is not categorized as highly recalcitrant biomass; - allowing sufficient time for the digester to degrade at least a portion of said treated cellulose and optionally, at least a portion of said organic material to yield a biogas composition comprising methane; - capturing said biogas composition; and - storing said biogas.
WO2025035200A1	Sixring Inc (CA)	Method for enhanced biogas generation. A process to make biogas, said process comprising the steps of: - providing a digester which comprises at least one organic material rich in nitrogen and at least one inoculum capable of converting a portion of said at least one organic material into methane under anaerobic conditions; - providing a biomass which is depleted of lignin in a range from 5 to 100 % w/w of the total organic feedstock; - adding said biomass to said digester; - allowing sufficient time for the digester to degrade at least a portion of said biomass and at least a portion of said organic material to yield a biogas composition comprising methane; - capturing said biogas composition; and - storing said biogas. Also disclosed, are methods and uses associated with the use of a cellulosic component which has been processed to be depleted of lignin which comprises approximately between 10% to 50 % of the amount of lignin present in a biomass component prior to a delignification treatment, as additive to organic waste in a bio-digester

Nº Publicación	Solicitante (País)	Contenido técnico
WO2025021891A1	Suez Int (FR)	System and method for determining at least one operating parameter of a biological treatment plant for biogas production with recovery of nitrogenous nutrients. The invention describes the coupling of an anaerobic biological system (110) with a bioelectrochemical system (120) in order to intensify the operation of the anaerobic system and recover the ammoniacal nitrogen contained in a digestate (3). The invention determines at least one operating parameter of an evaporation extraction system drawing off volatile organic matter from a liquid medium as a function of a value of a characteristic ratio of the mixture of this volatile organic matter with the digestate (3), this ratio being representative of an amount of biodegradable organic matter relative to an amount of ammonium ions. The value of this ratio is determined as a function (bi) of a target yield of ammonium ions extracted from the bioelectrochemical treatment system or of a target concentration of ammonium ions separated by this system, and (bii) of the value of at least one parameter representative of the capacity of the electrochemical treatment system to separate the ammonium ions and of at least one quality parameter of the digestate.

Bioalcoholes (bioetanol, biometanol, etc.)

Nº Publicación	Solicitante (País)	Contenido técnico
WO2025030235A1	Chemical Evolution Ltd (CA)	Improved production of alcohol and alcohol precursors by genetically modified ethanologenic bacteria. A genetically modified ethanologenic organism which comprises: - at least one endoglucanase (cen-like) polynucleotide sequence selected from the group consisting of: - an endoglucanase A-like (cenA-like) polynucleotide sequence which has at least 70% sequence coverage to SEQ 1; and at least 70% sequence identity to SEQ 1; - an endoglucanase B-like (cenB-like) polynucleotide sequence which has least 70% sequence coverage to SEQ 3; and at least 70% sequence identity to SEQ 3; and - an endoglucanase C-like (cenC-like) polynucleotide sequence which has at least 70% sequence coverage to SEQ 5; and at least 70% sequence identity to SEQ 5; - a β-glucosidase 1 (bgl1) polynucleotide sequence which has at least 70% sequence coverage to SEQ 9 or SEQ 20; and at least 70% sequence identity to SEQ 9 or SEQ 20; and - an exoglucanase (cex-like) polynucleotide sequence which has least 70% sequence coverage to SEQ 7 or SEQ 147; and at least 70% sequence identity to SEQ 7 or SEQ 147.
US2025092379A1	Danstar Ferment AG (CH)	Heterologous protease expression for improving alcoholic fermentation. The present disclosure relates to proteases for improving alcoholic fermentation. The proteases are expressed from a recombinant host cell. The present disclosure also provides a population of recombinant host cells expressing an heterologous protease that can be used in combination with recombinant host cells expressing an heterologous glucoamylase and/or an heterologous glycerol reduction system.
WO2025031538A2	4 Emotion GmbH (DE)	Method for producing ethanol using whey, and use of the ethanol and gaseous production byproducts. The invention addresses the problem of creating a simplified and efficient method for producing ethanol from whey, which is also sustainable and provides substantial use of the production byproducts and production residual products. 1. The invention relates to a method for producing ethanol using whey, characterised in that a sugar content of the whey is concentrated to form a thickened whey by water removal (1), in that subsequently, with addition of enzymes and yeast, the thickened whey is fermented (2), wherein the fermentation (2) takes place over at least six days, in that subsequently, the fermented thickened whey is fed to at least one distillation process (3) or at least one distillation stage (3) and is distilled to form ethanol, wherein at least one production byproduct (4) and/or at least one production residual product (5) is collected, discharged or picked up for further processing.
WO2025056406A1	IFP Energies Now (FR)	Method for producing alcohols using a support on which microorganisms are immobilized. The present invention relates to a method for producing alcohols, according to which a sugary fluid is introduced into a reaction section comprising supports on which microorganisms are immobilized, in order to produce, by fermentation, an alcohol-enriched must under the action of said microorganisms, wherein said supports comprise structured packings or packings arranged randomly in the reaction section, wherein said packings - offer an accessible surface area of between 50 and 1000 m²/m³ of working volume of the reaction section, - have an overall void fraction of at least 70%, - are made of metal, glass, ceramic, or based on polymer(s) withstanding temperatures up to at least 80°C.

Nº Publicación	Solicitante (País)	Contenido técnico
WO2025002833A1	IFP Energies Now (FR)	Production of aromatics and ethanol by biomass conversion. Disclosed are a process and a device for converting a hydrocarbon feedstock, in which a unit for producing ethanol by biochemical transformation (13) treats a hydrocarbon feedstock (30) to produce ethanol (31) and CO ₂ (32); and a methanol synthesis reaction section (50) treats the CO ₂ to produce methanol (51). Preferably the methanol is aromatized in an aromatization reaction section (56) and then sent to a fractionation train (4-7), a xylene separation unit (10) and an isomerization unit (11) to produce xylene.
KR20250008649A	KNU Industry Cooperation Found (KR)	RDAY337NIYL16073 saccharomyces cerevisiae rday337niyl16073 with excellent isoamyl alcohol productivity. The present invention relates to yeast <i>Saccharomyces cerevisiae</i> RDAY337 (NIYL16073) having excellent isoamyl alcohol productivity. The strain according to the present invention exhibits isoamyl alcohol productivity superior to that of commercial yeast strains, and can provide a high-quality fermented liquor having a unique flavor.
WO2025001260A1	Nanjing University of Technology (CN)	Method for enhancing efficiency of producing ethanol from saccharomyces cerevisiae. A method for enhancing the efficiency of producing ethanol from <i>Saccharomyces cerevisiae</i> , comprising: integrally expressing lectin protein in a <i>Saccharomyces cerevisiae</i> genome to obtain recombinant <i>Saccharomyces cerevisiae</i> , and producing ethanol from the recombinant <i>Saccharomyces cerevisiae</i> in a fermentation system containing a solid carrier. In the surface adhesion continuous production of ethanol, the constructed recombinant <i>Saccharomyces cerevisiae</i> strain can promote the adhesion and growth of yeast cells on a solid medium by improving the adhesion and membrane-forming capability of the yeast cells, so that a continuous production process is achieved, the population growth density of the cells can also be improved, the tolerance of the cells and the resistance thereof to adverse production environments can be enhanced, and the reaction properties of the yeast cells and the production efficiency of ethanol are improved. Additionally, in the continuous production of ethanol by coupling surface adhesion fermentation and membrane separation, the turbidity of a fermentation liquor can be reduced, the pollution to a separated membrane can be reduced, the efficiency of membrane separation can be improved, and the fermentation metabolic byproducts, glycerol and succinic acid, can be reduced.
JP2025027607A	Nara Advanced Institute of Science and Technology Graduate University (JP)	Alcohol fermentation methods and alcohol fermentation accelerators. The problem is to increase the efficiency of alcohol fermentation by microorganisms when fermentation raw materials containing sugar in various concentration ranges are used. SOLUTION: To fermentation materials containing sugar, at least one ingredient selected from curcumin, piperine, dipotassium glycyrrhizate, and allicin, or a fermentation promotion material containing a derivative of the ingredient, is added, and alcohol fermentation is performed by the microorganism performing fermentation.
WO2025049898A2	Terragia Biofuel Inc (US)	Co-fermentation of mixed biomass feedstocks using thermophilic bacterial co-cultures. A method for direct simultaneous co-fermentation of two or more insoluble biomass feedstocks using thermophilic bacterial co-cultures.
CN119331710A	Univ Shanghai Jiaotong (CN)	Reactor for fixing CO₂ in fermentation tail gas through coupling of microalgae culture and fermentation. The invention provides a reactor for coupling fixation of CO ₂ in fermentation tail gas in microalgae culture and fermentation. The reactor comprises a material supplementing tank, a material supplementing pump, a bioethanol fermentation tank and a microalgae photobioreactor, the material supplementing tank is communicated with the bioethanol fermentation tank through a first pipeline, and the material supplementing pump is arranged on the pipeline; the bioethanol fermentation tank is communicated with the microalgae photobioreactor through a second pipeline; a microalgae culture medium and a cold light source illumination assembly are arranged in the microalgae photobioreactor. The reactor provided by the invention can fix CO ₂ generated in the ethanol continuous fermentation process through microalgae, the microalgae growth and carbon fixation rate is high, and the reactor has a relatively good treatment effect on CO ₂ generated in the ethanol fermentation process

Biodiésel		
Nº Publicación	Solicitante (País)	Contenido técnico
WO2025036750A1	BASF SE (DE)	Synthesis of fatty acid methyl ester and fatty acid ethyl ester. In the present invention a new synthesis method for fatty acid methyl ester and fatty acid ethyl ester is provided. More specifically, a fatty oil composition obtained from dried insects by mechanical treatment is reacted with aliphatic alcohols in the presence of alkali metal alkoxide salts such as methoxide or ethoxide to obtain fatty acid methyl ester (FAME) or fatty acid ethyl ester (FAEE).
CN119310854A	Chongqing Yubang New Energy Tech Co Ltd (CN)	Intelligent biodiesel batching system and working method. The intelligent biodiesel batching system comprises a batching storage bin, a metering assembly, a control module, a data acquisition module, a data preprocessing module, an optimization module, a control module and a batching mixing module, the metering assembly is connected with the ingredient storage bin, the data acquisition module is connected with sensors in all the assemblies, and the data acquisition module is used for acquiring data in the production process in real time; the optimization module is connected with the preprocessing module, and the optimization module generates a prediction model by using the historical sample data; the optimization module is used for determining an optimal ingredient ratio; the control module is respectively connected with the optimization module, the metering assembly and the ingredient mixing module; the optimization module provides the optimal ingredient ratio for the control module, the metering assembly is used for controlling the discharging amount of the ingredient storage bin, and the ingredient mixing module is used for mixing ingredients. By setting the machine learning module and the optimization module, the batching system generates a quality prediction model by using historical sample data.
WO2025052468A1	D2SBiosolutions Private Ltd (IN)	Automated system for batch-wise biodiesel production and method thereof. The present invention discloses a fully automated system (100) and process for small-scale batch-wise biodiesel production from various feedstocks, utilizing transesterification. Initially, the system (100) pre-treats and filters the oil feedstock, removing excess water before transferring it to a primary reactor (5). In the reactor, the feedstock is mixed with methanol and a catalyst at 60°C and 450 rpm for 90 minutes. After the trans-esterification process in the reactor (5), the reacted mixture will be subjected to vacuum distillation to recover methanol, with subsequent separation of crude biodiesel and glycerol. The separated biodiesel undergoes a multi-stage filtration process to produce premium-grade biodiesel. The entire system (100) is automated, managed by a Programmable Logic Controller (PLC) system (18) for precision and safety, featuring methanol sensors for leak detection and manual controls for hybrid operation. Additionally, an esterification unit (19) is included to handle feedstocks with high free fatty acid content, enhancing the system's versatility and efficiency.
GR1010886B	Ethniko Kentro Erevnas Kai Technologikis Anaptyxis, EKE TA (GR)	Biotechnological method for the production of biodiesel from high-acidity oils by using an innovative Yarrowia Lipotitica whole cell biocatalyst. The invention relates to the technical field of the biotechnological production of biodiesel from high-acidity oils by enzymatic transesterification using innovative whole-cell biocatalysts. Specifically, the invention provides the innovative use of plasmid vectors incorporating a gene coding for LIP2 lipase under the influence of innovative strong promoters, which is fused to the YIPR1 gene coding for a cell-wall protein, for constructing a recombinant strain (YLS24) of Yarrowia lipolytica yeast with new biocatalytic activities. Also, the invention provides culturing the said recombinant YLS24 strain on a substrate with crude glycerol as exclusive carbon source by membrane bioreactor technology. Finally, biocatalytic transesterification of high-acidity oils is achieved by using the said recombinant YLS24 strain as whole-cell biocatalyst for biodiesel production..
CN222305821U	Henan Hi Tech Kingdo Ind Co Ltd (CN)	Esterification reaction device for biodiesel production. The utility model discloses an esterification reaction device for biodiesel production, which comprises an esterification kettle, a first motor is mounted on the upper surface of the esterification kettle, a partition plate is fixedly connected to the inner wall of the esterification kettle, and first bearings are fixedly embedded in the upper surface of the partition plate and the upper surface of the esterification kettle; through the arrangement of the esterification kettle, the first motor, the partition plate, the first bearing, the rotating shaft and the first stirring rod, an added material can be premixed above the partition plate, so that an esterification reaction can be quickly completed in the follow-up process; according to the esterification kettle, materials and a catalyst can be fully stirred in the esterification reaction process, so that the reaction speed is further increased, the materials precipitated at the bottom of the esterification kettle can be continuously conveyed upwards through the arrangement of a mounting opening, a shell, a feeding opening, a discharging opening, a second motor, a second bearing and a spiral conveying shaft, so that the materials can be better reacted, and the reaction efficiency is improved. Accumulation at the bottom of the esterification kettle is avoided.

Nº Publicación	Solicitante (País)	Contenido técnico
CN119242385A	Henan Hi Tech Kingdo Ind Co Ltd (CN)	Method and device for preparing biodiesel through non-catalytic alcoholysis. The invention belongs to the technical field of biodiesel preparation, and particularly relates to a biodiesel preparation method and device. The preparation method comprises the following steps: (1) mixing the waste animal and vegetable oil and methanol, and stirring at 185-200 DEG C and 1.5-2.0 MPa to react for 5-6 hours, so that fatty acid in the waste animal and vegetable oil and methanol generate fatty acid methyl ester and water; wherein the fatty acid and the methanol are subjected to a chemical reaction, namely $R-COOH + CH_3OH \rightarrow R-COOCH_3 + H_2O$; (2) carrying out hydrolysis reaction on part of triglyceride in the waste animal and plant grease in the step (1) and water in the step (1) under the conditions that the temperature is 185-200 DEG C and the pressure is 1.5-1.6 MPa, and carrying out hydrolysis reaction on the triglyceride and the water, namely $C_3H_5(OOCR) + 3H_2O \rightarrow C_3H_5(OH)_3 + 3R-COOH$.
WO2025023059A1	J Oil Mills Inc (JP)	Method for producing biofuel and method for improving methyl esterification efficiency of tamanu oil. The present invention provides a method for producing a biofuel, the method including: (a) a tamanu oil purification step which comprises a deoxidization step for deoxidizing a crude oil of a tamanu oil, wherein the absorbance of the refined tamanu oil at the wavelength of 330 nm is 0.08 or less; and (b) a methyl esterification step in which methanol is added to the refined tamanu oil so as to produce a fatty acid methyl ester (FAME) by a transesterification reaction. The present invention also provides a method for improving the methyl esterification efficiency of a tamanu oil.
UA158779U	L M Lytvynenko Institute of Physical and Organic Chemistry and Coal Chemistry of the Nat Academy of Ukraine (UA)	Method of obtaining biodiesel fuel. The method of obtaining biodiesel fuel is carried out by transesterification of vegetable oils with alcohol in the presence of potassium carbonate. The alcohol is selected from the following: methanol, ethanol. The reaction is conducted at a temperature of 15-25 °C with oil:alcohol equivalent ratios of 1:1.2-6 for 4-6 hours. Potassium carbonate is used in the amount of 10-60 mol %. Ethyl acetate and water are added to the reaction solution, the organic phase is washed with water, dried by traditional means, and the solvent is removed under vacuum.
CN119331242A	Univ Fuzhou (CN)	Preparation method of acidic solid catalyst with self-contained microporous polymer. The invention discloses an acidic solid catalyst with a microporous polymer, a preparation method of the acidic solid catalyst and application of the acidic solid catalyst in biodiesel production prepared through esterification reaction catalysis, and belongs to the technical field of catalysts. The preparation method comprises the following steps: by taking an intrinsic microporous polymer as a raw material, carrying out nitrile group reduction on the intrinsic microporous polymer by using hydrazine hydrate to prepare an intrinsic microporous polymer with an amino group, and then carrying out sulfonation reaction on the intrinsic microporous polymer with the amino group by using sulfone to prepare the acidic solid catalyst with a sulfonic acid group and a high specific surface area. The prepared acidic solid catalyst with the microporous polymer shows excellent catalytic performance in catalytic production of biodiesel in esterification reaction, is easy to separate and recycle, and has excellent reusability. Therefore, the prepared acid solid catalyst with the sulfonic acid group and the intrinsic microporous polymer has important significance for promoting the production of biodiesel.
CN119307562A	Univ Hunan (CN)	Method for producing biodiesel by using organic solid waste anaerobic fermentation liquor and microalgae. The invention discloses a method for producing biodiesel by using organic solid waste anaerobic fermentation liquor and microalgae, which comprises the following steps: inoculating microalgae into a culture medium for culture, and collecting algae cells; and adding the organic solid waste anaerobic fermentation liquor into the residual culture medium, inoculating microalgae for culture, and collecting new algae cells. According to the method, the organic solid waste anaerobic fermentation liquid is directly added into the residual culture medium, so that a new microalgae culture system can be quickly formed, the production process can be simplified, continuous culture of microalgae can be realized, the accumulation amount of microalgae biomass and the yield of biodiesel can be increased, the use amount of water can be remarkably reduced, and the production cost can be reduced. And addition of a new carbon source is avoided, so that the production cost is reduced. The method has the advantages of being simple in process, convenient to operate, low in cost, high in microalgae biomass yield, high in biodiesel yield, good in biodiesel quality and the like, is suitable for large-scale production of the biodiesel, and facilitates industrial application of the biodiesel.

Bio-jet fuels

Nº Publicación	Solicitante (País)	Contenido técnico
WO2025054258A1	Chevron Phillips Chemical CO LP (US)	Sustainable aviation fuel from normal alpha olefin byproducts and process for same. Process for making sustainable aviation fuel (SAF) from specific bio-ethylene oligomerization reactions producing a C4-C8 alpha-olefin and a by-product mixture of C10 olefins. This mixed decene stream is upgraded by further oligomerizing with at least one C4-C6 alpha-olefin to provide a C16- olefin stream, which is hydrogenated to C16- paraffins which is used to form a SAF. Employing bio-ethylene to produce the mixed decene stream, which is relatively low-value due in part to its non-selectivity, leverages that non-selectivity into a desirable sustainable aviation fuel product where the low selectivity is preferable. These and other embodiments and aspects are described herein.
WO2025038806A1	Exxonmobil Technology & Engineering Company (US)	Process to make sustainable aviation fuel. A method including: introducing a feed comprising an alcohol and an activator into a reactor comprising a solid acid catalyst; contacting the alcohol and the activator in the presence of the solid acid catalyst under conditions effective to convert at least a portion of the alcohol and the activator to produce a product stream comprising C6-C16 olefins; and introducing at least a portion of the C6-C16 olefins from the product stream into a hydrotreatment unit and hydrotreating the portion of the C6-C16 olefins from the product stream to form corresponding C6-C16 paraffins.
WO2025026952A1	Firefly Green Fuels Ltd (GB)	Biofuel production process. The invention relates to a method for producing a biofuel, along with an apparatus for conducting such a method. In particular, the invention relates to a method and apparatus for producing sustainable aviation fuel (SAF).
US2025019603A1	Honeywell Int Inc (US)	Methods, apparatuses, and systems for conversion of bioethanol to renewable jet fuel. Methods, apparatuses, and systems for the conversion of bioethanol to renewable jet fuel are disclosed. In an example embodiment, a method for converting bioethanol to renewable jet fuel includes providing an olefin process stream comprising olefins to a hydrogenation reaction zone, converting at least a portion of the olefin process stream to a product stream comprising jet-range compatible hydrocarbons, determining, in the hydrogenation reaction zone, an iso-to-normal ratio of a portion of the product stream via one or more online analyzers, in an instance wherein the determined iso-to-normal ratio fails to satisfy a predetermined iso-to-normal threshold ratio, determine at least one additive and an amount of the at least one additive to be added to the product stream, the at least one additive configured to adjust a freeze point of the product stream, and adding the at least one additive to the product stream prior to the product stream exiting the hydrogenation reaction zone.
FI20245872A1	Neste Oyj (FI)	A method for producing renewable fuels. The present disclosure concerns a method for producing renewable fuels comprising directing crude feedstock (10) to pretreatment (100), subjecting the pretreated feedstock (20) to hydroprocessing (200), removing light components from the hydroprocessed stream (30) by stripping (300), subjecting the stripped liquid stream (40) to hydroisomerizing (400), and subjecting the hydroisomerized stream (50) to stabilizing and fractionating (500) thereby obtaining a product effluent (60) containing at least a renewable aviation fuel component. The method includes measuring in situ online the stripped liquid stream and determining in real time using an online analyzer (M) amount of at least one impurity in the stripped liquid stream. If the determined amount is above a predefined target purity value, the method includes adjusting the hydroprocessing until determined amount is at or below the predetermined target purity value.

Nº Publicación	Solicitante (País)	Contenido técnico
CN119368134A	Shanghai Zhongqi Environment Tech Co Ltd (CN)	Processing device for biological aviation kerosene production. The invention relates to the technical field of biological aviation kerosene production, and discloses a processing device for biological aviation kerosene production, which comprises an adjusting assembly, a box body, a hydraulic telescopic rod, a connecting block and a vertical plate, and the hydraulic telescopic rod is arranged at the bottom of the box body in a penetrating manner. The invention has the following beneficial effects: through linkage of the hydraulic telescopic rod and the driving assembly, the specified mixing catalysis part is started as required for stirring, the reaction controllability is enhanced, the mixing stirring performance is excellent, the stirring parts in each box are reasonably arranged, the material and the catalyst can be fully and uniformly stirred, a foundation is built for efficient promotion of the reaction, and the reaction efficiency is improved. The reaction efficiency and the conversion rate are powerfully improved, the reaction condition control is not inferior, each box is provided with an independent heating plate and a pressure pump, the temperature and pressure are accurately regulated and controlled, the reaction environment is optimized, the reaction process is accelerated, the high conversion rate and the product quality are guaranteed, the overall design is ingenious, all links are tightly matched, and the material mixing catalysis effect is greatly improved.
US2025075132A1	SK Innovation Co Ltd (KR)	Method for preparing sustainable aviation fuel. A method of preparing sustainable aviation fuel (SAF) is provided. The method includes preparing renewable feedstocks and introducing the renewable feedstocks as a reactant into a hydroprocessing reaction in the presence of a catalyst, in which the catalyst includes a metal and zeolite, and the zeolite is a one-dimensional 10 membered-ring (1D 10MR) zeolite. In addition, in the hydroprocessing reaction, the conversion of fractions having boiling points above an SAF boiling point range is lower than and equal to 50%.
WO2025008276A1	Topsoe AS (DK)	Process and plant for conversion of alcohols to hydrocarbons. Process and plant for producing hydrocarbons, comprising: supplying an alcohol feed stream to an alcohol-to-hydrocarbons (ATH) synthesis section, said ATH synthesis section comprising an alcohol-to-olefins (ATO) section, said ATO section comprising an alcohol-to-olefin reactor (ATO) reactor; said alcohol feed stream being any of: i) a combination of a C2-C8 alcohol stream and a methanol (MeOH) stream; ii) a C2-C8 alcohol stream and a MeOH stream being supplied separately; iii) a combination thereof; supplying said alcohol feed stream to the ATO reactor, the ATO reactor comprising an adiabatic fixed bed reaction zone having a conversion catalyst comprising a zeolite with a framework having a 10-ring pore structure, said 10-ring pore structure being a unidimensional (1D) pore structure; and providing a first product rich in olefins as said hydrocarbons; wherein the weight ratio of the C2-C8 alcohol to methanol (MeOH) in any of said alcohol feed streams is in the range 0.30-6.0.
WO2025021897A1	Totalenergies Onetech (FR)	Aviation fuel with high renewable fuel content and reduced aromatic content. The present invention relates to a jet fuel composition comprising, relative to the total volume of the composition: a. from 9% to 60% by volume of a jet fuel in accordance with standard ASTM d1655-21-c; b. from 30% to 90% by volume of a renewable synthetic kerosene base, the kerosene base being derived from the hydroprocessing of esters and fatty acids, a Fischer-Tropsch process, or a process for producing jet fuel from alcohols; and c. from 1% to 15% by volume of an aromatic base comprising at least 70% by weight, preferably 80% by weight, C8-C12 aromatic compounds, relative to the total weight of the aromatic base.
WO2025061892A1	Totalenergies Onetech (FR)	Paraffinic base composition for renewable jet fuel and high-yield production method for renewable paraffinic base. The present invention relates to a paraffinic base composition comprising, relative to the total mass of the paraffinic base composition, at least 90% by mass of paraffins, wherein: - the mass ratio between the content by mass of C _x iso-paraffins and the content by mass of C _x n-paraffins is greater than or equal to 2.0, x being an integer chosen from 14, 15, 16 and 17, and - the content by mass of C ₁₄ n-paraffins is greater than or equal to 1.0%, relative to the total mass of the paraffinic base composition. The invention also relates to a method for preparing such a paraffinic base composition.

Biohidrógeno		
Nº Publicación	Solicitante (País)	Contenido técnico
CN119351197A	China Renewable Energy Engineering Inst et al. (CN)	Alkaline electrolytic cell coupling biomass dark fermentation combined hydrogen production energy-saving system and method. The invention provides an alkaline electrolytic cell coupling biomass dark fermentation combined hydrogen production energy-saving system and method. Comprising an alkaline electrolytic bath, a gas-liquid separator of a coupling heat exchanger, a primary heat exchanger, an oxygen drying and purifying device, a hydrogen drying and purifying device, an alkali liquor reflux pump, a biomass substrate supply device, a dark fermentation hydrogen production reactor, a heat preservation heater and a heat conduction oil circulating pump, the number of the gas-liquid separators of the coupling heat exchangers is two, and the two gas-liquid separators are the gas-liquid separator of the first coupling heat exchanger and the gas-liquid separator of the second coupling heat exchanger respectively. According to the alkaline electrolytic cell coupling biomass dark fermentation combined hydrogen production energy-saving system and method, two hydrogen production systems are coupled, the utilization efficiency of waste heat and a hydrogen production auxiliary system is improved, the overall hydrogen production capacity and hydrogen production stability of the system are improved, and meanwhile energy conservation and consumption reduction are achieved.
US2025034467A1	Clean Energy Entrpr Inc (US)	Method and device for making hydrogen from heterogenous waste. The invention pertains to a system for extracting hydrogen from a chemically organic feedstock, comprising: an organic waste feeder unit, a screw thermo-gasifier comprising a feedstock inlet at the first end configured to supplying the thermo-gasifier with a chemically organic feedstock, an auger configured to conveying the chemically organic feedstock inside a gasification chamber, a thermogas collector, a hot gas injector configured to inject a hot gas in the screw thermo-gasifier configured to heat up the chemically organic feedstock at a temperature comprised between 800° C. and 900° C., a high temperature reformer, the high temperature reformer exposing the thermogas to a temperature comprised between 1,200° C. and 1,400° C. and releasing a reformed gas at a high temperature through a reformed gas outlet, an installation configured to separate hydrogen from the reformed gas, wherein the first duct line comprises an expansion reactor between the thermogas collector and the thermogas inlet.
CN119372263A	Harbin Inst Technology (CN)	Method for maintaining continuous photosynthetic hydrogen production of microalgae under ultrahigh light intensity. The invention discloses a method for maintaining continuous photosynthetic hydrogen production of microalgae under ultrahigh light intensity, and belongs to the technical field of biological energy sources. The method comprises the following steps: culturing microalgae: transferring microalgae species into a TAP culture medium, and carrying out illumination culture until the number of microalgae cells reaches a logarithmic phase; the preparation method comprises the following steps: synthesizing a poly (N-isopropylacrylamide-butyl acrylate) copolymer, namely dissolving N-isopropylacrylamide, butyl acrylate and an azodiisobutyronitrile solution in anhydrous tetrahydrofuran, removing oxygen for 30 minutes under the action of magnetic stirring, and reacting for 24 hours at the temperature of 50 DEG C after the oxygen removal is finished, so as to obtain PNIPAM-BA (poly (N-isopropylacrylamide-butyl acrylate)-BA (poly (N-isopropylacrylamide-butyl acrylate))-BA (poly (N-isopropylacrylamide)-BA); the method comprises the following steps: taking a microalgae solution, centrifugally collecting microalgae, dispersing the microalgae in an HM culture medium, adding PNIPAM-BA and graphene oxide, and continuously illuminating at 25 DEG C under the light intensity of 2000 [mu]mol photons.m ⁻² s ⁻¹ ; the sunlight-driven intelligent microalgae photoreactor is constructed through graphene oxide and PNIPAM-BA, the survival rate and chlorophyll content of microalgae under the ultrahigh light intensity can be maintained, and the microalgae can maintain high-rate photosynthetic hydrogen production under the ultrahigh light intensity of 2000 micromoles photons * m ⁻² s ⁻¹ .
KR102788192B1	Korea National Maritime University Industry-Academic Cooperation Group (KR)	Swine manure treatment and hydrogen energy generation system utilizing bioelectrochemical technology and method for swine manure treatment using the same. A system for treating wastewater containing high concentration organic wastewater and producing hydrogen energy using bioelectrochemical technology is disclosed. According to one aspect of the present invention, a system for treating high concentration organic wastewater containing livestock wastewater and producing hydrogen energy is provided, characterized in that it includes a biomass inflow unit for receiving and storing organic wastewater from an organic wastewater generation source, a pretreatment unit for pretreating the introduced biomass, a fermentation unit for acid fermenting the biomass received from the pretreatment unit to produce organic acid and hydrogen gas, and a hydrogen production unit for receiving the organic acid fermented in the fermentation unit, electrolyzing it to decompose organic substances, and producing hydrogen gas.

Nº Publicación	Solicitante (País)	Contenido técnico
US2025066821A1	Purdue Research Foundation (US)	Processes and systems for biological hydrogen production from organic waste using yeast. Processes and systems for biologically producing hydrogen gas from organic waste, including food waste. Such a process includes biologically producing hydrogen gas from organic waste by anaerobic fermentation of the organic waste with at least one strain of yeast.
CN119372701A	Univ Chongqing (CN)	Ce-NiMo/NF catalyst, preparation method and application of Ce-NiMo/NF catalyst in field of biomass electrooxidation. The invention discloses a Ce-NiMo/NF catalyst, a preparation method and application of the Ce-NiMo/NF catalyst in the field of biomass electrooxidation, and belongs to the technical field of catalyst preparation. The trace rare earth element Ce is doped into the transition metal NiMo, a heterogeneous interface of CeO ₂ and NiMo is constructed, a more favorable bonding environment is created, the active oxygen adsorption capacity is improved, and therefore the furfural oxidation activity is improved. An anode OER reaction is replaced with an organic electro-oxidation reaction, large-current-density biomass electro-oxidation coupling water electrolysis hydrogen production is driven under the low overpotential, 500 mA cm ⁻² ; industrial water decomposition current density can be driven under the low voltage of 1.39 V vs RHE, the current density is only reduced by 6% when continuous testing is conducted for 200 h in an electrolytic cell, and the hydrogen production efficiency is greatly improved. And excellent electrocatalytic activity and stability are shown.
CN119352085A	Univ Dalian Tech (CN)	Cocatalyst/heterostructure/tungsten trioxide photo-anode integrated structure and preparation method and application thereof. The invention discloses a cocatalyst/heterostructure/tungsten trioxide photo-anode integrated structure and a preparation method and application thereof, and belongs to the technical field of biomass conversion and photoelectrocatalysis. The method comprises the following steps: firstly, synthesizing a zinc oxide/tungsten trioxide heterostructure by adopting hydrothermal, spin-coating and calcining modes, then synthesizing a noble metal modified nickel phosphide cocatalyst through phosphorization, and loading the cocatalyst on the surface of the heterostructure to successfully construct a cocatalyst/heterostructure/photo-anode integrated system. The heterostructure of zinc oxide and tungsten trioxide can inhibit recombination of photo-generated carriers, and the noble metal modified cocatalyst can reduce interface resistance between the heterostructure and the electrolyte, accelerate migration of photo-generated holes, greatly reduce surface energy barriers, improve surface reaction kinetics and prolong the service life of photo-generated charges. The method has the advantages that the method is simple and easy to implement, excellent photoelectrocatalysis glycerol oxidation performance is achieved, only two C3 products including glyceraldehyde and 1,3-dihydroxyacetone are available, the variety is few, and a feasible path is provided for improving photoelectrocatalysis biomass high-valued coupling hydrogen production.
CN119320653A	Univ Jiangxi Sci & Technology (CN)	Continuous biomass hydrogen production comprehensive treatment system based on supercritical water gasification. The invention discloses a continuous biomass hydrogen production comprehensive treatment system based on supercritical water gasification. Comprising a high-pressure inert gas bottle, a storage tank, an energy storage device, a water spraying tank, a fluidized bed reactor, a first cooler, a slag lock hopper, a slag storage table, a water storage tank, a filter, a first pressure sensor, a second pressure sensor, a hydroelectric generator, a third pressure sensor, a temperature sensor, a data center, a first valve, a second valve, a third valve, a fourth valve and a fifth valve, a sixth valve, a seventh valve, an eighth valve, a second cooler, a high-pressure separator, a ninth valve, a first drying pipe, a low-pressure separator, a tenth valve and a second drying pipe. The biomass hydrogen production whole-process treatment from biomass reaction, hydrogen separation and purification to residue discharge is integrated, residue storage, residue discharge, water adding and power generation are achieved, the influence on the environment is greatly reduced, meanwhile, the low operation cost is kept, and the biomass hydrogen production device is suitable for large-scale industrial popularization and application.

Nº Publicación	Solicitante (País)	Contenido técnico
CN119265016A	Univ Northeast Electric Power (CN)	Method for producing hydrogen from corn straw electric enzymatic hydrolysate based on sectional type electric pretreatment device. The invention relates to the technical field of biomass dark fermentation hydrogen production, and discloses a corn straw electric enzymatic hydrolysate hydrogen production method based on a sectional type electric pretreatment device, which comprises a pretreatment device shell, and a pretreatment cavity is arranged in the pretreatment device shell; a straw electric enzymatic hydrolysate is stored in the pretreatment cavity; the pretreatment electrode is arranged in the pretreatment cavity, and the straw electric enzymatic hydrolysate is subjected to strong electric field electric pretreatment and weak electric field electric pretreatment by adjusting the pretreatment electrode; comprising the following steps: mixing corn straws with a citric acid-sodium citrate buffer solution, and putting the mixture into a pretreatment cavity for strong current pretreatment; after the strong current pretreatment is completed, cellulase is added into the pretreatment cavity, and weak current enhanced cellulose enzymolysis is carried out; and after the sectional type electric pretreatment is finished, carrying out mixed fermentation on the filtered electricity-taking enzymatic hydrolysate and hydrogenogens to produce hydrogen. The problems of crusting, coking, difficulty in pH control, difficulty in straw residue recovery and the like in the traditional corn straw fermentation process are solved.
CN119327487A	Univ Shanghai (CN)	CDS (AT) MoS2 photocatalyst, preparation method thereof and application of CDS (AT) MoS2 photocatalyst in biomass reforming hydrogen production. The invention relates to a CdS (at) MoS2 photocatalyst and a preparation method and application thereof in biomass reforming hydrogen production, the CdS (at) MoS2 photocatalyst is prepared by the following steps: firstly, dispersing prefabricated CdS powder in deionized water, stirring for 1-2 hours by a magnetic stirrer, then adding MoS2 which is dispersed in the deionized water and is subjected to ultrasonic treatment for 1-2 hours, the mass ratio of the MoS2 to the CdS is 0.02: 1-0.1: 1, stirring for 1-2 hours by a magnetic stirrer, then adding the MoS2 into the deionized water, stirring for 1-2 hours by the magnetic stirrer, and finally adding the MoS2 into the deionized water to obtain the CdS (at) MoS2 photocatalyst. And continuously stirring for 24 hours at normal temperature by using the magnetic stirrer, and finally centrifuging and drying the mixed solution to obtain the CdS-coated MoS2 photocatalyst. Compared with the prior art, the device has the advantages that an electric field is built in, the charge separation efficiency can be improved, and the device has a good effect on hydrogen production through photocatalytic biomass reforming, especially hydrogen production through cane sugar.

Otros biocombustibles (bio-oils, etc.)

Nº Publicación	Solicitante (País)	Contenido técnico
WO2025007042A2	Chevron USA Inc (US)	Hydroconversion of a biomass feedstock to hydrocarbon fuels in a slurry phase catalyst reactor. Methods and reactor systems for conversion of bio-oils into renewable diesel, jet fuel, and gasoline. Phosphorus and metals containing feedstock is subjected to hydrodeoxygenation in a reactor comprising a solid catalyst suspended in a heavy oil.
US2025051651A1	Green Carbon Dev LLC (US)	Method of manufacturing renewable diesel from biological feedstock. A method for producing renewable diesel includes introducing a primary feedstock comprising biologically-derived triglycerides with catalyst poisons into a first reaction chamber and hydrolyzing the primary feedstock within the first reaction and liquid-liquid extraction chamber for at least an hour such that the reacted triglycerides are separated into an aqueous solution comprising glycerol and catalyst poisons, and an intermediate feedstock comprising free fatty acids and catalyst poisons. The method also includes distilling the intermediate feedstock to separate the intermediate feedstock into a purified intermediate stream and a lower volume bottom stream containing unreacted triglyceride, diglyceride, monoglyceride, FFA and catalyst poisons. The method also includes combining the purified intermediate feedstock with a hydrogen stream and converting, in a second reaction chamber comprising a metallic catalyst bed, the purified intermediate feedstock into a product comprising long-chain alkanes. The method also includes hydrotreating the purified intermediate feedstock into a renewable diesel product.
KR102749758B1	Korea Institute of Energy Res (KR)	Bio oil and bio fuel manufactured therefrom. Provided is a bio-oil that is economical and has both carbon reduction and resource recycling benefits. According to one aspect of the present invention, there is provided a bio-oil derived from cashew nut shell liquid (CNSL) comprising anacardic acids, wherein said bio-oil comprises a phenolic derivative derived from said anacardic acids.

Nº Publicación	Solicitante (País)	Contenido técnico
FI20235891A1	Neste Oyj (FI)	A process for producing rosin oil. The present disclosure relates to a process for producing rosin oils from a renewable material A comprising rosin acid such as from a feedstock comprising crude tall oil. According to the process the rosin acid present in the renewable material is separated (202, 203), and the separated rosin acid D is subjected to thermal decarboxylation reaction (204) to produce rosin oil. The present invention also relates to a system (200) for carrying out the process, as well as to uses of the rosin oil obtainable by the process as renewable feedstock for increasing renewable content of fossil transportation fuels and as a renewable feedstock for production of renewable fuels and/or chemicals, or components thereto.
WO2025022348A1	Nextchem Tech Spa (IT)	Process for producing fuels from waste by converting olefins from methanol to propylene (MTP). A process for producing hydrocarbons, usable as fuels, from industrial, agroforestry, urban waste and derivatives thereof, with high sustainability and lower CO2 emissions, given the same energy, with respect to the equivalent fuels of fossil origin, by means of a series of subsequent conversions in which first a syngas is produced,, obtained by gasification of waste with oxygen at high temperature, which is purified and adjusted in composition by modulating the H2/CO ratio and then converted into methanol. The methanol obtained is in turn catalytically converted into light olefins by means of methanol -to- propylene (MTP) technology; such olefins are catalytically converted by oligomerization in order to obtain a hydrocarbon mixture comprising an ultra-light fraction (C1 and C2), a light fraction (C3 and C4), a fraction with a boiling range from 60 to 300°C, and a fraction with a boiling temperature above 300°C to be used for product separation and fractionation treatments.
US12258528B1	Univ Católica de la Santísima Concepcion (CL)	Method for producing biopropane from waste oils. The present invention discloses a method for producing biopropane from waste oils, characterised in that it comprises the steps of: saponifying the waste oils, thus obtaining carboxylate and glycerol; separating the carboxylate and glycerol; fermenting the glycerol obtained after saponification to obtain 1,3-propanediol; oxidising the 1,3-propanediol to obtain propanedioic acid; saponifying the propanedioic acid to obtain carboxylate; and carrying out pyrolysis of the carboxylate obtained from the waste oils and of the carboxylate obtained from the propanedioic acid to obtain biopropane.
CN119320646A	Univ Shenyang Aerospace (CN)	Device and method for preparing high-quality bio-oil by culturing microalgae with wastewater and pyrolyzing. The invention relates to the technical field of environmental protection and biomass energy, and particularly provides a device and a method for preparing high-quality bio-oil by culturing microalgae from wastewater and pyrolyzing the microalgae, the device comprises a microalgae incubator, a solid-liquid separation device, a water quality detection device, a drying device, a crushing device, a stirring device and a catalytic pyrolysis purification system, an outlet of the microalgae incubator is connected with an inlet of the solid-liquid separation device through a pipeline, a liquid outlet of the solid liquid separation device is connected with the water quality detection device, a solid outlet of the solid-liquid separation device is connected with an inlet of the drying device, an outlet of the drying device is connected with an inlet of the crushing device, and an outlet of the crushing device is connected with an inlet of the stirring device. An outlet of the stirring equipment is connected with an inlet of the catalytic pyrolysis purification system. The invention aims to reduce the microalgae culture cost, improve the quality of bio-oil and realize resource utilization of wastewater.
US2025011665A1	UOP LLC (US)	Process for hydroprocessing a biorenewable feedstock. A process for hydroprocessing a biorenewable feedstock is disclosed. The process comprises hydrotreating the biorenewable feed stream in a hydrotreating reactor to hydrodeoxygenate the biorenewable feed stream to provide a hydrotreated stream. A hydrocracking feed stream taken from the hydrotreated stream is hydrocracked in a hydrocracking reactor to provide a hydrocracked stream. A hydroisomerization feed stream taken from the hydrotreated stream is hydroisomerized in a hydroisomerization reactor to provide a hydroisomerized stream. The hydroisomerized stream is separated to provide a jet fuel stream and a diesel stream. The diesel stream is separated into a first recycle diesel stream and a second recycle diesel stream. The first recycle diesel stream is passed to the hydrocracking reactor and the second recycle diesel stream is passed to the hydroisomerization reactor.

PATENTES BIOPRODUCTOS

Biomateriales (de construcción, medicina, embalaje, etc.)		
Biocomposites y biofibras		
Nº Publicación	Solicitante (País)	Contenido técnico
WO2025008659A1	Fameccanica Data Spa (IT)	A method for producing cellulose products. A method for producing cellulose products, comprising: - providing at least one row of discrete blanks (12) each including at least one layer of dry-formed cellulose fibers, - feeding said at least one row of discrete blanks (12) to a forming mold (14), - heating and pressing said discrete blanks (12) in the forming mold (14) to shape said discrete blanks (12) into two-dimensional or three-dimensional cellulose products (10).
WO2025022306A2	Flexsea Ltd (GB)	Biopolymer, and system and method for producing biopolymer. Disclosed is a biopolymer synthesised from a biowaste substrate (102, 204, 304) comprising at least one of: a cellular biomass and an acellular material; and a supplementary substrate, wherein, when grown under optimal process conditions, the yield and physicochemical properties of the biopolymer is regulated by the concentrations of the biowaste substrate, the supplementary substrate and the process conditions.
WO2025048695A1	Lignin Ind AB (SE)	Lignin-containing composites. There is provided a composition comprising: - lignin in a content of 2-45 wt% by dry weight of the composition; - a polymer matrix in a content of 30-90 wt% by dry weight of the composition, and - an additive in a content of 2-35 wt% by dry weight of the composition, wherein o the additive is a thermoplastic elastomer and the polymer matrix is a polyolefin, or o the additive is an ester-containing thermoplastic and the polymer matrix is a copolymer comprising styrene and acrylonitrile or a biodegradable polyester, wherein the ester-containing thermoplastic and the biodegradable polyester are distinct.
WO2025017755A2	Marea EHF (IS)	Enhanced utilisation of microalgae biomass and edible film-forming compositions. The invention provides efficient methods for extracting from microalgae biomass after astaxanthin extraction valuable biomaterials, including polysaccharides, that can be used as coatings (biofilms) and other applications. The method provided herein provides partial separation of biomaterials into fractions enriched in different materials, that increases the utility and value of the original biomass. Thus, the method herein provides at least a protein-enriched fraction, a polysaccharide-enriched fraction and a lignin-rich fraction. Thus, by the methods of the invention, a biomass source which is currently underutilised can be refined and processed into higher value products, leaving very little or no left-over residue material. The invention can advantageously be used for utilisation and valuation of left-over biomass after astaxanthin extraction from microalgae.
WO2025024354A2	Nyungu Afrika Corp (US)	Biodegradable highly absorbent material, method of making and using thereof. The present disclosure is directed to a biodegradable absorbent material comprising pulp extracted from at least one of rice husk, sugar cane, maize husk, pineapple leaves, hemp, powdered maize husk, cottonized pineapple leaf fibers, or combinations thereof. The biodegradable absorbent material may be highly absorbent. The present disclosure is directed to a menstrual pad comprising the biodegradable absorbent material.
EP4509284A1	Papershell AB (SE)	Low density cellulosic fiber material and method for manufacturing thereof. The present invention relates to a cellulosic fiber substrate comprising cellulosic fibers having a length of maximum 10mm, and a binding agent selected from a group consisting of cellulose, hemicellulose, furan and derivatives thereof, lignin and combinations thereof, wherein the cellulosic fibre substrate has a density in the range from 0.1 g/cm3 to 0.7 g/cm3.
WO2025035104A2	Poly Med Inc (US)	Methods of making and using biocomposite compositions. Disclosed herein are methods of making and using biocomposite compositions comprising at least a polymeric component and a fiber component

Nº Publicación	Solicitante (País)	Contenido técnico
WO2025032396A1	Stora Enso OYJ (FI)	A method for manufacturing a cellulose pulp composition for a moldable cellulose fiber-based web. The present invention relates to a method for manufacturing a cellulose pulp composition for a moldable cellulose fiber-based web, said method comprising: a) providing a cellulose pulp composition comprising at least 50 wt% chemical or semi-chemical wood pulp based on dry weight, b) subjecting the cellulose pulp composition provided in step a) to low consistency (LC) refining at a consistency in the range of 1-7 wt% to an SR value in the range of 18-50 as determined by standard ISO 5267-1, c) subjecting the LC-refined cellulose pulp composition obtained in step b) to high consistency (HC) refining at a consistency in the range of 12-40 wt% with a refining energy of at least 150 kWh/t, and d) diluting the HC-refined cellulose pulp composition obtained in step c) to a consistency in the range of 0.1-10 wt%. The invention further relates to a method for manufacturing a moldable cellulose fiber-based web and a method for manufacturing a molded cellulose fiber-based product.
WO2025035142A1	Texas A & M Univ Sys (US)	Lignin compositions for improved bioprocess utilization. A method of producing a lignin composition comprising contacting a lignin obtained from a renewable resource with an aqueous fluid a plurality of times to produce a washed lignin; contacting the washed lignin with an acid under conditions suitable for formation of an acid washed lignin; contacting the acid washed lignin with one or more cellulases to form a pretreated lignin; and fermenting the pretreated lignin to form a crosslinked high molecular weight lignin. A composite material comprising a high molecular weight crosslinked lignin and at least one material selected from the group consisting of carbon fiber, polymers, a precursor for carbon-based materials, nanomaterials, cement, concrete and combinations thereof.

Bioplásticos

Nº Publicación	Solicitante (País)	Contenido técnico
WO2025011430A1	Changchun Sinobiomaterials Co Ltd (CN)	Use of polylactic acid and copolymer thereof in preparation of drugs for promoting tendon/ligament growth. Provided is a use of polylactic acid and a copolymer thereof in preparation of drugs for promoting tendon/ligament growth. The molecular weight of the polylactic acid is 400-300000 Da, and the preferable molecular weight is 5000-20000 Da. The polylactic acid copolymer comprises one or more of a polylactic acid glycolic acid copolymer, a polylactic acid polyethylene glycol copolymer, a polyethylene glycol polylactic acid glycolic acid copolymer, a polylactic acid-chitosan copolymer, and a lactide caprolactone copolymer, preferably a polylactic acid glycolic acid copolymer. It is found for the first time that the polylactic acid and the copolymer thereof have the effect of promoting ligament/tendon growth, and a new approach is provided for treatment of ligament/tendon injury
WO2025006901A1	Heinz Co Brands H J Llc (US)	Biodegradable polymer materials. Various bio-based biodegradable materials, films, packaging materials, and methods of manufacture are provided herein. For example, such components may include polyvinyl alcohol (PVA) based materials that include lactic acid (LA) such as in the form of polylactic acid (PLA). In this regard, the synthesis of various PVA based copolymer on which PLA oligomers are grafted as a result of synthesis from LA. The result is a PVA-g-PLA copolymer, which is distinct from PVA and PLA blends.
WO2025003276A1	Ingevity UK Ltd (GB)	Bioplastic polymers and compositions, articles, and methods of making the same. A bioplastic polymer or composition or article including the same are described herein. The bioplastic polymer or composition includes at least one polycaprolactone (PCL) and at least one bioplastic. The bioplastic polymer or composition described herein has increased/enhanced degradation/biodegradation characteristics, such as marine degradation/biodegradation characteristics (e.g., aerobic biodegradation and/or biodegradation in seawater), relative to the at least one bioplastic alone. A method of making a bioplastic polymer or composition is further described herein. The method includes admixing or mixing at least one PCL and at least one bioplastic to prepare a PCL-bioplastic blend or mixture; and blending the PCL-bioplastic blend or mixture to produce the bioplastic polymer or composition.
WO2025064814A1	Lifoam Ind Llc (US)	Hybrid polylactic acid and polyurethane foam articles and associated methods. Hybrid foam articles are provided herein, the articles including at least one layer of expandable polylactic acid (ePLA) foam and at least one layer of polyurethane (PU) foam. It has been unexpectedly discovered that replacing at least a portion of the PU foam with an equivalent volume of ePLA foam can advantageously reduce the weight of the article compared to a PU foam article, increase the flexural strength, improve the recyclability/compostability of the article, reduce the amount of polyurethane foam waste, and simply the manufacturing process of the foam article.

Nº Publicación	Solicitante (País)	Contenido técnico
WO2025017680A1	Royal Bengal Greentech Private Ltd (IN)	Methods of preparation of low cost thermosetting bioplastics. The present invention describes a low cost process for preparation of a bio-plastic wherein the rice flour / starch is mixed without the need for external synthetic ingredients, with improved mechanical properties in the ratio of rice flour/starch :water is 1:10-10:1 (w/w); with plasticizer rice flour/starch: plasticizer in the ratio 99:1 to 1:1 (w/w) and also combine with one cross-linking agent which mixed with rice flour/starch in the ratio 99:1 to 1:1 (w/w), along with natural additives wherein that the ratio of such additives with respect to rice flour/starch is in the ratio nil to 1:3 (w/w). Heating the mixture in a temperature range of 60°C to 180°C for an average time of 1-60 minutes; cooling of such solution to an average temperature ranging from 20-80°C and subsequent drying until water content in final bio-plastic product is less than 5% (w/w).
WO2025018562A1	Samsung Electronics Co Ltd et al. (KR)	Genetically recombinant microorganism producing polyhydroxyalkanoate. A genetically recombinant microorganism, according to the idea of the present disclosure, comprises at least one foreign gene, wherein the foreign gene comprises a LvaED gene derived from a strain selected from the genus Pseudomonas, and the LvaED gene is introduced into a microorganism selected from the genus Ralstonia.
WO2025026440A1	Suzhou Singmed Medical Device Science and Tech Ltd (CN)	Modified polylactic acid and preparation method therefor, polylactic acid fiber, plastic substrate and plastic product. A modified polylactic acid and a preparation method therefor, a polylactic acid fiber, a plastic substrate and a plastic product. The tensile strength of the modified polylactic acid is not lower than 45 MPa, and the melt flow rate of the modified polylactic acid at 180-200°C and a load of 2-3 kg is not lower than 2 g/10 min. In addition, the modified polylactic acid has excellent mechanical properties and processing performance.
WO2025051835A1	Univ Danmarks Tekniske (DK)	Biological production of polyhydroxyalkanoates and monomers therefor using engineered pseudomonas cells. The present invention relates to cells and methods for producing polymers from acetate. The invention also relates to cells with increased tolerance to short-chain organic acids, such as acetate. In particular, the invention relates to production of polyhydroxybutyrate (PHB), fluorinated 3-hydroxybutyrate and fluorinated PHB (F-PHB) from acetate and/or F-acetate using bacterial cells with increased tolerance to acetate.
WO2025019459A1	Univ Rochester et al. (US)	Degradation of polyhydroxyalkanoate. The present disclosure provides methods for degrading bioplastics. Also provided are articles suitable for degradation of bioplastics. The bioplastic may be a polyhydroxyalkanoate polymer and it may be degraded by an article comprising bacteria and one or more enzymes.
WO2025053734A1	Yonsei Univ (KR)	Bioplastic and manufacturing method therefor. The present invention relates to a bioplastic and a manufacturing method therefor. The bioplastic according to the present invention can retain antibacterial properties and biocompatibility and exhibit excellent stress relaxation behavior.

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

Biofertilizantes, bioadhesivos, etc.

Nº Publicación	Solicitante (País)	Contenido técnico
WO2025027323A1	Bindethics Ltd (GB)	Adhesive formulations. Provided herein are formulations and methods for adhering substrates. The formulations comprise yeast; carboxylic acid; and solvent.
WO2025004102A1	Council of Scient and Industrial Research an Indian Registered Body Incorporated Under the Regn of Soc Act (IN)	Bio-derived cyclic bicarbonate monomers and isocyanate-free poly(hydroxy urethane)-based hot-melt adhesives/polymers therefrom. The present disclosure relates to bio-derived cyclic carbonate based monomers of formula I and preparation processes thereof. The disclosure also relates to sustainable and isocyanate-free poly(hydroxy urethane) based hot-melt adhesives/polymers of formula II and its preparation thereof using said bio-derived cyclic carbonate based monomers
WO2025010497A1	FPInnovations (CA)	Self-polymerized kraft lignin, method for producing them and their uses. It is provided a process of preparing self-polymerized kraft lignin comprising the steps of thermally treating kraft lignin producing self-polymerized lignin; and isolating the self-polymerized lignin. Also provided is the use of self-polymerized kraft lignin as an adhesive for wood panels.
WO2025056117A1	Humboldt Univ Zu Berlin (DE)	Two-component-adhesive-system component, and two-component adhesive system, and use. The invention relates to a two-component-adhesive-system component A and is characterised in that the two-component-adhesive-system component A comprises bio-based conjugated dicarbonyls as reactive components, wherein the bio-based conjugated dicarbonyls are an oxidation product of lignin or highly oxidised lignin and/or tannins, and the bio-based conjugated dicarbonyls are in the form of reactive quinone groups. The invention also relates to a two-component adhesive system having the two-component-adhesive-system component A and a two-component-adhesive-system component B, and to an associated use.
WO2025040839A1	Luonnonvarakeskus (FI)	Bioadhesive and a method for its production. According to the present invention, there is provided a method for the production of an adhesive, said method comprising the following steps: a) providing lignin rich carbohydrate complexes (LCC) by pressurized hot water extraction of softwood biomass, preferably biomass of Norway spruce or Scots pine, or of hardwood biomass, preferably biomass of Birch or Beech, providing bark lignin rich carbohydrate complexes (BLCC) by pressurized hot water extraction of softwood bark, preferably bark of Norway spruce or Scots pine, or providing liquefied biomass by acid-catalyzed liquefaction of biomass including wood saw dust, agricultural residues, plant stalks, recycle carton boards, recycle paper, recycle wood, wood panels, and wood bark side streams, in polyhydric alcohols and phenols; b) reacting the LCCs, BLCCs, or liquefied biomass obtained in step a) with a crosslinking or catalytic agent selected from the group consisting of: carboxylic agents including citric acid, dicarboxylic acids including adipic acid, organic acid anhydrides, tannin, tannic acid, plant derived fatty acids including suberin, and hexamethylenediamine, in order to produce said adhesive. The present invention is also directed to an adhesive produced by the method of the invention and to the use thereof as a bonding agent in wood products or as a coating agent in wood products or mineral wool.
WO2025035059A1	Poet Res Inc (US)	Compositions and methods for reducing agricultural inputs. Soil additives that include at least a diatomaceous earth ingredient, a calcium sulfate ingredient, and a biochar ingredient. Soil additives that include at least a diatomaceous earth ingredient, a calcium sulfate ingredient, and a limestone ingredient. Related methods of making and using such soil additives for growing crops.
WO2025053859A1	Purdue Research Foundation (US)	High-strength adhesives from sustainable components. A high-strength adhesive composition comprising components such as (i) an epoxidized oil, (ii) a nucleophile, and (iii) a phenolic compound derived from sustainably sourced, low cost biological materials available on a large scale: its use; and a method of manufacturing.
WO2025008782A1	Stora Enso OYJ (FI)	Binder comprising modified lignin. The present invention is directed to a process for preparing a binder, wherein lignin is subjected to demethylation whereby methoxy groups of lignin are converted to hydroxy groups. The demethylated lignin is mixed with a cross-linker and heated. The invention is also directed a binder obtained according to the process and to the use thereof.

Nº Publicación	Solicitante (País)	Contenido técnico
EP4484515A1	Swiss Krono Tec AG (CH)	Sugar-containing binder composition for wood material boards, in particular wood particle boards, in the form of a one-component system. The present invention relates to a binder composition for wood material boards, as in the form of a one-component system, the binder composition comprising a) at least one sugar, and b) at least one mixture composed of at least one compound of general formula (I) $R_1 aSiX_1$ (4-a) (I), wherein X_1 is alkoxy, aryloxy, acyloxy, and R_1 is an organic moiety selected from the group comprising alkyl, aryl, cycloalkyl, which can be interrupted by -O- or -NH-, and wherein R_1 comprises at least one functional group Q_1 , which is selected from a group containing an acryl group, an acryloxy group, an amino group, an aminoalkylamino group, a methacryl group, a methacryloxy group, a cyano group, an isocyano group, an epoxide group, and an alkenyl group, and a is 0, 1, 2, 3, in particular 0 or 1, at least one compound of general formula (II) $R_2 bSiX_2$ (4-b) (II), wherein X_2 is alkoxy, aryloxy, acyloxy, R_2 is a non-hydrolyzable organic moiety R_2 selected from the group comprising alkyl and aryl, and b is 1, 2, 3, or 4, preferably 1 or 2.
EP4506422A1	Triflex GmbH & Co KG (DE)	Eco-effective road marking composition suitable for the biosphere. The present invention pertains to thermoplastic road marking compositions comprising at least one biodegradable polymer and preferably bio-based components. The thermoplastic road marking composition comprises: a) at least one thermoplastic biodegradable polymer, preferably according to OECD 301B b) resin, and c) wax. The present invention has the advantage that microplastics introduced into the environment by abrasion from the thermoplastic road marking are not persistent but biodegradable.

Biocosméticos, Biofarmaceúticos

Nº Publicación	Solicitante (País)	Contenido técnico
WO2025029204A1	Acar Orhan (DE)	A new solution preventing hair loss and contributing to the development of hair. This invention relates to a new solution with natural and clean content that prevents hair loss and contributes to hair growth and it's characterized by; a predetermined amount of astragalus, a predetermined amount of common sage, a predetermined amount of carnation, a predetermined amount of pear blossoms, a predetermined amount of green walnut shells, a predetermined amount of algae, a predetermined amount of rosehip root, a predetermined amount of persimmon, a predetermined amount of turmeric, a predetermined amount of bay leaves and obtaining plant sap as a result of keeping a predetermined amount of labada (evelik) grass in a predetermined amount of hot water, a predetermined amount of chestnut oil of the obtained plant juice, predetermined amount of walnut oil and adding a predetermined amount of common sage oil includes the process steps.
WO2025019424A1	DSM IP Assets BV (NL) et al.	Microbial oils having high epa content and methods of making the same. The present disclosure describes microbial oil compositions that can include a biomass present in a culture medium. The biomass can include a microbial oil enriched in EPA. The present disclosure also describes methods of producing microbial oils enriched in EPA. The present disclosure also describes nutritional oil compositions including the microbial oils and nutritional oil concentrates prepared from the nutritional oil compositions or microbial oils.
WO2025012135A1	Fermentalg (FR)	Red algae biomass extract, and cosmetic use thereof for eliminating skin imperfections. The present invention relates to a photosensitizing polar biomass extract extracted from phycocyanin-producing organisms, in particular unicellular red algae (URA) or cyanobacteria, and to the cosmetic use thereof for preventing and/or eliminating skin imperfections, i.e. for improving the look of the skin
WO2025050190A1	Fundacao Univ Federal do ABC (BR)	Method for preparing an emulsion containing an essential oil as active ingredient, pickering emulsion and use of a pickering emulsion. The present invention relates to a method for preparing antimicrobial Pickering emulsions stabilised by solid chitosan particles adsorbed on the oil/water interface composed of natural and non-toxic raw materials. The emulsions have a Melaleuca alternifolia essential oil (MaEO) phase dispersed in an aqueous phase, stabilised with micro and nanoparticles of chitosan (Qs). Moreover, the emulsions exhibit anti-bacterial, anti-fungal and anti-viral antibiotic activity.

Nº Publicación	Solicitante (País)	Contenido técnico
WO2025019140A2	ISP Investments LLC (US)	Biodegradable saccharide microcapsules, process for preparing the same and method of use thereof. The present invention relates to biodegradable microcapsules, that can encapsulate and retain cargoes such as, lipophilic, or hydrophobic core materials comprising fragrances, butters, essential or other oils; or oil solubilized ingredients, process of making said biodegradable microcapsules, and their applications in various industries. Present invention further relates to biodegradable microcapsule shell materials that comprise a natural or biobased component, specifically a saccharide or saccharide containing polymer or oligomer, and which show evidence of biodegradation or non-persistence in aquatic based and/or soil or compost based environments.
WO2025009748A1	Jeju National Univ Industry Academic Cooperation Foundation (KR)	Antioxidative and anti-inflammatory composition comprising extract of carrot leaf lava seawater as active ingredient. The present invention relates to an antioxidant and anti-inflammatory composition comprising a carrot leaf lava seawater extract as an active ingredient. The carrot leaf lava seawater extract of the present invention has an increased total polyphenol, rutin, and caffeic acid content compared to a carrot leaf water extract, has excellent DPPH radical scavenging activity, and has a remarkable effect of inhibiting NO production. Therefore, the carrot leaf lava seawater extract of the present invention can be useful as an antioxidant and anti-inflammatory composition.
WO2025017021A1	Microphyt (FR)	Novel uses, in particular dermatological uses, of an extract of the microalga <i>dunaliella tertiolecta</i>. The present invention relates to a <i>D. tertiolecta</i> extract or a composition comprising same, for use in preventing the appearance of and/or reducing acne and/or reducing dysseborrhoea and thereby purifying the skin, and/or preventing the appearance of and/or reducing acne lesions and thereby reducing imperfections, and/or reducing inflammation and thereby soothing the skin. The extract is also effective in maintaining and/or improving the barrier function, and/or improving skin texture. The invention also relates to a dermatological composition comprising a <i>D. tertiolecta</i> extract.
EP4488059A1	Sartorius Stedim FMT et al. (FR)	Biodegradable multilayered film comprising outer layers and a core layer for the wall of a single-use bag. The present disclosure concerns a biodegradable multilayered film comprising stacked to one another in the following order: a) a first outer layer comprising a first polymer selected from the group consisting of polybutylene adipate terephthalate (PBAT), poly butylene succinate (PBS), poly butylene succinate adipate (PBSA), and mixtures thereof, b) a core layer comprising a blend of a thermoplastic starch (TPS) and polybutylene terephthalate (PBAT), c) a second outer layer comprising a second polymer selected from the group consisting of polybutylene adipate terephthalate (PBAT), poly butylene succinate (PBS), poly butylene succinate adipate (PBSA), and mixtures thereof. The present disclosure also concerns a single use-bag, a bioreactor, and container suitable for mixing, packaging, storing or transporting biopharmaceuticals, wherein the single use-bag, bioreactor, and container comprise the biodegradable multilayered film.
EP4516285A1	Unifarco Spa (IT)	Extract enriched in unsaturated fatty acids from the processing waste of food products based on wild strawberries and/or garden strawberries. Extract enriched in unsaturated fatty acids from processing waste in the production of foods based on <i>Fragaria vesca</i> (wild strawberry) and/or <i>Fragaria x ananassa</i> (strawberry or garden strawberry) obtained by supercritical extraction in CO ₂ , characterised by the fact that it has a peroxide content less than 60 meq/kg of extract, related preparation process, related compositions in particular for cosmetic use. This extract can be used for the treatment and prevention of disorders of inflammatory origin, such as atopic dermatitis and psoriasis, and/or it can be used for the treatment of skin and hair disorders associated with hormonal imbalance, for example overproduction of dihydrotestosterone, such as acne vulgaris, hirsutism, seborrhoea, telogen effluvium and androgenic alopecia, or it can be used as an emollient and/or humectant to restore the moisture of the barrier layer.
WO2025046271A1	Univ do Porto et al. (PT)	Semisolid composition for scalp and hair, method for obtaining and use thereof. The present invention describes a semisolid composition for topical administration onto the scalp and hair comprising enriched extract of coffee silverskin and fresh olive pomace. The present invention further describes the method for obtaining such semisolid composition by using environmentally friend solvent-free technologies and its use. The enriched extract of coffee silverskin is loaded into environmentally and physiologically friendly lipid nanocarriers. The loaded nanocarriers are then dispersed into a base that contains fresh olive pomace and cosmetically acceptable green excipients. The added value of the invention over traditionally available hair care products is the improved nutritional / bioactive value of combining coffee silverskin-loaded nanocarriers into an olive pomace-based natural semisolid system with expected synergistic effects against dandruff and to nourish the skin and hair structure.

Bioaditivos alimentarios y nutraceuticos		
Nº Publicación	Solicitante (País)	Contenido técnico
WO2025014675A1	Cargill Inc (US) et al.	Dairy substitute product. The present invention relates to a dairy substitute product comprising at least one dairy substitute ingredient and fat, and the fat is consisting of an oil in water emulsion, optionally a solid fat, and optionally fat component present in at least one dairy substitute ingredient, wherein the oil in water emulsion is comprising a plant protein and one or more hydrocolloids and a lipid phase in a water phase. The present invention also relates to a food product comprising the dairy substitute product and a method for preparing a dairy substitute product.
WO2025015337A2	DSM IP Assets BV (NL) et al.	PUFA-containing edible product comprising shell and center filling. The present invention relates to an edible product, such as a gummy or confection. In an embodiment, an edible product comprises a filling comprising a polyunsaturated fatty acid oil, an emulsifier, water, and a filling gelling agent, and a shell at least partially surrounding the filling. In an additional embodiment, the shell also comprises a bulking agent and en-capsulated particles comprising a coacervate shell encapsulating a polyunsaturated fatty acid.
WO2025056506A1	Herbstreith & Fox Gmbh & Co Kg Pektin Fabriken (DE)	Use of a ground pomace powder as a standardization agent for hydrocolloids. The present invention relates to a pomace powder, a process for making same, and the use of a pomace powder as a standardization agent for hydrocolloids. The invention further relates to a power mixture comprising a hydrocolloid and a pomace powder as a standardization agent.
WO2025061830A1	Jellynov (FR)	Compositions and methods for reducing appetite and/or facilitating weight loss. The present invention relates to a composition for reducing appetite and/or promoting weight loss, the composition comprising, in a first compartment, a first composition comprising a hydrophilic polymer selected from among polysaccharides, derivatives thereof, and mixtures thereof, a crosslinking compound, a foaming agent, and a foam-stabilising agent and, in a second compartment, separated from the first compartment, a second composition comprising citric acid. The invention also relates to methods for administering the composition according to the invention to a human or animal subject.
WO2025053217A1	Mitsubishi Corporation Life Sciences Ltd (JP)	Highly dispersed thickener composition. The purpose of the present invention is to provide: a thickener composition that has excellent dispersibility in various foods and drinks, hardly causes clumping, and is capable of rapidly imparting viscosity; and a method for improving the dispersibility of a thickener composition. [Solution] Porous starch degradation product particles are used as a starch degradation product that coexists with a polysaccharide thickener.
WO2025031901A1	Nestle SA (CH)	Emulsion gels. The present invention provides an emulsion gel comprising at least about 400 kcal/100g, wherein the emulsion gel comprises an E471 emulsifier and an E472 emulsifier, and wherein the ratio of the total weight of E471 emulsifier to the total weight of E472 emulsifier is from about 1.8:1.0 to about 1.0:1.0.
WO2025004650A1	Nisshin Oillio Group Ltd (JP)	Agent and composition for reducing fatigue in middle-aged and older persons. The present invention addresses the problem of providing a novel agent and composition for reducing fatigue in middle-aged and older persons. The present invention provides an agent for reducing fatigue in middle-aged and older persons, the active ingredient of the agent being a medium-chain fatty acid.
EP4512253A1	Oterra AS (DK)	Jet-milled natural red coloring compositions for snacks. A process for coloring food products, in particular dry food products, even more particularly snacks, even more particularly chips or puff snacks, comprising applying a natural red coloring composition, wherein the natural red coloring composition comprises red sweet potato particles, and wherein the red sweet potato particles are jet-milled.

Nº Publicación	Solicitante (País)	Contenido técnico
WO2025059736A1	Paiva Soares Junior Edson et al. (BR)	Sweetener composition, preparation method and use of composition based on seaweed. The present invention pertains to the field of foods or food products and preparations based on seaweed or seaweed derivatives, as well as other organic active ingredients such as natural sweetening agents. The invention describes sugar obtained from seaweed using only four natural ingredients, trehalose, neohesperidin, lithothamnium and spirulina. It has a sweet flavour, greater sweetening power than ordinary sugar, an alkaline pH and is a source of minerals such as iron, zinc, potassium and magnesium, with no added preservatives or pesticides. The invention also describes the method for producing said composition and its use in the preparation of food products, beverages, nutritional products, dietary supplements, feed products, personal care products, pharmaceutical products or industrial products.
WO2025063718A2	Slunch Factory Co Co Ltd (KR)	Method for manufacturing vegetable sausage. The present invention relates to a plant-based alternative meat processed food product and a manufacturing method therefor and, more specifically, to a vegetable sausage made of a vegetable material, and a manufacturing method therefor.

Bioproductos alimenticios para animales		
Nº Publicación	Solicitante (País)	Contenido técnico
WO2025053764A1	Barenbrug New Zealand Ltd (NZ)	Phytochemical compositions, methods and uses in ruminant animal farming. Described herein are phytochemical compositions, methods and uses in ruminant animal farming, along with other methods and uses beyond ruminant farming. Phytochemical compositions are described derived from herb, legume, or grass pasture plant species. The pasture plant species may be characterised by elevated secondary metabolic pathways relative to a conventional pasture plant species. The elevated secondary metabolite compounds, e.g., phenolic concentrations may be a result of an upregulated gene pathway. The elevated secondary metabolite compound concentrations may result in a colouring of the pasture plant or a part thereof. Benefits in ruminant animal farming along with other applications are described such as enhanced animal health and growth; more efficient nitrogen use; lower methane and nitrous emissions from ruminant animals administered with the pasture plant or part thereof; and/or products derived from the pasture plant or part thereof.
WO2025034934A1	Can Tech Inc (US)	Unique blend of plant-derived components to support piglets during nursery phase post-weaning. Phytochemical compositions with an essential oil core and herbal powders are used for feeding post-weaning piglets. The PW piglets provided basal feed supplemented with the phytochemical compositions have improved growth performance. The essential oil core includes three essential oils
WO2025056580A1	DSM IP Assets BV (NL)	Use of whey and propanediol mononitrate to reduce methane emission of ruminants. The present invention relates to the field of reduction of methane emission in ruminants. Particularly, it relates to the administration of whey and propanediol mononitrate to a ruminant for reducing the production of methane emanating from the digestive activities of said ruminant.
WO2025040747A1	EPI Ingredients (FR)	Method for obtaining a vitamin k3-enriched powdered milk for puppies and kittens. The invention relates to the field of nutritional compositions for young animals, such as milk with a high vitamin content for puppies and kittens. More particularly, the invention relates to a method for obtaining a milk-type nutritional composition characterised by a high vitamin K3 content.
EP4494479A1	Landguth Heimtiernahrung GmbH (DE)	Vegan animal feed. The present invention relates to a vegan animal feed comprising at least two phases, wherein one phase is a gel-like mass and the second phase is a lumpy mass, and wherein the second phase consists of a meat substitute mass and occupies 15-50% of the surface area of the animal feed. The present invention further relates to a method for producing a vegan animal feed according to the invention.
WO2025036944A1	Nutreco IP Assets BV (NL)	Feed additive for improving performance of farming animals. The present invention is in the field of feed additives for animals, e.g., farming animals, in particular feed additives to be added to animal feed to obtain an improved performance, e.g., increased average daily gain, and/or increased feed efficiency (i.e., decreased feed conversion ratio), of such animals. Moreover, it relates to a culture medium and a method of culturing cells.

Nº Publicación	Solicitante (País)	Contenido técnico
WO2025056811A1	Rare Earth Int Ltd (GB)	Aquafeed compositions. The present invention provides an aquafeed composition suitable for a farmed fish or a farmed crustacean, the composition comprising a hemp seed product, wherein the hemp seed product comprises 25% to 100% by weight protein and is present in the composition in an amount of 5 to 100% by weight. Methods of producing and using the aquafeed composition are also provided.
WO2025029582A2	Rubicon Scient LLC (US)	Maintaining diethylcarbamazine in an extruded daily ration animal feed product. A method is disclosed for maintaining a therapeutically effective amount of diethylcarbamazine in an extruded daily ration feed product for animals. The diethylcarbamazine is introduced and mixed into a feed mixture upstream of an extruder die. Additionally, a preservative is introduced and mixed into the feed mixture upstream of the extruder die. The preservative comprises an antioxidant system having a water-soluble antioxidant. The feed mixture is then extruded to form the extruded daily ration feed product having a concentration of diethylcarbamazine that is between 200 milligrams per kilogram to 2,000 milligrams per kilogram. This method ensures stabilization of diethylcarbamazine in the extruded daily ration feed product stored at ambient conditions over a shelf-life period. An effective amount of the therapeutic compound can be delivered to animals as part of their daily ration.
WO2025013643A1	Shima Boeki KK et al. (JP)	Composition for preventing gastric ulcer in pigs, and feed. As a novel composition for preventing gastric ulcer in pigs, a composition containing water-soluble dietary fibers is provided.
EP4512251A1	Yara Int ASA (NO)	Ruminant feed additive compositions having methane inhibition properties. The present disclosure relates to ruminant feed additive composition comprising a combination of urea, biuret and N-containing by-products of the biuret production out of urea, and optionally one or more nitrate compounds, to inhibit methane production emanating from the activities of the digestive tract of ruminant animals, the composition comprising one or more other methane inhibition compounds, more in particular chosen out of the group consisting of halogenated methane analogues in the form of halogenated aliphatic compounds with 1 or 2 carbons (also called C₁/sub>-C₂/sub> hydrocarbons) and halocarbon compounds, nitro compounds, plant secondary metabolites (PSM), seaweed, algae, lichen, and/or fungi, dietary lipid and/or fatty acids, The present disclosure further relates to the use of such a ruminant feed additive composition to inhibit methane emissions from digestive activities of ruminant animals and additionally mitigate the amount of nitrous oxide (N₂/sub>O) and ammonia (NH₄/sub>) in the urine of the ruminant animal. The present disclosure also relates to a method for inhibiting the production of methane emanating from the digestive activities of ruminant animals, wherein the method comprises the step of orally administering to the ruminant animal an effective amount of such a ruminant feed additive composition.

NIPO Oficina Española de Patentes y Marcas: 220-25-007-0

NIPO Ciemat: 152-25-003-4



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