VT BIOMASA PARA LA BIOECONOMÍA 41
NIPO: 116-19-007-8 PATENTES
Vigilancia Tecnológica
3º trimestre 2021

BOLETÍN BIOENERGÍA Y BIOPRODUCTOS

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

En los últimos años, la generación de vapor solar interfacial se presenta como una tecnología prometedora para el tratamiento de aguas residuales, desalinización, esterilización, etc. En un sistema de evaporación interfacial solar los rayos del sol se concentran en la superficie de un absorbedor que se encuentra flotando en el agua, dando lugar a temperaturas superficiales elevadas, que permiten una rápida transferencia de calor al líquido circundante. La eficacia de esta tecnología depende de diferentes factores: el material fototérmico utilizado para desarrollar la superficie del absorbedor, el material aislante y la forma de sumistrar el agua. La elección del material fototérmico es de gran importancia para el diseño y la fabricación del evaporador solar, ya que su naturaleza óptica determina la capacidad de absorción de luz y la conversión fototérmica. Además, la posibilidad de diseñar un material con una gran superficie puede mejorar aún más la eficacia. La aplicación de un aislamiento térmico entre el evaporador solar y el agua a granel bloquea la ruta de conducción de calor hacia abajo, minimizando así la pérdida de calor al agua, lo que conduce a una conversión fototérmica más eficiente. Por último, el suministro de agua es de fundamental importancia para mantener la evaporación, ya que para alcanzar el potencial máximo de los evaporadores solares se requiere un suministro de agua suficiente. Solo si se establece una sinergia bien equilibrada entre estos tres componentes, se puede lograr una alta eficiencia de conversión solar.

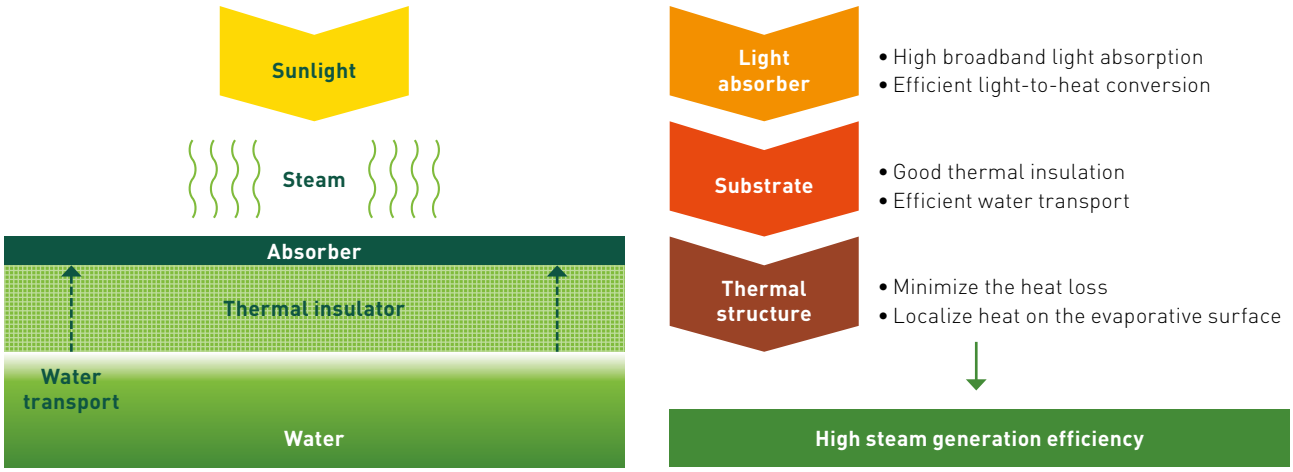

Figura 1. Sistema de evaporación solar interfacial

Fuente: https://media.neliti.com/media/publications/343550-3d-printed-absorbers-for-solar-driven-in-bf1abe9c.pdf

Actualmente, está despertando un gran interés el uso de la biomasa para el desarrollo de este tipo de absorbedores. Así, el objetivo de este boletín es ofrecer una rápida visión de cuál es la situación de la investigación en este ámbito, identificando y analizando publicaciones científicas. Éstas se buscaron en las bases de datos de la colección principal de Web of Science (WoS).

La evolución temporal de la producción científica a nivel mundial refleja que se trata una línea de investigación muy reciente con un total de 159 publicaciones. Las primeras datan de 2017, siendo 2020 el año de mayor crecimiento (Figura 1). En la Tabla 1 se recogen los títulos de algunos de los artículos científicos publicados, ordenados por año de publicación, así como otros datos de interés (autores, revista y DOI). Se puede acceder al texto completo de los mismos haciendo link en el título.

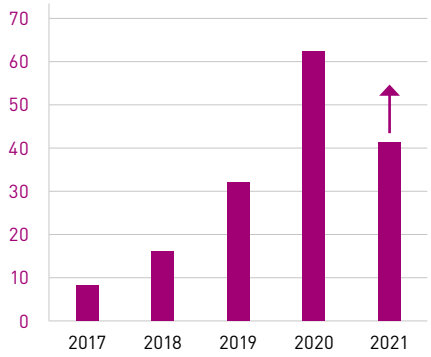

Figura 1. Distrubución de artículos por fecha de publicación (nº artículos)

Tabla 1. Publicaciones científicas

Artículos científicos publicados en 2021
Autores: Fillet, R et al. **Revista:** Solar Energy Materials and Solar Cells Vol.: 219 Nº artículo: 110814 **DOI:** 10.1016/j.solmat.2020.110814 **Título:** A review of natural materials for solar evaporation
Autores: Gong, BY et al. **Revista:** Carbon Vol.: 171 Pág.: 359-367 **DOI:** 10.1016/j.carbon.2020.09.033 **Título:** Multifunctional solar bamboo straw: Multiscale 3D membrane for self-sustained solar-thermal water desalination and purification and thermoelectric waste heat recovery and storage
Autores: Li, JY et al. **Revista:** Solar Energy Materials and Solar Cells Vol.: 222 Nº artículo: 110941 **DOI:** 10.1016/j.solmat.2020.110941 **Título:** Evaporation efficiency monitoring device based on biomass photothermal material for salt-resistant solar-driven interfacial evaporation
Autor/es: Wani, TA et al. **Revista:** Materials Advances Vol.: 2 Nº: 12 Pág.: 3856-3861 **DOI:** 10.1039/d1ma00361e **Título:** An environmental pollutant to an efficient solar vapor generator: an eco-friendly method for freshwater production
Autor/es: Wei, AY et al. **Revista:** Solar RRL Vol.: 5 Nº: 3 Nº artículo: 2000782 **DOI:** 10.1002/solr.202000782 **Título:** Multifunctional hydrothermal-carbonized sugarcane for highly efficient direct solar steam generation
Autor/es: Zafar, MS et al. **Revista:** Advanced Sustainable Systems Nºartículo: 2100031 **DOI:** 10.1002/adsu.202100031 **Título:** Biowaste-Derived Carbonized Bone for Solar Steam Generation and Seawater Desalination

Autor/es: Zhang, CF et al.
Revista: Materials Chemistry and Physics Vol.: 258 Nº artículo: 123998
DOI: 10.1016/j.matchemphys.2020.123998
Título: Carbon nanofibers enhanced solar steam generation device based on loofah biomass for water purification

Artículos científicos publicados en 2020

Autor/es: Gao, H et al.
Revista: RSC Advances, Vol.: 10 Nº: 2 Pág.: 1152-1158
DOI: 10.1039/c9ra08235b
Título: Natural phenolic compound-iron complexes: sustainable solar absorbers for wood-based solar steam generation devices

Autor/es: Ghafurian, MM et al.
Revista: Renewable Energy, Vol.: 146 Pág.: 2308-2315
DOI: 10.1016/j.renene.2019.08.036
Título: Wood surface treatment techniques for enhanced solar steam generation

Autor/es: Guo, MX et al.
Revista: New Carbon Materials, Vol.: 35 Nº: 4 Pág.: 436-443
DOI: 10.1016/S1872-5805(20)60501-7
Título: A low-cost lotus leaf-based carbon film for solar-driven steam generation

Autor/es: Jiang, H et al.
Revista: Journal of Materials Science & Technology, Vol.: 59 Pág.: 180-188
DOI: 10.1016/j.jmst.2020.05.023
Título: Multi-3D hierarchical biomass-based carbon particles absorber for solar desalination and thermoelectric power generator

Autor/es: Liu, J et al.
Revista: Advanced Sustainable Systems, Vol.: 4 Nº: 9 Nº artículo: 2000126
DOI: 10.1002/adsu.202000126
Título: Surface-Carbonized Bamboos with Multilevel Functional Biostructures Deliver High Photothermal Water Evaporation Performance

Autor/es: Lopez-Sosa, LB et al.
Revista: Solar Energy, Vol.: 202 Pági.: 238-248
DOI: 10.1016/j.solener.2020.03.102
Título: Ecological solar absorber coating: A proposal for the use of residual biomass and recycled materials for energy conversion

Autor/es: Ovando-Medina, VM et al.
Revista: International Journal of Energy Research, Vol.: 44 Nº: 13 Pág: 10878-10893
DOI: 10.1002/er.5773
Título: Interfacial photothermal water evaporator based on nanoporous microwave-expanded graphite and coconut waste fibers@ recycled polystyrene as substrate

Autor/es: Wilson, HM et al.
Revista: Solar Energy Materials and Solar Cells, Vol.: 215 Nº artículo: 110604
DOI: 10.1016/j.solmat.2020.110604
Título: Biomass-derived porous carbon for excellent low intensity solar steam generation and seawater desalination

Autor/es: Wilson, HM et al.
Revista: Solar Energy Materials and Solar Cells, Vol.: 210 Nº artículo: 110489
DOI: 10.1016/j.solmat.2020.110489
Título: Plant-derived carbon nanospheres for high efficiency solar-driven steam generation and seawater desalination at low solar intensities

Autor/es: Zhang, SC et al.
Revista: ACS Omega, Vol.: 5 Nº: 6 Páginas: 2878-2885
DOI: 10.1021/acsomega.9b03718
Título: Willow Catkins-Derived Porous Carbon Membrane with Hydrophilic Property for Efficient Solar Steam Generation

Artículos científicos publicados en 2019

Autor/es: Bian, Y et al.
Revista: Advanced Materials Technologies, Vol.: 4 Nº: 4 Nº artículo: 1800593
DOI: 10.1002/admt.201800593
Título: Carbonized Bamboos as Excellent 3D Solar Vapor-Generation Devices

Autor/es: Chen, ZJ et al.
Revista: ACS Applied Materials & Interfaces, Vol.: 11 Nº: 29 Pág.: 26032-26037
DOI: 10.1021/acsami.9b08244
Título: Deep Eutectic Solvent-Assisted In Situ Wood Delignification: A Promising Strategy To Enhance the Efficiency of Wood-Based Solar Steam Generation Devices

Autor/es: Guo, DF et al.
Revista: Science China-Materials, Vol.: 62 Nº: 5 Pág.: 711-718
DOI: 10.1007/s40843-018-9353-5
Título: Highly efficient solar steam generation of low cost TiN/bio-carbon foam

Autor/es: He, YM et al.
Revista: Bioresources, Vol.: 14 Nº: 2 Pág.: 3758-3767
DOI: 10.15376/biores.14.2.3758-3767
Título: Delignified Wood-based Highly Efficient Solar Steam Generation Device via Promoting Both Water Transportation and Evaporation

Autor/es: Li, ZT et al.
Revista: Advanced Sustainable Systems, Vol.: 3 Nº: 4 Nº artículo: 1800144
DOI: 10.1002/adsu.201800144
Título: Arched Bamboo Charcoal as Interfacial Solar Steam Generation Integrative Device with Enhanced Water Purification Capacity

Autor/es: Liu, J et al.
Revista: Journal of Materials Chemistry A, Vol.: 7 Nº: 15 Pág.: 9034-9039
DOI: 10.1039/c9ta00843h
Título: Simultaneously achieving thermal insulation and rapid water transport in sugarcane stems for efficient solar steam generation

Autor/es: Wang, QY et al.
Revista: Solar Energy Materials and Solar Cells, Vol.: 20 Nº artículo: 110116
DOI: 10.1016/j.solmat.2019.110116
Título: Functionalized biomass-derived composites for solar vapor generation

Autor/es: Wang, XY et al.
Revista: Materials Research Express, Vol.: 6 Nº: 12
DOI: 10.1088/2053-1591/ab586e
Título: Design of carbon loaded porous TiO2 foams by the hydrothermal-assisted annealing carbonization of fruit residue for solar-driven water evaporation

Autor/es: Yu, Z et al.
Revista: Solar Energy, Vol.: 193 Pág.: 434-441
DOI: 10.1016/j.solener.2019.09.080
Título: Enhancing efficiency of carbonized wood based solar steam generator for wastewater treatment by optimizing the thickness

Autor/es: Zhu, MM et al.
Revista: Solar Energy Materials and Solar Cells, Vol.: 191 Págі: 83-90
DOI: 10.1016/j.solmat.2018.11.01.
Título: Carbonized daikon for high efficient solar steam generation

Artículos científicos publicados en 2018

Autor/es: Liu, FH et al.
Revista: Advanced Functional Materials, Vol.: 28 Nº: 47 Nº artículo: 1803266
DOI: 10.1002/adfm.201803266
Título: Low Cost, Robust, Environmentally Friendly Geopolymer-Mesoporous Carbon Composites for Efficient Solar Powered Steam Generation

Autor/es: Liu, HW et al.
Revista: Journal of Materials Chemistry A, Vol.: 6 Nº: 39 Pág.: 18839-18846
DOI: 10.1039/c8ta05924a
Título: Narrow bandgap semiconductor decorated wood membrane for high-efficiency solar-assisted water purification

Autor/es: Zhang, YX et al.
Revista: Iscience, Vol.: 3 Pág.: 31
DOI: 10.1016/j.isci.2018.04.003
Título: A Barbeque-Analog Route to Carbonize Moldy Bread for Efficient Steam Generation

Artículos científicos publicados en 2017

Autor/es: Jia, C et al.
Revista: Joule, Vol.: 1 Nº: 3 Pág.: 588-599
DOI: 10.1016/j.joule.2017.09.011
Título: Rich Mesostructures Derived from Natural Woods for Solar Steam Generation

Autor/es: Xu, N et al.
Revista: Advanced Materials, Vol.: 29 Nº: 28 Nº artículo: 1606762
DOI: 10.1002/adma.201606762
Título: Mushrooms as Efficient Solar Steam-Generation Devices

Los países líderes (con más de 2 publicaciones) se muestran en la Tabla 2. China se sitúa, indiscutiblemente, a la cabeza, con el 82,4% de publicaciones, seguido a gran distancia de EE.UU., con el 16,4%. En tercer lugar, se encuentran Australia e Inglaterra con el 3,1%.

Tabla 2. Países líderes en publicaciones (nº publicaciones >2)

País	Nº Publicaciones
China	131
Estados Unidos	26
Australia	5
Inglaterra	5
Índia	4
Singapur	4
Corea del Sur	4
México	3

En relación a las instituciones con actividad en este campo, se han identificado más de 200. Las más relevantes son la *Chinese Academy of Sciences y la Northeast Forestry University China*, con 12 y 10 publicaciones, repectivamente (Tabla 3). A continución, con 9 artículos, destaca la *University of Maryland College Park*, la única institución no china ostentando una posición de liderazgo.

Los diferentes tipos de biomasa objeto de investigación por las principales instituciones se recogen en la Tabla 3. Se trata de materiales naturales como la madera, algodón, bambú, paja de arroz, paja de maíz, caña de azúcar, hoja de loto, etc., que previamente se someten a un proceso de carbonización.

Tabla 3. Instituciones líderes en publicaciones (nº publicaciones >4) y tipo de biomasa utilizada

Instituciones (País)	Nº Publicaciones	Tipo de biomasa
Chinese Academy of Sciences (China)	12	• Polyester-derived porous carbon-coated wood • Bacterial cellulose nanocomposites inside and on the natural porous structure of wood • Lotus leaf-based carbon film • Paulownia wood covalently bonded with MXene on the top • Polypyrrole-functionalized pomelo peel • Carbonized rice straw • Ternary Pt/Au/TiO2 nanoparticle decorated plasmonic wood carbon • Carbonized wood
Northeast Forestry University China (China)	10	• Dried wood • Carbonized wood • Larch bark
University of Maryland College Park (EE.UU.)	9	• Natural Wood • CuFeSe2 nanoparticles decorated wood • Plasmonic wood (fine metal nanoparticles into the 3D mesoporous matrix of natural wood)
Lanzhou University of Technology (China)	6	• Surface modified coconut fiber • Corn straw-based microcrystalline and oxidized microcrystalline cellulose • Superhydrophilic carbonized green algae • Polypyrrole-coated alkali-treated corn straw and polypyrrole-coated microwave and alkali-treated corn straw • Polypyrrole modified sugarcane • Kapok fiber-polypyrrole aerogels
Nanjing Forestry University (China)	6	• Polydopamine/wood composites • Fe3O4 coated delignified wood • Carbonized pencil wastes • Carbonized loofah sponge
Harbin Institute of Technology (China)	5	• Carbonized wood • Poly-pyrrole-modified maize straw
Huazhong University of Science Technology (China)	5	• Surface coating of wood by low-cost porous carbon from controlled Carbonization of polyester waste • polypyrrole decorated wood • Carbon nanotube modified flexible wood membrane • Flame-teated wood
Nanjing University (China)	5	• Carbonized bamboo • Plasmonic wood (fine metal nanoparticles into the 3D mesoporous matrix of natural wood) • Carbonized mushrooms
Shaanxi University of Science Technology (China)	5	• Polydopamine and Ti3C2Tx MXene with a cellulose network skeleton of delignified wood • Polydopamine and silver nanoparticles on natural wood • Bamboo charcoal
Shanghai Jiao Tong University (China)	5	• Carbonized bamboo • Carbonized sunflower • Carbonized stems of sugarcane • Carbonized Lotus Seedpods
Tsinghua University (China)	5	• Graphene/cotton sponge • Nanoparticles with cotton fibers • Sugarcane • Poly-pyrrole-modified maize straw • Processed wood

Instituciones (País)	Nº Publicaciones	Tipo de biomasa
Zhejian University (China)	5	• Luffa sponge treated with dopamine and with a candle soot surface coating • Bamboo • Lotus leaf • Carbonized wood
Dalian University of Technology (China)	4	• Hydrophilic radish • Carbonized corncob • Squid ink • Flamed straw
Hubei University (China)	4	• Carbonized pomelo peel • Cotton fibers-derived aerogel • Activated carbon ejuncus effusus
Wuhan Textile University (China)	4	• Polypyrrole-decorated 3D array structural sunflower discs • Activated carbon ejuncus effusus • Wood

PATENTES BIOENERGÍA

Biocombustibles sólidos (pellets, biochars, bio RDFs, bio SRFs, etc.)		
Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021156801 A1 20210812	Debize Michael Jacques (CH)	**Method for manufacturing solid fuel from water hyacinths.** The invention relates to a method for manufacturing pellets or briquettes from water hyacinth comprising the steps consisting in collecting the water hyacinth, optionally cleaning the water hyacinth, grinding the water hyacinth, screening the ground water hyacinth, storing the ground water hyacinth in a tank, drying the water hyacinth using a dryer, molding and compacting the water hyacinth in the form of pellets or briquettes, the relative moisture content of which is less than 12%.
WO 2021132807 A1 20210701	4EN Inc (KR)	**System for manufacturing briquette using agricultural by-products.** The present invention relates to a system for manufacturing a briquette using agricultural by-products, which is capable of manufacturing a briquette rapidly and stably by using agricultural by-products discharged from agriculture, such as peanut hulls, bean pods, rice hulls, etc., while effectively preventing environmental degradation. The present system for manufacturing a briquette comprises: a carbonizer for receiving agricultural by-products and heating same at high temperatures to carbonize same; a crusher, provided on one side of the carbonizer, for receiving and crushing the agricultural by-products carbonized by the carbonizer; a mixing kneader, provided at the rear of the crusher, for adding and mixing water and an expanding agent with the crushed agricultural by-products discharged from the crusher to form a dough; a briquette former, provided at the rear of the mixing kneader, for forming the dough discharged from the mixing kneader into a briquette and discharging the briquette; a drying expander, provided at the rear of the briquette former, for drying and expanding the briquette discharged from the briquette former by heating while receiving and transferring the briquette to one side by means of a transfer conveyor.
WO 2021161660 A1 20210819	Kobe Steel Ltd (JP)	**Method for producing biomass fuel.** One aspect of the present invention pertains to a method for producing a biomass fuel from a biomass, the method for producing a biomass fuel including a step for hot-pressure-forming a semi-carbonized biomass or an unreacted biomass, and being such that a formic acid aqueous solution and/or acetic acid aqueous solution is added to the semi-carbonized product or the unreacted biomass prior to the hot-pressure-forming step.
WO 2021179037 A1 20210916	Petra Ip Group Pty Ltd (AU)	**Methods and systems for dynamically processing waste.** A method for producing a thermal product with a consistent and designable thermal property is disclosed. The method comprises producing from a municipal waste a cellulose-based material stockpile and a plastic-based material stockpile; automatically measuring at least one physical property of the cellulose-based material stockpile and at least one physical property of the plastic-based material stockpile; based on the measurements of the at least one physical property the cellulose-based material stockpile and the measurements of the at least one physical property of the plastic-based material stockpile, automatically controlling mixing the cellulose- based material stockpile and the plastic-based material stockpile to form a mixture by adjusting a ratio of the cellulose-based material stockpile to the plastic-based material stockpile; and automatically heating and compressing the mixture to form the thermal product.
EP 3854861 A1 20210728	SLB Sarl (FR)	**Method and facility for producing biochar and similar products.** The installation for the production of biochar or assimilated from a biomass, the installation comprising a transformation station of the biomass into an aggregate of the "pellet" type, an oven pyrolysis to transform the aggregate into a biochar aggregate, positioned downstream of the transformation station, and a conditioner positioned downstream of the pyrolysis furnace for conditioning the biochar aggregate, the installation further comprising first transfer means of energy generated by the pyrolysis furnace to the transformation station. A method of producing associated biochar is also described.
EP 3854226 A1 20210728	Univ Catolica Portuguesa et al. (PT)	**Method for fractionating olive pomace, its products and uses thereof.** The present disclosure relates to the field of agriculture, namely to the olive oil industry. It provides a procedure to obtain value-added products from olive pomace with the goal of zero waste while maximizing the value of the products. The present disclosure also relates to the field of solid biofuels, cosmetics, medicine and food industry. The products obtained by the different methods herein disclosed can be used in a broad range of fields. The products obtained may be used as solid biofuel, cosmetic exfoliation material and food ingredients.The present disclosure uses environmentally friendly methodologies of fractionation and blanching, belonging therefore also to the field of ecology.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021163458 A1 20210819	Univ Colorado State Res Found (US)	**Combustion system for solid biomass fuel.** Various implementations include a combustor system including an inner wall, a fuel grate, an ash grinder, an igniter, and a fan. The inner wall defines a combustion chamber and has a longitudinal axis and first and second ends. The inner wall defines primary and secondary air inlets. The primary air inlets are defined closer than the secondary air inlets to the first end. The fuel grate is disposed within the combustion chamber between the primary and secondary air inlets and is configured to support fuel disposed within the combustion chamber. The ash grinder is disposed between the fuel grate and the secondary air inlets and is rotatable about the longitudinal axis relative to the fuel grate. The igniter provides energy to the combustion chamber. The fan is configured to cause air to flow from the primary and secondary air inlets through the second end of the combustion chamber.

Syngas

Nº Publicación	Solicitante (País)	Contenido técnico
EP 3875564 A1 20210908	Abeler albert (DE)	**Pyrolytic gas generating device for generating synthesis gas from a carbonizable feedstock.** Pyrolytic gas generating device for generating synthesis gas from a charring starting material, at least comprising: - a vertically aligned shaft gasifier unit with a downwardly open gasifier shaft; - a heat generator unit for heating the gasifier shaft and - a discharge unit which is arranged below the gasifier shaft and has at least one motor-driven conveying element which is conveyed away from the gasifier shaft. The gasifier shaft is surrounded in part of the circumference of its wall by a hot air duct fed by the heat generator, which is connected to the gasifier shaft via at least one gas passage opening.The wall is provided in at least one further partial area with at least one gas passage opening to which a synthesis gas discharge duct is connected. The gas passage openings for the synthesis gas discharge duct and the hot air duct are arranged on opposite sides of the gasification shaft.
WO 2021150274 A1 20210729	Anderson Paul S (US)	**Covered cavity kiln pyrolyzer.** The invention presents a covered cavity kiln pyrolyzer with modulated means of rotation, to promote mixing and exposure of the biomass to heat, thereby allowing complete and efficient pyrolysis of biomass therein. The invention has a portal arrangement for simultaneous entry of fuel and air alongside the exit of emissions and flames to a separate hood structure. In addition to rotational modulation for mixing, the rotational capabilities of the kiln also permit the removal of processed charcoal when the portal is turned downward. The invention also has a system of internal prongs for mixing and sifting removal of char, as well as automated fuel delivery mechanisms and a system of openings to allow insertion of pipes and sensors into the kiln for monitoring and for additional delivery of reagents for better modulation and efficiency by a user during the pyrolyzation process.
WO 2021153871 A1 20210805	Kyung Kuk Hyun (KR)	**Double fluidized bed reactor system comprising staircase-type helical blade.** The present invention relates to a double fluidized bed reactor system comprising a staircase-type helical blade, the system comprising: a bubbling fluidized bed gasification furnace for receiving fuel (for example, combustible waste and biomass) and steam, forming a bubbling fluidized bed through a flow of flow medium therein, and gasifying the fuel, thereby generating a resultant gas; and a high-speed fluidized bed combustion furnace for receiving char of the resultant gas and the flow medium from the bubbling fluidized bed gasification furnace, additionally receiving air, combusting the char so as to heat the flow medium, and transferring the heated flow medium back to the bubbling fluidized bed gasification furnace. Inside the bubbling fluidized bed gasification furnace, a center rod is installed to be elongated in the vertical direction along the bubbling fluidized bed gasification furnace center portion, and a helical blade is installed to move the resultant gas and the steam as a vortex along the center rod. The helical blade comprises multiple unit blades radially coupled to the center rod. Respective unit blades are spaced from each other and arranged in a staircase type. Accordingly, the frequency of contact between a flow medium supplied from the upper portion of the bubbling fluidized bed gasification furnace and a reaction material supplied from the lower portion thereof can be increased, thereby substantially improving the gas generating efficiency and the tar removing efficiency.
WO 2021188300 A1 20210923	Lanzatech Inc (US)	**Tail gas of gas fermentation to dry gasification feedstock.** The disclosure provides for the integration of a gas fermentation process with a gasification process whereby tail gas from the gas fermentation process is recycled to a dryer of the gasification process. The tail gas from the gas fermentation process is utilized to generate heat which in turn is used to dry feedstock to the gasification process. The heat is typically used to heat a drying gas, such as air, which is then directly or indirectly contacted with the gasification feedstock to dry the gasification feedstock. Dried gasification feedstock provides improved yield and improved quality of syngas as compared to gasification feedstock that is not dried.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021150271 A1 20210729	Massachusetts Inst Technology (US)	**Control of power producing engine in a biomass conversion system.** A biomass conversion system is disclosed. The system comprises a syngas generator, a cleanup engine and a power producing engine. The power producing engine is coupled to a load, such as an electrical generator. Methods of controlling the power producing engine in response to changes in load are disclosed. In certain embodiments, the air-to-fuel ratio, spark timing, and/or recirculation gases are varied to change the power of the power producing engine. In other embodiments, the power producing engine is throttled by limiting the amount of clean syngas that enters the engine.
WO 2021150590 A1 20210729	Nexstate Technlogies Ltd (US)	**Virtual landfill terminal.** Handling of municipal solid waste (MSW) is described. A method for handling MSW in a single waste processing facility includes receiving the MSW at the waste processing facility. The MSW is separated into biomass, recyclables, and plashes. The biomass is processed at the waste processing facility to produce syngas using a gasifier. The plashes are also processed at the waste processing facility to produce naphtha, diesel fuel, and/or lubricants. Waste heat from the processing of the biomass and from the processing of the plashes is captured and used in the generating of electricity at the waste processing facility. Facilities for handling MSW are also described.
WO 2021165986 A1 20210826	Raman Perumal (IN)	**A gasifier system for power generation from biomass.** The present invention relates to a gasifier system for power generation from biomass. The present invention includes a triple reactor gasifier, a primary gas cooling unit a hot air distributor, a secondary gas cooling unit, an IC engine, an electric power generator. The triple reactor gasifier includes a pyrolyzer zone, a gasification reactor zone and a tar cracker zone. The gasification reactor zone generates producer gas and attached below the pyrolyzer zone. The tar cracker zone eliminates the presence of tar in the producer gas and attached below the gasification reactor zone. Herein the present invention performs gasification of biomass thus producing the producer gas that is free from tar. An IC engine burns a mixture of air and producer gas to generate mechanical torque. The electric power generator is connected to the IC engine that uses mechanical torque for electricity generation.
WO 2021125289 A1 20210624	Showa Denko KK et al. (JP)	**Gasification furnace operating method and gasification furnace.** Provided are a gasification furnace operating method, a gasification furnace, a two-stage gasification apparatus, a gasification method for an organic raw material, and a two-stage gasification method for organic waste that make it possible to stably operate a gasification furnace over a long period of time. The present invention provides a gasification furnace operating method including, in a gasification furnace into which an organic raw material is introduced and that produces gas and slag, directly or indirectly introducing an alkali metal-containing compound into the gasification furnace to reduce the viscosity of the slag.
WO 2021130445 A1 20210701	Syctom Lagence Metropolitaine des Dechets Menagers et al. (FR)	**Device for the high-pressure injection of an organic resource.** The invention relates to an injection device for injecting organic material into a supercritical water gasification reactor, the device comprising: - two reservoirs, each comprising an upper end and a lower end; - a compression fluid reservoir; - a filling means allowing both of the two reservoirs to be filled with organic material at their lower end; -a compression means allowing the organic material present in both of the two reactors to be compressed by injecting the compression fluid at the upper end of one or other of the reservoirs; - an injection means for injection, into the reactor, of the organic material that may be present in both of the two reactors, and compressed by the compression fluid.
WO 2021130444 A1 20210701	Syctom Lagence Metropolitaine des Dechets Menagers et al. (FR)	**Device for high-pressure injection of a wet mixture.** The invention relates to a device for high-pressure injection of a wet mixture into a supercritical water gasification reactor, the device comprising: - two tubular vessels each comprising a top end and a bottom end; - filling means for selectively filling either of the two vessels with wet mixture at the bottom end thereof; - water compression means for selectively compressing, by injecting water into the top end of either of the vessels, the wet mixture likely to be present in either of the two vessels; - means for injecting, into the reactor, the wet mixture likely to be present in either of the two vessels and compressed by the water that has been injected

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021123693 A1 20210624	Syctom Lagence Metropolitaine des Dechets Menagers et al. (FR)	**Plant for hydrothermal gasification of biomass, comprising, downstream of the gasification reactor, an expansion system for the aqueous flow tolerating the presence of solid particles. Associated method for operating the plant.** Plant for hydrothermal gasification of biomass, comprising, downstream of the gasification reactor, an expansion system for the aqueous flow tolerating the presence of solid particles. Associated method for operating the plant. The invention relates to a plant for hydrothermal gasification of biomass, comprising: - a gasification reactor suitable for carrying out hydrothermal gasification; - an expansion system for the aqueous flow tolerating the presence of solid particles, connected downstream of the reactor, comprising at least two fluid branches in parallel, each of the branches comprising: • at least two two-way valves, • at least one sluice tank, arranged between the two two-way valves. The invention also relates to the associated operating method.

Biogás

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021152541 A1 20210805	Bennamann Services Ltd UK (GB)	**Methane separation system and method.** Systems and methods for separating a biogas or other gaseous material into its constituent parts, including solid methane and carbon dioxide, using liquid nitrogen in a processing chamber. The individual parts may be extracted from the processing chamber. Separation and extraction can be performed on a mobile processing plant.
WO 2021130396 A1 20210701	Consejo Superior Investigacion et al. (ES)	**Method for producing methane by means of anaerobic codigestion of alperujo (olive oil byproduct) and a microalga.** The present invention belongs to the sector for the use of food industry byproducts. In particular, the invention relates to an improved method for producing methane from the anaerobic codigestion of alperujo, the main byproduct generated in olive oil production, and the micro alga Dunaliella salina.
WO 2021156802 A1 20210812	Debize Michael Jacques (CH)	**Method for producing biogas.** The invention relates to a method for producing combustible biogas, in particular methane, comprising the steps of: - arranging ground water hyacinths in a digester; - optionally arranging organic matter in the digester; - optionally arranging vegetable oil in the digester; - mixing the ground water hyacinths, organic matter and vegetable oil at a temperature above an ambient temperature to enable methane fermentation to develop; - recovering the biogas produced from the fermentation of the mixture in the digester.
WO 2021142553 A1 20210722	Evoqua Water Tech Canada Ltd (CA)	**Utilization of biogas scrubber in anaerobic membrane bioreactor systems.** Methods of controlling hydrogen sulfide concentration of a biogas occupying an anaerobic membrane bioreactor (AnMBR) containing a submerged membrane are disclosed herein. Methods of controlling dissolved sulfide concentration of a mixed liquor within the AnMBR are disclosed. The methods include directing wastewater containing sulfur and a chemical oxygen demand (COD) to an AnMBR, withdrawing at least a fraction of the biogas from the AnMBR, directing a pre-determined amount of the withdrawn biogas to a scrubber, directing a remainder of the withdrawn biogas to a gas distributor, and directing the scrubbed biogas to the AnMBR. Systems for treating wastewater having sulfur and COD are disclosed. The systems include an AnMBR, a scouring gas closed loop, a scrubber, and a control mechanism for directing biogas to the scrubber and to a gas distributor. Methods of retrofitting a system for treating wastewater having sulfur and COD are disclosed.
WO 2021124179 A1 20210624	IES Biogas SRL (IT)	Biogas or biomethane production assembly with stirrer position detection device. The present invention relates to a biogas or biomethane production assembly comprising : - at least one tank, such as for example a fermenter or storage tank, which receives material such as manure, slurry, poultry manure, dairy whey, vegetable waste, agricultural by- products inoculated with bacterial load for the formation especially of digestate and biogas; said tank comprising a tank bottom; - at least one stirrer or mixer; - at least one stirrer support and movement device for moving said stirrer or mixer at least along a substantially vertical direction defining a vertical axis; - at least one lifting winch or winch; wherein there is further comprised - a position sensor which detects at least one indication of minimum and maximum height of the position with respect to said tank bottom of the stirrer or mixer.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021154523 A1 20210805	Loci Controls Inc (US)	**Automated compliance measurement and control for landfill gas extraction systems.** A method for use of a system coupled to at least one sensor and at least one flow control mechanism of a gas extraction system, the system comprising at least one controller and configured for use in connection with a landfill gas extraction process for extraction of landfill gas from a landfill via the gas extraction system, the method comprising: using the at least one controller to perform: obtaining, based on at least one measurement made by the at least one sensor, at least one current value indicative of a selected characteristic of the landfill gas extraction process, such as oxygen concentration, gas temperature, gas pressure or methane concentration, determining, at discrete time intervals, whether the at least one current value satisfies at least one compliance criterion for the selected characteristic, and when it is determined that the at least one current value does not satisfy the at least one compliance criterion for the selected characteristic, performing a corrective action.
WO 2021170162 A1 20210902	Noa Climate UG Haftungsbes-chraenkt (DE)	**Apparatus for production and intermediate storage of biogas.** Apparatus for production and intermediate storage of biogas; the present invention especially relates to a small-scale or ultrasmall-scale biogas plant comprising a fermenter, a biogas collection chamber and inlets for the biogas substrate to be fermented and outlets for the fermented residual biogas material, withdrawal means for the biogas and applications for the control and regulation of the fermentation process in the fermenter. The fermenter of the apparatus in its installed position transitions in the upward direction directly into the biogas collection chamber, wherein the transition between the fermenter and the biogas collection chamber is determined by the fill level of the biogas substrate to be fermented and the fermenter and the biogas collection chamber are substantially integrally connected to one another and made of a foldable, tear-resistant, flexible textile fabric with a gas- and liquid-tight coating.
EP 3868859 A2 20210825	SEA SRL (IT)	**Plant and method for the production of methane.** The patent application relates to a process for producing methane from the anaerobic fermentation of a biomass, the process comprising at least the following steps:(a) subjecting to anaerobic digestion a quantity greater than or equal to 700,000 t/year, preferably 700,000-900,000 t/year, of biomass as such having an average value VS/Tq greater than or equal to 27.0% by weight, preferably greater than or equal to 30.0% by weight, more preferably greater than or equal to 33.0% by weight, in at least one bioreactor having a total digestion volume less than or equal to 350,000 m3, preferably 150,000-350,000 m3, and producing a flow of biogas comprising methane and CO2 and a flow of digestate comprising a solid phase and a liquid phase; (b) sending the flow of biogas to a refining plant for selectively removing the CO2 from the flow of biogas, thus obtaining a flow of CO2 and a flow of biomethane; wherein the quantity of methane produced is greater than or equal to 70,000,000 m3/year, preferably greater than or equal to 90,000,000 m3/year.
WO 2021123417 A1 20210624	Univ Berlin Tech (DE) et al.	**Use of biomagnetism for biogas production.** The invention relates to a method for improving a biogas production in which an organic substrate is pretreated by various methods. In particular, the method comprises a combination of a magnetic and an enzymatic pretreatment of the substrate with an attractive specific energy gain. The application of a magnetic field induces changes in biological systems.
WO 2021161337 A1 20210819	Vidyan Biocommerce Private Ltd (IN)	**A bioreactor and process for production of biogas using the same.** The present invention provides a bioreactor with one or more agitators each having one or more wire meshed agitator blade/s, wherein the bioreactor maintains uniform viscosity of the feed, uniform cell density & cell distribution, uniform floc size throughout the bioreactor volume, and enables radially uniform reaction rates with consistent and uniform release of gases from the bioreactor. The present invention, as a result of better design, provides a more efficient process for production of biogas from wastes using the bioreactor, wherein the process results in high biogas yield and high volumetric gas productivity while effectively maintaining process stability.

Bioalcoholes (bioetanol, biometanol, etc.)		
Nº Publicación	Solicitante (País)	Contenido técnico
US 2021268483 A1 20210902	Alliance Sustainable Energy (US)	**Catalysts and methods for the conversion of carbonaceous materials to liquid fuels.** The present disclosure relates to a composition that includes copper (Cu), aluminum (Al), oxygen, and an element (M) that includes at least one of magnesium, cerium, and/or a transition metal, where the copper and the element are present at a first molar ratio relative to the aluminum between about 0.1:1 and about 30:1 ((Cu+M):Al), and the copper and the element are present at a second molar ratio between about 0.1:4 and about 20:1 (Cu:M).
WO 2021186089 A1 20210923	Cuenca Adrover Luis (ES)	**Wankel engine with thrust propulsion.** The invention relates to an engine that uses a mixture of bioethanol and hydrogen peroxide or water, the engine thus being more environmentally friendly. The engine comprises an engine block with a cylindrical internal chamber containing a propeller, attached to an axle that acts as a live axle, said propeller presenting a plurality of blades that are moved as a result of the expansion that occurs inside the engine during the combustion reaction of the fuel/oxidising agent mixture that takes place inside the engine, specifically prior to entering said block, in a combustion chamber connected to said engine block, which incorporates secondary combustion chambers in a radial manner which, as is the case for the combustion chamber, include electrodes that provoke the electrolysis reaction of the steam, thus causing an explosive reaction that increases the power of the engine.
WO 2021122917 A1 20210624	DSM IP Assets BV (NL)	**Method and system for prediction of a performance of a strain in a plant.** A method and system for predicting performance of strains in processes, the strains being capable of fermentation of biomass for production of at least bio-ethanol, the method including the steps of: receiving a first process data set related to a performance of a first strain in a first process for producing bio-ethanol at a first site, receiving a second process data set related to a performance of a second strain in the first process for producing bio-ethanol at the first site, receiving a third process data set related to a performance of the first strain in a second process for producing bio-ethanol at a second site, the second site being different from the first site, and wherein the first, second and third process data sets each include one or more process profiles and/or process responses, determining a first correlation between the first process data set and the second process data set, and determining a second correlation between the first process data and the third process data, and reconstructing a fourth process data set related to a performance of the second strain in the second process for producing bio-ethanol at the second site by missing data imputation, wherein the fourth process data set is estimated based on the first correlation and the second correlation.
WO 2021150285 A1 20210729	Exxonmobil Res & Eng Co (US)	**Ethanol production methods and systems that integrate flexicoking and fermentation.** Methods for producing ethanol from flexicoking syngas may include: flexicoking a hydrocarbon feed stream to produce a flexicoking syngas stream; introducing a steam stream and an oxygen-rich stream into a gasifier of the flexicoking process, wherein the oxygen-rich stream has greater than 22 vol% oxygen and less than 50 vol% nitrogen; and fermenting the flexicoking syngas with fermenting organisms to produce a fermentation liquid product comprising ethanol. In addition to or in alternative of the oxygen-rich stream, the methods may include reforming (a) methane, (b) waste, and/or (c) refused acetogens in a gasifier of the flexicoking process. In addition to or in alternative of each of the foregoing, additional hydrogen may be present in the fermenting step.
TW 202122571 A 20210616	INER AEC (TW)	**Yarrowia Lipolytica, use thereof and method for producing diversified fuels using the same.** The present invention relates to a Yarrowia Lipolytica, a use thereof and a method for producing diversified fuels using the same. By using the Yarrowia Lipolytica INER-W6, agricultural and forestry waste or waste oil can be utilized as raw materials to produce diversified fuels such as alcohol and fuel precursors. Therefore, the Yarrowia Lipolytica INER-W6 and the use thereof are environmentally friendly and have a high industrial utilization value.
WO 2021142528 A1 20210722	Iogen Corp (CA)	**Process and system for producing biofuels with reduced carbon intensity.** A process and/or system for producing one or more biofuels, wherein biogas (e.g., partially purified biogas produced by removing water, hydrogen sulfide and/or carbon dioxide from raw biogas) is transported by vehicle in one or mobile vessels. Depressurization of the mobile vessels provides a change in pressure that can be used to provide work, cooling, and/or increased pressure for the production process. Combustion of the biogas produces heat and/or power used to reduce a carbon intensity of the biofuel or biofuel intermediate.

Biodiésel

Nº Publicación	Solicitante (País)	Contenido técnico
BR 102020001489 A2 20210727	AGA Consultora e Desenvolvimento de Projetos Tecnico Cientificos Ltda ME (BR)	**Synthetic process to obtain molecular sieves containing transition metals and use in the removal of impurities from biodiesel.** The technology described in the present invention refers to the synthesis process of microporous molecular sieves containing transition metal atoms (nickel, copper, cobalt, vanadium, zirconium and molybdenum) in its crystallographic network obtained synthetically in the absence of silicon sources and organic cations employed as structural drivers. The use of molecular sieves as specific catalysts for the bleaching and sulfur removal process of biofuels produced from residual triacylglycerol sources is also mentioned. specifically biodiesel.
WO 2021127413 A1 20210624	Imerys USA Inc (US)	**Filter aids for non aqueous liquids.** A method for filtering a non aqueous liquid such as a biodiesel to reduce the levels of sterol glucosides and/or saturated monoglycerides.
BR 102020024667 A2 20210720	Kaiser Agro Florest et al. (BR)	**Biodiesel production process from rubber seed oil hevea brasiliensis.** The present invention concerns the production of biodiesel from rubber tree seed, hevea brasiliensis. More specifically, the use of oil extracted from the interior of the rubber tree seed, which, after acidity treatment, is subjected to an alkaline transesterification reaction to obtain the biofuel. This process is carried out in 10 steps, starting from the seed to purified biodiesel, using less reagent and less time compared to existing technologies. This technology can be applied in the energy sector of biodiesel production, in addition to adding value to the co-product in the latex market.
KR 20210072420 A 20210617	Korea Inst Energy Res (KR)	**Method for producing bio oil from microalgae using base catalyst.** The present invention is a first step of preparing a mixture by adding a hydrophobic organic solvent and a base catalyst dissolved in alcohol to microalgae and stirring; a second step of layer-separating the hydrophobic organic solvent layer containing bio-oil in the stirred mixture; and a third step of removing the organic solvent from the hydrophobic organic solvent layer containing the bio-oil; Bio-oil with improved purity prepared by its manufacturing method; And it relates to a biodiesel manufacturing method comprising the step of adding a biodiesel conversion catalyst to the bio-oil produced by the manufacturing method. This is simple and economical as it can extract high-purity bio-oil while reducing moisture inhibition without a separate drying process.
WO 2021126342 A1 20210624	Lubrizol Corp (US)	**Wax anti-settling additive composition for use in diesel fuels.** A composition comprising at least one fuel that is a diesel fuel, a biodiesel fuel, or combinations thereof and less than 100ppm, less than 50ppm (or less than 25ppm, less than 10ppm, 1 to 7ppm, or 5 to 7ppm) of an alkylene-coupled C10 to C60 (or C10 to C40, C14 to C32 or C24 to C28) alkylphenol; 25 to 500ppm (or 50 to 500ppm, or 150 to 450ppm or 250 to 450ppm, or 250 to 400ppm) of a terpolymer; and 5 to 90ppm, (or 10 to 70ppm, to 60ppm, or 10 to 55ppm) of hydrocarbyl-substituted amine detergent having at least one tertiary amino group. Methods of reducing the cold filter plugging point ("CFPP") of a fuel, said method comprising adding the following components: less than 100ppm, less than 50ppm (or less than 25ppm; less than 10ppm, 1 to 7ppm, or 5 to 7ppm) of an alkylene-coupled C10 to C60 (or C10 to C40, C14 to C32 or C24 to C28) alkylphenol; 25 to 500ppm (or 50 to 500ppm, or 150 to 450ppm or 250 to 450ppm, or 250 to 400ppm) of a terpolymer; and 5 to 90ppm, (or 10 to 70ppm, to 60ppm, or 10 to 55ppm) of hydrocarbyl-substituted amine detergent having at least one tertiary amino group. Uses of a fuel additive composition to reduce the cold filter plugging point ("CFPP") of a fuel, wherein the fuel additive composition comprises: 0.2 to 3wt% of an alkylene-coupled C10 to C60 (or C10 to C40, C14 to C32 or C24 to C28) alkylphenol; 10 to 50wt% of a terpolymer; and 2 to 10wt% of hydrocarbyl-substituted amine detergent having at least one tertiary amino group; and an optional solvent.
KR 20210085917 A 20210708	Sung Gi Won (KR)	**Bio-diesel with palm oil.** The present invention relates to biodiesel using palm oil and a manufacturing method therefor, comprising: a heating step; oxidation step; mixing step; It includes the separation step, solves the problem of environmental pollution, and has high efficiency and practicality.
WO 2021154804 A1 20210805	The Dallas Group of America Inc (US)	**Solid adsorbent compositions for purifying liquids.** A composition for purifying a liquid, such as used cooking oil, unrefined edible oils, or biodiesel fuel, that comprises at least one purifying material, such, as magnesium silicate, and at least one binder material that is a solid or a semi-solid at room temperature, or is water or a glycol. When the composition is placed in a liquid, and the liquid is heated, the solid composition disintegrates and the at least one purifying material is released in the liquid. Such composition minimizes or eliminates contact with the dust associated with solid adsorbent materials, and provides for a controlled release of the at least one purifying material into the liquid to be purified.

Nº Publicación	Solicitante (País)	Contenido técnico
BR 102020000616 A2 20210727	Univ Estadual Londrina (BR)	**Process for quantification of biodiesel degradation by nuclear magnetic resonance in the presence of copper ions.** Nuclear magnetic resonance (nmr) makes it possible to analyze the degradation of biodiesel from the intensities of olefinic, bis-allylic and allylic protons as the oxidation reaction progresses, being possible to correlate them with the induction periods provided by the rancimat. Thus, the present invention shows a process for quantifying the oxidative degradation of biodiesel through the intensities of olefinic, bis-allylic and allylic protons. The process has a short analysis time when compared to conventional ones, it is a non-destructive technique, in addition to allowing the observation of the generated degradation products.
BR 102019024371 A2 20210601	Univ Federal do Espirito Santo (BR)	**Chemometric method built with low-field nmr data for determination of physicochemical properties of biodiesel and blends.** This document presents a method for determining the physical-chemical properties of biodiesel and blends. The procedure consists of three steps: the first one consists of analyzing the biodiesel samples and blends by low-field nmr, a fast technique that does not require the use of chemical products to prepare the samples; the second step corresponds to obtaining the physicochemical properties of the samples by traditional methods; finally, the data obtained by low-field nmr and the values of the physicochemical properties are used in first order multivariate calibrations. Several parameters of the nmr measurements were investigated, such as temperature, pulse sequence, magnetic field, number of scans, etc., in order to develop a robust procedure. In addition, different multivariate regression methods were also tested. different physicochemical properties of biodiesel samples and blends were determined with a single database generated by low-field nmr: kinematic viscosity, specific mass, refractive and iodine indices. the accuracy of the models was determined by calculating the root mean square error of prediction (rmsep) values. The method is advantageous because it can replace the various methodologies that would be required to obtain each physicochemical property.
DE 102020101544 A1 20210729	Volswagen AG (DE)	**Biodiesel.** The invention relates to compounds of the formula (I) in which RA denotes alkyl or alkylene radicals having 3 to 23 carbon atoms and RE - [(CH2) m- (C2H4) n- (CH2CHCH3) o- (CHCH3CH2) p- (CH2-CH2-CH2) q - (CH = CH-CH2) r- (CH2-CH = CH) s-0] tX with m = 0 or 1, n = 0 or 1, o = 0 or 1, p = 0 or 1, q = 0 or 1, r = 0 or 1, s = 0 or 1, m + n + o + p + q + r + s = 1, t = 1 to 5 and X = H, CH3, C2H5 or C3H7. The compounds of the formula (I) can be used as diesel fuel or as a component in biodiesel or mineral diesel fuels.
N 113025665 A 20210625	Univ Xiamen (CN)	**Method for producing biodiesel by using red tide algae and algicidal bacteria.** The invention discloses a method for producing biodiesel by using red tide algae and algicidal bacteria, and relates to biodiesel. The method comprises the following steps: inoculating an f/2 culture medium with red tide algae cells, and standing and culturing in an illumination culture room; culturing algicidal bacteria Y42 in a liquid culture medium to obtain sterile supernate; adding the sterile supernate into a prorocentrum donghaiense culture solution for continuous culture, oxidizing fatty acid, and lysing red tide algae cells; repeatedly extracting the lysedalgae liquid by adopting a rotary evaporation method, and drying to obtain a crude fat extract; and performing methyl esterification on the grease to obtain the biodiesel production raw material. The supernatant of the algae-lysing strain Y42 is used for lysing algae cells, so that the algae-lysing process of downstream extraction is simplified, the production cost is saved, the grease composition can be changed, the grease unsaturation degree of the algae cells is effectively reduced, and the grease IV < 120, CN > 47, and the grease composition is suitable for biodiesel production. And 90% or more of algae cells can be lysed after the algae killing bacteria are treated for 72 hours, so that the development of biodiesel is facilitated, and harm is turned into treasure.

Bio-jet fuels

Nº Publicación	Solicitante (País)	Contenido técnico
US 2021188734 A1 20210624	Alliance Sustainable Energy (US)	**Fuels and methods of making the same.** The present disclosure relates to a method that includes a first treating of a first mixture that includes a carboxylic acid having between 2 and 12 carbon atoms, inclusively, to form a second mixture that includes a ketone having between 2 and 25 carbon atoms, inclusively, and a second treating of at least a first portion of the second mixture to form a first product that includes a paraffin having 8 or more carbon atoms.
WO 2021184104 A1 20210923	Autarcycle Inc (CA)	**Process for converting biosourced triglycerides into a single-phase composition containing fatty acid ester and related uses as biofuel or lubricant.** The present techniques relate to facilitating conversion of biosourced triglycerides into fatty acid esters by combining the biosourced triglycerides with a carbonate ester in presence of an alcohol, under catalytic transesterification conditions. A reaction mixture can be heated to a reaction temperature to operate a transesterification of the biosourced triglyceride with the carbonate ester under catalysis of the alcohol thereby forming a single-phase composition comprising the fatty acid esters. The reaction mixture can have a molar ratio of the biosourced triglyceride over the carbonate ester between 1: 0.1 and 1:20. Compositions comprising the produced single-phase composition, and optionally an additive, can be used as diesel, jet fuel or lubricant.
WO 2021180805 A1 20210916	Topsoe Haldor AS (DK)	**Process and plant for producing hydrocarbons with reduced CO2-footprint and improved hydrogen integration.** Process and plant for producing hydrocarbon products from a feedstock originating from a renewable source, where a hydrogen-rich stream and on off-gas stream comprising hydrocarbons is formed. A portion of the hydrogen-rich stream is used as a recycle gas stream in a hydroprocessing stage for the production of said hydrocarbon products, and another portion may be used for hydrogen production, while the off-gas stream is treated to remove its H2S content and used as a recycle gas stream in the hydrogen producing unit, from which the hydrogen produced i.e. make-up hydrogen, is used in the hydroprocessing stage. The invention enables minimizing natural gas consumption in the hydrogen producing unit as well as steam reformer size.

Biohidrógeno

Nº Publicación	Solicitante (País)	Contenido técnico
KR 20210088262 A 20210714	Korea Inst Energy Res (KR)	**A high pressurized gas-lift bioreactor for carbon monoxide conversion and a production method of bio-hydrogen therewith.** The present invention provides a method for producing bio-hydrogen using a high-pressure gas flotation bioreactor capable of improving gas solubility through high pressure and utilizing a low power source to improve mass transfer efficiency in which the gas in the bioreactor is transferred in the liquid phase. It also relates to an apparatus for producing bio-hydrogen using a biological water-gas conversion reaction, comprising: a rising part in which gas-liquid contact is made while gas rises; and an external circulation line through which the gas is circulated; a mass flow controller (MFC) connected to a gas supply unit positioned below the rising unit to control a flow rate of the supplied gas; and a back pressure regulator (BPR) connected to the gas outlet positioned above the riser to increase the pressure inside the reactor body; a sparger positioned above the gas supply part positioned below the riser positioned to form gas-liquid contact bubbles in the rising part, and a part of the raised gas descends the external circulation line and re-introduced to the lower part of the rising part, the external circulation line rises upward of the sparger connected with wealth.
WO 2021171675 A1 20210902	Univ Kyoto et al. (JP)	**Hydrogen production method.** Provided is a method for efficiently generating hydrogen by using a renewable resource as a raw ingredient. [Solution] A hydrogen production method according to the present disclosure generates hydrogen from a sugar in the presence of a solvent and the catalyst described below. Catalyst: Contains at least one metal element selected from group 8, group 9, and group 10. A complex or salt of the metal element is preferable as the catalyst; in particular, a complex comprising at least one metal element selected from group 8, group 9, and group 10 and at least one ligand selected from a pentamethylcyclopentadienyl, a cyclopentadienyl, p-cymene, and 1,5-cyclooctadiene is preferable. The use of at least one selected from organic acids and ionic liquids is preferable for the solvent. The sugar may be a lignin-sugar complex, and cellulose is preferable as the sugar.

Otros biocombustibles (hidrobiodiésel, biopropano, biocrudos, etc.)		
Nº Publicación	Solicitante (País)	Contenido técnico
US 2021292665 A1 20210923	Honda Motor Co Ltd (JP)	**Fuel production system.** A fuel production system includes a gasification unit including a gasification furnace that gasifies biomass feedstock to produce a syngas; a liquid fuel production unit that produces a liquid fuel from the syngas produced by the gasification unit; an electrolysis unit that produces hydrogen from water using electric power generated using renewable energy; a hydrogen tank that stores the hydrogen produced by the electrolysis unit; a remaining hydrogen amount determining section that determines the amount of hydrogen remaining in the hydrogen tank; a hydrogen supply unit that supplies the hydrogen from the hydrogen tank to the gasification unit; and a control unit that performs a hydrogen consumption increasing control to reduce the H2/CO ratio of the syngas produced by reaction in the gasification furnace and to increase the amount of hydrogen supplied by the hydrogen supply unit, when the remaining amount of hydrogen is more than a predetermined amount.
WO 2021124443 A1 20210624	Ihi Power Systems Co Ltd (JP)	**Power-generation system.** [Problem] To provide a power-generation system capable of supplying at a low cost the power needed in a plant for extracting oil from the fruit of oil palm trees, using a portion of the crude palm oil (CPO) destined for shipment. [Solution] The power-generation system 1 comprises a CPO storage tank 10, a sedimentation tank 13 connected to the storage tank through oil-delivery piping 11 and oil-return piping 12, a degumming device 2 to which CPO is sent from the sedimentation tank, and power-generation equipment 15 operated by the degummed crude oil obtained by the degumming device. A portion of the CPO in the storage tank is sent to the sedimentation tank. The supernatant fraction of the CPO that has undergone sedimentation processing in the sedimentation tank is sent to the degumming device, and the sediment fraction of the CPO that has undergone the sedimentation processing in the sedimentation tank is returned from the oil-return piping to the storage tank. The power-generation equipment is operated with the degummed crude oil supplied from the degumming device to meet the power demands of the oil extraction plant.
WO 2021123496 A1 20210624	Neste Oyj (FI)	**Flexible integrated production plant system and method.** An integrated production plant system comprises, at one production site at least two plants of different kinds selected from a renewable paraffinic fuel plant to produce renewable paraffinic fuel in a renewable paraffinic fuel process, a renewable fatty acid alkyl ester (FAAE) fuel plant to produce renewable FAAE fuel in a renewable FAAE process, a renewable base oil plant to produce renewable base oil in a renewable base oil process, and a renewable chemical plant to produce renewable chemical in a renewable chemical process. Each of the processes is provided with a respective renewable feed, where the feed of each of the processes originates from a common renewable system feed, and the feed to at least one of the processes is altered for example by directing at least part of the feed of at least one of the processes to another of said processes.
IT 201900017339 A1 20210326	Olivito Fabrizio et al. (IT)	**Process to convert lignino-cellulosic materials into bio-oil and bio-polymers, plant for the realization of the process and obtainable product.** The present invention relates to the conversion of lignin-cellulosic materials into furan bio-oil and functionalized lignin-cellulosic products, by means of a green chemistry process with low energy consumption, having very high yields.
WO 2021119783 A1 20210624	PETROBRAS SA (BR)	**Process for generating renewable streams from bio-oil and use thereof for the production of renewable fuels.** The present invention relates to a process for the production of bio-oil-based renewable streams for composing a diesel or aviation kerosene (AVK) pool by combining the technologies of hydroprocessing esters and fatty acids (HEFA) and thermochemical conversion of lignocellulosic biomass for generating bio-oil. The integration of conventional raw material from the HEFA pathway with a bio-oil fraction has the advantages of the use of a stream originating from the conversion of lignocellulosic material, which is widely available on the market, and also the production of a renewable stream containing aromatics in its composition.
WO 2021156436 A1 20210812	Preem AB (SE)	**Slurry hydrocracking of pyrolysis oil and hydrocarbon feedstock, such as petroleum derived feedstock.** A process of producing a hydrocracking product in a slurry hydrocracking reactor. A pyrolysis oil, a hydrocarbon feedstock, and a hydrocracking catalyst is provided. The pyrolysis oil is combined with the hydrocarbon feedstock and the hydrocracking catalyst, the pyrolysis oil being maintained at a temperature of less than 100 °C until the pyrolysis oil contacts both the hydrocarbon feedstock and the hydrocracking catalyst. The hydrocarbon feedstock and the pyrolysis oil are hydrocracked in the slurry hydrocracking reactor in the presence of the hydrocracking catalyst and hydrogen gas. A fuel precursor obtainable by the process.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021178997 A1 20210910	Reg Synthetic Fuels LLC (US)	**Method of providing a bio-oil to a hydrodeoxygenation reactor.** A method is disclosed for hydrodeoxygenation of a bio-oil over a catalyst bed in a hydrodeoxygenation reactor, the method including combining a two-phase diluent having a water dew point and a bio-oil at a bio-oil temperature that is from 50 °F less than to 50 °F more than the water dew point. The two-phase diluent includes a liquid phase and a vapor phase, where the liquid phase includes a hydrocarbon and the vapor phase includes hydrogen and water.
WO 2021154022 A1 20210805	SK Eco Prime Co Ltd (KR)	**Method for preparing bio-oil from fatty acid with high acid value.** Disclosed is a method for preparing bio-oil, which can be used as bio heavy fuel oil and bio marine oil, from a fatty acid with high acid value. The method for preparing bio-oil comprises the steps of: inputting materials comprising glycerine and a fatty acid into respective material input ports positioned in the center of a column-type reactor and esterification reacting the material comprising glycerine and fatty acid in each tray of a reaction area, thereby producing glyceride and water, wherein the column-type reactor has the plurality of trays installed inside the reactor so as to form a plurality of compartments in the vertical direction inside the reactor, openings are formed in the plurality of trays to connect the compartments which are vertically adjacent, and the openings of the adjacent compartments are alternately formed in a crisscrossing manner; obtaining the produced glyceride through a lower part of the reactor; and vaporizing the water produced by the esterification reaction, moving the water in a vapor state to a distillation area in an upper part of the reactor to separate the water from active components (reaction material and bio-oil) comprised in the vapor, allowing the separated active components to flow into the reaction area, and removing the separated water through the upper part of the reactor in a vapor state. The acid value of the glyceride is 30 mgKOH/g or lower, and the esterification reaction is performed at a reaction temperature of 200 to 250 ºC and at ordinary pressure without using a catalyst.

PATENTES BIOPRODUCTOS

Biomateriales (de construcción, medicina, embalaje, etc.)		
Biocomposites y biofibras		
Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021154165 A1 20210805	Adiyaman Univ Rektorlugu (TR)	**Biocomposite materials and usage areas thereof.** The invention particularly relates to biocomposite materials produced by employing biodegradable polymer (1.1) as a matrix and pistachio shell (2) and/or black cumin cake (3) as reinforcing element. The invention also relates to biocomposite material produced from biodegradable materials for use as plastic-based toys, drinking straws, injection materials and 3D printer filament materials.
WO 2021165354 A1 20210826	Basf SE (DE)	**Composite pole composed of a bamboo cane as core and a continuous fiber reinforced polymer layer.** The invention relates to a composite pole composed of a bamboo cane as core and a continuous fiber reinforced polymer layer, wherein the continuous fiber reinforced polymer layer is made of polymer-saturated continuous fibers which are directly wound around the bamboo cane. The invention further relates to a process for producing the composite pole and a use of the composite pole.
WO 2021177924 A1 20210910	Bursa Teknik Univ Rektorlugu (TR)	**Polymer biocomposites with improved antimicrobial activity by bee bread and their production method.** The invention is related with a biocomposite product with high microbial activity obtained by using bee bread, the method of obtaining this product and using of this biocomposite material for the coating of products like artificial materials, packaging, etc. to be used in areas requiring hygiene or their use as an intermediate raw material.
EP 3872172 A1 20210901	CIC Nanogune Asociacion Centro de Investig Cooperativa en Nanociencias et al. (ES)	**Conductive cellulose composite materials and uses thereof.** The present invention refers to a cellulose composite material, methods of preparation and uses thereof. The composite material comprises type I cellulose fibers selected from the group consisting of cellulose nanocrystals, cellulose nanofibers and a mixture thereof and a carbon material selected from the group consisting of carbon nanotubes, carbon nanofibers, graphene, graphene oxide and a mixture thereof. The invention further relates to conductive paint compositions comprising said composite material.
WO 2021170530 A1 20210902	Frank Domschat (DE)	**Wooden panel component, method for producing a wooden panel component and use of a wooden panel component.** The invention relates to, inter alia, a wooden panel component, comprising at least two layers of cross-pieces arranged within its frame. The crosspieces are orientated transverse to opposing frame sides of the frame for bracing the wooden panel element and the frame thereof.
WO 2021162542 A1 20210819	Greenmarking BV (NL)	**STRIP-SHAPED SANDWICH STRUCTURE SUITABLE FOR PACKAGING WORKTOPS.** Strip-shaped sandwich structure suitable for packaging worktops, comprising two parallel cover plates, wherein the cover plates are made of cardboard and/or fibreboard, parallel length ribs which extend in the length direction, between the cover plates, for reinforcing the sandwich structure, wherein the length ribs are made of cardboard and/or fibreboard, parallel width ribs which extend in the width direction, between the cover plates, wherein the width ribs are against, or close to, one of the two parallel cover plates and extend towards the second of the two parallel cover plates such that a receiving distance between the width ribs and the second of the two cover plates remains.
WO 2021161326 A1 20210819	Indian Inst Tech Madras (IN)	**Method for processing waste cotton microdust into a cellulose membrane material.** A method for processing waste cotton microdust into a cellulose membrane material for use in manufacturing of wide range of materials and chemicals, is disclosed herein. The physio-chemical properties of the waste cotton microdust were altered by soaking sequentially in alkali and acid at low concentrations and moderate temperatures. The solids obtained from the soaking of waste cotton microdust in alkali and acid under the specified conditions were solubilized in zinc chloride and converted into cellulose membrane by spin coating. The waste cotton microdust solution was poured into a petri plate to form a layer and coated with 22% sodium chloride at a spin rate of 200 rpm to form cellulose rich membrane with the removal of acid insoluble lignin.

Nº Publicación	Solicitante (País)	Contenido técnico
EP 3838529 A1 20210623	Nanning Ketian Shuixing Tech Limited Company (CN)	**Wood composite board and preparation method thereof.** The invention disclosures a wood composite board and a preparation method thereof, comprising: mixing wood materials with the adhesive evenly, paving the mixed wood materials on the boards, and then forming through high-temperature and hot-pressing, the wood composite board of the invention has good evenness, high surface bonding strength, low moisture content, good dimensional stability, anti-cracking and anti-thermocycling performance, can use compound adhesives such as polyurethane adhesive, formaldehyde-free biomass adhesive or formaldehyde-type adhesives, waterproofing agent, mildew preventive, etc., and by the invention, fiber finish coat with different environmental protection standards can be produced according to market requirements, and the fiber finish coat has a low thickness swelling rate of water absorption and a thickness of 0.5-3mm.
WO 2021154192 A1 20210805	Papkovich Igor et al. (UA)	**Method for manufacturing a bio-composite material.** The invention relates to the technology for manufacturing a composite material from household food waste, food industry waste, agricultural and processed product waste, and food service sector waste. Coffee grounds and press cake obtained from processing citrus fruits or fruit or berries or vegetables are mixed with a previously collected and pre-treated cellulose-containing material at a mass ratio of (40-60):(60-40). The mixture obtained is then finely ground, the resulting meal is soaked in water at a temperature of 90-95°C for 2 to 3 hours. The resulting mass is poured into a mould and excess water is removed. The half-finished item is then pressed and dried, and a thin layer of a biopolymer is applied on the surface thereof. The invention makes it possible to produce a bio-composite material of high quality by virtue of increasing the flexibility thereof.
WO 2021173018 A1 20210902	Politechnika Gdanska (PL)	**The method of obtaining reactive polyols from wood-based waste, the method of manufacturing polyurethane materials from the obtained reactive polyols and reactive polyols obtained from wood-based materials.** The invention relates to a process for the production of reactive polyols from wood-like waste materials on the fact that the wood-like waste material is used as a wood-like material, which is chipped to a grain size of 1 to 500 pm, and this material is subjected to a solvolysis process in the presence of a solvent or mixture of solvents with the amount of biomass from 1-50% of the weight of the solvent with the catalyst at the temperature from 80 to 300 ° C and the obtained polyol raw material is neutralized with an acid or a base.

Bioplásticos

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021130128 A1 20210701	CO2Bioclean GmbH (DE)	**Novel bioplastics.** The present invention discloses a method for producing PHA polymer using bacteria, by using a two-step process. In the first step the bacteria are grown under heterotrophic conditions using an organic substance as carbon source and exponential growth conditions. In a second step the bacteria are then cultivated under autotrophic conditions under an atmosphere of H2, CO2 and O2, wherein the O2 content is less than 10 % (v/v) and the pressure is more than 1 barg. By this the production of PHA with unique properties and at a high rate is possible.
WO 2021154446 A1 20210805	Edward Showalter (US)	**Earth plant compostable biodegradable substrate and method of producing the same.** An earth plant-based compostable biodegradable composition for the formation of a bioplastic and method of producing said resin, the composition comprising: about 17.5 to 45% ethanol- based green polyethylene by weight, about 20 to 25% calcium carbonate by weight, about 2 to 12% hemp hurd or soy protein by weight, about 32 to 45% starch by weight, and about 0.5 to 1% biodegradation additive by weight to enable biodegradation and composting of the bioplastic; wherein the composition is produced by first mill grinding the ethanol-based green polyethylene, calcium carbonate, hemp hurd or soy protein, starch and the biodegradation additive into fine powders, then mechanically mixing the fine powders one by one into a final mixture for about 5- 25 minutes at a time, dry and without heat, and then heating the final mixture to about 220 to 430 degrees Fahrenheit.
WO 2021126128 A1 20210624	Ermetal Otomotiv ve Esya Sanayi Ticaret Anonim Sirket (TR)	**A self-healing filament embodiment.** The invention relates to a self-healing filament embodiment which is made of polylactic acid polymer in which microcapsules comprising linseed oil in their core structure and comprising chitosan in their shell structure are integrated.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021125402 A1 20210624	Harm Ji Yeon (KR)	**Biodegradable PLA filament composition for molding porous structure.** The present invention relates to a biodegradable PLA filament composition for molding a porous structure. A biodegradable PLA filament composition for molding a porous structure according to an example of the present invention comprises: 50 to 60 wt% of polylactic acid (PLA); 20 to 30 wt% of polybutylene succinate (PBS); 7 to 9 wt% of polybutylene adipate terephthalate (PBAT); 0.1 to 1 wt% of an additive; 0.1 to 1 wt% of a crystallization nucleating agent; 0.1 to 2 wt% of a natural grapefruit seed powder (GENU® Pectin type); 1 to 10 wt% of an inorganic filler; and 0.001 to 10 wt% of a crosslinking agent.
WO 2021176941 A1 20210910	Kaneka Corp (JP)	**Method for producing polyhydroxyalkanoate and use of same.** The purpose of the present invention is to provide a production method by which a PHA is able to be obtained by a simple operation. The above is achieved by providing a method for producing a polyhydroxyalkanoate, said method comprising: (a) a step for preparing an aqueous polyhydroxyalkanoate suspension having a pH of 7 or less; and (b) a step for having the polyhydroxyalkanoate agglomerate by heating the aqueous polyhydroxyalkanoate suspension prepared in the step (a) at a set temperature of from 80 to 300°C in a twin screw extruder.
WO 2021158981 A1 20210812	Lifoam Ind Llc (US)	**Biodegradable insulating structures, panel systems, and associated methods of making such structures.** Biodegradable insulating structures, panel systems, and methods for producing and assembling the biodegradable insulating structures are provided. The biodegradable insulating structures include biodegradable foam panels formed from biobased polymer foam beads which include polylactic acid. The biodegradable foam panels have edges that form a seal with adjacent biodegradable foam panels to restrict thermal energy transfer at the edges.
WO 2021181532 A1 20210916	Maxell Holdings Ltd (JP)	**Polylactic acid decomposition method.** Provided is a polylactic acid decomposition method with which polylactic acid can be decomposed while suppressing energy consumption. This polylactic acid decomposition method comprises: a step for introducing, in a reaction device, polylactic acid and an additive which is a mixture of one or more types of compounds selected from the group consisting of alkali metal salts, alkaline-earth metal salts, alkali metal oxides, and alkaline-earth metal oxides (step S3); and a step for retaining or kneading said polylactic acid and said additive under a condition where the moisture content expressed by the following equation is 0.15-3.0% (step S4). Moisture content = Mass of moisture in the reaction device/(Mass of the polylactic acid + Mass of the additive + Mass of moisture added from outside). Herein, the mass of moisture in the reaction device includes the mass of moisture adhering to the polylactic acid and the additive and also the mass of moisture added from outside, and the mass of the polylactic acid, as well as the mass of the additive, is the mass including the mass of moisture adhering thereto respectively.
WO 2021151651 A1 20210805	Omya Int AG	**Nonwoven fabrics comprising polylactic acid and surface-treated calcium carbonat.** The present invention relates to a process for the production of a nonwoven fabric. In particular, the present invention relates to the production of a nonwoven fabric having desirable tactile and haptic as well as mechanical properties, as well as to the nonwoven fabric itself. The process requires the selection of specific polylactic acid polymers and corresponding process conditions.
WO 2021176067 A1 20210910	Total Corbion Pla BV (NL)	**Multilayer polylactide based structure and articles made therefrom.** The present invention relates to a multilayer structure, such as a film or a sheet, and articles made from such multilayer structures. The present invention provides a multilayer structure comprising at least three different layers A, B and C, wherein said layer B is disposed between said layer A and said layer C and is capable of binding said layer A to said layer C, wherein layer A comprises a polylactide (PLA) polymer, layer B comprises a lactide-rich poly(lactide- co-glycolide) (PLGA) polymer, and layer C comprises a polyglycolide (PGA) polymer and/or a glycolide-rich poly(lactide-co-glycolide) (PLGA) polymer. The present invention also provides a multilayer structure comprising at least one barrier layer, providing gas barrier properties, wherein said barrier layer comprises a glycolide-rich poly(lactide-co-glycolide) (PLGA) polymer.
WO 2021165964 A1 20210826	Triplew Ltd (IL)	**Methods and systems for lactic acid production and polylactic acid recycling.** Industrial fermentation for the production of lactic acid from organic waste combined with chemical recycling of polylactic acid are provided, to obtain lactic acid at high yields.

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

Biofertilizantes, bioadhesivos, etc.

Nº Publicación	Solicitante (País)	Contenido técnico
ES 2827874 A2 20210524	Aguasol Rizo SL (ES)	**Machine and manufacturing processes for biological inputs based on compost tea and its derivatives with simplified biodynamic technology.** Machine and manufacturing process of biofertilizers based on compost tea and its derivatives. This invention is both the machine and the process of using it for the manufacture of biofertilizers based on compost tea and its derivatives using simplified biodynamic technology and the precepts for structuring water. There are many advantages that incorporate the use of this machine and the application of these biofertilizers on agricultural soil. The increase in organic matter, the improvement of the crops and their organolepic properties, the elimination of toxins, the multiplication of microorganisms in the soil or the improvement of quality and the increase in production are just some of its advantages.
WO 2021078836 A1 20210429	Centre Nat Rech Scient et al. (FR)	**Biobased adhesive compositons.** The present invention relates to biobased adhesive compositions. More particularly, the present invention relates to adhesive compositions, the processes for manufacturing same and the applications thereof, in particular in the form of wood particle board. The invention relates in particular to an adhesive composition in the form of a solution or dispersion comprising at least one water-soluble or water-dispersible polysaccharide comprising aldehyde functions, said solution or dispersion having a solids content of greater the 20 wt%, preferably of at least 30 wt% and more preferably of at least 40 wt%, expressed as a weight percentage of solids relative to the total weight of the solution or dispersion.
WO 2021117826 A1 20210617	Dainippon Ink & Chemicals (JP)	**Adhesive tape.** Provided is an adhesive tape that has a high degree of biomass, sufficient adhesive strength and excellent re-peeling. This adhesive tape is characterized by having an adhesive agent layer that contains a polyester resin, a degree of biomass of 80 wt% or greater, a gel percentage of 40 wt% or greater, and an adhesive strength to a stainless steel sheet of 4 to 14 N/20 mm.
ES 2813444 A1 20210323	Entobiz Solutions Inc (US)	**Orujera ecological or natural.** Ecological or natural caterpillar, constituted by a system of utilization and elimination of a raw material formed by alperujos, alpeorujos, alpechines and grape skins, through the use of larvated biomass of insects. It comprises a cycle that after a reception and storage stage, performs a digestive treatment using larval biomass, obtaining a natural fertilizer as waste and larvae. The process is carried out in a building or industrial warehouse equipped to maintain the required environmental parameters, depending on the type of insect larvae used. The digestive treatment is carried out by means of metabolization trains, which comprise a plurality of horizontal surfaces, in the form of shelves or belts, stacked one on top of the other. Finally, a phase of drying and sterilization of the organic matter, followed by separation and screening gives rise to the fertilizer that can be dispatched outside the facilities.
WO 2021073765 A1 20210422	Hexion Res Belgium SA et al. (BE)	**Glycidyl esters of alpha, alpha branched acids from renewable sources and formulations thereof.** The invention relates to compositions of α,α-branched alkane carboxylic acids glycidyl esters which derived from rosin and or hydrogenated rosin reacted with an epihalohydrin. The above glycidyl esters compositions can be used for example, as monomer in binder compositions for paints or adhesives, as reactive diluent or as acid scavenger. This invention is also about the uses of rosin and or hydrogenated rosin glycidyl ester in combinations with polyester polyols, or acrylic polyols, or polyether polyols.
WO 2021077238 A1 20210429	Jara Vanessa (CL)	**Urn-like device made of biodegradable plant fibre, for depositing ashes, which acts as fertiliser to germinate a seed.** The present utility model relates to a device made of biodegradable material, for depositing ashes, which act as fertiliser to germinate a seed. The device comprises: a single biodegradable container made of coir, in a modified spatial structure in the shape of an inverted truncated cone, and a cover in the shape of an inverted truncated cone with a central hole, wherein the inner hole has a ring shape, the inverted truncated cone shape allowing the cover to fit inside the upper part of the plant-fibre urn, while the inner ring shape allows the cover to fit on the outside of the base of the plant-fibre urn, the ashes being deposited therein with mineralised earth, acting directly as fertiliser together with the ash, which is a natural fertiliser, in addition to a seed of choice.
WO 2021067299 A1 20210408	Lashify Inc (US)	**Charcoal adhesive composition for lashes or lash extensions.** Provided are adhesive compositions that include an acrylate component and a charcoal component. The adhesive compositions are useful for adhering articles, for example, lashes or lash extensions to surfaces such as skin.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021081018 A1 20210429	Massachusetts Inst Technology (US)	**Biomaterial-based compositions to deliver plant growth promoting microbes.** The use of biological fertilizer combined with microbes can be used instead of herbicides, pesticides and synthetic fertilizers. Silk and trehalose dry films can be used as seed coatings to localize and quantify delivery of plant microbes to mitigate plant stress and soil salinity. Similar microbes can be delivered using the same technology.
WO 2021070096 A1 20210415	Plantic Tech Ltd (AU)	**Laminate.** A laminate according to the present invention comprises a remoistening adhesive agent layer (I) and a base material layer (II), the remoistening adhesive agent layer (I) containing a modified starch (A) and a water-soluble polymer (B), and the modified starch (A) having an amylose content of at least 45 mass%.
WO 2021080491 A1 20210429	Rise Innventia AB (SE)	**Lignin-containing sealant and/or coating compositions from renewable sources.** The present invention relates to lignin-containing compositions comprising: 10 to 50 percent by weight of lignin; 10 to 50 percent by weight of a polyethylene glycol; 10 to 50 percent by weight of an acrylic resin; and 1 to 50 percent by weight of an inorganic filler; wherein the percentages by weight are expressed relative to the total dry weight of the composition, and wherein the total dry weight of the composition amounts to 100 percent. The present invention further relates to processes for sealing joints or coating surfaces using such a composition. Moreover, the present invention relates to joints sealed and surfaces coated using such a composition, as well as vehicles comprising such sealed joints and coated surfaces.

Biocosméticos, Biofarmaceúticos

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021152250 A1 20210805	Basf Beauty Care Solutions France SAS (FR)	**Cosmetic, nutraceutical or dermatological use of a tamarindus indica l. Extract and/or a composition comprising it.** The present invention relates to the cosmetic, nutraceutical and/or pharmaceutical, in particular dermatological, use of a Tamarindus indica L. extract and/or a composition comprising it for maintaining and/or increasing the expression of extracellular matrix molecules of the skin and/or mucosa, the extract not being obtained by using butylene glycol as the extraction solvent.
WO 2021127675 A1 20210624	Colgate Palmolive Co (US)	**Personal care compositions and methods for the same.** Personal care compositions and methods for treating one or more dry skin conditions are disclosed. The composition may include a carrier, one or more plant oils, and a source of Aloe vera. The one or more plant oils and the source of Aloe vera may each be present in an effective amount to increase natural moisturizing factors in skin when applied thereto. The method for treating the one or more dry skin conditions may include contacting the personal care composition with skin. Contacting the personal care composition with the skin may increase an amount of natural moisturizing factors in the skin and/or increase an amount of Caspase-14 in the skin.
EP 3848018 A1 20210714	Creasearch BV (BE)	**Cosmetic composion comprising a saponin and a saccharide polymer.** The invention pertains to a cosmetic composition comprising: at least one saccharide polymer selected from the group consisting of starch hydrolysates, fructans, fructooligosaccharides, and mixtures thereof; and at least one saponin. The invention further relates to the use of the cosmetic composition in the preparation of a rinse-off cosmetic product or a leave-on cosmetic product.
WO 2021184086 A1 20210923	Innova Bm Ltd (BE)	**Standardized plant extract from biomass of in vitro cultures, method for preparation and use thereof.** The invention refers to standardized plant extract from biomass of in vitro cultures of Haberlea rhodopensis Friv. (HR), containing bioactive compounds and their primary secondary metabolites, containing in weight %, as follows: organic acids from 4.0 to 6.0, fatty acids from 0.5 to 1.5, amino acids from 8.0 to 12.0, sterols from 0.5 to 1.0, free phenols from 3.0 to 6.0, sugars from 45 to 55, and polyphenols from 25.0 to 35,0, with a predominant myconoside content of 70% to 96% in the polyphenolic fraction, constituting 18% to 35% of the total extract, and to a composition containing the standardized extract and glycerol as well as to a method for the the preparation of a standardized plant extract. The method according this invention, along with its optimally chosen steps, specific conditions, parameters such as temperature, duration, stirring, light, growth factors, etc. achieves both maximum volumetric productivity of the target substances and myconoside, as well as stable productivity of the plant in vitro cultures and is a reliable efficient 24/7 continuous system for production of NPs. Dependence on natural factors, limited availability and protection of HR rare wild plant populations are eliminated. The limitations posed by seasonality arid slow HR growth are also avoided by developing a renewable, ecologically method. The developed method provides alternative, renewable and sustainable sources of raw plant material necessary to obtain the target extract. The resulting extract standardized in myconoside is especially valuable with its protective action on human health and can successfully be used with its pharmacological, cosmetic effects as well as in functional foods.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021162415 A1 20210819	LG Household & Health Care Ltd (KR)	**Cosmetic composition for skin improvement comprising, as active ingredients, polysaccharides, yeast extract, and strain fermentation product with characteristics of probiotics.** The present invention relates to a cosmetic composition, which is safe for the human body and has a skin condition improving effect by containing, as active ingredients, polysaccharides, a yeast extract, and a strain fermentation product with characteristics of probiotics. The cosmetic composition can be provided for improving microbial flora inhabiting the skin, soothing the skin, relieving skin wrinkles, improving skin elasticity, soothing the scalp, relieving the oiliness of the scalp, preventing hair loss, or improving hair growth.
WO 2021168170 A1 20210826	Natureworks Llc (US)	**Cosmetic compositions containing low molecular weight amorphous grade polylactic acid resin.** Cosmetic compositions contain certain polylactic acid resins as film-formers. The polylactic acid resin is effective at low levels in the composition and is compatible with many organic ingredients commonly used in cosmetic compositions. The cosmetic composition can be formulated as a spray, a lotion, a cream or a paste.
WO 2021123325 A1 20210624	Oreal (FR)	**Composition comprising a natural dye, a dispersant, an oil and a fatty-phase thickener.** The present invention relates to a composition for dyeing human keratin fibres, notably the hair, comprising at least one natural dye, at least one dispersant, at least one oil and at least one fatty-phase thickener. The invention also relates to a dyeing process using this composition.
WO 2021181239 A1 20210916	Raiz Instituto de Investig da Floresta e Papel et al. (PT)	**A process for producing xylooligosaccharides (XOS) from eucalyptus globulus kraft pulp and xylooligosaccharides solution produced according to the process.** The present invention relates to a process for the production of xylooligosaccharides (XOS) from the alkaline filtrate of Eucalyptus globulus Kraft pulp that involves only a direct step of acid hydrolysis using nitric acid, at moderate temperature and pH conditions and with low reaction times. Through this process it is possible to obtain a solution containing XOS with a polymeric distribution according to what is desired to obtain its nutraceutical properties and only with xylose as a by-product.
EP 3871658 A1 20210901	Soc Ind Limousine Dapplication Biologique (FR)	**Active ingredient including a black oat extract and a spiny restharrow extract and cosmetic uses, in particular anti-graying.** The invention relates to a cosmetic active ingredient comprising at least one extract of Avena strigosa and at least one extract of Ononis spinosa.The invention also relates to a composition including it, a method for obtaining it and the use of this cosmetic active ingredient, in particular for its anti-graying effect on the hair.
WO 2021175451 A1 20210910	Symrise AG (DE)	**Cosmetic or pharmaceutical use of avenanthramide L.** The present invention relates generally to: the cosmetic or pharmaceutical use of avenanthramide L or an oat extract comprising avenanthramide L; avenanthramide L or an oat extract comprising avenanthramide L as a neurokinin-1 receptor NK1R antagonist; and a method for preparing of preparing avenalumic acid and/or avenanthramide L.

Bioaditivos alimentarios

Nº Publicación	Solicitante (País)	Contenido técnico
EP 3799723 A1 20210407	ADM Wild Europe GmbH & Co Kg (DE)	**Foamable composition and foam.** The present invention relates to a foamable composition comprising 0.05 to 10 wt% of a plant germ flour, 0.1 to 15 wt% of a thickening agent; 0.1 to 35 wt% of a natural fiber and water, based on the total weight of the composition. The invention further relates to a foam obtainable from said foamable composition, a method for producing said foamable composition comprising mixing the ingredients with water, the use of said foamable composition or said foam in a food product and a food product comprising said foamable composition or said foam.
WO 2021097025 A1 20210520	Dupont Nutrition Biosci APS (DK) et al.	**Process for reducing oxidation of a foodstuff and related compositions.** This specification relates to a process for reducing oxidation of a foodstuff, an antioxidant composition for use in such a process, and a foodstuff wherein oxidation is reduced by such a process.
WO 2021056085 A1 20210401	Ecopartners Eood (BG)	**Method and installation for flavoring of vegetable oils/olive oils by utilization of natural volatile organic aroma compounds emitted by vegetable products, and products obtained by the method.** The present invention relates to the food industry field and in particular to a method, technology and installation for flavoring of natural vegetable oils / olive oils for the needs of the gourmet industry. The process according to the invention relates to the natural flavoring of oils / olive oils with highly volatile aroma organic compounds and comprises the extraction the highly volatile aroma organic compounds as a gas stream and their complete transfer into vegetable oils / olive oils subject to flavoring. The transfer of the highly volatile aroma organic compounds in their full volume is carried out by bubbling these compounds in a gaseous state in oil / olive oil in a liquid state under the conditions of regulated liquid and gas phase.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021111396 A1 20210610	Good Srl (IT)	**Product, or preparation, to flavor dishes.** Product, or preparation, to flavor dishes, both hot and cold, in particular consisting of appetizers, vegetables, sauces, first courses and/or main courses, in particular based on meat and fish, or other; including a flavoring agent comprising, or consisting of, fish.
WO 2021081049 A1 20210429	Kalamazoo Holdings Inc (US)	**Light stable natural yellow colorant systems in pickled and fermented vegetable applications.** The present invention comprises a novel natural yellow colorant system to enhance the appearance of pickled and/or fermented vegetable products. Individually ail-natural yellow pigments failed light stability investigations in pickled and/or fermented vegetable products - either the yellow hue of the brine solution faded, or the pulp/skin of the vegetable turned white, or both. Surprisingly combinations of these same individual natural yellow pigments not only created brine hues and vegetable coloring comparable to FD&C Yellow # 5 products but remained stable in accelerated Sight stability investigations designed to mimic the real-time shelf-life of the products.
WO 2021076550 A1 20210422	Sensient Colors LLC (US)	**Beverages with improved particle suspension properties, and methods of making the same.** Beverages with improved particle suspension properties are disclose, along with methods of making the same. The beverages include a low-acyl gellan gum and insoluble particles. The low- acyl gellan gum undergoes a gel transition that provides adequate gelation to maintain the particles in suspension. The low-acyl gellan gum undergoes the gel transition below a threshold above which the particles and/or a gelled portion of the gum would rise to the top of the beverage via bubbles moving upward through the beverage.
WO 2021106839 A1 20210603	Taiyokagaku Co Ltd (JP)	**Squid-like texture composition.** [Problem] To provide a squid-like texture composition. [Solution] A squid-like texture composition comprising a curdlan (A), a saccharide (B), and insoluble fibers (C), wherein the mass ratio of A:B:C is 100 : 5 to 450 : 1 to 100. In this case, the particle size of the insoluble fibers (C) is preferably such that 80 percent or more thereof passes through a 300-μm mesh, the average particle size thereof is preferably 100 μm or less. The saccharide (B) is preferably starch syrup.
WO 2021076608 A1 20210422	Tate & Lyle Ingedients Americas LLC (US)	**Flavor altering and/or sweetness enhancing compositions and methods and food and beverage products based thereon.** The present disclosure provides flavor altering and/or sweetness enhancing compositions, methods, and food and beverage products using a soluble oligomeric component selected from soluble dietary fiber and polydextrose to alter flavor and/or enhance sweetness.
WO 2021067568 A1 20210408	Univ California (US)	**Soy proteins for preparation of gels, fibers and films.** The present invention provides compositions of soy protein gel fibers, soy protein fiber membranes, and soy protein films. The present invention also provides methods of making the soy protein compositions and also uses of the compositions.
WO 2021105953 A1 20210603	Univ Catolica Portuguesa et al. (PT)	**Multifunctional extracts of sugarcane straw or bagasse and uses thereof.** Provided herein are extracts of sugarcane straw or bagasse, methods of preparing the extracts, and the use of the extracts in compositions that have antioxidant activity, anti-inflammation activity, and antimicrobial activity that can be used as multifunctional ingredients. Further provided are methods of using the extracts to treat or ameliorate conditions involving oxidation, inflammation, skin and food enzymes inhibition activity capacity and microbial growth.
WO 2021053259 A1 20210325	Univ Sevilla (ES)	Method for extracting, from olive leaf, oleuropein in a phenolic fraction; functional food composition; and use. The present invention relates to a method for extracting, from olive leaf, a phenolic fraction containing oleuropein, which comprises: heating a mixture of crushed dry olive leaf and a deep eutectic solvent of edible natural sugars and water; and filtering to obtain a precipitate and an aqueous phase, wherein the aqueous phase contains the phenolic fraction with the oleuropein. The invention also relates to a functional food composition with an oleuropein content of 80-85% by weight with respect to the weight of the total phenolic extract, and to the use thereof in the food, cosmetic or pharmaceutical industry.

Bioproductos alimenticios para animales

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021126121 A1 20210624	Ankara Ueniversitesi Rektoerluegue (TR)	**Herbal feed additive.** The present invention relates to a product that is made of an herbal mixture comprising saturated and unsaturated fatty acids together with components with bioactive sulfur content and can be used in fish feeds as suspension.

Nº Publicación	Solicitante (País)	Contenido técnico
WO 2021138403 A1 20210708	Calyxt Inc (US)	**High oleic acid soybean oil.** The present disclosure relates to materials and methods for improving the oxidative stability and performance attributes of soybean oil. For example, provided are soybean oil compositions containing soybean oil derived from seed of a soybean plant comprising an induced deletion in at least one FAD2-1A allele and at least one FAD2-1B allele, having an oleic acid content of at least about 80% based on the weight of the total fatty acids of the oil, and having an oxidative stability index (OSI) value of greater than 25 hours to about 190 hours at 110° C.
WO 2021159182 A1 20210819	Crowe Michael (AU)	**A system and method for producing fodder.** The present invention relates to the devices, methods and systems for producing fodder. The invention provides an apparatus for processing trays of fodder comprised of germinated seed. The apparatus includes a harvesting zone in which fodder is separated from a tray, a seed depositing zone in which fresh seed is deposited onto the tray, and a conveyer for translating the tray between the harvesting zone and the seed depositing zone. The invention is adapted for use in the production of fodder from germinated seed for use in meat production or for the production of milk or other by-products of animal husbandry.
WO 2021127360 A1 20210624	Dupont Nutrition Biosci APS (DK) et al.	**Diet formulations.** Provided herein are poultry diets containing phytase polypeptides or fragments thereof wherein the diet contains no or substantially no inorganic phosphate.
WO 2021158927 A1 20210812	Dupont Nutrition Biosci APS (DK) et al.	**Feed compositions for animal health.** Provided herein, inter alia, are compositions comprising oxygen tolerant strains of Megasphaera elsdenii and methods of making and using the same to promote improvement of one or more metrics in an animal, such as increased bodyweight/carcass gain, increased feed intake, decreased feed conversion ratio (FCR), decreased medical costs, decreased transition period, decrease use of antibiotics, and reduced mortality.
WO 2021156332 A1 20210812	Embion Tech SA (CH)	**Use of ionic polymers in biomass processing for preparation of animal feed additive.** The invention relates to an animal feed additive comprising oligosaccharides, proteins, lipids, phenolic compounds and minerals, wherein the oligosaccharides comprise glucans, xylans, arabinans and mannans, and wherein degree of polymerisation (DP) of the oligosaccharides is DP1 to DP30 and to a method for preparing thereof from biomass.
WO 2021126159 A1 20210624	Hills Pet Nutrition Inc (US)	**Pet food compositions.** Described herein are pet food compositions comprising - in relevant part - effective amounts of betaine and carnitine. Methods of making and using these compositions are also described.
WO 2021163148 A1 20210819	Locus IP Co LLC (US)	**Methods and compositions for reducing deleterious enteric atmospheric gases in livestock.** The subject invention provides compositions and methods for reducing deleterious atmospheric gas emissions produced in livestock animals' digestive systems and/or waste. In preferred embodiments, a composition comprising one or more beneficial microorganisms and/or one or more microbial growth by-products is contacted with the livestock animal's digestive system and/or waste in order to, for example, control methanogenic bacteria therein.
WO 2021150521 A1 20210729	Minnemma John Murray (US)	**Methods of incorporating sustainable carbon supplements into animal feed.** The embodiments herein are directed to methods for incorporating high quality, sustainable carbon product into animal feed. In particular, the sustainable carbon product described herein for use in animal feed may be produced as byproducts of efficient, clean energy processes. Utilization of sustainable carbon product produced by such clean energy solutions can provide long-term benefits to the environment, while providing a high quality feed supplement for detoxification of animals.
WO 2021155104 A1 20210805	Provital Inc (US)	**Edible pet chew.** An edible pet chew (100) with a generally spherical first portion (102) is surrounded by a second portion (110), and in an implementation the second portion is surrounded by a third portion (120). The portions include components from plant and animal derived materials that are palatable to pets, and are mixed and combined to not create an excess of debris when consumed.
WO 2021173814 A1 20210902	Ralco Nutrition Inc (US)	**Compositions based on dietary fibers and essential oils.** Embodiments of the present disclosure describe a composition comprising a dietary fiber, one or more essential oils, and a carrier. Embodiments of the present disclosure describe a method of preparing a composition comprising contacting a dietary fiber and one or more essential oils with a carrier sufficient to form a composition for enhancing immune responses in subjects having or susceptible to having infections and/or diseases caused by gastrointestinal pathogens. Embodiments of the present disclosure further describe a method of administering a composition comprising administering a composition to a subject having or susceptible to having an infection and/or disease caused by a pathogen, wherein the composition comprises a dietary fiber, one or more essential oils, and a carrier.

NIPO: 116-19-007-8

VT BIOMASA PARA LA BIOECONOMÍA

PATENTES

Boletín elaborado con la colaboración de:

Agencia Estatal de Investigación
C/ Torrelaguna, 58
28071 Madrid

Bioplat
C/ Doctor Castelo 10, 4ºD
28009 Madrid
Tel.: 91 074 54 28
E-mail: secretaria@bioplat.org
www.bioplat.org

CIEMAT
Avda. Complutense,40
28040 Madrid
Tel: 91 346 08 99
E-mail:uip@ciemat.es
www.ciemat.es

OEPM
Paseo de la Castellana, 75
28071 Madrid
Tel: 91 349 53 00
E-mail:carmen.toledo@oepm.es
www.oepm.es