# VT IMPRESIÓN 3D 17

PATENTES

Vigilancia Tecnológica

1º trimestre 2024

NIPO: 220-24-018-3

En este Boletín de Vigilancia Tecnológica se recogen, de manera trimestral, los avances acontecidos en el campo de la tecnología de Impresión 3D que se materializa en forma de solicitudes de patente en todo el mundo.

Aunque en los años 80 comenzaron a desarrollarse los primeros equipos y materiales sobre la tecnología de impresión 3D también denominada fabricación aditiva, no fue hasta 1986 cuando aparece en el mercado la primera impresora 3D comercial, patentada por Charles W. Hull, premiado por la Oficina Europea de Patentes como inventor del año en 2014 en la categoría de inventores no europeos.

Cuando trataba de buscar un sistema para mejorar el proceso de realización de prototipos de pequeñas piezas de plástico que utilizaba para testar nuevos diseños de productos, desarrolló una máquina de impresión 3D que conseguía realizar en pocos minutos procesos que por aquel entonces llevaban semanas.

## Contenido

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Desde entonces, la tecnología no ha parado de evolucionar, especialmente en los últimos años, alcanzándose a partir de 2017 un verdadero auge, cuando se incorpora la automatización utilizando software de inteligencia artificial que permite industrializar la fabricación aditiva y multiplicar la capacidad de los sistemas.

En los últimos años de evolución de la impresión 3D hemos visto pasar del desarrollo conjunto de nuevas tecnologías y materiales innovadores aplicados principalmente a la creación de prototipos y diseños personalizados, a la consecución de productos casi impensables hace tan solo una década. Gracias a esta increíble tecnología hemos visto imprimir, órganos, coches e incluso edificios.

Desde la Oficina Española de Patentes y Marcas, y en cumplimiento de su doble objetivo de proteger y fomentar la innovación tecnológica en nuestro país, así como de divulgar la información técnica que contienen las patentes a través de sus servicios de Información Tecnológica, se realiza este nuevo Boletín de Vigilancia Tecnológica, que se suma a los dieciséis *Boletines VT* que venimos publicando desde el año 2000 con periodicidad trimestral. Nuestro objetivo es dar a conocer las nuevas solicitudes de patentes que se publican a nivel mundial relacionadas con la tecnología de impresión 3D.

En este Boletín, se incluye una selección de las solicitudes de patentes publicadas a nivel mundial durante el primer trimestre de 2024, distribuidas en cinco apartados: procesos, materiales, dispositivos, productos y procesamiento de datos.

Para cada patente se incluye su número de publicación, con un enlace que permite la consulta del documento completo, el solicitante, el país de origen y su título.

Esperamos que la información aportada en este Boletín de Vigilancia Tecnológica, sirva para identificar tendencias tecnológicas y sus actores, así como para contribuir a la utilización del conocimiento contenido en los documentos de patente como punto de partida para emprender nuevas actividades de investigación y desarrollo. Para suscribirse a este Boletín basta con cumplimentar este *formulario de suscripción*.

# Procesos

| Nº PUBLICACIÓN | SOLICITANTE Y PAÍS DE ORIGEN | CONTENIDO TÉCNICO |
|---|---|---|
| WO2024046422 | ELKEM SILICONES SHANGHAI CO LTD [CN] | Method for additive manufacturing of wearable consumer goods |
| WO2024064650 | VADIENT OPTICS LLC [US] | Grin lenses made by 3D printing monomer-based inks |
| WO2024013670 | UNIVERSITA' DEGLI STUDI DI MILANO [IT]; FOND IRCCS "CA' GRANDA OSPEDALE MAGGIORE POLICLINICO" [IT] | Clear orthodontic aligner |
| EP4335569 | PRATT & WHITNEY CANADA [CA] | Additively depositing braze material |
| EP4335607 | JIN YA DIAN TECH CO LTD [TW] | Method of fabricating light-transmitting decorated molding article |
| WO2024030019 | CYBE CONSTRUCTION BV [NL] | Method for manufacturing a module for a building using 3D concrete printing |
| WO2024047471 | REOPHOTONICS LTD [IL] | Methods for printing a conductive pillar with high precision |
| WO2024047304 | FAURECIA SIEGES DAUTOMOBILE [FR] | Method for manufacturing seat padding and padding associated therewith |
| WO2024059071 | SKYPHOS IND INC [US] | Additive manufacturing platform, resin, and improvements for microdevice fabrication |
| EP4302967 | ZEISS CARL VISION INT GMBH [DE] | Method for inkjet printing a spectacle lens |
| WO2024041782 | TESA SE [DE] | Method for printing three-dimensional structures with reduced processing effort |
| WO2024038000 | MERCK PATENT GMBH [DE] | Process for the manufacture of a solid pharmaceutical administration form |
| EP4328776 | SIEMENS AG [DE] | Method for securely printing one or more three-dimensional objects visualized in a computer simulated virtual environment communicatively coupled to a blockchain network |
| WO2024048791 | MITSUBISHI MATERIALS CORP [JP]; NAT UNIV CORP YOKOHAMA NAT UNIV [JP] | Metal member having three-dimensional regular skeleton structure, electrode having three-dimensional regular skeleton, water electrolysis apparatus, and fuel cell |
| WO2023247147 | TRUMPF LASER & SYSTEMTECHNIK GMBH [DE] | Method for planning the local solidification of a layer of powder material when manufacturing a three-dimensional object layer by layer |
| WO2024038705 | TOKUYAMA DENTAL CORP [JP] | Cationically polymerizable resin composition for 3D stereolithography and method for producing 3D stereolithography product |
| WO2024068684 | UNIV DANMARKS TEKNISKE [DK] | System and methods for tomographic vat photopolymerization |
| WO2024073024 | INKBIT LLC [US] | Frequency domain spatial packing for 3D fabrication |

| Nº PUBLICACIÓN | SOLICITANTE Y PAÍS DE ORIGEN | CONTENIDO TÉCNICO |
|---|---|---|
| WO2024054947 | UNIV CORNELL [US] | Polymerizable compositions, methods of making a polymer using same, and products thereof |
| WO2024059954 | ALLARTA LIFE SCIENCE INC [CA] | Thiol-ene hydrogel |
| WO2024033569 | BRINTER OY [FI] | Multi-material fluidic printing system and method of printing |
| WO2024028478 | ARBURG GMBH CO KG [DE] | Support geometry |
| EP4339898 | BOEING CO [US] | System and method for generating an infill geometry of a body |
| WO2024026100 | NUTECH VENTURES [US]; RIENSCHE ALEX [US]; RAO PRAHALADA [US]; BEVANS BENJAMIN [US]; COLE KEVIN D [US]; YAVARI REZA [US] | Feedforward control of laser powder bed fusion |

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# Materiales

| Nº PUBLICACIÓN | SOLICITANTE Y PAÍS DE ORIGEN | CONTENIDO TÉCNICO |
|---|---|---|
| WO2024036300 | MATERION CORP [US] | Method for producing a beryllium article |
| WO2024010720 | DIFUSION INC [US] | Cardiac valve with early preferential polarization towards an M2 phenotype post-implantation, and method of implantation |
| WO2024004696 | UNIV OSAKA [JP]; NAGASE CHEMTEX CORP [JP] | Method for manufacturing three-dimensional object and ink set for manufacturing three-dimensional object |
| EP4331811 | UNIV STUTTGART [DE] | Demand-matched water-soluble support structures for additive manufacturing |
| WO2024059302 | L LIVERMORE NAT SECURITY LLC [US] | High throughput materials screening |
| WO2024047317 | UNIV DARTOIS [FR]; UNIV LILLE [FR]; CENTRE HOSPITALIER UNIV DE LILLE; INST NAT SANTE RECH MED [FR]; ECOLE NAT SUPERIEURE MINES TELECOM LILLE DOUAI [FR]; JUNIA [FR] | Surgical insert and bone cement |
| WO2024051928 | AM EXTRUSION GMBH [DE] | Material for additive manufacture of three-dimensional components with a printing process |
| WO2024044063 | JABIL INC [US] | Producing semi-crystalline polycarbonate and use thereof in additive manufacturing |
| WO2024043029 | TORAY INDUSTRIES [JP] | Polymer particles and polymer particle composition for producing three-dimensional shaped article, production method for polymer particles, and three-dimensional shaped article and production method therefor |
| WO2024006374 | ATI PROPERTIES LLC [US] | Nickel-base alloy |
| EP4302905 | EOS GMBH ELECTRO OPTICAL SYSTEMS [DE] | Ni-base superalloy |
| WO2024058145 | SANYO SPECIAL STEEL CO LTD [JP] | Iron-based alloy powder and method for producing molded body |
| WO2024020650 | UNIV QUEENSLAND [AU]; UNIV QUEENSLAND TECHNOLOGY [AU] | Particulate filled thermoplastic polymer |
| WO2024014972 | FUND BADAN I ROZWOJU NAUKI [PL]; POLBIONICA SPOLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA [PL] | Recombinant proteins, recombinant DNA sequences, vectors, eukaryotic and prokaryotic expression systems and their use |

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# Dispositivos

| Nº PUBLICACIÓN | SOLICITANTE Y PAÍS DE ORIGEN | CONTENIDO TÉCNICO |
|---|---|---|
| WO2024047592 | DWS SRL [IT] | Device and method for producing a three-dimensional layered object |
| WO2024073400 | MASSACHUSETTS INST TECHNOLOGY [US] | Line scanning temporally focused two-photon lithography system |
| WO2024041898 | TRUMPF LASER & SYSTEMTECHNIK GMBH [DE] | Device and method for additive manufacturing with fresh-water-free emergency cooling |
| WO2024050344 | SCHULTZ JEFFREY [US]; PHASE INC [US]; BROWN SIMEON [US] | Additive manufacturing of thermosetting polymers using thermal laser curing |
| WO2024013144 | MICHELIN & CIE [FR] | Removable module for reducing the energy consumption of a 3D printer |
| WO2024035803 | VELO3D INC [US] | Additive manufacturing systems |
| WO2024025844 | NEXA3D INC [US] | Method and apparatus for ensuring consistent tensioning of membrane in frame |
| WO2024013123 | BROSE FAHRZEUGTEILE SE & CO KG COBURG [DE] | Process for the additive manufacture of a component by using a metal/polymer powder mixture |
| EP4324623 | GEN ELECTRIC [US] | Systems and methods for additive manufacturing using pixel shifting |
| EP4302907 | JEOL LTD [JP] | Three-dimensional powder bed fusion additive manufacturing apparatus, three-dimensional powder bed fusion additive manufacturing method, and method for setting moving speed of recoater member in three-dimensional powder bed fusion additive manufacturing |
| WO2024048234 | IHI CORP [JP] | Three-dimensional shaping device and pre-heating device |
| WO2024053281 | KOBE STEEL LTD [JP] | Control information generation device, control information generation method, and program |
| WO2024003336 | EOS GMBH ELECTRO OPTICAL SYSTEMS [DE] | Additive manufacturing process using pulsed laser radiation |
| WO2024005630 | ULTIMAKER BV [NL] | Liquefier assembly with a cooled protective sleeve around hot-end |
| EP4324622 | GEN ELECTRIC [US] | Systems and methods for additive manufacturing using pixel shifting |
| WO2024038408 | DEI HOLDING LTD [IL] | Apparatus, system, and method for automated depowdering and extraction of three-dimensional printed parts |
| WO2024037928 | SIGNIFY HOLDING BV [NL] | Method for obtaining good adhesion of semi crystalline polymers to the build plate during FDM printing |

| Nº PUBLICACIÓN | SOLICITANTE Y PAÍS DE ORIGEN | CONTENIDO TÉCNICO |
|---|---|---|
| EP4302978 | ESSILOR INT [FR] | Method for additively manufacturing an ophthalmic lens and manufacturing system |
| WO2024041750 | DMG MORI ADDITIVE GMBH [DE] | Additive manufacturing device and additive manufacturing process |
| EP4345560 | SIEMENS AG [DE] | Method and device for determining an additive production process of a component and additive production process of the component |
| WO2024026333 | NORDSON CORP [US] | Polymer processing device and process of implementing the same |
| EP4324581 | XEROX CORP [US] | High-throughput liquid metal inkjet nozzle with porous layer for meniscus damping |
| EP4302950 | HOCHSCHULE FUER ANGEWANDTE WSS AUGSBURG [DE] | Method and device for producing a component |
| EP4331810 | GEN ELECTRIC [US] | Gas control systems for purging a printhead manufacturing apparatus |
| WO2023247905 | ADDUP [FR] | Additive manufacturing machine configured to manufacture an object from a printing powder |
| WO2024042793 | JVCKENWOOD CORP [JP] | Image generation control device and optical shaping device |
| EP4328008 | BOEING CO [US] | Methods of additively manufacturing a manufactured component and systems that perform the methods |
| WO2024035806 | NEXA3D INC [US] | Light engines for vat polimerization 3D printers |
| WO2024019614 | CEAD B V [NL] | A printing platform for supporting an object and a method for producing an object |
| WO2024007082 | OQAB DIETRICH INDUCTION INC [CA] | Multi-phase heating systems for bidispersed and polydispersed particle applications |
| WO2024062629 | FUJI CORP [JP] | Control device, printing device, and method for controlling printing device |
| EP4299217 | JEOL LTD [JP] | Three-dimensional powder bed fusion additive manufacturing apparatus |
| EP4344855 | HENSOLDT SENSORS GMBH [DE] | Method for additive manufacturing electronics and a printing support for the manufacturing |
| WO2024029276 | KOBE STEEL LTD [JP] | Control information correction method, control information correction device, and program |
| WO2024004768 | KOBE STEEL LTD [JP] | Method for controlling additive manufacturing device, control device, and program |
| WO2024014474 | UNIV NIHON [JP] | Three-dimensional printing apparatus, three-dimensional printing method, and compression apparatus |
| WO2024026039 | UNIV TEXAS [US] | Multi-channeled and guided inner controlling (magic) printheads |
| WO2024027919 | SEI S P A [IT] | Method and device for preparing plates to treat items in the paper processing industry |
| WO2024001369 | SHENZHEN CREALITY 3D TECH CO LTD [CN] | Height compensation method for printing platform, apparatus, and computer device |
| WO2024005697 | CELLINK BIOPRINTING AB [SE] | Modular nozzle for coaxial extrusion |

| Nº PUBLICACIÓN | SOLICITANTE Y PAÍS DE ORIGEN | CONTENIDO TÉCNICO |
|---|---|---|
| WO2024059932 | NAT RES COUNCIL CANADA [CA] | Photoresin formulations and use thereof for volumetric additive manufacturing |
| EP4311932 | GENERAL ELECTRIC RENOVABLES ESPANA SL [ES] | System and method for tracking reinforcement member placement in an additively manufactured structure |
| EP4338936 | IN VISION TECH AG [AT] | 3D-printing method |
| WO2024017561 | TRUMPF LASER & SYSTEMTECHNIK GMBH [DE] | Beam-guiding device for guiding an energy beam and manufacturing device for additively manufacturing components from a powder material and having such a beam-guiding device |
| WO2024062699 | SCREEN HOLDINGS CO LTD [JP] | Additive manufacturing device and additive manufacturing method |
| WO2024038012 | SIGNIFY HOLDING BV [NL] | Single nozzle pellet extruder with fdm filament feed from the side |
| WO2024049443 | HEWLETT PACKARD DEVELOPMENT CO [US] | Forming build material layers |
| EP4324625 | SCREEN HOLDINGS CO LTD [JP] | Optical apparatus and three-dimensional modelling apparatus |
| EP4349576 | DAHER AEROSPACE [FR] | Prepreg fiber laying head with laser heating control device |
| WO2024062696 | SCREEN HOLDINGS CO LTD [JP] | 3D molding device |
| EP4313597 | ADBIOINK BIYOSISTEM TEKNOLOJI ANONIM SIRKETI [TR] | Extrusion-based and portable handheld three-dimensional bioprinter |
| EP4344858 | SOLUKON INGENIEURE GBR [DE] | Depowdering device for depowdering objects produced in 3D printing method |
| WO2024010581 | STRATASYS INC [US] | Tethered spool assembly and methods of use thereof |
| EP4304835 | SITAR LIBOR [CZ] | Printing head assembly for a 3D printer and a 3D printer with this assembly |
| WO2024012925 | SIGNIFY HOLDING BV [NL] | Improved adhesion of fdm printed layer to a metal part |
| EP4338960 | COLLINS ENGINE NOZZLES INC [US] | Valve body and fluid pump housing made by additive manufacturing |
| WO2023249818 | INKBIT LLC [US] | Hybrid additive manufacturing with dual phase-change materials |
| WO2023247432 | SIGNIFY HOLDING BV [NL] | A method for applying a 2D pattern onto a 3D object |
| EP4299288 | GENERAL ELECTRIC TECHNOLOGY GMBH [CH] | Methods and systems for manipulating an additive build assembly |
| WO2024035874 | INTERFACIAL CONSULTANTS LLC [US] | Multicomponent composite article |
| WO2024019944 | POWDER MOTION LABS LLC [US] | Powder bed recoaters including non-contact powder redistributors |
| WO2024006296 | ENTEGRIS INC [US] | De-powdering of green samples using freezing method for additive manufacturing |
| EP4339463 | COLLINS ENGINE NOZZLES INC [US] | Valve body produced by additive manufacturing and method of manufacturing the valve body |
| WO2024009070 | ADDITIVE MANUFACTURING TECH LTD [GB] | Method for post-processing thermoplastic parts |

| Nº PUBLICACIÓN | SOLICITANTE Y PAÍS DE ORIGEN | CONTENIDO TÉCNICO |
|---|---|---|
| EP4321325 | TERRAPLASMA GMBH [DE]; APRINTAPRO GMBH [AT] | Additive manufacturing apparatus, system, method, and use |
| WO2024012852 | NIKON SLM SOLUTIONS AG [DE] | Powder container for an additive manufacturing process |
| EP4309878 | IVOCLAR VIVADENT AG [LI] | Method for cleaning a print head |
| WO2024050334 | WATLOW ELECTRIC MFG [US] | 3D printed heater system |
| WO2024059749 | ALIGN TECHNOLOGY INC [US] | Systems and methods for modifying surfaces of additively manufactured objects |
| WO2024062105 | ARKEMA FRANCE [FR] | Polyamide composition prepared from a powder of polyamides to be recycled |
| WO2024010135 | GRAPHY INC [KR] | Device for post-curing of 3D-printed product |
| WO2024064832 | CUBICURE GMBH [AT]; ALIGN TECHNOLOGY INC [US] | Modular build platforms for additive manufacturing |
| EP4311657 | GEN ELECTRIC [US] | Apparatus and methods for additive manufacturing |
| WO2024037941 | SIGNIFY HOLDING BV [NL] | A method for printing a 3D object using material shaped from a sheet |
| WO2024019991 | BATTELLE SAVANNAH RIVER ALLIANCE LLC [US] | In situ chemical modification during additive manufacturing |
| WO2024056928 | VOXELCARE SL [ES] | Granule-based three-dimensional printing equipment |
| EP4311658 | GEN ELECTRIC [US] | Systems and methods for additive manufacturing |
| WO2024010691 | POSTPROCESS TECH INC [US] | System and method for removal of resin from 3D printed objects |
| EP4338763 | FRAUNHOFER GES FORSCHUNG [DE] | A process for 3D bioprinting utilizing a hydrogel comprising a water-soluble elastin derivative |
| EP4349579 | ESSILOR INT [FR] | Method for manufacturing an optical device comprising a microstructure, manufacturing system to carry out such a method, and optical device thus obtained |
| EP4309876 | IVOCLAR VIVADENT AG [LI] | Method for preventing deposits on a nozzle plate |
| WO2024010421 | GRAPHY INC [KR] | Device for post-curing of 3D-printed product |
| WO2023248227 | YISSUM RES DEV CO OF HEBREW UNIV JERUSALEM LTD [IL] | Microfluidics devices and printing methods therefor |
| WO2023250409 | SAN DIEGO STATE UNIV SDSU FOUNDATION DBA SAN DIEGO STATE UNIV RESEARCH FOUNDATION [US] | Terahertz nondestructive testing apparatus and method |

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# Productos

| Nº PUBLICACIÓN | SOLICITANTE Y PAÍS DE ORIGEN | CONTENIDO TÉCNICO |
|---|---|---|
| EP4327864 | ION BEAM APPLIC [BE]; UNIV PENNSYLVANIA [US] | Off line quality control of a beam shaping device for radiation therapy |
| WO2024052225 | EVONIK OPERATIONS GMBH [DE] | Improved nanocarrier manufacturing |
| WO2024045431 | UNIV SHANGHAI JIAOTONG [CN]; JIAXING YAOJIAO MEDICAL DEVICE CO LTD [CN] | Zein fibril powder, zein new gel, and preparation methods therefor and uses thereof |
| EP4306236 | LIBURDI ENGINEERING [CA] | High gamma prime nickel based welding material |
| WO2024005673 | AUTONOMOUS NON PROFIT ORGANIZATION FOR HIGHER EDUCATION "SKOLKOVO INST OF SCIENCE AND TECHNOL [RU] | Method for the laser synthesis of endodontic instruments from nickel-titanium |
| WO2024071987 | POSTECH RES & BUSINESS DEV FOUND [KR]; ST PHARM CO LTD [KR] | Microfluidic mixing structure and microfluidic mixing apparatus comprising same |
| WO2024014377 | JSR CORP [JP] | Composition for 3D printing support or 3D cell culture support |
| WO2024010877 | ALIGN TECHNOLOGY INC [US] | 3D printable material for the fabrication of printed dental attachments and dental attachment placement devices |
| WO2024015523 | NICHOLSON MFG LTD [CA] | Self-sharpening knife tip |
| WO2024023392 | EKOTEKT AB [FI] | Method for manufacturing building elements |
| WO2024013569 | APPLIKON BIOTECHNOLOGY B V [NL] | Impeller system for use with a bioreactor |
| WO2024008348 | PFEIFFER VACUUM [FR] | Turbomolecular vacuum pump and methods for manufacturing a rotor |
| WO2024014599 | INTER MEDI CO LTD [KR] | Jig for post-processing of customized implant for orthopedic surgery and method for fabricating same |
| WO2024064864 | MATERION CORP [US] | Method for manufacturing objects comprising beryllium |
| WO2024002627 | BAUER LEAN ENG GMBH [DE] | Method and device for producing laminated cores from laminations |
| WO2024071222 | SUMITOMO PRECISION PROD CO [JP] | Heat exchanger |
| WO2024059684 | LAM RES CORP [US] | Showerhead faceplates |
| WO2024008850 | SIGNIFY HOLDING BV [NL] | 3D printed light fixture |
| EP4302903 | COMMISSARIAT ENERGIE ATOMIQUE [FR] | Method for manufacturing a complex-shaped part and a densifiable counter-form useful for preparing said part |
| WO2024028870 | TECHNION RES & DEV FOUNDATION [IL] | Spacer fabrics analogous structures and production techniques thereof |
| WO2024039773 | DIMENSION INX CORP [US] | Biointegrative implantable cell encapsulation device and system |

| Nº PUBLICACIÓN | SOLICITANTE Y PAÍS DE ORIGEN | CONTENIDO TÉCNICO |
|---|---|---|
| WO2024068162 | SIEMENS AG [DE] | Method for manufacturing a measuring tube, flowmeter, computer program product and use of a flowmeter |
| EP4306218 | HON HAI PREC IND CO LTD [TW]; SOLIDEDGE SOLUTION INC [TW] | Horizontal grinder rotor, grinding bead driving device and horizontal grinder |
| WO2024053501 | ITOCHU CERATECH CORP [JP] | Refractory aggregate for casting sand |
| WO2024063222 | FOUND RES & BUSINESS SEOUL NAT UNIV SCI & TECH [KR] | Microcellular heat exchanger using local filtering |
| WO2023249395 | M O P CO LTD [KR] | Image processing method for high-precision ceramic 3D printing and high-precision ceramic 3D printing method using same |
| WO2024030661 | UNIV WASHINGTON [US]; ASOCIACION CENTRO DE INVESTIG COOPERATIVA EN BIOMATERIALES CIC BIOMAGUNE [ES]; UNIV OF THE BASQUE COUNTRY UPV/EHU [ES] | Systems and methods for selective shape transformation of 3D-printed materials |
| EP4339547 | HAMILTON SUNDSTRAND CORP [US] | Crossflow heat exchanger with stacked distribution tubes |
| WO2024018896 | FUJIFILM CORP [JP] | Method for manufacturing radio wave absorber, radio wave absorber, and radio-wave-absorbing article |
| WO2024014763 | AMSOLUTIONS INC [KR] | Method for forming multi-material structure |
| EP4350270 | RTX CORP [US] | Tube heat exchanger using 3-tube bundles |
| WO2024063138 | POLYPLASTICS CO [JP] | Three-dimensional shaped object and method for producing three-dimensional shaped object |
| EP4316693 | FYZIKALNI USTAV AV CR V V I [CZ] | Method for improving surface integrity of an additive manufactured mesoscopic gear, and product thereof |
| WO2024049993 | BIOGENNIX LLC [US] | Tissue regeneration particles with a controlled structure |
| WO2024026429 | PENN STATE RES FOUND [US]; WATSON NATE [US] | Systems and methods for additive manufacturing of discontinuously supported structures |
| WO2024026021 | FUELCELL ENERGY INC [US] | Hybrid fabrication of fuel cell flow fields |
| WO2024008897 | VALLS BESITZ GMBH [DE] | Methods for manufacturing ultra high-performance metal additive manufacturing components (A3) methods for manufacturing additive manufacturing components |
| WO2024020584 | UNIV WASHINGTON [US] | Grayscale fabrication of 4D materials |
| WO2024020602 | UNIV JOHNS HOPKINS [US] | Lattice heatsink for impingement cooling |
| WO2024026023 | BRIGHAM & WOMENS HOSPITAL INC [US] | Double networked 3D-printed biomaterials |

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# Procesamiento de Datos

| Nº PUBLICACIÓN | SOLICITANTE Y PAÍS DE ORIGEN | CONTENIDO TÉCNICO |
|---|---|---|
| EP4311656 | AIRBUS OPERATIONS GMBH [DE] | Method of producing an object, object, and aircraft or spacecraft |
| EP4322082 | FEHRMANN MAT X GMBH [DE] | Computer-implemented determination and qualification of material compositions |
| WO2024066485 | SHENZHEN CREALITY 3D TECH CO LTD [CN] | 3D printing consumable test apparatus and 3D printing apparatus |
| WO2024039993 | STRATASYS INC [US] | Method and computer for simplified tuning of 3D printers |
| WO2024013264 | BUNDESREPUBLIK DEUTSCHLAND VERTRETEN DURCH DEN BUNDESMINISTER FUER WIRTSCH UND KLIMASCHUTZ DIESER VE [DE] | Fabrication and inspection of non-tamperable manufactured components |

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