

IHMA PATENT NEWSLETTER

Limited circulation patent news bulletin for the Holography Industry

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Published and granted patents

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is exclusively dedicated to IHMA MEMBERS.**

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Please note that:

- IHMA Patent Newsletter covers the requests for worldwide patents (WO, US, EP, FR, GB, DE, JP, CN, KR, RU...).
- Some patents can be indexed in several categories.
- Some old patents are sometimes introduced in the databases if they have not been included in the previous update.
- The full patent information is in the tables at the end of this document (See TABLES WITH REFERENCES).
- IHMA Patent Newsletter is forwarded at the end of each month and corresponds to the patents appearing during the previous month. If at any time, you do not receive your newsletter in the usual time span, please contact us, as an electronic transmission problem is always possible.

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P35634

**SECURITY & OPTICAL EFFECTS' COLUMN
PRINTING – BANKNOTE – RELIEF – MICROLENS**

WO2022213148

CCL SECURE

Inventor(s):

JOLIC KARLO IVAN

Application Nber / Date:

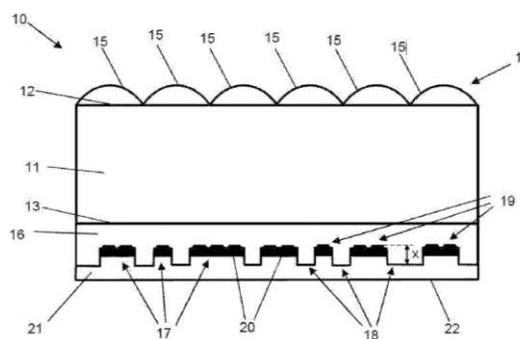
WOAU2022/050304 2022-04-06

Priority Nber / Date / Country:

AU2021900998 2021-04-06

OPTICALLY VARIABLE DEVICE

The present disclosure relates to an optically variable device, preferably for use in a security document such as a banknote. The optically variable device comprises a substrate having a first side with an array of focusing elements, and a second side opposite to the first side, the second side having a plurality of image elements. The image elements comprise a first group of sub-elements that are magnified by the focusing elements at a first range of viewing angles, and a second group of sub-elements that are magnified by focusing elements at a second range of viewing angles. The image elements comprise a plurality of recessed regions that are recessed on the second side and a corresponding plurality of non-recessed regions. At least a first portion of the recessed regions and/or non-recessed regions comprise diffraction gratings. A segregated ink is present in the recessed regions but not in the non-recessed regions.



DISPOSITIF OPTIQUEMENT VARIABLE

La présente divulgation concerne un dispositif optiquement variable, de préférence destiné à être utilisé dans un document de sécurité tel qu'un billet de banque. Le dispositif optiquement variable comprend un substrat ayant un premier côté avec un réseau d'éléments de focalisation et un second côté opposé au premier côté, le second côté ayant une pluralité d'éléments d'image. Les éléments d'image comprennent un premier groupe de sous-éléments qui sont agrandis par les éléments de focalisation à une première plage d'angles de visualisation et un second groupe de sous-éléments qui sont agrandis par des éléments de focalisation dans une seconde plage d'angles de visualisation. Les éléments d'image comprennent une pluralité de régions évidées qui sont en retrait sur le second côté et une pluralité correspondante de régions non évidées. Au moins une première partie des régions évidées et/ou des régions non évidées comprend des réseaux de diffraction. Une encre séparée est présente dans les régions évidées, mais pas dans les régions non évidées.

CLAIM 1. An optically variable device comprising: a substrate having a first side and a second side opposite to the first side; an array of focusing elements on the first side; and a plurality of image elements on the second side, the image elements comprising a first group of sub-elements that are magnified by the focusing elements at a first range of viewing angles, and a second group of sub-elements that are magnified by focusing elements at a second range of viewing angles, wherein the image elements comprise a plurality of recessed regions that are recessed on the second side and a corresponding plurality of non-recessed regions, at least a first portion of the recessed regions and/or non-recessed regions comprising diffraction gratings, wherein a first segregated ink is present in the recessed regions but not in the non-recessed regions.

Equivalent: FR3121386 A1

Status: Pending

Research Report:

INTERNATIONAL SEARCH REPORT		International application No.
C (Continuation).		PCT/AU2022/050304
DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2016/0176221 A1 (DE LA RUE INTERNATIONAL LIMITED) 23 June 2016 Abstract; Figures 1-5, 15, 18, 19; Paragraphs 2, 28, 32, 104-107, 116, 121	1-41
X	US 2017/0165997 A1 (DE LA RUE INTERNATIONAL LIMITED) 15 June 2017 Abstract; Figures 1, 2, 27	1-41
X	US 2018/0196980 A1 (DE LA RUE INTERNATIONAL LIMITED) 12 July 2018 Abstract; Figures 2, 12, 14	1-41
X	US 2019/0105938 A1 (DE LA RUE INTERNATIONAL LIMITED) 11 April 2019 Abstract; Figures 1-5, 18	1-41
X	US 2019/0275824 A1 (DE LA RUE INTERNATIONAL LIMITED) 12 September 2019 Abstract; Figures 1-4, 8	1-41

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PATENT REFERENCE – See the table at the end of this document

P35655

BANKNOTE

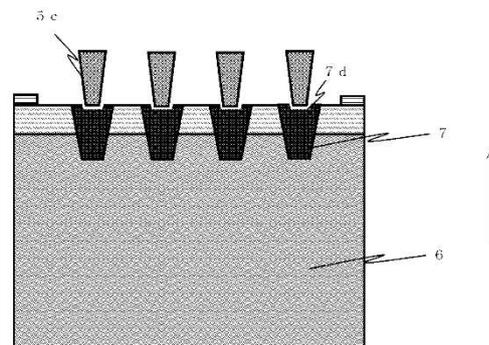
JP2022150325

NATIONAL PRINTING BUREAU

Priority Date: 26/03/2021

SHEET FEEDING MECHANISM

TOPIC: To provide a sheet feeding mechanism including at least a feeder table that moves in conjunction with the movement of a gripper and a sheet suppressing guide, the mechanism being capable of suppressing flopping that occurs immediately before gripping a sheet with the gripper. INVENTION: a sheet feeding mechanism including at least a sheet suppressing guide that suppresses, when feeding a sheet to a transport mechanism including at least a gripper that grips the sheet, from above at a position where the gripper grips the sheet, the sheet feeding mechanism including: A sheet suppressing cutout portion at an end portion of a sheet suppressing guide at a position corresponding to the gripper to avoid interference between the sheet suppressing guide and the gripper at a position where the gripper grips the sheet.



CLAIM 1. A sheet feeding mechanism including at least a sheet suppressing guide that suppresses, when feeding a sheet to a transport mechanism including at least a gripper that grips the sheet, from above at a position where the gripper grips the sheet, the sheet feeding mechanism comprising: A sheet suppressing cutout portion at an end portion of the sheet suppressing guide at a position corresponding to the gripper to avoid interference between the sheet suppressing guide and the gripper at a position where the gripper grips the sheet.

P35663

SEAL – BRAND PROTECTION

JP2022146605

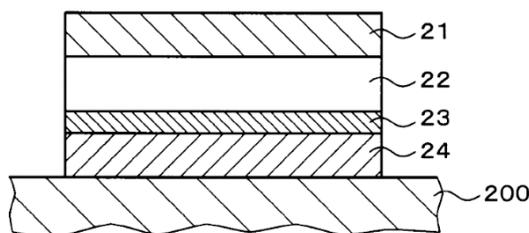
DAI NIPPON PRINTING

Priority Date: 22/03/2021

PROGRAM, AUTHENTICITY DETERMINATION METHOD, AUTHENTICITY DETERMINATION APPARATUS, AND AUTHENTICITY DETERMINATION SYSTEM

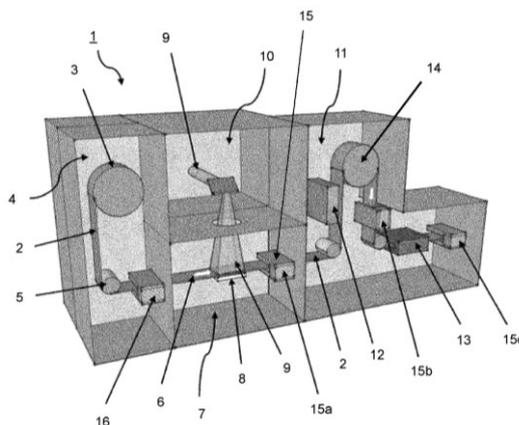
TOPIC: To provide a program, an authenticity determination method, an authenticity determination apparatus, and an authenticity determination system capable of accurately determining authenticity of an optical modulation element even when the optical modulation element is replicated or cut out and reused. INVENTION: a program that causes a learning model that acquires information related to a reproduced image of a light modulating element, receives the information related to the reproduced image of the light modulating element, and outputs an estimate related to an elapsed time since manufacturing the light modulating element, to perform the steps of: The information relating to the acquired reconstructed image is input, and a computer is caused to execute processing of determining authenticity of the light modulating element based on the estimation output from the learning model.

CLAIM 1. Obtaining information related to a reproduced image of the light modulating element, receiving the information related to the reproduced image of the light modulating element, and outputting an estimate regarding the elapsed time since the manufacturing of the light modulating element, and outputting an estimate regarding the elapsed time since the manufacturing of the light modulating element; Inputting information relating to the acquired reconstructed image; and causing a computer to execute a process of determining authenticity of a light modulation element based on estimation output from the learning model.



METHOD AND DEVICE FOR PRODUCING A HOLOGRAM FOR A SECURITY ELEMENT AND METHOD FOR PRODUCING A VALUE OR SECURITY DOCUMENT

The invention relates to a method and a device for producing a hologram for a security element, comprising: providing a holographic recording material (2) in a device (1) having processing stations that are configured to process the holographic recording material (2), perform successive process steps of a process step chain during the production of a hologram for a security element and thereby process the holographic recording material (2) in accordance with process parameters; and processing the holographic recording material (2) in a process step, which is set up to expose the holographic recording material (2), wherein in this case the holographic recording material (2) is processed in accordance with process parameters associated with the process step and the processing comprises writing a holographic arrangement with the hologram for the security element by means of exposing the holographic recording material (2) into the holographic recording material (2), wherein the hologram is formed in the holographic recording material (2) so as to detect a hologram useful surface. The method further comprising: determining an optical diffraction efficiency of the holographic arrangement by means of a measuring device (15) in a further process step, which is downstream of the process step in the process step chain in the device (1) with the processing stations; changing at least one process parameter if the measured optical diffraction efficiency is different from a predetermined optical diffraction efficiency; and applying the at least one changed process parameter in further processing of the holographic arrangement in another process step, which is downstream of the further process step in the process step chain in the device (1) with the processing stations, and / or when producing a further hologram for a security element in the device (1) with the processing stations.



CLAIM 1. A method for producing a hologram for a security element, comprising:- Providing a holographic recording material (2) in an apparatus (1) having processing stations which are set up to carry out successive process steps of a process step chain during the production of a hologram for a security element and in so doing to process the holographic recording material (2) in accordance with process parameters; - Processing the holographic recording material (2) in a process step configured to expose the holographic recording material (2),- the holographic recording material (2) is processed according to process parameters assigned to the process step, and - the processing comprises writing a holographic arrangement with the hologram for the security element by means of exposing the holographic recording material (2) into the holographic recording material (2), wherein the hologram is formed in the holographic recording material (2) so as to detect a hologram useful surface; - Determining an optical diffraction efficiency of the holographic arrangement by means of a measuring device (15) in a further process step which is downstream of the process step in the process step chain in the apparatus (1) with the processing stations; - Changing at least one process parameter when the measured diffraction optical efficiency is different from a predetermined diffraction optical efficiency; and - Applying the at least one changed process parameter in further processing of the holographic arrangement in another process step, which is downstream of the further process step in the process step chain in the device (1) with the processing stations, and / or when producing a further hologram for a security element in the device (1) with the processing stations.

P35682

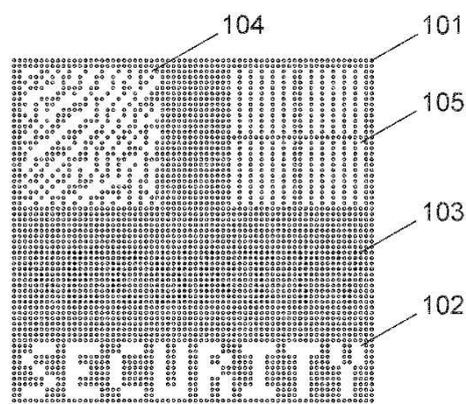
EP4067102

Priority Date: 02/04/2021

KAUNAS UNIVERSITY OF TECHNOLOGY

AN OPTICAL DEVICE WITH ORDERED SCATTERER ARRAYS FOR SECURE IDENTITY AND A METHOD OF PRODUCING THE SAME

This invention discloses a method for configurable spatial control and modification of optically active resonantly coupled scatterer arrays to produce identifiable security features and a corresponding photonic secure identity device. The invention comprises at least the steps of (i) producing a deposition template from said master stamp, (ii) synthesis of a plasmonic particle colloid, (iii) producing an optically active, two-dimensional security tag template using self-assembly of said particles on said deposition template, (iv) producing a customized secure identity device from said security tag template by selective removal or modification of optical properties using ultrashort laser pulses. The produced customized plasmonic-photonic device can then be used as secure identity and anti-counterfeiting means. The device exploits customized spatial control and modification of optically active plasmonic particle arrays demonstrating surface lattice resonance optical signature to produce easily identifiable security features.



CLAIM 1. An optical secure identity device for anti-counterfeiting measures, producing visually (801, 902, 1004, 1103), spectroscopically (701), and/or microscopically (102, 103, 801, 902) verifiable security features, comprising at least: - a substrate (201); and - a plurality of optical scatterers (101, 202) affixed onto the substrate (201) and separated from adjacent scatterers (202) by a distance to form a two-dimensional pattern, characterized in that - said optical scatterer pattern comprises at least one: a) a specifically designed binary pattern (102, 105, 104, 801, 1003, 1101), wherein some scatterers either are (202) or are not (204) in a selected location on the substrate; b) a specifically designed colour-based pattern (103, 902), wherein some scatterers (902) scatter a measurably different colour of light compared to adjacent scatterers (901); c) a specifically designed photonic interaction between said scatterers (202), wherein said interaction results in features in an optical spectrum (701); or d) a combination thereof in any proportion.

P35685

PRINTING – LABEL

CN217640510U

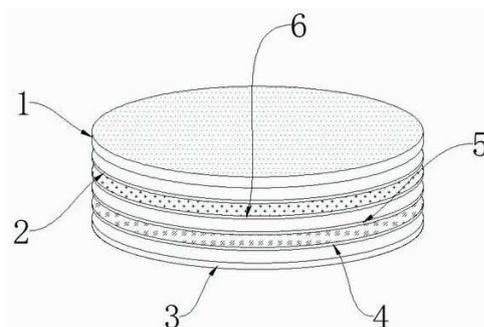
Priority Date: 13/06/2022

SHENZHEN YATUSHEN PRINTING PACKAGE

SHAPE-DISPLAYING ANTI-COUNTERFEIT LABEL BASED ON GOLD-STAMPING 3D HOLOGRAPHIC FILM

The utility model relates to an antifalsification label technical field provides a show antifalsification label based on gilt 3D holographic film, including the stratum basale, stealthy anti-fake layer and printing picture layer, the inside of stratum basale is provided with additional strengthening, the surface mounting of stratum basale has stealthy anti-fake layer, the surface on stealthy anti-fake layer is provided with the printing picture layer, be provided with anti-fake structure between printing picture layer and the stealthy anti-fake layer, the surface mounting on printing picture layer has holographic anti-fake layer, the surface on holographic anti-fake layer is provided with protective structure, protective structure is including first inoxidizing coating, second inoxidizing coating and adhesive layer, the surface on holographic anti-fake layer is installed to the adhesive layer. The utility model discloses an at the first inoxidizing coating of holographic anti-fake layer surface mounting, first inoxidizing coating can improve the scratch resistance of label, avoids the label to be scraped the flower when using, prolongs the life of label, and the waterproof performance of label can be strengthened to the second inoxidizing coating to improve the availability factor of label.

CLAIM 1. The utility model provides a show shape antifalsification label based on gilt 3D holographic film, includes stratum basale (3), stealthy antifalsification layer (4) and printing picture layer (6), its characterized in that: a reinforcing structure (7) is arranged inside the base layer (3), and an invisible anti-counterfeiting layer (4) is arranged on the surface of the base layer (3); a printed pattern layer (6) is arranged on the surface of the invisible anti-counterfeiting layer (4); an anti-counterfeiting structure (5) is arranged between the printing pattern layer (6) and the invisible anti-counterfeiting layer (4), a holographic anti-counterfeiting layer (2) is arranged on the surface of the printing pattern layer (6), and a protective structure (1) is arranged on the surface of the holographic anti-counterfeiting layer (2).



P35686

PRINTING – LABEL

CN217640508U

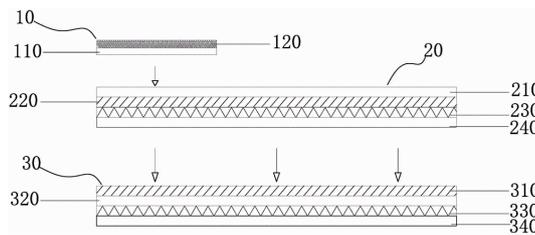
ZHONGSHAN ANMEI INFORMATION TECHNOLOGY

Priority Date: 23/05/2022

DIGITAL ANTI-TRANSFER LABEL WITH HOLOGRAPHIC INFORMATION LAYER

The utility model discloses a digital anti-shifting label with holographic information layer, including being used for pasting the anti-shifting layer on the object, be equipped with the information layer on the anti-shifting layer, be equipped with anti-fake layer on the information layer, the information layer from top to bottom is equipped with bearing layer, information surface course in proper order, is used for the first coating of pasting and is used for the second coating of protection, anti-fake layer attaches on the bearing layer, the second coating is attached on the anti-shifting layer, also be exactly, can realize anti-fake and anti-shifting's dual function through anti-fake layer and anti-shifting layer, avoid the label to be shifted and realize anti-fake discernment to improve the security of label.

CLAIM 1. A digital anti-transfer label with a holographic information layer is characterized in that: the anti-transfer layer (30) is used for being pasted on an object (340), an information layer (20) is arranged on the anti-transfer layer (30), and an anti-counterfeiting layer (10) is arranged on the information layer (20); the information layer (20) is sequentially provided with a bearing layer (210), an information surface layer (220), a first coating (230) for adhesion and a second coating (240) for protection from top to bottom; the anti-counterfeiting layer (10) is attached to the bearing layer (210), and the second coating (240) is attached to the anti-transfer layer (30).



P35694

CN217574413U

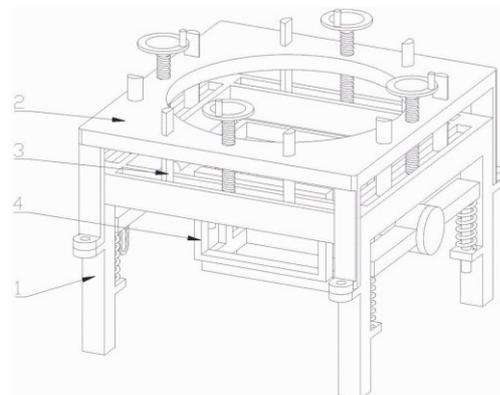
ANHUI JINCAI ANTI COUNTERFEITING TECHNOLOGY

Priority Date: 24/04/2022

PNEUMATIC SCREEN STRETCHING TOOL FOR HOLOGRAPHIC ANTI-COUNTERFEITING GOLD STAMPING STAINED PAPER

The utility model discloses a pneumatic screen frock that stretches tight of gilt stained paper of holographic anti-fake relates to the pneumatic screen technical field that stretches tight of stained paper, the screen frock that stretches tight includes the workstation, the workstation sets firmly the mounting bracket, the mounting bracket sets firmly mobilizable fixed plate, it is equipped with the mounting to rotate on the workstation, be equipped with bearing structure on the workstation, bearing structure includes first spring and second spring, the one end and the workstation fastening connection of first spring, the other end fastening is equipped with the horizontal pole, one side of horizontal pole is equipped with the round hole, the opposite side is equipped with the rectangular channel, the one end fastening connection of second spring have with rectangular channel complex rectangular block. The utility model discloses the net frock of straining adopts pneumatics or manual mode, fixes the silk screen, and it is convenient to adjust, is equipped with a plurality of racks on the mounting, and the fixed silk screen frame of installation of being convenient for rotates the position of adjusting the silk screen frame, is convenient for switch the screen frame, according to a plurality of silk screen frames of disposable installation of actual need, reduces to dismantle and changes number of times, simple structure.

CLAIM 1. A holographic anti-counterfeiting gold stamping decal paper pneumatic screen stretching tool comprises a workbench (1) and is characterized in that a mounting frame (2) is fixedly fastened on the workbench (1), a movable fixing plate (3) is fixedly fastened on the mounting frame (2), and a fixing piece (4) is rotatably arranged on the workbench (1); be equipped with bearing structure on workstation (1), bearing structure includes first spring (16) and second spring (47), the one end and workstation (1) fastening connection of first spring (16), and the other end fastening is equipped with horizontal pole (15), and one side of horizontal pole (15) is equipped with round hole (17), and the opposite side is equipped with rectangular channel (18), the one end fastening connection of second spring (47) have with rectangular channel (18) complex rectangular block (43).



P35696

PRINTING – LABEL – STRIP

CN217562178U

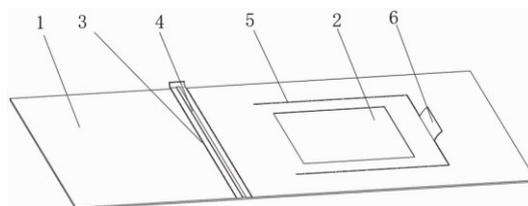
Priority Date: 14/06/2022

HUBEI GEDIAN DEVELOPMENT REGION CHENGUANG INDUSTRIAL

PATCH TYPE LASER HOLOGRAPHIC TWO-DIMENSIONAL CODE ANTI-COUNTERFEIT LABEL

The utility model provides a holographic two-dimensional code antifalsification label of SMD laser, relate to the holographic two-dimensional code technical field of laser, including the label main part, the surface of label main part is close to the department of keeping between two parties and is provided with the holographic anti-fake strip of laser, the surface of label main part is located the both sides of the holographic anti-fake strip of laser and has seted up and tears the grooving, the adoption lies in the inboard of peeling off the grooving in the bottom surface of label main part and is provided with the two-dimensional code and posts the district, because the region after peeling off the part of grooving is unreparable, consequently can have good antifalsification after using information two-dimensional code and anti-fake two-dimensional code combination, and be provided with the holographic anti-fake strip of laser in the inboard of tearing the grooving, can protect product information, can tear the holographic anti-fake strip of laser branch away through tearing the grooving when the user needs open product kaifeng department and tear, tear away the unable recovery of the holographic anti-fake strip of back laser, not only can be convenient for unsealing the product through tearing the grooving, also have good leakproofness simultaneously.

CLAIM 1. The utility model provides a holographic two-dimensional code antifalsification label of SMD laser, includes label main part (1), its characterized in that: the utility model discloses a label, including label body (1), the surface of label body (1) is close to the department of placing in the middle and is provided with holographic anti-fake strip of laser (4), the surface of label body (1) is located the both sides of holographic anti-fake strip of laser (4) and has seted up and tears grooving (3), one side that the surface of label body (1) is located holographic anti-fake strip of laser (4) is provided with holographic information district of laser (2), the surface of label body (1) is located holographic information district of laser (2) the outside and has seted up and has peeled off grooving (5), one side that the surface of label body (1) is located holographic information district of laser (2) is connected with brace (6), the inboard that the bottom surface of label body (1) is located to peel off grooving (5) is provided with two-dimensional code and posts district (8), label body (1) is including hydrophobic oil-phobic layer (101), protective layer (102), enhancement layer (103), information pattern layer (104) and printing basic unit (105).



P35706

BRAND PROTECTION

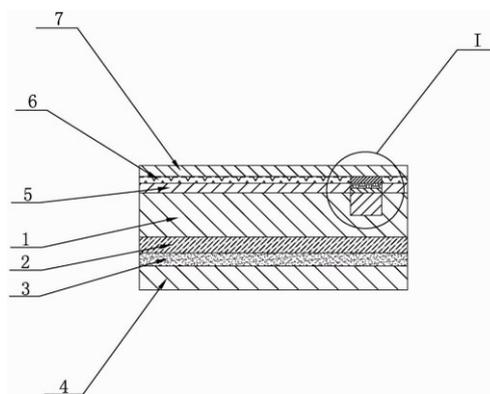
CN217516875U

Priority Date: 30/05/2022

WENZHOU XINFENG COMPOSITE MATERIALS

NOVEL MULTILAYER STRUCTURE'S ANTI-FAKE LASER MEMBRANE

The utility model discloses a novel multilayer structure anti-counterfeiting laser film, which comprises a substrate layer, wherein a carbon fiber coating is fixedly arranged on the lower surface of the substrate layer, a gum layer is fixedly arranged on the lower surface of the carbon fiber coating, and a release layer is arranged on the lower surface of the gum layer; an aluminum-plated layer is fixedly arranged on the upper surface of the base material layer, a holographic laser film layer is fixedly arranged on the upper surface of the aluminum-plated layer, and a polytetrafluoroethylene surface layer is fixedly arranged on the upper surface of the holographic laser film layer; the upper surface local position of substrate layer is provided with the ascending thing recess of putting of opening, and the aluminizing layer is aimed at and is put thing groove position and be provided with the first thing through-hole of putting, and holographic radium-shine rete is aimed at the first thing through-hole position of putting and is provided with the second and puts the thing through-hole, puts and is provided with the gold foil location layer in the thing recess, and the first thing through-hole of putting is embedded to be provided with anti-fake gold foil. Above-mentioned technical scheme, structural design is reasonable, high temperature resistance is good, long service life, anti-fake effectual and the practicality is good.



P35708

BRAND PROTECTION – LUMINESCENCE

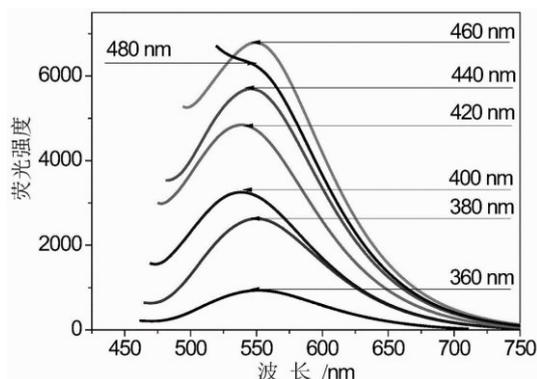
CN115232343

SHANDONG TAIBAO PACKAGING PRODUCT

Priority Date: 12/07/2022

NITROGEN AND FLUORINE CO-DOPED CARBON DOT HOLOGRAPHIC ANTI-COUNTERFEITING FILM AND PREPARATION METHOD THEREOF

The invention relates to a nitrogen and fluorine co-doped carbon dot holographic anti-counterfeiting film and a preparation method thereof, wherein the anti-counterfeiting film comprises a base film layer, and the base film layer is sequentially provided with a carbon dot fluorescent coating, a holographic imprinting coating, a holographic information layer and an aluminum plating layer from inside to outside; the preparation method comprises the following steps of 1) preparing the carbon dot fluorescent coating; 2) Coating a carbon dot fluorescent coating; 3) Coating a holographic imprinting coating; 4) Embossing the holographic information layer; 5) And (5) aluminizing. The invention has the advantages that: 1) The fluorine atom-doped carbon dot fluorescent anti-counterfeiting technology and the holographic anti-counterfeiting technology are combined on the anti-counterfeiting film, so that anti-counterfeiting means are enriched, and the anti-counterfeiting performance is improved; 2) The carbon dot fluorescence wavelength is adjustable, and the authenticity can be detected by setting a specific wavelength through a fluorescence spectrometer, so that the anti-counterfeiting performance is further improved; 3) Compared with the traditional organic dye and inorganic semiconductor quantum dot, the carbon dot overcomes the defects of unstable light emission and easy photobleaching of the organic dye and the defect of low biocompatibility of the inorganic semiconductor quantum dot.



CLAIM 1. A nitrogen and fluorine co-doped carbon dot holographic anti-counterfeiting film comprises a base film layer and is characterized in that the base film layer is sequentially provided with a carbon dot fluorescent coating, a holographic imprinting coating, a holographic information layer and an aluminum plating layer from inside to outside, the carbon dot fluorescent coating comprises the following raw materials in parts by weight:

P35710

PRINTING – BRAND PROTECTION

CN115230358

SHANDONG TAIBAO INFORMATION TECHNOLOGY GROUP

Priority Date: 24/06/2022

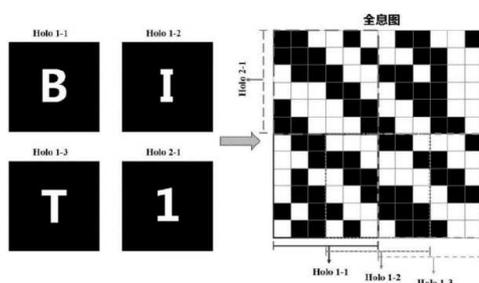
NOVEL ANTI-RECOVERY WINE BOTTLE MANUFACTURING METHOD

The invention relates to a novel anti-recovery wine bottle manufacturing method, which comprises the following steps: set up the high temperature baked flower paper on the beverage bottle outer wall, the high temperature baked flower paper is used for showing random anti-fake information, two-dimensional code information, includes: the film layer, the surface oil layer, the information layer, the protective layer, the random variable holographic anti-counterfeiting layer, the hot stamping bottom oil layer, the printing layer, the hydrosol layer and the paper base layer are sequentially stacked; the wine bottle stuck with the high-temperature decal paper is burnt into a whole. The invention relates to a novel anti-recovery wine bottle manufacturing method, which integrates anti-counterfeiting information and wine bottle firing for anti-counterfeiting.

CLAIM 1. A novel method for manufacturing a recycling-prevention wine bottle is characterized by comprising the following steps: the method comprises the following steps: set up the high temperature baked flower paper on the beverage bottle outer wall, the high temperature baked flower paper is used for showing random anti-fake information, two-dimensional code information, includes: the film layer, the surface oil layer, the information layer, the protective layer, the random variable holographic anti-counterfeiting layer, the hot stamping bottom oil layer, the printing layer, the hydrosol layer and the paper base layer are sequentially stacked; firing the wine bottle pasted with the high-temperature decal paper to integrate the anti-counterfeiting information of the decal paper and the wine bottle.

HOLOGRAPHIC ENCRYPTION METHOD BASED ON SINGLE-PIXEL IMAGING KEY OF METASURFACE

The invention discloses a holographic encryption method based on a single-pixel imaging key of a metasurface, and belongs to the technical field of micro-nano optics, holographic multiplexing and optical encryption application. In order to obtain the computer-generated amplitude hologram corresponding to the reproduced image, the invention uses a phase recovery algorithm to obtain the light field phase distribution of the object on the hologram, and then binarizes the generated phase distribution to obtain the corresponding amplitude distribution. In addition, in order to obtain a reconstructed image of a target object in single-pixel imaging, amplitude holograms generated by a computer are used as modulation masks in a single-pixel imaging system, mask patterns meeting reconstruction conditions are generated in a translation iteration mode, total amplitude intensity of a corresponding light field after modulation is collected, and then a single-pixel imaging algorithm is used for obtaining the reconstructed image of the target object. And the reconstructed image of single pixel imaging is used as an addressing key of metasurface holography so as to realize optical encryption with anti-counterfeiting function, high safety and large plaintext coverage.



CLAIM 1. The holographic encryption method based on the single-pixel imaging key of the metasurface is characterized by comprising the following steps of: (a) carrying out, the method comprises the following steps of firstly, realizing binary amplitude restoration by using an improved gradient descent algorithm, and distributing different reproduced images at different positions in space to generate the amplitude distribution of a hologram with a plurality of image information at different spatial positions on a holographic surface; overlapping areas are arranged between sub-holograms corresponding to reproduction images adjacent to each other in the horizontal position, so that the spatial multiplexing of the holograms is realized, and the information capacity of the holograms is improved; selecting a nanopore array as a structural unit of the binary amplitude modulation metasurface, wherein the nanopore array structural unit is equivalent to amplitude of 1, and the rest part is equivalent to amplitude of 0; manufacturing a metasurface distributed corresponding to the nanopore array according to the amplitude distribution on the hologram obtained in the step one so as to irradiate different sub-hologram areas of the metasurface and optically reproduce different recorded images; step three, taking the designed amplitude hologram as a mask for single-pixel imaging, and generating a series of different modulation patterns through the spatial movement of the metasurface, namely realizing the single-pixel imaging through translation iteration; taking a two-dimensional code image carrying character string information as an original image in single-pixel imaging, modulating the original image by using the generated modulation pattern, collecting a total intensity signal after modulation by using a single-pixel detector, and transmitting the intensity signal as a ciphertext subjected to encryption processing by using a public channel; the key point for realizing the single-pixel imaging is that a mask pattern generated by the spatial light modulator is used for modulating a target object, then an intensity signal is collected by a single-pixel detector, and the reconstruction of an image is realized by the correlation calculation between the mask pattern and the intensity signal; fourthly, reconstructing the two-dimensional code image obtained in the third step according to a single-pixel imaging algorithm, namely, the single-pixel imaging illuminates a series of mask patterns to the plane of a target object to modulate the light field of the target object, then collects the modulated light beams by a single-pixel detector after converging, and completes reconstruction of the two-dimensional code image according to the correlation between the mask patterns and the detection intensity to obtain a two-dimensional code reconstructed image; step five, character string information carried by the two-dimensional code image reconstructed in the step four can be obtained by scanning the two-dimensional code image, and single-pixel imaging and holographic display are further achieved on a single metasurface; the image transmitted by single-pixel imaging is used as an addressing key of the metasurface holography, the area corresponding to the metasurface is irradiated to obtain a corresponding holographic reproduction image, transmitted plaintext information is decoded in sequence, plaintext information optical encryption combined by any letters and numbers is realized, the optical encryption and anti-counterfeiting security level can be improved, and the capacity covered by the plaintext information can be improved.

P35713

PRINTING

CN115214250

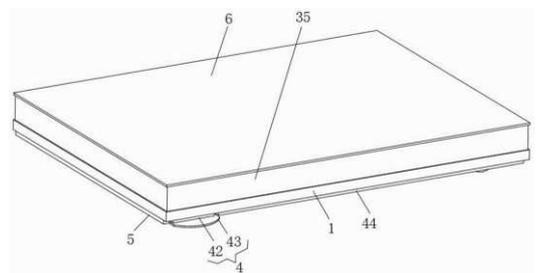
SHANDONG KAITUO PACKAGING MATERIALS

Priority Date: 30/08/2022

POSITIONING LASER SCRAPING AND GILDING FILM

The invention discloses a positioning laser scraping and scalding membrane, which comprises a base membrane layer, an upper layer unit and a positioning unit; the base film layer is internally provided with a heat insulation layer and is made of high polymer material; the upper layer unit comprises a positioning holographic layer, a coating, an anti-counterfeiting printing layer and a pattern layer, the positioning holographic layer is installed at the upper end of the base film layer, a holographic microstructure for recording patterns is arranged on the upper surface of the positioning holographic layer, the coating is installed at the upper end of the positioning holographic layer, the coating is any one of a metal aluminum layer or a zinc sulfide medium layer, the anti-counterfeiting printing layer is installed at the upper end of the coating, a plurality of anti-counterfeiting marks are arranged on the anti-counterfeiting printing layer, the pattern layer is installed on the anti-counterfeiting printing layer, and patterns of products are arranged on the pattern layer; this radium-shine scraping of location scalds gold membrane, outside waterproof grease proofing ability is stronger, and the location is convenient, and the location back low temperature toasts can be with its installation, dials the left end and can take off it, and it is more convenient to use, and the effect is better.

CLAIM 1. Radium-shine scraping gilding film in location, its characterized in that: comprises a base film layer (1), an upper layer unit (3) and a positioning unit (4); base film layer (1): the heat insulation layer (2) is arranged in the base film layer (1), and the base film layer is made of high polymer materials; upper layer unit (3): contain location holographic layer (31), cladding material (32), anti-fake printing layer (33) and decorative pattern layer (34), location holographic layer (31) is installed to the upper end of base film layer (1), the upper surface of location holographic layer (31) is provided with the holographic micro-structure that is used for the record pattern, cladding material (32) are installed to the upper end of location holographic layer (31), cladding material (32) are any kind of metal aluminium layer or zinc sulfide dielectric layer, anti-fake printing layer (33) is installed to the upper end of cladding material (32), be equipped with a plurality of false proof mark on anti-fake printing layer (33), install decorative pattern layer (34) on anti-fake printing layer (33), be equipped with the decorative pattern of product on decorative pattern layer (34); positioning unit (4): is arranged at the lower end of the base film layer (1).



P35714

PRINTING – BRAND PROTECTION

CN115195321

SHANTOU JIAXIN PACKING MAT

Priority Date: 16/09/2022

UV LASER TRANSFER PAPER CAPABLE OF BEING ACCURATELY POSITIONED AND MANUFACTURING PROCESS THEREOF

The invention relates to the technical field of packaging materials and discloses a manufacturing process of accurately positioned UV laser transfer paper, wherein water-based paint is coated on base paper, and a bottom coating is formed on the surface of the base paper; the UV composite laser coating is coated on the bottom coating, after a UV coating is formed on the surface of the bottom coating, the UV composite laser coating is subjected to die pressing composite with a BOPP seamless laser film to form a paper film composite material, after the BOPP seamless laser film is peeled off, an information layer is formed on the UV coating, and then positioning and paper cutting are carried out to obtain the UV laser transfer paper with accurate positioning.

CLAIM 1. A manufacturing process of UV laser transfer paper with accurate positioning is characterized by comprising the following steps: step one, coating a water-based paint on base paper, and drying the base paper by a far infrared oven to form a bottom coating on the surface of the base paper; step two, coating UV composite laser paint on the bottom coating in the step one, leveling by a far infrared oven, and forming a UV coating on the surface of the bottom coating; step three, the UV coating in the step two and a BOPP seamless laser film are subjected to die pressing and compounding, and a paper film composite material is formed after the UV coating is cured by an ultraviolet lamp; step four, stripping the BOPP seamless laser film from the paper film composite material obtained in the step three on a stripping machine, copying information on the BOPP seamless laser film onto the UV coating, and forming an information layer on the UV coating to obtain the stripped paper film composite material; and step five, positioning and cutting the paper film composite material stripped in the step four on a precise positioning transverse cutting machine according to the printing layout of the printing stock to obtain the precise positioning UV laser transfer paper.

P35717

LUMINESCENCE

CN115181121

CHINA THREE GORGES UNIVERSITY

Priority Date: 29/07/2022

PREPARATION METHOD AND APPLICATION OF HIGH-BRIGHTNESS NITROGEN-CONTAINING HETEROCYCLIC COMPOUND

The invention provides a preparation method and application of a high-brightness nitrogen-containing heterocyclic compound, wherein the structure of a high-brightness solid fluorescent dye is as shown in the following figure: the dye takes 1, 8-naphthalene imide and 2-ethyl-3, 3-dimethyl indole as raw materials, and is synthesized into the hexabasic fluoroboron fluorescent dye through single condensation and fluoroboration reaction. The yield of the fluorescent quantum in a solid state is as high as 76.29 percent, the fluorescent quantum can be quickly formed into a film when being combined with acrylic resin, and the image can be clearly formed under a 365nm ultraviolet light source. The compound has good solubility, shows excellent optical properties in a liquid state, is simple to prepare and purify, is beneficial to industrial production, and has great potential in the field of fluorescent anti-counterfeiting application.



CLAIM 1. A high-brightness nitrogen-containing heterocyclic compound is characterized in that the chemical structural formula of a dye is as follows:

P35722

CARD

CN115157894

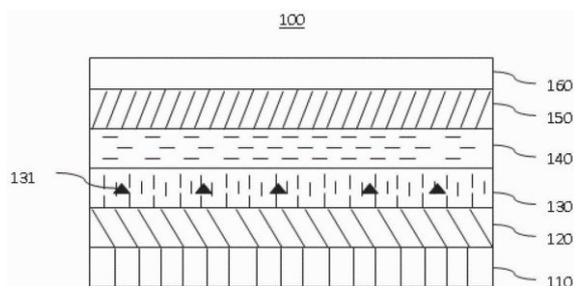
WUHAN HUAGONG IMAGE TECHNOLOGY & DEVELOPMENT

Priority Date: 22/07/2022

HOLOGRAPHIC ANTI-COUNTERFEITING FILM, ANTI-COUNTERFEITING CERTIFICATE CARD AND PREPARATION METHOD

The embodiment of the application provides a holographic anti-counterfeiting film, an anti-counterfeiting certificate card and a preparation method, and relates to the field of anti-counterfeiting printing. The holographic anti-counterfeiting film comprises an adhesive layer, a coating layer, an imaging layer, a first wear-resistant layer, a release layer and a base film layer which are sequentially stacked; the first wear-resistant layer is formed by thermo-curing thermo-optic dual-curing resin, and the surface of the imaging layer, which is far away from the first wear-resistant layer, is provided with a holographic anti-counterfeiting pattern; the thermal-optical dual-curing resin comprises an oligomer, a reactive monomer, a photoinitiator, a thermal initiator, an auxiliary agent and a solvent; the mass ratio of the oligomer, the active monomer, the photoinitiator, the thermal initiator, the auxiliary agent and the solvent is (24-28): (12 to 8): 2:2:1:59. the holographic anti-counterfeiting film is convenient to process, and can ensure that the anti-counterfeiting certificate card has good wear resistance and anti-counterfeiting effect when being attached to the surface of the card.

CLAIM 1. A holographic anti-counterfeiting film is characterized by comprising an adhesive layer, a plating layer, an imaging layer, a first wear-resistant layer, a release layer and a base film layer which are sequentially stacked; the first wear-resistant layer is formed by thermo-curing thermo-optic dual-curing resin, and the surface of the imaging layer, which is far away from the first wear-resistant layer, is provided with a holographic anti-counterfeiting pattern; the thermal-optical dual-curing resin comprises an oligomer, an active monomer, a photoinitiator, a thermal initiator, an auxiliary agent and a solvent; the mass ratio of the oligomer, the active monomer, the photoinitiator, the thermal initiator, the auxiliary agent and the solvent is (24-28): (12 to 8): 2:2:1:59.



P35728

BRAND PROTECTION – LUMINESCENCE

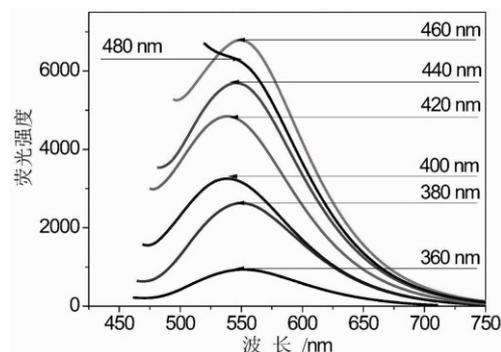
CN115124938

SHANDONG TAIBAO PACKAGING PRODUCT

Priority Date: 12/07/2022

NITROGEN AND FLUORINE CO-DOPED CARBON DOT HOLOGRAPHIC ANTI-COUNTERFEITING STAY WIRE AND MANUFACTURING METHOD THEREOF

The invention relates to a nitrogen and fluorine codoped carbon dot holographic anti-counterfeiting stay wire and a preparation method thereof, wherein a carbon dot fluorescent coating, a holographic imprinting coating, a holographic information layer, a shielding layer, an aluminum plating layer and a glue layer are sequentially arranged on the front surface of a stay wire base film layer from inside to outside, and a printing layer and a release gloss oil layer are sequentially arranged on the back surface of the stay wire base film layer from inside to outside; the preparation method comprises the following steps: 1) preparing a carbon dot fluorescent coating; 2) coating a carbon dot fluorescent coating; 3) coating a holographic imprinting coating; 4) embossing the holographic information layer; 5) printing a shielding layer; 6) aluminum plating; 7) manufacturing a printing layer; 8) coating a release gloss oil layer; 9) coating a glue water layer; 10) and (6) slitting. The invention has the advantages that: 1) the fluorine atom-doped carbon dot fluorescent anti-counterfeiting technology and the holographic anti-counterfeiting technology are combined, so that the anti-counterfeiting performance is improved; 2) the carbon dot fluorescence wavelength is adjustable, so that the anti-counterfeiting performance is further improved; 3) the carbon dots overcome the defects of unstable luminescence and easy photobleaching of organic dyes and the defect of low biocompatibility of inorganic semiconductor quantum dots.



CLAIM 1. The utility model provides a nitrogen, fluorine codoped carbon dot holographic anti-fake act as go-between, is including acting as go-between the basic film layer, and its characterized in that acts as go-between the basic film layer openly from inside to outside is equipped with carbon dot fluorescence coating, holographic impression coating, holographic information layer, shielding layer, aluminized layer, glue layer in proper order, acts as go-between the basic film layer back from inside to outside for the printing layer in proper order, from type gloss oil layer, carbon dot fluorescence coating's raw materials and ratio are as follows:

P35729

BRAND PROTECTION – LUMINESCENCE

CN115124931

SHANDONG TAIBAO PACKAGING PRODUCT

Priority Date: 12/07/2022

NITROGEN AND FLUORINE CO-DOPED CARBON DOT HOLOGRAPHIC ANTI-COUNTERFEITING ADHESIVE TAPE AND PREPARATION METHOD THEREOF

The invention relates to a nitrogen and fluorine codoped carbon dot holographic anti-counterfeiting adhesive tape and a preparation method thereof. A base film layer of the adhesive tape is sequentially provided with a printing layer, a carbon dot fluorescent coating, a holographic imprinting coating, a holographic information layer, a shielding layer, an aluminum plating layer and a glue layer from inside to outside; the preparation method comprises the following steps: 1) preparing a carbon dot fluorescent coating; 2) manufacturing a printing layer; 3) coating a carbon dot fluorescent coating; 4) coating a holographic imprinting coating; 5) embossing the holographic information layer; 6) printing a shielding layer; 7) aluminum plating; 8) and (6) coating a glue water layer. The invention has the advantages that: 1) the fluorine atom-doped carbon dot fluorescent anti-counterfeiting technology and the holographic anti-counterfeiting technology are combined on the anti-counterfeiting adhesive tape, so that the anti-counterfeiting performance is improved; 2) the carbon dot fluorescence wavelength is adjustable, so that the anti-counterfeiting performance is further improved; 3) compared with the traditional organic dye and inorganic semiconductor quantum dot, the carbon dot overcomes the defects of unstable light emission and easy photobleaching of the organic dye and the defect of low biocompatibility of the inorganic semiconductor quantum dot.

CLAIM 1. A nitrogen and fluorine co-doped carbon dot holographic anti-counterfeiting adhesive tape comprises an adhesive tape base film layer, and is characterized in that the adhesive tape base film layer is sequentially provided with a printing layer, a carbon dot fluorescent coating, a holographic imprinting coating, a holographic information layer, a shielding layer, an aluminum plating layer and an adhesive water layer from inside to outside, the carbon dot fluorescent coating comprises the following raw materials in parts by weight:

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PATENT REFERENCE – See the table at the end of this document

P35604

BANKNOTE – CARD – LUMINESCENCE – RELIEF – MICROLENS

WO2022228730

Priority Date: 27/04/2021

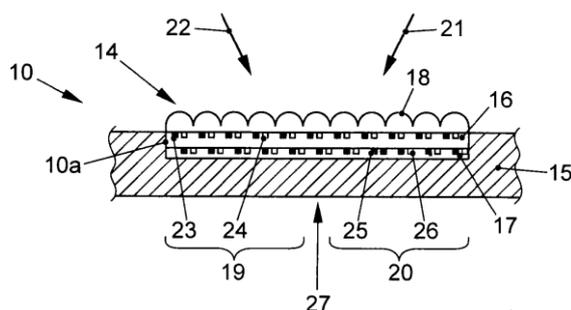
GIESECKE & DEVRIENT MOBILE SECURITY

SECURITY FEATURE FOR A VALUE DOCUMENT, VALUE DOCUMENT AND METHOD FOR PRODUCING A SECURITY FEATURE

The invention relates to a security feature (11) for a value document (10), into which positives (19, 20) of a representation (28) are introduced by at least one laser beam, comprising at least one transparent, laser-sensitive recording layer (16, 17), light-diffracting or light-refracting structures (18) arranged on a first side of the recording layer (16), a positive (19) and an image-processed positive (20), wherein one of the positive (19) or the image-processed positive (20) is introduced with a laser beam from a first direction (21) through the light-diffracting or light-refracting structures (18) into the at least one recording layer (16, 17) and is recognizable when viewed from the first direction (21), and wherein the other positive (20) processed by the positive (19) or the image is introduced into the at least one recording layer (16, 17) with a laser beam from a second direction (22) and is recognizable when viewed from the second direction (22).

SIGNE DE SÉCURITÉ POUR UN DOCUMENT DE VALEUR, DOCUMENT DE VALEUR ET PROCÉDÉ DE RÉALISATION D'UN SIGNE DE SÉCURITÉ

L'invention concerne un signe de sécurité (11) destiné à un document de valeur (10), dans lequel des positifs (19, 20) d'une représentation (28) sont insérés au moyen d'au moins un faisceau laser, le signe de sécurité présentant au moins une couche d'enregistrement (16, 17) sensible au rayonnement laser, transparente dans le domaine spectral de la lumière visible, des structures photodiffractives ou photoréfractives (18) agencées sur un premier côté de la couche d'enregistrement (16), un positif (19) et un positif (20) ayant subi un traitement d'image, le positif (19) ou le positif (20) ayant subi un traitement d'image étant introduit dans l'au moins une couche d'enregistrement (16, 17) à l'aide d'un faisceau laser provenant d'une première direction (21) à travers les structures photodiffractives ou photoréfractives (18), et pouvant être identifié par observation depuis la première direction (21), et l'autre positif entre le positif (19) et le positif (20) ayant subi un traitement d'image étant introduit dans l'au moins une couche d'enregistrement (16, 17) au moyen d'un faisceau laser provenant d'une seconde direction (22), et pouvant être identifié par observation depuis la seconde direction (22).



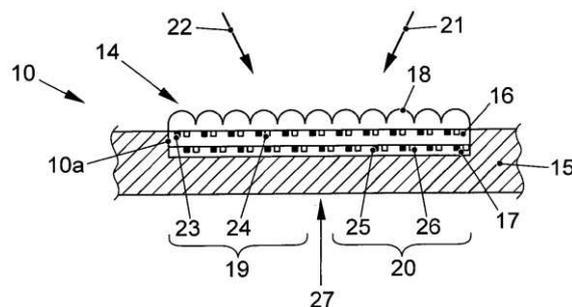
CLAIM 1. A security feature (11) for a value document (10), into which positives (19, 20) of a representation (28) are introduced by at least one laser beam, comprising at least one transparent, laser-sensitive recording layer (16, 17), light-diffracting or light-refracting structures (18) arranged on a first side of the recording layer (16), a positive (19) and an image-processed positive (20), wherein one of the positive (19) or the image-processed positive (20) is introduced with a laser beam from a first direction (21) through the light-diffracting or light-refracting structures (18) into the at least one recording layer (16, 17) and is recognizable when viewed from the first direction (21), and wherein the other positive (20) processed by the positive (19) or the image is introduced into the at least one recording layer (16, 17) with a laser beam from a second direction (22) and is recognizable when viewed from the second direction (22).

SECURITY FEATURE FOR A VALUE DOCUMENT, VALUE DOCUMENT AND METHOD FOR PRODUCING A SECURITY FEATURE

The invention relates to a security feature (11) for a value document (10) into which markings (19, 20) are introduced by means of at least one laser beam, comprising at least one transparent, laser-sensitive recording layer (16), light-diffracting or light-refracting structures (18) arranged on a first side of the recording layer (16), at least one first marking (19) which is illuminated with a laser beam from at least one direction (21, 22) Is introduced through the light-diffracting or light-refracting structures (18) into the at least one recording layer (16) and, when viewed from the same direction (21, 22), is recognizable from a second side, at least one second marking (20) which is introduced with a laser beam from the second side of the recording layer (16) into the at least one recording layer (16, 17) and is recognizable when viewed from the first and the second side.

SIGNE DE SÉCURITÉ POUR UN DOCUMENT DE VALEUR, DOCUMENT DE VALEUR ET PROCÉDÉ DE RÉALISATION D'UN SIGNE DE SÉCURITÉ

L'invention concerne un signe de sécurité (11) destiné à un document de valeur (10), dans lequel des marquages (19, 20) sont insérés au moyen d'au moins un faisceau laser, le signe de sécurité présentant au moins une couche d'enregistrement (16) sensible au rayonnement laser, transparente dans le domaine spectral de la lumière visible, des structures photodiffractives ou photoréfractives (18) agencées sur un premier côté de la couche d'enregistrement (16), au moins un premier marquage (19) qui est inséré dans l'au moins une couche d'enregistrement (16) à l'aide d'un faisceau laser provenant d'au moins une première direction (21, 22) à travers les structures photodiffractives ou photoréfractives (18), et qui peut être identifié du second côté par observation depuis la direction (21, 22) correspondante, au moins un second marquage (20) qui est introduit dans l'au moins une couche d'enregistrement (16, 17) au moyen d'un faisceau laser d'un second côté de la couche d'enregistrement (16) et peut être identifié par observation du premier et du second côté.



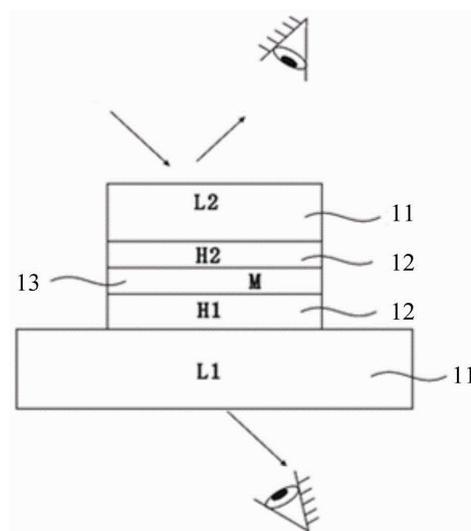
CLAIM 1. A security feature (11) for a value document (10) into which markings (19, 20) are introduced by at least one laser beam, comprising at least one laser-sensitive recording layer (16) transparent in the visible spectral range, light-diffracting or light-refracting structures (18) arranged on a first side of the recording layer (16), at least one first marking (19) which can be scanned with a laser beam from at least one direction (21, 22) Is introduced through the light-diffracting or light-refracting structures (18) into the at least one recording layer (16) and is recognizable when viewed from the same direction (21, 22) and from a second side, at least one second marking (20) which is introduced with a laser beam from the second side of the recording layer (16) into the at least one recording layer (16, 17) and is recognizable when viewed from the first and the second side.

THIN FILM ELEMENT, TRANSPARENT ANTI-COUNTERFEITING ELEMENT, AND DATA CARRIER

A thin film element, a transparent anti-counterfeiting element, and a data carrier, which belong to the technical field of anti-counterfeiting. The thin film element comprises: at least two low refractive index dielectric layers (11), at least two high refractive index dielectric layers (12), and at least one translucent reflective layer (13). The at least two high refractive index dielectric layers (12) are located between the at least two low refractive index dielectric layers (11), the at least one translucent reflective layer (13) is located between the two high refractive index dielectric layers (12), and the thin film element has at least two colors after light is reflected on one surface and reflected on and transmitted through the other surface. The thin film element can be used as an anti-counterfeiting element, so as to achieve more practical and more difficult re-engraving.

ÉLÉMENT EN FILM MINCE, ÉLÉMENT TRANSPARENT ANTI-CONTREFAÇON ET SUPPORT DE DONNÉES

Un élément en film mince, un élément transparent anti-contrefaçon et un support de données, qui appartiennent au domaine technique de l'anti-contrefaçon. L'élément en film mince comprend : au moins deux couches diélectriques à faible indice de réfraction (11), au moins deux couches diélectriques à indice de réfraction élevé (12), et au moins une couche translucide réfléchissante (13). Lesdites deux couches diélectriques à indice de réfraction élevé (12) sont situées entre lesdites deux couches diélectriques à faible indice de réfraction (11), ladite couche translucide réfléchissante (13) est située entre les deux couches diélectriques à indice de réfraction élevé (12), et l'élément en film mince présente au moins deux couleurs après qu'une lumière est réfléchi sur une surface et réfléchi sur l'autre surface et transmise à travers cette dernière. L'élément en film mince peut être utilisé comme élément anti-contrefaçon, de façon à permettre une regravure plus pratique et plus complexe.



CLAIM 1. A thin-film element, characterized in that it comprises at least two low-refractive-index dielectric layers, at least two high-refractive-index dielectric layers and at least one semitransparent reflective layer, the at least two high-refractive-index dielectric layers are located between the at least two low-refractive-index dielectric layers, the at least one semitransparent reflecting layer is located between the two high-refractive-index dielectric layers, and the thin film element presents at least two colors after being reflected by one surface and reflected and transmitted by the other surface.

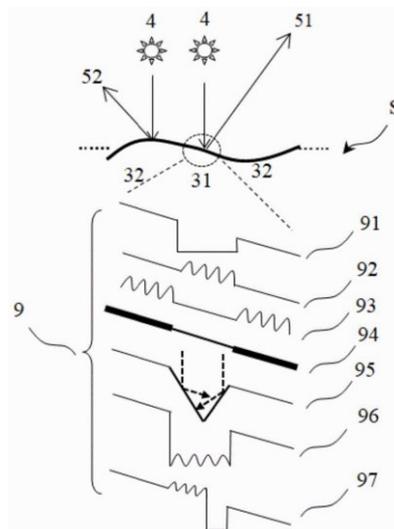
OPTICAL ANTI-COUNTERFEITING ELEMENT, DESIGN METHOD THEREFOR, AND ANTI-COUNTERFEITING PRODUCT

The present application provides an optical anti-counterfeiting element, a design method therefor, and an anti-counterfeiting product. The optical anti-counterfeiting element has a substantially smooth diffuse reflective curved surface. Incident light is reflected by the diffuse reflective curved surface and then may form a substantially uniform brightness distribution in a range no less than a preset observation angle set Ωv . The diffuse reflective curved surface comprises modified curved regions and unmodified curved regions. The modified curved regions and the unmodified curved regions have different reflective properties, and the modified curved regions correspond to pattern regions of an animation frame. When the diffuse reflective curved surface is irradiated by the incident light, the modified curved regions collectively appear as a pattern of dynamic features, and the unmodified curved regions collectively appear as a background of the dynamic features. The fabrication process therefor is simple, and dynamic features such as color and/or bright and dark contrast can be flexibly achieved.

ÉLÉMENT ANTI-CONTREFAÇON OPTIQUE, SON PROCÉDÉ DE CONCEPTION ET PRODUIT ANTI-CONTREFAÇON

La présente demande concerne un élément anti-contrefaçon optique, son procédé de conception et un produit anti-contrefaçon. L'élément anti-contrefaçon optique a une surface incurvée réfléchissante diffuse sensiblement lisse. La lumière incidente est réfléchiée par la surface incurvée réfléchissante diffuse et peut ensuite former une distribution de luminosité sensiblement uniforme dans une plage qui n'est pas inférieure à un angle d'observation prédéfini réglé Ωv . La surface incurvée réfléchissante diffuse comprend des régions incurvées modifiées et des régions incurvées non modifiées. Les régions incurvées modifiées et les régions incurvées non modifiées ont des propriétés réfléchissantes différentes, et les régions incurvées modifiées correspondent à des régions de motif d'un cadre d'animation. Lorsque la surface incurvée réfléchissante diffuse est irradiée par la lumière incidente, les régions incurvées modifiées apparaissent collectivement sous la forme d'un motif de caractéristiques dynamiques, et les régions incurvées non modifiées apparaissent collectivement sous la forme d'un arrière-plan des caractéristiques dynamiques. Le procédé de fabrication de celui-ci est simple, et des caractéristiques dynamiques telles qu'une couleur et/ou un contraste brillant et sombre peuvent être obtenues de manière flexible.

CLAIM 1. An optical security element capable of presenting a dynamic feature, said dynamic feature being pre-designed as a reproduction of a set of animated frames visible at a set of preset viewing angles v , said animated frames comprising a pattern region and a background region forming an optical contrast with said pattern region; the optical anti-counterfeiting element is provided with a smooth diffuse-reflectivity curved surface, and incident light forms uniform brightness distribution in a range not less than the preset observation angle set Ωv after being reflected by the diffuse-reflectivity curved surface; the diffuse reflection curved surface comprises a modified curved surface area and an unmodified curved surface area, the modified curved surface area and the unmodified curved surface area have different reflection characteristics, and the modified curved surface area corresponds to the pattern area; when the diffuse reflection curved surface is irradiated by the incident light, the modified curved surface areas jointly represent the pattern of the dynamic feature, and the unmodified curved surface areas jointly represent the background of the dynamic feature.



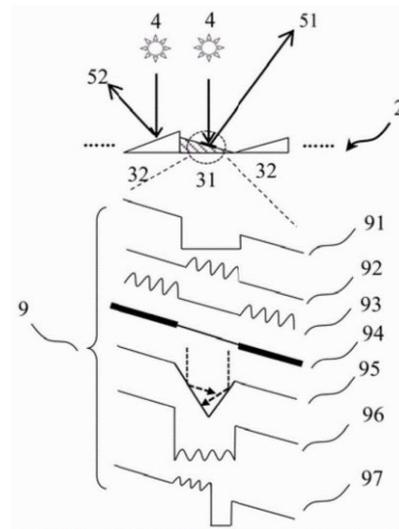
OPTICAL ANTI-COUNTERFEITING ELEMENT AND DESIGN METHOD THEREFOR, ANTI-COUNTERFEITING PRODUCT, AND DATA CARRIER

Provided are an optical anti-counterfeiting element and a design method therefor, an anti-counterfeiting product, and a data carrier. The optical anti-counterfeiting element (1) has a diffuse reflection region (2); the diffuse reflection region can reflect incident light into the range of at least a preset observation angle set Ωv ; the diffuse reflection region comprises a plurality of reflection facets (3); the plurality of reflection facets comprise modified reflection facets that are globally or locally modified, and unmodified reflection facets; the modified reflection facets and the unmodified reflection facets have different reflection characteristics, wherein the modified reflection facets correspond to a pattern region (71, 81); and when the diffuse reflection region is irradiated by the incident light, the modified reflection facets are collectively presented as a pattern of a dynamic feature, and the unmodified reflection facets are collectively presented as a background (72, 82) of the dynamic feature. The optical anti-counterfeiting element is simple in manufacturing process, and can flexibly implement a dynamic feature such as color and/or light-dark contrast.

ÉLÉMENT ANTI-CONTREFAÇON OPTIQUE ET SON PROCÉDÉ DE CONCEPTION, PRODUIT ANTI-CONTREFAÇON, ET SUPPORT DE DONNÉES

L'invention concerne un élément anti-contrefaçon optique et son procédé de conception, un produit anti-contrefaçon, et un support de données. L'élément anti-contrefaçon optique (1) comprend une région de réflexion diffuse (2) ; la région de réflexion diffuse peut réfléchir une lumière incidente dans la plage d'au moins un ensemble d'angles d'observation prédéfinis Ωv ; la région de réflexion diffuse comprend une pluralité de facettes de réflexion (3) ; la pluralité de facettes de réflexion comprennent des facettes de réflexion modifiées qui sont globalement ou localement modifiées, et des facettes de réflexion non modifiées ; les facettes de réflexion modifiées et les facettes de réflexion non modifiées présentent des caractéristiques de réflexion différentes, les facettes de réflexion modifiées correspondant à une région de motif (71, 81) ; et, lorsque la région de réflexion diffuse est irradiée par la lumière incidente, les facettes de réflexion modifiées sont collectivement présentées sous la forme d'un motif d'une caractéristique dynamique, et les facettes de réflexion non modifiées sont collectivement présentées sous la forme d'un arrière-plan (72, 82) de la caractéristique dynamique. L'élément anti-contrefaçon optique présente un procédé de fabrication simple, et peut mettre en œuvre de manière flexible une caractéristique dynamique telle qu'une couleur et/ou un contraste lumière-obscurité.

CLAIM 1. An optical security element capable of presenting a dynamic feature, said dynamic feature being pre-designed as a reproduction of a set of animated frames visible at a set of preset viewing angles v , said animated frames comprising a pattern region and a background region forming an optical contrast with said pattern region; the optical anti-counterfeiting element is provided with a diffuse reflection area, and the diffuse reflection area can reflect incident light to at least the range of the preset observation angle set ωv ; the diffuse reflective area comprises a plurality of reflective surface elements including a wholly or partially modified reflective surface element and an unmodified reflective surface element, the modified reflective surface element and the unmodified reflective surface element having different reflective characteristics, wherein the modified reflective surface element corresponds to the pattern area; when the diffuse reflection area is illuminated by the incident light, the modified reflective surface elements collectively present a pattern of the dynamic feature and the unmodified reflective surface elements collectively present a background of the dynamic feature.

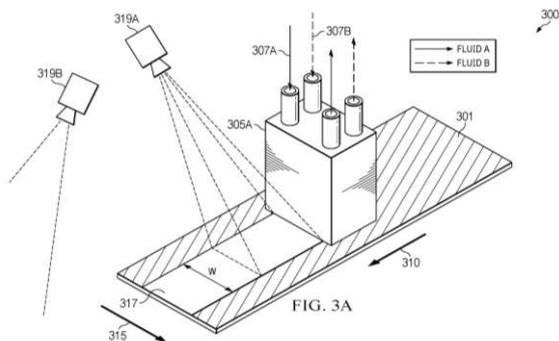


PROCESS FOR APPLYING RESINOUS FLUIDS FOR CAST MICRO-OPTIC STRUCTURES MANUFACTURING

A method of cast curing microstructures of a micro-optic security device (100) includes jetting a first volume of a first radiation-curable resin (205) directly onto a casting master (210) to form a layer of the first radiation-curable resin having a first thickness, bringing the casting master into contact with a substrate (201) along a squeeze line to transfer the first radiation-curable resin to the substrate and applying curing radiation to the transferred first radiation-curable resin.

PROCÉDÉ PERMETTANT D'APPLIQUER DES FLUIDES RÉSINEUX POUR LA FABRICATION DE STRUCTURES MICRO-OPTIQUES COULÉES

La présente invention concerne un procédé de durcissement par coulée de microstructures d'un dispositif de sécurité micro-optique (100) qui consiste à éjecter un premier volume d'une première résine durcissable par rayonnement (205) directement sur une matrice de coulée (210) pour former une couche de la première résine durcissable par rayonnement présentant une première épaisseur, à mettre en contact la matrice de coulée avec un substrat (201) le long d'une ligne de compression pour transférer la première résine durcissable par rayonnement au substrat et à appliquer un rayonnement de durcissement à la première résine durcissable par rayonnement transférée.



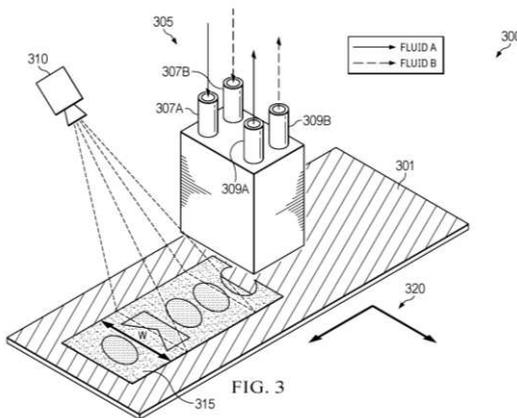
CLAIM 1. A method of cast curing microstructures of a micro-optic security device (100), the method comprising: jetting a first volume of a first radiation-curable resin (205) directly onto a casting master (210) to form a layer of the first radiation-curable resin having a first thickness; bringing the casting master into contact with a substrate (201) along a squeeze line to transfer the first radiation-curable resin to the substrate; and applying curing radiation to the transferred first radiation-curable resin.

SYSTEM AND METHOD FOR PRECISION INKING OF MICRO-OPTIC RECESSES

A method for inking a three-dimensional micro-optic structure includes jetting a first volume of a first radiation-curable ink (207) having a first pigment concentration to a first portion of a three-dimensional icon layer (201), wherein the first portion of the three-dimensional icon layer has a first volumetric fill requirement, jetting a second volume of the first radiation-curable ink (209) to a second portion of the three-dimensional icon layer, wherein the second portion of the three-dimensional icon layer has a second volumetric fill requirement, blading excess radiation-curable ink from the three-dimensional icon layer and radiation curing remaining radiation-curable ink.

SYSTÈME ET PROCÉDÉ D'ENCRAGE DE PRÉCISION D'ÉVIDEMENTS MICRO-OPTIQUES

La présente invention concerne un procédé d'encrage d'une structure micro-optique tridimensionnelle consistant à projeter un premier volume d'une première encre durcissable par rayonnement (207) ayant une première concentration de pigment sur une première portion d'une couche d'icône tridimensionnelle (201), la première portion de la couche d'icône tridimensionnelle ayant une première exigence de remplissage volumétrique, à projeter un deuxième volume de la première encre durcissable par rayonnement (209) sur une deuxième portion de la couche d'icône tridimensionnelle, la deuxième portion de la couche d'icône tridimensionnelle ayant une deuxième exigence de remplissage volumétrique, à niveler l'excès d'encre durcissable par rayonnement depuis la couche d'icône tridimensionnelle et durcir par rayonnement l'encre durcissable par rayonnement restante.



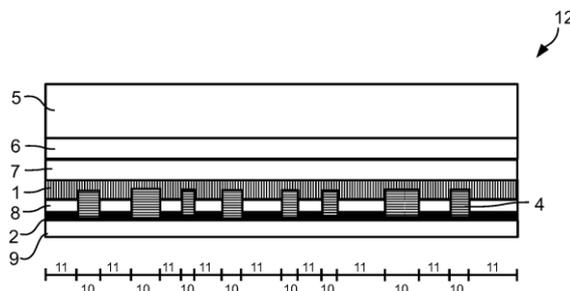
CLAIM 1. A method for inking a three-dimensional micro-optic structure, the method comprising: jetting a first volume of a first radiation-curable ink (207) having a first pigment concentration to a first portion of a three-dimensional icon layer (201), wherein the first portion of the three-dimensional icon layer has a first volumetric fill requirement; jetting a second volume of the first radiation-curable ink (209) to a second portion of the three-dimensional icon layer, wherein the second portion of the three-dimensional icon layer has a second volumetric fill requirement; blading excess radiation-curable ink from the three-dimensional icon layer; and radiation curing remaining radiation-curable ink.

METHOD FOR PRODUCING A MULTILAYER BODY, MULTILAYER BODY, USE OF A MULTILAYER BODY, USE OF A FIRST LAYER MADE OF A FIRST METAL AND A SECOND LAYER MADE OF A SECOND METAL IN A MULTILAYER BODY AND USE OF A HEAT APPLICATION DEVICE

The invention relates to a method for producing a multilayer body (12), a multilayer body (12), the use of a multilayer body (12), the use of a first layer (1) made of a first metal and a second layer (2) made of a second metal in a multilayer body (12) and the use of a heat application device (14). The multilayer body (12) in this case comprises a first layer (1) made of a first metal and a second layer (2) made of a second metal, wherein the first layer (1) and the second layer (2) are arranged directly on top of one another in at least one first region (10), so that in the at least one first region (10) the optical appearance and/or the physical properties of the first (1) and/or second layer (2) are changed, in particular on account of a chemical and/or physical reaction of the first (1) and the second layer (2) with one another.

PROCÉDÉ DE FABRICATION D'UN CORPS MULTICOUCHE, CORPS MULTICOUCHE, UTILISATION D'UN CORPS MULTICOUCHE, UTILISATION D'UNE PREMIÈRE COUCHE CONSTITUÉE D'UN PREMIER MÉTAL ET D'UNE DEUXIÈME COUCHE CONSTITUÉE D'UN DEUXIÈME MÉTAL DANS UN CORPS MULTICOUCHE ET UTILISATION D'UN DISPOSITIF D'APPLICATION DE CHALEUR

L'invention concerne un procédé de fabrication d'un corps multicouche (12), un corps multicouche (12), l'utilisation d'un corps multicouche (12), l'utilisation d'une première couche (1) constituée d'un premier métal et d'une deuxième couche (2) constituée d'un deuxième métal dans un corps multicouche (12) ainsi que l'utilisation d'un dispositif d'application de chaleur (14). Le corps multicouche (12) comprend une première couche (1) composée d'un premier métal et d'une deuxième couche (2) composée d'un deuxième métal, la première (1) et la deuxième couche (2) étant disposées directement l'une sur l'autre dans au moins une première zone (10), de façon que dans la ou les premières zones (10) l'apparence optique et/ou les propriétés physiques de la première couche (1) et/ou de la deuxième couche (2) soient modifiées, en particulier en raison d'une réaction chimique et/ou physique de la première couche (1) et de la deuxième couche (2) l'une avec l'autre.



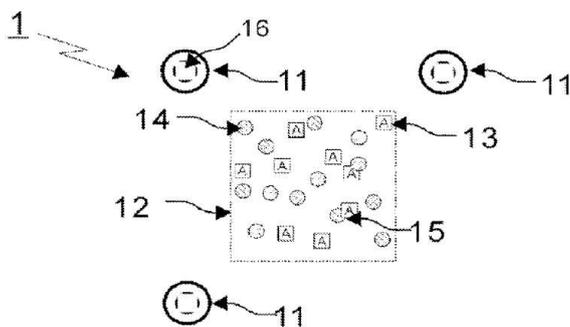
CLAIM 1. Method for producing a multilayer body (12), wherein the method comprises the following steps, which are carried out in particular in the following order: - providing a substrate (3); - applying a first layer (1) of a first metal to the substrate (3); - applying a second layer (2) of a second metal directly to the first layer (1) in at least one first region (10), so that in the at least one first region (10) the optical appearance and/or the physical properties of the first (1) and/or second layer (2) are changed, in particular on account of a chemical and/or physical reaction of the first (1) and the second layer (2) with one another.

ENCODING ELEMENT AND ANTI-COUNTERFEITING PRODUCT

Provided in the embodiments of the present application are an encoding element and an anti-counterfeiting product. The encoding element comprises: a printing stock, wherein the printing stock has an encoding area thereon; the encoding area is provided with at least one group of markers, and at least one of the attributes of markers in the same group is the same; and the markers are randomly distributed, such that encoding information of the encoding element is random. By means of the present application, an encoding system of "one object, one code" is realized, and the uniqueness of encoding is realized by means of random encoding information, which cannot be preset.

ÉLÉMENT DE CODAGE ET PRODUIT ANTI-CONTREFAÇON

Les modes de réalisation de la présente demande concernent un élément de codage et un produit anti-contrefaçon. L'élément de codage comprend : un matériau d'impression, le matériau d'impression ayant une zone de codage sur ce dernier ; la zone de codage est pourvue d'au moins un groupe de marqueurs, et au moins l'un des attributs de marqueurs dans le même groupe est le même ; et les marqueurs sont répartis de manière aléatoire, de telle sorte que les informations de codage de l'élément de codage sont aléatoires. Au moyen de la présente demande, un système de codage de type « un objet, un code » est réalisé, et le caractère unique du codage est réalisé au moyen d'informations de codage aléatoire, qui ne peuvent pas être prédéfinies.



CLAIM 1. A coding element comprising: A first coding region; A substrate having an encoded region thereon; The coding region has at least one set of markers on which at least one of the attributes of the set of markers is identical; The markers are randomly distributed so that the coding information of the coding elements is random.

SYNTHETIC IMAGES WITH ANIMATION OF PERCEIVED DEPTH

A method for manufacturing a synthetic image device comprises providing (S10) of a focusing element array. An image layer is arranged (S20) in a vicinity of a focal distance of focusing elements, whereby a synthetic image composed of enlarged portions of the image layer becomes perceivable for a viewer. The image layer comprises an array of image cells, each associated with a respective focusing element. The step of arranging (S20) the image layer comprises creation (S22) of a respective image object within each respective one of said image cells. The image objects are such that an animation becomes perceivable, comprising a series of synthetic images perceivable in-series as the viewing direction changes. The image objects are such that each one of the synthetic images of the series is perceivable at a respective perceivable depth, changing between the synthetic images of the series of synthetic images.

IMAGES SYNTHÉTIQUES AVEC ANIMATION DE PROFONDEUR PERÇUE

Un procédé de fabrication d'un dispositif d'images synthétiques comprend la fourniture (S10) d'un réseau d'éléments de focalisation. Une couche d'image est agencée (S20) à proximité d'une distance focale d'éléments de focalisation, moyennant quoi une image synthétique composée de portions agrandies de la couche d'image devient perceptible pour un observateur. La couche d'image comprend un réseau de cellules d'image, chacune associée à un élément de focalisation respectif. L'étape d'agencement (S20) de la couche d'image comprend la création (S22) d'un objet d'image respectif à l'intérieur de chacune des dites cellules d'image respectives. Les objets d'image sont tels qu'une animation devient perceptible, comprenant une série d'images synthétiques pouvant être perçues en série lorsque la direction de visualisation change. Les objets d'image sont tels que chacune des images synthétiques de la série est perceptible à une profondeur perceptible respective, changeant entre les images synthétiques de la série d'images synthétiques.

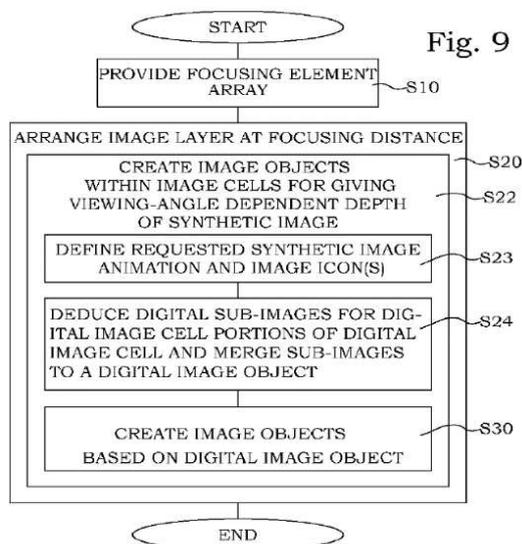


Fig. 9

CLAIM 1. A method for manufacturing a synthetic image device, comprising the steps of: - providing (S10) a focusing element array (20); - arranging (S20) an image layer (10) in a vicinity of a focal distance (d) of focusing elements (22) of said focusing element array (20), whereby a synthetic image composed of enlarged portions of said image layer becomes perceivable for a viewer (2); wherein said image layer (10) comprises an array (7) of image cells (16), wherein each image cell (16) is associated with a respective focusing element (22) of said focusing element array (20) and wherein said array (7) of image cells (16) having a same element distance as said focusing element array (20); wherein said step of arranging (S20) the image layer (10) comprises creation (S22) of a respective image object (19) within each respective one of said image cells (16), said image objects (19) being such that an animation becomes perceivable, said animation comprising a series of synthetic images perceivable in-series as the viewing direction (3) changes from a first viewing direction to a second viewing direction, wherein the image objects are such that each one of the synthetic images of said series is perceivable at a respective depth changing between the synthetic images of said series of synthetic images; wherein the change of depth throughout the animation utilizes at least three different depths.

P35620

LABEL

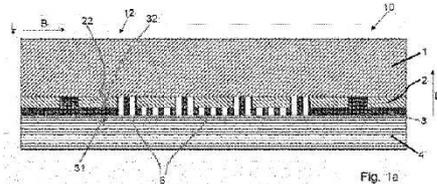
WO2022218600

SCRIBOS

Priority Date: 15/04/2021

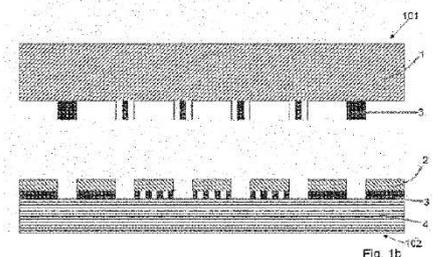
SECURITY LABEL, A SERIES OF SECURITY LABELS, AUTHENTICATION SYSTEM HAVING A SERIES OF SECURITY LABELS AND METHOD FOR PRODUCING A SECURITY LABEL

The invention relates to a security label having: a transparent carrier layer (1); a metallized layer (3) having at least one first optical security feature (6); a release layer (2) arranged partially between the metallized layer (3) and the carrier layer (1); and an integrity-indicating element arranged in the metallized layer (3), the at least one first optical security feature (6) being introduced into the metallized layer (3) by means of laser lithography.



ÉTIQUETTE DE SÉCURITÉ, SÉRIE D'ÉTIQUETTES DE SÉCURITÉ, SYSTÈME D'AUTHENTIFICATION COMPRENANT UNE SÉRIE D'ÉTIQUETTES DE SÉCURITÉ ET PROCÉDÉ DE FABRICATION D'UNE ÉTIQUETTE DE SÉCURITÉ

L'invention concerne une étiquette de sécurité pourvue d'une couche support (1) transparente, d'une couche métallisée (3) comprenant au moins une première marque de sécurité optique (6) et d'une couche intercalaire (2) disposée partiellement entre la couche métallisée (3) et la couche support (1), un indicateur d'effraction étant disposé dans la couche métallisée (3) et la ou les premières marques de sécurité optiques (6) étant créées par lithographie laser dans la couche métallisée (3).



CLAIM 1. The security label according to claim 2, characterized in that a separating force between carrier layer (1) and release layer (2) is smaller than the separating force between release layer (2) and metallized layer (3) and the separating force between metallized layer (3) and adhesive layer (4) is smaller than the separating force between carrier layer (1) and metallized layer (3). Security label according to Claim 1, 2 or 3, characterized in that the release layer (2) is transparent.

P35622

BANKNOTE – RELIEF

WO2022218569

GIESECKE & DEVRIENT CURRENCY TECHNOLOGY

Priority Date: 13/04/2021

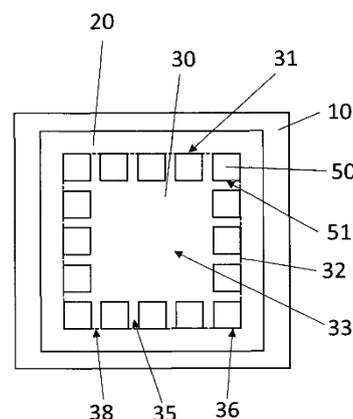
OPTICALLY VARIABLE SECURITY ELEMENT AND VALUE DOCUMENT COMPRISING THE OPTICALLY VARIABLE SECURITY ELEMENT

The invention relates to an optically variable security element having a motif region, wherein an optically variable main motif having a main motif shape is visible to a viewer in the motif region at least a first viewing angle, and the optically variable main motif comprises substructures visible to the viewer, wherein the substructures are Submotive visible to the viewer with a submotif shape, the Submotive have the same submotif shape, and the submotif shape corresponds to the main motif shape.

ÉLÉMENT DE SÉCURITÉ OPTIQUEMENT VARIABLE ET DOCUMENT DE VALEUR CONTENANT L'ÉLÉMENT DE SÉCURITÉ OPTIQUEMENT VARIABLE

L'invention concerne un élément de sécurité optiquement variable contenant une zone de motif, un motif principal optiquement variable ayant une forme de motif principal étant visible pour un observateur dans la région de motif à au moins un premier angle de visualisation, et le motif principal optiquement variable comprenant des sous-structures qui sont visibles pour l'observateur, lesdites sous-structures étant des sous-motifs qui sont visibles pour l'observateur et ont une forme de sous-motifs, les sous-motifs ayant la même forme de sous-motifs, et la forme de sous-motifs correspondant à la forme du motif principal.

CLAIM 1. An optically variable security element (10) having a motif region (20), wherein (a) an optically variable main motif (30) having a main motif shape (31) in the motif region (20) is visible to a viewer at least a first viewing angle, and (b) the optically variable main motif (30) comprises substructures visible to the viewer, characterized in that Such that (c) the substructures are Submotive (50) visible to the viewer with a submotive shape (51), (d) the Submotive (50) have the same submotive shape (51), and (e) the submotive shape (51) corresponds to the main motive shape (31).



P35623

BANKNOTE – RELIEF

WO2022218568

GIESECKE & DEVRIENT CURRENCY TECHNOLOGY

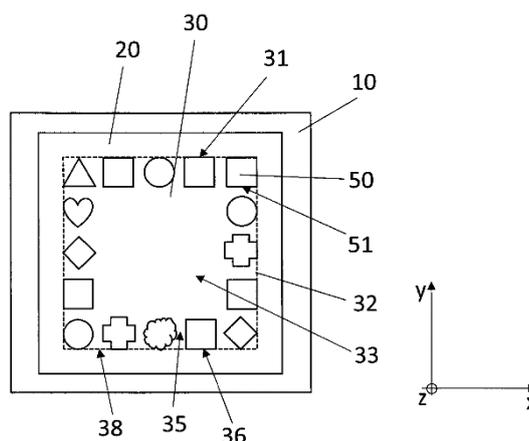
Priority Date: 13/04/2021

OPTICALLY VARIABLE SECURITY ELEMENT AND VALUE DOCUMENT COMPRISING THE OPTICALLY VARIABLE SECURITY ELEMENT

The invention relates to an optically variable security element having a motif region, wherein an optically variable main motif having a contour in the motif region is visible to a viewer at least a first viewing angle, and the optically variable main motif comprises substructures visible to the viewer, wherein the visible substructures are visible along the contour of the main motif, wherein the substructures are Submotive visible to the viewer, and each of the Submotive has a contour.

ÉLÉMENT DE SÉCURITÉ OPTIQUEMENT VARIABLE ET DOCUMENT DE VALEUR CONTENANT L'ÉLÉMENT DE SÉCURITÉ OPTIQUEMENT VARIABLE

L'invention concerne un élément de sécurité optiquement variable contenant une zone de motif, un motif principal optiquement variable ayant un contour étant visible pour un observateur dans la zone de motif à au moins un premier angle de visualisation, et le motif principal optiquement variable comprenant des sous-structures qui sont visibles pour l'observateur, lesdites sous-structures visibles étant visibles le long du contour du motif principal, les sous-structures étant des sous-motifs qui sont visibles pour l'observateur, et chacun des sous-motifs étant pourvu d'un contour.



CLAIM 1. An optically variable security element (10) having a motif region (20), wherein (a) an optically variable main motif (30) having a contour (32) in the motif region (20) is visible to a viewer at least a first viewing angle, and (b) the optically variable main motif (30) comprises substructures visible to the viewer, wherein the visible substructures are visible along the contour (32) of the main motif (30), characterized in that Such that (c) the substructures are Submotive (50) visible to the viewer, and (d) each of the Submotive (50) has a contour (52).

P35624

PRINTING – BANKNOTE – CARD – STRIP – LUMINESCENCE

WO2022217315

CCL SECURE

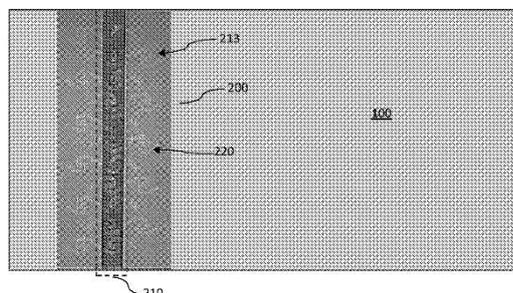
Priority Date: 15/04/2021

A PRINTED SECURITY FEATURE

A printed security feature for a security document including a substrate, the security feature comprising: a first functional effect ink printed on a first surface of the substrate, and a second functional effect ink printed on the first and/or a second surface of the substrate, at least partially overlapping the first functional effect ink, wherein the first and the second functional effect inks in combination create an imagery feature which resembles an appearance of a security thread.

ÉLÉMENT DE SÉCURITÉ IMPRIMÉ

Élément de sécurité imprimé pour un document de sécurité comprenant un substrat, l'élément de sécurité comprenant : une première encre à effet fonctionnel imprimée sur une première surface du substrat, et une seconde encre à effet fonctionnel imprimée sur la première et/ou la seconde surface du substrat, chevauchant au moins partiellement la première encre à effet fonctionnel, les première et seconde encres à effet fonctionnel en combinaison créant un élément d'imagerie qui ressemble à un aspect d'un fil de sécurité.



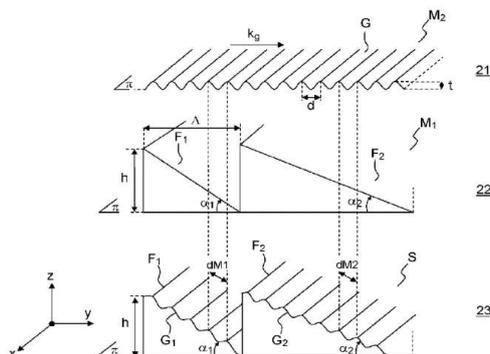
CLAIM 1. A printed security feature for a security document including a substrate, the security feature comprising: a first functional effect ink printed on a first surface of the substrate, and a second functional effect ink printed on the first and/or a second surface of the substrate, at least partially overlapping the first functional effect ink, wherein the first and the second functional effect inks in combination create an imagery appearance which resembles an appearance of a security thread.

OPTICAL SAFETY COMPONENTS VISIBLE IN REFLECTION, MANUFACTURING OF SUCH COMPONENTS AND SECURE DOCUMENTS EQUIPPED WITH SUCH COMPONENTS

The invention relates to an optical safety component (40) configured to be observed in reflection in an observation direction (ΔO) forming an observation angle (θ_{obs}) with an illumination direction (ΔL). The component comprises a diffractive structure with a first pattern consisting of a set of parallel facets which have variable slopes in a slope variation direction and which are arranged to produce a dynamic visual effect in a given angular tilt range ($\Delta\theta_{\text{tilt}}$). In at least one region, the first pattern is modulated by a grating designed to produce a reflective diffraction effect at order 1 and order -1. The period of the grating, the maximum angular value of the slopes, and the angle of observation are designed to produce an achromatic animation in a first part ($\Delta\theta_B$) of the angular tilt range and to produce the same, iridescent, animation in a second part ($\Delta\theta_{R-}$; $\Delta\theta_{R+}$) of the angular tilt range in sequence with the achromatic animation on both sides of the first part of the angular tilt range.

COMPOSANTS OPTIQUES DE SÉCURITÉ VISIBLES EN RÉFLEXION, FABRICATION DE TELS COMPOSANTS ET DOCUMENTS SÉCURISÉS ÉQUIPÉS DE TELS COMPOSANTS

L'invention concerne un composant optique de sécurité (40) configuré pour être observé en réflexion dans une direction d'observation (ΔO) faisant un angle d'observation (θ_{obs}) avec une direction d'éclairage (ΔL). Le composant comprend une structure diffractive avec un premier motif constitué d'un ensemble de facettes parallèles, présentant des pentes variables selon une direction de variation de la pente, agencées pour produire un effet visuel dynamique dans une plage angulaire de tilt donnée ($\Delta\theta_{\text{tilt}}$). Dans au moins une région, le premier motif est modulé par un réseau déterminé pour produire un effet de diffraction en réflexion à l'ordre 1 et à l'ordre -1. La période du réseau, la valeur angulaire maximale des pentes et l'angle d'observation sont déterminés pour produire une animation achromatique dans une première partie ($\Delta\theta_B$) de la plage angulaire de tilt et pour produire la même animation, iridescente, dans une deuxième partie ($\Delta\theta_{R-}$; $\Delta\theta_{R+}$) de la plage angulaire de tilt s'enchaînant avec l'animation achromatique de part et d'autre de la première partie de la plage angulaire de tilt.



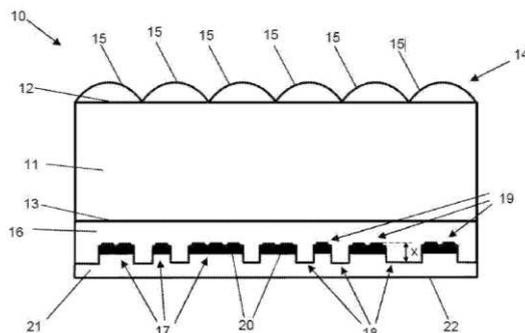
CLAIM 1. Optical security component (101, 102) configured to be observed in reflection, with the naked eye, along at least one first observation face (100), in an observation direction (d_o) forming a given observation angle (θ_{Obs}) with a given illumination direction (ΔL), the component comprising: A first layer (113) made of dielectric material, transparent in the visible range; at least one first diffractive structure (S) etched on said first layer; and a second layer (114), at least partially covering said first diffractive structure, and having a spectral band of reflection in the visible range; And in which: Said first diffractive structure comprises a first pattern (m_1) consisting of a set of parallel facets (F_i), having slopes which vary in a direction (Y) of variation of the slope, said slopes comprising angular values comprised in absolute value between a minimum angular value (α_{min}) and a maximum angular value (α_{max}), said facets comprising a given maximum height (h_m), said set of facets being arranged to produce, when the component is illuminated in white light along said illumination axis, A dynamic visual effect observable in reflection under the effect of a tilt movement along a tilt axis (D) substantially perpendicular to the direction of variation of the slope, and in a given tilt angular range ($\Delta\theta_{\text{tilt}}$); in at least a first region, Said first pattern is modulated by a second pattern (M_2) forming a one-dimensional periodic grating, with a predetermined period (d) comprised between 450 nm and 650 nm, said grating comprising a grating vector (k_g) with a direction collinear to the direction (y) of variation of the slope, Said grating being determined so as to produce, after deposition of the second layer, a diffractive effect in reflection at order 1 and at order -1, said period (d) of the grating, said maximum angular value (α_{max}) of the slopes and said observation angle (θ_{Obs}) being determined so as to produce, in reflection, An achromatic animation in a first part (DQB) of the tilt angular range around the specular reflection, and to produce the same animation, iridescent, in a second part ($\Delta\theta_{R-}$; $\Delta\theta_{R+}$) of the tilt angular range, the iridescent animation concatenating with the achromatic animation on either side of said first part of the tilt angular range.

OPTICALLY VARIABLE DEVICE

The present disclosure relates to an optically variable device, preferably for use in a security document such as a banknote. The optically variable device comprises a substrate having a first side with an array of focusing elements, and a second side opposite to the first side, the second side having a plurality of image elements. The image elements comprise a first group of sub-elements that are magnified by the focusing elements at a first range of viewing angles, and a second group of sub-elements that are magnified by focusing elements at a second range of viewing angles. The image elements comprise a plurality of recessed regions that are recessed on the second side and a corresponding plurality of non-recessed regions. At least a first portion of the recessed regions and/or non-recessed regions comprise diffraction gratings. A segregated ink is present in the recessed regions but not in the non-recessed regions.

DISPOSITIF OPTIQUEMENT VARIABLE

La présente divulgation concerne un dispositif optiquement variable, de préférence destiné à être utilisé dans un document de sécurité tel qu'un billet de banque. Le dispositif optiquement variable comprend un substrat ayant un premier côté avec un réseau d'éléments de focalisation et un second côté opposé au premier côté, le second côté ayant une pluralité d'éléments d'image. Les éléments d'image comprennent un premier groupe de sous-éléments qui sont agrandis par les éléments de focalisation à une première plage d'angles de visualisation et un second groupe de sous-éléments qui sont agrandis par des éléments de focalisation dans une seconde plage d'angles de visualisation. Les éléments d'image comprennent une pluralité de régions évidées qui sont en retrait sur le second côté et une pluralité correspondante de régions non évidées. Au moins une première partie des régions évidées et/ou des régions non évidées comprend des réseaux de diffraction. Une encre séparée est présente dans les régions évidées, mais pas dans les régions non évidées.



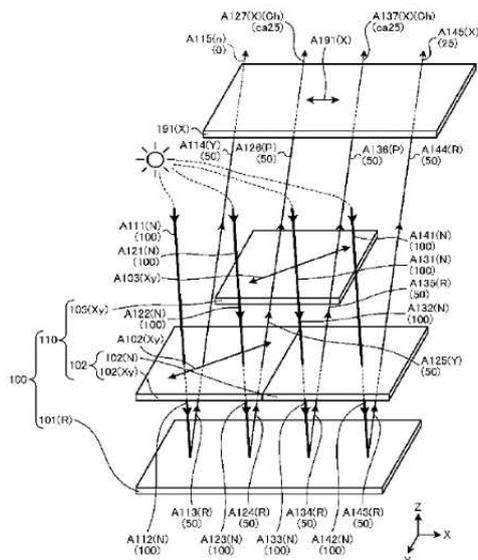
CLAIM 1. An optically variable device comprising: a substrate having a first side and a second side opposite to the first side; an array of focusing elements on the first side; and a plurality of image elements on the second side, the image elements comprising a first group of sub-elements that are magnified by the focusing elements at a first range of viewing angles, and a second group of sub-elements that are magnified by focusing elements at a second range of viewing angles, wherein the image elements comprise a plurality of recessed regions that are recessed on the second side and a corresponding plurality of non-recessed regions, at least a first portion of the recessed regions and/or non-recessed regions comprising diffraction gratings, wherein a first segregated ink is present in the recessed regions but not in the non-recessed regions.

OPTICAL DISPLAY MEDIUM, ARTICLE, AND METHOD FOR USING OPTICAL DISPLAY MEDIUM

Provided is an optical display medium comprising a light reflection layer and a patterned phase difference layer, wherein the light reflection layer reflects incident light as circularly polarized light or linearly polarized light, the patterned phase difference layer includes regions having a phase difference, an in-plane retardation ReH(400) at a wavelength of 400 nm, an in-plane retardation ReH(550) at a wavelength of 550 nm, and an in-plane retardation ReH(700) at a wavelength of 700 nm (the unit of each of the in-plane retardations is nm) of one or more regions H among the regions having the phase difference satisfy a specific relation, and the region H converts light passing through the region H into light having a polarization state that differs according to the wavelength thereof.

SUPPORT D’AFFICHAGE OPTIQUE, ARTICLE ET PROCÉDÉ D’UTILISATION DE SUPPORT D’AFFICHAGE OPTIQUE

L’invention concerne un support d’affichage optique comprenant une couche de réflexion de lumière et une couche à différence de phase à motifs, la couche de réflexion de lumière réfléchissant la lumière incidente sous la forme d’une lumière à polarisation circulaire ou d’une lumière à polarisation linéaire, la couche à différence de phase à motifs comprenant des régions ayant une différence de phase, un retard dans le plan ReH(400) à une longueur d’onde de 400 nm, un retard dans le plan ReH(550) à une longueur d’onde de 550 nm, et un retard dans le plan ReH(700) à une longueur d’onde de 700 nm (l’unité de chacun des retards dans le plan est de nm) d’une ou de plusieurs régions H parmi les régions ayant la différence de phase satisfaisant une relation spécifique, et la région H convertissant la lumière traversant la région H en lumière ayant un état de polarisation qui diffère en fonction de la longueur d’onde de celle-ci.



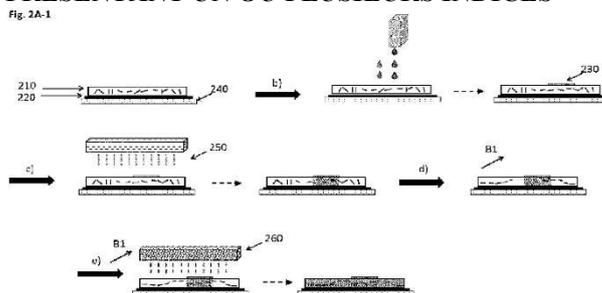
CLAIM 1. An optical display medium comprising a light reflection layer and a patterned retardation layer, wherein the light reflection layer is a layer that reflects incident light as circularly polarized light or linearly polarized light, and the patterned retardation layer comprises: An in-plane retardation ReH (400) in a wavelength 400 nm of one or more regions H of the regions having retardation; An in-plane retardation ReH (550) at a wavelength 550 nm and an in-plane retardation ReH (700) (unit: both nm) at a wavelength 700 nm satisfy the following Formula (1), and satisfy either of the following Formulas (2) and (3), $ReH(550) > 275$ Equation (1) $ReH(400)/400 > ReH(550)/550 > ReH(700)/700$ Equation (2) $ReH(400)/400 < ReH(550)/550 < ReH(700)/700$ Equation (3) and the region H converts light passing through the region H into light having a polarization state different for each wavelength of the light.

METHODS FOR PRODUCING OPTICAL EFFECT LAYERS COMPRISING MAGNETIC OR MAGNETIZABLE PIGMENT PARTICLES AND EXHIBITING ONE OR MORE INDICIA

The invention relates to the field of the protection of security documents such as for example banknotes and identity documents against counterfeit and illegal reproduction. In particular, the present invention provides methods for producing optical effect layers (OELs) exhibiting one or more indicia (x30) on a substrate (x20), said method comprising a step of exposing a coating layer (x10) comprising non- spherical magnetic or magnetizable pigment particles to a magnetic field of a magnetic-field generating device so as to orient at least a part of the magnetic or magnetizable pigment particles; a step of applying a top coating composition on top of the coating layer (x10) and in the form of one or more indicia (x30), and a step of at least partially curing the coating layer (x10) and the one or more indicia (x30) with a curing unit (x50).

PROCÉDÉS DE PRODUCTION DE COUCHES À EFFET OPTIQUE COMPRENANT DES PARTICULES PIGMENTAIRES MAGNÉTIQUES OU MAGNÉTISABLES ET PRÉSENTANT UN OU PLUSIEURS INDICES

L'invention concerne le domaine de la protection de documents de sécurité, par exemple des billets de banque et des pièces d'identité, contre la contrefaçon et la reproduction illégale. En particulier, la présente invention concerne des procédés de production de couches à effet optique (CEO) présentant un ou plusieurs indices (x30) sur un substrat (x20), ledit procédé comprenant une étape d'exposition d'une couche de revêtement (x10) comprenant des particules pigmentaires magnétiques ou magnétisables non sphériques à un champ magnétique d'un dispositif de génération de champ magnétique de manière à orienter au moins une partie des particules pigmentaires magnétiques ou magnétisables ; une étape d'application d'une composition de revêtement supérieur sur le dessus de la couche de revêtement (x10) et sous la forme d'un ou de plusieurs indices (x30), et une étape de durcissement au moins partiel de la couche de revêtement (x10) et dudit un ou desdits indices (x30) à l'aide d'une unité de durcissement (x50).



ID CARD MANUFACTURING METHOD.

The present invention relates to a method for manufacturing an ID card, and more particularly, to a method for manufacturing an ID card, which can improve manufacturing speed of the ID card. The method includes: Preparing a protective sheet having a surface protective coating layer formed by coating and curing a protective coating solution on one surface of a base material; preparing a card base by stacking a first transparent sheet and a second transparent sheet on each of top and bottom surfaces of the base sheet with reference to a base sheet printed with an identification element; forming a pressure sensitive adhesive by stacking the protective sheet on at least one surface of the card base; And segmenting the card pressing body (S4).



CLAIM 1. A method for manufacturing a board, comprising the steps of: (S1) preparing a protective sheet having a surface protective coating layer formed by coating and then curing a protective coating solution on one surface of a base material; (S2) preparing a card base by laminating a first transparent sheet and a second transparent sheet on each of upper and lower surfaces of the base sheet with reference to a printed identification element; And a step (S4) of segmenting the card pressing body.

P35647

RELIEF

JP2022156988

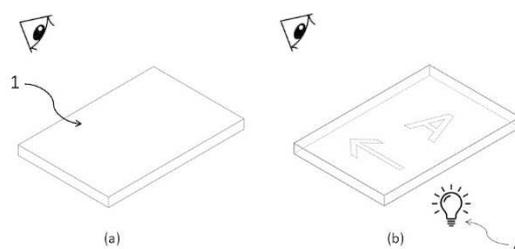
SEIKO GIKEN

Priority Date: 31/03/2021

COLORED TRANSPARENT DIFFRACTION OPTICAL ELEMENT DECORATIVE MOLDED ARTICLE

TOPIC: To provide a light diffraction optical element decorative molded article capable of back surface illumination, in which a mark such as a design can be visually recognized on a front surface when illuminated from a visual back surface side, and a light diffraction grating pattern is not visually recognized and an inconspicuous appearance is obtained when not illuminated. INVENTION: a colored transparent molded article having a light-transmissive plate-like portion, the colored transparent molded article comprising: a flat surface side that emits light and visually recognizes; and a light diffraction grating surface having a plurality of fine concave and convex portions formed on a back surface side thereof, wherein a region of the fine concave and convex portions is formed by a pattern or the like; A portion of the light that has entered when illuminated from the back surface side is guided and diffusely reflected, and the pattern can be visually recognized from the flat surface side serving as the outer surface portion of the molded article body by the fine relief part pattern region, and the color development of the diffraction grating part is not noticeable when not illuminated.

CLAIM 1. A molded article having a light-transmissive plate-like portion, the molded article comprising: a first surface having a flat surface; and a second surface having the flat surface portion and a plurality of fine relief portions formed therein, the plurality of fine relief portions of the second surface having a light diffraction grating structure; A region shape of the diffraction optical element (DOE) having the fine concavities and convexities is a character, a figure, a symbol, a design, or a pattern, wherein a light beam can be shaped and characters, figures, symbols, designs, or patterns can be projected by the diffraction optical element (DOE).



P35648

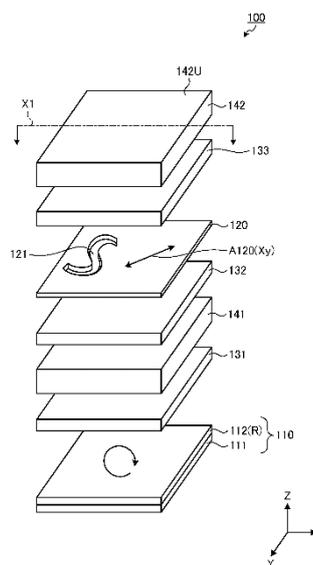
ZEON

JP2022155079

Priority Date: 30/03/2021

IDENTITY MEDIUM, MANUFACTURING METHOD, ARTICLE, AND METHOD OF USING IDENTIFICATION MEDIUM

TOPIC: To provide an identification medium or the like that has high anti-counterfeiting performance, can utilize an identification function without using a special determination tool, and can highly conceal a location having the identification function. INVENTION: An identification medium including a light reflection layer and a patterned retardation layer, wherein the light reflection layer is a layer that reflects incident light as circularly polarized light or linearly polarized light, the patterned retardation layer is a layer that includes a region having a retardance, and is provided on the identification medium such that the region having a retardance occupies a portion of a region of a display surface of the identification medium, The identification medium further includes a thermoplastic resin layer (A) provided in direct contact with the surface of the patterned retardation layer on the light reflection layer side; and a thermoplastic resin layer (B) provided in direct contact with the surface of the patterned retardation layer on the opposite side to the light reflection layer side; a method of manufacturing the identification medium, an article provided with the identification medium, and a method of using the identification medium.



CLAIM 1. An identification medium comprising a light reflection layer and a patterned retardation layer, wherein the light reflection layer is a layer that reflects incident light as circularly polarized light or linearly polarized light, the patterned retardation layer is a layer that includes a region having a retardance, and the region having a retardance occupies a portion of a region of a display surface of the identification medium. The identification medium is a layer provided on an identification medium, wherein the identification medium further includes a thermoplastic resin layer (A) provided in direct contact with a surface of the patterned retardation layer on the light reflection layer side, and a thermoplastic resin layer (B) provided in direct contact with a surface of the patterned retardation layer on the opposite side to the light reflection layer side.

P35651

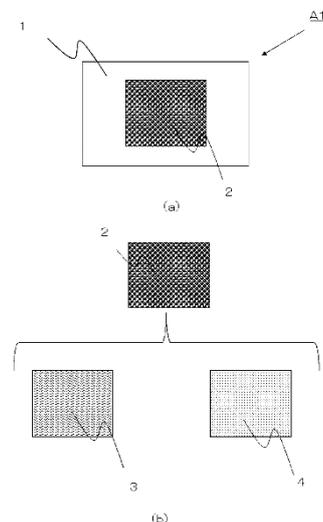
JP2022152459

Priority Date: 29/03/2021

NATIONAL PRINTING BUREAU

DOT MOIRÉ FORMING

TOPIC: To provide a dot moiré forming body in which an image is constituted by hemispherical dot groups, whereby the dependency of the observation angle is reduced, and the image is formed by observing a moiré pattern, thereby making it easier to visually recognize a dynamic and three-dimensional effect. INVENTION: a first element group in which a plurality of hemispherical first elements are arranged at a first direction and at a first pitch is arranged at a second direction; A first dot pattern formed by arranging a plurality of hemispherical second elements at a second pitch; and a second element group formed by arranging a plurality of hemispherical second elements at a third pitch different from the first pitch in the second direction; A second dot pattern formed by a plurality of arranged at a fourth pitch; and a third element group formed by at least a portion of the first element and the second element overlapping, the third element group being formed by arranging a plurality of third elements whose width, depth, or height varies periodically in accordance with a difference between the first pitch and the third pitch.



CLAIM 1. A dot moir forming body, comprising: a plurality of two hemispherical elements having the same or different diameters disposed on at least a portion of a light reflective or light transmissive substrate so as to at least partially overlap, wherein a height or a depth of an area where the portions overlap is greater than or deeper than a height or a depth of the two elements.

P35652

PRINTING

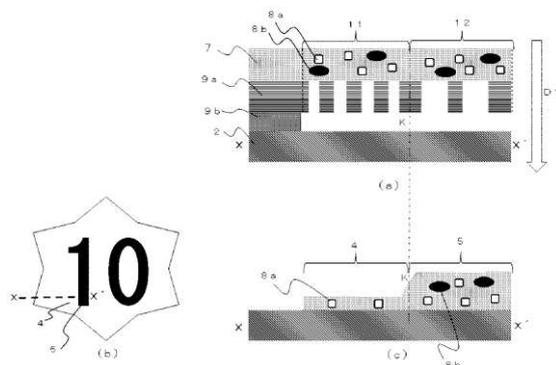
JP2022152453

Priority Date: 29/03/2021

NATIONAL PRINTING BUREAU

PRINTED MATERIAL AND METHOD FOR MAKING SAME

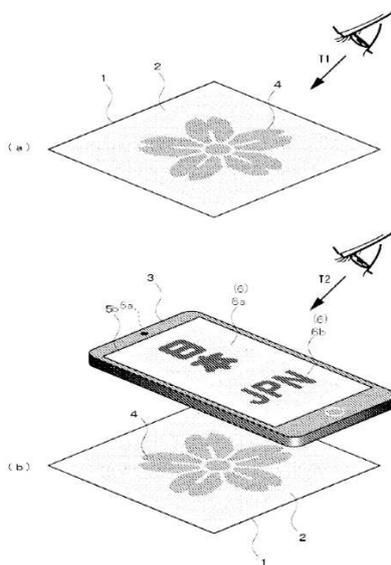
TOPIC: To provide a printed material in which a printed region having raised and no boundary is formed, wherein the number of particles or particle sizes of functional pigments contained in the printed region differs between a portion constituting the printed region and another portion constituting the printed region. INVENTION: a printed material of the present invention is a printed material having a printed region built up by one type of ink including at least one type of functional pigment on a substrate, wherein the printed region includes at least a first printed region and a second printed region, and The first printed region and the second printed region are formed without a boundary, and the number of particles and/or the particle size of the functional pigment per unit area in the first printed region and the second printed region are different.



CLAIM 1. A printed material comprising a printed region on at least a portion of a substrate, the printed region being populated with one type of ink containing at least one type of functional pigment, wherein the printed region comprises at least a first printed region and a second printed region, and The first printed region and the second printed region being formed without a boundary, and the number of particles and/or the particle size of the functional pigment per unit area in the first printed region and the second printed region being different.

ANTI-COUNTERFEITING MEDIUM READING METHOD CAPABLE OF AUTHENTICATING AT SPATIAL FREQUENCY AND ANTI-COUNTERFEITING MEDIUM READING PROGRAM CAPABLE OF AUTHENTICATING AT SPATIAL FREQUENCY

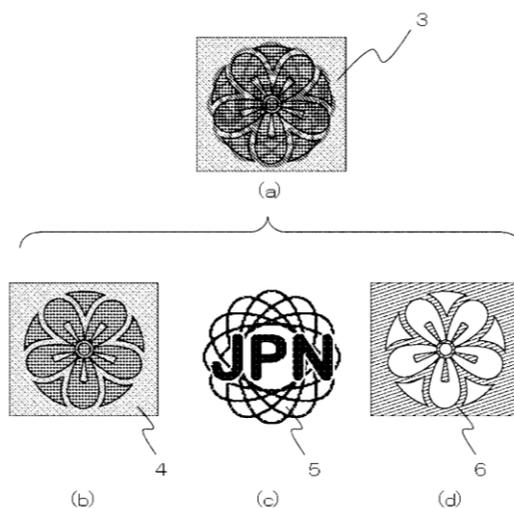
TOPIC: To provide an anti-counterfeiting medium reading method and an anti-counterfeiting medium reading program capable of causing an anti-counterfeiting medium capable of authenticating at a spatial frequency to be displayed on a screen by imaging. INVENTION: An anti-counterfeiting medium reading method includes performing spatial frequency image conversion on which a target image, in which a collective pattern of regularly arranged streaks is input by image capturing, is converted into a spatial frequency image by spatial frequency conversion, and using center coordinates of the spatial frequency image and an intensity peak appearing in the spatial frequency image to calculate a real spatial distance d1, d2Image inclination θ at the time of imaging the collective pattern1, θ_2 , the real space distance d1, d2And image tilt θ_1 , θ_2 A combining step of superimposing the slit patterns S1 and S2 and the target image to combine the invisible image applied to the aggregate pattern, and a displaying step of displaying the invisible image.



CLAIM 1. Converting, by spatial frequency conversion, a target image, to which a collective pattern of streaks regularly arranged is input by imaging, into a spatial frequency image by spatial frequency conversion; and calculating a set pattern of streaks with center coordinates of the spatial frequency image converted in the spatial frequency image conversion, Calculating a real spatial distance based on a streak pitch of the set pattern and an image inclination when capturing an image of the set pattern using an intensity peak appearing in the spatial frequency image; A slit pattern generating step of generating a slit pattern using the actual spatial distance and the image inclination calculated in the calculating step; a synthesizing step of superimposing the slit pattern generated in the slit pattern generating step with the target image and synthesizing an invisible image applied to the set pattern; A display step of displaying the invisible image synthesized in the synthesis step.

ANTI-COUNTERFEITING PRINTED MATERIAL

TOPIC: In a printed material that changes an image under diffuse reflected light and under specular reflected light, there is a problem in that the effect of disappearance of an image under specular reflected light that can be confirmed under diffuse reflected light is inferior due to a substrate or the like. INVENTION: An image display device comprising: a first image including an information element group including a graphic visible under diffuse reflected light formed by a photoluminescent ink and a background element group uniformly disposed within a printed pattern; An anti-counterfeiting printed material comprising: a second image in which a plurality of latent image elements formed by transparent ink are arranged so as to overlap with a background element, thereby producing a graphic visible under specular reflected light; and a third image in which a plurality of camouflage elements having higher gloss than the substrate are arranged, thereby producing a graphic that is negative-positive reversed from the graphic produced by the information element group.



CLAIM 1. An anti-counterfeiting printed material comprising a printed pattern on at least a portion of a substrate, the printed pattern being visually recognized by changing graphics visually recognized under diffuse reflected light and graphics visually recognized under specular reflected light, wherein the printed pattern comprises a first image, a second image, and a third image, and the first image comprises: An information element group formed by arranging a plurality of information elements formed by photoluminescent ink of a color different from that of the substrate to form a graphic visually recognized under the diffusely reflected light, and a background element group formed by uniformly arranging a plurality of background elements formed by photoluminescent ink within the print pattern without overlapping with the information elements; The image display device according to claim 1, wherein the second image is formed by a plurality of latent image elements formed by transparent ink superimposed on the background element to form a graphic visible under the specularly reflected light, and the third image is a color different from that of the information elements, and A plurality of camouflage elements having a higher gloss than that of the substrate are arranged so as to fit with the group of information elements to form a graphic that is negatively and positively reversed from a graphic formed by the group of information elements.

P35671

PRINTING – CARD – RELIEF – MICROPRISM

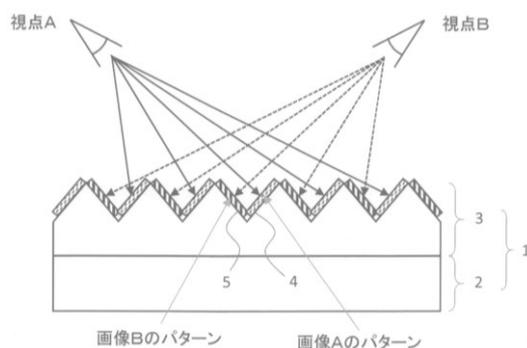
JP2022141165

TOPPAN PRINTING

Priority Date: 15/03/2021

ANTI-COUNTERFEITING MEDIA

TOPIC: To provide an anti-counterfeiting medium capable of generating a changing effect without impairing the changing effect even when a protective layer is provided on an image having the changing effect, and without affecting optical path misalignment or the like. INVENTION: a blazed grating 3 having a serrated cross-section is formed on at least a portion of a base material 2, and a pattern for forming a first image and a pattern for forming a second image are formed on a serrated surface 4 facing a first direction of the blazed grating, and a pattern for forming a second image are formed on a serrated surface 5 facing a second direction.



CLAIM 1. An anti-counterfeiting medium, wherein a blazed grating having a serrated cross-section is formed on at least a portion of a base material, a pattern forming a first image on a serrated surface facing a first direction of the blazed grating, and a pattern forming a second image on a serrated surface facing a second direction of the blazed grating.

P35673

PRINTING – LABEL

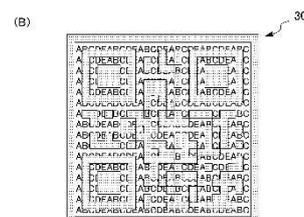
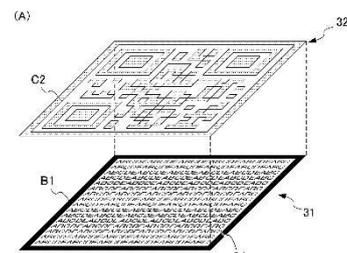
JP2022139020

DAI NIPPON PRINTING

Priority Date: 11/03/2021

INFORMATION RECORDING MATERIAL, LABEL, READING APPARATUS, PROGRAM, AND AUTHENTICITY DETERMINATION METHOD

TOPIC: To provide an information recording member, a label, a reading apparatus, a program, and an authenticity determination method that make it difficult to visually recognize information printed with a transparent material and improve reading accuracy by the reading apparatus. INVENTION: An information recording material 30 including a brightening layer 31 and a transparent layer 32, wherein the brightening layer 31 and the transparent layer 32 are provided on one surface of a base 10 and are configured such that the amount of reflected light varies depending on an observation angle, and the brightening layer 31 includes: The image is a first image including a solid image, and the transparent layer 32 is a second image formed of a transparent material and including a code having variable information. in the second image, an identification region for recognizing a reading region of the code is formed on the solid image.



CLAIM 1. An information recording material comprising a first ink layer and a second ink layer, wherein the first ink layer and the second ink layer are provided on one surface of a substrate and are each configured to differ in reflected light quantity depending on an observation angle, and the first ink layer comprises: An information recording material is a first image including a solid image, the second ink layer is a second image including a code formed of a transparent material and having variable information, and an identification region for recognizing a reading region of the code in the second image is formed on the solid image.

P35674

LUMINESCENCE

IN202221052488

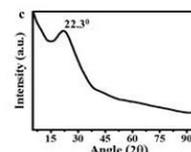
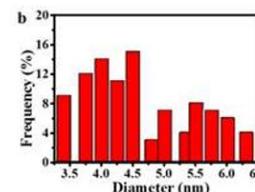
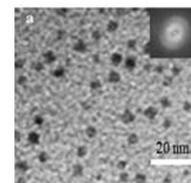
Priority Date: 14/09/2022

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY | UNIVERSITY OF SYDNEY

CARBON QUANTUM DOTS BASED PATTERNABLE MATERIAL SYSTEM FOR FABRICATING FLUORESCENT NANOSTRUCTURES WITH SUBWAVELENGTH RESOLUTION

The present disclosure discloses a two-photon patternable all carbon material system which can be used to fabricate fluorescent 3D micro/nano structures using twophoton lithography, with sub-wavelength resolution. The synthesized material system eliminates the need to use conventional two-photon absorbing materials such as two-photon dyes or two-photon initiators. Additionally, there is no requirement of any additional fluorophore to attain emissive traits in the resin and the polymerized structures. The carbon dots in the resin offer high signal to noise ratio in fluorescent imaging, which is further incorporated for non-invasive imaging and 3D reconstruction of polymerized structures.

CLAIM 1. A two-photon patternable all carbon material system to fabricate fluorescent nanostructures using two-photon lithography, with sub-wavelength resolution.



P35675

BANKNOTE – THREAD – LIQUID CRYSTALS

IN202121011448

Priority Date: 18/03/2021

PATEL SHILPAN PRAVINCHANDRA

COLOR SHIFT BASE FILM AND METHOD OF MANUFACTURING THE SAME

The present invention relates to color shift base film with enhanced spectrum wavelength and stable color shift effect and method of manufacturing the same. A color shift base film comprising at least two liquid crystal polymeric layers individually coated to a dimensionally stable carrier film, wherein the said Liquid crystal polymeric layers are subsequently laminated to each other by an UV curable Acrylic adhesive, Optionally wherein the carrier film is delaminated / peeled off from one side of the said liquid crystal layer, wherein the said color shift base film exhibits color shift effect over a wider spectrum/wavelength, covering NIV to NIR color spectrum. Further a method of manufacturing Color shift base film comprising the steps of: Coating Liquid crystal polymer on a dimensionally stable carrier film, preferably PET film, to form a LC film of a discreet nano meter wavelength; Coating of another Liquid crystal polymer on a dimensionally stable carrier film preferably PET film to form another LC film of a wider range of nanometers wavelength; Laminating the LC films face to face coated over the PET films obtained in step (a) and (b) with the help of UV adhesive and passing through two successive UV curing chamber D1 and D2 for bonding the liquid crystal layer, Winding the web onto a shaft and Optionally, Delaminating/peeling off the substrate from one side of the film to obtain a high security film for further process of manufacture of security thread.



CLAIM 1. A color shift base film comprising at least two liquid crystal polymeric layers (102, 104) individually coated to a dimensionally stable carrier film (101, 103), wherein the said Liquid crystal polymeric layers (102, 104) are subsequently laminated to each other by an UV curable Acrylic adhesive (105), Optionally wherein the carrier film (103) is delaminated / peeled off from one side of the said liquid crystal layer (104), Characterized in that the said color shift base film exhibits color shift effect over a wider spectrum/wavelength, covering NIV to NIR color spectrum.

P35707

THREAD

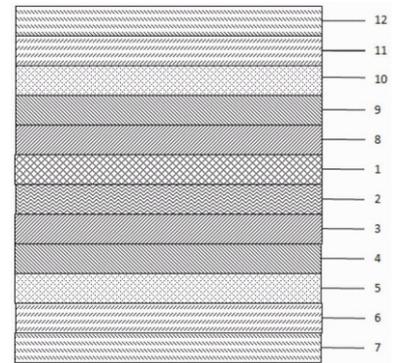
CN115240532

Priority Date: 03/08/2022

GUANGZHOU HUADU LIANHUA PACKING MATERIAL

DOUBLE-SIDED LIGHT ANGLE COLOR-CHANGING MULTIPLE ANTI-COUNTERFEITING SAFETY LINE AND PREPARATION METHOD THEREOF

The invention discloses a double-sided light angle color-changing multiple anti-counterfeiting safety line and a preparation method thereof, and relates to the technical field of anti-counterfeiting safety lines. The invention provides a double-sided light angle color-changing multiple anti-counterfeiting safety line which comprises an original film layer, a color development layer, an information layer, a laser layer, a dielectric layer, an aluminum layer and an ink layer; the information layer comprises a first information layer and a second information layer, the laser layer comprises a first laser layer and a second laser layer, the medium layer comprises a first medium layer and a second medium layer, the aluminum layer comprises a first aluminum layer and a second aluminum layer, and the ink layer comprises a first ink layer and a second ink layer; the color development layer, the first information layer, the first laser layer, the first dielectric layer, the first aluminum layer and the first ink layer are sequentially arranged on one surface of the original film layer, and the second information layer, the second laser layer, the second dielectric layer, the second aluminum layer and the second ink layer are sequentially arranged on the other surface of the original film layer.



CLAIM 1. A double-sided light angle color-changing multiple anti-counterfeiting safety line is characterized by comprising an original film layer, a color development layer, an information layer, a laser layer, a dielectric layer, an aluminum layer and an ink layer; the information layer comprises a first information layer and a second information layer, the laser layer comprises a first laser layer and a second laser layer, the medium layer comprises a first medium layer and a second medium layer, the aluminum layer comprises a first aluminum layer and a second aluminum layer, and the ink layer comprises a first ink layer and a second ink layer; the color development layer, the first information layer, the first laser layer, the first dielectric layer, the first aluminum layer and the first ink layer are sequentially arranged on one surface of the original film layer, and the second information layer, the second laser layer, the second dielectric layer, the second aluminum layer and the second ink layer are sequentially arranged on the other surface of the original film layer.

P35720

PRINTING – BANKNOTE – INFRARED

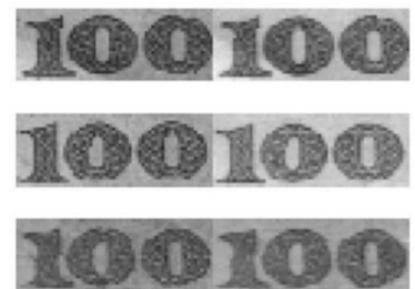
CN115169516

Priority Date: 08/07/2022

WUHAN ZMVISION TECHNOLOGY

OPTICALLY VARIABLE INK IDENTIFICATION METHOD, APPARATUS, ELECTRONIC DEVICE AND STORAGE MEDIUM

The invention provides an optically variable ink identification method, an optically variable ink identification device, an electronic device and a storage medium, wherein the optically variable ink identification method comprises the following steps: obtaining a plurality of positive samples, and extracting an infrared light image and a visible light image of each sample color-changing ink area; extracting an M multiplied by N matrix a from the infrared light image and the visible light image based on a first preset method; obtaining an arbitration matrix d of 1 xM based on the matrix a; extracting a 1 xM matrix A from the paper money to be identified based on a second preset method; obtaining a 1 x M matrix B based on the matrix A; and judging whether the matrix B belongs to the same class of the arbitration matrix d or not based on a preset decision tree to finish target identification. By the mode, the invention does not need multi-angle irradiation, is not influenced by the difference between new and old paper money, has stable true money identification and high false money detection rate, and has good effect on judging the truth of the color-changing ink of the paper money.



CLAIM 1. An optically variable ink identification method, comprising: obtaining a plurality of positive samples, and extracting an infrared light image and a visible light image of each sample color-changing ink area; extracting an M multiplied by N matrix a from the infrared light image and the visible light image based on a first preset method; obtaining a 1 xM arbitration matrix d based on the matrix a; extracting a 1 xM matrix A from the paper money to be identified based on a second preset method; obtaining a 1 M matrix B based on the matrix A; and judging whether the matrix B belongs to the same class of the arbitration matrix d or not based on a preset decision tree to finish target identification.

Click on the title to return to table of contents

PATENT REFERENCE – See the table at the end of this document

N8976

KR20220134909
Priority Date: 29/03/2021

SE GYUNG HI TECHNOLOGY

METHOD FOR PRODUCING 3 D HOLOGRAM DECORATION FILM

The present invention relates to a method for manufacturing a hologram decoration sheet. the method for manufacturing a hologram decoration film according to the present invention comprises the steps of: applying a special primer to a back surface of a 3 D hologram fabric to a thickness of 3 μm or less, semi-curing the special primer to form a viscous primer layer, A UV pattern layer having a thickness of 12 μm or less is formed on the semi-cured primer layer and then fully cured to form a combination of the 3 D hologram facestock, the primer layer, and the UV pattern layer. the adhesion of the 3 D hologram facestock is enhanced in a decoration film without the pet film being a base film, and the thickness of the hologram decoration film is slimmed to 150 μm or less.

CLAIM 1. A method of manufacturing a 3 D hologram film, comprising the steps of: forming a first adhesive layer on one surface of a 3 D hologram fabric (S100); forming a viscous primer layer on a back surface of the 3 D hologram fabric (S200) after application of a special primer and semi-curing the special primer layer; Forming (S300) a UV pattern layer on said semi-cured primer layer followed by full curing to form a combination of 3D hologram distal end, primer layer, and UV pattern layer; Forming (S400) a deposition layer in the form of an inorganic thin film on the UV pattern layer of the combination; including (S500) a shielding print layer on the deposition layer; forming (S600) a second adhesive layer on one side of the glass-interleaving paper; And joining the first adhesive layer and the second adhesive layer to produce a 3 D hologram decoration film (S700), wherein the special primer has a formula of $ch_3COC_4H_9$ From 15 to 35 parts by weight of phosphorus methyl-isobutyl-ketone, from 15 to 35 parts by weight of toluene, and from 0.1 to 1 part by weight of ethanol.



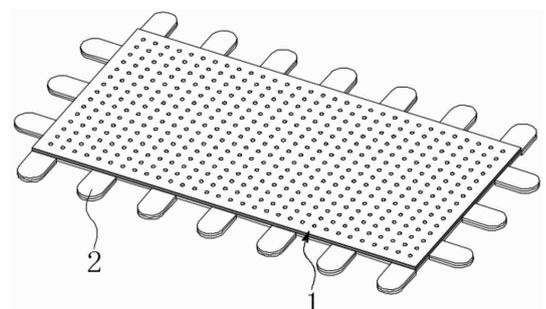
N8992

CN217579517U
Priority Date: 11/04/2022

JIANGSU YANJI PACKAGING TECHNOLOGY

HOLOGRAPHIC LASER TRANSFER PAPER FOR PACKAGING

The utility model belongs to the technical field of the wrapping paper, especially, be a packing is with holographic radium-shine transfer paper, including the transfer paper body, it has aluminized coating, ultraviolet ray protection rete and wear-resisting protection rete to stack gradually on the base paper layer of transfer paper body, and the aluminized coating integral type is compound on base paper layer, and ultraviolet ray protection rete integral type is compound on aluminized coating, and wear-resisting protection rete integral type is compound on ultraviolet ray protection rete, and the surface of wear-resisting protection rete is provided with evenly distributed's wear-resisting bump. The utility model discloses, be convenient for when producing the friction with external object in the transfer paper body use through the wear-resisting bump that sets up, stabilize effectual protection to the transfer paper body, utilize the ultraviolet protection rete that sets up to avoid ultraviolet ray direct irradiation to act on the coating of aluminizing simultaneously, the ageing period of coating of aluminizing is prolonged, the life of extension transfer paper body, and this holographic radium-shine transfer paper of being convenient for carries out long-time stable effectual packing to article.



Click on the title to return to table of contents

PATENT REFERENCE – See the table at the end of this document

N8953

WO2022215499

Priority Date: 09/04/2021

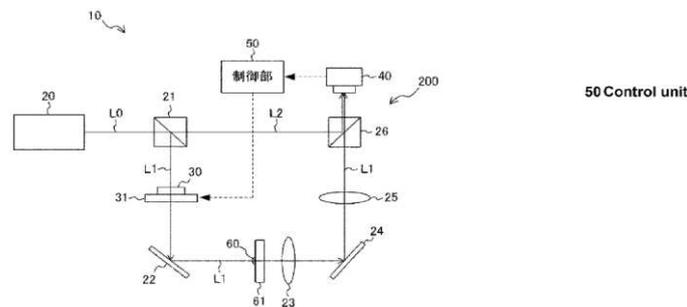
FUJIFILM

HOLOGRAPHY DEVICE AND CELL EVALUATION METHOD

A holography device 10 has an optical system 200 that forms an interference image resulting from interference between objective light L1 and reference light L2. The optical system 200 includes: a phase element 30 disposed on an optical path for the objective light or the reference light; and a rotational mechanism 31 that causes the phase element 30 to rotate such that the optical axis of the objective light L1 or reference light L2 serves as the axis of rotation. The holography device 10 includes an image-capture unit 40 that captures the interference image; and a control unit 50 that derives an evaluation value for the interference image captured by the image-capture unit 40, and controls the rotation position of the rotational mechanism 31 on the basis of the evaluation value.

DISPOSITIF D'HOLOGRAPHIE ET PROCÉDÉ D'ÉVALUATION DE CELLULE

Un dispositif d'holographie 10 comporte un système optique 200 qui forme une image d'interférence résultant de l'interférence entre une lumière d'objectif L1 et une lumière de référence L2. Le système optique 200 comprend : un élément de phase 30 disposé sur un trajet optique pour la lumière d'objectif ou la lumière de référence ; et un mécanisme de rotation 31 qui amène l'élément de phase 30 à tourner de telle sorte que l'axe optique de la lumière d'objectif L1 ou de la lumière de référence L2 sert d'axe de rotation. Le dispositif d'holographie 10 comprend une unité de capture d'image 40 qui capture l'image d'interférence ; et une unité de commande 50 qui dérive une valeur d'évaluation pour l'image d'interférence capturée par l'unité de capture d'image 40 et qui commande la position de rotation du mécanisme de rotation 31 sur la base de la valeur d'évaluation.



CLAIM 1. An optical system that forms an interference image due to interference between object light and reference light, the optical system including a retarder disposed on an optical path of the object light or the reference light and a rotation mechanism that rotates the retarder with an optical axis of the object light or the reference light as a rotation axis; An imaging unit configured to capture the interference image; and a control unit configured to derive an evaluation score for the interference image captured by the imaging unit and to control a rotational position of the rotation mechanism based on the evaluation score.

N8956

WO2022212189

Priority Date: 29/03/2021

MIT - MASSACHUSETTS INSTITUTE OF TECHNOLOGY

DATA-EFFICIENT PHOTOREALISTIC 3D HOLOGRAPHY

A number of techniques provide a data efficient and/or computation efficient computer-generated holography, examples of which may be implemented on low-power devices such as smartphones and virtual-reality/augmented-reality devices and provide high fidelity holographic images. The techniques include used of layered depth image representations and end-to-end training of neural network generation of double-phase hologram encoding.

HOLOGRAPHIE 3D PHOTORÉALISTE EFFICACE EN TERMES DE DONNÉES

Un certain nombre de techniques permettent d'obtenir une holographie générée par ordinateur qui est efficace en termes de calcul et/ou de données et dont des exemples peuvent être mis en œuvre dans des dispositifs à faible puissance tels que des téléphones intelligents et des dispositifs de réalité virtuelle/de réalité augmentée et fournir des images holographiques à haute fidélité. Les techniques comprennent l'utilisation de représentations d'images à profondeur en couches et l'apprentissage de bout en bout de la génération par réseau neuronal d'un codage d'hologramme à double phase.

CLAIM 1. A method for generating a digital hologram comprising: accepting a layered representation of a three-dimensional image, wherein the layered representation of the three-dimensional image comprises a plurality of image layers, and wherein each of the image layers comprises varying depth data across the image; and forming the digital hologram from the layered representation.

N8972

US20220317624

Priority Date: 30/03/2021

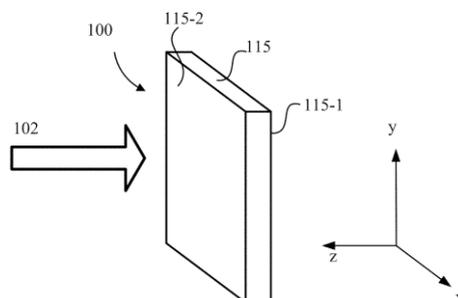
META PLATFORMS TECHNOLOGIES

SYSTEM AND METHOD FOR FABRICATING LIQUID CRYSTAL POLARIZATION HOLOGRAMS

A system includes a light outputting element configured to output a first beam propagating toward a beam interference zone from a first side of the beam interference zone. The system also includes a reflective assembly configured to reflect the first beam back as a second beam propagating toward the beam interference zone from a second side of the beam interference zone. The first beam and the second beam interfere with one another within the beam interference zone to generate a polarization interference pattern.

SYSTÈME ET PROCÉDÉ POUR LA FABRICATION D'HOLOGRAMMES DE POLARISATION À CRISTAUX LIQUIDES

L'invention concerne un système qui comprend un élément de sortie de lumière configuré pour délivrer en sortie un premier faisceau se propageant vers une zone d'interférence de faisceaux à partir d'un premier côté de la zone d'interférence de faisceaux. Le système comprend également un ensemble réfléchissant configuré pour réfléchir le premier faisceau en retour sous la forme d'un second faisceau se propageant vers la zone d'interférence de faisceaux à partir d'un second côté de la zone d'interférence de faisceaux. Le premier faisceau et le second faisceau interfèrent l'un avec l'autre au sein de la zone d'interférence de faisceaux pour générer un motif d'interférence de polarisation.



CLAIM 1. A system, comprising: a light outputting element configured to output a first beam propagating toward a beam interference zone from a first side of the beam interference zone; and a reflective assembly configured to reflect the first beam back as a second beam propagating toward the beam interference zone from a second side of the beam interference zone, wherein the first beam and the second beam interfere with one another within the beam interference zone to generate a polarization interference pattern.

N8982

JP2022147598

KDDI

Priority Date: 23/03/2021

COMPUTER COMPOSITE HOLOGRAM GENERATION APPARATUS, METHOD, AND PROGRAM

TOPIC: To provide an apparatus, a method, and a program for generating a computer composite hologram (CGH) at high speed while suppressing quality degradation. INVENTION: a 3 D point cloud acquisition unit 10 acquires 3 D point cloud data used for calculation of CGH. The 3 D point cloud division unit 20 divides the 3 D point cloud into a plurality of groups. The frequency limiting unit 30 determines a region in which frequency limiting is to be implemented for each point of the 3 D point cloud, and implements the frequency limiting by not performing the light wave propagation calculation on the region. The light wave propagation calculation unit 40 calculates the propagation of the object light wave from the 3 D point cloud to the hologram surface in groups. The object light wave conversion unit 50 performs conversion to simulate viewpoint movement on the object light wave distribution $u_n(x, y)$. The object point cloud frequency limiting unit 60 is configured to control the converted object light wave distribution u_n . Frequency limiting processing for preventing aliasing is performed on a (x, y) .

CLAIM 1. A computer composite hologram generation apparatus that generates a computer composite hologram based on interference calculation between object light and reference light on a hologram surface, the apparatus comprising: a 3 D point cloud acquisition unit configured to acquire a 3 D point cloud of an object; a light wave propagation calculation unit configured to perform a light wave propagation calculation for each point in the 3 D point cloud to calculate an object light wave distribution on the hologram surface; and a viewpoint movement calculation unit configured to calculate a viewpoint movement by: An object light wave conversion unit configured to convert and simulate at least one of amplitude information and phase information of object light waves recorded as an object light wave distribution; object point cloud frequency limiting unit configured to remove a high frequency region at which aliasing is caused from the converted object light wave distribution; An interference calculating unit configured to calculate interference with reference light on the object light wave distribution from which the high frequency region has been removed, and output a hologram.

N8996

CN115202174

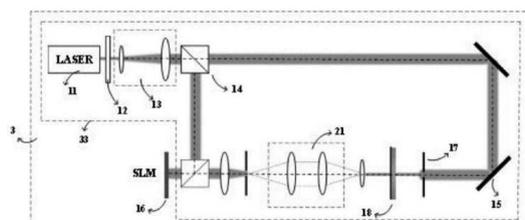
ZHEJIANG SCI-TECH UNIVERSITY

Priority Date: 14/07/2022

HOLOGRAPHIC VOLUME VIEW ACQUISITION METHOD, SYSTEM AND APPLICATION BASED ON LIGHT FIELD IMAGE

The invention relates to the technical field of three-dimensional rendering, in particular to a method, a system and application for acquiring a holographic volume view based on a light field image. The method comprises the steps of obtaining color image information and depth image information of a reference viewpoint of a scene to be rendered, and determining a watching center of the scene to be rendered, wherein a scene object in the scene to be rendered comprises a plurality of three-dimensional object points; performing visibility definition on three-dimensional object points by using a radiation light cone, and determining a correct shielding relation between the three-dimensional object points; rendering a virtual viewpoint image based on the reference viewpoint and according to perspective correlation and correct occlusion relation between the views, and obtaining perspective information to obtain a clipped virtual light field image; and converting the clipped virtual light field image obtained by the perspective information into an object light wave, and enabling the object light wave to interfere with the reference light to form a holographic view with a correct shielding relation. The method of the invention can obtain the hologram with correct shielding relation, and the calculated amount is small.

CLAIM 1. A holographic volume view acquisition method based on a light field image is characterized by comprising the following steps: acquiring color image information and depth image information of a reference viewpoint of a scene to be rendered, and determining a watching center of the scene to be rendered, wherein a scene object in the scene to be rendered comprises a plurality of three-dimensional object points; performing visibility definition on the three-dimensional object points by using a radiation light cone, and determining a correct shielding relation between the three-dimensional object points; rendering a virtual viewpoint image based on the reference viewpoint and according to perspective correlation between views and the correct occlusion relation, and obtaining perspective information to obtain a clipped virtual light field image; and converting the clipped virtual light field image obtained by the perspective information into an object light wave, and enabling the object light wave to interfere with the reference light to form a holographic body view with a correct shielding relation.



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PATENT REFERENCE – See the table at the end of this document

N8999

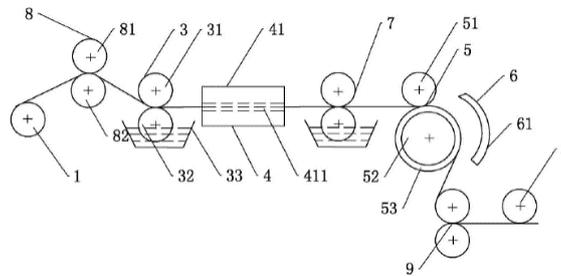
CN115179672

Priority Date: 20/07/2022

ANHUI ZIJIANG METALLIZATION ENVIRONMENTAL PROTECTION MATERIAL | SHANGHAI ZIJIANG METALLIZATION ENVIRONMENTAL PROTECTION MATERIAL

FULL-UV SEAMLESS DIE-PRESSING PRINTING PROCESS

The application discloses seamless mould pressing printing technology of full UV relates to mould pressing printing technical field, and it includes following step: s1, manufacturing a cylindrical seamless mould pressing plate roller; s1-1, coating a UV coating on the plate roller; s1-2, rolling the plate roller coated with the UV coating on a laser plate; s1-3, curing the UV coating by using an ultraviolet lamp to form a seamless mould pressing plate roller with laser information; s2, installing a seamless mould pressing roller to a UV mould pressing machine; and S3, pressing the holographic image-text on the film base material in a UV mode. The seamless mould pressing plate roller with the laser information is used for replacing a laser plate pasted on the mould pressing plate roller, and the effect of improving the continuity and integrity of a printed pattern is achieved; meanwhile, the temperature of each area of the plate roller is consistent, no shadow is generated on a printed pattern, and the effect of ensuring the quality of a printed product is achieved.



CLAIM 1. A full UV seamless mould pressing printing process is characterized by comprising the following steps: s1, manufacturing a cylindrical seamless mould pressing plate roller (53); s2, installing a seamless mould pressing plate roller (53) with laser information to a UV mould pressing machine; and S3, pressing the holographic picture and text on the film substrate in a UV mode.

Click on the title to return to table of contents

PATENT REFERENCE – See the table at the end of this document

N8955

WO2022213090

Priority Date: 30/03/2021

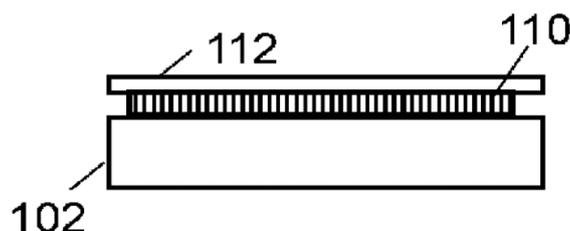
DIGILENS

PHOTOPOLYMERS FOR HOLOGRAPHIC RECORDING

Waveguide based displays benefit from gratings which are capable of diffracting both S and P polarized light with high efficiency. While typical surface relief gratings (SRGs) diffract P polarized light efficiently, SRGs do not typically diffract S polarized light efficiently. One class of gratings that diffracts S polarized light with high efficiency is deep SRGs. One approach to producing deep SRGs is holographic polymer dispersed liquid crystal (HPDLC) gratings. In producing HPDLC gratings, a reactive monomer mixture is exposed to light in a polymerization process. Reactive monomer mixtures may include co-initiators and photo-initiator dyes. Co-initiators which include liquid amine synergist have been demonstrated to have advantageous results. Further, photo-initiator dyes with high extinction coefficients have demonstrated advantageous results.

PHOTOPOLYMÈRES POUR ENREGISTREMENT HOLOGRAPHIQUE

Des affichages basés sur un guide d'ondes bénéficient de réseaux permettant de diffracter à la fois la lumière polarisée S et P avec une efficacité élevée. Tandis que les réseaux à relief de surface (SRG) habituels diffractent efficacement la lumière polarisée P, les SRG ne diffractent pas habituellement la lumière polarisée S de manière efficace. Une classe de réseaux diffractant la lumière polarisée S avec une efficacité élevée est celle des SRG profonds. Une approche de production de SRG profonds porte sur des réseaux à cristaux liquides dispersés dans un polymère holographique (HPDLC). Lors de la production de réseaux HPDLC, un mélange de monomères réactifs est exposé à la lumière dans un procédé de polymérisation. Les mélanges de monomères réactifs peuvent comprendre des co-initiateurs et des colorants photo-initiateurs. Des co-initiateurs qui comprennent un synergiste aminé liquide ont été mis en évidence pour présenter des résultats avantageux. En outre, des colorants photo-initiateurs présentant des coefficients d'atténuation élevés ont démontré des résultats avantageux.



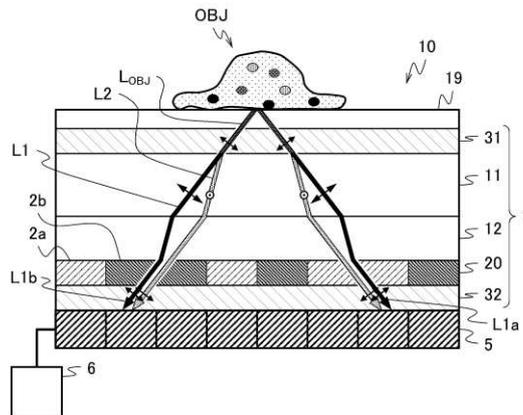
CLAIM 1. A reactive monomer mixture material comprising: a co-initiator; a photo-initiator dye; photopolymerizable monomers; and a non-reactive material, wherein the co-initiator comprises an amine synergist, and wherein the photo-initiator dye comprises a high extinction coefficient near recording/excitation wavelengths.

INTERFERENCE LIGHT GENERATION ELEMENT AND HOLOGRAM RECORDING DEVICE

This hologram recording device 10 comprises an imaging element 5 and an interference light generation element 1 mounted on an imaging surface of the imaging element 5, wherein the interference light generation element 1 generates two light waves L1, L2 having different phases from incident object light LOBJ, and the imaging element 5 records, as a hologram, an interference fringe formed by the two light waves L1, L2. The interference light generation element 1 comprises, in order from the light incident side: a first birefringence member 11; a phaser array 20 that spatially divides a polarization component in a direction parallel or perpendicular to the optical axis of the first birefringence member 11, thereby changing the phase difference in two or more ways; and a polarization plate 32 in which the direction of the transmission axis is inclined with respect to the optical axis of the first birefringence member 11.

ÉLÉMENT DE GÉNÉRATION D'INTERFÉRENCE LUMINEUSE ET DISPOSITIF D'ENREGISTREMENT D'HOLOGRAMME

Ce dispositif d'enregistrement d'hologramme (10) comprend un élément d'imagerie (5) et un élément de génération d'interférence lumineuse (1) monté sur une surface d'imagerie de l'élément d'imagerie (5), l'élément de génération d'interférence lumineuse (1) générant deux ondes lumineuses L1, L2 ayant différentes phases à partir de la lumière d'objet incidente LOBJ, et l'élément d'imagerie (5) enregistre, en tant qu'hologramme, une frange d'interférence formée par les deux ondes lumineuses L1, L2. L'élément de génération d'interférence lumineuse (1) comprend, dans l'ordre à partir du côté d'incidence de lumière : un premier élément de biréfringence (11) ; un déphaseur (20) qui divise spatialement une composante de polarisation dans une direction parallèle ou perpendiculaire à l'axe optique du premier élément de biréfringence (11), ce qui permet de modifier la différence de phase d'au moins deux manières ; et une plaque de polarisation (32) dans laquelle la direction de l'axe de transmission est inclinée par rapport à l'axe optique du premier élément de biréfringence (11).



CLAIM 1. A display device comprising: a first birefringent member; a phase modulation element that divides a polarization component in a direction parallel to or orthogonal to an optical axis of the first birefringent member into at least one of time and space to change a phase difference in two or more ways; a polarizer whose transmission axis direction is inclined with respect to the optical axis of the first birefringent member; and Wherein the polarizer is disposed on an emission side of the light with respect to the first birefringence member and the phase modulation element, and an emission surface of the light is attached to an incidence surface of light of the imaging element.

N8960

WO2022207784

Priority Date: 01/04/2021

METAMATERIAL TECHNOLOGIES CANADA

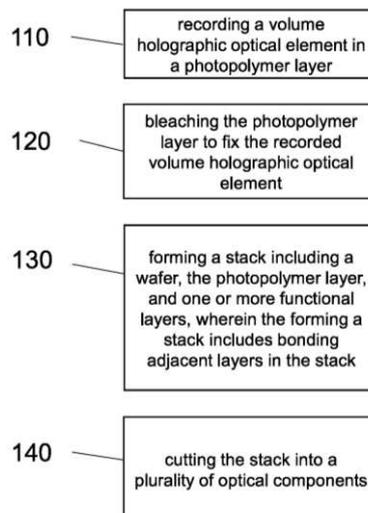
WAFER-LEVEL OPTICS ASSEMBLY WITH HOLOGRAPHIC OPTICAL ELEMENT

A method for manufacturing optical components comprising a volume holographic optical element is provided, the method comprising: recording a volume holographic optical element in a photopolymer layer; bleaching the photopolymer layer to fix the recorded volume holographic optical element; forming a stack including a wafer, the photopolymer layer, and one or more functional layers, wherein the forming a stack includes bonding adjacent layers in the stack; and cutting the stack into a plurality of optical components. There is also provided an optical component comprising a volume holographic optical element and an apparatus for manufacturing the same.

ENSEMBLE OPTIQUE DE NIVEAU TRANCHE AVEC ÉLÉMENT OPTIQUE HOLOGRAPHIQUE

L'invention concerne un procédé de fabrication de composants optiques comprenant un élément optique holographique volumique, le procédé consistant à : enregistrer un élément optique holographique volumique dans une couche photopolymère ; blanchir la couche photopolymère pour fixer l'élément optique holographique volumique enregistré ; former un empilement comprenant une tranche, la couche photopolymère et une ou plusieurs couches fonctionnelles, la formation d'un empilement consistant à lier des couches adjacentes dans l'empilement ; et découper l'empilement en une pluralité de composants optiques. L'invention concerne également un composant optique comprenant un élément optique holographique volumique et son appareil de fabrication.

CLAIM 1. A method for manufacturing optical components comprising a volume holographic optical element, the method comprising: recording a volume holographic optical element in a photopolymer layer; bleaching the photopolymer layer to fix the recorded volume holographic optical element; forming a stack including a wafer, the photopolymer layer, and one or more functional layers, wherein the forming a stack includes bonding adjacent layers in the stack; and cutting the stack into a plurality of optical components.



N8967

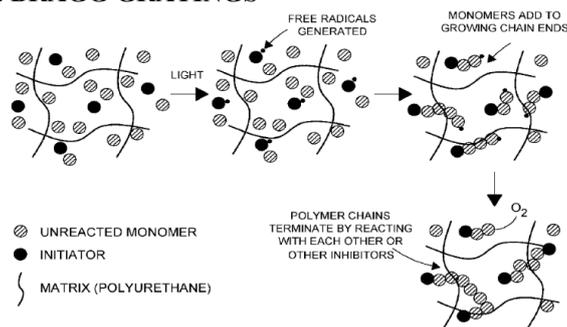
US20220332896

Priority Date: 31/03/2021

META PLATFORMS TECHNOLOGIES

HALOGENATED MONOMERS AND POLYMERS FOR VOLUME BRAGG GRATINGS

The disclosure provides recording materials including halogenated derivatized monomers and polymers for use in volume Bragg gratings, including, but not limited to, volume Bragg gratings for holography applications. Several structures are disclosed for halogenated derivatized monomers and polymers for use in Bragg gratings applications, leading to materials with higher refractive index, low birefringence, and high transparency. The disclosed halogenated derivatized monomers and polymers thereof can be used in any volume Bragg gratings materials, including two-stage polymer materials where a matrix is cured in a first step, and then the volume Bragg grating is written by way of a second curing step of a monomer.



MONOMÈRES ET POLYMÈRES HALOGÉNÉS POUR RÉSEAUX DE BRAGG VOLUMIQUES

La divulgation concerne des matériaux d'enregistrement comprenant des monomères et polymères dérivés halogénés destinés à être utilisés dans des réseaux de Bragg volumiques, comprenant sans caractère limitatif, des réseaux de Bragg volumiques pour des applications holographiques. Plusieurs structures sont divulguées pour des monomères et polymères dérivés halogénés destinés à être utilisés dans des applications de réseaux de Bragg, permettant d'obtenir des matériaux présentant un indice de réfraction supérieur, une faible biréfringence et une transparence élevée. Les monomères et polymères dérivés halogénés divulgués peuvent être utilisés dans tous les matériaux pour réseaux de Bragg volumiques, y compris les matériaux polymères s'obtenant en deux étapes, une matrice étant durcie dans une première étape, puis le réseau de Bragg volumique étant inscrit à l'aide d'une seconde étape de durcissement d'un monomère.

N8986

EP4080505

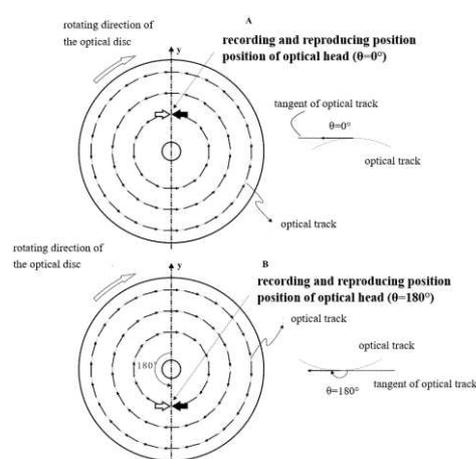
Priority Date: 21/04/2021

AMETHYSTUM STORAGE TECHNOLOGY | GUANGDONG ZIJING
INFORMATION STORAGE TECHNOLOGY

MULTI-CHANNEL MULTIPLEXING METHOD AND DEVICE FOR DISC STORAGE MEDIUM

The present invention provides a multi-channel multiplexing method and device for a disc storage medium. The method includes: S1) recording holograms at holographic positioning marks of the storage medium by a reference light beam and a signal light beam, S2) rotating the storage medium in a circumferential direction and repeatedly performing step S1 until the holograms have been recorded at all the holographic positioning marks on optical tracks, S3) translating the storage medium to switch an optical head to another optical track, S4) repeating steps S1-S3 until recording of one cross channel is completed, S5) changing a relative angle of the center of the storage medium with respect to the optical head, and repeating steps S1-S4 to complete recording of another cross channel, S6) repeating steps S1-S5 until recording of all cross channels is completed, and S7) reproducing the holograms at any channel or recording position of the storage medium by using the same beam of reference light. Each cross channel consists of all the holograms recorded by the optical head at the same relative angle with respect to the medium. The method and device improve the hologram storage capacity of the storage medium and the signal-to-noise ratio of the holograms.

CLAIM 1. A multi-channel multiplexing method for a disc storage medium, comprising: S1) recording holograms with reference light beam and signal light beam carrying input information exposure at holographic positioning marks, aligned with an optical head, on an optical track of the storage medium, S2) rotating the storage medium in a circumferential direction from a position where the optical head is aligned with a start mark on the optical track, and repeatedly performing step S1 in the rotating process until holograms have been recorded at all holographic positioning marks on the optical track, S3) translating the storage medium to switch the optical head to another optical track, S4) repeating steps S1-S3 until holograms recording of one cross channel is completed, S5) changing a relative angle of the center of the storage medium with respect to the optical head, and repeating steps S1-S4 to complete holograms recording of another cross channel, S6) repeating steps S1-S5 until holograms recording of all cross channels of the storage medium is completed, and S7) reproducing the holograms at any channel and any recording position on the storage medium by using the same reference light beam, wherein each cross channel consists of all holograms recorded by the optical head at the same relative angle with respect to the storage medium.



N9003

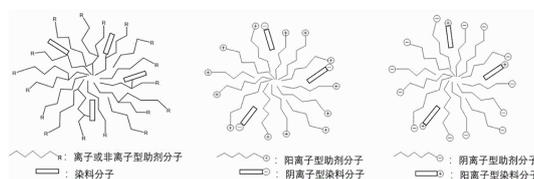
CN115167075

Priority Date: 08/08/2022

HANGZHOU GUANGLI TECHNOLOGY

PHOTOPOLYMER AND GRATING INITIATED BY DISPERSE DYE MACROMOLECULES AND PREPARATION METHOD THEREOF

The invention provides a photopolymer and grating initiated by a disperse dye macromolecule and a preparation method thereof, wherein the preparation method comprises the following steps: 10-50wt% of polymerized monomer; 10 to 40wt% of a film forming agent; 0.1 to 5wt% of disperse dye macromolecules; 0.5 to 5wt% of an initiator; 10 to 40wt% of a solvent; 0 to 30wt% of a plasticizer; the disperse dye macromolecule comprises a disperse auxiliary agent, a dye and a linker; compared with the prior art, the dispersibility of the dye in a solvent/non-solvent system can be improved, and the uniformity and the transmittance of the material can be improved; the photosensitivity of the dye can be improved by improving the dispersibility of the dye, so that the refractive index modulation of the grating is improved; in addition, under the action of a small amount of linkers, the dye containing hydroxyl, amino or carboxyl and other groups is combined with a dispersing auxiliary agent to form a dye macromolecule with stable structure and good dispersibility in organic/inorganic environment.



CLAIM 1. A disperse dye macromolecule initiated photopolymer comprising: 10 to 50wt% of a polymerized monomer; 10-40 wt% of a film forming agent; 0.1 to 5wt% of disperse dye macromolecules; 0.5 to 5wt% of an initiator; 10-40 wt% of a solvent; 0 to 30wt% of a plasticizer; the disperse dye macromolecule comprises a disperse auxiliary agent, a dye and a linker.

N9004

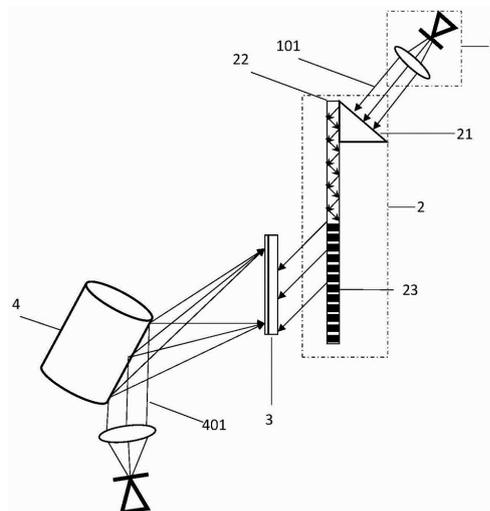
CN115166987

Priority Date: 30/06/2022

JOURNEY TECHNOLOGY

HOLOGRAPHIC REPRODUCTION DEVICE AND METHOD FOR REAL OBJECT

The application is applicable to the technical field of holograms, and provides a physical holographic reproduction device and a physical holographic reproduction method, wherein the physical holographic reproduction device comprises a holographic recording module and a light source module; the holographic recording module comprises a holographic dry plate and a reference photon module; the light source module is used for generating parallel light source light rays or non-parallel light source light rays; the breadth size of the parallel light source light is a first size; the reference photonic module is to: at least one part of the parallel light source light rays are coupled out to the holographic dry plate in a second-size breadth mode in parallel to form reference light; or at least a part of the non-parallel light source rays are coupled out to the holographic dry plate in parallel to form reference light; the second dimension is greater than the first dimension. This application utilizes reference photon module, carries out the pupil with parallel light source light in order to realize the breadth size and enlarge, carries out optical modulation with non-parallel light source light in order to realize parallel coupling to holographic dry plate to reproduction device volume has effectively been reduced.



CLAIM 1. A kind of holographic reproduction device of real object, characterized by, including holographic recording module and light source module; the holographic recording module comprises a holographic dry plate and a reference photon module; the holographic dry plate is provided with grating stripes; the grating stripes are used for diffracting the reference light to obtain a holographic light field of the object to be reproduced; the light source module is used for generating parallel light source light rays or non-parallel light source light rays; the breadth size of the parallel light source light rays is a first size; the reference photonic module is to: at least one part of the parallel light source rays is coupled out to the holographic dry plate in a second-size breadth in parallel to form the reference light; alternatively, the first and second liquid crystal display panels may be, coupling at least a portion of the non-parallel light source rays out to the holographic dry plate in parallel to constitute the reference light; the second size is larger than the first size.

N9010

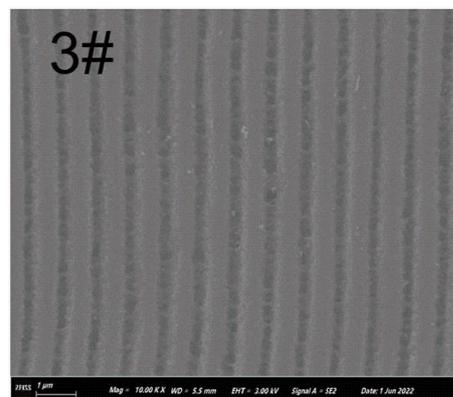
CN115141636

Priority Date: 26/07/2022

NANCHANG VIRTUAL REALITY RESEARCH INSTITUTE

POLYMER DISPERSED LIQUID CRYSTAL HOLOGRAPHIC BODY GRATING AND PREPARATION METHOD THEREOF

The invention provides a polymer dispersed liquid crystal holographic grating and a preparation method thereof, wherein the polymer dispersed liquid crystal holographic grating comprises the following components: a liquid crystal, a radical polymerizable compound, a cationic photopolymerizable compound and a photoinitiator composition. Wherein the photoinitiator composition comprises a photoinitiator and a photosensitizer, and the photoinitiator can simultaneously generate free radicals and cations and initiate corresponding polymer reaction under the irradiation of light. The invention combines the advantages of free radical photopolymerization and cationic photopolymerization, and efficiently and stably prepares the polymer dispersed liquid crystal holographic grating with high phase separation.



CLAIM 1. A polymer dispersed liquid crystal holographic grating, comprising: a liquid crystal; a radical polymerizable compound; a cationically photopolymerizable compound; a photoinitiator composition; wherein the photoinitiator composition comprises a photoinitiator and a photosensitizer, and the photoinitiator can simultaneously generate free radicals and cations and initiate corresponding polymer reaction under the irradiation of light.

Click on the title to return to table of contents

PATENT REFERENCE – See the table at the end of this document

N8951

WO202219350

Priority Date: 16/04/2021

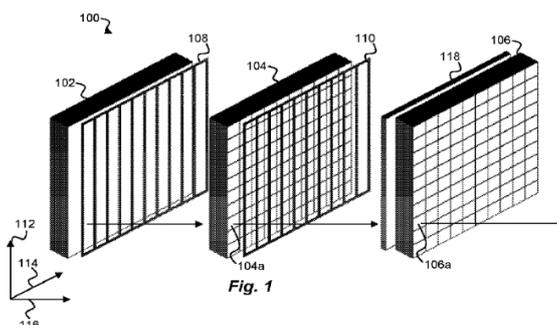
VIVIDQ

HOLOGRAPHIC DISPLAYS AND METHODS

Various holographic displays are disclosed along with their methods of operation. A first holographic display comprises an illumination source, a first liquid crystal layer, and a second liquid crystal layer positioned relative to the first liquid crystal layer such that a light ray passes through an element in the first liquid crystal layer and an element in the second liquid crystal layer. A second holographic display comprises an illumination source, a liquid crystal layer comprising a first element and a second element, an interference element configured to interfere a first light ray from the first element with a second light ray light from the second element to generate an output light ray, and a fixed phase modulating element configured to adjust a phase of the second light ray by a predetermined additional amount.

DISPOSITIFS D’AFFICHAGE HOLOGRAPHIQUES ET PROCÉDÉS

L’invention concerne divers dispositifs d’affichage holographiques ainsi que leurs procédés de fonctionnement. Un premier dispositif d’affichage holographique comprend une source d’éclairage, une première couche de cristaux liquides, et une seconde couche de cristaux liquides positionnée par rapport à la première couche de cristaux liquides de telle sorte qu’un rayon lumineux passe à travers un élément situé dans la première couche de cristaux liquides et à travers un élément situé dans la seconde couche de cristaux liquides. Un second dispositif d’affichage holographique comprend une source d’éclairage, une couche de cristaux liquides comprenant un premier élément et un second élément, un élément d’interférence configuré de façon à créer une interférence pour un premier rayon lumineux provenant du premier élément avec une seconde lumière de rayon lumineux provenant du second élément pour générer un rayon lumineux de sortie, et un élément de modulation de phase fixe conçu pour ajuster une phase du second rayon lumineux par une quantité supplémentaire prédéterminée.



CLAIM 1. A method of modulating an amplitude and a phase of a light ray in a holographic display, the method comprising: modulating an amplitude of the light ray based on an electric field applied to an element of a first liquid crystal layer; and modulating a phase of the light ray based on an electric field applied to an element of a second liquid crystal layer; wherein the light ray passing through the first liquid crystal layer is linearly polarized and the light ray passing through the second liquid crystal layer is circularly polarized.

N8952

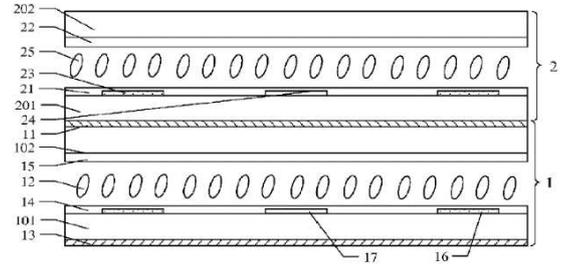
WO2022217913

Priority Date: 12/04/2021

BEIJING BOE DISPLAY TECHNOLOGY | BOE TECHNOLOGY GROUP

DISPLAY APPARATUS AND HOLOGRAPHIC DISPLAY DEVICE

The present disclosure relates to a display apparatus and a holographic display device. The display apparatus comprises: a display panel (1), comprising a first linear polarizer (11) located on a light exit side, such that the display panel emits linearly polarized image light; and a phase modulation panel (2), which is arranged on the light exit side of the display panel (1), and which is configured to perform phase modulation on the linearly polarized image light. The holographic display device comprises the display apparatus. The display apparatus can synchronously adjust and express amplitude and phase, thereby achieving a holographic three-dimensional display that has high resolution and high definition.



APPAREIL D'AFFICHAGE ET DISPOSITIF D'AFFICHAGE HOLOGRAPHIQUE

La présente invention concerne un appareil d'affichage et un dispositif d'affichage holographique. L'appareil d'affichage comprend : un panneau d'affichage (1) comprenant un premier polariseur linéaire (11) situé sur un côté de sortie de lumière, de telle sorte que le panneau d'affichage émet une lumière d'image linéairement polarisée ; et un panneau de modulation de phase (2) qui est disposé sur le côté de sortie de lumière du panneau d'affichage (1) et qui est conçu pour effectuer une modulation de phase sur la lumière d'image linéairement polarisée. Le dispositif d'affichage holographique comprend l'appareil d'affichage. L'appareil d'affichage peut ajuster et exprimer l'amplitude et la phase de manière synchrone, ce qui permet d'obtenir un affichage tridimensionnel holographique qui présente une haute résolution et une haute définition.

CLAIM 1. A display device comprising: A display device; A display panel comprising a first linear polarizer disposed on the light exit side so that the display panel emits linearly polarized image light A phase modulation panel disposed on the light-emitting side of the display panel and configured to phase modulate the linearly polarized image light.

N8958

WO2022209107

Priority Date: 31/03/2021

PANASONIC INTELLECTUAL PROPERTY MANAGEMENT

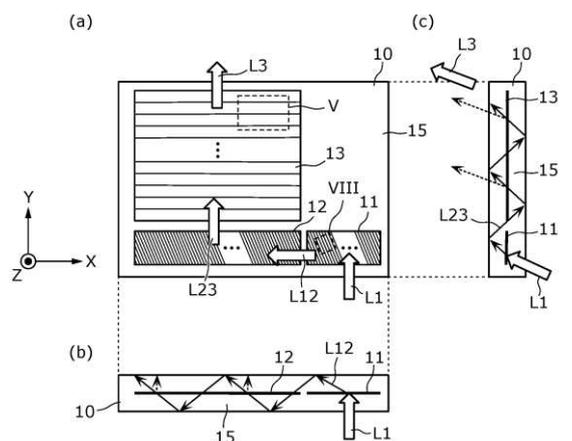
LIGHT-GUIDE PLATE, AND DISPLAY DEVICE

Provided is a light-guide plate (10) comprising a hologram element (13) that is a first hologram element that has a plurality of diffraction cells, at least one of the edge lines of one of the plurality of diffraction cells included in the hologram element (13), which is the first hologram element, being located at a position different from the extension line of all the edge lines of the one diffraction cell and an adjacent diffraction cell.

PLAQUE DE GUIDAGE DE LUMIÈRE ET DISPOSITIF D'AFFICHAGE

L'invention concerne une plaque de guidage de lumière (10) comprenant un élément d'hologramme (13) qui est un premier élément d'hologramme qui a une pluralité de cellules de diffraction, au moins l'une des lignes de bord de l'une de la pluralité de cellules de diffraction incluses dans l'élément d'hologramme (13), qui est le premier élément d'hologramme, étant située à une position différente de la ligne d'extension de toutes les lignes de bord de la cellule de diffraction et d'une cellule de diffraction adjacente.

CLAIM 1. A light guide plate comprising: a first hologram element including a plurality of diffraction cells, wherein at least one edge line of one diffraction cell of the plurality of diffraction cells included in the first hologram element is positioned at a position different from an extension line of all edge lines of diffraction cells adjacent to the one diffraction cell.

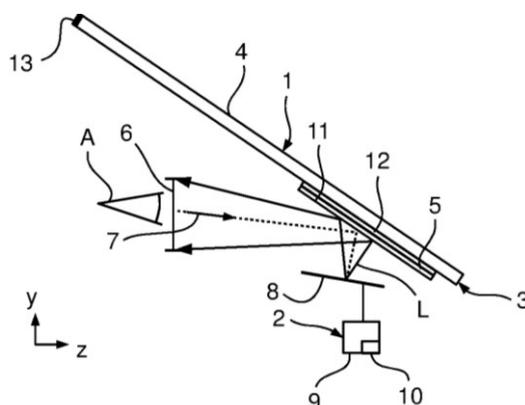


HOLOGRAPHIC PROJECTION DEVICE

The invention relates to a holographic projection device for generating an image which a viewer can perceive if the viewer's eye (A) is positioned in a predetermined field of view and the viewer is looking at the projection device (1) at a predetermined viewing angle, the projection device (1) having a first volume hologram which, when impinged upon by light from a useful light source, deflects said light to generate the image. The first volume hologram further has the characteristic that light which does not originate from the useful light source and strikes the first volume hologram at a predetermined solid angle would deflect such that it is perceptible as unwanted interfering light, wherein the projection device (1) has a holographic filter (12) which - deflects the light which does not originate from the useful light source and would strike the first volume hologram at the predetermined solid angle, before the light strikes the first volume hologram, such that it is not perceptible as unwanted interfering light, and/or - deflects the light which does not originate from the useful light source and strikes the first volume hologram at the predetermined solid angle, after the deflection by the first volume hologram, such that it is not perceptible as unwanted interfering light.

DISPOSITIF DE PROJECTION HOLOGRAPHIQUE

L'invention concerne un dispositif de projection holographique permettant de générer une image qu'un observateur puisse apercevoir lorsqu'un oeil (A) de ce dernier est positionné dans une zone d'observation prédéfinie et qu'il regarde le dispositif de projection (1) dans un angle d'observation défini, le dispositif de projection (1) présentant un premier hologramme de volume qui, exposé à la lumière d'une source de lumière utile, la dévie pour produire l'image, le premier hologramme de volume ayant également la propriété suivante : la lumière non issue de la source de lumière utile et incidente sur le premier hologramme de volume dans un angle solide prédéfini, serait déviée de manière à être perceptible comme lumière parasite indésirable, le dispositif de projection (1) présente un filtre holographique (12) permettant de dévier la lumière qui est non issue de la source de lumière utile et qui serait incidente sur le premier hologramme de volume dans l'angle solide prédéfini, avant qu'elle ne vienne frapper le premier hologramme de volume de manière à ce qu'elle ne soit pas perceptible comme une lumière parasite indésirable et/ou de dévier la lumière qui est non issue de la source de lumière utile et qui est incidente sur le premier hologramme de volume dans l'angle solide prédéfini, après qu'elle ait frappé le premier hologramme de volume de manière à ce qu'elle soit perceptible comme lumière parasite indésirable.



CLAIM 1. Holographic projection device for generating an image which a viewer can perceive when his eye (a) is positioned in A predetermined viewing area and he looks at the projection device (1) at a predetermined viewing angle, wherein the projection device (1) has a first volume hologram which, when acted upon by light from a useful light source, deflects the latter in order to generate the image, wherein the first volume hologram further has the property that light which does not originate from the useful light source and impinges on the first volume hologram at a predetermined solid angle would be deflected such that it is perceptible as undesired stray light wherein the projection device (1) has a holographic filter (12) which - deflects the light which does not originate from the useful light source and would impinge on the first volume hologram at the predetermined solid angle such that it is not perceptible as undesired stray light before impinging on the first volume hologram, and/or - deflects the light which does not originate from the useful light source and impinges on the first volume hologram at the predetermined solid angle, after deflection by the first volume hologram, in such a way that it is not perceptible as undesired stray light.

N8959

WO2022209106
Priority Date: 31/03/2021

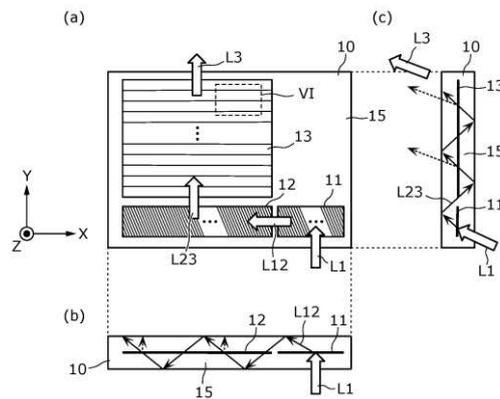
PANASONIC INTELLECTUAL PROPERTY MANAGEMENT

LIGHT GUIDE PLATE, LIGHT GUIDE PLATE UNIT, AND DISPLAY DEVICE

A light guide plate (10) comprises: a hologram element (13) that is a first hologram element having two or more diffraction cells; and a hologram element (11 or 12) that is a second hologram element having a single diffraction cell.

PLAQUE DE GUIDAGE DE LUMIÈRE, UNITÉ À PLAQUE DE GUIDAGE DE LUMIÈRE ET DISPOSITIF D’AFFICHAGE

Plaque de guidage de lumière (10) comprenant : un élément d'hologramme (13) qui est un premier élément d'hologramme ayant au moins deux cellules de diffraction ; et un élément d'hologramme (11 ou 12) qui est un second élément d'hologramme ayant une seule cellule de diffraction.



CLAIM 1. A light guide plate including a first hologram element including two or more diffraction cells and a second hologram element including a single diffraction cell.

N8962

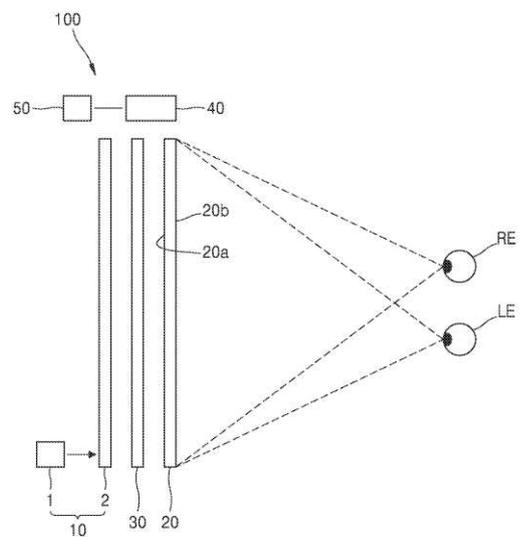
US20220342368
Priority Date: 26/04/2021

SAMSUNG ELECTRONICS

HOLOGRAPHIC DISPLAY APPARATUS, HEAD-UP DISPLAY APPARATUS, AND IMAGE PROVIDING METHOD

A holographic display apparatus includes a backlight unit having a light source configured to emit coherent light, a spatial light modulator configured to diffract incident light from the backlight unit and generate a holographic image, a beam deflector configured to change a traveling direction of the incident light from the backlight unit to change a focal position of the holographic image, an eye-tracking sensor configured to recognize positions of a viewer's eyeballs, and a controller configured to perform, in real time, calibration of the eye-tracking sensor and the beam deflector to focus the holographic image on the recognized positions of the viewer's eyeballs.

CLAIM 1. A holographic display apparatus comprising: a backlight unit comprising a light source configured to emit coherent light; a spatial light modulator configured to diffract incident light from the backlight unit and generate a holographic image; a beam deflector configured to change a traveling direction of the incident light from the backlight unit to change a focal position of the holographic image; an eye-tracking sensor configured to recognize positions of a viewer's eyeballs; and a controller configured to perform, in real time, calibration of the eye-tracking sensor and the beam deflector to focus the holographic image on the recognized positions of the viewer's eyeballs.



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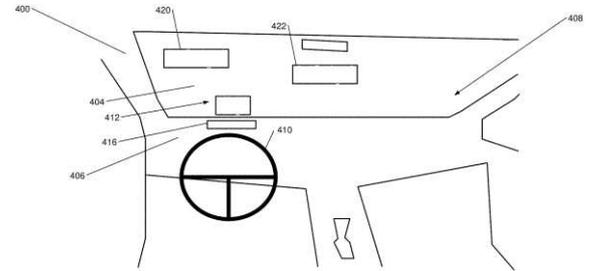
US20220342367

Priority Date: 22/04/2021

GM GLOBAL TECHNOLOGY OPERATIONS

CONTRAST CHARACTERIZATION OF MULTI-PLANE HOLOGRAPHIC HUD ACCOUNTING FOR IMAGE ARTIFACTS

A holographic projection system includes a SLM that receives a light beam and generates a modulated beam projected at an eyebox, where: the modulated beam includes multiple versions of a test image; and the test image includes bright objects and transparent regions, which are selected dark areas of interest for measuring luminance. A control module runs a test to characterize contrast in each of multiple virtual image planes including: controlling the SLM to generate the modulated beam; measuring luminance levels of each of the versions of the test image displayed in the virtual image planes; calculating contrast ratios based on the luminance levels of each of the versions of the test image; determining whether the contrast ratios are within predetermined ranges of predetermined contrast ratios; and adjusting operation of the SLM in response to one of the contrast ratios not being within a corresponding one of the predetermined ranges.



CLAIM 1. A holographic projection system comprising: a light source configured to generate a light beam; a spatial light modulator configured to receive the light beam and generate a modulated beam projected at an eyebox, wherein the modulated beam comprises a plurality of versions of a test image, wherein the test image comprises a plurality of bright objects and a plurality of transparent regions, and wherein the plurality of transparent regions are selected dark areas of interest for measuring luminance; and a control module configured to run a test to characterize contrast in each of a plurality of virtual image planes of a head-up display including controlling the spatial light modulator to generate the modulated beam, measuring luminance levels of each of the plurality of versions of the test image displayed in the plurality of virtual image planes, calculating a plurality of contrast ratios based on the luminance levels of each of the plurality of versions of the test image, determining whether the plurality of contrast ratios are within predetermined ranges of predetermined contrast ratios, and adjusting operation of the spatial light modulator in response to at least one of the plurality of contrast ratios not being within a corresponding one of the predetermined ranges.

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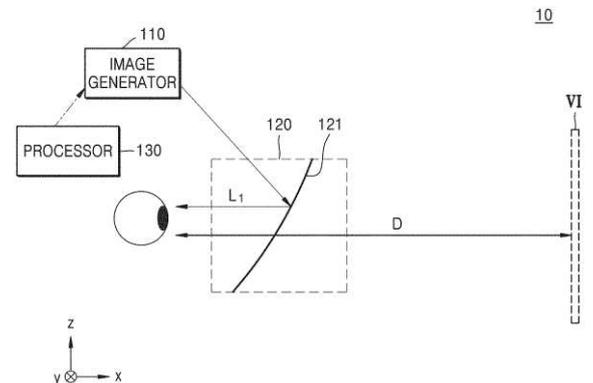
US20220342366

Priority Date: 23/04/2021

SAMSUNG ELECTRONICS

HOLOGRAPHIC DISPLAY APPARATUS INCLUDING FREEFORM CURVED SURFACE AND OPERATING METHOD THEREOF

A holographic display apparatus including a freeform curved surface and an operating method of the holographic display apparatus are provided. The holographic display apparatus includes: an image generator configured to generate a hologram image by modulating light; an optical system including a freeform curved surface for forming the hologram image generated by the image generator in a predetermined depth; and a processor configured to generate a computer-generated hologram (CGH) based on three-dimensional image information by using a phase map including information about an optical aberration with respect to the freeform curved surface and to control the image generator to modulate the light based on the CGH.



CLAIM 1. A holographic display apparatus comprising: an image generator configured to generate a hologram image by modulating light; an optical system comprising a freeform curved surface configured to form the hologram image generated by the image generator at a predetermined depth; and a processor configured to: generate a computer-generated hologram (CGH) based on three-dimensional image information using a phase map, the phase map comprising information about an optical aberration due to the freeform curved surface; and control the image generator to modulate the light based on the CGH.

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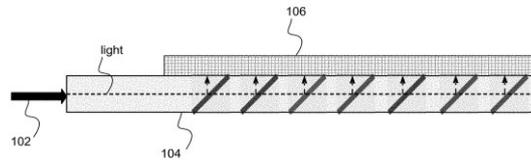
US20220334395

Priority Date: 16/04/2021

NVIDIA

HOLOGRAPHIC VIRTUAL REALITY DISPLAY

Virtual reality (VR) displays are computer displays that present images or video in a manner that simulates a real experience for the viewer. In many cases, VR displays are implemented as head-mounted displays (HMDs) which provide a display in the line of sight of the user. Because current HMDs are composed of a display panel and magnifying lens with a gap therebetween, proper functioning of the HMDs limits their design to a box-like form factor, thereby negatively impacting both comfort and aesthetics. The present disclosure provides a different configuration for a virtual reality display which allows for improved comfort and aesthetics, including specifically at least one coherent light source, at least one holographic waveguide coupled to the at least one coherent light source to receive light therefrom, and at least one spatial light modulator coupled to the at least one holographic waveguide to modulate the light.



CLAIM 1. An apparatus, comprising: a virtual reality (VR) display, including: at least one coherent light source, at least one holographic waveguide coupled to the at least one coherent light source to receive light therefrom, and at least one spatial light modulator coupled to the at least one holographic waveguide to modulate the light.

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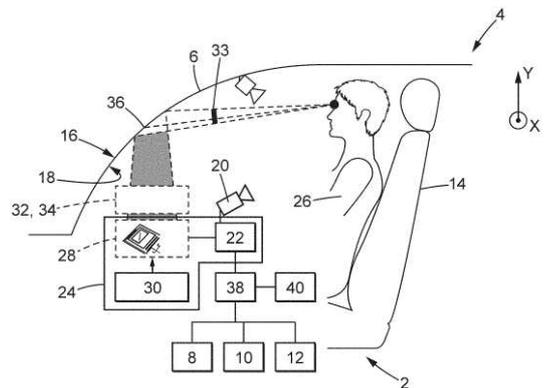
Priority Date: 16/04/2021

FAURECIA INTERIEUR INDUSTRIE

CAB COMPRISING AN HOLOGRAPHIC HUMAN-MACHINE INTERFACE AND MOTOR VEHICLE

A cab having a human-machine interface to generate a holographic image in order to control comfort equipment installed in the cab. The human-machine interface includes: a camera capable of capturing images representing a gaze of an occupant, one image generation unit having (a) a computer capable of calculating the position of the location of the occupant's gaze from the captured images, the computer being adapted to generate the digital holographic image according to the position of the occupant's gaze, (b) a spatial light modulator receiving the generated digital holographic image, and (c) a light source illuminating the spatial light modulator. The human-machine interface also includes a reflector reflecting the light beams emitted by the spatial light modulator into a visualizing window to form a holographic image positioned between the windscreen and the seat.

CLAIM 1. Cab comprising a holographic human-machine interface to generate at least one holographic image in order to control at least one comfort equipment installed in the cab, the cab having a windshield, the at least one comfort equipment, and at least one seat configured for an occupant, the human-machine interface comprising: at least one camera capable of capturing images representing at least one gaze of said occupant, one image generation unit comprising: (a) a computer connected to the at least one camera, the computer being capable of calculating the position of the location of the occupant's gaze from the captured images, the computer being adapted to generate said at least one digital holographic image with variable focal points to control said comfort equipment according to the position of the occupant's gaze, (b) a spatial light modulator connected to the computer to receive said at least one generated digital holographic image, (c) a coherent light source capable of illuminating the spatial light modulator, the spatial light modulator emitting light beams, a reflector adapted to reflect the beams of light emitted by the spatial light modulator in a visualizing window in order to form at least one holographic image positioned between the windscreen and the seat as a control interface, and an orientatable reflective system comprising a mirror and a mirror orientation system mobile along two perpendicular axes, wherein the orientation system is connected to the computer and receives mirror inclination controls according to the position of the occupant's pupils located from the images captured by the at least one camera.



N8969

US20220317858

IBM

Priority Date: 31/03/2021

GENERATING DIGITAL DRAWING CONTENT WITH HOLOGRAPHIC TOOLS

A computer generates digital output by identifying, a digital display surface. The computer identifies a tool selected from a list of geometric shape drawing tools. The computer, in response to the tool identification, generates by a projector, a holographic model of the selected tool including interaction points into an interaction zone near the display surface. The computer receives a feed from a sensor associated with the interaction zone and identifies an interaction motion associated with an interaction point. The computer adjusts a model location, a model orientation, or a model size based on the interaction motion. The computer, in response to determining an interaction point is making virtual contact with the display surface, generates digital output on surface near the interaction point. The digital output corresponds, at least in part, to a predetermined shape associated with the selected tool.

CLAIM 1. A computer implemented method of generating digital output, comprising: identifying, by a computer, a digital display surface; identifying, by said computer, a tool selected from a list of geometric shape drawing tools; responsive to said tool identification, generating by at least one projector, a holographic model of the selected tool including at least one interaction point into an interaction zone proximate said display surface; receiving, by said computer, a feed from a sensor associated with the interaction zone; identifying from the feed a signal indicating an interaction motion associated with the at least one interaction point; adjusting at least one of a model location, a model orientation, and a model size, in accordance, at least partially, with said interaction motion; responsive to determining that an interaction point associated with the model is making virtual contact with the display surface, generating digital output on said surface at a marking location proximate said interaction point, wherein said digital output corresponds, at least in part, to a predetermined shape associated with the selected tool; using, by the computer, a combined tool of a protractor tool model and a physical straight edge together; and generating output from this combined tool including an arc and two line segments intersecting at an angle vertex.

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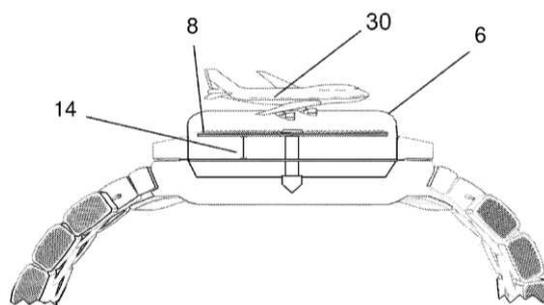
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SIBONI EYTAN

Priority Date: 31/03/2021

HOLOGRAPH-PROJECTING WATCH DEVICES AND METHODS THEREIN

The present invention discloses devices for projecting holographic content from a watch and methods therein. Devices include: a watch base for housing the watch; an opaque watch face attached to the base; a transparent watch cover for protecting the face; a light wand having a series of controllable light-emitting elements configured to project the holographic content, wherein the series is disposed on the wand such that light emitted from the elements is projected primarily toward the cover, the wand is disposed: mostly parallel to the surfaces of the face and cover; and between the face and cover with a spacing greater than about 40% of a face/cover gap adapted to produce suitable, projected holographic content free from distortion caused by the proximity of the face to the wand; and a spinning axis for mounting the wand, configured for rotating in order to spin the wand for projecting the holographic content.



CLAIM 1. A device for projecting holographic content from a watch, the device comprising: (a) a watch base for housing the watch; (b) an opaque watch face attached to said watch base; (c) a transparent watch cover for protecting said opaque watch face; (d) a light wand having a series of controllable light-emitting elements configured to project the holographic content, wherein said series is disposed on said light wand such that light emitted from said elements is projected primarily toward said transparent watch cover, said light wand is disposed: (i) mostly parallel to the surface of said opaque watch face and the surface of said transparent watch cover; and (ii) between said opaque watch face and said transparent watch cover with a wand/face spacing, representing a positional distance between said opaque watch face and said transparent watch cover, that is greater than about 40% of a face/cover gap, representing a total available distance between said opaque watch face and said transparent watch cover, in order to be adapted to produce suitable, projected holographic content, from the holographic content, that is free from any distortion caused by the proximity of said opaque watch face to said light wand; and (e) a spinning axis for mounting said light wand, said spinning axis configured for rotating in order to spin said light wand for projecting the holographic content.

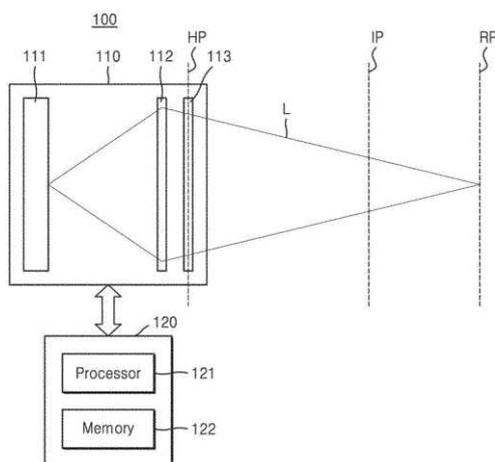
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US20220317626
Priority Date: 30/03/2021

SAMSUNG ELECTRONICS | SEOUL NATIONAL UNIVERSITY R&DB
FOUNDATION

HOLOGRAPHIC DISPLAY SYSTEM AND METHOD OF GENERATING HOLOGRAM

Provided is a method of generating a hologram, the method including generating a kernel and a neural network configured to model an aberration of a holographic display device, obtaining second image data output from the neural network to which first image data obtained by propagating a first hologram based on the kernel is input, updating the kernel and the neural network based on comparing the second image data and predetermined image data, and generating a second hologram based on the kernel and the neural network.



CLAIM 1. A method of generating a hologram, the method comprising: generating a kernel and a neural network configured to model an aberration of a holographic display device; obtaining second image data output from the neural network to which first image data obtained by propagating a first hologram based on the kernel is input; updating the kernel and the neural network based on comparing the second image data and predetermined image data; and generating a second hologram based on the kernel and the neural network.

N8973

KR20220136722
Priority Date: 01/04/2021

KWANGWOON UNIVERSITY INDUSTRY ACADEMIC
COLLABORATION FOUNDATION

REFLECTIVE FULL COLOR HIGH CONTRAST VHOE HOLOGRAPHIC DISPLAY

The present embodiments provide a holographic glass display capable of disposing a polarizer and a phase retardation film forward and backward in a propagation path of light transmitted through a reflective holographic optical film to remove afterglow reflected from an absorber.

CLAIM 1. A holographic glass display, comprising: A light source for emitting light; a polarizing plate disposed in a path of the light for polarizing the polarized light on a reference optical axis; a reflective holographic optical film for diffracting and diffusing the polarized light; a phase retardation film for changing a polarization state of light transmitted through the reflective holographic optical film; and an absorber for absorbing the light whose polarization state has been changed at a constant rate.



N8974

KR20220136721
Priority Date: 01/04/2021

KWANGWOON UNIVERSITY INDUSTRY ACADEMIC
COLLABORATION FOUNDATION

A PINHOLE BASED OMNIDIRECTIONAL LIGHT FIELD HOLOGRAPHIC DISPLAY WITH HIGH LIGHT EFFICIENCY

The present embodiments provide a pinhole-based holographic display in which light passing through a lens array is incident on a panel, the panel outputs an image, expands a viewing angle of the image through the pinhole, and adjusts a viewing angle based on a distance between the pinhole and the panel.

CLAIM 1. A pinhole holographic display, comprising: A backlight configured to emit parallel light; a lens array having a plurality of lenses arranged in a path of the parallel light; a panel configured to receive light passing through the lens array and provide a holographic image; and a pinhole plate having a plurality of pinholes disposed to expand a viewing angle of the image, wherein the viewing angle is adjusted based on a distance between the pinhole and the panel.

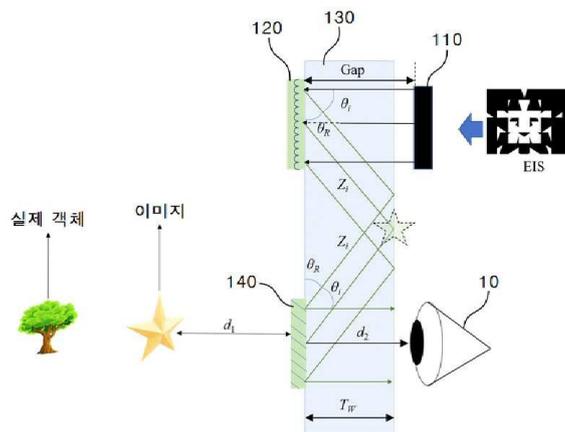
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KR20220130337
Priority Date: 18/03/2021

CHUNGBUK NATIONAL UNIVERSITY INDUSTRY ACADEMIC
COOPERATION FOUNDATION

THREE-DIMENSIONAL HOLOGRAPHIC WAVEGUIDE TYPE AUGMENTED REALITY DISPLAY SYSTEM USING HOLOGRAPHIC OPTICAL ELEMENT MICROMIRROR ARRAY

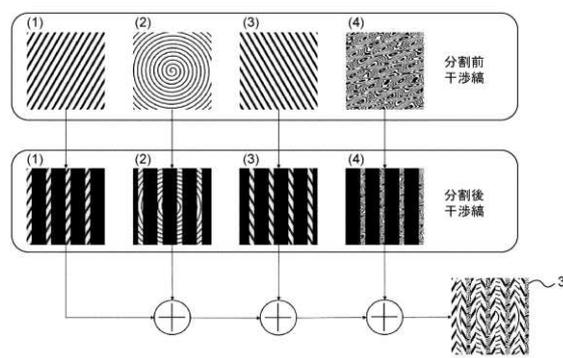
The present invention relates to an augmented reality display system. the augmented reality display system includes a micro display for displaying an elemental image set (EIS), an in-coupler holographic optical element micromirror-array (HOE-MA) for reconstructing the EIS displayed on the micro display into a 3 D image, Wherein light information of the 3 D image reconstructed in the in-coupler HOE-MA is input at an input end thereof, the input light information is transmitted to an output end by total internal reflection without loss, and the 3 D image transmitted through the waveguide is reflected to a viewing area of a user and viewed, And an Out-coupler Holographic optical element (hoe) through which light of an external real object can be passed and viewed. According to the present invention, by providing a three-dimensional holographic waveguide type augmented reality display system using a holographic micromirror array, it is possible to implement the augmented reality display system simply and easily without the need for an additional device.



CLAIM 1. A display device comprising: a micro display for displaying an elemental image set (EIS); an in-coupler holographic optical element micromirror-array (HOE-MA) for reconstructing the EIS displayed on the micro display into a 3 D image; A waveguide for receiving light information of the 3 D image reconstructed in the in-coupler HOE-MA at an input end thereof and transmitting the received light information to an output end by total internal reflection without loss; And an out-of-coupler hoe (Out-coupler holographic optical element) configured to reflect and view a 3 D image transmitted through the waveguide to a viewing area of a user, and to pass and view light of an external real object.

HOLOGRAM DISPLAY SYSTEM, HOLOGRAM DISPLAY METHOD, AND HOLOGRAM

TOPIC: To provide a hologram display system that includes a suitable viewing angle and is capable of displaying hologram images that can be viewed simultaneously by a plurality of people in a plurality of instantaneous switches. INVENTION: a hologram display system using a computer-composite hologram, the system being configured to instantaneously switch and display a plurality of hologram images, the system including: an interference fringe formation medium on which interference fringes using computer holographic are formed; An illumination device, comprising: an illumination light source configured to illuminate an interference fringe formation medium; and a control device configured to control an illumination pattern of the illumination light source, wherein interference fringe data on the interference fringe formation medium includes: Extracting a portion of the interference fringe data of each of the plurality of holograms in accordance with a predetermined spatially divided pattern, and integrating the extracted portion of the interference fringe data into one piece, The control device switches the illumination pattern from the illumination light source in accordance with a predetermined spatially divided pattern, and illuminates the interference fringe formation medium to instantaneously switch and display the plurality of hologram images.



CLAIM 1. A computer synthesized hologram display system that switches and displays a plurality of hologram images, the system comprising: an interference fringe formation medium on which computer holographic interference fringes are formed; An illumination light source configured to illuminate the interference fringe formation medium; and a control device configured to control an illumination pattern of the illumination light source, wherein the data of the interference fringes on the interference fringe formation medium includes: A part of interference fringe data of each of a plurality of holograms is extracted in accordance with a predetermined spatial division pattern, and the extracted part of the interference fringe data is integrated into one piece, and the control device is configured to: The illumination pattern from the illumination light source is switched in accordance with the predetermined spatially divided pattern, and the interference fringe formation medium is irradiated with light to cause the plurality of hologram images to be switched and displayed.

N8983

IN202111007396

Priority Date: 22/02/2021

CHITKARA INNOVATION INCUBATOR FOUNDATION

HOLOGRAPHIC SCREEN CREATION SYSTEM AND METHOD

The present disclosure pertains to a holographic screen creation system (100) and method (400). The system (100) includes a first screen (102), a second screen (104), a processor (106), and an illumination source (108). The first screen (102) is associated with a computing device, where the first screen facilitate displaying a two dimensional visual attributes, where the first screen (102) includes an outer layer and an inner layer. The illumination source (108) is configured within the first screen (102), where the illumination source (108) facilitate illuminating an area of interest inside the inner layer of the first screen (102). The processor (106) is operatively coupled to the first screen, and facilitate displaying holographic view on outer layer of the first screen, and enables creation of a second screen. The second screen (104) is created such that internal reflection of the illumination source (106) creates a holographic image on outer layer of the first screen (102) and on surrounding sides to give a three - dimensional view.

CLAIM 1. A holographic screen creation system (100) comprising: a first screen (102) associated with a computing device, wherein the first screen (102) facilitate displaying a two dimensional visual attributes, and correspondingly generate a first set of signals, wherein the first screen (102) includes an outer layer and an inner layer; an illumination source (106) configured within the first screen (102), wherein the illumination source (106) facilitate illuminating an area of interest inside the inner layer of the first screen (106), and correspondingly generate a second set of signals, and a processor (106) operatively coupled to the first screen (102), wherein the processor (106) is operatively coupled with a memory, the memory storing instructions executable by the processor (106), and configured to: modify the second set of signals into a third set of signals, wherein the third set of signals pertain to internally reflected monochromatic packets of light; convert the first set of signals into a fourth set of signals based on the modified third set of signals, wherein the fourth set of signals pertain to three dimensional holographic visual attributes, and transmit the fourth set of signals to the first screen, wherein the fourth set of signals facilitate displaying holographic view on outer layer of the first screen, and enables creation of a second screen.

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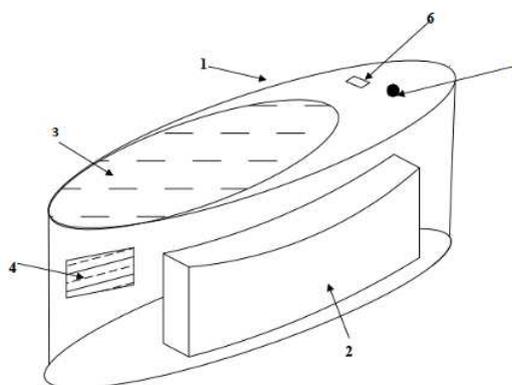
Priority Date: 20/01/2021

CHANDIGARH UNIVERSITY

HOLOGRAM BASED SMART GROOMING DEVICE

A hologram based smart grooming device, comprising a body 1 covered with a lid, wherein the body 1 is segregated into multiple containers that stores different types of cosmetics and grooming accessories, a control panel 4 integrated with a voice recognition module assembled over body 1 that are paired with a microcontroller to display multiple options of grooming and styling to the user and based on that options, the user selects a desired options via inputting voice commands, an image capturing module 5 fabricated within body 1 to capture user's image and store them in microcontroller, a holographic projecting unit 6 mounted over lid and linked with a microcontroller that converts images into holograms to produce a holographic projection of user(s) along with their desired makeover in space, thereby giving a trial of makeup to the user virtually.

CLAIM 1. A hologram based smart grooming device, comprising: i) a body 1 employed with a lid and having multiple containers, wherein said containers are used to store different types of cosmetics and grooming accessories; ii) a control panel 4 inbuilt with a voice recognition module fabricated over said body 1 and paired with a microcontroller for displaying multiple options regarding grooming and styling to a user, wherein one of said options is selected by said user by inputting voice commands; iii) an image capturing module 5 positioned on said body 1, wherein said capturing module is pre-processed with a protocol for capturing images of said user and filtering said captured images based on the option selected by said user; and iv) a holographic projecting unit 6 paired with said microcontroller and mounted over said lid, wherein upon fetching said user's filtered images, said microcontroller converts said image into holograms in order to produce a holographic projection of said user along with desired makeover in space, thereby eliminating the time invested by said user in selecting cosmetics.



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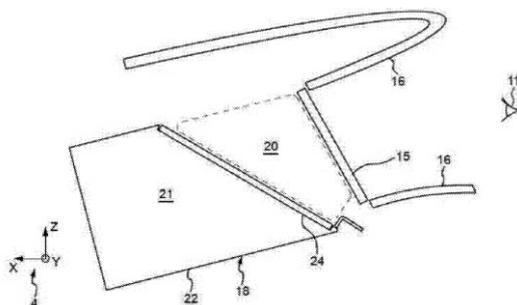
Priority Date: 14/04/2021

DISPLAY SYSTEM FOR A MOTOR VEHICLE COMPRISING A DISPLAY SCREEN AND HOLOGRAPHIC MEANS

A display system (13) for a motor vehicle comprises a frame (16) to be placed in a group part behind a steering wheel of the vehicle, a display screen (15) mechanically connected to the frame (16), holographic means (18) for displaying a hologram, the holographic means (18) comprising a projection mirror (24), the display system (13) comprising a displacement means (26) able to displace the display screen (15) with respect to the frame (16) between a second position in which the display screen (15) is retracted against the frame (16), and a first position in which the display screen (15) is deployed.

SYSTÈME D’AFFICHAGE POUR VÉHICULE À MOTEUR COMPRENANT UN ÉCRAN D’AFFICHAGE ET UN MOYEN HOLOGRAPHIQUE

Ce système d’affichage (13) pour véhicule à moteur comprend un cadre (16) destiné à être placé dans une partie de groupe derrière un volant du véhicule, un écran d’affichage (15) connecté mécaniquement au cadre (16), un moyen holographique (18) pour afficher un hologramme, le moyen holographique (18) comportant un miroir de projection (24), le système d’affichage (13) comportant un moyen de déplacement (26) apte à déplacer l’écran d’affichage (15) par rapport au cadre (16) entre une deuxième position dans laquelle l’écran d’affichage (15) est rétracté contre le cadre (16), et une première position dans laquelle l’écran d’affichage (15) est déployé.



CLAIM 1. A display system (13) for a motor vehicle, comprising a frame (16) to be placed in a group part (10) behind a steering wheel (6) of the vehicle, and a display screen (15) mechanically connected to the frame (16), characterized in that the display system (13) comprises a displacement means (26) able to displace the display screen (15) with respect to the frame (16) between a second position in which the display screen (15) is retracted against the frame (16), and a first position in which the display screen (15) is deployed.

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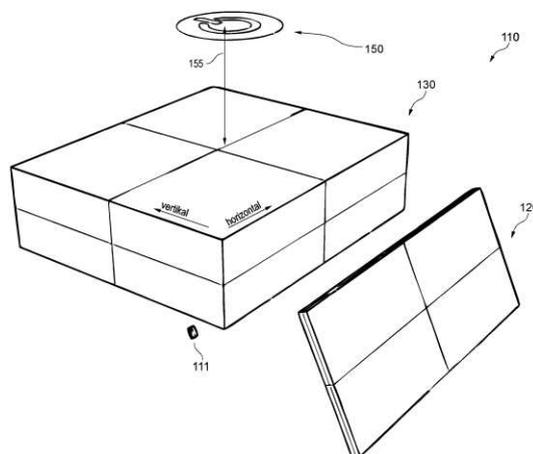
CARL ZEISS JENA

Priority Date: 27/04/2021

FLOATING HOLOGRAM OPTICAL SYSTEM

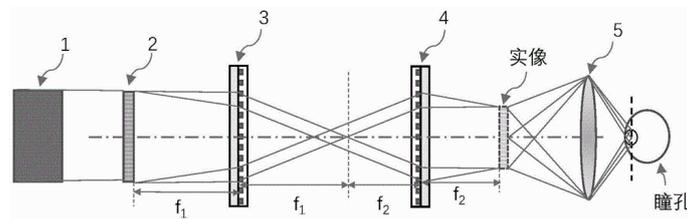
The invention relates to an optical system (110) comprising an imaging holographic optical element (130) which generates a floating hologram (150). An upstream light form of the holographic-optical element (120) effects a spectral filtering of the light (90).

CLAIM 1. An optical system (110), comprising: - an imaging holographic optical element, HOE (130), configured to generate, based on light (90), a floating hologram (150) arranged in a volume (159) outside the imaging HOE (130), - a light source (111) configured to generate, based on the light (90), in order to emit the light (90) along a beam path (81) towards the imaging HOE (130), and - a light-shaping HOE (120) which is arranged in the beam path (81) between the light source (111) and the imaging HOE (130) and which is configured to perform spectral filtering of the light (90).



HOLOGRAPHIC NEAR-TO-EYE DISPLAY SYSTEM

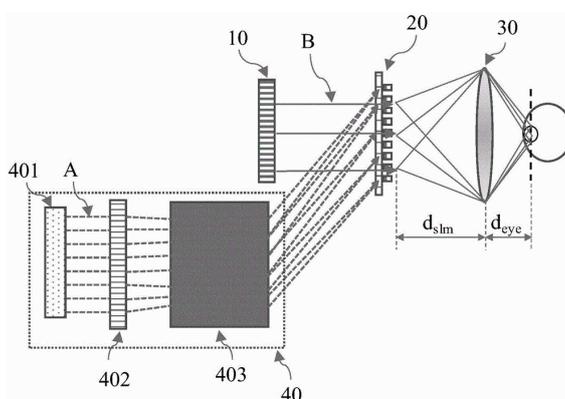
The utility model provides a nearly eye display system of holographic formula, wherein, this nearly eye display system of holographic formula includes: the system comprises a light source module, a spatial light modulator, a first super lens, a second super lens and a projection lens; the spatial light modulator is arranged on the light emitting side of the light source module and used for generating an imaging light beam; the spatial light modulator is positioned on the object side focal plane of the first super lens; the second super lens is arranged on the light-emitting side of the first super lens, and the image space focus of the first super lens is superposed with the object space focus of the second super lens; the focal length of the first super lens is larger than that of the second super lens; the projection lens is arranged on the light emergent side of the second super lens; the imaging light beam sequentially passes through the first super lens and the second super lens, and a real image is generated at the entrance pupil of the projection lens; the projection optics are used to converge the real image. The first super lens and the second super lens adopted by the holographic near-eye display system can form a $4f$ system, so that the field angle is enlarged, and the holographic near-eye display system has the advantages of light weight and thin overall thickness.



CLAIM 1. A holographic near-eye display system, comprising: the system comprises a light source module (1), a spatial light modulator (2), a first super lens (3), a second super lens (4) and a projection lens (5); the light source module (1) is used for emitting an initial light beam; the spatial light modulator (2) is arranged on the light emitting side of the light source module (1) and is used for performing wavefront modulation on the initial light beam to generate an imaging light beam; the first super lens (3) is arranged on the light-emitting side of the spatial light modulator (2), and the spatial light modulator (2) is positioned on the object focal plane of the first super lens (3); the second super lens (4) is arranged on the light emitting side of the first super lens (3), and the image space focal point of the first super lens (3) is superposed with the object space focal point of the second super lens (4); the focal length of the first super lens (3) is larger than that of the second super lens (4); the projection lens (5) is arranged on the light emergent side of the second super lens (4); the imaging light beam sequentially passes through the first super lens (3) and the second super lens (4), and a real image is generated at the entrance pupil of the projection lens (5); the projection lens (5) is used for converging the real image.

HOLOGRAPHIC NEAR-TO-EYE DISPLAY PROJECTION SYSTEM

The utility model provides a holographic near-to-eye display projection system, include: the system comprises a projection light source, a spatial light modulator based on a super surface, a projection lens and a light control module; the spatial light modulator comprises a substrate and a plurality of nanostructures made of phase change material; the projection light source is used for emitting projection light rays in a visible light wave band; the spatial light modulator is used for modulating the incident projection light; the projection lens is used for converging projection light; the light control module is used for generating controllable light focuses of a plurality of non-visible light wave bands, and at least part of the nano structures of the spatial light modulator correspond to the light focuses. Through the embodiment of the utility model provides a holographic near-to-eye display projection system can reduce spatial light modulator's cycle to can enlarge spatial light modulator's angle of vision, realize wide-angle projection. And only need add light-operated module can, it is less to projection system's volume influence, be favorable to realizing miniaturization and lightweight.



CLAIM 1. A holographic near-eye display projection system, comprising: the system comprises a projection light source (10), a spatial light modulator (20) based on a super surface, a projection lens (30) and a light control module (40); the spatial light modulator (20) comprises a substrate (201) and a plurality of nano-structures (202) made of phase change material, wherein the nano-structures (202) are periodically arranged on one side of the substrate (201); the projection light source (10) is used for emitting projection light rays in a visible light wave band; the spatial light modulator (20) is positioned on the light emergent side of the projection light source (10) and is used for modulating the incident projection light and emitting the modulated projection light; the projection lens (30) is positioned on the light-emitting side of the spatial light modulator (20) and is used for converging the projection light emitted by the spatial light modulator (20); the light control module (40) is used for generating a plurality of controllable light focuses in non-visible light bands, the spatial light modulator (20) is positioned on a light focus surface formed by the plurality of light focuses, and at least part of the nano structures (202) correspond to the light focus positions; the light control module (40) is not overlapped with the light path of the projection light.

N8993

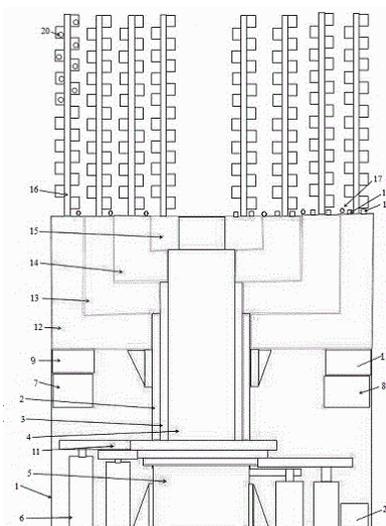
CN115220242

Priority Date: 12/04/2022

GANSU ZHITONG SCIENCE & TECHNOLOGY ENGINEERING
DETECTION CONSULTATION | GANSU ZHITONG YUNXIANG TRAFFIC
TECHNOLOGY

NAKED EYE 4D HOLOGRAPHIC IMAGE DEVICE AND IMAGING METHOD THEREOF

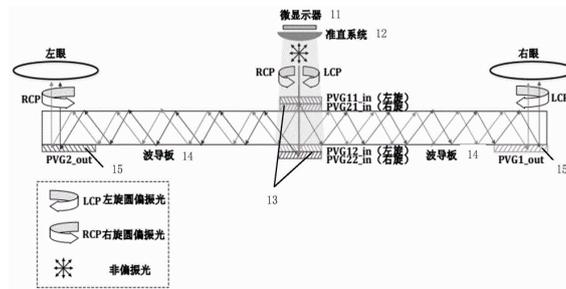
The invention discloses a naked eye 4D holographic image device, which comprises a base; the rotating body is arranged on the upper part of the base and comprises at least four rotating discs which are concentrically arranged from outside to inside; and the driving mechanism is arranged inside the base. The invention also discloses a naked eye 4D holographic image imaging method, which comprises the following steps: s1, obtaining a model file of color and light and shadow information of a three-dimensional shape of an object through a PC (personal computer) terminal; s2, obtaining the model file from the step S1; and S3, calculating the coordinate information and the direction information in the step S2 on the PC side. The invention can solve the problems that the displayed content only exists in a two-dimensional plane, has no depth display capability, can only display corresponding content in 4 fixed directions which are vertical to each other, and can not realize ideal display effect at any angle in the prior holographic image technology.



CLAIM 1. A bore hole 4D holographic image device, characterized in that includes: a base (1); the rotating body is arranged at the upper part of the base (1) and comprises at least four rotating discs which are concentrically arranged from outside to inside; the driving mechanism is arranged in the base (1), is respectively connected with the at least four turntables and is used for driving the turntables to rotate; the crankshaft type lamp posts (16) are uniformly distributed with LED lamp belts (20), the crankshaft type lamp posts (16) are respectively arranged on the at least four turntables, the crankshaft type lamp posts (16) are distributed on the at least four turntables in a cross shape, the radius of the crankshaft type lamp posts (16) on each turntable from the center of the turntable is gradually reduced to form a spiral track, the at least four turntables are respectively provided with a conductive assembly, a power transmission end of the conductive assembly is connected with the crankshaft type lamp posts (16), and a power supply end of the conductive assembly is connected with a power supply assembly; the sub wireless communication control assemblies are respectively arranged on the at least four turntables and are respectively connected with the crankshaft type lamp post (16); the main wireless communication control assembly is arranged in the base (1) and is respectively connected with the driving mechanism and the sub wireless communication control assembly; the sound component is arranged in the base (1) and is connected with the general wireless communication control component; wherein, four at least carousel include first group carousel (12), second group carousel (13), third group carousel (14) and fourth group carousel (15), be provided with first mounting groove on first group carousel (12), first mounting groove with the mutual adaptation installation of second group carousel (13), be provided with second mounting groove on second group carousel (13), second mounting groove with the mutual adaptation installation of third group carousel (14).

HIGH-LUMINOUS-EFFICIENCY BINOCULAR HOLOGRAPHIC WAVEGUIDE NEAR-TO-EYE DISPLAY DEVICE AND AUGMENTED REALITY DISPLAY EQUIPMENT

The invention relates to a high-light-efficiency binocular holographic waveguide near-eye device and augmented reality display equipment, wherein the binocular holographic waveguide near-eye device comprises: the display source is arranged on a main optical axis of the collimation system and used for loading and outputting an image; the collimation system is used for collimating and correcting the image output by the display source and then coupling the image into the waveguide plate through the coupling-in diffraction optical element; the coupling-in diffraction optical element is arranged on an emergent light path of the collimation system, comprises a first coupling-in diffraction optical element and a second coupling-in diffraction optical element, is respectively arranged on the upper surface and the lower surface of the waveguide plate, and is formed by stacking and compounding a first polarizer holographic grating and a second polarizer holographic grating; the waveguide plate is used for transmitting the coupled light to the coupling-out diffraction optical element in a total reflection mode; the coupling-out diffraction optical element comprises a left-eye coupling-out diffraction optical element and a right-eye coupling-out diffraction optical element, is used for respectively coupling light rays out to the left eye and the right eye of a human, and is respectively composed of at least one layer of polarizer holographic grating.



CLAIM 1. A high light efficiency binocular holographic waveguide near-to-eye device, comprising: a display source, a collimating system, an incoupling diffractive optical element, a waveguide plate and an outcoupling diffractive optical element; the display source is arranged on a main optical axis of the collimation system and used for loading and outputting images; the collimation system is positioned on the light emergent surface of the display source and is used for collimating and correcting the image output by the display source and then coupling the image into the waveguide plate through the coupling-in diffraction optical element; the incoupling diffractive optical element is arranged on an emergent light path of the collimating system and comprises a first incoupling diffractive optical element and a second incoupling diffractive optical element, wherein the first incoupling diffractive optical element and the second incoupling diffractive optical element are respectively arranged on the upper surface and the lower surface of the waveguide plate, and the first incoupling diffractive optical element and the second incoupling diffractive optical element are respectively formed by stacking and compounding a first polarizer holographic grating and a second polarizer holographic grating; the waveguide plate is used for transmitting the coupled light to the coupling-out diffraction optical element in a total reflection mode; the coupling-out diffractive optical element is arranged in a coupling-out area of the waveguide plate, comprises a left-eye coupling-out diffractive optical element and a right-eye coupling-out diffractive optical element and is used for coupling light out to the left eye and the right eye of a person respectively, wherein the left-eye coupling-out diffractive optical element and the right-eye coupling-out diffractive optical element are respectively composed of at least one layer of polarization body holographic grating.

N8998

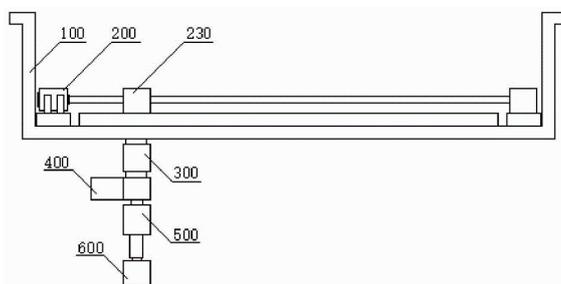
CN115183088

Priority Date: 01/04/2021

XISHUO SHANGHAI ELECTRONIC TECHNOLOGY

VIRTUAL PERFORMANCE HOLOGRAPHIC PROJECTION EQUIPMENT

The invention relates to a virtual performance holographic projection device which comprises a holographic projection device and a projection control system, wherein the projection control system is in communication connection with the holographic projection device, a plurality of projector drive assemblies are arranged on a mounting bracket of the holographic projection device, each projector drive assembly comprises a transverse drive mechanism and a longitudinal drive mechanism, each projector drive assembly is connected with a projector, each projection control system comprises a projection control module, an image material database, an image editing module, a performance image database and an image editing end, the projection control module calls performance image data of the performance image database and sends the performance image data to the projectors, the projection control module drives the projectors to move through the projector drive assemblies, and the projector movement and the projector projection are synchronously performed. The invention adopts the holographic projection device and the projection control system to cooperate to form a plurality of virtual illusions which can be moved and performed on the stage in real time, and has the characteristics of strong projection stereoscopic impression and vivid performance effect.



CLAIM 1. Virtual performance holographic projection equipment, characterized by includes holographic projection arrangement, projection control system with holographic projection arrangement communication connection, holographic projection arrangement includes the installing support, be equipped with a plurality of projecting apparatus drive assemblies on the installing support, projecting apparatus drive assembly includes horizontal drive mechanism, vertical drive mechanism, projecting apparatus drive assembly is connected with the projecting apparatus, projection control system includes projection control module, image material database, image editing module, performance image database, image editing terminal, the image editing terminal passes through image editing module calls the image material of image material database is edited and is deposited after forming performance image data performance image database, projection control module calls performance image data of performance image database send for the projecting apparatus, projection control module passes through projecting apparatus drive assembly drive the projecting apparatus motion, the projecting apparatus motion with the projecting apparatus projection goes on in step.

N9000

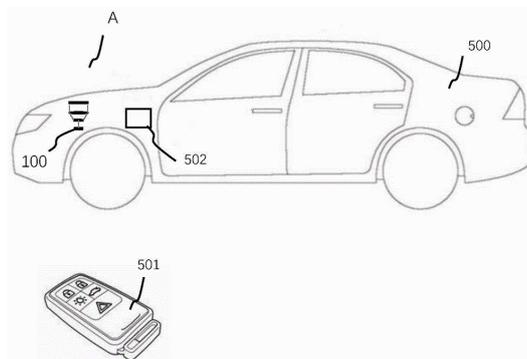
CN115167089

Priority Date: 06/06/2022

CHINA FIRST AUTOMOBILE WORKS (FAW)

HOLOGRAPHIC PROJECTION SYSTEM AND METHOD FOR VEHICLE, COMPUTER MEDIUM AND VEHICLE WITH HOLOGRAPHIC CAR LOGO

The invention provides a holographic projection system, a holographic projection method, a computer medium and a vehicle with a holographic vehicle logo. The invention relates to the technical field of vehicle external display, and the system comprises: the device comprises a light source device, a beam expanding lens, a collimating lens and a holographic film; the light source device emits light beams to the beam expanding lens, the beam expanding lens expands the laser beams emitted by the light source device into the surface light source, the surface light source after the beam expanding by the collimating lens is collimated into parallel light beams, the light beams are made to be incident into the holographic sheet at specific angles, the holographic sheet records the to-be-displayed patterns in the holographic sheet in a holographic image shooting mode, and virtual images are formed.



The invention has simple structure: need not to install additional equipment such as rainwater storage structure, water smoke production device, recovery unit additional, this implementation scheme needs water smoke as the formation of image carrier of projection image, consequently need have a series of devices such as water smoke production, receives the water yield to influence simultaneously, in case the water yield is not enough, will can't observe the projection image.

CLAIM 1. A holographic projection system for a vehicle, characterized by: the system comprises: the device comprises a light source device, a beam expanding lens, a collimating lens and a holographic film; the light source device emits light beams to the beam expanding lens, the beam expanding lens expands the laser beams emitted by the light source device into the surface light source, the surface light source after the beam expanding by the collimating lens is collimated into parallel light beams, the light beams are made to be incident into the holographic sheet at specific angles, the holographic sheet records the to-be-displayed patterns in the holographic sheet in a holographic image shooting mode, and virtual images are formed.

N9005

CN115166981

Priority Date: 26/07/2022

BEIHANG UNIVERSITY OF AERONAUTICS & ASTRONAUTICS

LARGE-VISUAL-ANGLE HOLOGRAPHIC NEAR-TO-EYE DISPLAY METHOD BASED ON LIQUID CRYSTAL CONICAL LENS

The invention provides a large-visual angle holographic near-to-eye display method based on a liquid crystal conical lens, which comprises the following three steps of: first, the inclination angle is calculated as $\theta_1, \theta_2, \dots, \theta_N$. The phase factors of the N carriers are respectively superposed with the phase factors of the N carriers, and N sub-holograms of the recorded object are obtained by calculation according to the near-field diffraction principle; secondly, superposing N sub-holograms loaded with different carrier phase factors to obtain a composite hologram, and loading the composite hologram on a spatial light modulator; thirdly, the spatial light modulator is irradiated by utilizing linearly polarized light, and stray light corresponding to the zero-order diffraction image and the high-order diffraction image is filtered. After that, N spectral points of the reproduced light are obtained on the spectral plane of the $4f$ system, and the N spectral points are modulated by the liquid crystal axicon, so that $2 \times N$ reproduced images are obtained, and the continuous expansion of the viewing angle is realized.

CLAIM 1. A large-visual angle holographic near-to-eye display method based on liquid crystal cone lenses comprises the following three steps: first, the inclination angle is calculated as $\theta_1, \theta_2, \dots, \theta_N$. The phase factors of the N carriers are respectively superposed with the phase factors of the N carriers, and N sub-holograms of the recorded object are obtained by calculation according to the near-field diffraction principle; secondly, overlapping N sub-holograms loaded with different carrier phase factors to obtain a composite hologram, and loading the composite hologram on a spatial light modulator; and thirdly, irradiating the spatial light modulator by utilizing linear polarization light, filtering stray light corresponding to the zero-order diffraction image and the high-order diffraction image, obtaining N spectral points of the reproduced light on a spectrum surface of a $4f$ system, and modulating the N spectral points by utilizing a liquid crystal cone lens to obtain 2 multiplied by N reproduced images so as to realize continuous expansion of a visual angle.

N9006

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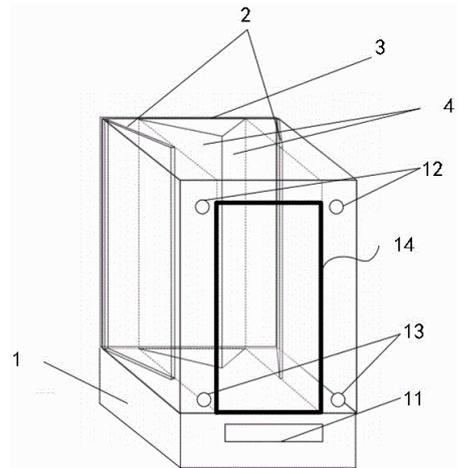
Priority Date: 11/07/2022

DAAI QUANXI BEIJING TECHNOLOGY

HOLOGRAPHIC DECK VOLUME LIGHT FIELD SHOW STAGE

The invention discloses a holographic deck volume light field display stage, which comprises: the supporting structure is used for providing an image to be displayed for the display screen; a housing disposed on one side of the support structure; the display screen group and the first display screen are used for receiving and displaying the image to be displayed provided by the supporting device; the display screen group is positioned on two sides of the same side of the first display screen; the holographic medium group is located inside the first display screen and the display screen group, and the holographic medium group is used for directionally refracting light emitted by the display screen group and the image to be displayed on the first display screen to a point light source field, so that the effect that the image to be displayed displays holography in the point light source field is achieved. By the mode, the convenience of the holographic projection technology is improved.

CLAIM 1. A holographic deck volumetric light field display stage, comprising: the display device comprises a supporting structure (1), wherein the supporting structure (1) is used for providing an image to be displayed for a display screen; a housing arranged at one side of the support structure (1); the display screen set (2), the first display screen (3) and the holographic medium set (4) are arranged in the shell, and the display screen set (2) and the first display screen (3) are used for receiving and displaying the image to be displayed, which is provided by the supporting device (1); the display screen groups (2) are positioned on two sides of the same side of the first display screen (3); the holographic medium group (4) is located inside the first display screen (3) and the display screen group (2), and the holographic medium group (4) is used for directionally refracting light emitted by the image to be displayed, which is displayed by the display screen group (2) and the first display screen (3), to a point light source field, so that the effect that the image to be displayed displays holography in the point light source field is achieved.



N9008

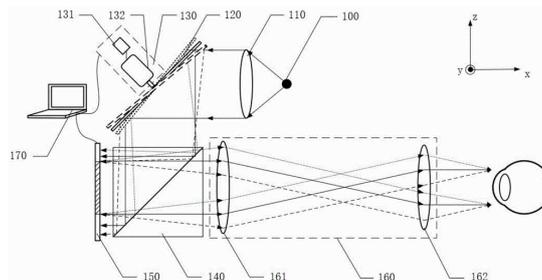
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Priority Date: 07/06/2022

SHANGHAI UNIVERSITY

LARGE-FIELD-ANGLE HIGH-RESOLUTION HOLOGRAPHIC NEAR-TO-EYE DISPLAY DEVICE AND DISPLAY METHOD BASED ON FIELD-OF-VIEW SCANNING SPLICING

The invention provides a large-field-angle high-resolution holographic near-to-eye display device and a display method based on field-of-view scanning splicing. The holographic near-eye display device comprises a point light source, a collimating lens, a reflector rotating system, a beam splitter, a spatial light modulator, a relay optical system and a master controller. Or the system comprises a point light source moving platform, a collimating lens, a platform moving control system, a beam splitter, a spatial light modulator, a relay optical system and a master controller. The invention can change the direction of parallel light incident on the spatial light modulator by rotating the reflector or moving the point light source, so that holograms incident at different angles are accurately converged to the position of human eyes through the relay optical system, the visual angle range and the image resolution of an image to be watched are increased through continuous scanning under the condition of ensuring the exit pupil size to be certain, and the high-resolution holographic near-eye display with a large field angle and a large exit pupil is simultaneously realized by adopting a field angle continuous scanning method.



N9009

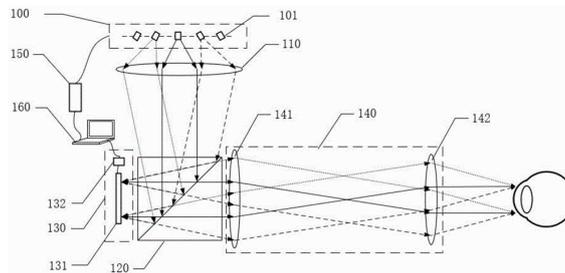
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Priority Date: 07/06/2022

SHANGHAI UNIVERSITY

LARGE-FIELD-ANGLE HIGH-RESOLUTION HOLOGRAPHIC NEAR-TO-EYE DISPLAY DEVICE AND DISPLAY METHOD BASED ON LIGHT SOURCE ARRAY

The invention provides a large-field-angle high-resolution holographic near-eye display device and a display method based on a light source array. The device comprises a light source array, a lens, a beam splitter, a spatial light modulator, a relay optical system, a light source array controller, a spatial light modulator driver and a master controller. Light rays emitted by point light sources at different positions in the light source array are collimated by the lens into parallel light with different angles to illuminate the spatial light modulator, the parallel light is modulated and diffracted by the computer-generated hologram on the spatial light modulator, and diffracted image light is converged to an exit pupil position through the relay optical system to be watched by human eyes. The invention increases the visual angle range and the image resolution of the viewed image by sequentially lightening the point light sources at different positions through time sequence under the condition of ensuring that the size of the exit pupil is fixed, and simultaneously realizes the high-resolution holographic near-eye display of a large visual angle and a large exit pupil by adopting a visual angle time-sharing scanning method.



CLAIM 1. The large-field-angle high-resolution holographic near-eye display device based on the light source array is characterized by comprising the light source array (100), a lens (110), a beam splitter (120), a spatial light modulator and driving system (130), a relay optical system (140), a light source array controller (150) and a master controller (160), and the virtual reality holographic near-eye display device is formed; wherein: the light source array (100) is used for providing illumination light and is connected with the light source array controller (150); the front focal plane of the lens (110) is provided with a light source array (100) for generating wide beam parallel light with different angles; the beam splitter (120) reflects the parallel light collimated by the lens (110) to irradiate the effective working area of the spatial light modulator; the spatial light modulator and driving system (130) loads the calculation hologram with the corresponding field angle on the spatial light modulator through driving, performs diffraction modulation on parallel light with different angles irradiated on the spatial light modulator, and is connected with a master controller (160); the relay optical system (140) images the spatial light modulator to the position near the pupil of the human eye, and the spatial light modulator and the pupil surface of the human eye are ensured to be basically in a conjugate relation; the light source array controller (150) controls the on-off and the light-emitting intensity of each point light source in the light source array (100), and is connected with the master controller (160); the master controller (160) is used for calculating the position of a point light source to be lighted in the light source array (100), the corresponding light-emitting intensity and the corresponding hologram sequence required to be loaded on the spatial light modulator, and is synchronously controlled by the light source array controller (150), the spatial light modulator and the driving system (130).

N9011

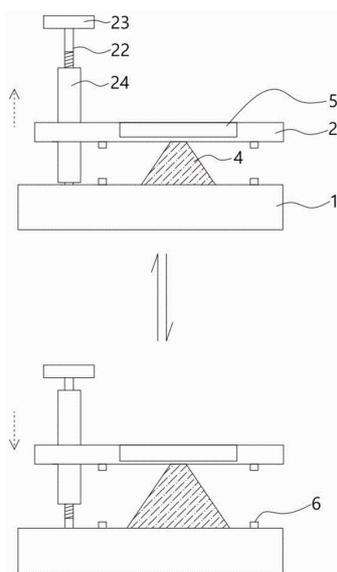
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Priority Date: 17/06/2022

GUANGDONG POLYTECHNIC NORMAL UNIVERSITY

LABORATORY IS WITH HOLOGRAPHIC PROJECTION EQUIPMENT MOUNTING STRUCTURE OF 3D AND PROJECTION EQUIPMENT

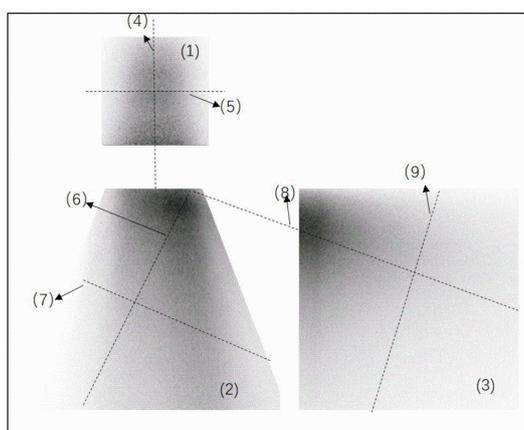
The invention provides a laboratory 3D holographic projection equipment mounting structure and projection equipment, which comprises a base, wherein the upper part of the base is provided with a lifting adjustable traction seat parallel to the base, four elastic contour ropes which are equal in length and have consistent included angles with the bottom surface are connected between the base and the traction seat, the vertexes of the four elastic contour ropes are intersected to form a regular rectangular pyramid structure, and the traction mechanism drives the four bottom edges of a regular rectangular pyramid transparent emulsion film to synchronously extend or contract and change. The transmittance of the film is not affected in the repeated use process.



CLAIM 1. The utility model provides a laboratory is with 3D holographic projection equipment mounting structure, includes base (1), its characterized in that: the upper part of the base (1) is provided with a traction seat (2) which is parallel to the base in an up-down adjustable manner, four elastic contour ropes (3) which are equal in length and have the same included angle with the bottom surface are connected between the base (1) and the traction seat (2), four vertexes of the elastic contour ropes (3) are intersected to form a regular rectangular pyramid structure, a detachable regular rectangular pyramid transparent latex film (4) is further correspondingly arranged outside the elastic contour ropes (3), the elastic contour ropes (3) are attached to four side edges of the regular rectangular pyramid transparent latex film (4), the top end of the regular rectangular pyramid transparent latex film (4) is clamped and installed on the traction seat (2), four base edges of one end, far away from the traction seat (2), of the regular rectangular pyramid transparent latex film (4) are clamped on a traction mechanism arranged on the base (1), and the traction mechanism drives the four base edges of the regular rectangular pyramid transparent latex film (4) to be synchronously prolonged or changed in a contraction manner, the upper part of the traction seat (2) is also provided with an equipment installation groove (5) for placing a display device, and the traction seat (2) at the bottom of the equipment installation groove (5) is in a transparent state; the base (1) and the traction seat (2) are located on the outer side of the rectangular pyramid transparent latex film (4) and are also provided with rubber sealing frame strips (6) which are movably abutted against each other, the rubber sealing frame strips (6) are abutted against each other and are arranged with the inner side area of the frame strips and the outer environment in an isolated mode, the base (1) is internally provided with a liquid supply device which is abutted against each other by the upper and lower rubber sealing frame strips (6) and pumps the humectant into the isolated area, and the liquid supply device recovers and stores the humectant after the upper and lower rubber sealing frame strips (6) are separated.

GRATING EFFICIENCY DISTRIBUTION CHARACTERIZATION AND OPTIMIZATION METHOD FOR REALIZING UNIFORM IMAGING OF HOLOGRAPHIC WAVEGUIDE DISPLAY SYSTEM

The invention discloses a grating efficiency distribution characterization and optimization method for realizing uniform imaging of a holographic waveguide display system. The method comprises the following steps: the method comprises the steps of accurately tracing the light of the holographic waveguide structure in a full-view field, obtaining two-dimensional graphs of illumination distribution on an incident grating, a middle grating and an emergent grating by using a detector element, describing the main illumination distribution of the grating by respectively taking points in the grating in two directions parallel to a grating vector and perpendicular to the grating vector, and compensating the energy distribution by using the distribution of the grating efficiency in each area so as to obtain an efficiency distribution curve of the grating. The peak efficiency distribution of the holographic volume grating obtained by the invention is optimized for each grating division area, and the problem of uneven luminance of the TONG-outputting surface commonly existing in the two-dimensional pupil can be solved.



CLAIM 1. A grating efficiency distribution characterization and optimization method for realizing uniform imaging of a holographic waveguide display system is characterized by aiming at the illumination distribution of a grating in a two-dimensional pupil expanding structure displayed by a holographic waveguide, wherein the grating comprises an incident grating (1), a middle grating (2) and an emergent grating (3); the method is characterized by comprising the following steps: step 1: performing full-field ray tracing on the two-dimensional pupil expanding structure displayed by the holographic waveguide; step 2: obtaining a two-dimensional graph of illumination distribution on the incident grating (1), the intermediate grating (2) and the emergent grating (3) by using a detector element; and step 3: points in two directions parallel to the grating vector and perpendicular to the grating vector in the incident grating (1), the intermediate grating (2) and the emergent grating (3) are respectively taken to describe the main illumination distribution of the gratings; specifically, the method comprises the following steps: selecting a first straight line (4) and a second straight line (5) from the incident grating (1), wherein the first straight line (4) is coincident with the grating vector of the incident grating and passes through the central point of the incident grating (1), and the second straight line (5) is perpendicular to the incident grating vector and passes through the central point of the incident grating (1); selecting a third straight line (6) and a fourth straight line (7) from the intermediate grating (2), wherein the third straight line (6) is coincident with the intermediate grating vector and passes through the highest illumination point of the intermediate grating (2), the fourth straight line (7) is perpendicular to the third straight line (6), and the fourth straight line (7) passes through the middle point of the third straight line (6); selecting a fifth straight line (8) and a sixth straight line (9) from the emergent grating (3), wherein the fifth straight line (8) is coincident with the emergent grating vector and passes through the intersection point of the third straight line (6) and the upper boundary of the middle grating (2), the sixth straight line (9) is vertical to the fifth straight line (8), and the fifth straight line (8) passes through the middle point of the sixth straight line (9); and 4, step 4: and reversely deducing grating efficiency distribution curves which are required to be met by different positions on the grating when the TONG is uniform according to the energy distribution on the grating so as to compensate the energy loss caused by the reflection of the light beam on the holographic body grating and ensure that the TONG and the imaging are uniform.

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PATENT REFERENCE – See the table at the end of this document

N8950

WO2022225177

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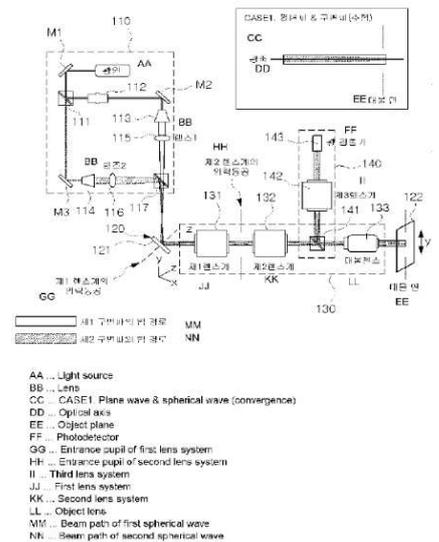
CUBIXEL

FLYING-OVER BEAM PATTERN SCANNING HOLOGRAM MICROSCOPE DEVICE USING SPATIAL MODULATION SCANNER AND TRANSLATION STAGE

The present invention relates to a flying-over beam pattern scanning hologram microscope device using a spatial modulation scanner and a translation stage. The present invention provides a flying-over beam pattern scanning hologram microscope device comprising: a scan beam generation unit which modulates a phase of a first beam split from a light source to convert the first beam to a first spherical wave through a first lens and convert a second beam to a second spherical wave through a second lens, and then makes the first spherical wave and the second spherical wave interfere with each other to form a scan beam; a scanning unit including a spatial modulation scanner which controls the scan beam in the horizontal direction to be transferred to a projection unit, and a translation stage which moves an object in the vertical direction at the rear end of the projection unit; the projection unit including multiple lens systems and an objective lens, and projecting the scan beam transferred from the scanning unit onto an object plane; and a light collection unit which detects a beam that has passed through the objective lens again after being reflected or fluoresced from the object, wherein the scan beam projected onto the object plane has different patterns depending on the focal position and conical angle condition of each of the first and second spherical waves formed on a scanning mirror.

DISPOSITIF DE MICROSCOPE À HOLOGRAMME À BALAYAGE À FAISCEAU EN SURVOL UTILISANT UN SCANNER À MODULATION SPATIALE ET UNE PLATINE DE TRANSLATION

La présente invention concerne un dispositif de microscope à hologramme à balayage à faisceau en survol utilisant un scanner à modulation spatiale et une platine de translation. La présente invention concerne un dispositif de microscope à hologramme de balayage à faisceau en survol, comprenant les éléments suivants : une unité de génération de faisceau de balayage modulant la phase d'un premier faisceau provenant d'une source lumineuse pour convertir le premier faisceau en une première onde sphérique à travers une première lentille et convertir un second faisceau en une seconde onde sphérique à travers une seconde lentille, puis faire interférer la première onde sphérique et la seconde onde sphérique l'une avec l'autre pour former un faisceau de balayage; une unité de balayage comprenant un scanner à modulation spatiale et commandant le faisceau de balayage dans la direction horizontale pour le transférer à une unité de projection, et une platine de translation déplaçant un objet dans la direction verticale à l'extrémité arrière de l'unité de projection; l'unité de projection comprenant des systèmes de lentilles multiples et une lentille d'objectif, et projetant le faisceau de balayage transféré depuis l'unité de balayage sur un plan objet; et une unité de collecte de lumière détectant un faisceau ayant traversé à nouveau la lentille d'objectif après avoir été réfléchi ou rendu fluorescent par l'objet, le faisceau de balayage projeté sur le plan de l'objet présentant différents motifs en fonction de la position focale et de la condition d'angle conique de chacune des première et seconde ondes sphériques formées sur un miroir de balayage.



CLAIM 1. A scan beam generation unit configured to modulate a phase of a first beam divided by a light source to convert the first beam into a first spherical wave through a first lens and to convert a second beam into a second spherical wave through a second lens, and to interfere the first and second spherical waves to form a scan beam; A scanning unit including a spatial modulation scanner for controlling the incident scanning beam to a projection unit to control a scanning position of the scanning beam with respect to an object in horizontal and vertical directions, and a translation stage for moving the object in the vertical direction at a rear end of the projection unit; an object projection unit including a plurality of lens systems and an objective lens, wherein the scanning beam received from the scanning unit is positioned at an object projection surface; And a light collecting unit detecting a beam reflected or fluoresced from the object and passed through the objective lens again, wherein the scanning beam projected on the objective surface has different patterns according to angular focus positions and pyramid angle conditions of the first and second spherical waves focused on the spatial modulation scanner.

N8965

US20220341722
Priority Date: 21/04/2021

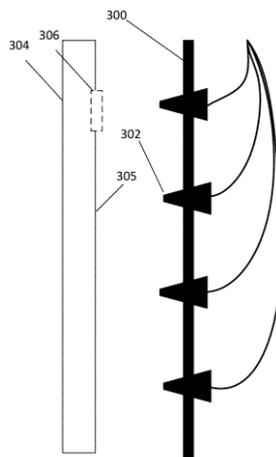
APPLIED MATERIALS

DIGITAL HOLOGRAPHY FOR ALIGNMENT IN LAYER DEPOSITION

An organic light-emitting diode (OLED) deposition system has a workpiece transport system configured to position a workpiece within the OLED deposition system under vacuum conditions, a deposition chamber configured to deposit a first layer of organic material onto the workpiece, a metrology system having one or more sensors measure of the workpiece after deposition in the deposition chamber, and a control system to control a deposition of the layer of organic material onto the workpiece. The metrology system includes a digital holographic microscope positioned to receive light from the workpiece and generate a thickness profile measurement of a layer on the workpiece. The control system is configured to adjust processing of a subsequent workpiece at the deposition chamber or adjust processing of the workpiece at a subsequent deposition chamber based on the thickness profile.

HOLOGRAPHIE NUMÉRIQUE POUR L'ALIGNEMENT DANS UN DÉPÔT DE COUCHE

Un système de dépôt à diodes électroluminescentes organiques (OLED) comprend un système de transport de pièce conçu pour positionner une pièce à l'intérieur du système de dépôt à OLED dans des conditions de vide, une chambre de dépôt conçue pour déposer une première couche de matériau organique sur la pièce, un système de métrologie ayant une ou plusieurs mesures de capteurs de la pièce après le dépôt dans la chambre de dépôt, et un système de commande pour commander un dépôt de la couche de matériau organique sur la pièce. Le système de métrologie comprend un microscope holographique numérique positionné de façon à recevoir de la lumière provenant de la pièce et à générer une mesure de profil d'épaisseur d'une couche sur la pièce. Le système de commande est conçu pour ajuster le traitement d'une pièce ultérieure au niveau de la chambre de dépôt ou pour ajuster le traitement de la pièce au niveau d'une chambre de dépôt ultérieure sur la base du profil d'épaisseur.



CLAIM 1. An organic light-emitting diode (OLED) deposition system comprising: a workpiece transport system configured to position a workpiece within the OLED deposition system under vacuum conditions; a deposition chamber configured to deposit a first layer of organic material onto the workpiece, a metrology system having one or more sensors measure of the workpiece after deposition in the deposition chamber, the metrology system including a digital holographic microscope positioned to receive light from the workpiece and generate a thickness profile measurement of a layer on the workpiece, and a control system to control a deposition of the layer of organic material onto the workpiece, the control system configured to cause the deposition chamber to deposit a first layer of a first organic material onto the workpiece, cause the workpiece transport system to transfer the workpiece from the deposition chamber to a position at which the one or more sensors measure of the workpiece, receive the thickness profile measurement from the metrology system, and adjust processing of a subsequent workpiece at the deposition chamber or adjust processing of the workpiece at a subsequent deposition chamber based on the thickness profile.

N8978

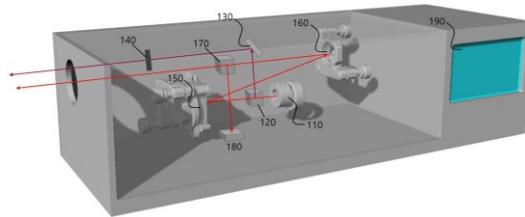
KR102455591

Priority Date: 07/12/2021

GUMI ELECTRONICS & INFORMATION TECHNOLOGY RESEARCH
INSTITUTE

A MULTIPLE LIGHT OUTPUT DEVICE

In order to solve the above-mentioned problems, in order to enable measurement of the high step height in a digital holographic microscope, the light output from one laser light source is separated into two paths, To provide a multi-light output device capable of outputting multi-light having different wavelengths by changing a wavelength and a line width of light traveling through one of these paths. The multi-light output device includes a light source unit generating and outputting light, a beam splitter transmitting a part of the light output from the light source unit to a first optical path and reflecting the other part to a second optical path, and a first light output unit changing the light incident from the beam splitter through the first optical path and outputting the changed light to the outside.



CLAIM 1. Processing apparatus comprising: A light source unit generating and outputting delete deletion deletion lights; a first beam splitter transmitting a part of the light output from the light source unit to a first optical path and reflecting the other part to a second optical path; a first optical output unit changing light incident from the first beam splitter through the first optical path and outputting the changed light to the outside; And a second light output unit configured to output light incident from the first beam splitter through the second optical path to the outside as a source light; wherein the first optical output unit includes: A diffraction grating unit configured to diffract light incident from the first beam splitter through the first optical path; a first reflective unit configured to reflect light diffracted by the diffraction grating unit; And a second beam splitter configured to transmit a part of light incident on the first reflecting unit through a third optical path and reflect the other part through a fourth optical path, wherein the second light output unit includes: A second reflecting unit configured to reflect light incident from the first beam splitter through the second optical path; a polarizing unit configured to transmit light reflected by the second reflecting unit according to a polarization direction; Wherein the optical path splitting unit splits one light output from the light source into two paths through the first beam splitter and then changes a wavelength and a line width of the light traveling to the first optical path to cause the first optical output unit and the second optical output unit to output light having different wavelengths, A high level difference of 100 or more is measured by a combined wave path produced by two wavelengths in a DHM that measures a sample using the two wavelengths, and the first optical output unit includes a measuring unit that is positioned separately from the light source unit and measures a wavelength and a line width of light incident in the second beam splitter through the fourth optical path, And a density of the grooves formed in the diffraction grating portion is in a range of 150 to 1800 (grooves / mm).

N8995

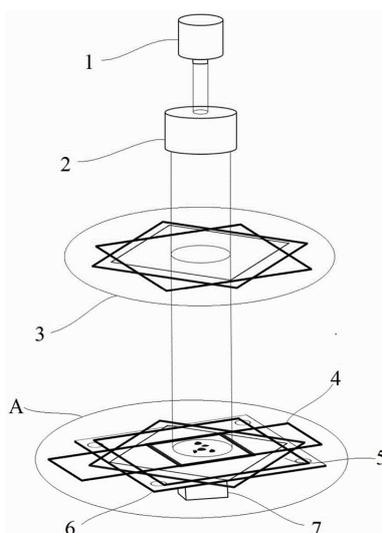
CN115219434

Priority Date: 27/06/2022

HEFEI UNIVERSITY OF TECHNOLOGY

LENS-FREE COAXIAL HOLOGRAPHIC MUELLER MATRIX IMAGING SYSTEM AND IMAGING METHOD

The invention discloses a lens-free coaxial holographic Mueller matrix imaging system and an imaging method. According to the method, different polarization state combinations are formed by controlling the voltages of the liquid crystal phase retarders in the polarization state generator and the polarization state analyzer, so that different coaxial holographic diffraction patterns are obtained by the image sensor, and the Mueller matrix image of the sample to be measured can be obtained based on the coaxial holographic diffraction patterns. The method eliminates the vibration error caused by mechanical rotation in the traditional rotary wave plate method-based Mueller matrix microscopic imaging technology, and obviously improves the imaging speed.



CLAIM 1. The utility model provides a coaxial holographic Mueller matrix imaging system of no lens, includes light source, image sensor, its characterized in that still includes polarization state generator, polarization state analyzer, light source, polarization state generator, polarization state analyzer, image sensor share the optical axis in proper order and distribute, and the sample that awaits measuring is arranged in between polarization state generator, the polarization state analyzer, wherein: the polarization state generator comprises a first linear polaroid, a first liquid crystal phase retarder and a second liquid crystal phase retarder which are sequentially distributed along a light path common-axis, wherein an included angle between the polarization direction of the first linear polaroid and the fast axis direction of the first liquid crystal phase retarder is set to be ϕ 45 degrees, and an included angle between the polarization direction of the first linear polaroid and the fast axis direction of the second liquid crystal phase retarder is set to be ϕ 0 degrees; the polarization state analyzer is structurally symmetrical to the polarization state generator, and comprises a third liquid crystal phase retarder, a fourth liquid crystal phase retarder and a second linear polarizer which are sequentially distributed along the optical path common-axis, so that an included angle between the polarization direction of the second linear polarizer and the fast axis direction of the third liquid crystal phase retarder is ϕ 0 degrees, and an included angle between the polarization direction of the second linear polarizer and the fast axis direction of the fourth liquid crystal phase retarder is ϕ 45 degrees; emergent light of the light source sequentially passes through a first linear polaroid, a first liquid crystal phase retarder and a second liquid crystal phase retarder in a polarization state generator and then reaches a sample to be detected, diffracted light is formed by the sample to be detected, and the diffracted light sequentially passes through a third liquid crystal phase retarder, a fourth liquid crystal phase retarder and a second linear polaroid in a polarization state analyzer and then reaches an image sensor, so that a coaxial holographic diffraction pattern is formed on the image sensor.

Click on the title to return to table of contents

PATENT REFERENCE – See the table at the end of this document

N8954

WO2022214365

Priority Date: 09/04/2021

INTERDIGITAL PATENT HOLDINGS

METHODS AND APPARATUSES FOR ENCODING/DECODING A SEQUENCE OF MULTIPLE PLANE IMAGES, METHODS AND APPARATUS FOR RECONSTRUCTING A COMPUTER GENERATED HOLOGRAM

Methods (1400) and apparatuses for encoding/decoding a sequence of multiple plane images representative of a 3D scene are provided, wherein the sequence of multiple plane images comprises at least one multiple plane image, a multiple plane image comprising a plurality of layers, said encoding comprising encoding in a bitstream, for at least one layer of the plurality of layers of the at least one multiple plane image, an indicator indicating whether the at least one layer has changed with respect to a corresponding layer of a reference multiple plane image, and encoding the at least one multiple plane image. Methods (1100) and apparatuses for reconstructing Computer Generated Holograms from the sequence of multiple plane images are also provided.

PROCÉDÉS ET APPAREILS POUR CODER/DÉCODER UNE SÉQUENCE D'IMAGES À PLANS MULTIPLES, PROCÉDÉS ET APPAREIL POUR RECONSTRUIRE UN HOLOGRAMME GÉNÉRÉ PAR ORDINATEUR

L'invention concerne des procédés (1400) et des appareils de codage/décodage d'une séquence d'images à plans multiples représentatives d'une scène 3D, la séquence d'images à plans multiples comprenant au moins une image à plans multiples, une image à plans multiples comprenant une pluralité de couches, ledit codage comprenant le codage dans un flux binaire, pour au moins une couche de la pluralité de couches de ladite au moins une image à plans multiples, un indicateur indiquant si ladite au moins une couche a changé par rapport à une couche correspondante d'une image à plans multiples de référence, et le codage de ladite au moins une image à plans multiples. L'invention concerne également des procédés (1100) et des appareils destinés à reconstruire des hologrammes générés par ordinateur à partir de la séquence d'images à plans multiples.

N8975

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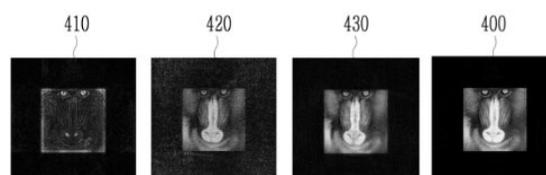
Priority Date: 29/03/2021

KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE

PHASE HOLOGRAM QUANTIZATION APPARATUS AND OPERATING METHOD THEREOF

A phase hologram quantization apparatus and a method of operating the same are provided. A phase hologram quantization apparatus includes a wide field forward propagation unit configured to propagate an input image to generate a first complex hologram, a phase hologram conversion unit configured to convert the first complex hologram into a first phase hologram using an error diffusion method, A wide field reverse propagation unit configured to generate a second complex hologram by reverse propagation of the first phase hologram, and a phase hologram generation controller configured to calculate a first weight to be applied to the error diffusion scheme using the input image and the second complex hologram.

CLAIM 1. A projector includes a wide field forward propagation unit configured to generate a first complex hologram by propagating an input image, a phase hologram conversion unit configured to convert the first complex hologram into a first phase hologram by using an error diffusion method, A wide field backpropagation unit configured to generate a second complex hologram by backpropagating the first phase hologram, and a phase hologram generation control unit configured to calculate a first weight to be applied to the error diffusion scheme using the input image and the second complex hologram.



CLAIM 1. A projector includes a wide field forward propagation unit configured to generate a first complex hologram by propagating an input image, a phase hologram conversion unit configured to convert the first complex hologram into a first phase hologram by using an error diffusion method, A wide field backpropagation unit configured to generate a second complex hologram by backpropagating the first phase hologram, and a phase hologram generation control unit configured to calculate a first weight to be applied to the error diffusion scheme using the input image and the second complex hologram.

N8979

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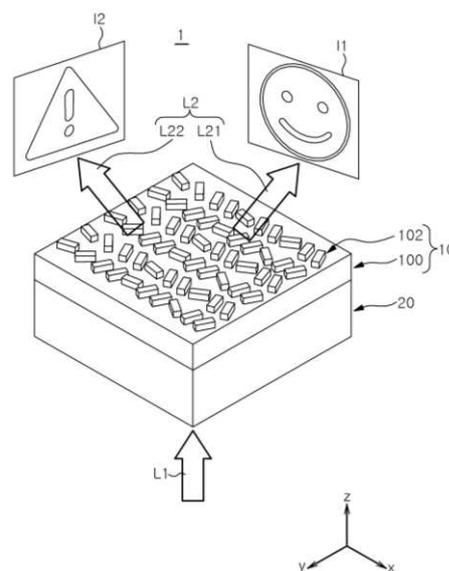
Priority Date: 28/04/2021

POHANG UNIVERSITY OF SCIENCE & TECHNOLOGY POSTECH

HOLOGRAPHIC METASURFACE GAS SENSOR AND WEARABLE DEVICE COMPRISING THE SAME

According to one aspect of the present invention, there is provided a liquid crystal device including: a meta-surface layer provided with a plurality of nanostructures; and a liquid crystal layer provided on one side of the meta-surface layer and including a plurality of cells whose arrangement can be changed by a specific material in contact with each other, Wherein the liquid crystal layer is configured to change a polarization state of transmitted light transmitted through the liquid crystal layer by changing an arrangement of the plurality of cells due to contact with the specific substance.

CLAIM 1. A holographic metasurface gas sensor comprising: a metasurface layer provided with a plurality of nanostructures; and a liquid crystal layer provided on one side of the metasurface layer, the liquid crystal layer including a plurality of cells whose arrangement can be changed by a specific substance in contact with each other, wherein the liquid crystal layer can change a polarization state of transmitted light transmitted through the liquid crystal layer by changing the arrangement of the plurality of cells by the contact of the specific substance.



N8980

JP2022160861

Priority Date: 07/04/2021

JAPAN BROADCASTING

DIGITAL HOLOGRAM SIGNAL PROCESSING DEVICE AND DIGITAL HOLOGRAM IMAGING/REPRODUCTION DEVICE

TOPIC: To correctly obtain a sense of depth, such as a depth position and a depth order of a subject, and to synthesize the subject with a video captured by a normal camera. INVENTION: a focused image/depth position information acquiring unit 18 A configured to acquire, from a reconstructed image of a digital hologram, a focused image of a subject and depth position information of the focused image; a reference image acquiring unit 18 B configured to perform a computation so that a focused image within a region set at a desired depth position within a region of a depth of field can be specified, and acquire a reference image B by adding the obtained focused images; Defocus image group acquisition means 18 C for obtaining a defocus image group Dd by performing a computation so that an out-of-region focused image disposed at a desired depth position outside the region of the depth of field can be specified; A reference image/defocus image group addition unit 18 D that adds the obtained reference image B and the obtained defocus image group Dd to each other to obtain an incoherent response image.

CLAIM 1. A digital hologram signal processing apparatus that performs signal processing of a digital hologram imaging/reproduction apparatus that captures three-dimensional information of a subject using interference of light, the apparatus comprising: A focused image for acquiring a desired number of focused images of a subject and information on a depth position of the focused image from a reconstructed image of a digital hologram obtained by an interference optical system of the digital hologram imaging/reproduction device/ Depth position information acquisition means; and one or more of a depth of field, a focal length of a lens, and a focal length of a lens in accordance with a depth position so that a focused image in a region set to a desired depth position in a region of the depth of field can be specified, A reference image acquiring means for acquiring a reference image by setting elements of an opening diameter of the lens and a distance from the lens to an image surface, and adding together the obtained predetermined number of focused images in the regions; Sets, in accordance with the depth position, elements including a focal length of the lens, an opening diameter of the lens, and a distance from the lens to an image plane so that a focused image outside a region disposed at a desired depth position outside the region of the depth of field can be specified; Defocus image group acquiring means for acquiring a set of defocus images by computing a convolution integral between the obtained intensity distribution of each of the out-of-region focused images and the intensity distribution of the point spread function of the incoherent imaging system; A reference image/defocus image group addition unit configured to add the reference image obtained by the reference image acquiring unit and the defocus image group obtained by the defocus image group acquiring unit to each other to obtain an incoherent response image.

N8990

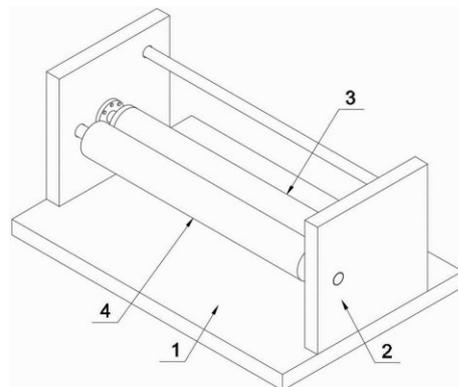
CN217595400U

SICHUAN KADIA TECHNOLOGY

Priority Date: 22/04/2022

DUST COLLECTOR OF HOLOGRAPHIC LASER POSITIONING FILM

The utility model discloses a dust collector of holographic radium-shine locating film, comprising a base plate, the equal fixedly connected with backup pad in both sides at bottom plate top, middle part between two backup pads is provided with the dust removal subassembly, be provided with drive assembly between two backup pads, the dust removal subassembly is including bearing the axle, bear an axle fixed mounting between two backup pads, the outer wall rotation of bearing the axle has cup jointed and has born the sleeve, bear telescopic outer wall fixed mounting has the silica gel sleeve, one side that two position sleeve rings are relative all is a plurality of locating levers of ring array fixedly connected with, the outer wall of locating lever and the inner chamber slip joint of constant head tank. The utility model discloses utilize the mode that sets up of dust removal subassembly, dust removal subassembly is including bearing the axle, bearing sleeve and silica gel sleeve, and the silica gel sleeve is made by washing viscosity silica gel material to when holographic radium-shine locating film passes through the silica gel sleeve, the silica gel sleeve can be to its externally adnexed aluminite powder and dust adhesion clearance, thereby improves its practicality.



CLAIM 1. The dust removal device for the holographic laser positioning film comprises a bottom plate (1), and is characterized in that two sides of the top of the bottom plate (1) are fixedly connected with supporting plates (2), a dust removal assembly (3) is arranged in the middle between the two supporting plates (2), and a driving assembly (4) is arranged between the two supporting plates (2); dust removal subassembly (3) are including bearing axle (31), bear axle (31) fixed mounting between two backup pad (2), the outer wall that bears axle (31) rotates and has cup jointed and bear sleeve (32), the outer wall fixed mounting who bears sleeve (32) has silica gel sleeve (33).

N8991

CN217595008U

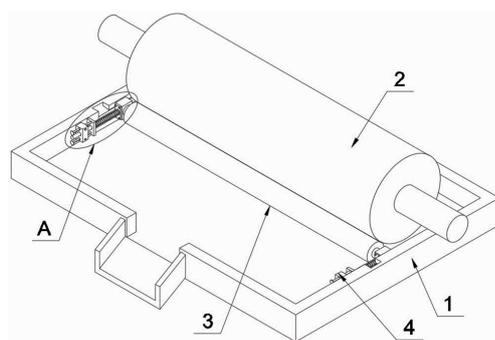
SICHUAN KADIA TECHNOLOGY

Priority Date: 24/04/2022

DEVICE OF HOLOGRAPHIC LASER INFORMATION COATING

The utility model discloses a device of radium-shine information coating of holography, including bearing the tray, the top of bearing the tray is provided with the reticulation roller, and the top of bearing the tray is provided with the extrusion subassembly, and the extrusion subassembly includes the connecting axle, and the fixed extrusion sleeve that has cup jointed of outer wall of connecting axle, and the both ends of connecting axle all are provided with coupling assembling, and coupling assembling includes the connecting block, and connecting block sliding connection is in one side of bearing the tray inner wall, and the one end and the connecting block of connecting axle outer wall rotate to be connected, and the equal sliding connection in both sides of bearing the tray inner wall has the limiting plate, is provided with the spring between limiting plate and the connecting block. The utility model discloses utilize extrusion subassembly and coupling assembling's mode that sets up, extrusion subassembly includes connecting axle and extrusion sleeve, and extrusion sleeve is soft material, and coupling assembling can give an elasticity thrust of extrusion sleeve to the extrusion sleeve uses with the reticulation roller cooperation, just can extrude the discharge with the foam on the PET chemical film, and then improves the production quality of product.

CLAIM 1. A holographic laser information coating device comprises a bearing tray (1), and is characterized in that an anilox roller (2) is arranged at the top of the bearing tray (1), and an extrusion assembly (3) is arranged at the top of the bearing tray (1); the extrusion assembly (3) comprises a connecting shaft (31), an extrusion sleeve (32) is fixedly sleeved on the outer wall of the connecting shaft (31), and two ends of the connecting shaft (31) are provided with connecting assemblies (4); coupling assembling (4) are including connecting block (41), connecting block (41) sliding connection is in the one side that bears tray (1) inner wall, the one end and the connecting block (41) of connecting axle (31) outer wall rotate to be connected, the equal sliding connection in both sides that bear tray (1) inner wall has limiting plate (42), be provided with spring (43) between limiting plate (42) and connecting block (41).



N8997

CN115187682

Priority Date: 10/05/2022

BEIJING UNIVERSITY OF POSTS & TELECOMMUNICATIONS

OBJECT STRUCTURE RECONSTRUCTION METHOD AND RELATED EQUIPMENT

The application provides an object structure reconstruction method and related equipment. The method comprises the following steps: acquiring a plurality of transmission holographic images of the object with different acquisition angles; inputting the transmission holographic image and the corresponding acquisition angle into a pre-trained multilayer sensor MLP, and outputting volume density through the multilayer sensor MLP to construct initial point cloud data and fuse the initial point cloud data; comparing and analyzing the initial fusion point cloud data with each holographic image respectively to generate a plurality of visual point cloud data; responding to the fusion of the plurality of visual point cloud data and the fusion result reaching a preset dense threshold value to obtain a body corresponding to the object; and extracting the body to obtain the internal structure corresponding to the object. The application provides an object structure reconstruction method and related equipment, which can conveniently and effectively acquire the internal structure of an object.



图3a

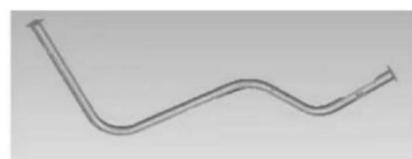


图3b

CLAIM 1. A method for reconstructing a structure of an object, comprising: acquiring a plurality of transmission holographic images of the object, wherein the acquisition angles of the transmission holographic images are different; inputting the transmission holographic image and the corresponding acquisition angle into a pre-trained multilayer sensor MLP, and outputting the volume density through the multilayer sensor MLP; constructing initial point cloud data based on the volume density; obtaining initial fusion point cloud data through point cloud splicing based on all the initial point cloud data; comparing and analyzing the initial fusion point cloud data with each holographic image respectively to generate a plurality of visual point cloud data; responding to the fusion of the plurality of visual point cloud data and the fusion result reaching a preset dense threshold value to obtain a body corresponding to the object; and extracting the body to obtain the internal structure corresponding to the body.

N9001

CN115167088

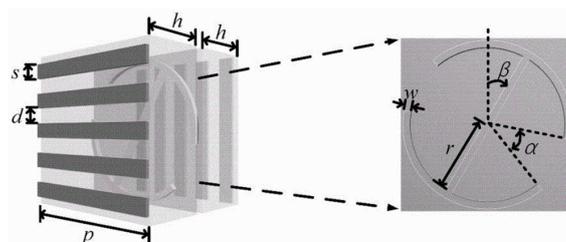
Priority Date: 12/07/2022

AIR FORCE ENGINEERING UNIVERSITY OF PLA

CUSTOMIZABLE HOLOGRAPHIC SUPER-SURFACE DESIGN METHOD BASED ON DEEP LEARNING

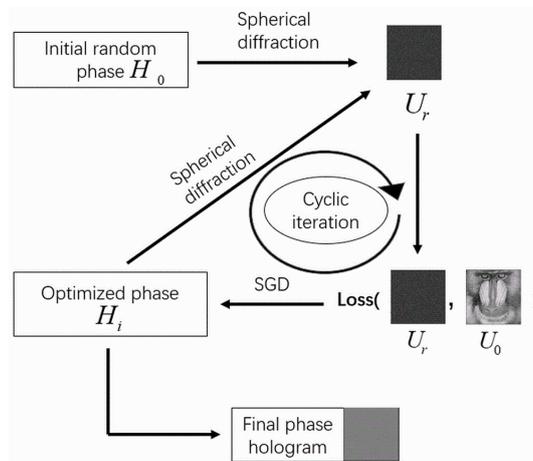
The invention provides a customizable holographic super-surface design method based on deep learning, which comprises the following steps: determining a curved 'I' shaped super-surface unit structure, and customizing super-surface amplitude and phase arrangement according to a pre-imaging pattern; constructing a deep learning network model; inputting the amplitude value and the phase information of each super-surface unit structure, and calculating the parameter information of the unit structure by using a parameter scanning method according to a trained deep learning network model; regulating and controlling the amplitude and the phase of each I-shaped super-surface unit structure according to the unit structure parameter information; and filling each regulated and controlled I-shaped super surface unit to form the holographic super surface. Under the condition of ensuring that a target hologram is designed, the invention realizes the rapid generation of the holographic super surface by deducing the phase and amplitude distribution and training the deep network, and has the advantages of simple manufacturing process, simple design structure and strong practicability.

CLAIM 1. A customizable holographic super surface design method based on deep learning is characterized by comprising the following steps: determining a curved 'I' shaped super-surface unit structure, and customizing super-surface amplitude and phase arrangement according to a pre-imaging pattern; constructing a deep learning network model; inputting structural amplitude and phase information of each super-surface unit to a deep learning network model for training, and calculating structural parameter information of the super-surface unit by using a parameter scanning method according to the trained deep learning network model; regulating and controlling the amplitude and the phase of each I-shaped super-surface unit structure according to the super-surface unit structure parameter information; filling the regulated and controlled I-shaped super surface units and forming the holographic super surface.



SPHERICAL HOLOGRAPHIC RECONSTRUCTION QUALITY IMPROVING METHOD BASED ON RANDOM GRADIENT DESCENT OPTIMIZATION ALGORITHM

The invention provides a method for improving spherical holographic reproduction quality based on a random gradient descent optimization algorithm. The method comprises two parts of hologram generation and hologram reconstruction. In the generation process of the method, firstly, a randomly initialized hologram is reconstructed by utilizing the spherical surface occlusion rejection diffraction algorithm provided by the invention, a loss value between the randomly initialized hologram and a target image is calculated, then a gradient of the randomly initialized hologram is obtained, the hologram is updated according to a back propagation formula, the operation is repeated on the updated hologram, a set threshold value is met, and finally the optimized hologram is obtained; compared with the traditional spherical self-diffraction iterative method, the method can reconstruct images with higher quality by obtaining the hologram, the converged peak signal-to-noise ratio is far higher than that of the traditional self-diffraction method by the random gradient descent method, and the method has good application prospect in the 360-degree display of the spherical surface.



CLAIM 1. A spherical holographic reproduction quality improvement method based on a random gradient descent optimization algorithm is characterized by comprising two parts of hologram generation and hologram reconstruction; the hologram generating process is specifically described as follows: step one, generating a random phase distribution within a range of 0-2 pi by using a random function as an initial spherical hologram H_0 ; reconstructing the spherical hologram H_0 by utilizing a spherical diffraction algorithm, wherein the spherical diffraction algorithm adopts a spherical convolution algorithm of shielding elimination and is represented as $U_r(\theta, \phi) = \text{IFFT}[\text{FFT}(U_s(\theta, \phi)) \cdot \text{FFT}(h')]$, U_s is source field complex amplitude, U_r is diffraction field complex amplitude, θ and ϕ are respectively represented as a pitch angle and a yaw angle, and h' is a point spread function adopting a shielding elimination relation; substituting the reconstructed complex amplitude image and the target image into a loss function, and calculating to obtain a loss value loss ; step four, calculating the gradient of the calculated loss value to the phase of the hologram H_0 to obtain the gradient $\text{Grad} = \frac{\partial \text{loss}}{\partial H_0}$, and obtaining the updated hologram phase H_i according to a back propagation formula $H_i = H_0 - \text{lr} \cdot \text{Grad}$, wherein lr is the learning rate; reconstructing the phase-updated hologram H_i by using a de-occlusion spherical convolution algorithm, continuing the previous two steps of operation, calculating loss values loss and gradient, performing back propagation, and continuously optimizing the phase of the hologram; step six, when the optimized times meet the set times or the reconstruction quality reaches a set threshold value, stopping the optimization process, and keeping the last iteration hologram as a final optimized hologram; the hologram reconstruction process is specifically described as follows: loading a hologram on a corresponding modulator; and step two, receiving the spherical hologram reconstructed image at the corresponding diffraction distance.

N9007

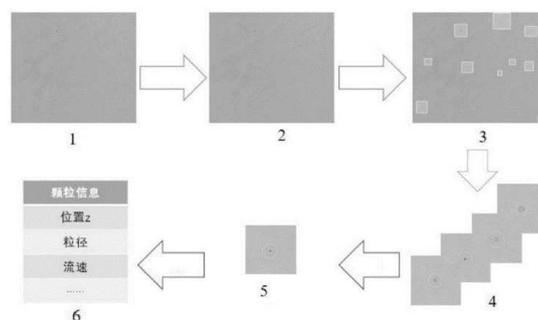
CN115145138

Priority Date: 14/06/2022

ZHEJIANG UNIVERSITY

RAPID PROCESSING METHOD FOR SPARSE PARTICLE HOLOGRAM

The invention discloses a method for quickly processing a sparse particle hologram, which comprises the following steps: (1) Identifying and marking single-particle holographic fringes in a hologram obtained by shooting in a sparse particle environment by using a neural network model; (2) Local reconstruction is carried out on the marked single-particle holographic fringes in the whole hologram; (3) And axially positioning the locally reconstructed sectional image, finding a focusing section by adopting a self-focusing algorithm, and extracting particle information from the focusing section. The method for rapidly processing the sparse particle hologram solves the problem of large reconstruction calculation amount caused by data redundancy of the sparse particle hologram.



CLAIM 1. A method for rapidly processing a sparse particle hologram, the method comprising: (1) Identifying and marking single-particle holographic fringes in a hologram obtained by shooting in a sparse particle environment by using a neural network model; (2) Local reconstruction is carried out on the marked single-particle holographic fringes in the whole hologram; (3) And axially positioning the locally reconstructed sectional image, finding a focusing section by adopting a self-focusing algorithm, and extracting particle information from the focusing section.

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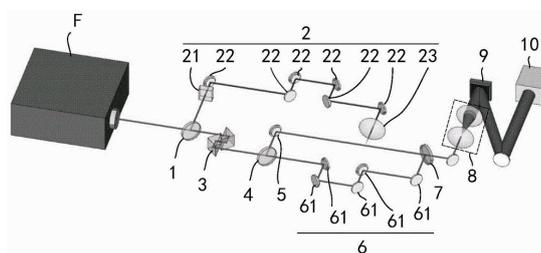
Priority Date: 28/06/2022

SHENZHEN UNIVERSITY

ULTRAFAST HOLOGRAPHIC IMAGING METHOD AND SYSTEM BASED ON COMPRESSED FREQUENCY DOMAIN HOLOGRAPHIC RECORDING

The embodiment of the application relates to the technical field of high-speed imaging. The embodiment of the application discloses an ultrafast holographic imaging method based on compressed frequency domain holographic recording, which combines a chirp pulse frequency time correspondence method, a frequency domain interference phase recording and reproducing method, and a compressed dimension reduction recording and recovering method to obtain intensity and phase information changes of a continuous time-space femtosecond ultrafast process, adopts a weighted sparse compression model based reproducing algorithm to realize compressed recording interference fringes to reproduce a plurality of continuous intensity and phase distributions, and calculates and obtains ultrafast event three-dimensional space-time intensity and phase information according to the intensity and phase distributions. The embodiment of the application also discloses an ultrafast holographic imaging system based on the compressed frequency domain holographic recording. The method and the device can solve the technical problems of complex amplitude recording, recording frame number and expanding recording dimensionality at the same time.

CLAIM 1. An ultrafast holographic imaging method based on compressed frequency domain holographic recording is characterized by comprising the following steps: splitting the femtosecond laser pulse into an excitation beam and a recording beam; forming an ultrafast event excitation region according to the excitation beam; broadening the recording light beam to form chirp pulse; performing light splitting processing on the chirped pulse to obtain a first chirped pulse and a second chirped pulse; enabling the first chirped pulse to pass through the ultrafast event excitation area, and carrying out intensity and phase modulation to obtain a first modulation pulse; enabling the second chirped pulse to pass through a delay optical path to form a reference pulse in frequency domain interference; combining the first modulation pulse and the reference pulse to form recording and reference pulses separated in time dimension; performing beam expanding treatment on the recording pulse and the reference pulse to obtain a beam expanding pulse; performing two-dimensional sparse sampling modulation on the beam expanding pulse to form a second modulation pulse and obtain a sparse sampling result; the second modulation pulse is subjected to frequency domain interference after being subjected to light splitting to obtain two-dimensional frequency domain interference fringes, and the two-dimensional frequency domain interference fringes are compressed, overlapped and recorded to obtain an interference fringe overlapping intensity image; and calculating to obtain three-dimensional space-time intensity and phase information by adopting a weighted sparse compression model-based reproduction algorithm.



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HOLOGRAMS - 18 PATENTS

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P35655	JP	2022150325	07/10/2022	NATIONAL PRINTING BUREAU	JP	26/03/2021	JP2021000052889	JP2022150325	SHEET FEEDING MECHANISM	
P35663	JP	2022146605	05/10/2022	DAI NIPPON PRINTING	JP	22/03/2021	JP2021000047653	JP2022146605	PROGRAM, AUTHENTICITY DETERMINATION METHOD, AUTHENTICITY DETERMINATION APPARATUS, AND AUTHENTICITY DETERMINATION SYSTEM	
P35681	EP	4068009	05/10/2022	BUNDESDRUCKEREI	DE	01/04/2021	DE202110108433	EP4068009 DE102021108433	METHOD AND DEVICE FOR PRODUCING A HOLOGRAM FOR A SECURITY ELEMENT AND METHOD FOR PRODUCING A VALUE OR SECURITY DOCUMENT	
P35682	EP	4067102	05/10/2022	KAUNAS UNIVERSITY OF TECHNOLOGY	EP	02/04/2021	EP2021000166819	EP4067102 US20220314682 JP2022158738	AN OPTICAL DEVICE WITH ORDERED SCATTERER ARRAYS FOR SECURE IDENTITY AND A METHOD OF PRODUCING THE SAME	
P35685	CN	217640510	21/10/2022	SHENZHEN YATUSHEN PRINTING PACKAGE	CN	13/06/2022	CN2022001466222	CN217640510U	SHAPE-DISPLAYING ANTI-COUNTERFEIT LABEL BASED ON GOLD-STAMPING 3D HOLOGRAPHIC FILM	
P35686	CN	217640508	21/10/2022	ZHONGSHAN ANMEI INFORMATION TECHNOLOGY	CN	23/05/2022	CN2022001252120	CN217640508U	DIGITAL ANTI-TRANSFER LABEL WITH HOLOGRAPHIC INFORMATION LAYER	
P35694	CN	217574413	14/10/2022	ANHUI JINCAI ANTI COUNTERFEITING TECHNOLOGY	CN	24/04/2022	CN2022000999265	CN217574413U	PNEUMATIC SCREEN STRETCHING TOOL FOR HOLOGRAPHIC ANTI-COUNTERFEITING GOLD STAMPING STAINED PAPER	
P35696	CN	217562178	11/10/2022	HUBEI GEDIAN DEVELOPMENT REGION CHENGUANG INDUSTRIAL	CN	14/06/2022	CN2022001509253	CN217562178U	PATCH TYPE LASER HOLOGRAPHIC TWO-DIMENSIONAL CODE ANTI-COUNTERFEIT LABEL	
P35706	CN	217516875	30/09/2022	WENZHO XINFENG COMPOSITE MATERIALS	CN	30/05/2022	CN2022001344586	CN217516875U	NOVEL MULTILAYER STRUCTURE'S ANTI-FAKE LASER MEMBRANE	
P35708	CN	115232343	25/10/2022	SHANDONG TAIBAO PACKAGING PRODUCT	CN	12/07/2022	CN2022000817759	CN115232343	NITROGEN AND FLUORINE CO-DOPED CARBON DOT HOLOGRAPHIC ANTI-COUNTERFEITING FILM AND PREPARATION METHOD THEREOF	
P35710	CN	115230358	25/10/2022	SHANDONG TAIBAO INFORMATION TECHNOLOGY GROUP	CN	24/06/2022	CN2022000729070	CN115230358	NOVEL ANTI-RECOVERY WINE BOTTLE MANUFACTURING METHOD	
P35711	CN	115225770	21/10/2022	BEIJING UNIVERSITY OF TECHNOLOGY	CN	24/06/2022	CN2022000729591	CN115225770	HOLOGRAPHIC ENCRYPTION METHOD BASED ON SINGLE-PIXEL IMAGING KEY OF METASURFACE	
P35713	CN	115214250	21/10/2022	SHANDONG KAITUO PACKAGING MATERIALS	CN	30/08/2022	CN2022001048210	CN115214250	POSITIONING LASER SCRAPING AND GILDING FILM	
P35714	CN	115195321	18/10/2022	SHANTOU JIAXIN PACKING MAT	CN	16/09/2022	CN2022001128828	CN115195321	UV LASER TRANSFER PAPER CAPABLE OF BEING ACCURATELY POSITIONED AND MANUFACTURING PROCESS THEREOF	
P35717	CN	115181121	14/10/2022	CHINA THREE GORGES UNIVERSITY	CN	29/07/2022	CN2022000906851	CN115181121	PREPARATION METHOD AND APPLICATION OF HIGH-BRIGHTNESS NITROGEN-CONTAINING HETEROCYCLIC COMPOUND	
P35722	CN	115157894	11/10/2022	WUHAN HUAGONG IMAGE TECHNOLOGY & DEVELOPMENT	CN	22/07/2022	CN2022000870772	CN115157894	HOLOGRAPHIC ANTI-COUNTERFEITING FILM, ANTI-COUNTERFEITING CERTIFICATE CARD AND PREPARATION METHOD	
P35728	CN	115124938	30/09/2022	SHANDONG TAIBAO PACKAGING PRODUCT	CN	12/07/2022	CN2022000817758	CN115124938	NITROGEN AND FLUORINE CO-DOPED CARBON DOT HOLOGRAPHIC ANTI-COUNTERFEITING STAY WIRE AND MANUFACTURING METHOD THEREOF	
P35729	CN	115124931	30/09/2022	SHANDONG TAIBAO PACKAGING PRODUCT	CN	12/07/2022	CN2022000818482	CN115124931	NITROGEN AND FLUORINE CO-DOPED CARBON DOT HOLOGRAPHIC ANTI-COUNTERFEITING ADHESIVE TAPE AND PREPARATION METHOD THEREOF	

VARIOUS OPTICAL EFFECTS - 31 PATENTS

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P35604	WO	2022228730	03/11/2022	GIESECKE & DEVRIENT MOBILE SECURITY	DE	27/04/2021	DE202110002225	DE102021002225 WO2022228730	SECURITY FEATURE FOR A VALUE DOCUMENT, VALUE DOCUMENT AND METHOD FOR PRODUCING A SECURITY FEATURE	MicroLens
P35605	WO	2022228729	03/11/2022	GIESECKE & DEVRIENT MOBILE SECURITY	DE	27/04/2021	DE202110002214	DE102021002214 WO2022228729	SECURITY FEATURE FOR A VALUE DOCUMENT, VALUE DOCUMENT AND METHOD FOR PRODUCING A SECURITY FEATURE	MicroLens
P35607	WO	2022227744	03/11/2022	CHINA BANKNOTE PRINTING & MINT CHINA BANKNOTE PRINTING & MINTING GROUP	CN	25/04/2021	CN2021000449714	CN115230277 WO2022227744	THIN FILM ELEMENT, TRANSPARENT ANTI-COUNTERFEITING ELEMENT, AND DATA CARRIER	

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VARIOUS OPTICAL EFFECTS - 31 PATENTS (continuation)

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P35608	WO	2022227741	03/11/2022	CHINA BANKNOTE PRINTING & MINT CHINA BANKNOTE PRINTING & MINTING GROUP	CN	25/04/2021	CN2021000449712	CN115230363 WO2022227741	OPTICAL ANTI-COUNTERFEITING ELEMENT, DESIGN METHOD THEREFOR, AND ANTI-COUNTERFEITING PRODUCT	
P35609	WO	2022227740	03/11/2022	CHINA BANKNOTE PRINTING & MINT CHINA BANKNOTE PRINTING & MINTING GROUP	CN	25/04/2021	CN2021000449753	CN115230364 WO2022227740	OPTICAL ANTI-COUNTERFEITING ELEMENT AND DESIGN METHOD THEREFOR, ANTI-COUNTERFEITING PRODUCT, AND DATA CARRIER	
P35610	WO	2022226540	27/10/2022	CRANE	US	23/04/2021	US2021063178844	WO2022226540	PROCESS FOR APPLYING RESINOUS FLUIDS FOR CAST MICRO-OPTIC STRUCTURES MANUFACTURING	Microlens
P35611	WO	2022226538	27/10/2022	CRANE	US	23/04/2021	US2021063178825	WO2022226538	SYSTEM AND METHOD FOR PRECISION INKING OF MICRO-OPTIC RECESSES	Microlens
P35613	WO	2022223223	27/10/2022	LEONHARD KURZ STIFTUNG	DE	20/04/2021	DE202110109967	DE102021109967 WO2022223223	METHOD FOR PRODUCING A MULTILAYER BODY, MULTILAYER BODY, USE OF A MULTILAYER BODY, USE OF A FIRST LAYER MADE OF A FIRST METAL AND A SECOND LAYER MADE OF A SECOND METAL IN A MULTILAYER BODY AND USE OF A HEAT APPLICATION DEVICE	
P35615	WO	2022222542	27/10/2022	CHINA BANKNOTE PRINTING & MINT CHINA BANKNOTE PRINTING & MINTING GROUP ZHONGCHAO SPECIAL SECURITY TECHNOLOGY	CN	20/04/2021	CN2021000426270	WO2022222542 CN115221998	ENCODING ELEMENT AND ANTI-COUNTERFEITING PRODUCT	
P35616	WO	2022220727	20/10/2022	ROLLING OPTICS INNOVATION	SE	13/04/2021	SE2021000050453	WO2022220727	SYNTHETIC IMAGES WITH ANIMATION OF PERCEIVED DEPTH	Microlens
P35620	WO	2022218600	20/10/2022	SCRIBOS	DE	15/04/2021	DE202110203749	WO2022218600 DE102021203749	SECURITY LABEL, A SERIES OF SECURITY LABELS, AUTHENTICATION SYSTEM HAVING A SERIES OF SECURITY LABELS AND METHOD FOR PRODUCING A SECURITY LABEL	
P35622	WO	2022218569	20/10/2022	GIESECKE & DEVRIENT CURRENCY TECHNOLOGY	DE	13/04/2021	DE202110001898	DE102021001898 WO2022218569	OPTICALLY VARIABLE SECURITY ELEMENT AND VALUE DOCUMENT COMPRISING THE OPTICALLY VARIABLE SECURITY ELEMENT	
P35623	WO	2022218568	20/10/2022	GIESECKE & DEVRIENT CURRENCY TECHNOLOGY	DE	13/04/2021	DE202110001899	DE102021001899 WO2022218568	OPTICALLY VARIABLE SECURITY ELEMENT AND VALUE DOCUMENT COMPRISING THE OPTICALLY VARIABLE SECURITY ELEMENT	
P35624	WO	2022217315	20/10/2022	CCL SECURE	AU	15/04/2021	AU2021000901109	WO2022217315 FR3121867	A PRINTED SECURITY FEATURE	
P35626	WO	2022214689	13/10/2022	SURYS	FR	09/04/2021	FR2021000003625	WO2022214689 FR3121629	OPTICAL SAFETY COMPONENTS VISIBLE IN REFLECTION, MANUFACTURING OF SUCH COMPONENTS AND SECURE DOCUMENTS EQUIPPED WITH SUCH COMPONENTS	
P35634	WO	2022213148	13/10/2022	CCL SECURE	AU	06/04/2021	AU2021000900998	WO2022213148 FR3121386	OPTICALLY VARIABLE DEVICE	Microlens
P35635	WO	2022209852	06/10/2022	ZEON	JP	30/03/2021	JP2021000058413	WO2022209852	OPTICAL DISPLAY MEDIUM, ARTICLE, AND METHOD FOR USING OPTICAL DISPLAY MEDIUM	
P35636	WO	2022207692	06/10/2022	SICPA	EP	31/03/2021	EP2021000166341	WO2022207692 TW202239482	METHODS FOR PRODUCING OPTICAL EFFECT LAYERS COMPRISING MAGNETIC OR MAGNETIZABLE PIGMENT PARTICLES AND EXHIBITING ONE OR MORE INDICIA	
P35643	KR	20220141204	19/10/2022	KOREA SECURITY PRINTING & MINTING	KR	12/04/2021	KR2021000047296	KR20220141204	ID CARD MANUFACTURING METHOD.	Microlens
P35647	JP	2022156988	14/10/2022	SEIKO GIKEN	JP	31/03/2021	JP2021000060960	JP2022156988	COLORLED TRANSPARENT DIFFRACTION OPTICAL ELEMENT DECORATIVE MOLDED ARTICLE	
P35648	JP	2022155079	13/10/2022	ZEON	JP	30/03/2021	JP2021000058414	JP2022155079	IDENTITY MEDIUM, MANUFACTURING METHOD, ARTICLE, AND METHOD OF USING IDENTIFICATION MEDIUM	
P35651	JP	2022152459	12/10/2022	NATIONAL PRINTING BUREAU	JP	29/03/2021	JP2021000055241	JP2022152459	DOT MOIRÉ FORMING	
P35652	JP	2022152453	12/10/2022	NATIONAL PRINTING BUREAU	JP	29/03/2021	JP2021000055233	JP2022152453	PRINTED MATERIAL AND METHOD FOR MAKING SAME	
P35656	JP	2022150301	07/10/2022	NATIONAL PRINTING BUREAU	JP	26/03/2021	JP2021000052849	JP2022150301	ANTI-COUNTERFEITING MEDIUM READING METHOD CAPABLE OF AUTHENTICATING AT SPATIAL FREQUENCY AND ANTI-COUNTERFEITING MEDIUM READING PROGRAM CAPABLE OF AUTHENTICATING AT SPATIAL FREQUENCY	Microlens
P35669	JP	2022144418	03/10/2022	NATIONAL PRINTING BUREAU	JP	19/03/2021	JP2021000045421	JP2022144418	ANTI-COUNTERFEITING PRINTED MATERIAL	

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VARIOUS OPTICAL EFFECTS - 31 PATENTS (continuation)

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
P35671	JP	2022141165	29/09/2022	TOPPAN PRINTING	JP	15/03/2021	JP2021000041351	JP2022141165	ANTI-COUNTERFEITING MEDIA	Microprism
P35673	JP	2022139020	26/09/2022	DAI NIPPON PRINTING	JP	11/03/2021	JP2021000039220	JP2022139020	INFORMATION RECORDING MATERIAL, LABEL, READING APPARATUS, PROGRAM, AND AUTHENTICITY DETERMINATION METHOD	
P35674	IN	20221052488	23/09/2022	INDIAN INSTITUTE OF TECHNOLOGY BOMBAY UNIVERSITY OF SYDNEY	IN	14/09/2022	IN2022021052488	IN20221052488	CARBON QUANTUM DOTS BASED PATTERNABLE MATERIAL SYSTEM FOR FABRICATING FLUORESCENT NANOSTRUCTURES WITH SUBWAVELENGTH RESOLUTION	
P35675	IN	202121011448	23/09/2022	PATEL SHILPAN PRAVINCHANDRA	IN	18/03/2021	IN2021021011448	IN202121011448	COLOR SHIFT BASE FILM AND METHOD OF MANUFACTURING THE SAME	
P35707	CN	115240532	25/10/2022	GUANGZHOU HUADU LIANHUA PACKING MATERIAL	CN	03/08/2022	CN2022000929528	CN115240532	DOUBLE-SIDED LIGHT ANGLE COLOR-CHANGING MULTIPLE ANTI-COUNTERFEITING SAFETY LINE AND PREPARATION METHOD THEREOF	
P35720	CN	115169516	11/10/2022	WUHAN ZMVISION TECHNOLOGY	CN	08/07/2022	CN2022000805579	CN115169516	OPTICALLY VARIABLE INK IDENTIFICATION METHOD, APPARATUS, ELECTRONIC DEVICE AND STORAGE MEDIUM	

NON SECURITY HOLOGRAMS - 64 PATENTS

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
N8950	WO	2022225177	27/10/2022	CUBIXEL	KR	22/04/2021	KR2021000052337	WO2022225177 KR20220145585	FLYING-OVER BEAM PATTERN SCANNING HOLOGRAM MICROSCOPE DEVICE USING SPATIAL MODULATION SCANNER AND TRANSLATION STAGE	
N8951	WO	202219350	20/10/2022	VIVIDQ	GB	16/04/2021	GB2021000005474	WO202219350 GB202105474	HOLOGRAPHIC DISPLAYS AND METHODS	
N8952	WO	202217913	20/10/2022	BELJING BOE DISPLAY TECHNOLOGY BOE TECHNOLOGY GROUP	CN	12/04/2021	CN2021000391627	WO202217913 CN115202176	DISPLAY APPARATUS AND HOLOGRAPHIC DISPLAY DEVICE	
N8953	WO	202215499	13/10/2022	FUJIFILM	JP	09/04/2021	JP2021000066769	WO202215499	HOLOGRAPHY DEVICE AND CELL EVALUATION METHOD	
N8954	WO	202214365	13/10/2022	INTERDIGITAL PATENT HOLDINGS	EP	09/04/2021	EP2021000305464	WO202214365	METHODS AND APPARATUS FOR ENCODING/DECODING A SEQUENCE OF MULTIPLE PLANE IMAGES, METHODS AND APPARATUS FOR RECONSTRUCTING A COMPUTER GENERATED HOLOGRAM	
N8955	WO	202213090	06/10/2022	DIGILENS	US	30/03/2021	US2021063167999	WO202213090	PHOTOPOLYMERS FOR HOLOGRAPHIC RECORDING	
N8956	WO	202212189	06/10/2022	MIT - MASSACHUSETTS INSTITUTE OF TECHNOLOGY	US	29/03/2021	US2021063167441	WO202212189	DATA-EFFICIENT PHOTOREALISTIC 3D HOLOGRAPHY	
N8957	WO	202209518	06/10/2022	NICT NATIONAL INSTITUTE OF INFORMATION & COMMUNICATIONS TECHNOLOGY	JP	29/03/2021	JP2021000056121	WO202209518 JP2022153080	INTERFERENCE LIGHT GENERATION ELEMENT AND HOLOGRAM RECORDING DEVICE	
N8958	WO	202209107	06/10/2022	PANASONIC INTELLECTUAL PROPERTY MANAGEMENT	JP	31/03/2021	JP2021000060015	WO202209107 JP2022156367	LIGHT-GUIDE PLATE, AND DISPLAY DEVICE	
N8959	WO	202209106	06/10/2022	PANASONIC INTELLECTUAL PROPERTY MANAGEMENT	JP	31/03/2021	JP2021000058956	WO202209106 JP2022155627 JP2022155632	LIGHT GUIDE PLATE, LIGHT GUIDE PLATE UNIT, AND DISPLAY DEVICE	
N8960	WO	202207784	06/10/2022	METAMATERIAL TECHNOLOGIES CANADA	GB	01/04/2021	GB2021000004783	WO202207784	WAFER-LEVEL OPTICS ASSEMBLY WITH HOLOGRAPHIC OPTICAL ELEMENT	
N8961	WO	202207597	06/10/2022	CARL ZEISS JENA	DE	01/04/2021	DE202110108354	WO202207597 DE102021108354	HOLOGRAPHIC PROJECTION DEVICE	
N8962	US	20220342368	27/10/2022	SAMSUNG ELECTRONICS	KR	26/04/2021	KR2021000053760	US20220342368	HOLOGRAPHIC DISPLAY APPARATUS, HEAD-UP DISPLAY APPARATUS, AND IMAGE PROVIDING METHOD	
N8963	US	20220342367	27/10/2022	GM GLOBAL TECHNOLOGY OPERATIONS	US	22/04/2021	US2021017237815	US20220342367	CONTRAST CHARACTERIZATION OF MULTI-PLANE HOLOGRAPHIC HUD ACCOUNTING FOR IMAGE ARTIFACTS	
N8964	US	20220342366	27/10/2022	SAMSUNG ELECTRONICS	KR	23/04/2021	KR2021000053105	US20220342366	HOLOGRAPHIC DISPLAY APPARATUS INCLUDING FREEFORM CURVED SURFACE AND OPERATING METHOD THEREOF	

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NON SECURITY HOLOGRAMS - 64 PATENTS (continuation)

REFERENCE	COUNTRY	PATENT NUMBER	PUBLICATION DATE Day-Month-Year	APPLICANT	PRIORITY	PRIORITY DATE Day-Month-Year	PRIORITY NUMBER	EQUIVALENTS	TITLE	KEY WORDS
N8965	US	20220341722	27/10/2022	APPLIED MATERIALS	US	21/04/2021	US2021017236997	US20220341722 WO2022226123	DIGITAL HOLOGRAPHY FOR ALIGNMENT IN LAYER DEPOSITION	
N8966	US	20220334395	20/10/2022	NVIDIA	US	16/04/2021	US2021063176108	US20220334395 US20220334392	HOLOGRAPHIC VIRTUAL REALITY DISPLAY	
N8967	US	20220332896	20/10/2022	META PLATFORMS TECHNOLOGIES	US	31/03/2021	US2021063169021	WO2022212772 US20220332896	HALOGENATED MONOMERS AND POLYMERS FOR VOLUME BRAGG GRATINGS	
N8968	US	20220332192	20/10/2022	FAURECIA INTERIEUR INDUSTRIE	FR	16/04/2021	FR202100003998	US20220332192 FR3122000	CAB COMPRISING AN HOLOGRAPHIC HUMAN-MACHINE INTERFACE AND MOTOR VEHICLE	
N8969	US	20220317858	06/10/2022	IBM	US	31/03/2021	US2021017301381	US20220317858	GENERATING DIGITAL DRAWING CONTENT WITH HOLOGRAPHIC TOOLS	
N8970	US	20220317632	06/10/2022	SIBONI EYTAN	US	31/03/2021	US2021017218205	US20220317632	HOLOGRAPH-PROJECTING WATCH DEVICES AND METHODS THEREIN	
N8971	US	20220317626	06/10/2022	SAMSUNG ELECTRONICS SEOUL NATIONAL UNIVERSITY R&DB FOUNDATION	KR	30/03/2021	KR2021000041264	US20220317626 KR20220135506	HOLOGRAPHIC DISPLAY SYSTEM AND METHOD OF GENERATING HOLOGRAM	
N8972	US	20220317624	06/10/2022	META PLATFORMS TECHNOLOGIES	US	30/03/2021	US2021017217249	US20220317624 WO2022212224	SYSTEM AND METHOD FOR FABRICATING LIQUID CRYSTAL POLARIZATION HOLOGRAMS	
N8973	KR	20220136722	11/10/2022	KWANGWOON UNIVERSITY INDUSTRY ACADEMIC COLLABORATION FOUNDATION	KR	01/04/2021	KR2021000042730	KR20220136722	REFLECTIVE FULL COLOR HIGH CONTRAST VHOE HOLOGRAPHIC DISPLAY	
N8974	KR	20220136721	11/10/2022	KWANGWOON UNIVERSITY INDUSTRY ACADEMIC COLLABORATION FOUNDATION	KR	01/04/2021	KR2021000042729	KR20220136721	A PINHOLE BASED OMNIDIRECTIONAL LIGHT FIELD HOLOGRAPHIC DISPLAY WITH HIGH LIGHT EFFICIENCY	
N8975	KR	20220135073	06/10/2022	KOREA ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE	KR	29/03/2021	KR2021000040621	KR20220135073	PHASE HOLOGRAM QUANTIZATION APPARATUS AND OPERATING METHOD THEREOF	
N8976	KR	20220134909	06/10/2022	SE GYUNG HI TECHNOLOGY	KR	29/03/2021	KR2021000040178	KR20220134909	METHOD FOR PRODUCING 3 D HOLOGRAM DECORATION FILM	
N8977	KR	20220130337	27/09/2022	CHUNGBUK NATIONAL UNIVERSITY INDUSTRY ACADEMIC COOPERATION FOUNDATION	KR	18/03/2021	KR2021000035084	KR20220130337	THREE-DIMENSIONAL HOLOGRAPHIC WAVEGUIDE TYPE AUGMENTED REALITY DISPLAY SYSTEM USING HOLOGRAPHIC OPTICAL ELEMENT MICROMIRROR ARRAY	
N8978	KR	102455591	19/10/2022	GUMI ELECTRONICS & INFORMATION TECHNOLOGY RESEARCH INSTITUTE	KR	07/12/2021	KR2021000173818	KR102455591	A MULTIPLE LIGHT OUTPUT DEVICE	
N8979	KR	102448894	28/09/2022	POHANG UNIVERSITY OF SCIENCE & TECHNOLOGY POSTECH	KR	28/04/2021	KR2021000055105	KR102448894	HOLOGRAPHIC METASURFACE GAS SENSOR AND WEARABLE DEVICE COMPRISING THE SAME	
N8980	JP	2022160861	20/10/2022	JAPAN BROADCASTING	JP	07/04/2021	JP2021000065331	JP2022160861	DIGITAL HOLOGRAM SIGNAL PROCESSING DEVICE AND DIGITAL HOLOGRAM IMAGING/REPRODUCTION DEVICE	
N8981	JP	2022154753	13/10/2022	KANSAI UNIVERSITY	JP	30/03/2021	JP2021000057938	JP2022154753	HOLOGRAM DISPLAY SYSTEM, HOLOGRAM DISPLAY METHOD, AND HOLOGRAM	
N8982	JP	2022147598	06/10/2022	KDDI	JP	23/03/2021	JP2021000048910	JP2022147598	COMPUTER COMPOSITE HOLOGRAM GENERATION APPARATUS, METHOD, AND PROGRAM	
N8983	IN	202111007396	07/10/2022	CHITKARA INNOVATION INCUBATOR FOUNDATION	IN	22/02/2021	IN2021011007396	IN202111007396	HOLOGRAPHIC SCREEN CREATION SYSTEM AND METHOD	
N8984	IN	202111002613	23/09/2022	CHANDIGARH UNIVERSITY	IN	20/01/2021	IN2021011002613	IN202111002613	HOLOGRAM BASED SMART GROOMING DEVICE	
N8985	FR	3121880	21/10/2022	RENAULT	FR	14/04/2021	FR2021000003842	FR3121880	DISPLAY SYSTEM FOR A MOTOR VEHICLE COMPRISING A DISPLAY SCREEN AND HOLOGRAPHIC MEANS	
N8986	EP	4080505	26/10/2022	AMETHYSTUM STORAGE TECHNOLOGY GUANGDONG ZIJING INFORMATION STORAGE TECHNOLOGY	CN	21/04/2021	CN2021000431558	EP4080505 US20220343947 CN115223597 KR20220145290	MULTI-CHANNEL MULTIPLEXING METHOD AND DEVICE FOR DISC STORAGE MEDIUM	

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N8987	DE	102021110734	27/10/2022	CARL ZEISS JENA	DE	27/04/2021	DE202110110734	DE102021110734	FLOATING HOLOGRAM OPTICAL SYSTEM	
N8988	CN	217639767	21/10/2022	CHANGYUAN TEFA TECHNOLOGY	CN	06/07/2022	CN2022001727197	CN217639767U	HOLOGRAPHIC NEAR-TO-EYE DISPLAY SYSTEM	
N8989	CN	217639765	21/10/2022	CHANGYUAN TEFA TECHNOLOGY	CN	30/06/2022	CN2022001664088	CN217639765U	HOLOGRAPHIC NEAR-TO-EYE DISPLAY PROJECTION SYSTEM	
N8990	CN	217595400	18/10/2022	SICHUAN KADIA TECHNOLOGY	CN	22/04/2022	CN2022000962781	CN217595400U	DUST COLLECTOR OF HOLOGRAPHIC LASER POSITIONING FILM	
N8991	CN	217595008	18/10/2022	SICHUAN KADIA TECHNOLOGY	CN	24/04/2022	CN2022000954966	CN217595008U	DEVICE OF HOLOGRAPHIC LASER INFORMATION COATING	
N8992	CN	217579517	14/10/2022	JIANGSU YANJI PACKAGING TECHNOLOGY	CN	11/04/2022	CN2022000823348	CN217579517U	HOLOGRAPHIC LASER TRANSFER PAPER FOR PACKAGING	
N8993	CN	115220242	21/10/2022	GANSU ZHITONG SCIENCE & TECHNOLOGY ENGINEERING DETECTION CONSULTATION GANSU ZHITONG YUNXIANG TRAFFIC TECHNOLOGY	CN	12/04/2022	CN2022000380615	CN115220242	NAKED EYE 4D HOLOGRAPHIC IMAGE DEVICE AND IMAGING METHOD THEREOF	
N8994	CN	115220236	21/10/2022	GOOLTON TECHNOLOGY	CN	17/08/2022	CN2022000987297	CN115220236	HIGH-LUMINOUS-EFFICIENCY BINOCULAR HOLOGRAPHIC WAVEGUIDE NEAR-TO-EYE DISPLAY DEVICE AND AUGMENTED REALITY DISPLAY EQUIPMENT	
N8995	CN	115219434	21/10/2022	HEFEI UNIVERSITY OF TECHNOLOGY	CN	27/06/2022	CN2022000740324	CN115219434	LENS-FREE COAXIAL HOLOGRAPHIC MUELLER MATRIX IMAGING SYSTEM AND IMAGING METHOD	
N8996	CN	115202174	18/10/2022	ZHEJIANG SCI-TECH UNIVERSITY	CN	14/07/2022	CN2022000826463	CN115202174	HOLOGRAPHIC VOLUME VIEW ACQUISITION METHOD, SYSTEM AND APPLICATION BASED ON LIGHT FIELD IMAGE	
N8997	CN	115187682	14/10/2022	BEIJING UNIVERSITY OF POSTS & TELECOMMUNICATIONS	CN	10/05/2022	CN2022000509136	CN115187682	OBJECT STRUCTURE RECONSTRUCTION METHOD AND RELATED EQUIPMENT	
N8998	CN	115183088	14/10/2022	XISHUO SHANGHAI ELECTRONIC TECHNOLOGY	CN	01/04/2021	CN2021000357672	CN115183088	VIRTUAL PERFORMANCE HOLOGRAPHIC PROJECTION EQUIPMENT	
N8999	CN	115179672	14/10/2022	ANHUI ZIJIANG METALLIZATION ENVIRONMENTAL PROTECTION MATERIAL SHANGHAI ZIJIANG METALLIZATION ENVIRONMENTAL PROTECTION MATERIAL	CN	20/07/2022	CN2022000852432	CN115179672	FULL-UV SEAMLESS DIE-PRESSING PRINTING PROCESS	
N9000	CN	115167089	11/10/2022	CHINA FIRST AUTOMOBILE WORKS (FAW)	CN	06/06/2022	CN2022000628001	CN115167089	HOLOGRAPHIC PROJECTION SYSTEM AND METHOD FOR VEHICLE, COMPUTER MEDIUM AND VEHICLE WITH HOLOGRAPHIC CAR LOGO	
N9001	CN	115167088	11/10/2022	AIR FORCE ENGINEERING UNIVERSITY OF PLA	CN	12/07/2022	CN2022000854494	CN115167088	CUSTOMIZABLE HOLOGRAPHIC SUPER-SURFACE DESIGN METHOD BASED ON DEEP LEARNING	
N9002	CN	115167087	11/10/2022	SICHUAN UNIVERSITY	CN	27/05/2022	CN2022000585254	CN115167087	SPHERICAL HOLOGRAPHIC RECONSTRUCTION QUALITY IMPROVING METHOD BASED ON RANDOM GRADIENT DESCENT OPTIMIZATION ALGORITHM	
N9003	CN	115167075	11/10/2022	HANGZHOU GUANGLI TECHNOLOGY	CN	08/08/2022	CN2022000944477	CN115167075	PHOTOPOLYMER AND GRATING INITIATED BY DISPERSE DYE MACROMOLECULES AND PREPARATION METHOD THEREOF	
N9004	CN	115166987	11/10/2022	JOURNEY TECHNOLOGY	CN	30/06/2022	CN2022000761416	CN115166987	HOLOGRAPHIC REPRODUCTION DEVICE AND METHOD FOR REAL OBJECT	
N9005	CN	115166981	11/10/2022	BEIHANG UNIVERSITY OF AERONAUTICS & ASTRONAUTICS	CN	26/07/2022	CN2022000882538	CN115166981	LARGE-VISUAL-ANGLE HOLOGRAPHIC NEAR-TO-EYE DISPLAY METHOD BASED ON LIQUID CRYSTAL CONICAL LENS	
N9006	CN	115155075	11/10/2022	DAAI QUANXI BEIJING TECHNOLOGY	CN	11/07/2022	CN2022000808232	CN115155075	HOLOGRAPHIC DECK VOLUME LIGHT FIELD SHOW STAGE	
N9007	CN	115145138	04/10/2022	ZHEJIANG UNIVERSITY	CN	14/06/2022	CN2022000671881	CN115145138	RAPID PROCESSING METHOD FOR SPARSE PARTICLE HOLOGRAM	
N9008	CN	115145037	04/10/2022	SHANGHAI UNIVERSITY	CN	07/06/2022	CN2022000642142	CN115145037	LARGE-FIELD-ANGLE HIGH-RESOLUTION HOLOGRAPHIC NEAR-TO-EYE DISPLAY DEVICE AND DISPLAY METHOD BASED ON FIELD-OF-VIEW SCANNING SPLICING	

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N9009	CN	115145036	04/10/2022	SHANGHAI UNIVERSITY	CN	07/06/2022	CN2022000640456	CN115145036	LARGE-FIELD-ANGLE HIGH-RESOLUTION HOLOGRAPHIC NEAR-TO-EYE DISPLAY DEVICE AND DISPLAY METHOD BASED ON LIGHT SOURCE ARRAY	
N9010	CN	115141636	04/10/2022	NANCHANG VIRTUAL REALITY RESEARCH INSTITUTE	CN	26/07/2022	CN2022000885489	CN115141636	POLYMER DISPERSED LIQUID CRYSTAL HOLOGRAPHIC BODY GRATING AND PREPARATION METHOD THEREOF	
N9011	CN	115128930	30/09/2022	GUANGDONG POLYTECHNIC NORMAL UNIVERSITY	CN	17/06/2022	CN2022000692773	CN115128930	LABORATORY IS WITH HOLOGRAPHIC PROJECTION EQUIPMENT MOUNTING STRUCTURE OF 3D AND PROJECTION EQUIPMENT	
N9012	CN	115128809	30/09/2022	NANJING VOCATIONAL UNIVERSITY OF INDUSTRY TECHNOLOGY	CN	17/05/2022	CN2022000535036	CN115128809	GRATING EFFICIENCY DISTRIBUTION CHARACTERIZATION AND OPTIMIZATION METHOD FOR REALIZING UNIFORM IMAGING OF HOLOGRAPHIC WAVEGUIDE DISPLAY SYSTEM	
N9013	CN	115127684	30/09/2022	SHENZHEN UNIVERSITY	CN	28/06/2022	CN2022000740201	CN115127684	ULTRAFAST HOLOGRAPHIC IMAGING METHOD AND SYSTEM BASED ON COMPRESSED FREQUENCY DOMAIN HOLOGRAPHIC RECORDING	