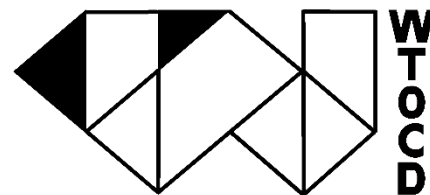


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Patent News nr. 123 (2016)



JP2016117852A UNIV SHIGA MEDICAL SCIENCE

Publication / filed : 2016-06-30 / 2014-12-22

Title: FLUORESCENT DIAMOND AND METHOD FOR PRODUCING THE SAME

PROBLEM TO BE SOLVED: To provide fluorescent diamond in which a fluorescence wavelength range is narrower, and a fluorescent diamond whose fluorescent strength is stronger

SOLUTION: There is provided a fluorescent diamond with a Ge luminescent center being at least one kind selected from a diamond synthesized by a CDV method, Ila type natural diamond and EL standard diamond and obtained by impregnating the diamond with Ge ions. There is also provided a method for producing a fluorescent diamond with a Ge ion luminescent center, comprising: a) a step of injecting Ge ions into a diamond; (b) a step of heating the diamond obtained by the step (a) at 700°C or higher. The concentration of Ge in the diamond is 1×10^{13} to $1 \times 10^{22}/\text{cm}^3$, its thickness is 0.01 mm or higher, it is being a thin film shape or a sheet shape, a peak in which the concentration of Ge is given at the 5 to 500 nm from the surface of the diamond. In the Ge luminescent center, Ge is present at a position between lattices, and two holes are arranged at a position between the adjacent lattices

US9355124B2 & US20160070723A1 CENTRAL GEM LAB

Publication / filed : 2016-05-31 / 2015-10-23

Title: Written expert opinion of diamond and method of preparing the same

Abstract: The invention includes: a barcode for reading a management number and measurement inspection company information of a polished mined diamond; a two-dimensional code for reading 4C information bound to the management number, the size information of the diamond, and optical virtual reflected images in the respective cases of the presence and absence of a color filter of the diamond created by CG software; and a field for outputting and displaying the 4C information output and displayed from the two-dimensional code and a size display field of the diamond, wherein the optical virtual reflected image in the absence of the color filter and the optical virtual reflected image in the presence of the color filter are output and displayed from the two-dimensional code and the computer database

JP2016165765A TOYO SEIKAN GROUP HOLDINGS LTD

Publication / filed : 2016-09-15 / 2015-03-09

Title: POLISHING METHOD OF DIAMOND SURFACE AND DEVICE PERFORMING THE SAME

PROBLEM TO BE SOLVED: To provide a polishing method which provides uniform polishing without being influenced by a shape of an object to be polished and crystal size of diamond by solving problems causing polishing irregularities and substrate exposure, in the method of polishing the surface of the object to be polished of the diamond surface with a polishing member containing metal or metal oxide

SOLUTION: A diamond surface polishing method includes at least a step of bringing a long size shaped polishing member having a linear or belt-like shape which contains metal or metal oxide into sliding contact with an object to be polished of which the surface is made of diamond to perform polishing. Therein, a pushing pressure of the polishing member is controlled such that a contacting surface pressure on a working area gets uniform in accordance with material of the polishing member on a sliding part and/or a shape of the object to be polished and crystal size of diamond

US9326570B2 WORLDWIDE DIAMOND TRADEMARKS LTD

Publication / filed : 2016-05-03 / 2013-09-30

Title: Decagonal shaped diamond which displays hearts and arrows pattern

Abstract: A decagonal shaped diamond, adapted to display a hearts and arrows pattern when exposed to light comparable to the hearts and arrows pattern in a round diamond. The decagonal shaped diamond should be cut to form ten main crown facets of substantially equal size symmetrically arranged relative to one another surrounding a table facet twenty star facets with two star facets polished on every main crown facet, ten main pavilion facets, an equal number of crown half facets as pavilion half facets, ten subsidiary pavilion half facets, twenty subsidiary pavilion facets and ten main girdle facets with the girdle facets polished at a given angle relative to one another for forming the decagonal shape of the diamond

US20160066663A9 & US20150020544A1 & US9456669B2 WORLDWIDE DIAMOND TRADEMARKS LTD

Publication / filed : 2016-10-04 / 2013-08-27

Title: Cushion shaped hearts and arrows gemstone and method

Abstract: A diamond which will display a heart and arrows pattern characteristic substantially conforming to the hearts and arrows pattern inherently generated in a symmetrically polished round cut diamond when subjected to light. The diamond is polished in a symmetrical shape having four

main crown facets on the long sides of the diamond, four main crown facets on the corner sides of the diamond, a table facet, 8 crown star facets adjacent the table facet, 16 crown half facets, 8 main pavilion facets, 16 pavilion half facets, 4 subsidiary pavilion facets, 16 subsidiary pavilion half facets with each subsidiary pavilion facet positioned adjacent two pavilion half facets and multiple girdle facets of varying thickness on both the long and corner sides of the diamond. The hearts and arrows pattern generated by this gemstone forms 8 symmetrically aligned arrows and 8 symmetrically aligned hearts when visually observed through a conventional scope in the presence of light

US9486043B2 WORLDWIDE DIAMOND TRADEMARKS LTD

Publication / filed : 2016-11-08 / 2007-05-04

Title: Hexagon shaped diamond which displays hearts and arrows pattern

Abstract: A hexagonal shaped diamond, adapted to display a hearts and arrows pattern when exposed to light comparable to the hearts and arrows pattern in a round diamond. The hexagon shaped diamond should be cut to form six main crown facets of substantially equal size symmetrically arranged relative to one another surrounding a table facet with each main crown facet having parallel edges symmetrically aligned to the parallel edges of a main crown facet located opposite thereto, six main pavilion facets polished in alignment with the main crown facets, girdle facets separating the pavilion facets from the main crown facets and twelve crown star facets

EP3111795A1 WORLDWIDE DIAMOND TRADEMARKS LTD

Publication / filed : 2017-01-04 / 2016-06-16

Title: IMPROVED OVAL SHAPED DIAMOND CUT HAVING HEARTS AND ARROWS PATTERN

Abstract: An oval shaped diamond, adapted to display a hearts and arrows pattern when exposed to light characteristic of the hearts and arrows pattern in a round diamond, comprising:

an oval shape having two long sides symmetrical to each other, two short sides symmetrical to each other and four diagonal sides symmetrically located between the long sides and the short sides respectively, eight main crown facets (8, M1, M5), eight main pavilion facets (16, P1), sixteen pavilion half facets (8);

a uniform girdle of varying thickness separating the crown and pavilion facets, twelve subsidiary pavilion facets and eight crown star facets (C1) with each crown star facet (C5) including two facet sections of equal size and geometry on each of the two long and two short sides of the oval shaped diamond and two facet sections of non-equal size and geometry in each of the four diagonal or shoulder sides of the oval shaped diamond

US20160366993A1 WORLDWIDE DIAMOND TRADEMARKS LTD

Publication / filed : 2016-12-22 / 2015-06-16

Title: OVAL SHAPED DIAMOND CUT HAVING HEARTS AND ARROWS PATTERN

Abstract: An oval shaped diamond, adapted to display a hearts and arrows pattern when exposed to light characteristic of the hearts and arrows pattern in a round diamond, comprising: an oval shape having two long sides symmetrical to each other, two short sides symmetrical to each other and four diagonal sides symmetrically located between the long sides and the short sides respectively, eight main crown facets, eight main pavilion facets, sixteen pavilion half facets; a uniform girdle of varying thickness separating the crown and pavilion facets, twelve subsidiary pavilion facets and eight crown star facets with each crown star facet including two facet sections of equal size and geometry on each of the two long and two short sides of the oval shaped diamond and two facet sections of non-equal size and geometry in each of the four diagonal or shoulder sides of the oval shaped diamond

JP2016127130A UNIV KUMAMOTO

Publication / filed : 2016-07-11 / 2014-12-26

Title: PROCESSING METHOD AND PROCESSING DEVICE

PROBLEM TO BE SOLVED: To provide a processing method capable of highly efficiently and accurately process a minute region on a surface of a hard-to-process, high-functional material such as diamond, and also to provide a processing device enabling the processing method described above

SOLUTION: A processing device 1 comprises: an ozone gas supply port 2; an inorganic oxide tool 3; and a specimen holder 5 for holding a diamond member 4. The ozone gas supply port 2 is arranged in the vicinity of a tip of the inorganic oxide tool 3 so as to supply ozone gas 6 toward a contact portion between the inorganic oxide tool 3 and the diamond member 4. The tip surface of the inorganic oxide tool 3 is purified and hydrophilically treated with the ozone, and the diamond member 4 comes into contact therewith so that a workpiece may be polished

JP2016133311A DIAMOND GRADING LABORATORY CO LTD

Publication / filed : 2016-07-25 / 2015-01-15

Title: OBSERVATION APPARATUS FOR JEWELRY

PROBLEM TO BE SOLVED: To make possible in a simple configuration direct and easy observation of how jewelry including diamond glitters around with its reflected light

SOLUTION: An observation apparatus for jewelry has: a mounting plate 13 made of a transparent material for mounting jewelry on; a screen plate 12 arranged underneath and in parallel to the

mounting plate, having on its upper face a screen face 121 for projection of emitted light from jewelry and in its central part an aperture 123 for light transmission; a projection light source 15 arranged underneath the screen plate for irradiating with a light beam jewelry mounted on the mounting plate through the aperture; and a movement supporting device 14 for varying the relative distance between the mounting plate and the screen plate by moving the mounting plate or the screen plate while keeping the plates in parallel to each other. Its configuration is such that an image formed by light emitted from jewelry and projected on the screen face can be observed through the transparent mounting plate

JP2016500309A

Publication / filed : 2016-01-12 / 2013-11-14

Colored single crystal chemical vapor deposited synthetic diamond material used in jewellery applications comprises several parallel layers that include two sets of layers which differ in terms of their defect composition and color

JP2016500309A

Publication / filed : 2016-01-12 / 2013-11-14

81-facet diamond with internal structure featuring ten hearts and ten arrows having higher brightness and higher color degree

USD768532S1 OCTONUS DIA-TECH PRIVATE LTD

Publication / filed : 2016-10-11 / 2015-07-24

Title: Gemstone

Abstract: The ornamental design for a gemstone, as shown and described.

US9311435B2 OCTONUS DIA TECH PRIVATE LTD

Publication / filed : 2016-04-12 / 2013-10-14

Title: Method for determining a cut for a gemstone

Abstract: Method for determining a cut for a gemstone, comprising selecting a generic shape for the cut; selecting a plurality of cut designs of a group of cut designs having the selected generic shape; simulating a number of optical metrics for the plurality of cut designs using simulation models having modeling coefficients; selecting one or more cut designs of the plurality of cut designs based on the simulated optical metrics; varying the geometry parameters for each selected cut design within a range, simulating a number of optical metrics for said range of geometry

parameters, and determining an optimized cut design having optimized geometry parameters based on the simulated number of optical metrics for said range; cutting and polishing of the gemstone using the optimized cut design having the optimized geometry parameters; analyzing the visual appearance of the polished gemstone; changing or adapting the simulation models and/or the modeling coefficients thereof and/or the range for varying the geometry parameters and/or a cut design of the plurality of cut designs, and/or adding one or more new cut designs to the group of cut designs, on the basis of the analysis of the visual appearance

EP2713800B1 OCTONUS FINLAND OY

Publication / filed : 2016-11-30 / 2012-03-20

Title: METHOD FOR DETERMINING A CUT FOR A GEMSTONE

Abstract: Method for determining a cut for a gemstone, comprising selecting a generic shape for the cut; selecting a plurality of cut designs of a group of cut designs having the selected generic shape; simulating a number of optical metrics for the plurality of cut designs using simulation models having modeling coefficients; selecting one or more cut designs of the plurality of cut designs based on the simulated optical metrics; varying the geometry parameters for each selected cut design within a range, simulating a number of optical metrics for said range of geometry parameters, and determining an optimized cut design having optimized geometry parameters based on the simulated number of optical metrics for said range; cutting and polishing of the gemstone using the optimized cut design having the optimized geometry parameters; analyzing the visual appearance of the polished gemstone; changing or adapting the simulation models and/or the modeling coefficients thereof and/or the range for varying the geometry parameters and/or a cut design of the plurality of cut designs, and/or adding one or more new cut designs to the group of cut designs, on the basis of the analysis of the visual appearance

US9366638B2 GEMOLOGICAL INST AMERICA INC

Publication / filed : 2016-06-14 / 2013-03-18

Title: Method and system for providing a clarity grade for a gem

Abstract: A method and system for generating a clarity grading look-up table includes collecting actual inclusion parameter data for a plurality of gems, where the actual inclusion parameter data includes an actual clarity grade and an actual inclusion parameter data combination. A mathematical relationship between a clarity grade and a particular inclusion parameter combination is then extrapolated from the actual inclusion parameter data. A derived clarity grade is then assigned to a plurality of inclusion parameter combinations as a function of the mathematical relationship and a set of inputted inclusion parameters. Also, a method and system for providing a clarity grade includes receiving a plurality of inclusion characteristics associated with a gem and parameterizing each of the inclusion characteristics, so that a parameter value is assigned to each

inclusion characteristic. The parameter values are then input to a mathematical formula so as to provide a parameterized clarity grade for the gem

US20160290925A1 GEMOLOGICAL INST OF AMERICA INC

Publication / filed : 2016-10-06 / 2015-03-30

Title: APPARATUS AND METHOD FOR FLUORESCENCE GRADING OF GEMSTONES

Abstract: Provided herein is an apparatus for assessing a fluorescence characteristic of a gemstone. The apparatus comprises an optically opaque platform for supporting a gemstone to be assessed, one or more light source to provide uniform UV and non-UV illumination, an image capturing component, and a telecentric lens positioned to provide fluorescent images of the illuminated gemstone to the image capturing component. Also provided are methods of fluorescence analysis based on images collected using such an apparatus

WO2016161016A1 GEMOLOGICAL INST OF AMERICA INC (GIA)

Publication / filed : 2016-10-06 / 2016-03-30

Title: APPARATUS AND METHOD FOR FLUORESCENCE GRADING OF GEMSTONES

Abstract: Provided herein is an apparatus for assessing a fluorescence characteristic of a gemstone. The apparatus comprises an optically opaque platform for supporting a gemstone to be assessed, one or more light source to provide uniform UV and non-UV illumination, an image capturing component, and a telecentric lens positioned to provide fluorescent images of the illuminated gemstone to the image capturing component. Also provided are methods of fluorescence analysis based on images collected using such an apparatus

US20160290930A1 GEMOLOGICAL INST OF AMERICA INC

Publication / filed : 2016-10-06 / 2015-03-30

Title: APPARATUS AND METHOD FOR ASSESSING OPTICAL QUALITY OF GEMSTONES

Abstract: Provided herein is an apparatus for assessing a color characteristic of a gemstone. The apparatus comprises an optically opaque platform for supporting a sample gemstone to be assessed, a daylight-approximating light source to provide uniform illumination to the gemstone, an image capturing component, and a telecentric lens positioned to provide an image of the illuminated gemstone to the image capturing component. Also provided are methods of color analysis based on images collected using such an apparatus

WO2016161014A1 GEMOLOGICAL INST OF AMERICA INC (GIA)

Publication / filed : 2016-10-06 / 2016-03-30

Title: APPARATUS AND METHOD FOR ASSESSING OPTICAL QUALITY OF GEMSTONES

Abstract: Provided herein is an apparatus for assessing a color characteristic of a gemstone. The apparatus comprises an optically opaque platform for supporting a sample gemstone to be assessed, a daylight-approximating light source to provide uniform illumination to the gemstone, an image capturing component, and a telecentric lens positioned to provide an image of the illuminated gemstone to the image capturing component. Also provided are methods of color analysis based on images collected using such an apparatus

USD753536S1 ROSY BLUE N V

Publication / filed : 2016-04-12 / 2015-04-13

Title: Multiple facet gemstone

Abstract: The ornamental design for a multiple facet gemstone, as shown.

US9439483B1 WEINGARTEN JONATHAN

Publication / filed : 2016-09-13 / 2014-04-28

Title: Cut diamond providing predetermined optical performance

Abstract: A gemstone cut with a table facet, where the gemstone receives existing light from around the viewer and the facets on the bottom of the diamond effectively reflect the existing light back into the eyes of the beholder in such a manner as to maximize light performance and to provide specific optical performance

US9398791B1 ECNA LLC

Publication / filed : 2016-07-26 / 2015-01-26

Title: Diamond cuts providing increased light amplification

Abstract: A sparkling, oblong-shaped precious stone, such as an emerald or cushion cut diamond is formed by providing these diamonds with two long crown surfaces extending at a crown angle and two long pavilion surfaces extending at a pavilion angle, where the crown angle is in the range of 30-36 and the pavilion angle is in the range of 30-34. The crown angle and the pavilion angle are so formed that the crown angle is either equal to or larger than the pavilion angle by an angle that does not exceed 6 degrees

US9292966B2 IDEAL SCOPE PTY LTD

Publication / filed : 2016-03-22 / 2013-12-13

Title: Method and system for improved optical modeling of gemstones

Abstract: Methods of constructing a virtual model of a gemstone are provided. Aspects of the methods include performing measurements of the gemstone to construct a three-dimensional (3D) model of an exterior surface of the gemstone; identifying one or more visible inclusions within an interior volume of the gemstone; capturing at least one image of the inclusion; using the at least one image to determine relevant optical characteristics of the inclusion; and constructing a 3D virtual model of the inclusion

US9277792B2 UNIV MICHIGAN STATE

Publication / filed : 2016-03-08 / 2011-08-23

Title: Multicolored single crystal diamond gemstones and methods for forming the same

Abstract: The disclosure relates to the inclusion of an image embedded in or on a single crystal diamond such that the image is part of the single crystal diamond structure. The disclosed methods use a combination of gemstone deposition processes and patterning processes to create single crystal gemstones with embedded color variations that can create externally visible two-dimensional or three-dimensional images in a seamless single crystal matrix without visible internal lines/interfacial boundaries. The image embedded image is differently colored from the surrounding diamond matrix. The color variation is accomplished by a change in the diamond growth conditions or treatment of the diamond

US9265311B2 & US20150173469A1 HASENFELD STEIN INC

Publication / filed : 2016-02-23 / 2013-12-23

Title: Cushion cut gemstone with excellent optical brilliance

Abstract: A gemstone including a substantially rectangular girdle with rounded corners, a crown extending in a first direction from the girdle, and a pavilion extending in a second direction from the girdle opposite the first direction. The gemstone has 69 uniquely arranged and angled facets, 41 of which are in the crown, and 28 of which are in the pavilion. The height of the crown is preferably between 12 to 19½% of the width of the stone, the total depth of the stone is preferably between 58-68% of the width of the stone, and the width of the table is preferably between 55-65% of the width of the stone

US20160166021A1 HASENFELD STEIN INC

Publication / filed : 2016-06-16 / 2015-11-30

Title: ROUND CUT GEMSTONE EXHIBITING EXCELLENT OPTICAL BRILLIANCE

Abstract: A gemstone including a substantially round girdle, a crown extending in a first direction from the girdle, and a pavilion extending in a second direction from the girdle opposite the first direction. The gemstone has 73 uniquely arranged and angled facets, 33 of which are in the crown, and 40 of which are in the pavilion. The height of the crown is preferably between 12.5 to 19.5% of the diameter of the stone, the total depth of the stone is preferably between 59-62.9% of the diameter of the stone, the depth of the pavilion is between 42.9 to 44.5% of the diameter of the stone, and the diameter of the table is preferably between 53-60% of the diameter of the stone

US9226554B2 & US20150320153A1 KODAMA YOSHIHIKO

Publication / filed : 2016-01-05 / 2014-05-12

Title: Circular cut diamond

Abstract: A circular cut diamond (10) comprising a girdle (20), a crown (30), and a pavilion (40). The crown (30) comprises a circumferential succession of eight main crown facets which extend upward from an upper edge (23) of the girdle at a crown angle which is greater than 19° and less than 25°. The pavilion (40) comprises a circumferential succession of eight main pavilion facets which extend downward from a lower edge (24) of the girdle at a pavilion angle which is greater than 41° and less than 43°. The circular cut diamond (10) can compete with the brilliance of an ideal cut diamond without a significant compromise in carat weight

US9227343B2 SCIO DIAMOND TECHNOLOGY CORP

Publication / filed : 2016-01-05 / 2012-12-31

Title: Gemstone production from CVD diamond plate

Abstract: A method of producing gemstones includes obtaining a plate of chemical vapor deposition formed diamond. The plate is cut into a plurality of geometrically optimized preforms. The preforms may be finished and cut into diamond gemstones

US9226553B2 4 MH ADVERTISING LLC

Publication / filed : 2016-01-05 / 2012-03-29

Title: Gemstone cut with improved characteristics

Abstract: A gemstone cut is provided with a strategic placement of facets that optimizes the three dimensional optically geometric light interactions to thereby produce unique characteristics. In one

embodiment, the gemstone has a crown with 29 facets, a pavilion with 28 facets and a girdle with 32 facets. The crown has a table with an octagonal shape, four first star facets, four second star facets, eight kite facets, eight first upper girdle facets and four second upper girdle facets. The pavilion can have eight pavilion facets, eight intermediate pavilion facets, eight first lower girdle facets and four second lower girdle facets. The girdle can have 32 facets including four sides each having seven facets and four facets at the corners of the gemstone interspaced between the side facets. The gemstone has four-fold mirror-image symmetry

US20160249714A1 D SWAROVSKI KG

Publication / filed : 2016-09-01 / 2016-05-13

Title: GEM HAVING A STELLAR APPEARANCE

Abstract: Disclosed is a gem (1) that has a stellar appearance. Said gem (1) comprises a crown (2) having a plurality of crown facets, including a first group (6) of crown facets that taper in the direction of a girdle (4) and extend at an angle (α) of $22.5^\circ \pm 3^\circ$, preferably $22.5^\circ + 2^\circ$ from the girdle plane (E), and a second group (7) of crown facets that adjoin the girdle (4) by their large side and extend at an angle (β) of $34^\circ \pm 3^\circ$, preferably $34^\circ \pm 2^\circ$ from the girdle plane (E). Also disclosed is an arrangement comprising a gem

EP3068254A2 SWAROVSKI D KG

Publication / filed : 2016-09-21 / 2014-10-27

Title: GEM HAVING A STELLAR APPEARANCE

Abstract: Disclosed is a gem (1) that has a stellar appearance. Said gem (1) comprises a crown (2) having a plurality of crown facets, including a first group (6) of crown facets that taper in the direction of a girdle (4) and extend at an angle (α) of $22.5^\circ \pm 3^\circ$, preferably $22.5^\circ + 2^\circ$ from the girdle plane (E), and a second group (7) of crown facets that adjoin the girdle (4) by their large side and extend at an angle (β) of $34^\circ \pm 3^\circ$, preferably $34^\circ \pm 2^\circ$ from the girdle plane (E). Also disclosed is an arrangement comprising a gem

EP2505096B1SWAROVSKI D KG

Publication / filed : 2016-10-19 / 2012-02-23

Title: Jewellery stone with chaton cut

Abstract: Schmuckstein (1) mit einem Chatonschliff, bei dem sich an eine ebene Tafel (5) eine Krone (2) rundherum schräg gegenüber der Tafel (5) abfallende Facetten (10,11) der Krone (2) anschließen, die bis zu einer Rondiste (4) reichen, an der der Schmuckstein (1) die größte Querabmessung aufweist, wobei unterhalb der Rondiste (4) ein Pavillon (3) aus vorzugsweise spitz

zusammenlaufender Facetten (8,9) anschließt, wobei der Schmuckstein (1) zumindest zum Großteil, vorzugsweise zur Gänze, aus Glas besteht und wobei der Kronenwinkel (α) zwischen $40,5^\circ$ und $42,5^\circ$ beträgt

US20160161421A1 SWAROVSKI D KG

Publication / filed : 2016-06-09 / 2016-02-10

Title: ASSEMBLY FOR ANALYZING A LIGHT PATTERN CAUSED BY REFRACTION AND REFLECTION AT A PRECIOUS STONE

Abstract: The invention relates to an assembly (1) for analyzing a light pattern (3) caused by refraction and reflection at a precious stone (2), comprising a light source (4) for illuminating the precious stone (2), a retaining device (5) for retaining the precious stone (2), an in particular flat diffusing screen (6) for imaging the light pattern (3), and a camera (7) for recording the light pattern (3) imaged on the diffusing screen (6), wherein the assembly (1) comprises a semi-transmitting optical element (8) for deflecting, in the direction of the precious stone (2), the light (9) emitted by the light source (4) and for transmitting the light (10) refracted and reflected at the precious stone (2)

US20160213104A1 SLOWINSKI CHRISTOPHER

Publication / filed : 2016-07-28 / 2015-01-26

Title: DIAMOND CUTS PROVIDING INCREASED LIGHT AMPLIFICATION

Abstract: A sparkling, oblong-shaped precious stone, such as an emerald or cushion cut diamond is formed by providing these diamonds with two long crown surfaces extending at a crown angle and two long pavilion surfaces extending at a pavilion angle, where the crown angle is in the range of $30-36$ and the pavilion angle is in the range of $30-34$. The crown angle and the pavilion angle are so formed that the crown angle is either equal to or larger than the pavilion angle by an angle that does not exceed 6 degrees

US20160213105A1 WEITMAN ZEV W

Publication / filed : 2016-07-28 / 2016-01-19

Title: METHOD AND SYSTEM FOR GEMSTONES

Abstract: A gemstone cut into a round stone and method of cutting a gemstone are disclosed herein. A gemstone having a crown having a table surrounded by eight star facets surrounded by eight bezel facets, each bezel facet having a primary and secondary bezel facet, surrounded by sixteen upper girdle facets is described herewith

EP3045069A1 CARTIER INTERNAT AG

Publication / filed : 2016-07-20 / 2015-01-16

Title: Cut stone and support comprising such a cut stone

Abstract: La présente invention concerne une pierre (10) taillée notamment un diamant pour support de pièce de bijouterie, ladite pierre comportant une partie frontale appelée couronne (20) et une partie dorsale, appelée pavillon (30), disposée à l'arrière de ladite couronne (20) et délimitée de ladite couronne (20) par une partie intermédiaire appelée rondiste (40). Ladite couronne (20) est un polyèdre et comporte une base (21) polygonale, au moins deux faces latérales (22a, 22b) et au moins une face supérieure (23) de forme générale incurvée. Ladite face supérieure (23) présente une courbure positive et est délimitée par deux lignes incurvées (C1, C2) opposées, constituées chacune d'une pluralité de segments (221). Lesdites lignes incurvées (C1, C2) sont reliées entre elles par au moins deux arêtes opposées (21 a, 21 b) de ladite base (21), et ladite face supérieure (23) et/ou lesdites faces latérales (22a, 22b) comportent une pluralité de facettes (222, 231, 232, 233)

EP2962590A1 & EP2962590A4 SHENZHEN PERFECT LOVE DIAMOND CO LTD

Publication / filed : 2016-01-06 / 2013-11-14

Title: 81-FACET DIAMOND WITH 10-HEART-AND-10-ARROW STRUCTURE INSIDE

Abstract: The present invention relates to an 81-facet diamond with a 10-heart-and-10-arrow structure inside. The diamond comprises 10 main crown facets and 10 main pavilion facets. The diamond further comprises one table facet. Crown star facets are disposed at places where the main crown facets are connected to the table facet, and the number of the crown star facets is 10. Crown small facets are disposed at places wherein main crown facet edges are connected to the crown star facets, and the number of the crown small facets is 10. Small sector facets are disposed at places where the main crown facets are connected to the crown small facets, and the number of the small sector facets is 20. Auxiliary facets of the main pavilion facets are disposed at main pavilion facet connection places, and the number of the auxiliary facets of the main pavilion facets is 20. The present invention has the following beneficial effects: the diamond is cut into 81 facets, and a 10-heart-and-10-arrow structure is provided inside, higher quality and value are provided for the diamond by using a high-end cutting process, and the brightness of the diamond under sunshine is increased by 20 to 30%. The diamond according to the present invention has a higher brilliant degree

EP2982262A1 BONOLI S R L

Publication / filed : 2016-02-10 / 2015-07-31

Title: METHOD FOR INCREASING THE DEFINITION, THE BRILLIANCE AND THE LUSTER OF GEMSTONES

Abstract: A method for increasing the definition, the brilliance and the luster of gemstones, in which the surface of a gemstone, be it natural, synthetic or imitation, is coated, by way of the use of the process of Physical Vapor Deposition or PVD, with a thin coating which is antireflective to light rays entering the gemstone, for the purpose of decreasing the amount of reflected light and increasing the amount of incoming light, in order to enable a greater clarity and definition of the colors and of the edges of the gemstone and at the same time reduce the reflection

US20160363576A1 SHENZHEN DIKAI IND CO LTD

Publication / filed : 2016-12-15 / 2016-08-18

Title: Multi-Functional Precious Stone Testing Apparatus and Method Thereof

Abstract: A multi-functional precious stone testing apparatus includes a portable housing, a testing unit, and an indication unit. The portable housing includes a hand-held casing and a probe casing extended from a front end of the hand-held casing. The testing unit includes a conductive probe having a testing end portion extended out of a tip end of the probe casing for contacting a testing object to determine a conductivity of the testing object. The indication unit includes a LED light unit received in the hand-held casing for illuminating the testing end portion of the conductive probe during testing, wherein the LED light unit is positioned away from the tip end of the probe casing for preventing heat generated from the LED light unit being transmitted toward the conductive probe to affect an accurate measurement for the conductivity of the testing object

US9453808B2 & US20150091593A1 SHENZHEN DIKAI IND CO LTD

Publication / filed : 2016-09-27 / 2014-12-08

Title: Multi-functional precious stone testing apparatus and method thereof

Abstract: A multi-functional precious stone testing apparatus includes a portable housing, a testing unit, and an indication unit. The portable housing includes a hand-held casing and a probe casing extended from a front end of the hand-held casing. The testing unit includes a conductive probe having a testing end portion extended out of a tip end of the probe casing for contacting a testing object to determine a conductivity of the testing object. The indication unit includes a LED light unit received in the hand-held casing for illuminating the testing end portion of the conductive probe during testing, wherein the LED light unit is positioned away from the tip end of the probe casing for preventing heat generated from the LED light unit being transmitted toward the conductive probe to affect an accurate measurement for the conductivity of the testing object

US20160161420A1 SHENZHEN DIKAI IND CO LTD

Publication / filed : 2016-06-09 / 2015-12-07

Title: Multi-Functional Precious Stone Testing Apparatus and Method Thereof

Abstract: A multi-functional precious stone testing apparatus includes a microcontroller, a measuring unit for measuring properties of the testing object, and a functional unit. The measuring unit is arranged to measure one of a combination of ultraviolet and infrared distributions of the testing object and a combination of thermal and electrical conductivities of the testing object. The microcontroller analyzes a result from the measuring unit to generate a test result of the testing object, wherein the microcontroller includes a communication unit for connecting with an electronic device to transmit the test result thereto. The functional unit includes a voice indicator that generates a voice indication signal of the test result

EP3032242A1 SHENZHEN DIKAI IND CO LTD

Publication / filed : 2016-06-15 / 2015-12-08

Title: MULTI-FUNCTIONAL PRECIOUS STONE TESTING APPARATUS AND METHOD THEREOF

Abstract: A multi-functional precious stone testing apparatus includes a microcontroller, a measuring unit for measuring properties of the testing object, and a functional unit. The measuring unit is arranged to measure one of a combination of ultraviolet and infrared distributions of the testing object and a combination of thermal and electrical conductivities of the testing object. The microcontroller analyzes a result from the measuring unit to generate a test result of the testing object, wherein the microcontroller includes a communication unit for connecting with an electronic device to transmit the test result thereto. The functional unit includes a voice indicator that generates a voice indication signal of the test result

EP2860003B1 CHOW TAI FOOK JEWELLERY COMPANY LTD

Publication / filed : 2016-12-07 / 2014-05-22

Title: Method of providing markings to precious stones including gemstones and diamonds, and markings and marked precious stones marked according to such a method.

Abstract: An identifiable mark on a portion of a polished facet of a surface of an article and being identifiable by an optical magnifying viewing device, said identifiable mark comprising a nano-structure (200) formed by a two- dimensional or a three-dimensional lattice of a plurality of discrete nanometer sized recessed or protruded entities (201), wherein said entities are arranged within a predefined region of said polished facet in a predetermined arrangement in relation to each other and such that an outer interface surface (101) between the facet of the article and air is formed and

an inner interface surface (105) between the facet of the article and air is formed. Said predetermined arrangement of said entities is non-uniform and non-periodic arrangement, and wherein said entities are sized and shaped so as to cause optical scattering upon reflection of incident light and the distance from the inner interface surface to the outer interface surface is greater than the amplitude of the non-marked portion of said polished face. Upon reflection of incident light having one or more predetermined wavelengths by said lattice at a predetermined angle of incidence to said lattice, interference due to scattering of light from said lattice is induced such that said reflected light has a variation in intensity providing one or more local maxima of one or more wavelengths. Said mark is identifiable by way of an optical magnifying viewing device inclined at a requisite viewing angle such that a local maxima is detected

WO2016083680A1 VUITTON LOUIS SA

Publication / filed : 2016-06-02 / 2015-09-18

Title: CUT GEM AND ARTICLE COMPRISING SUCH A GEM

Abstract: The invention relates to a cut gem comprising a girdle (3) having four girdle sides (2) and four girdle corners (1), a table (4) realized by a flat facet, a crown (7) which extends between the table (4) and the girdle (3), in a first direction (H), and a pavilion (13) which extends in a second direction (B), opposite to said first direction (H), between said girdle (3) and a tip of the pavilion (14). The gem is noteworthy in that the crown (7) has 24 facets, the pavilion (13) has 32 facets and in that the four girdle sides (2) are identical in the form of an arc of a circle, the concavity of which is oriented towards the outside of the gem

WO2016122721A1 ENCA LLC

Publication / filed : 2016-08-04 / 2015-09-21

Title: DIAMOND CUTS PROVIDING INCREASED LIGHT AMPLIFICATION

Abstract: A sparkling, oblong-shaped precious stone, such as an emerald or cushion cut diamond is formed by providing these diamonds with two long crown surfaces extending at crown angle and two long pavilion surfaces extending at a pavilion angle, where the crown angle is in the range of 30-36 and the pavilion angle is in the range of 30-34. The crown angle and the pavilion angle are so formed that the crown angle is either equal to or larger than the pavilion angle by an angle that does not exceed 6 degrees

WO2016054996A1 GOLDWAY TECHNOLOGY LTD

Publication / filed : 2016-04-14 / 2015-10-07

Title: A SYSTEM, APPARATUS AND METHOD FOR VIEWING A GEMSTONE

Abstract: A system(1) for viewing a gemstone, the system(1) including a first light source(2) configured for selectably illuminating at least one of a plurality of features of the gemstone; an optical magnifying unit(10) configured for providing a magnified view of the plurality of the features of the gemstone in which at least one of the plurality of features of the gemstone is selectably illuminated by the first light source(2); and a viewing display unit(11) configured for displaying a representation of the magnified view

US20160120274A1 GEMCONCEPTS LTD

Publication / filed : 2016-05-05 / 2015-07-17

Title: Step-Cut Gemstone

Abstract: A cushioned step-cut gemstone is disclosed. The gemstone may include a crown disposed above a girdle and a pavilion disposed below the girdle. The girdle may include twelve straight-edged facets defining four sides and four corners of the girdle, wherein the four sides each comprise one straight-edged facet and the four corners each comprise two straight-edged facets meeting at a corner midpoint. The crown may include a table and two or more rows of step-cut facets between the table and the girdle. The step-cut facets may include side step-cut facets shaped like elongated trapezoids and corner step-cut facets, and each step-cut row includes twelve step-cut facets

US20160007699A1 STRNAD LEONARD J

Publication / filed : 2016-01-14 / 2015-07-10

Title: SQUARE PRINCESS CUT GEMSTONE

Abstract: A square princess cut gemstone (100) comprises a crown (300) having thirteen facets (310, 321-324, 331-334, 345-348). The crown facets include a square table facet (310) forming the top of the crown's truncated pyramid shape. Four upper girdle facets (321-324) extend upward from girdle edges (231-234). Four table-surrounding facets (331-334) extend upward from the upper girdle facets (321-324) to the table facet (310). Four bezel facets (345-348) straddles at least one of the adjoining corners of the upper girdle facets (321-324) and the adjoining corners of the table-surrounding facets (331-334)

US20160309860A1 GHASSABIAN YORAM

Publication / filed : 2016-10-27 / 2015-04-27

Title: More stable princess cut diamond

Abstract: A princess cut diamond having no points, but instead having rounded corners, so that the diamond is more stable, and has a less propensity to have any breakage

US20160371778A1 GEMSHARES LLC

Publication / filed : 2016-12-22 / 2016-08-19

Title: Global Investment Grade for Natural and Synthetic Gems used in Financial Investments and Commercial Trading and Method of Creating Standardized Baskets of Gems to be Used in Financial and Commercial Products

Abstract: A process to create a fungible global standard for diamonds and gemstones involves grouping diamonds in an investment standard according to their gemological, proportional, optical and light behavior characteristics. Diamonds that conform to the investment grade standard are interchangeable within a specific size range according to an equivalent monetary bundling process. Diamonds subjected to the standard conform to a holistic set of gemological, proportional, optical and light characteristic requirements that enables diamonds to be classified into a extraordinarily homogeneous, visually indistinguishable and highly fungible group which can be used to create baskets of diamonds to form an index/benchmark for diamond pricing, financial instruments, and a standard that can be used for certifying diamonds as investment grade to insure quality

US20170010217A1 UNIVERSITÀ DEGLISTUDI DI MILANO-BICOCCA

Publication / filed : 2017-01-12 / 2016-08-23

Title: METHOD OF SPECTROSCOPIC ANALYSIS OF A DIAMOND AND APPARATUS THEREOF

Abstract: A method of spectroscopic analysis of a diamond for determining whether the diamond has been artificially treated to change its colour may include: generating light emission from a diamond upon optical excitation at a wavelength equal to or smaller than 680 nm; optically producing a dispersed light emission; detecting the dispersed light emission across a collected spectral region including emission wavelengths of from 670 nm to 735 nm; processing the output signals to produce a spectral intensity distribution as a function of emission wavelengths; analysing the spectral intensity distribution to determine the presence or absence of a spectral pattern including either an intensity peak at 681 nm or a combination of intensity peaks at respective wavelengths 705 nm and 725 nm; if a spectral pattern is present, establishing that the diamond has been treated; and if a spectral pattern is absent, establishing that the diamond has not been treated

EP3111199A1 UNIVERSITÀ DEGLI STUDI DI MILANO - BICOCCA

Publication / filed : 2017-01-04 / 2014-02-28

Title: METHOD OF SPECTROSCOPIC ANALYSIS OF A DIAMOND AND APPARATUS THEREOF.

Abstract: A spectroscopic analysis method and apparatus for enabling the distinction of artificially treated coloured diamonds from natural coloured diamonds. By illuminating a diamond with an excitation wavelength of less than 675 nm, the occurrence of specific combinations of discrete photoluminescence features positioned at 681 nm (1), 705 nm (2), and at 725 nm (3) indicates artificial treatments in the examined diamond. In particular, a spectral pattern comprising either at least a spectral feature at 681 nm or at least the co-existence of spectral features at 705 nm and 725 nm is associated with an artificially treated diamond. The method and the apparatus are particularly useful to discriminate artificially treated brown-coloured, orange-coloured, and yellow-coloured diamonds

EP2972249A1 RAPAPORT MARTIN

Publication / filed : 2016-01-20 / 2014-03-13

Title: METHODS FOR EVALUATING GEMSTONE SHAPE

Abstract: This disclosure relates to methods of evaluating the shape of a gemstone, such as a diamond, ruby, emerald, or sapphire. Also provided are methods of identifying gemstone shape

US20160033261A1 -

Publication / filed : 2016-02-04 / 2015-09-11

Title: METHODS FOR EVALUATING GEMSTONE SHAPE

Abstract: This disclosure relates to methods of evaluating the shape of a gemstone, such as a diamond, ruby, emerald, or sapphire. Also provided are methods of identifying gemstone shape

US9487858B2 FRAUNHOFER USA

Publication / filed : 2016-11-08 / 2009-03-10

Title: Process and apparatus for diamond synthesis

Abstract: The present invention relates to a microwave plasma deposition process and apparatus for producing diamond, preferably as single crystal diamond (SCD). The process and apparatus enables the production of multiple layers of the diamond by the use of an extending device to increase the length and the volume of a recess in a holder containing a SCD substrate as layers of diamond are deposited. The diamond is used for abrasives, cutting tools, gems, electronic substrates, heat sinks, electrochemical electrodes, windows for high power radiation and electron beams, and detectors

WO2016144256A1 IIA TECH PTE LTD

Publication / filed : 2016-09-15 / 2016-03-09

Title: MONOCRYSTALLINE DIAMONDS AND METHODS OF GROWING THE SAME

Abstract: A monocrystalline diamond having a corrected full width at half maxima after accounting for the Rayleigh width of a 514.5 nm laser, and exhibiting: a presence or absence of negatively-charged silicon vacancy defect depending on the diamond quality; a concentration level of neutral substitutional nitrogen at an absorption coefficient of 270 nm; an FTIR transmittance value at a 10.6 μm wavelength; a concentration of positively-charged substitutional nitrogen when the peak height is at 1332.5 cm^{-1} ; an absence of nitrogen-vacancy-hydrogen defect species when the wavelength is at 3123 cm^{-1} ; normalisation of spectra when the first order Raman peak is at 552.37 nm using 514.5 nm laser excitation; either a black or white sector and having a refractive index of retardation to thickness of diamond plates; or a reddish glow and a blue glow when the diamond is placed under 355 nm laser irradiation at room temperature in the dark

US9395350B2 SY KESSLER SALES INC

Publication / filed : 2016-07-19 / 2014-07-23

Title: Gem tester

Abstract: A gem tester for testing a gem under test and a kit including a horizontal recharging stand are disclosed. In one embodiment of the gem tester, an elongated body has a line-of-sight contour tapering from a bulbous end to a radially deviating frontal nose having a probe extending therefrom. Internal circuitry measures electrical conductivity of the gem under test in order to identify the type of gem under test and drive a color control signal in response thereto. A light source is disposed proximate the probe in order to expose the gem under test to ultraviolet light prior to the internal circuitry measuring electrical conductivity. Identification of the gem under test may be made by audio or visual indication or a combination thereof

US9285357B2 & US20160003795A1 SY KESSLER SALES INC

Publication / filed : 2016-03-15 / 2015-09-15

Title: Gem tester

Abstract: A gem tester for testing a gem under test and a kit including a horizontal recharging stand are disclosed. In one embodiment of the gem tester, an elongated body has a line-of-sight contour tapering from a bulbous end to a radially deviating frontal nose having a probe extending therefrom. Internal circuitry measures electrical and thermal conductivity of the gem under test in order to identify the type of gem under test and drive a color control signal in response thereto. A luminescent mounting extends about the contact to provide, in response to the control signal, a color indication of the identified gem type

WO2017001835A1 DE BEERS UK LTD

Publication / filed : 2017-01-05 / 2016-06-28

Title: LUMINESCENCE MEASUREMENTS IN DIAMOND

Abstract: A method of and an apparatus for providing an indicator for a diamond as to whether it is natural by testing for the presence or absence of one or more specific markers in the luminescence properties of the diamond, These markers are characterised by luminescence decay time and luminescence wavelength

US9322785B2 BEERS UK LTD DE

Publication / filed : 2016-04-26 / 2012-07-11

Title: Inclusion detection in polished gemstones

Abstract: A method and apparatus for generating a 3D model of and/or detecting inclusions in a polished gemstone such as diamond is described. The gemstone (103) is rotated in a series of discrete increments. At each rotational position of the gemstone, the gemstone (103) is illuminated with collimated light (111,112) and a silhouette image recorded. At each rotational position, the gemstone (103) is also (before further rotation) illuminated with diffuse light (109), and a diffuse image recorded. The images are analyzed to obtain a 3D model of the surface of the gemstone. Features may then be identified in the diffuse images and tracked between subsequent diffuse images. The tracked features may be located relative to the 3D model of the gemstone, taking into account reflection and refraction of light rays by the gemstone. Some or all of the located features may then be identified as inclusions

US20160041106A1 BEERS UK LTD DE

Publication / filed : 2016-02-11 / 2015-10-16

Title: GEMSTONE VIEWER

Abstract: An apparatus for viewing images of a gemstone is described. The apparatus comprises a support structure for supporting the gemstone at an observation position. An illumination structure comprises a plurality of directional light sources directed towards the observation position so as to illuminate the gemstone. The support structure and illumination structure are relatively rotatable relative to one another about a rotation axis. An imaging device is arranged to obtain images of the gemstone at the observation position at a variety of relative rotational positions between the illumination structure and support structure: the imaging device has an imaging axis passing through the observation position. The support structure is arranged so that the gemstone can be placed at the observation position in such a way that the normal to a selected facet of the gemstone is within a range of tilt angles from the rotation axis. The arrangement of directional light sources is such that, for any tilt angle within the range, at least one of the directional light sources will be specularly reflected from the selected facet into the imaging device for at least one rotational position of the support structure

WO2016203210A1 DE BEERS UK LTD

Publication / filed : 2016-12-22 / 2016-06-13

Title: COLOUR MEASUREMENT OF GEMSTONES

Abstract: The present disclosure relates to an apparatus for measuring a colour parameter of a gemstone. The apparatus comprises a support structure for supporting the gemstone at a measurement location, an illumination system for illuminating the gemstone at the measurement location, an imaging device directed towards the measurement location for obtaining an image of the gemstone, and an image processor for analysing the image of the gemstone. The image processor is configured to identify a set of stone pixels corresponding to the gemstone in the image and identify luminance and chrominance values for each stone pixel. A colour vector (401) is calculated from an expression of the chrominance values of the stone pixels in chrominance space, the colour vector extending in chrominance space from stone pixels having a relatively high luminance value (405) to stone pixels having a relatively low luminance value (407). This colour vector is used in the determination of the colour parameter

US9250193B2 BEERS UK LTD DE

Publication / filed : 2016-02-02 / 2012-10-03

Title: Gemstone sparkle analysis

Abstract: A system is described for obtaining images of a gemstone, and performing quantitative analysis on the images to obtain measures of properties of the gemstone. The system comprises a support structure for supporting the gemstone at an observation position. An illumination structure is arranged to illuminate the gemstone. The illumination structure comprises a plurality of radially dispersed directional light sources directed towards the observation position, the support structure and illumination system being rotatable relative to one another around a rotation axis so that the gemstone can be illuminated by one or more of the directional light sources at each of a plurality of rotational positions, the axis of rotation being normal to a selected facet of the gemstone. An imaging device is directed towards the gemstone for obtaining images of the gemstone at each of the rotational positions, the imaging device having an imaging axis parallel to or coincident with the axis of rotation. An image processor is provided for identifying sparkle regions in the images corresponding to reflections from individual light sources by individual facets and providing a quantitative measure of the gemstone on the basis of properties of the sparkle regions

EP3022549A1 BEERS UK LTD DE

Publication / filed : 2016-05-25 / 2014-07-17

Title: MEASURING PARAMETERS OF A CUT GEMSTONE

Abstract: Apparatus and corresponding methods for measuring a plurality of parameters of a cut gemstone while it is positioned at a single measurement location. Apparatus comprise a plurality of light sources, each configured to emit light at a different one of a plurality of emission wavelengths or ranges of wavelengths such that the emitted light illuminates at least part of the measurement location. Apparatus further comprise a sensor assembly configured to sense light at a plurality of sensing wavelengths or ranges of wavelengths for measuring the plurality of parameters. The sensed light is received at the sensor assembly from the measurement location as a result of illumination of a cut gemstone located at the measurement location

US20160178530A1 BEERS UK LTD DE

Publication / filed : 2016-06-23 / 2016-01-15

Title: MEASURING PARAMETERS OF A CUT GEMSTONE

Abstract: Apparatus and corresponding methods for measuring a plurality of parameters of a cut gemstone while it is positioned at a single measurement location. Apparatus comprise a plurality of light sources, each configured to emit light at a different one of a plurality of emission wavelengths or ranges of wavelengths such that the emitted light illuminates at least part of the

measurement location. Apparatus further comprise a sensor assembly configured to sense light at a plurality of sensing wavelengths or ranges of wavelengths for measuring the plurality of parameters. The sensed light is received at the sensor assembly from the measurement location as a result of illumination of a cut gemstone located at the measurement location

WO2016185472A1 SARINE COLOR TECH LTD

Publication / filed : 2016-11-24 / 2016-05-18

Title: SYSTEM AND METHOD OF UNIQUE IDENTIFYING A GEMSTONE

Abstract: There is provided a computerized system and method of generating a unique identification associated with a gemstone, usable for unique identification of the gemstone. The method comprises: obtaining one or more images of the gemstone, the one or more images captured at one or more viewing angles relative to the gemstone and to a light pattern, thus giving rise to a representative group of images; processing the representative group of images to generate a set of rotation-invariant values informative of rotational cross-correlation relationship characterizing the images in the representative group; and using the generated set of rotation-invariant values to generate a unique identification associated with the gemstone. The unique identification associated with the gemstone can be further compared with an independently generated unique identification associated with the gemstone in question, or with a class- indicative unique identification

US9519961B2 & US20160027166A1 SARINE COLOR TECH LTD

Publication / filed : 2016-12-13 / 2015-10-05

Title: Methods and systems of imaging cut stones

Abstract: A method of imaging a cut stone. The method comprises a) identifying an orientation of a cut stone (202), b) creating a volumetric model of the cut stone according to the orientation (203), c) capturing a plurality of images of the cut stone from a plurality of viewing angles around the cut stone (204), d) cropping a plurality of segments depicting the cut stone from the plurality of images using the volumetric model (205), and e) generating a volumetric image of the cut stone from the plurality of segments (207,208)

US20160103938A1 TRIFECTA IND LTD

Publication / filed : 2016-04-14 / 2015-06-05

Title: DIAMOND PROCESSING

Abstract: Technology is disclosed for use in diamond processing. Diamond parameter information is obtained and information for numerous diamonds can be aggregated into a database. At least one candidate diamond for potential recutting is identified based on processing the received measurement information by applying logic based on selection criteria stored in the memory. A virtual model is then generated of the at least one candidate diamond based, at least in part, on the received measurement information. The virtual model is analyzed by applying recut criteria to determine a parameter indicative of recut potential and this is output for use in selecting diamonds for a recutting operation. By reducing the requirement to transport diamonds to an analysis site, significant energy, processing, and environmental benefits may be achieved

US20160167164A9 KAPLAN LAZARE INT

Publication / filed : 2016-06-16 / 2012-11-19

Title: SYSTEM AND METHOD FOR GEMSTONE MICROINSCRIPTION

Abstract: A gemstone micro-inscription system, comprising an energy source, a spatial light modulator, and a control, the control controlling a spatial light pattern modulation of the spatial light modulator, wherein the spatial light modulator exposes a photoresist on the gemstone, which selectively impedes an etching process to produce a pattern on the gemstone corresponding to the spatial light modulation pattern

WO2016124948A1 ECOTRICITY GROUP LTD

Publication / filed : 2016-08-11 / 2016-02-05

Title: A METHOD OF PRODUCING A SYNTHETIC DIAMOND

Abstract: A method of producing a synthetic diamond is disclosed, the method comprising chemical vapour deposition (CVD) of methane and hydrogen, wherein the methane is obtained by reacting carbon dioxide with water or hydrogen, and the hydrogen is obtained by electrolysis of water

EP3028034A1 LAVJIBHAI PATEL ARVINDBHAI

Publication / filed : 2016-06-08 / 2013-09-11

Title: METHOD AND DEVICE FOR GEMSTONE EVOLUTION

Abstract: A method and device are provided for determining the properties and evolution of gemstone by detecting the internal and external structure of the gemstone. The method and device are used to identify the size, location of impurities/defects in raw gemstone with the help of optimized spectroscopy scanning and are used for precise automatic evolution of gemstones and possibilities of final value of planned gemstone after remaining gemstone processing cycle

US20160139058A1 PATEL ARVINDBHAI LAVJIBHAI

Publication / filed : 2016-05-19 / 2015-12-18

Title: METHOD AND DEVICE FOR GEMSTONE EVOLUTION

Abstract: The present invention relates to the method and device to determination of the properties of gemstones and more particularly evolution of gemstone by detection of internal and external structure of gemstone. In particular, the present invention methods and device is used to identify the size, location of impurities/defects in raw gemstone with the help of optimize spectroscopy scanning. The present invention method and device is used for precise automatic evolution of gemstones and possibilities (estimation) of final value of planned gemstone after remaining gemstone processing cycle

EP3088870A1 NUCTECH CO LTD

Publication / filed : 2016-11-02 / 2014-12-25

Title: METHOD AND DEVICE FOR IDENTIFYING JEWELLERY AND GEMS

Abstract: Embodiments of the present invention provide gem identification method and apparatus. The method comprises the steps: (a) placing a sample to be detected over a light transmission hole formed on a carrying surface of an object table and emitting, by an optical probe disposed below the carrying surface, an exciting light onto the sample through the light transmission hole and then collecting a Raman scattered light from the sample by the optical probe; (b) acquiring a Raman spectrogram of the sample from the collected Raman scattered light from the sample; and (c) comparing the Raman spectrogram with a reference Raman spectrogram library for gems to identify the sample. The method and apparatus may achieve effective, convenient and accurate inspections of the gems

US20160054560A1 ALKOUBY MOSHE LIOR

Publication / filed : 2016-02-25 / 2015-11-04

Title: LOUPE WITH ATTACHED CAMERA

Abstract: A system and method for capturing a portion of the visual field of a loupe comprising: a loupe with at least one attached camera, a first computational device in communication with the camera, and software for operation on the first device; wherein the at least one camera captures visual data comprising a portion of the visual field of the loupe to form a capture and transmits the capture to the device for manipulation by the software

US20160109374A1 PAN DONG-SHYOGN

Publication / filed : 2016-04-21 / 2015-08-28

Title: EXAMINATION METHOD FOR DISTINGUISHING BETWEEN NATURAL DIAMOND AND SYNTHETIC CVD/HPHT DIAMONDS

Abstract: This invention is within the technical field of distinguishing between natural diamond and synthetic CVD and HPHT diamonds, involves an examination technique using the Raman spectra. Procedurally, a highly sensitive Raman spectrometer ($S/N > 10,000$) is used to scan and examine the diamond sample. The spectrometer is fitted with a tailor-made probe that has a large facula and surface area. Specially developed software is then used to perform an intensity correction and a background elimination to obtain a specific Raman spectral range ($250-2800 \text{ cm}^{-1}$) with the corrected intensity and a smooth baseline. Next, the Raman peak intensity of 2030 cm^{-1} (the post-correction and -standardization characteristic peak) is used as a basis to distinguish between natural diamond and synthetic CVD and HPHT diamonds. This method has the advantages of being non-destructive, simple, fast, and practical identification for diamonds

US9546961B1 Pan Dong-Shyogn

Publication / filed : 2017-01-17 / 2016-03-29

Title: Method of rapid identification of natural and synthetic diamonds using third-order Raman spectra

Abstract: The method of rapid identification of natural and synthetic diamonds using a third-order Raman spectra is to make a diamond third order under large-scale comparative studies with synthetic diamond (CVD & HPHT) to distinguish natural and synthetic diamonds with their differences in Raman peaks. This analysis of the differences in characteristic peak phenomenon can form the basis of a rapid identification and analytical technique

WO2016092300A1 REISCHIG PETER

Publication / filed : 2016-06-16 / 2015-12-09

Title: A METHOD OF GENERATING A FINGERPRINT FOR A GEMSTONE USING X-RAY IMAGING

Abstract: The present invention provides a method of generating a fingerprint for a gemstone (5), for example a diamond, using x-ray imaging. The fingerprint comprises a three- dimensional map of a crystal or crystals present within the gemstone (5) including internal imperfections of the crystals and may also comprise further information about the gemstone (5). The method comprising the steps of: mounting the gemstone (5) in a sample holder (4) of an imaging apparatus, the imaging apparatus comprising a detector (6), a sample holder (4) mounted on a sample stage (3), an x-ray source (1), the sample holder (4) and the x-ray source (1) aligned along an optical axis, wherein the sample holder (4) is movable relative to the at least one x-ray source (1) and the detector (6); exposing the gemstone (5) to x-ray radiation from the x-ray source (1), whilst moving the sample holder (4) according to a search strategy that is predetermined for the gemstone (5) based on known physical characteristics of the gemstone (5); using the detector (6) to locate diffraction and/or extinction spots generated by the lattice of the crystals; utilising the located diffraction and/or extinction spots to calculate information about the position, orientation, and phase of the crystals; generating a suitable x-ray diffraction scanning strategy from the calculated information, the strategy including moving the sample holder (4) relative to the x-ray source (1) and the detector (6) and exposing the gemstone (5) to appropriate x-ray radiation as the sample holder (4) is moved, wherein the strategy is generated to locate and classify internal imperfections in the at least one crystal; scanning the gemstone according to the scanning strategy and recording the diffraction and/or extinction images using the detector (6); and generating a fingerprint from the recorded diffraction and/or extinction images

WO2016092553A1 SHIRTAL DIACAM LTD

Publication / filed : 2016-06-16 / 2015-12-10

Title: SYSTEM AND METHOD FOR GENERATING 360° INTERACTIVE VIEW OF AN OBJECT

Abstract: System and method for stabilizing physical object in upright position using vacuum for exposure of full or at least maximum of its faces, 2D photographing and 360° interactive view of the object with single session of photographing. The system comprises photographing means, illumination means, vacuum generating means, apparatus for holding the object in position for exposure of all or at least maximum of its faces, while revolving it around its longitudinal axis with motor and gearwheel apparatus and applying vacuum to its lower end. Computer and software means control the device means, collect and store the 2D photos and generate 360° interactive view of the object. The system is compact, relatively lightweight, easily operated and does not require professional knowledge, special training or technical or technological experience and intended for use by end consumers

US9488588B2 & US20160025643A1 GEMLOGICAL APPRAISAL ASS INC

Publication / filed : 2016-11-08 / 2015-07-28

Title: Gemstone registration system

Abstract: A device for producing a reproducible identification pattern of a polished gemstone includes light directing means for directing a focused beam of light onto a gemstone orientated in a particular known manner to produce an output of the internal refraction and reflection characteristics of the gemstone including reflected light beams having particular locations, sizes and intensities. The device also includes automated means for changing a position of the gemstone relative to the focused beam of light; and also a means for recording the output in a manner to record the relative size and location of the reflected light beams

US9239294B2 GEMEX SYSTEMS INC

Publication / filed : 2016-01-19 / 2013-08-30

Title: Gem identification method and apparatus using digital imaging viewer

Abstract: A system and an apparatus for capturing a digital image of a particular gemstone from which specific and unique data can be extracted using digital image processing analysis, which data is used to positively identify a single gemstone from a database of gemstone images

EP2274598B8 TJS DMCC

Publication / filed : 2016-10-12 / 2009-03-31

Title: SYSTEMS AND METHODS FOR GEMSTONE IDENTIFICATION AND ANALYSIS

Abstract: Images of items of jewelry having gemstones embedded therein are imaged and analyzed to determine the weights associated with the gemstones and, separately the precious metal in which the gemstones are encased without having to remove the gemstones from the jewelry

EP2274598B1 JEWELLERY STORE

Publication / filed : 2016-07-27 / 2009-03-31

Title: SYSTEMS AND METHODS FOR GEMSTONE IDENTIFICATION AND ANALYSIS

Abstract: Images of items of jewelry having gemstones embedded therein are imaged and analyzed to determine the weights associated with the gemstones and, separately the precious metal in which the gemstones are encased without having to remove the gemstones from the jewelry

US20160232432A1 RGV GROUP LLC

Publication / filed : 2016-08-11 / 2016-02-09

Title: Systems and Methods for Gemstone Identification

Abstract: Provided herein are systems and methods for identification of gemstones. The gemstones can be identified without removing the gemstones from an object in which the gemstones can be set. The gemstones can be imaged and image analysis can quantify one or more external and/or internal characteristics of the gemstone. The quantification of the one or more external and/or internal characteristics of the gemstone can be compared to a previous characterization to positively identify the gemstone

WO2016127064A1 RGV GROUP LLC

Publication / filed : 2016-08-11 / 2016-02-05

Title: SYSTEMS AND METHODS FOR GEMSTONE IDENTIFICATION

Abstract: Provided herein are systems and methods for identification of gemstones. The gemstones can be identified without removing the gemstones from an object in which the gemstones can be set. The gemstones can be imaged and image analysis can quantify one or more external and/or internal characteristics of the gemstone. The quantification of the one or more external and/or internal characteristics of the gemstone can be compared to a previous characterization to positively identify the gemstone

WO2016022153A1 EMPIRE TECHNOLOGY DEVELOPMENT LLC

Publication / filed : 2016-02-11 / 2014-08-08

Title: SPECTROSCOPIC DETERMINATION OF OPTICAL PROPERTIES OF GEMSTONES

Abstract: Technologies are generally described for spectroscopic determination of one or more optical properties of a gemstone. An imaging device may include one or more light sources configured to illuminate one or more portions of the gemstone, and one or more photo detectors configured to detect reflected light from the portions of the gemstone in response to the illumination. An analysis module may be communicatively coupled to the imaging device, and configured to analyze the reflected light to determine the optical properties of the portions of the gemstone. The optical properties may include at least one of a clarity, color, fluorescence, birefringence, dichroism, and brilliance of the portions of the gemstone. In some examples, an optical fingerprint of the gemstone may be created based on one or more determined optical characteristics of the portions of the gemstone, where the optical fingerprint may uniquely identify the gemstone

WO2016125057A1 GAIA MARIO

Publication / filed : 2016-08-11 / 2016-01-29

Title: APPARATUS FOR SIMULTANEOUSLY MACHINING A PLURALITY OF PRECIOUS STONES

Abstract: An apparatus for simultaneously grinding, lapping and polishing hundreds or thousands of precious stones, industrial diamonds and the like is described. The apparatus comprises a lap and at least one supporting assembly to support stones to be machined, in its turn provided with a stone holding socket and at least three supporting stems constrained thereto at the opposite side with respect to the stone to be machined. Each supporting stem is constrained to the socket by a spherical coupling allowing a spherical motion, that is to say so as to be able to be oriented. At least one first stem and one second stem are translatable in the two ways along their own longitudinal axis and the third stem is stationary or else it is translatable too in the two ways along its own longitudinal axis, so that the instantaneous position adopted by the three supporting stems defines univocally the orientation of the socket and, therefore, of the stone housed therein with respect to the respective lap

US20160203495A1 CARATELL PTE LTD

Publication / filed : 2016-07-14 / 2016-02-11

Title: METHOD AND SYSTEM FOR CERTIFICATION AND VERIFICATION OF GEMSTONES

Abstract: The present invention discloses a method and system for certifying and verifying gemstones and a document certifying and verifying gemstones. The method comprises the steps of capturing at least one image of an inclusion in a gemstone; storing the image in a first database; and displaying the image on a certification document for presenting to a consumer, wherein the image is of sufficient magnification to allow the consumer to compare the image on the document to the gemstone viewed through an optical device to determine if the gemstone matches the image

EP3033720A1 CARATELL PTE LTD

Publication / filed : 2016-06-22 / 2014-08-06

Title: METHOD AND SYSTEM FOR CERTIFICATION AND VERIFICATION OF GEMSTONES

Abstract: The present invention discloses a method and system for certifying and verifying gemstones and a document certifying and verifying gemstones. The method comprises the steps of capturing at least one image of an inclusion in a gemstone; storing the image in a first database; and displaying the image on a certification document for presenting to a consumer, wherein the

image is of sufficient magnification to allow the consumer to compare the image on the document to the gemstone viewed through an optical device to determine if the gemstone matches the image

EP1632590B1 ELEMENT SIX TECH LTD

Publication / filed : 2017-01-11 / 2001-06-14

Title: Thick single crystal diamond layer, method for making it, and gemstones produced from the layer

Abstract: A layer of single crystal CVD diamond of high quality having a thickness greater than 2 mm. Also provided is a method of producing such a CVD diamond layer. The method involves the homoepitaxial growth of the diamond layer on a low defect density substrate in an atmosphere containing less than 300ppb nitrogen. Gemstones can be manufactured from the layer

US9255009B2 ELEMENT SIX TECHNOLOGIES LTD

Publication / filed : 2016-02-09 / 2010-06-25

Title: Diamond material

Abstract: Starting from a diamond material which shows a difference in its absorption characteristics after exposure to radiation with an energy of at least 5.5 eV (typically UV radiation) and thermal treatment at 798K, controlled irradiation is applied so as to introduce defects in the diamond material. After the controlled irradiation the difference in the absorption characteristics after exposure to radiation with an energy of at least 5.5 eV and thermal treatment at 798K is reduced

US9260797B2 ELEMENT SIX LTD

Publication / filed : 2016-02-16 / 2014-06-04

Title: Single crystal CVD synthetic diamond material

Abstract: A single crystal CVD synthetic diamond material comprising: a total as-grown nitrogen concentration equal to or greater than 5 ppm, and a uniform distribution of defects, wherein said uniform distribution of defects is defined by one or more of the following characteristics: (i) the total nitrogen concentration, when mapped by secondary ion mass spectrometry (SIMS) over an area equal to or greater than 50×50 μm using an analysis area of 10 μm or less, possesses a point-to-point variation of less than 30% of an average total nitrogen concentration value, or when mapped by SIMS over an area equal to or greater than 200×200 μm using an analysis area of 60 μm or less, possesses a point-to-point variation of less than 30% of an average total nitrogen concentration value; (ii) an as-grown nitrogen-vacancy defect (NV) concentration equal to or greater than 50 ppb as measured using 77K UV-visible absorption measurements, wherein the

nitrogen-vacancy defects are uniformly distributed through the synthetic single crystal CVD diamond material such that, when excited using a 514 nm laser excitation source of spot size equal to or less than 10 μm at room temperature using a 50 mW continuous wave laser, and mapped over an area equal to or greater than 50 \times 50 μm with a data interval less than 10 μm there is a low point-to-point variation wherein the intensity area ratio of nitrogen vacancy photoluminescence peaks between regions of high photoluminescent intensity and regions of low photoluminescent intensity is $<2\times$ for either the 575 nm photoluminescent peak (NV0) or the 637 nm photoluminescent peak (NV); (iii) a variation in Raman intensity such that, when excited using a 514 nm laser excitation source (resulting in a Raman peak at 552.4 nm) of spot size equal to or less than 10 μm at room temperature using a 50 mW continuous wave laser, and mapped over an area equal to or greater than 50 \times 50 μm with a data interval less than 10 μm , there is a low point-to-point variation wherein the ratio of Raman peak areas between regions of low Raman intensity and high Raman intensity is $<1.25\times$; (iv) an as-grown nitrogen-vacancy defect (NV) concentration equal to or greater than 50 ppb as measured using 77K UV-visible absorption measurements, wherein, when excited using a 514 nm excitation source of spot size equal to or less than 10 μm at 77K using a 50 mW continuous wave laser, gives an intensity at 575 nm corresponding to NV0 greater than 120 times a Raman intensity at 552.4 nm, and/or an intensity at 637 nm corresponding to NV $^-$ greater than 200 times the Raman intensity at 552.4 nm; (v) a single substitutional nitrogen defect (Ns) concentration equal to or greater than 5 ppm, wherein the single substitutional nitrogen defects are uniformly distributed through the synthetic single crystal CVD diamond material such that by using a 1344 cm^{-1} infrared absorption feature and sampling an area greater than an area of 0.5 mm^2 , the variation is lower than 80%, as deduced by dividing the standard deviation by the mean value; (vi) a variation in red luminescence intensity, as defined by a standard deviation divided by a mean value, is less than 15%; (vii) a mean standard deviation in neutral single substitutional nitrogen concentration of less than 80%; and (viii) a color intensity as measured using a histogram from a microscopy image with a mean gray value of greater than 50, wherein the color intensity is uniform through the single crystal CVD synthetic diamond material such that the variation in gray color, as characterized by the gray value standard deviation divided by the gray value mean, is less than 40%

EP3071728A1 ELEMENT SIX TECHNOLOGIES LTD

Publication / filed : 2016-09-28 / 2014-11-18

Title: METHODS OF FABRICATING SYNTHETIC DIAMOND MATERIALS USING MICROWAVE PLASMA ACTIVATED CHEMICAL VAPOUR DEPOSITION TECHNIQUES AND PRODUCTS OBTAINED USING SAID METHODS

Abstract: A method of fabricating synthetic diamond material using a microwave plasma activated chemical vapour deposition technique is provided which utilizes high and uniform microwave power densities applied over large areas and for extended periods of time. Products fabricated using such a synthesis technique are described including a single crystal CVD diamond layer which has a large area and a low nitrogen concentration, and a high purity, fast growth rate single crystal CVD diamond material

EP2253745B1ELEMENT SIX TECHNOLOGIES LTD

Publication / filed : 2016-03-02 / 2002-12-13

Title: COLOURED DIAMOND

Abstract: A diamond layer of single crystal CVD diamond which is coloured, preferably which has a fancy colour, and which has a thickness of greater than 1mm