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Liu et al.

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(54) **OPTICAL LENS ASSEMBLY AND ELECTRONIC DEVICE**

(71) Applicant: **LARGAN PRECISION CO., LTD.**, Taichung (TW)

(72) Inventors: **Ssu-Hsin Liu**, Taichung (TW); **Chen-Wei Fan**, Taichung (TW); **Ming-Ta Chou**, Taichung (TW); **Chien-Pang Chang**, Taichung (TW); **Wen-Yu Tsai**, Taichung (TW)

(73) Assignee: **LARGAN PRECISION CO., LTD.**, Taichung (TW)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 489 days.

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(22) Filed: **Oct. 26, 2022**

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(51) **Int. Cl.**
G02B 7/02 (2021.01)
H04N 23/55 (2023.01)

(52) **U.S. Cl.**
CPC ***G02B 7/021*** (2013.01); ***H04N 23/55*** (2023.01)

(58) **Field of Classification Search**
CPC . G02B 5/22; G02B 5/003; G02B 7/02; G02B 7/021; G02B 7/022; G02B 7/023; G02B 7/025; G02B 7/026; H04N 23/55
See application file for complete search history.

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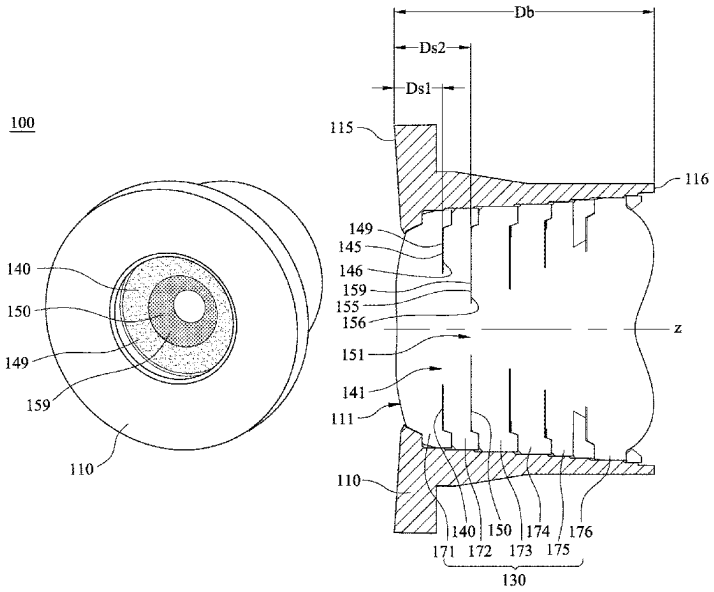
Primary Examiner — Ephrem Z Mebrahtu
(74) *Attorney, Agent, or Firm* — McClure, Qualey & Rodack, LLP

(57) **ABSTRACT**

An optical lens assembly includes a lens barrel and an optical lens group. The lens barrel includes a light entering hole, which is configured for allowing a light to enter the lens barrel. The lens barrel accommodates the optical lens group, and an optical axis passes through the optical lens group. The optical lens group includes a plurality of lens elements and at least one light blocking sheet. The light blocking sheet is an opaque sheet-shaped element and surrounds the optical axis to form a light passing hole. The light blocking sheet includes an object-side surface and an image-side surface, and the object-side surface is located more adjacent to the light entering hole than the image-side surface thereto. A first film layer is disposed on the object-side surface.

18 Claims, 23 Drawing Sheets



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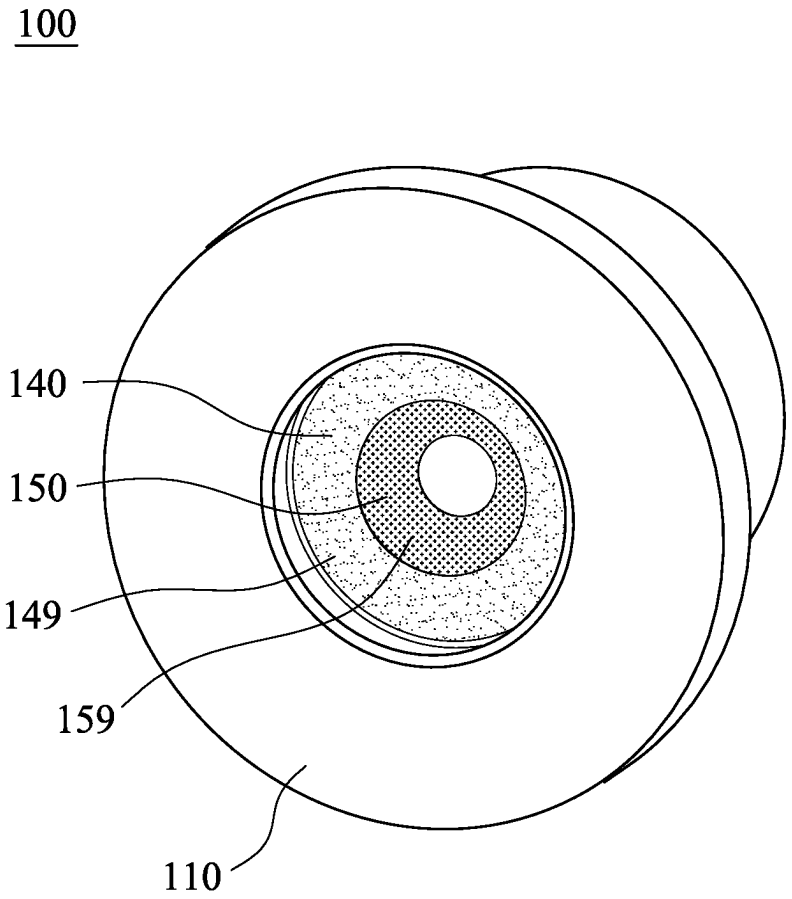


Fig. 1A

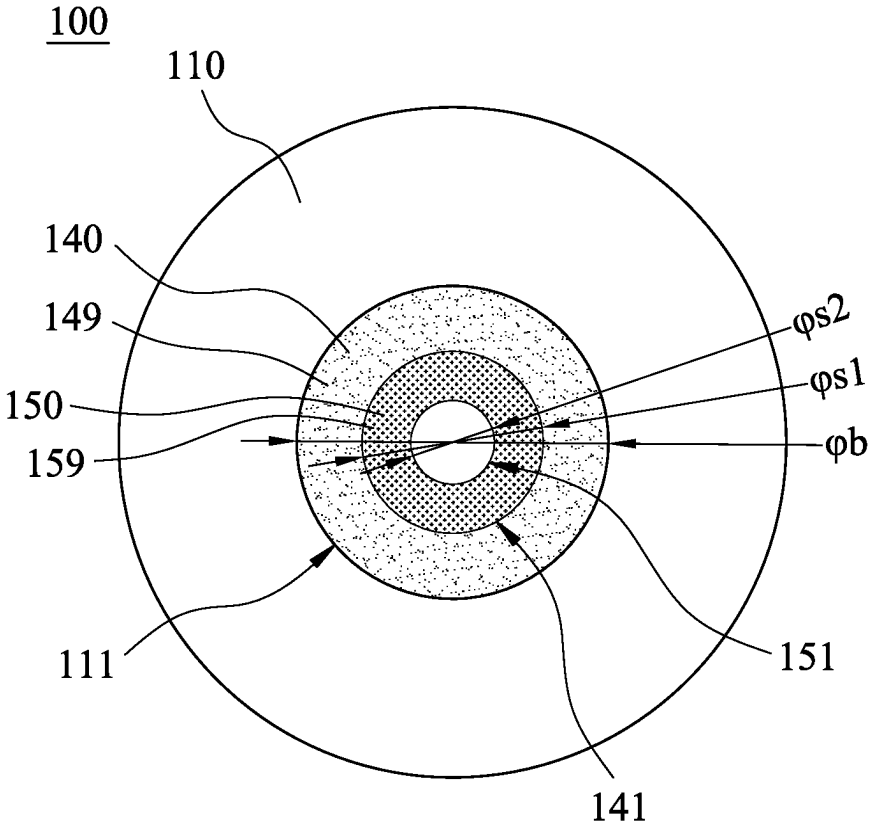
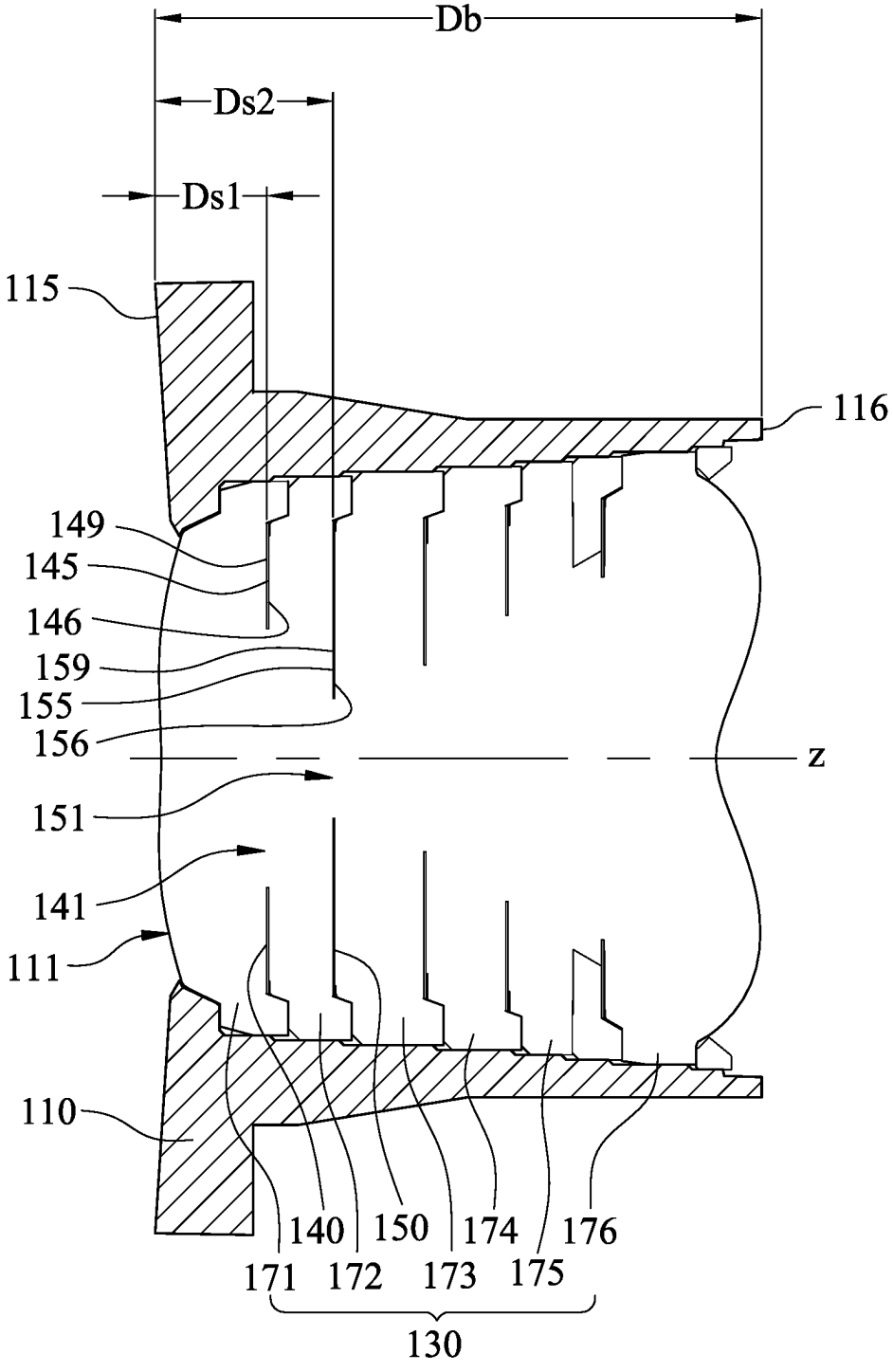


Fig. 1B


Db
Ds2
Ds1
115
116
149
145
146
159
155
156
z
151
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111
110
140
150
174
176
171
172
173
175
130

Fig. 1C

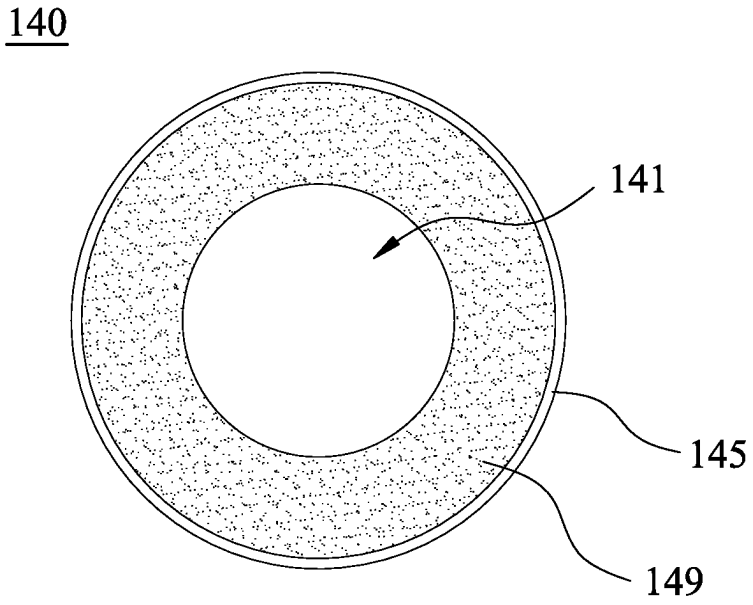


Fig. 1D

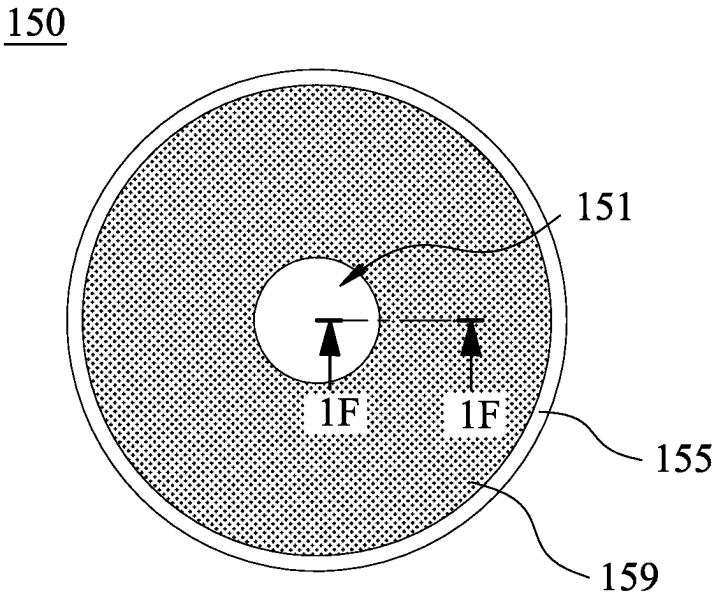


Fig. 1E

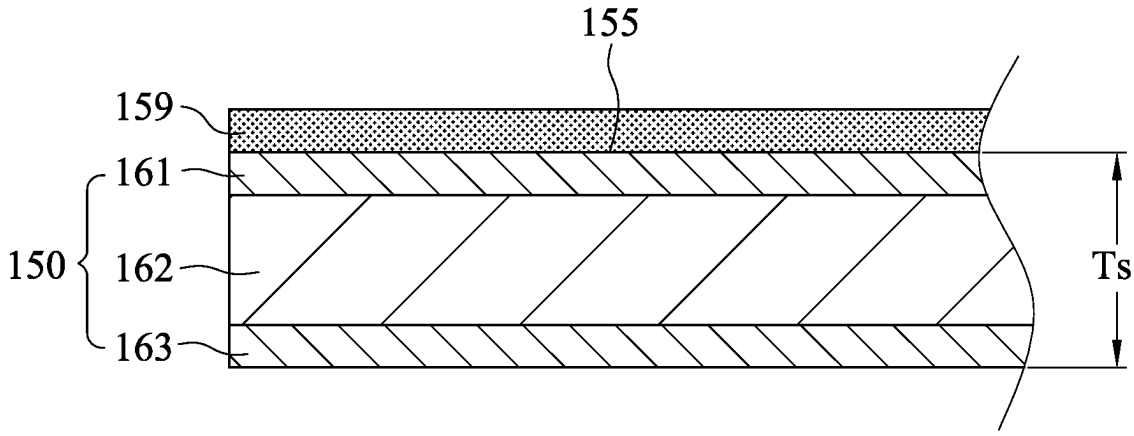


Fig. 1F

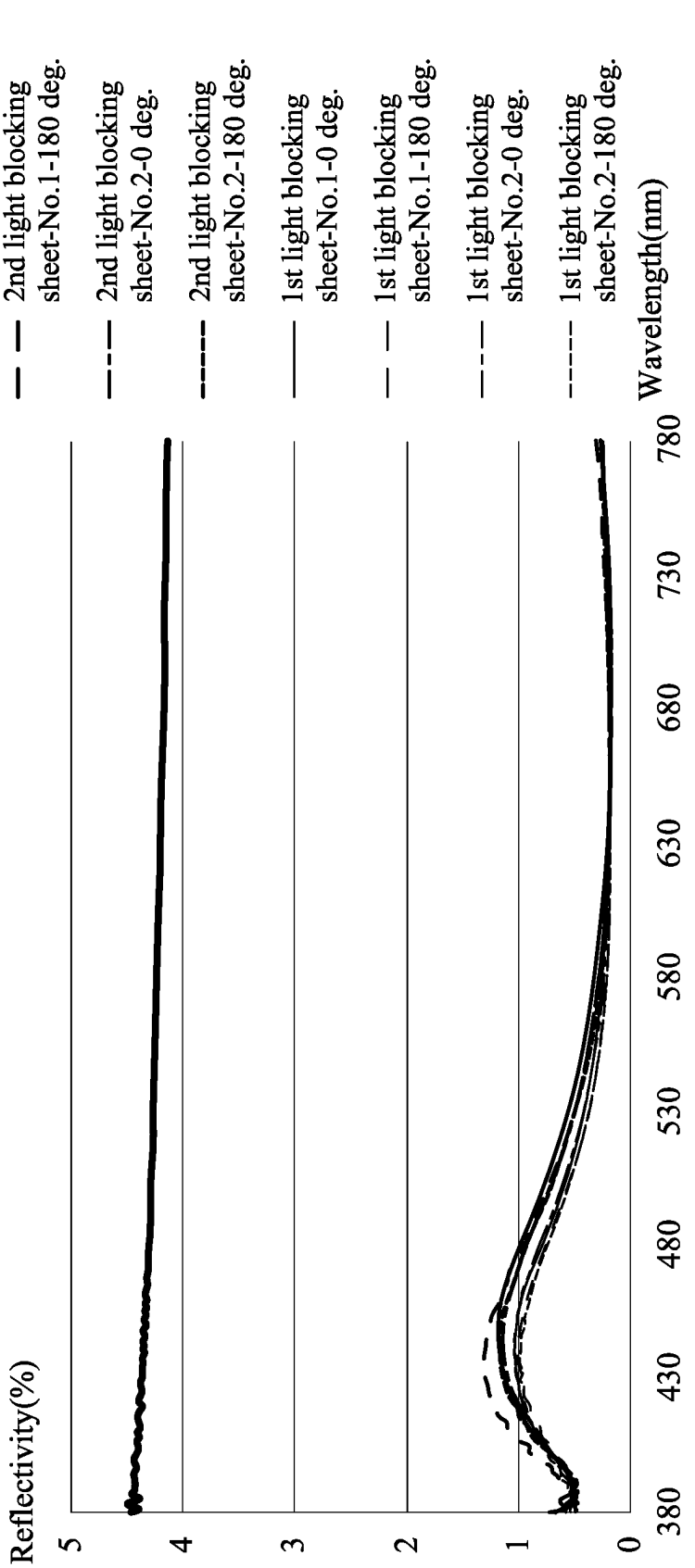

1st or 2nd light blocking sheet w/o 1st film layer
2nd light blocking sheet-No.1-0 deg.
2nd light blocking sheet-No.1-180 deg.
2nd light blocking sheet-No.2-0 deg.
2nd light blocking sheet-No.2-180 deg.
1st light blocking sheet-No.1-0 deg.
1st light blocking sheet-No.1-180 deg.
1st light blocking sheet-No.2-0 deg.
1st light blocking sheet-No.2-180 deg.
Reflectivity(%)
5
4
3
2
1
0
380
430
480
530
580
630
680
730
780
Wavelength(nm)

Fig. 1G

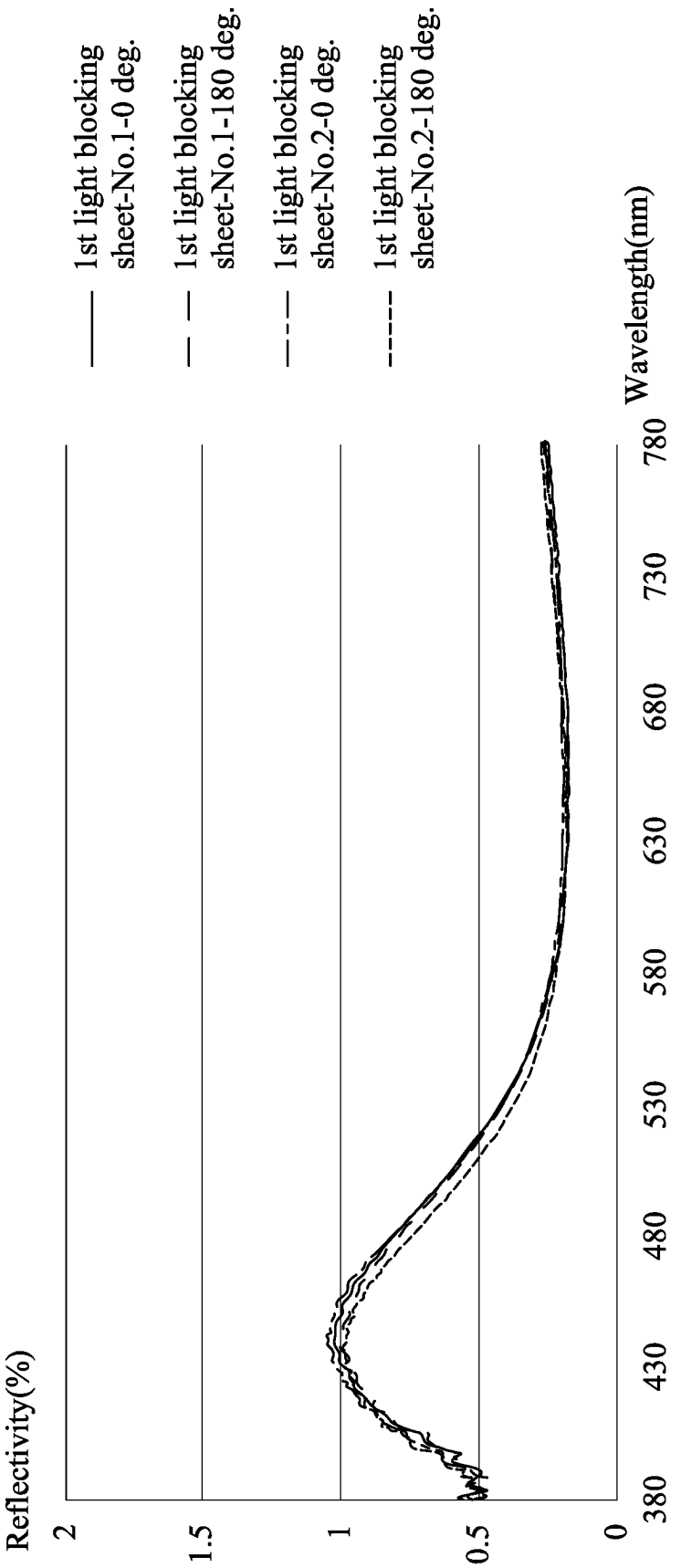

1st light blocking sheet-No.1-0 deg.
1st light blocking sheet-No.1-180 deg.
1st light blocking sheet-No.2-0 deg.
1st light blocking sheet-No.2-180 deg.
Reflectivity(%)
2
1.5
1
0.5
0
380
430
480
530
580
630
680
730
780
Wavelength(nm)

Fig. 1H

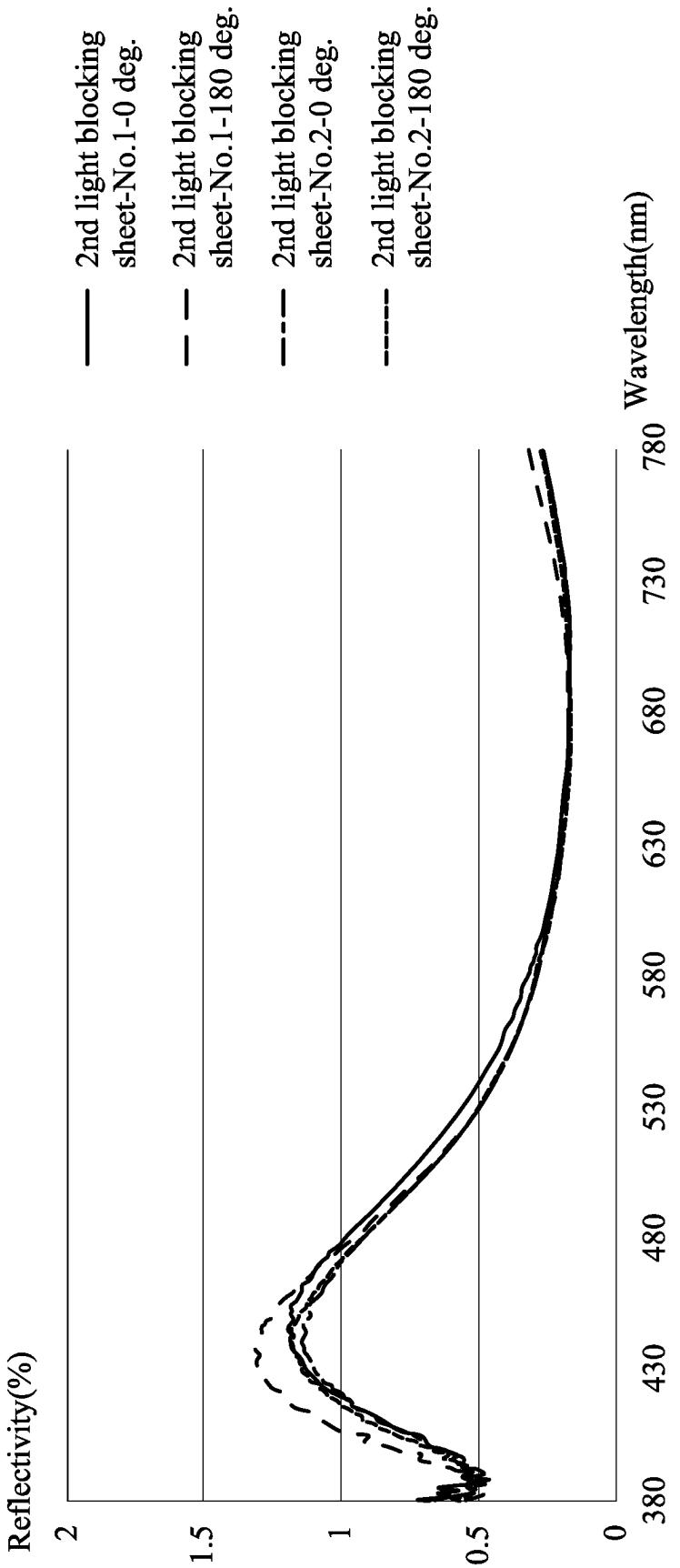

2nd light blocking sheet-No.1-0 deg.
2nd light blocking sheet-No.1-180 deg.
2nd light blocking sheet-No.2-0 deg.
2nd light blocking sheet-No.2-180 deg.
Reflectivity(%)
2
1.5
1
0.5
0
380
430
480
530
580
630
680
730
780
Wavelength(nm)

Fig. 1I

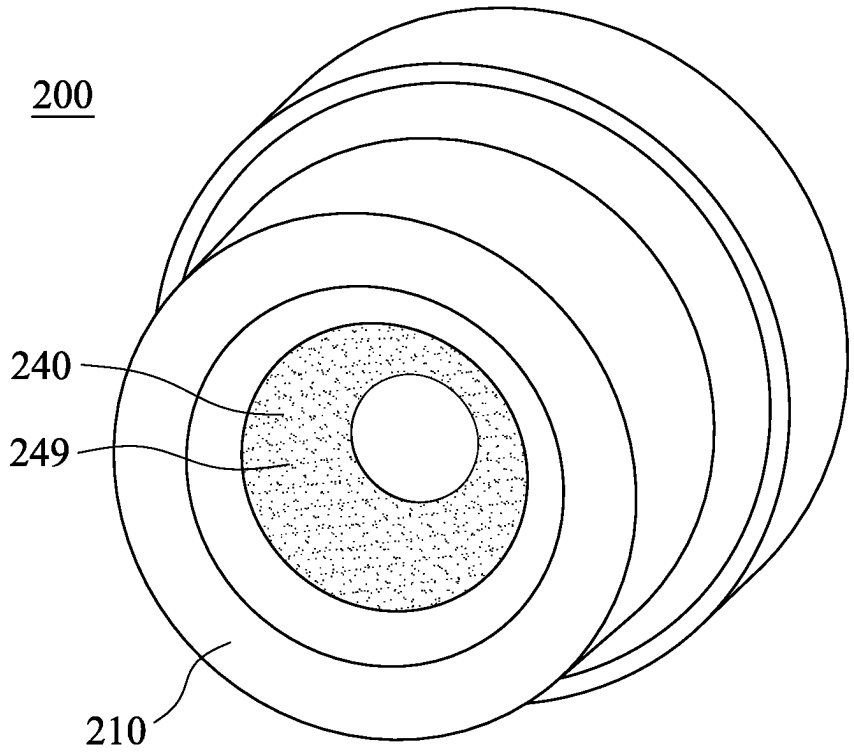


Fig. 2A

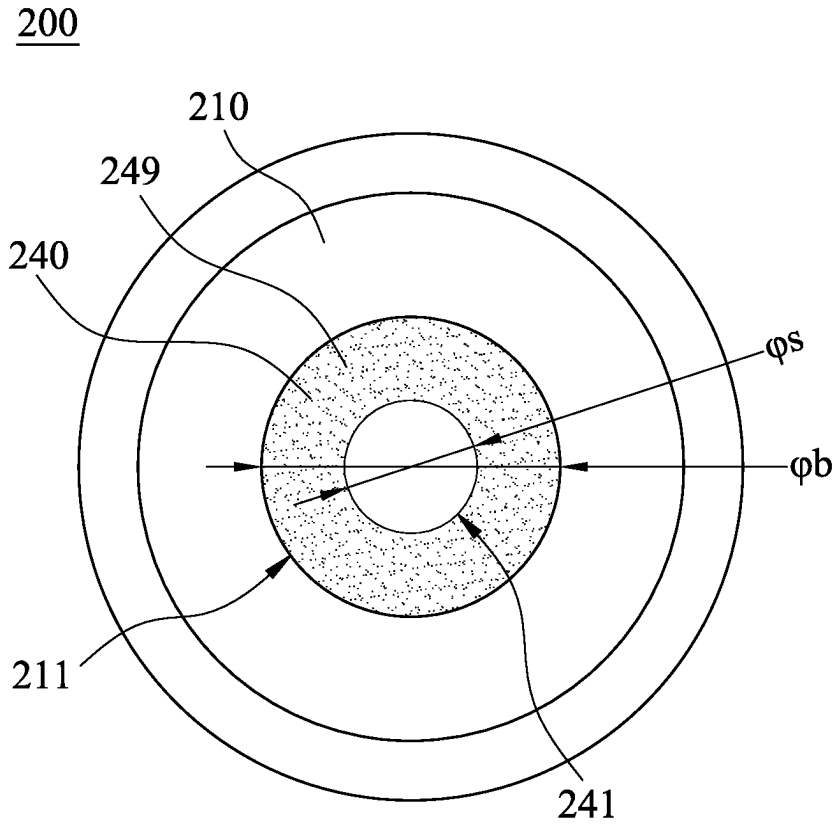
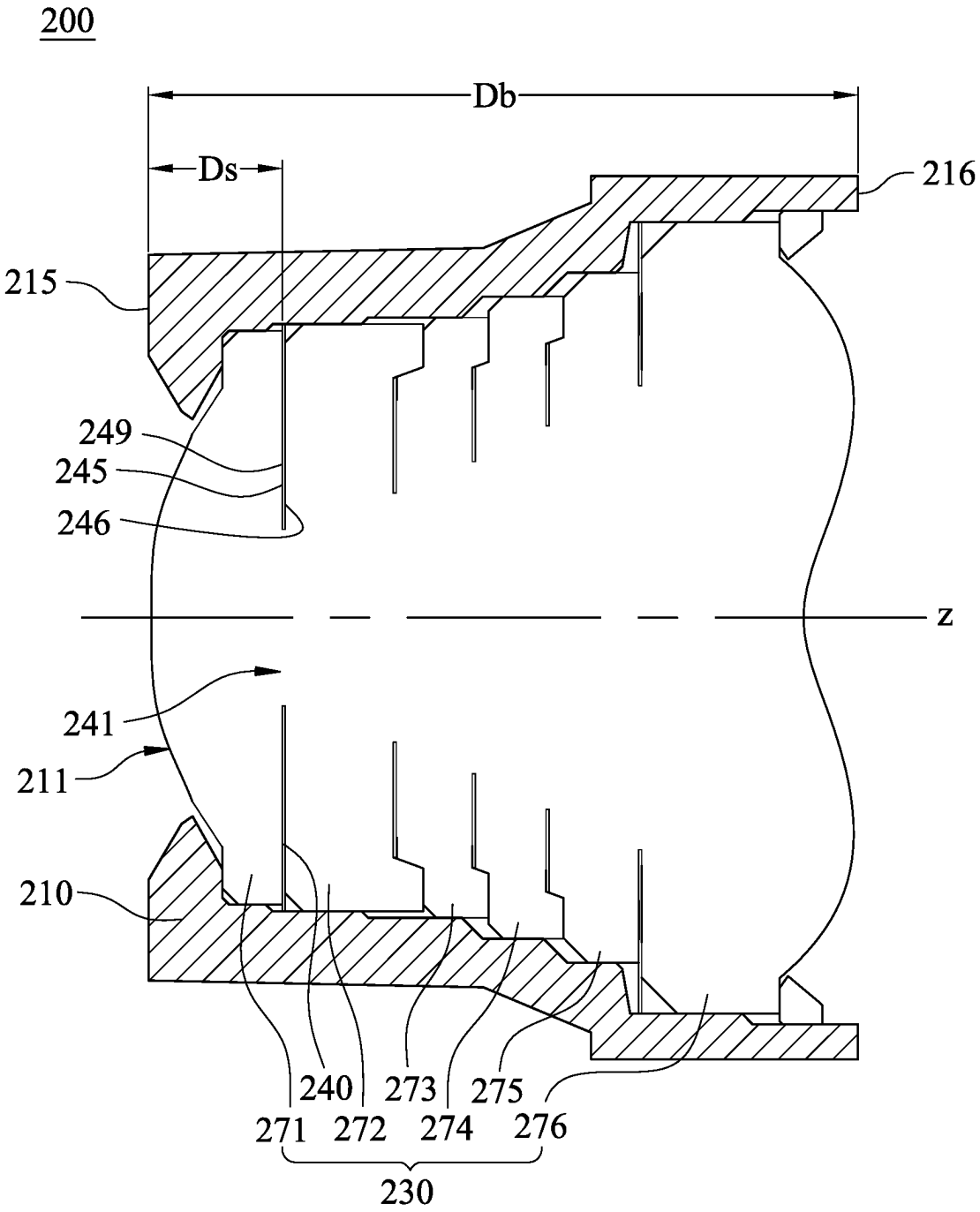


Fig. 2B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Db
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273
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271
272
274
276
230

Fig. 2C

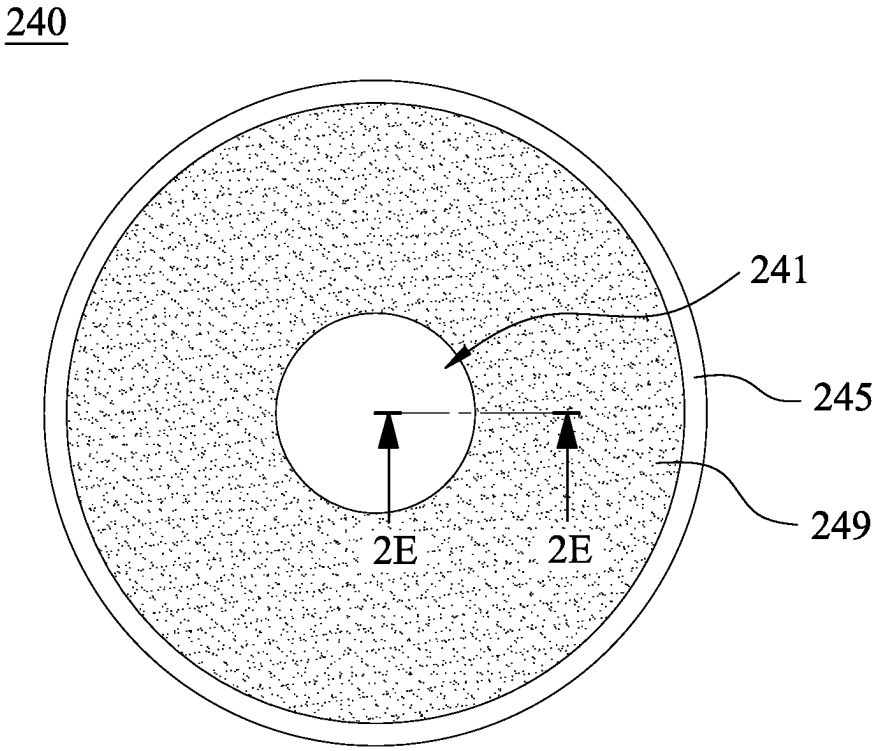


Fig. 2D

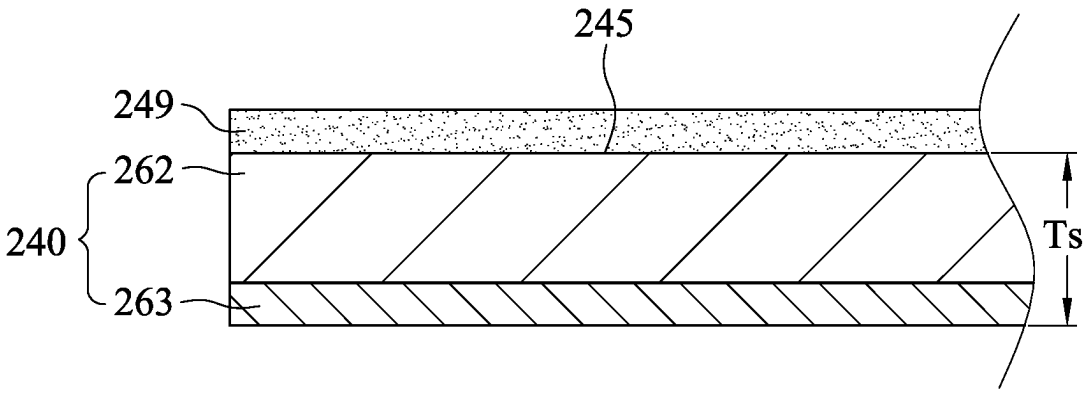


Fig. 2E

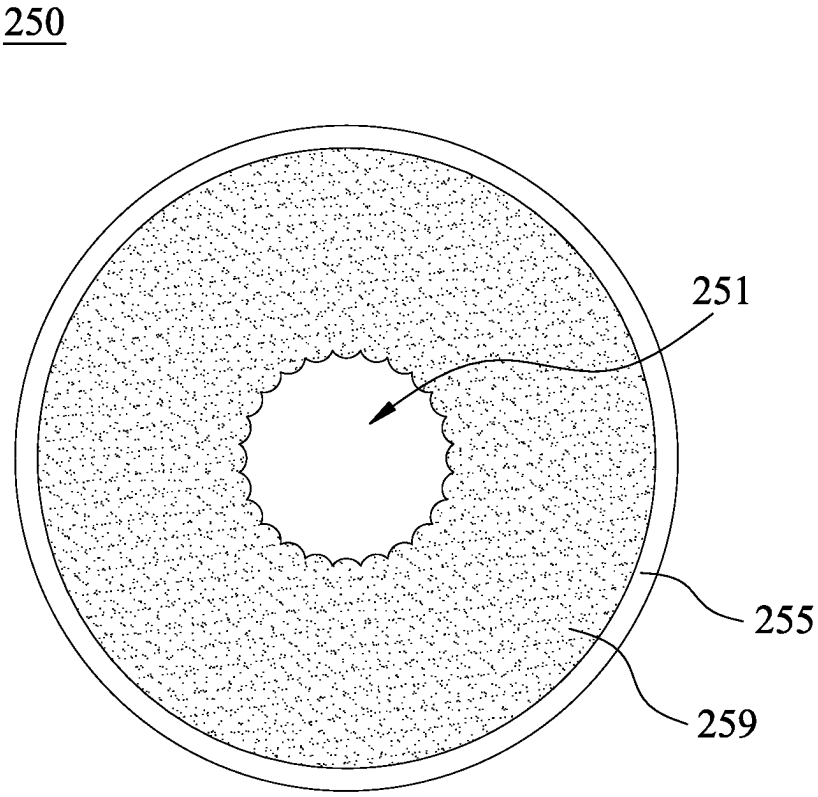


Fig. 2F

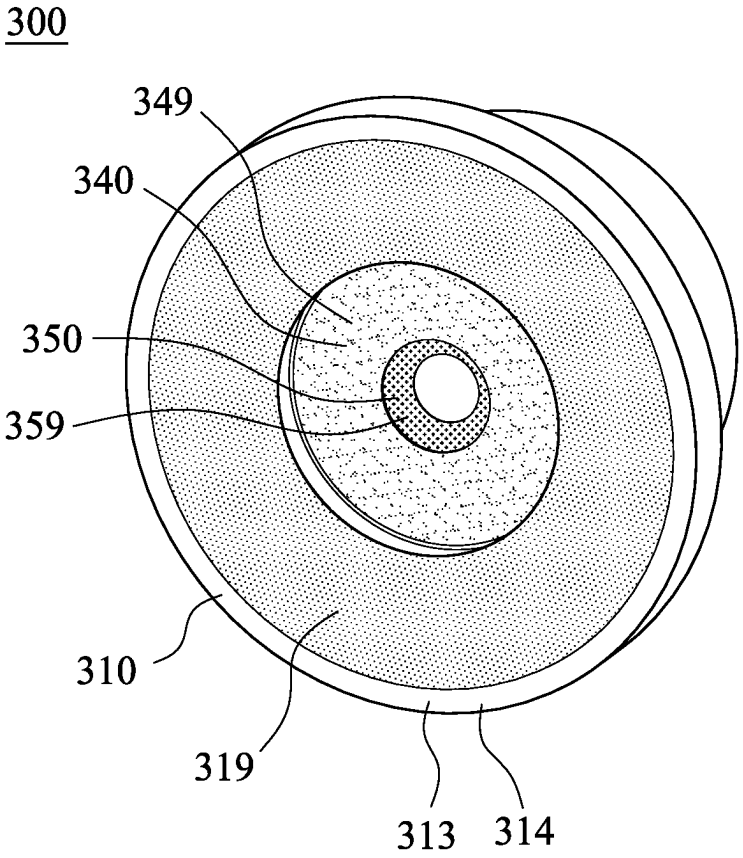


Fig. 3A

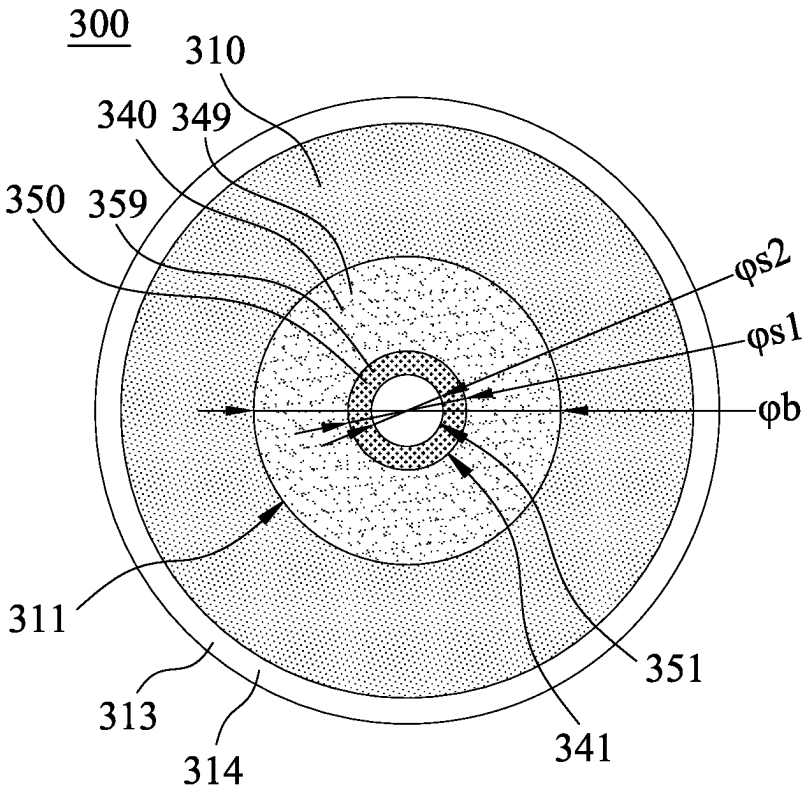
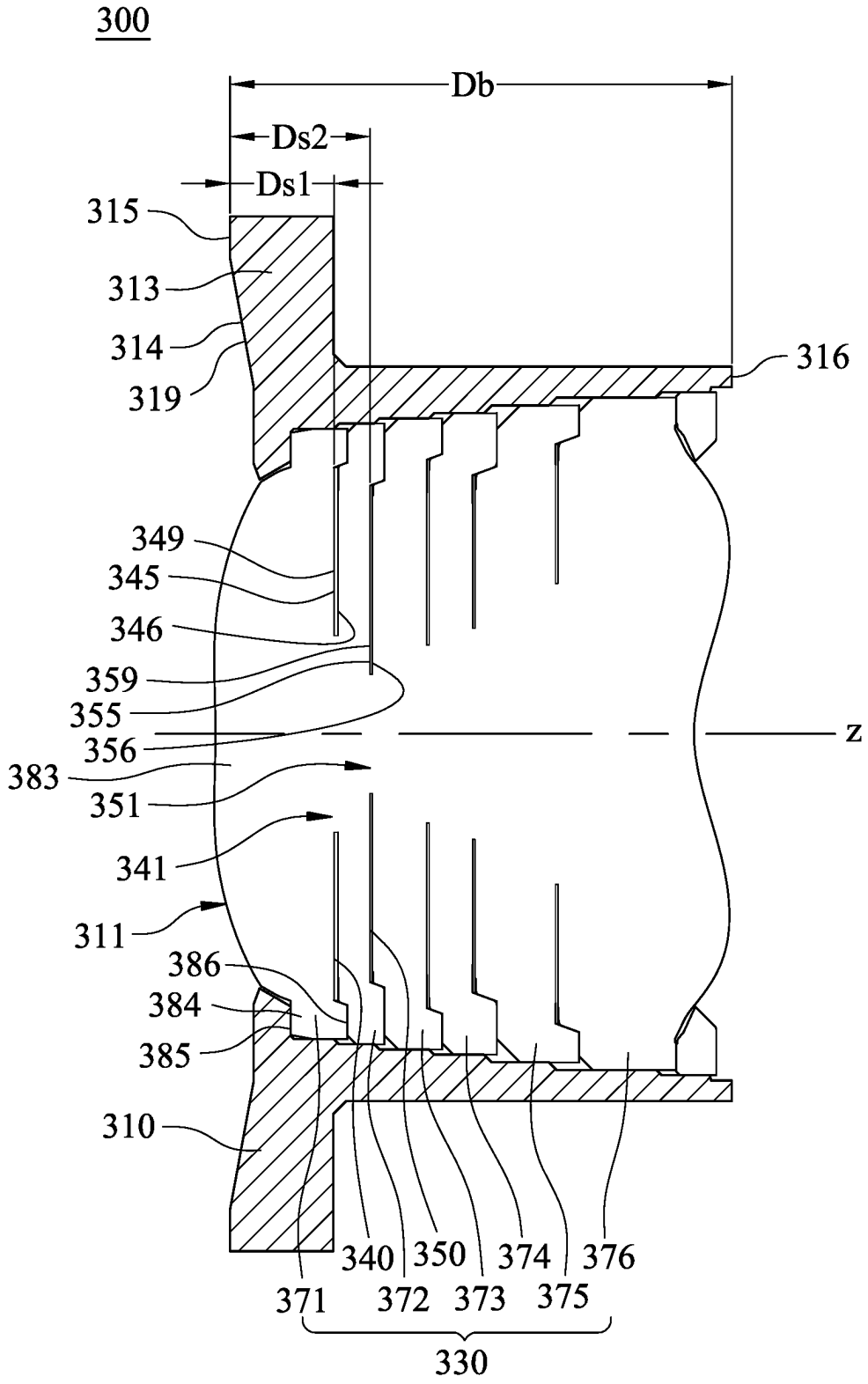


Fig. 3B


300
Db
Ds2
Ds1
315
313
314
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316
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359
355
356
383
351
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386
384
385
310
340
350
374
376
371
372
373
375
330
z

Fig. 3C

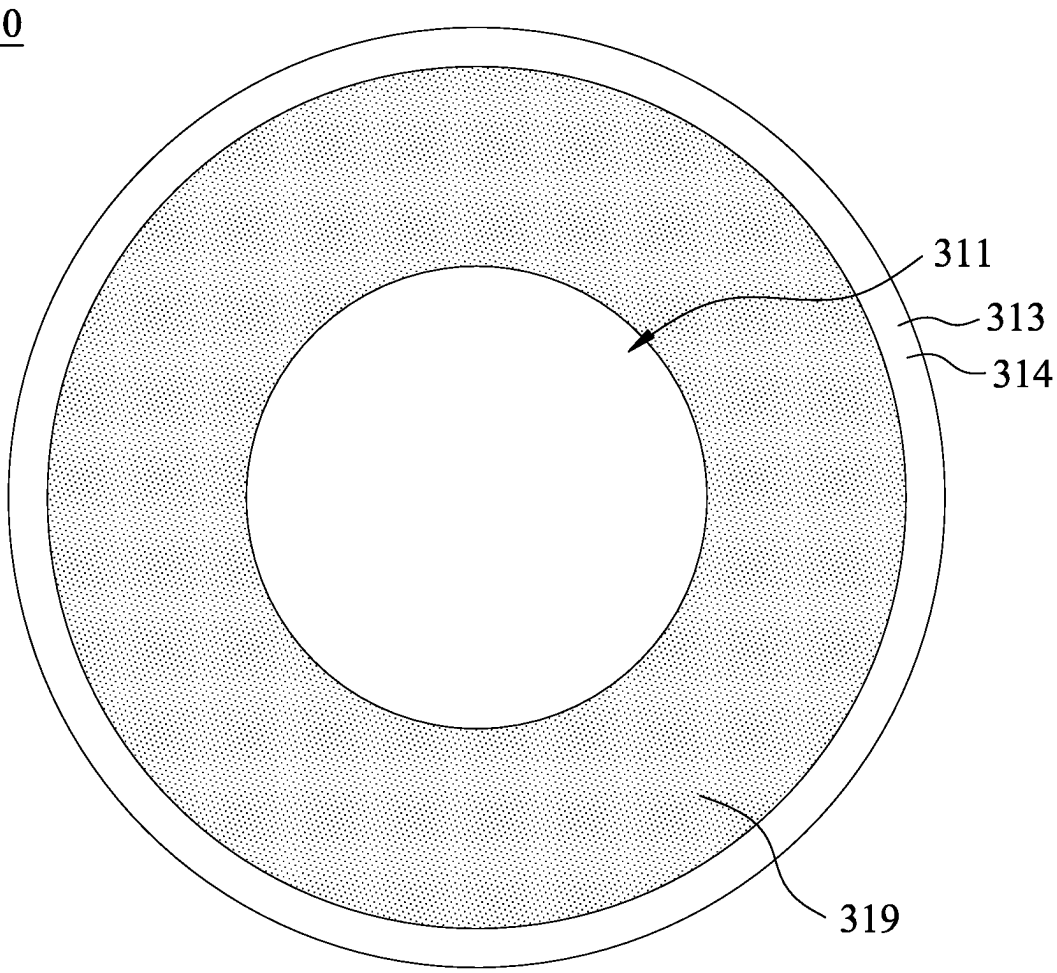

Fig. 3D

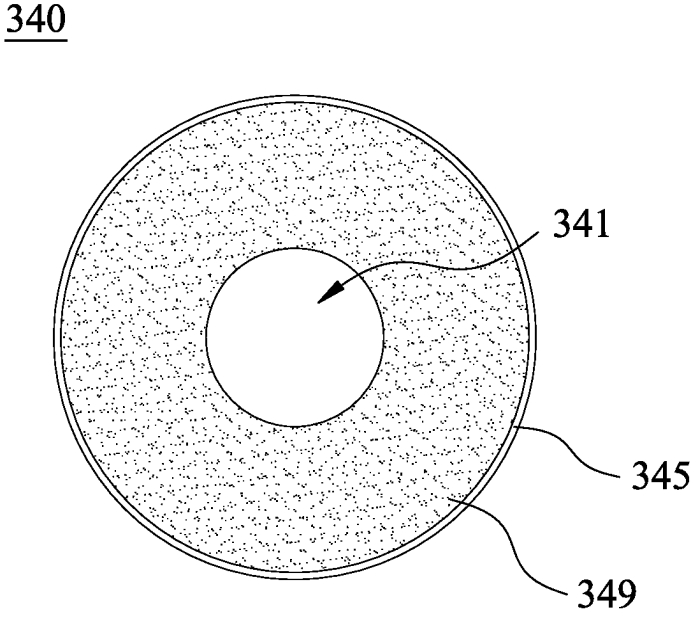

Fig. 3E

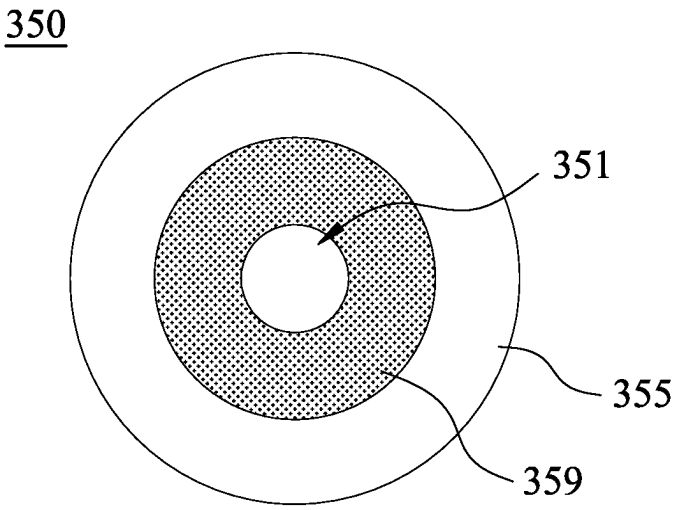

Fig. 3F

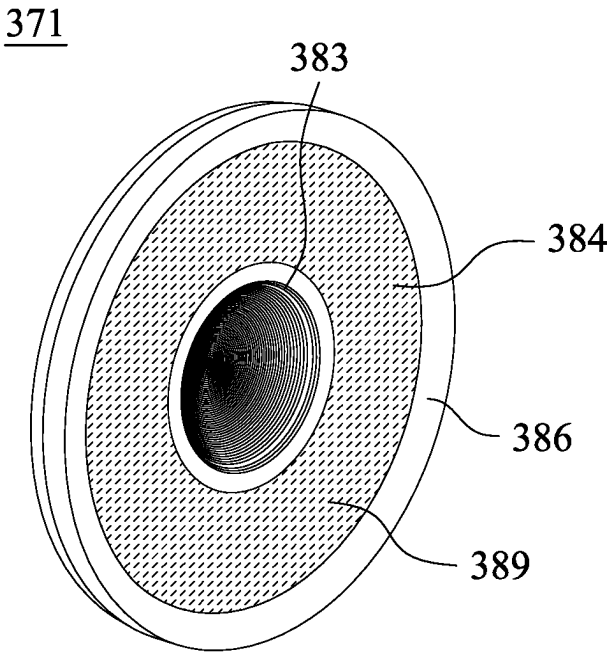

Fig. 3G

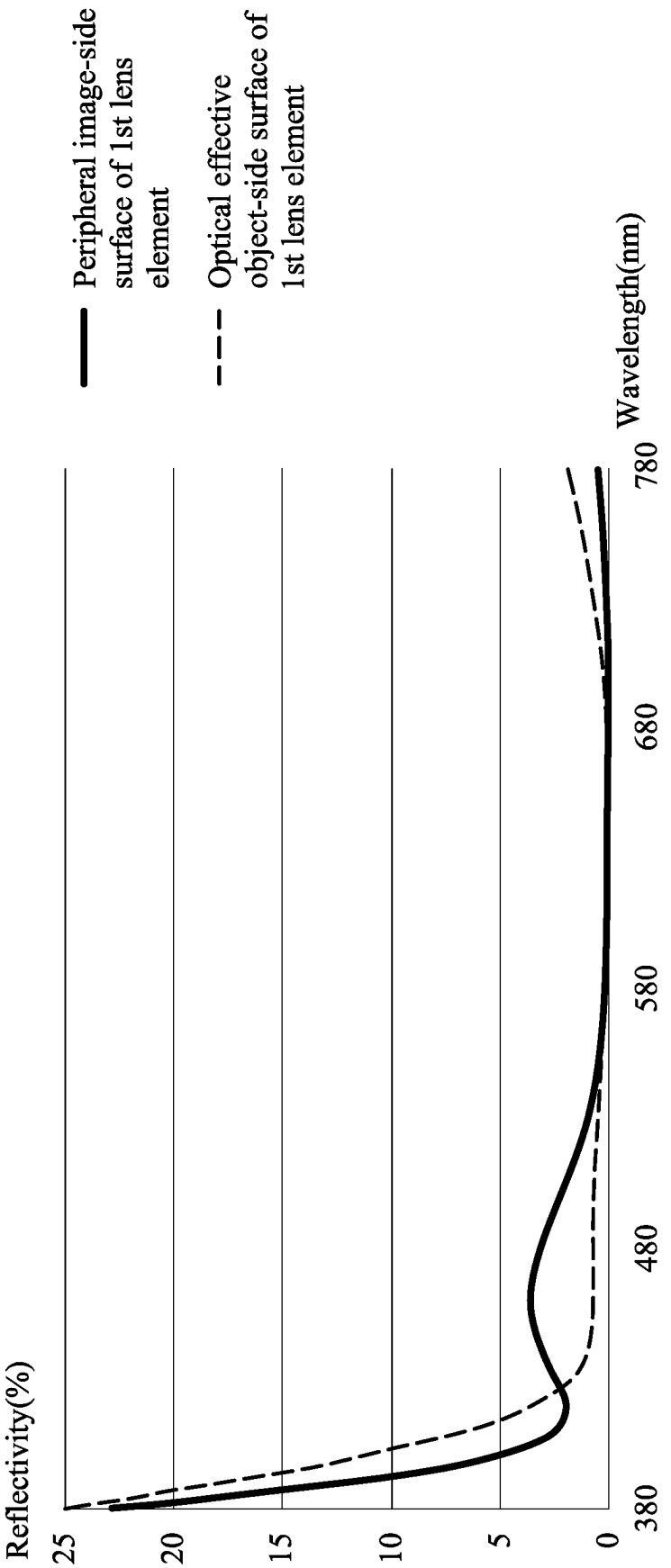
Peripheral image-side surface of 1st lens element
Optical effective object-side surface of 1st lens element
Reflectivity(%)
25
20
15
10
5
0
380
480
580
680
780
Wavelength(nm)

Fig. 3H

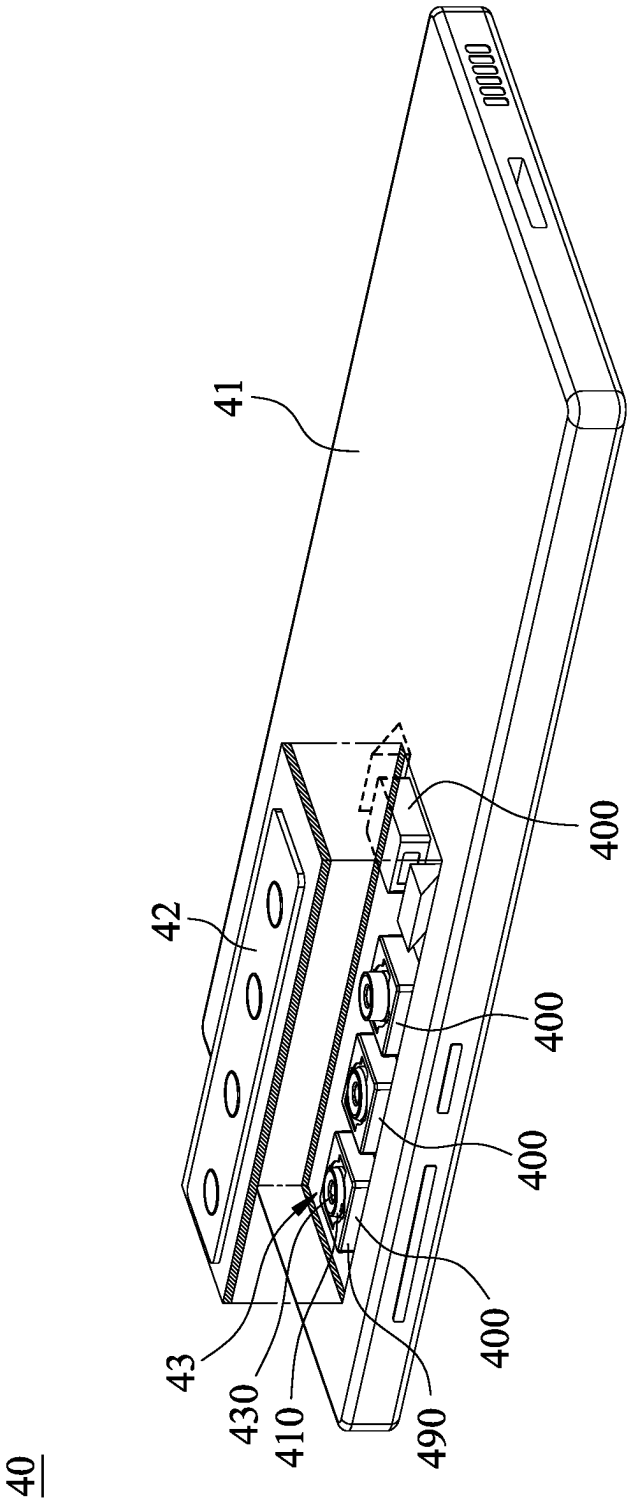

Fig. 4A

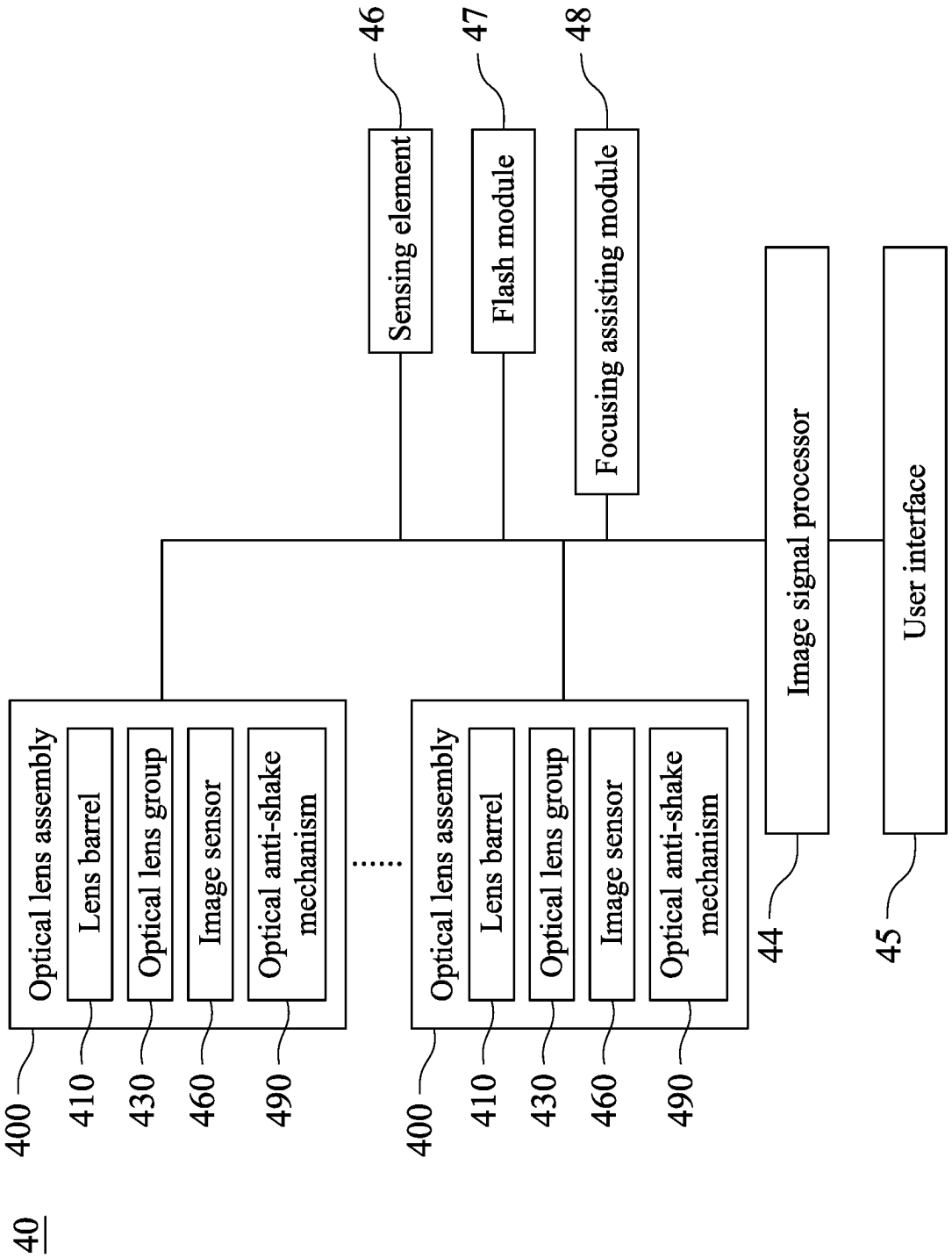
40
400
Optical lens assembly
410
Lens barrel
430
Optical lens group
460
Image sensor
490
Optical anti-shake mechanism
400
Optical lens assembly
410
Lens barrel
430
Optical lens group
460
Image sensor
490
Optical anti-shake mechanism
46
Sensing element
47
Flash module
48
Focusing assisting module
44
Image signal processor
45
User interface

Fig. 4B

OPTICAL LENS ASSEMBLY AND ELECTRONIC DEVICE

RELATED APPLICATIONS

This application claims priority to U.S. Provisional Application Ser. No. 63/275,966, filed Nov. 5, 2021, which is herein incorporated by reference.

BACKGROUND

Technical Field

The present disclosure relates to an optical lens assembly and an electronic device. More particularly, the present disclosure relates to a compact optical lens assembly that is applicable to electronic devices.

Description of Related Art

In recent years, portable electronic devices have developed rapidly. For example, intelligent electronic devices and tablets have been filled in the lives of modern people, and optical lens assemblies thereof mounted on portable electronic devices have also prospered. However, as technology advances, the requirements of the appearance quality of the electronic devices and the optical lens assemblies thereof are becoming higher and higher. Therefore, an electronic device with an optical lens assembly, which can balance the appearance recognition and the image quality, needs to be developed.

SUMMARY

According to one aspect of the present disclosure, an optical lens assembly includes a lens barrel and an optical lens group. The lens barrel includes a light entering hole, which is configured for allowing a light to enter the lens barrel. The lens barrel accommodates the optical lens group, and an optical axis passes through the optical lens group. The optical lens group includes a plurality of lens elements and at least one light blocking sheet. The light blocking sheet is an opaque sheet-shaped element and surrounds the optical axis to form a light passing hole. The light blocking sheet includes an object-side surface and an image-side surface, and the object-side surface is located more adjacent to the light entering hole than the image-side surface thereto. A first film layer is disposed on the object-side surface. A reflected light is obtained from the first film layer irradiated by a standard illuminant D65, a color index of the reflected light is defined according to a CIE 1976 L*a*b* color space, the color index is CI, the reflected light has a maximum reflectivity in a spectrum in a wavelength range of 380 nm to 780 nm, a wavelength range of a wavelength corresponding to the maximum reflectivity minus 50 nm to the wavelength thereto plus 50 nm is a high reflectivity section, a wavelength range remained in a wavelength range of 380 nm to 780 nm excluding the high reflectivity section is a second reflectivity section, an average reflectivity in the high reflectivity section is R_{high}, an average reflectivity in the second reflectivity section is R_2, the following conditions are satisfied: $CI=\{(L^*)\times[(a^*)^2+(b^*)^2]\}^{1/2}$; $8\leq CI\leq 41$; and $1.8\leq R_{high}/R_2\leq 6.2$.

According to another aspect of the present disclosure, an electronic device includes the optical lens assembly according to the foregoing aspect.

BRIEF DESCRIPTION OF THE DRAWINGS

The present disclosure can be more fully understood by reading the following detailed description of the embodiment, with reference made to the accompanying drawings as follows:

FIG. **1**A is a three-dimensional view of an optical lens assembly according to the 1st embodiment of the present disclosure.

FIG. **1**B is a top view of the optical lens assembly in FIG. **1**A.

FIG. **10** is a partially cross-sectional view of the optical lens assembly in

FIG. **1**A.

FIG. **1**D is a top view of a first light blocking sheet of the optical lens assembly in FIG. **1**A.

FIG. **1**E is a top view of a second light blocking sheet of the optical lens assembly in FIG. **1**A.

FIG. **1**F is a cross-sectional view along line **1**F-**1**F in FIG. **1**E.

FIG. **1**G is a schematic view of reflectivity of the first light blocking sheet and the second light blocking sheet of the optical lens assembly in FIG. **1**A.

FIG. **1**H is a schematic view of the reflectivity of the first light blocking sheet of the optical lens assembly in FIG. **1**A.

FIG. **1**I is a schematic view of the reflectivity of the second light blocking sheet of the optical lens assembly in FIG. **1**A.

FIG. **2**A is a three-dimensional view of an optical lens assembly according to the 2nd embodiment of the present disclosure.

FIG. **2**B is a top view of the optical lens assembly in FIG. **2**A.

FIG. **2**C is a partially cross-sectional view of the optical lens assembly in

FIG. **2**A.

FIG. **2**D is a top view of a light blocking sheet of the optical lens assembly in FIG. **2**A.

FIG. **2**E is a cross-sectional view along line **2**E-**2**E in FIG. **2**D.

FIG. **2**F is a top view of a light blocking sheet that can be applicable to the optical lens assembly in FIG. **2**A.

FIG. **3**A is a three-dimensional view of an optical lens assembly according to the 3rd embodiment of the present disclosure.

FIG. **3**B is a top view of the optical lens assembly in FIG. **3**A.

FIG. **3**C is a partially cross-sectional view of the optical lens assembly in

FIG. **3**A.

FIG. **3**D is a top view of a lens barrel of the optical lens assembly in FIG. **3**A.

FIG. **3**E is a top view of a first light blocking sheet of the optical lens assembly in FIG. **3**A.

FIG. **3**F is a top view of a second light blocking sheet of the optical lens assembly in FIG. **3**A.

FIG. **3**G is a three-dimensional view of a first lens element of the optical lens assembly in FIG. **3**A.

FIG. **3**H is a schematic view of reflectivity of the first lens element in FIG. **3**G.

FIG. **4**A is a three-dimensional view of an electronic device according to the 4th embodiment of the present disclosure.

FIG. **4**B is a block diagram of the electronic device in FIG. **4**A.

DETAILED DESCRIPTION

According to one aspect of the present disclosure, an optical lens assembly is provided. The optical lens assembly

includes a lens barrel and an optical lens group. The lens barrel includes a light entering hole, which is configured for allowing a light to enter the lens barrel, i.e., the light enters the lens barrel via the light entering hole. The lens barrel accommodates the optical lens group, and an optical axis passes through the optical lens group. The optical lens group includes a plurality of lens elements and at least one light blocking sheet. The light blocking sheet is an opaque sheet-shaped element and surrounds the optical axis to form a light passing hole. The light blocking sheet includes an object-side surface and an image-side surface, and the object-side surface is located more adjacent to the light entering hole than the image-side surface thereto. A first film layer is disposed on the object-side surface. A reflected light is obtained (i.e., reflected) from (one point on) the first film layer irradiated by a standard illuminant D65, a color index of the reflected light is defined according to a CIE 1976 L*a*b* color space, the color index is CI, the reflected light has a maximum reflectivity in a spectrum in a wavelength range of 380 nm to 780 nm, a wavelength range of a wavelength corresponding to the maximum reflectivity minus 50 nm to the wavelength corresponding to the maximum reflectivity plus 50 nm is a high reflectivity section, a wavelength range remained in a wavelength range of 380 nm to 780 nm excluding the high reflectivity section is a second reflectivity section, an average reflectivity in the high reflectivity section is R_{high}, an average reflectivity in the second reflectivity section is R_2, the following conditions are satisfied: $CI=\{(L^*)\times[(a^*)^2+(b^*)^2]\}^{1/2}$; $8\leq CI\leq 41$; and $1.8\leq R_{high}/R_2\leq 6.2$. Therefore, the color index satisfying the aforementioned conditions is favorable for the light blocking sheet to have colors other than gray-scale tones, which can improve the appearance recognition of the optical lens assembly, so that the appearance of the optical lens assembly achieves a unique visual experience. Among the wavelength band of visible light, only part of the wavelength band having a high average reflectivity is advantageous in preventing the light blocking sheet from the stray light to affect the image quality. The first film layer may be formed by high and low refractive index layers alternately stacked, and the color of the reflected light from the first film layer can be adjusted by controlling the thicknesses of high and low refractive index layers. Moreover, the surface of the light blocking sheet has a specific wavelength band distribution with high and low reflectivity (about blue of cool color tone), and maintains the coordinates of a specific color space. The coating with the specific high and low reflectivity distribution can also be applied to the lens barrel and the lens element, while maintaining the coordinates of the specific color space. Furthermore, the following conditions may be satisfied by the aforementioned optical lens assembly: $11\leq CI\leq 28$; and $2.2\ R_{high}/R_2\leq 4.8$.

Moreover, a color is defined with three values of L*a*b* according to the CIE 1976 L*a*b* color space, L* represents the perceived brightness (L*=0 for black, and L*=100 for white), a* represents green and red (a*=−128 for green, and a*=127 for red), and b* represents blue and yellow (b*=−128 for blue, and b*=127 for yellow). The object under test is placed on the carrying platform of the reflectivity measuring instrument, the standard illuminant D65 is vertically incident on the first film layer at an incident angle of 0 degrees, a measurement is performed at a position of a reflection angle of 0 degrees with a maximum field of view (FOV) of 2 degrees, and a reflectivity and the values of L*a*b* of the reflected light can be measured. In addition, the wavelength range of the wavelength corresponding to the maximum reflectivity minus 50 nm to the wavelength thereto plus 50 nm is the high reflectivity section. However, if a lower limit or an upper limit of the wavelength range of the wavelength corresponding to the maximum reflectivity minus and plus 50 nm is smaller than 380 nm or greater than 780 nm, the lower limit of the high reflectivity section is set as 380 nm or the upper limit of the high reflectivity section is set as 780 nm.

Furthermore, the outline of the light passing hole observed at the optical axis may be a circular shape or any shape (e.g., the outline of the light passing hole is formed by a plurality of arc shapes connected, as shown in FIG. **2**F), but is not limited thereto. In addition, a diameter of the light passing hole may gradually increase from the image side surface to the object side surface.

In detail, when the wavelength corresponding to the maximum reflectivity is λ_{RMax}, the following condition may be satisfied: 380 nm≤λ580 nm. Therefore, controlling the wavelength corresponding to the maximum reflectivity is favorable for avoiding the wavelength band that results in more stray light, and thereby improving the image quality.

When the maximum reflectivity is RMax, the following condition may be satisfied: $0.5\%\leq R_{max}\leq 4\%$. Therefore, controlling the maximum reflectivity of the first film layer is favorable for the first film layer to have color and luster and reduce the stray light, so as to improve the image quality.

When an average reflectivity of the reflected light in the wavelength range of 380 nm to 780 nm is R_{3878}, the following condition may be satisfied: $0.1\%\leq R_{3878}\leq 2\%$. Therefore, the visible light band of the overall reflected light maintaining a low reflectivity is advantages in preventing the image quality from being affected by the stray light.

A difference appears between two color indexes of any two points, respectively, on the first film layer. When an absolute value of the difference is |ΔCI|, the following condition may be satisfied: $0\leq|\Delta CI|\leq 4.7$. Therefore, a smaller difference between the color indexes of the first film layer indicates a more uniform distribution of color and luster and a better appearance quality.

The first film layer may be disposed from the light passing hole along a direction being away from the optical axis, and a coverage area of the first film layer is smaller than an area of the object-side surface. Therefore, the first film layer not completely covering the object-side surface of the light blocking sheet is beneficial to mass production.

A number of the at least one light blocking sheet may be at least two, and the first film layer is disposed on the object-side surface of each of the light blocking sheets. Diameters of the light passing holes of the at least two light blocking sheets, respectively, may be different, and the diameter of the light passing hole of one of the at least two light blocking sheets closer to an object side is greater than the diameter of the light passing hole of the other of the at least two light blocking sheets. Therefore, the two light blocking sheets can be observed from the outside the lens barrel at the same time. Colors of the first film layers of the two light-blocking sheets may be the same, so that the appearance of the optical lens assembly is consistent. Alternately, the colors of the first film layers of the two light-blocking sheets may be slightly different, so that the optical lens assembly has a gradient effect in the visual appearance, but is not limited thereto.

When a thickness in a direction along the optical axis of the light blocking sheet is Ts, the following condition may be satisfied: 7 μm<Ts<50 μm. In detail, the light blocking sheet may include a base layer and two covering layers, an object-side surface of the base layer is in physical contact with one of the covering layers, an object-side surface of the

one of the covering layers is in physical contact with the first film layer, and an image side surface of the base layer is in physical contact with the other of the covering layers. Alternately, the light blocking sheet may include a base layer and a covering layer, an object-side surface of the base layer is in physical contact with the first film layer, and an image side surface of the base layer is in physical contact with the covering layer. A material of the base layer can be plastic, e.g., PI or PET, and the material of the base layer can be metal, e.g., free-cutting brass or copper alloy, but is not limited thereto.

When a diameter of the light entering hole is φb, and a diameter of the light passing hole is φs, the following condition may be satisfied: φs<φb. Furthermore, the following condition may be satisfied: $0.31 \leq (\varphi b - \varphi s)/\varphi b \leq 0.95$. Therefore, when any of the aforementioned conditions is satisfied, there is a higher proportion that the light blocking sheet can be observed by the naked eyes from the outside of the lens barrel, so as to improve the appearance consistency of the optical lens assembly.

When a maximum field of view of the optical lens assembly is FOV, the following condition may be satisfied: 93 degrees≤FOV≤175 degrees. Therefore, for the optical lens assembly satisfying the aforementioned condition, the light blocking sheet is favorable for significantly improving the appearance of the optical lens assembly.

In a direction along the optical axis, when a distance between a most object-side end of the lens barrel and a most image-side end of the lens barrel is Db, and a distance between the most object-side end of the lens barrel and the first film layer is Ds, the following condition may be satisfied: $0.05 \leq Ds/Db \leq 0.41$. Therefore, the light blocking sheet disposed close to the light entering hole of the lens barrel is beneficial to observe the light blocking sheet from the outside of the lens barrel.

An object-side portion of the lens barrel may include a top wall surrounding the optical axis to form the light entering hole, and a second film layer is disposed on the top wall. Another reflected light is obtained from the second film layer irradiated by the standard illuminant D65, another color index of the another reflected light is defined according to the CIE 1976 L*a*b* color space, the another color index is CI2, the another reflected light has another maximum reflectivity in another spectrum in the wavelength range of 380 nm to 780 nm, a wavelength range of a wavelength corresponding to the another maximum reflectivity minus 50 nm to the wavelength thereto plus 50 nm is another high reflectivity section, a wavelength range remained in a wavelength range of 380 nm to 780 nm excluding the another high reflectivity section is another second reflectivity section, an average reflectivity in the another high reflectivity section is $R2_{high}$, an average reflectivity in the another second reflectivity section is $R2_2$, and the following conditions may be satisfied: $CI2=\{(L^*)\times[(a^*)^2+(b^*)^2]\}^{1/2}$, $11 \leq CI2 \leq 41$; and $1.8 \leq R2_{high}/R2_2 \leq 6.2$. Therefore, the top wall of the lens barrel with the second film layer disposed thereon is favorable for having a sense of visual extension of the color and luster so as to improve the appearance consistency of the optical lens assembly.

One of the lens elements may be disposed on an object side of the light blocking sheet, and the one of the lens elements includes an optical effective region and a peripheral region. The optical effective region is configured for being passed through by the light. The peripheral region is located farther from the optical axis than the optical effective region therefrom, and a third film layer is disposed on at least one of a peripheral object-side surface and a peripheral image-side surface of the peripheral region. Further another reflected light is obtained from the third film layer irradiated by the standard illuminant D65, further another color index of the further another reflected light is defined according to the CIE 1976 L*a*b* color space, the further another color index is CI3, and the following conditions may be satisfied: $CI3=\{(L^*)\times[(a^*)^2+(b^*)]\}^{1/2}$; and $11 \leq CI3 \leq 75$. Therefore, the peripheral region of the lens element with the third film layer disposed thereon is favorable for improving the appearance consistency of the optical lens assembly. In addition, the optical effective region of the lens element may have another third film layer disposed thereon. Furthermore, a material of the lens element enables the third film layer to present a brighter color and luster, and thereby the higher color index CI3 is obtained.

Continuing from the previous paragraph, the further another reflected light is obtained from the third film layer irradiated by the standard illuminant D65, the further another reflected light has further another maximum reflectivity in further another spectrum in the wavelength range of 380 nm to 780 nm, a wavelength range of a wavelength corresponding to the further another maximum reflectivity minus 50 nm to the wavelength thereto plus 50 nm is further another high reflectivity section, a wavelength range remained in a wavelength range of 380 nm to 780 nm excluding the further another high reflectivity section is further another second reflectivity section, an average reflectivity in the further another high reflectivity section is $R3_{high}$, an average reflectivity in the further another second reflectivity section is $R3_2$, and the following conditions are satisfied: $2.5 \; R3_{high}/R3_2 \leq 34$. Therefore, it is favorable for improving the appearance consistency of the optical lens assembly.

According to another aspect of the present disclosure, an electronic device is provided. The electronic device includes the aforementioned optical lens assembly. Therefore, the optical lens assembly of the present disclosure is favorable for improving the appearance and the visual experience of the electronic device, and can be applied to the electronic devices such as smart phones (with dual lens assemblies or multiple lens assemblies), tablet computers, portable video recorders, wearable devices, etc., but is not limited thereto. Furthermore, the light blocking sheet in the present disclosure is favorable for applying in an ultra-wide-angle lens assembly to have a better effect, but is not limited thereto.

Each of the aforementioned features can be utilized in various combinations for achieving the corresponding effects. According to the aforementioned aspects, specific embodiments are provided, and illustrated via figures.

1st Embodiment

FIG. **1**A is a three-dimensional view observed from an object side of an optical lens assembly **100** according to the 1st embodiment of the present disclosure, FIG. **1**B is a top view observed from the object side of the optical lens assembly **100** in FIG. **1**A, and FIG. **10** is a partially cross-sectional view of the optical lens assembly **100** in FIG. **1**A. With reference to FIG. **1**A to FIG. **10**, the optical lens assembly **100** includes a lens barrel **110** and an optical lens group **130**. The lens barrel **110** includes a light entering hole **111**, which is configured for allowing a light to enter the lens barrel **110**. The lens barrel **110** accommodates the optical lens group **130**, and an optical axis z passes through the optical lens group **130** (as shown in FIG. **10**). The optical lens group **130** includes a first lens element **171**, a second lens element **172**, a third lens element **173**, a fourth lens

element **174**, a fifth lens element **175** and a sixth lens element **176** in order from the object side (i.e., a left side in FIG. **10**) to an image side (i.e., a right side in FIG. **10**) along the optical axis z. A total number of lens elements in the optical lens group **130** is six. The reference numerals of the transparent lens elements such as the first lens element **171**, etc. are omitted in FIG. **1**A and FIG. **1**B. Partial surface shapes of the lens elements are omitted in FIG. **10**. It should be understood that the total number and the surface shapes of the lens elements in the optical lens assembly of the present disclosure are not limited thereto. A number of the light blocking sheet of the optical lens group **130** is at least two, and the optical lens group **130** specifically further includes annular optical elements such as a first light blocking sheet **140**, a second light blocking sheet **150**, another light blocking sheet, a spacer, a retainer, etc. The first light blocking sheet **140** is disposed and connected between the first lens element **171** and the second lens element **172**, and the second light blocking sheet **150** is disposed and connected between the second lens element **172** and third lens element **173**.

FIG. **1**D is a top view of the first light blocking sheet **140** of the optical lens assembly **100** in FIG. **1**A, and FIG. **1**E is a top view of the second light blocking sheet **150** of the optical lens assembly **100** in FIG. **1**A. With reference to FIG. **10** to FIG. **1**E, the first light blocking sheet **140** is an opaque sheet-shaped element and surrounds the optical axis z to form a light passing hole **141**. The first light blocking sheet **140** includes an object-side surface **145** and an image-side surface **146**, and the object-side surface **145** is located more adjacent to the light entering hole **111** than the image-side surface **146** thereto. A first film layer **149** is disposed on the object-side surface **145**. The second light blocking sheet **150** is an opaque sheet-shaped element and surrounds the optical axis z to form a light passing hole **151**. The second light blocking sheet **150** includes an object-side surface **155** and an image-side surface **156**, and the object-side surface **155** is located more adjacent to the light entering hole **111** than the image-side surface **156** thereto. A first film layer **159** is disposed on the object-side surface **155**. Furthermore, it should be understood that the dotted parts in the related drawings of the present disclosure are only intended to clearly represent the areas covered by the film layers, and not intended to represent the actual colors or color shades of the film layers.

The first film layer **149** is disposed from the light passing hole **141** along a direction being away from the optical axis z, and a coverage area of the first film layer **149** is smaller than an area of the object-side surface **145**. The first film layer **159** is disposed from the light passing hole **151** along the direction being away from the optical axis z, and a coverage area of the first film layer **159** is smaller than an area of the object-side surface **155**.

Diameters of the light passing holes **141**, **151** of the first light blocking sheet **140** and the second light blocking sheet **150**, respectively, are different. The diameter of the light passing hole **141** of the first light blocking sheet **140** closer to the object side is greater than the diameter of the light passing hole **151** of the second light blocking sheet **150**.

FIG. **1**F is a cross-sectional view along line **1**F-**1**F in FIG. **1**E (not drawn with an actual scale). With reference to FIG. **1**F, the second light blocking sheet **150** specifically includes a base layer **162** and two covering layers **161**, **163**. An object-side surface of the base layer **162** is in physical contact with the covering layer **161**, an image side surface of the base layer **162** is in physical contact with the covering layer **163**, and the first film layer **159** is disposed on an object-side surface of the covering layer **161**. In addition, the structure of the first light blocking sheet **140** may be the same as the structure of the second light blocking sheet **150** described in this paragraph.

FIG. **1**G is a schematic view of reflectivity of the first light blocking sheet **140** and the second light blocking sheet **150** of the optical lens assembly **100** in FIG. **1**A, FIG. **1**H is a schematic view of the reflectivity of the first light blocking sheet **140** of the optical lens assembly **100** in FIG. **1**A, FIG. **1**I is a schematic view of the reflectivity of the second light blocking sheet **150** of the optical lens assembly **100** in FIG. **1**A, the first film layer **149** is disposed on the object-side surface **145** of the first light blocking sheet **140**, and the first film layer **159** is disposed on the object-side surface **155** of the second light blocking sheet **150**. With reference to FIG. **1**G to FIG. **1**I and further to Table 1.1, Table 1.2, Table 1.3 and Table 1.4 as the following, Table 1.1 to Table 1.4 list parameter values of the optical lens assembly **100** and the first film layers **149**, **159** of the first light blocking sheet **140** and the second light blocking sheet **150**, respectively, thereof in the 1st embodiment of the present disclosure. In Table 1.1 to Table 1.4, the term "A" indicates the wavelength, the term "W/o film layer" indicates the first light blocking sheet **140** without (or not yet having) the first film layer **149** or the second light blocking sheet **150** without (or not yet having) the first film layer **159**, the terms "No. 1" and "No. 2" indicate the first light blocking sheet **140** having one of the different first film layers **149** of No. 1 and No. 2 and the second light blocking sheet **150** having one of the different film layers **159** of No. 1 and No. 2, the term "0 deg." indicates that a measurement point of 0 degrees is measured on the first film layer **149** of the first light blocking sheet **140** or on the first film layer **159** of the second light blocking sheet **150**, the term "180 deg." indicates that a measurement point of 180 degrees is measured on the first film layer **149** of the first light blocking sheet **140** or on the first film layer **159** of the second light blocking sheet **150**, and the measurement point of 180 degrees is rotated with 180 degrees from the measurement point of 0 degrees with respect to the optical axis z (i.e., a central axis of the first light blocking sheet **140** or the second light blocking sheet **150**). In addition, it is noted that the parameter values of the first film layers **149**, **159** of the first light blocking sheet **140** and the second light blocking sheet **150**, respectively, in Table 1.1 to Table 1.3 may be also applicable to the optical lens assembly **300** of the 3rd embodiment, and any one of the first film layers **149**, **159** of the first light blocking sheet **140** and the second light blocking sheet **150**, respectively, in Table 1.1 to Table 1.3 may be also applicable to any of a first film layer, a second film layer and a third film layer of an optical lens assembly in each embodiment of the present disclosure.

In detail, with reference to the following Table 1.1, Table 1.1 lists the reflectivity values of the first film layers **149**, **159** of the first light blocking sheet **140** and the second light blocking sheet **150**, respectively, of the optical lens assembly **100** in the 1st embodiment of the present disclosure. In Table 1.1, the unit of the reflectivity value is %, the maximum reflectivity of each the first film layer in Table 1.1 is marked by the symbol "#" in the right side of the reflectivity value, and wavelengths corresponding to all the maximum reflectivity of the first film layers in Table 1.1 are in a wavelength range of 437 nm to 446 nm. The relationship diagrams between the wavelengths and the corresponding reflectivity values listed in Table 1.1 are shown in FIG. **1**G to FIG. **1**I.

With reference to the following Table 1.2 and Table 1.3, a reflected light is obtained from one of the first film layers **149**, **159** irradiated by a standard illuminant D65, a color index of the reflected light is defined according to a CIE 1976 L*a*b* color space, the color index is CI, the reflected light has a maximum reflectivity in a spectrum in a wavelength range of 380 nm to 780 nm, a wavelength range of a wavelength corresponding to the maximum reflectivity minus 50 nm to the wavelength corresponding to the maximum reflectivity plus 50 nm is a high reflectivity section, and a wavelength range remained in a wavelength range of 380 nm to 780 nm excluding the high reflectivity section is a second reflectivity section. An average reflectivity in the high reflectivity section is R_{high}, an average reflectivity in the second reflectivity section is R_2, the wavelength corresponding to the maximum reflectivity is λ_{RMax}, the maximum reflectivity is R_{Max}, and an average reflectivity of the reflected light in the wavelength range of 380 nm to 780 nm is R_{3878}. A difference appears between two color indexes of two points, respectively, on one of the first film layers **149**, **159**, and an absolute value of the difference is |ΔCI|. The following Table 1.2 and Table 1.3 list the parameter values according to the aforementioned definitions of the optical lens assembly **100** in the 1st embodiment.

With reference to the following Table 1.4, a maximum field of view of the optical lens assembly **100** is FOV. In a direction along the optical axis z, a distance between a most object-side end **115** of the lens barrel **110** and a most image-side end **116** of the lens barrel **110** is Db, a distance between the most object-side end **115** of the lens barrel **110** and the first film layer **149** is Ds1, and a distance between the most object-side end **115** of the lens barrel **110** and the first film layer **159** is Ds2. A diameter of the light entering hole **111** is φb, a diameter of the light passing hole **141** is φs1, and a diameter of the light passing hole **151** is φs2. A thickness in the direction along the optical axis z of the first light blocking sheet **140** is Ts1, and a thickness in the direction along the optical axis z of the second light blocking sheet **150** is Ts2. The following Table 1.4 lists the parameter values according to the aforementioned definitions of the optical lens assembly **100** in the 1st embodiment.

TABLE 1.1

λ (nm)	W/o film layer	1st light blocking sheet-No. 1-0 deg.	1st light blocking sheet-No. 1-180 deg.	1st light blocking sheet-No. 2-0 deg.	1st light blocking sheet-No. 2-180 deg.	2nd light blocking sheet-No. 1-0 deg.	2nd light blocking sheet-No. 1-180 deg.	2nd light blocking sheet-No. 2-0 deg.	2nd light blocking sheet-No. 2-180 deg.
380	4.4778	0.5773	0.5121	0.5215	0.5027	0.7355	0.5680	0.6703	0.5680
381	4.3826	0.5591	0.4703	0.5636	0.4703	0.6661	0.5124	0.6148	0.6103
382	4.4438	0.4810	0.5125	0.5125	0.4959	0.6087	0.4810	0.5440	0.5291
383	4.4978	0.5080	0.5080	0.4806	0.5173	0.6533	0.4806	0.5353	0.5260
384	4.4716	0.4725	0.5089	0.5029	0.4784	0.5692	0.5029	0.5149	0.5089
385	4.3868	0.5450	0.5450	0.5106	0.5450	0.6527	0.5106	0.5450	0.5404
386	4.4192	0.5420	0.5009	0.5283	0.5283	0.5650	0.5283	0.5146	0.4778
387	4.4608	0.5314	0.4712	0.5403	0.5186	0.5314	0.5403	0.5057	0.4929
388	4.4228	0.4894	0.4568	0.5221	0.5184	0.5184	0.5221	0.4894	0.4605
389	4.4394	0.5144	0.5144	0.5490	0.5706	0.5187	0.5706	0.5619	0.5447
390	4.4230	0.4889	0.5004	0.5464	0.5521	0.5177	0.5292	0.4831	0.5292
391	4.4369	0.5176	0.5270	0.5543	0.5910	0.5449	0.5722	0.4912	0.5185
392	4.4336	0.5646	0.5410	0.5669	0.6164	0.5432	0.5927	0.5129	0.5151
393	4.4346	0.5718	0.5593	0.5921	0.6166	0.5634	0.6573	0.5186	0.5634
394	4.4409	0.6048	0.5546	0.6148	0.6282	0.5580	0.6681	0.5546	0.5780
395	4.4245	0.6000	0.5626	0.6222	0.6222	0.5556	0.6959	0.5778	0.5848
396	4.4218	0.5751	0.5926	0.6365	0.6365	0.5526	0.7204	0.5939	0.6339
397	4.4191	0.5928	0.5640	0.6337	0.6582	0.5724	0.7071	0.5764	0.6049
398	4.4254	0.5957	0.6065	0.6439	0.6831	0.5939	0.7616	0.5957	0.6457
399	4.4329	0.6316	0.6316	0.6615	0.7127	0.6103	0.7883	0.6182	0.6694
400	4.4297	0.6707	0.6531	0.6888	0.7258	0.6695	0.8336	0.6349	0.6718
401	4.4130	0.6989	0.6718	0.7281	0.7513	0.6718	0.8679	0.6853	0.7203
402	4.4156	0.7001	0.6758	0.7434	0.7427	0.6839	0.8947	0.6920	0.7258
403	4.4046	0.7030	0.6901	0.7555	0.7477	0.6944	0.9190	0.7107	0.7555
404	4.4023	0.7100	0.6786	0.7574	0.7730	0.6943	0.8995	0.7258	0.7731
405	4.4002	0.7161	0.7123	0.7659	0.7813	0.7315	0.9459	0.7353	0.8081
406	4.4055	0.7467	0.7470	0.7909	0.8206	0.7615	0.9760	0.7688	0.8279
407	4.4101	0.7771	0.7695	0.8167	0.8268	0.7914	1.0061	0.7805	0.8487
408	4.3940	0.8016	0.8013	0.8295	0.8560	0.8154	1.0367	0.8019	0.8704
409	4.4051	0.8176	0.8004	0.8541	0.8385	0.8273	1.0557	0.8347	0.8788
410	4.4026	0.8314	0.8054	0.8643	0.8564	0.8453	1.0728	0.8573	0.9092
411	4.3902	0.8349	0.7999	0.8626	0.8673	0.8600	1.0857	0.8798	0.9300
412	4.3978	0.8293	0.8165	0.8768	0.8658	0.8774	1.1080	0.8779	0.9266
413	4.3919	0.8482	0.8318	0.8754	0.8836	0.8908	1.1067	0.8954	0.9462
414	4.3881	0.8638	0.8510	0.8916	0.8916	0.9144	1.1313	0.9094	0.9665
415	4.3908	0.8860	0.8729	0.9081	0.9171	0.9482	1.1669	0.9301	0.9853
416	4.3887	0.8956	0.8741	0.9370	0.9072	0.9602	1.1770	0.9594	1.0032
417	4.3865	0.9030	0.8787	0.9308	0.9169	0.9655	1.1948	0.9620	1.0072
418	4.3785	0.9032	0.8788	0.9318	0.9092	0.9699	1.1987	0.9741	1.0164
419	4.3725	0.9169	0.8973	0.9449	0.9267	1.0023	1.2115	0.9940	1.0348
420	4.3727	0.9153	0.8894	0.9441	0.9345	1.0037	1.2053	0.9921	1.0507
421	4.3877	0.9326	0.9192	0.9573	0.9479	1.0287	1.2249	1.0040	1.0661
422	4.3800	0.9520	0.9267	0.9647	0.9612	1.0511	1.2429	1.0216	1.0708
423	4.3824	0.9686	0.9352	0.9853	0.9620	1.0680	1.2554	1.0400	1.0925
424	4.3717	0.9656	0.9394	0.9789	0.9493	1.0719	1.2646	1.0391	1.0840
425	4.3657	0.9692	0.9435	1.0054	0.9574	1.0806	1.2723	1.0601	1.1082
426	4.3693	0.9733	0.9426	1.0039	0.9619	1.0881	1.2763	1.0737	1.1212

TABLE 1.1-continued

λ (nm)	W/o film layer	1st light blocking sheet-No. 1-0 deg.	1st light blocking sheet-No. 1-180 deg.	1st light blocking sheet-No. 2-0 deg.	1st light blocking sheet-No. 2-180 deg.	2nd light blocking sheet-No. 1-0 deg.	2nd light blocking sheet-No. 1-180 deg.	2nd light blocking sheet-No. 2-0 deg.	2nd light blocking sheet-No. 2-180 deg.
427	4.3676	0.9772	0.9440	0.9955	0.9689	1.1008	1.2833	1.0701	1.1199
428	4.3741	0.9713	0.9536	1.0083	0.9631	1.1090	1.2807	1.0832	1.1322
429	4.3691	0.9921	0.9679	1.0116	0.9841	1.1245	1.2906	1.0923	1.1407
430	4.3628	1.0005	0.9766	1.0244	0.9926	1.1359	1.3004	1.0987	1.1518
431	4.3686	1.0054	0.9743	1.0218	0.9828	1.1399	1.3062	1.1077	1.1411
432	4.3598	1.0085	0.9693	1.0356	0.9821	1.1404	1.3130	1.1105	1.1561
433	4.3583	1.0087	0.9732	1.0301	0.9801	1.1434	1.3077	1.1166	1.1590
434	4.3568	1.0035	0.9780	1.0313	0.9881	1.1555	1.3097	1.1192	1.1601
435	4.3628	1.0081	0.9776	1.0311	0.9780	1.1546	1.3012	1.1235	1.1693
436	4.3601	1.0154	0.9880	1.0355	0.9940	1.1699	1.3075	1.1272	1.1715
437	4.3596	1.0151	0.9894	1.0426	0.9964 #	1.1749	1.3119	1.1340	1.1720
438	4.3664	1.0293 #	1.0022 #	1.0445	0.9903	1.1778	1.3143 #	1.1409	1.1788
439	4.3504	1.0255	0.9883	1.0551 #	0.9875	1.1833	1.3117	1.1386	1.1763
440	4.3502	1.0241	0.9966	1.0466	0.9789	1.1819	1.3097	1.1486 #	1.1819
441	4.3547	1.0252	0.9873	1.0476	0.9803	1.1823	1.3060	1.1444	1.1823
442	4.3480	1.0205	0.9907	1.0535	0.9811	1.1876	1.3014	1.1417	1.1823
443	4.3518	1.0175	0.9878	1.0330	0.9731	1.1811	1.2925	1.1363	1.1737
444	4.3490	1.0159	0.9937	1.0422	0.9789	1.1919	1.2939	1.1327	1.1829 #
445	4.3454	1.0200	0.9944	1.0382	0.9796	1.1894	1.2886	1.1340	1.1782
446	4.3373	1.0189	0.9895	1.0408	0.9749	1.1928 #	1.2901	1.1361	1.1748
447	4.3464	1.0226	0.9934	1.0374	0.9645	1.1908	1.2786	1.1395	1.1689
448	4.3437	1.0106	0.9798	1.0363	0.9636	1.1834	1.2801	1.1286	1.1632
449	4.3403	1.0039	0.9748	1.0288	0.9566	1.1805	1.2600	1.1267	1.1591
450	4.3321	0.9986	0.9718	1.0240	0.9469	1.1749	1.2486	1.1155	1.1567
451	4.3412	0.9942	0.9726	1.0298	0.9581	1.1870	1.2515	1.1157	1.1516
452	4.3401	0.9962	0.9803	1.0138	0.9519	1.1826	1.2465	1.1207	1.1491
453	4.3353	0.9974	0.9763	1.0222	0.9481	1.1878	1.2443	1.1171	1.1384
454	4.3356	0.9974	0.9713	1.0184	0.9434	1.1861	1.2350	1.1129	1.1320
455	4.3361	0.9937	0.9590	1.0146	0.9381	1.1744	1.2300	1.1118	1.1326
456	4.3243	0.9768	0.9493	1.0060	0.9184	1.1656	1.2120	1.1021	1.1227
457	4.3334	0.9721	0.9449	0.9959	0.9211	1.1624	1.2032	1.0978	1.1216
458	4.3371	0.9573	0.9354	0.9808	0.9135	1.1541	1.1945	1.0784	1.1053
459	4.3240	0.9682	0.9417	0.9815	0.9086	1.1539	1.1805	1.0810	1.1075
460	4.3325	0.9521	0.9324	0.9733	0.9029	1.1471	1.1733	1.0701	1.0881
461	4.3279	0.9610	0.9351	0.9739	0.9029	1.1513	1.1771	1.0738	1.0900
462	4.3280	0.9527	0.9257	0.9718	0.8907	1.1436	1.1642	1.0657	1.0800
463	4.3250	0.9388	0.9137	0.9638	0.8763	1.1266	1.1578	1.0577	1.0703
464	4.3220	0.9279	0.9004	0.9525	0.8742	1.1170	1.1384	1.0478	1.0647
465	4.3162	0.9138	0.8957	0.9410	0.8656	1.1128	1.1249	1.0405	1.0556
466	4.3194	0.9127	0.8905	0.9333	0.8564	1.1079	1.1107	1.0279	1.0502
467	4.3252	0.9056	0.8881	0.9287	0.8589	1.1030	1.1029	1.0217	1.0391
468	4.3206	0.9034	0.8792	0.9163	0.8409	1.0965	1.0924	1.0170	1.0325
469	4.3167	0.9037	0.8760	0.9174	0.8398	1.0921	1.0893	1.0145	1.0256
470	4.3121	0.8926	0.8655	0.9076	0.8276	1.0809	1.0755	1.0051	1.0159
471	4.3137	0.8733	0.8520	0.8943	0.8151	1.0639	1.0584	1.0053	1.0108
472	4.3145	0.8680	0.8437	0.8849	0.8113	1.0589	1.0486	0.9895	1.0036
473	4.3137	0.8576	0.8375	0.8751	0.7997	1.0489	1.0309	0.9806	0.9907
474	4.3115	0.8524	0.8405	0.8747	0.7975	1.0507	1.0225	0.9774	0.9909
475	4.3173	0.8480	0.8289	0.8576	0.7861	1.0432	1.0099	0.9625	0.9766
476	4.3112	0.8375	0.8190	0.8501	0.7760	1.0274	0.9950	0.9566	0.9626
477	4.3072	0.8307	0.8103	0.8421	0.7677	1.0152	0.9861	0.9456	0.9522
478	4.3072	0.8229	0.8011	0.8326	0.7549	1.0021	0.9724	0.9365	0.9409
479	4.3067	0.8083	0.7875	0.8252	0.7488	0.9956	0.9655	0.9274	0.9318
480	4.3052	0.7993	0.7887	0.8105	0.7391	0.9863	0.9480	0.9137	0.9232
481	4.3016	0.7908	0.7769	0.8010	0.7288	0.9731	0.9352	0.9012	0.9133
482	4.3046	0.7884	0.7736	0.7908	0.7237	0.9701	0.9319	0.8945	0.9031
483	4.3011	0.7749	0.7671	0.7861	0.7176	0.9574	0.9157	0.8850	0.8960
484	4.3033	0.7683	0.7572	0.7768	0.7053	0.9511	0.9137	0.8778	0.8815
485	4.2999	0.7617	0.7489	0.7686	0.6965	0.9388	0.9040	0.8696	0.8732
486	4.3055	0.7480	0.7367	0.7600	0.6867	0.9271	0.8940	0.8587	0.8650
487	4.2991	0.7422	0.7287	0.7493	0.6805	0.9176	0.8833	0.8489	0.8527
488	4.2999	0.7281	0.7200	0.7381	0.6709	0.9049	0.8702	0.8366	0.8457
489	4.2994	0.7247	0.7159	0.7309	0.6634	0.9001	0.8622	0.8312	0.8359
490	4.2978	0.7137	0.7087	0.7221	0.6573	0.8892	0.8480	0.8165	0.8249
491	4.2943	0.7150	0.7026	0.7154	0.6462	0.8816	0.8465	0.8126	0.8159
492	4.2969	0.7010	0.6918	0.7053	0.6356	0.8708	0.8288	0.8023	0.8085
493	4.2931	0.6920	0.6813	0.6937	0.6260	0.8600	0.8176	0.7927	0.7970
494	4.2908	0.6790	0.6697	0.6843	0.6144	0.8483	0.8042	0.7813	0.7842
495	4.2946	0.6747	0.6636	0.6802	0.6144	0.8416	0.7928	0.7750	0.7783
496	4.2906	0.6619	0.6544	0.6638	0.6019	0.8306	0.7819	0.7584	0.7659
497	4.2925	0.6563	0.6500	0.6563	0.5958	0.8261	0.7718	0.7526	0.7565
498	4.2913	0.6500	0.6429	0.6478	0.5886	0.8152	0.7653	0.7442	0.7491
499	4.2871	0.6426	0.6367	0.6448	0.5792	0.8106	0.7557	0.7373	0.7371
500	4.2892	0.6354	0.6250	0.6345	0.5718	0.7979	0.7472	0.7291	0.7274

TABLE 1.1-continued

λ (nm)	W/o film layer	1st light blocking sheet-No. 1-0 deg.	1st light blocking sheet-No. 1-180 deg.	1st light blocking sheet-No. 2-0 deg.	1st light blocking sheet-No. 2-180 deg.	2nd light blocking sheet-No. 1-0 deg.	2nd light blocking sheet-No. 1-180 deg.	2nd light blocking sheet-No. 2-0 deg.	2nd light blocking sheet-No. 2-180 deg.
501	4.2867	0.6250	0.6171	0.6261	0.5615	0.7877	0.7376	0.7199	0.7184
502	4.2834	0.6147	0.6069	0.6168	0.5566	0.7769	0.7259	0.7106	0.7102
503	4.2846	0.6060	0.5985	0.6034	0.5432	0.7658	0.7146	0.7002	0.6980
504	4.2850	0.6011	0.5932	0.5971	0.5410	0.7593	0.7047	0.6913	0.6913
505	4.2856	0.5934	0.5860	0.5883	0.5329	0.7529	0.6967	0.6817	0.6817
506	4.2815	0.5868	0.5796	0.5819	0.5238	0.7458	0.6889	0.6733	0.6733
507	4.2821	0.5822	0.5712	0.5736	0.5174	0.7371	0.6790	0.6673	0.6652
508	4.2804	0.5721	0.5626	0.5677	0.5106	0.7281	0.6732	0.6578	0.6571
509	4.2795	0.5622	0.5540	0.5604	0.5019	0.7177	0.6626	0.6505	0.6484
510	4.2802	0.5565	0.5484	0.5512	0.4956	0.7089	0.6540	0.6431	0.6428
511	4.2796	0.5448	0.5387	0.5404	0.4864	0.7006	0.6385	0.6302	0.6324
512	4.2773	0.5408	0.5353	0.5339	0.4815	0.6940	0.6333	0.6252	0.6292
513	4.2751	0.5335	0.5267	0.5267	0.4740	0.6855	0.6256	0.6163	0.6191
514	4.2758	0.5300	0.5208	0.5224	0.4691	0.6801	0.6195	0.6113	0.6116
515	4.2722	0.5192	0.5110	0.5131	0.4587	0.6690	0.6103	0.6010	0.6030
516	4.2768	0.5127	0.5025	0.5063	0.4520	0.6621	0.6021	0.5957	0.5969
517	4.2744	0.5048	0.4961	0.4987	0.4452	0.6508	0.5942	0.5889	0.5889
518	4.2757	0.4954	0.4893	0.4911	0.4390	0.6434	0.5860	0.5807	0.5807
519	4.2735	0.4901	0.4828	0.4812	0.4334	0.6371	0.5747	0.5743	0.5762
520	4.2744	0.4846	0.4780	0.4774	0.4296	0.6313	0.5697	0.5668	0.5679
521	4.2733	0.4789	0.4724	0.4706	0.4234	0.6249	0.5619	0.5601	0.5601
522	4.2691	0.4708	0.4638	0.4635	0.4130	0.6143	0.5552	0.5535	0.5535
523	4.2711	0.4665	0.4564	0.4582	0.4106	0.6081	0.5473	0.5458	0.5455
524	4.2704	0.4593	0.4511	0.4528	0.4033	0.5999	0.5410	0.5410	0.5399
525	4.2694	0.4515	0.4444	0.4461	0.3971	0.5939	0.5323	0.5334	0.5344
526	4.2683	0.4413	0.4347	0.4364	0.3902	0.5866	0.5212	0.5228	0.5245
527	4.2686	0.4390	0.4323	0.4321	0.3885	0.5803	0.5160	0.5197	0.5212
528	4.2675	0.4328	0.4255	0.4245	0.3806	0.5745	0.5076	0.5130	0.5123
529	4.2665	0.4277	0.4205	0.4205	0.3750	0.5680	0.5028	0.5071	0.5065
530	4.2644	0.4214	0.4134	0.4149	0.3706	0.5604	0.4965	0.5000	0.4971
531	4.2666	0.4154	0.4087	0.4103	0.3652	0.5532	0.4915	0.4961	0.4961
532	4.2655	0.4076	0.4008	0.4024	0.3584	0.5452	0.4838	0.4882	0.4876
533	4.2646	0.4015	0.3947	0.3973	0.3536	0.5381	0.4770	0.4814	0.4808
534	4.2640	0.3960	0.3923	0.3926	0.3499	0.5322	0.4746	0.4778	0.4778
535	4.2633	0.3927	0.3866	0.3853	0.3471	0.5277	0.4671	0.4700	0.4716
536	4.2631	0.3868	0.3815	0.3821	0.3415	0.5202	0.4633	0.4643	0.4659
537	4.2622	0.3827	0.3755	0.3781	0.3367	0.5124	0.4599	0.4589	0.4594
538	4.2595	0.3758	0.3709	0.3726	0.3295	0.5066	0.4531	0.4529	0.4529
539	4.2574	0.3700	0.3641	0.3671	0.3256	0.4965	0.4497	0.4486	0.4497
540	4.2593	0.3639	0.3587	0.3623	0.3222	0.4918	0.4425	0.4434	0.4425
541	4.2575	0.3568	0.3536	0.3572	0.3171	0.4852	0.4360	0.4370	0.4380
542	4.2590	0.3540	0.3497	0.3528	0.3159	0.4818	0.4303	0.4318	0.4360
543	4.2573	0.3487	0.3467	0.3469	0.3092	0.4759	0.4245	0.4269	0.4273
544	4.2567	0.3464	0.3418	0.3439	0.3064	0.4709	0.4215	0.4212	0.4236
545	4.2562	0.3424	0.3378	0.3418	0.3035	0.4660	0.4166	0.4181	0.4186
546	4.2552	0.3384	0.3325	0.3357	0.3005	0.4586	0.4127	0.4128	0.4156
547	4.2533	0.3294	0.3261	0.3307	0.2931	0.4519	0.4051	0.4079	0.4083
548	4.2535	0.3260	0.3226	0.3272	0.2916	0.4469	0.4006	0.4028	0.4052
549	4.2531	0.3216	0.3191	0.3227	0.2889	0.4410	0.3955	0.3986	0.4011
550	4.2515	0.3196	0.3165	0.3209	0.2860	0.4391	0.3906	0.3950	0.3967
551	4.2531	0.3146	0.3115	0.3160	0.2832	0.4330	0.3867	0.3896	0.3926
552	4.2490	0.3131	0.3100	0.3131	0.2781	0.4293	0.3834	0.3849	0.3865
553	4.2494	0.3090	0.3058	0.3108	0.2756	0.4248	0.3797	0.3831	0.3828
554	4.2489	0.3047	0.3003	0.3078	0.2732	0.4206	0.3765	0.3785	0.3796
555	4.2511	0.2993	0.2960	0.3010	0.2692	0.4128	0.3685	0.3731	0.3718
556	4.2473	0.2961	0.2919	0.2993	0.2659	0.4108	0.3643	0.3680	0.3696
557	4.2462	0.2910	0.2887	0.2951	0.2648	0.4076	0.3588	0.3636	0.3652
558	4.2436	0.2883	0.2867	0.2918	0.2626	0.4043	0.3571	0.3593	0.3609
559	4.2462	0.2877	0.2860	0.2908	0.2587	0.4024	0.3539	0.3557	0.3557
560	4.2436	0.2839	0.2807	0.2865	0.2574	0.3974	0.3486	0.3530	0.3530
561	4.2427	0.2806	0.2782	0.2856	0.2546	0.3936	0.3471	0.3504	0.3495
562	4.2412	0.2774	0.2745	0.2824	0.2514	0.3872	0.3415	0.3448	0.3457
563	4.2410	0.2715	0.2699	0.2781	0.2500	0.3825	0.3378	0.3410	0.3443
564	4.2410	0.2678	0.2674	0.2732	0.2449	0.3773	0.3336	0.3344	0.3365
565	4.2400	0.2677	0.2660	0.2719	0.2460	0.3756	0.3305	0.3330	0.3363
566	4.2415	0.2652	0.2647	0.2706	0.2433	0.3727	0.3286	0.3303	0.3324
567	4.2373	0.2632	0.2615	0.2682	0.2445	0.3694	0.3273	0.3273	0.3306
568	4.2380	0.2601	0.2584	0.2669	0.2376	0.3635	0.3219	0.3236	0.3249
569	4.2370	0.2560	0.2543	0.2636	0.2365	0.3589	0.3198	0.3207	0.3215
570	4.2361	0.2529	0.2512	0.2602	0.2349	0.3516	0.3160	0.3172	0.3189
571	4.2335	0.2499	0.2482	0.2567	0.2295	0.3473	0.3099	0.3116	0.3133
572	4.2359	0.2441	0.2444	0.2527	0.2287	0.3437	0.3070	0.3087	0.3107
573	4.2348	0.2444	0.2461	0.2538	0.2296	0.3437	0.3063	0.3072	0.3099
574	4.2329	0.2448	0.2453	0.2516	0.2286	0.3435	0.3053	0.3053	0.3070

TABLE 1.1-continued

λ (nm)	W/o film layer	1st light blocking sheet-No. 1-0 deg.	1st light blocking sheet-No. 1-180 deg.	1st light blocking sheet-No. 2-0 deg.	1st light blocking sheet-No. 2-180 deg.	2nd light blocking sheet-No. 1-0 deg.	2nd light blocking sheet-No. 1-180 deg.	2nd light blocking sheet-No. 2-0 deg.	2nd light blocking sheet-No. 2-180 deg.
575	4.2344	0.2411	0.2411	0.2495	0.2254	0.3382	0.3015	0.3015	0.3049
576	4.2321	0.2398	0.2381	0.2487	0.2242	0.3361	0.2983	0.3001	0.3006
577	4.2308	0.2360	0.2343	0.2457	0.2211	0.3296	0.2946	0.2956	0.2977
578	4.2291	0.2335	0.2340	0.2433	0.2185	0.3273	0.2932	0.2943	0.2966
579	4.2288	0.2316	0.2318	0.2420	0.2205	0.3240	0.2907	0.2924	0.2959
580	4.2286	0.2315	0.2300	0.2406	0.2183	0.3234	0.2858	0.2875	0.2940
581	4.2288	0.2257	0.2263	0.2364	0.2158	0.3179	0.2822	0.2846	0.2880
582	4.2272	0.2246	0.2253	0.2342	0.2126	0.3126	0.2789	0.2813	0.2848
583	4.2272	0.2265	0.2280	0.2387	0.2170	0.3174	0.2837	0.2855	0.2890
584	4.2266	0.2237	0.2237	0.2344	0.2118	0.3086	0.2802	0.2803	0.2839
585	4.2270	0.2184	0.2178	0.2307	0.2101	0.3035	0.2735	0.2765	0.2800
586	4.2256	0.2209	0.2202	0.2335	0.2122	0.3065	0.2769	0.2792	0.2839
587	4.2246	0.2118	0.2146	0.2240	0.2048	0.2942	0.2663	0.2677	0.2744
588	4.2209	0.2105	0.2123	0.2226	0.2051	0.2937	0.2642	0.2659	0.2713
589	4.2236	0.2138	0.2168	0.2259	0.2069	0.2953	0.2664	0.2676	0.2740
590	4.2213	0.2131	0.2148	0.2243	0.2053	0.2933	0.2648	0.2657	0.2699
591	4.2196	0.2113	0.2116	0.2229	0.2040	0.2889	0.2638	0.2641	0.2662
592	4.2216	0.2100	0.2100	0.2220	0.2015	0.2868	0.2597	0.2613	0.2647
593	4.2189	0.2055	0.2059	0.2191	0.1996	0.2806	0.2576	0.2576	0.2615
594	4.2179	0.2041	0.2058	0.2176	0.1999	0.2783	0.2556	0.2547	0.2598
595	4.2181	0.2041	0.2057	0.2175	0.2003	0.2787	0.2548	0.2531	0.2594
596	4.2209	0.2020	0.2036	0.2137	0.1970	0.2737	0.2504	0.2504	0.2554
597	4.2157	0.2010	0.2043	0.2143	0.1986	0.2744	0.2504	0.2483	0.2520
598	4.2172	0.2000	0.2026	0.2133	0.1959	0.2694	0.2488	0.2447	0.2488
599	4.2139	0.2009	0.2014	0.2129	0.1952	0.2676	0.2467	0.2441	0.2474
600	4.2167	0.1969	0.1969	0.2115	0.1935	0.2640	0.2443	0.2411	0.2443
601	4.2121	0.1971	0.1955	0.2088	0.1935	0.2591	0.2398	0.2395	0.2437
602	4.2135	0.1937	0.1949	0.2074	0.1909	0.2569	0.2383	0.2359	0.2397
603	4.2120	0.1933	0.1970	0.2078	0.1922	0.2558	0.2375	0.2343	0.2396
604	4.2115	0.1919	0.1936	0.2049	0.1918	0.2531	0.2339	0.2307	0.2355
605	4.2112	0.1953	0.1966	0.2084	0.1926	0.2533	0.2354	0.2324	0.2367
606	4.2106	0.1928	0.1928	0.2065	0.1915	0.2498	0.2320	0.2311	0.2327
607	4.2113	0.1908	0.1908	0.2055	0.1886	0.2457	0.2278	0.2278	0.2294
608	4.2082	0.1888	0.1902	0.2031	0.1872	0.2424	0.2263	0.2263	0.2293
609	4.2098	0.1885	0.1889	0.2041	0.1887	0.2417	0.2230	0.2246	0.2261
610	4.2071	0.1865	0.1890	0.2014	0.1875	0.2400	0.2214	0.2224	0.2240
611	4.2075	0.1877	0.1892	0.2005	0.1886	0.2378	0.2185	0.2214	0.2219
612	4.2070	0.1879	0.1894	0.2013	0.1881	0.2391	0.2180	0.2200	0.2200
613	4.2088	0.1864	0.1879	0.2012	0.1876	0.2344	0.2149	0.2179	0.2176
614	4.2039	0.1856	0.1871	0.2000	0.1852	0.2332	0.2139	0.2173	0.2149
615	4.2044	0.1847	0.1853	0.2000	0.1844	0.2309	0.2126	0.2162	0.2138
616	4.2032	0.1835	0.1823	0.2005	0.1844	0.2286	0.2087	0.2129	0.2111
617	4.2038	0.1818	0.1846	0.1965	0.1834	0.2252	0.2076	0.2134	0.2106
618	4.2011	0.1819	0.1842	0.1986	0.1847	0.2262	0.2052	0.2109	0.2095
619	4.2029	0.1821	0.1855	0.1976	0.1849	0.2268	0.2054	0.2102	0.2088
620	4.2022	0.1823	0.1851	0.1977	0.1851	0.2250	0.2048	0.2090	0.2076
621	4.2019	0.1826	0.1840	0.1965	0.1826	0.2243	0.2035	0.2077	0.2049
622	4.2004	0.1822	0.1836	0.1964	0.1822	0.2209	0.2029	0.2067	0.2043
623	4.1995	0.1801	0.1807	0.1959	0.1815	0.2179	0.2000	0.2042	0.2021
624	4.1997	0.1791	0.1812	0.1955	0.1818	0.2170	0.2003	0.2037	0.2010
625	4.1999	0.1782	0.1796	0.1946	0.1823	0.2136	0.1946	0.2000	0.1986
626	4.1987	0.1792	0.1826	0.1951	0.1833	0.2162	0.1972	0.2013	0.1992
627	4.1983	0.1797	0.1823	0.1952	0.1837	0.2141	0.1958	0.1986	0.1973
628	4.1967	0.1802	0.1823	0.1954	0.1823	0.2133	0.1957	0.1971	0.1954
629	4.1966	0.1789	0.1816	0.1950	0.1829	0.2112	0.1964	0.1977	0.1950
630	4.1951	0.1793	0.1810	0.1947	0.1813	0.2099	0.1947	0.1957	0.1931
631	4.1957	0.1777	0.1804	0.1940	0.1811	0.2073	0.1933	0.1952	0.1919
632	4.1953	0.1765	0.1792	0.1922	0.1810	0.2050	0.1899	0.1939	0.1908
633	4.1948	0.1769	0.1809	0.1918	0.1810	0.2064	0.1903	0.1918	0.1892
634	4.1942	0.1768	0.1811	0.1927	0.1822	0.2039	0.1891	0.1902	0.1889
635	4.1926	0.1781	0.1823	0.1928	0.1823	0.2046	0.1898	0.1904	0.1879
636	4.1931	0.1787	0.1831	0.1934	0.1822	0.2046	0.1898	0.1903	0.1863
637	4.1907	0.1799	0.1816	0.1947	0.1827	0.2019	0.1895	0.1883	0.1867
638	4.1900	0.1762	0.1812	0.1935	0.1802	0.1998	0.1881	0.1881	0.1841
639	4.1896	0.1765	0.1797	0.1927	0.1811	0.1967	0.1878	0.1873	0.1833
640	4.1891	0.1752	0.1809	0.1922	0.1814	0.1963	0.1864	0.1851	0.1819
641	4.1887	0.1757	0.1813	0.1921	0.1824	0.1961	0.1853	0.1852	0.1813
642	4.1876	0.1766	0.1818	0.1915	0.1820	0.1966	0.1846	0.1820	0.1805
643	4.1900	0.1785	0.1840	0.1939	0.1844	0.1966	0.1862	0.1839	0.1812
644	4.1877	0.1788	0.1829	0.1944	0.1832	0.1939	0.1859	0.1827	0.1799
645	4.1873	0.1783	0.1831	0.1933	0.1810	0.1929	0.1849	0.1821	0.1783
646	4.1879	0.1769	0.1799	0.1934	0.1813	0.1894	0.1839	0.1811	0.1757
647	4.1862	0.1758	0.1808	0.1918	0.1822	0.1886	0.1827	0.1794	0.1758
648	4.1851	0.1762	0.1811	0.1914	0.1825	0.1880	0.1811	0.1782	0.1746

TABLE 1.1-continued

λ (nm)	W/o film layer	1st light blocking sheet-No. 1-0 deg.	1st light blocking sheet-No. 1-180 deg.	1st light blocking sheet-No. 2-0 deg.	1st light blocking sheet-No. 2-180 deg.	2nd light blocking sheet-No. 1-0 deg.	2nd light blocking sheet-No. 1-180 deg.	2nd light blocking sheet-No. 2-0 deg.	2nd light blocking sheet-No. 2-180 deg.
649	4.1863	0.1763	0.1841	0.1916	0.1844	0.1877	0.1808	0.1766	0.1747
650	4.1838	0.1794	0.1837	0.1933	0.1850	0.1878	0.1822	0.1766	0.1725
651	4.1856	0.1776	0.1834	0.1926	0.1842	0.1866	0.1806	0.1758	0.1722
652	4.1842	0.1790	0.1841	0.1945	0.1854	0.1860	0.1805	0.1762	0.1714
653	4.1838	0.1783	0.1831	0.1940	0.1853	0.1831	0.1811	0.1755	0.1702
654	4.1834	0.1768	0.1851	0.1936	0.1838	0.1810	0.1796	0.1740	0.1711
655	4.1820	0.1770	0.1829	0.1928	0.1854	0.1794	0.1780	0.1741	0.1696
656	4.1819	0.1777	0.1841	0.1939	0.1862	0.1791	0.1770	0.1714	0.1693
657	4.1808	0.1785	0.1830	0.1929	0.1859	0.1799	0.1760	0.1708	0.1679
658	4.1818	0.1810	0.1880	0.1937	0.1881	0.1797	0.1769	0.1726	0.1698
659	4.1822	0.1811	0.1871	0.1952	0.1882	0.1794	0.1772	0.1716	0.1663
660	4.1796	0.1815	0.1866	0.1955	0.1879	0.1774	0.1774	0.1718	0.1669
661	4.1792	0.1782	0.1860	0.1942	0.1868	0.1746	0.1746	0.1700	0.1654
662	4.1802	0.1816	0.1861	0.1971	0.1901	0.1775	0.1775	0.1720	0.1678
663	4.1787	0.1780	0.1861	0.1934	0.1880	0.1724	0.1726	0.1673	0.1656
664	4.1788	0.1796	0.1878	0.1944	0.1902	0.1734	0.1742	0.1694	0.1672
665	4.1767	0.1812	0.1891	0.1951	0.1919	0.1742	0.1742	0.1695	0.1662
666	4.1759	0.1828	0.1911	0.1968	0.1915	0.1746	0.1759	0.1678	0.1662
667	4.1783	0.1820	0.1889	0.1948	0.1892	0.1720	0.1736	0.1690	0.1650
668	4.1779	0.1831	0.1901	0.1965	0.1915	0.1708	0.1747	0.1689	0.1655
669	4.1757	0.1832	0.1892	0.1966	0.1915	0.1692	0.1739	0.1688	0.1646
670	4.1756	0.1817	0.1898	0.1945	0.1913	0.1666	0.1707	0.1676	0.1647
671	4.1767	0.1818	0.1889	0.1954	0.1929	0.1688	0.1730	0.1675	0.1636
672	4.1758	0.1832	0.1916	0.1954	0.1949	0.1689	0.1726	0.1675	0.1651
673	4.1746	0.1833	0.1925	0.1964	0.1950	0.1682	0.1718	0.1676	0.1651
674	4.1754	0.1856	0.1918	0.1982	0.1968	0.1689	0.1731	0.1677	0.1639
675	4.1740	0.1859	0.1942	0.1985	0.1968	0.1664	0.1747	0.1679	0.1648
676	4.1744	0.1852	0.1922	0.1983	0.1945	0.1656	0.1740	0.1684	0.1633
677	4.1731	0.1843	0.1921	0.1975	0.1963	0.1647	0.1731	0.1683	0.1641
678	4.1716	0.1840	0.1924	0.1966	0.1955	0.1644	0.1716	0.1663	0.1632
679	4.1737	0.1853	0.1964	0.1980	0.1980	0.1657	0.1727	0.1683	0.1656
680	4.1720	0.1857	0.1942	0.1975	0.1989	0.1652	0.1718	0.1656	0.1642
681	4.1724	0.1882	0.1966	0.1988	0.2002	0.1671	0.1743	0.1670	0.1648
682	4.1727	0.1879	0.1963	0.1992	0.1984	0.1659	0.1732	0.1667	0.1639
683	4.1723	0.1880	0.1965	0.1993	0.2007	0.1653	0.1752	0.1654	0.1640
684	4.1716	0.1878	0.1963	0.2005	0.1995	0.1645	0.1740	0.1666	0.1658
685	4.1709	0.1884	0.1969	0.2004	0.2004	0.1650	0.1742	0.1664	0.1650
686	4.1702	0.1868	0.1985	0.1992	0.2013	0.1644	0.1733	0.1651	0.1641
687	4.1723	0.1901	0.1973	0.2001	0.2043	0.1646	0.1731	0.1660	0.1660
688	4.1709	0.1909	0.2006	0.2009	0.2030	0.1665	0.1728	0.1676	0.1668
689	4.1702	0.1925	0.2017	0.2025	0.2054	0.1663	0.1755	0.1676	0.1677
690	4.1684	0.1918	0.2007	0.2027	0.2052	0.1658	0.1757	0.1666	0.1662
691	4.1708	0.1931	0.2016	0.2031	0.2046	0.1662	0.1761	0.1689	0.1675
692	4.1666	0.1910	0.1984	0.2021	0.2049	0.1646	0.1760	0.1669	0.1655
693	4.1667	0.1929	0.2021	0.2029	0.2063	0.1651	0.1758	0.1688	0.1680
694	4.1675	0.1931	0.2030	0.2030	0.2082	0.1666	0.1756	0.1690	0.1700
695	4.1667	0.1937	0.2036	0.2036	0.2093	0.1668	0.1780	0.1684	0.1685
696	4.1665	0.1963	0.2060	0.2057	0.2126	0.1693	0.1792	0.1707	0.1716
697	4.1668	0.1967	0.2058	0.2050	0.2100	0.1686	0.1784	0.1700	0.1697
698	4.1674	0.1975	0.2064	0.2073	0.2107	0.1693	0.1792	0.1717	0.1712
699	4.1643	0.1958	0.2042	0.2056	0.2109	0.1664	0.1788	0.1692	0.1703
700	4.1671	0.1977	0.2061	0.2075	0.2121	0.1682	0.1809	0.1726	0.1714
701	4.1642	0.1969	0.2058	0.2067	0.2132	0.1669	0.1795	0.1725	0.1720
702	4.1647	0.1976	0.2083	0.2074	0.2139	0.1685	0.1811	0.1724	0.1719
703	4.1626	0.1975	0.2088	0.2074	0.2156	0.1695	0.1809	0.1735	0.1723
704	4.1660	0.2002	0.2114	0.2088	0.2158	0.1708	0.1834	0.1737	0.1748
705	4.1637	0.2000	0.2108	0.2094	0.2164	0.1701	0.1832	0.1743	0.1729
706	4.1626	0.2003	0.2102	0.2104	0.2174	0.1703	0.1852	0.1753	0.1739
707	4.1623	0.2015	0.2113	0.2115	0.2174	0.1709	0.1863	0.1753	0.1751
708	4.1620	0.2008	0.2107	0.2105	0.2190	0.1699	0.1867	0.1768	0.1767
709	4.1608	0.2009	0.2121	0.2097	0.2190	0.1708	0.1858	0.1760	0.1755
710	4.1635	0.2019	0.2139	0.2110	0.2214	0.1722	0.1878	0.1780	0.1778
711	4.1615	0.2039	0.2154	0.2123	0.2222	0.1729	0.1898	0.1777	0.1785
712	4.1622	0.2045	0.2158	0.2130	0.2215	0.1736	0.1905	0.1792	0.1778
713	4.1609	0.2044	0.2157	0.2133	0.2214	0.1747	0.1917	0.1794	0.1790
714	4.1609	0.2061	0.2167	0.2153	0.2231	0.1756	0.1941	0.1813	0.1813
715	4.1621	0.2049	0.2159	0.2145	0.2241	0.1747	0.1946	0.1815	0.1818
716	4.1582	0.2050	0.2150	0.2150	0.2235	0.1737	0.1950	0.1808	0.1808
717	4.1614	0.2062	0.2190	0.2158	0.2269	0.1748	0.1962	0.1816	0.1844
718	4.1582	0.2073	0.2195	0.2159	0.2273	0.1759	0.1973	0.1823	0.1845
719	4.1593	0.2094	0.2208	0.2180	0.2288	0.1789	0.1994	0.1830	0.1854
720	4.1570	0.2083	0.2212	0.2169	0.2269	0.1781	0.1982	0.1838	0.1867
721	4.1577	0.2125	0.2211	0.2197	0.2297	0.1797	0.2038	0.1855	0.1861
722	4.1575	0.2111	0.2204	0.2189	0.2290	0.1794	0.2031	0.1864	0.1880

TABLE 1.1-continued

λ (nm)	W/o film layer	1st light blocking sheet-No. 1-0 deg.	1st light blocking sheet-No. 1-180 deg.	1st light blocking sheet-No. 2-0 deg.	1st light blocking sheet-No. 2-180 deg.	2nd light blocking sheet-No. 1-0 deg.	2nd light blocking sheet-No. 1-180 deg.	2nd light blocking sheet-No. 2-0 deg.	2nd light blocking sheet-No. 2-180 deg.
723	4.1568	0.2106	0.2217	0.2203	0.2304	0.1799	0.2044	0.1885	0.1895
724	4.1583	0.2097	0.2213	0.2185	0.2313	0.1794	0.2026	0.1880	0.1895
725	4.1591	0.2111	0.2244	0.2210	0.2331	0.1810	0.2077	0.1882	0.1923
726	4.1564	0.2126	0.2265	0.2207	0.2334	0.1824	0.2068	0.1890	0.1925
727	4.1561	0.2143	0.2264	0.2216	0.2337	0.1834	0.2095	0.1901	0.1926
728	4.1571	0.2162	0.2292	0.2248	0.2339	0.1870	0.2132	0.1930	0.1957
729	4.1557	0.2163	0.2269	0.2239	0.2356	0.1861	0.2138	0.1949	0.1951
730	4.1566	0.2140	0.2265	0.2242	0.2358	0.1858	0.2140	0.1945	0.1965
731	4.1554	0.2132	0.2258	0.2234	0.2351	0.1850	0.2151	0.1947	0.1967
732	4.1571	0.2144	0.2276	0.2234	0.2363	0.1867	0.2161	0.1944	0.1984
733	4.1546	0.2156	0.2288	0.2242	0.2387	0.1903	0.2184	0.1975	0.1995
734	4.1559	0.2181	0.2309	0.2260	0.2393	0.1913	0.2201	0.1971	0.2020
735	4.1546	0.2194	0.2320	0.2282	0.2397	0.1935	0.2223	0.1993	0.2040
736	4.1561	0.2199	0.2320	0.2288	0.2403	0.1934	0.2241	0.2005	0.2039
737	4.1545	0.2178	0.2323	0.2282	0.2384	0.1942	0.2266	0.2004	0.2032
738	4.1538	0.2182	0.2309	0.2295	0.2392	0.1946	0.2270	0.2030	0.2049
739	4.1541	0.2195	0.2334	0.2289	0.2416	0.1951	0.2275	0.2033	0.2062
740	4.1551	0.2209	0.2342	0.2310	0.2454	0.1994	0.2319	0.2059	0.2100
741	4.1521	0.2204	0.2337	0.2307	0.2441	0.1984	0.2309	0.2041	0.2086
742	4.1547	0.2231	0.2364	0.2324	0.2455	0.2030	0.2360	0.2068	0.2112
743	4.1529	0.2248	0.2374	0.2344	0.2465	0.2041	0.2375	0.2093	0.2130
744	4.1505	0.2258	0.2388	0.2370	0.2473	0.2053	0.2403	0.2097	0.2150
745	4.1522	0.2238	0.2358	0.2343	0.2477	0.2044	0.2417	0.2119	0.2149
746	4.1508	0.2258	0.2385	0.2366	0.2479	0.2071	0.2445	0.2120	0.2164
747	4.1516	0.2249	0.2384	0.2346	0.2481	0.2062	0.2444	0.2114	0.2166
748	4.1491	0.2250	0.2416	0.2359	0.2495	0.2096	0.2454	0.2141	0.2190
749	4.1540	0.2276	0.2427	0.2382	0.2518	0.2126	0.2487	0.2141	0.2216
750	4.1503	0.2297	0.2433	0.2391	0.2516	0.2150	0.2504	0.2161	0.2213
751	4.1507	0.2311	0.2447	0.2417	0.2540	0.2168	0.2554	0.2175	0.2243
752	4.1493	0.2294	0.2420	0.2400	0.2518	0.2174	0.2570	0.2179	0.2239
753	4.1514	0.2301	0.2438	0.2422	0.2515	0.2180	0.2576	0.2209	0.2255
754	4.1487	0.2307	0.2448	0.2417	0.2552	0.2200	0.2598	0.2216	0.2280
755	4.1496	0.2320	0.2467	0.2436	0.2565	0.2219	0.2618	0.2228	0.2305
756	4.1496	0.2326	0.2474	0.2433	0.2571	0.2244	0.2633	0.2233	0.2310
757	4.1476	0.2355	0.2495	0.2449	0.2587	0.2292	0.2677	0.2263	0.2325
758	4.1486	0.2355	0.2505	0.2461	0.2582	0.2293	0.2693	0.2262	0.2350
759	4.1471	0.2373	0.2497	0.2478	0.2586	0.2317	0.2723	0.2286	0.2360
760	4.1479	0.2360	0.2494	0.2484	0.2583	0.2323	0.2738	0.2292	0.2376
761	4.1452	0.2362	0.2502	0.2500	0.2607	0.2345	0.2776	0.2314	0.2405
762	4.1484	0.2357	0.2509	0.2493	0.2606	0.2341	0.2762	0.2337	0.2405
763	4.1452	0.2381	0.2523	0.2496	0.2625	0.2371	0.2793	0.2340	0.2444
764	4.1479	0.2395	0.2548	0.2491	0.2629	0.2395	0.2817	0.2354	0.2448
765	4.1456	0.2419	0.2573	0.2536	0.2654	0.2445	0.2854	0.2398	0.2492
766	4.1477	0.2427	0.2569	0.2538	0.2647	0.2458	0.2868	0.2383	0.2491
767	4.1439	0.2428	0.2575	0.2553	0.2654	0.2464	0.2913	0.2428	0.2506
768	4.1442	0.2429	0.2562	0.2554	0.2640	0.2476	0.2914	0.2437	0.2523
769	4.1459	0.2430	0.2571	0.2556	0.2650	0.2489	0.2928	0.2446	0.2540
770	4.1438	0.2431	0.2572	0.2541	0.2681	0.2494	0.2948	0.2431	0.2571
771	4.1428	0.2458	0.2611	0.2583	0.2696	0.2549	0.2966	0.2486	0.2589
772	4.1456	0.2467	0.2615	0.2592	0.2711	0.2559	0.2993	0.2489	0.2617
773	4.1455	0.2495	0.2631	0.2600	0.2720	0.2594	0.3023	0.2506	0.2636
774	4.1416	0.2493	0.2647	0.2615	0.2713	0.2615	0.3040	0.2535	0.2648
775	4.1439	0.2506	0.2634	0.2618	0.2726	0.2618	0.3088	0.2543	0.2681
776	4.1431	0.2491	0.2632	0.2622	0.2711	0.2622	0.3088	0.2569	0.2679
777	4.1418	0.2503	0.2644	0.2626	0.2723	0.2635	0.3099	0.2581	0.2700
778	4.1415	0.2510	0.2664	0.2645	0.2742	0.2673	0.3132	0.2588	0.2739
779	4.1444	0.2531	0.2673	0.2642	0.2751	0.2674	0.3144	0.2610	0.2751
780	4.1437	0.2551	0.2716	0.2689	0.2771	0.2736	0.3180	0.2641	0.2783

TABLE 1.2

	W/o film layer	1st light blocking sheet-No. 1-0 deg.	1st light blocking sheet-No. 1-180 deg.	1st light blocking sheet-No. 2-0 deg.	1st light blocking sheet-No. 2-180 deg.	2nd light blocking sheet-No. 1-0 deg.	2nd light blocking sheet-No. 1-180 deg.	2nd light blocking sheet-No. 2-0 deg.	2nd light blocking sheet-No. 2-180 deg.
R_{Max} (%)	N/A	1.0293	1.0022	1.0551	0.9964	1.1928	1.3143	1.1486	1.1829
λ_{RMax} (nm)	N/A	438	438	439	437	446	438	440	444
R_{high} (%)	N/A	0.86	0.84	0.89	0.85	1.01	1.08	0.95	0.99
R_2 (%)	N/A	0.28	0.28	0.29	0.27	0.32	0.31	0.30	0.30

TABLE 1.2-continued

	W/o film layer	1st light blocking sheet-No. 1-0 deg.	1st light blocking sheet-No. 1-180 deg.	1st light blocking sheet-No. 2-0 deg.	1st light blocking sheet-No. 2-180 deg.	2nd light blocking sheet-No. 1-0 deg.	2nd light blocking sheet-No. 1-180 deg.	2nd light blocking sheet-No. 2-0 deg.	2nd light blocking sheet-No. 2-180 deg.
R_{high}/R_2	N/A	3.10	2.99	3.11	3.10	3.17	3.45	3.14	3.31
R_{3878} (%)	4.25	0.43	0.42	0.44	0.42	0.49	0.51	0.47	0.47

TABLE 1.3

Measurement items	L*	a*	b*	CI = {(L*) × [(a*)^2 + (b*)^2]}^1/2	|ΔCI|
W/o film layer	7.80	3.10	−0.47	8.76	
1st light blocking sheet-No. 1-0 deg.	4.17	−0.24	−9.51	19.42	2.07
1st light blocking sheet-No. 1-180 deg.	3.81	1.03	−10.96	21.49	
1st light blocking sheet-No. 2-0 deg.	3.78	0.21	−9.41	18.29	0.75
1st light blocking sheet-No. 2-180 deg.	3.79	0.41	−9.77	19.04	
2nd light blocking sheet-No. 1-0 deg.	3.17	0.58	−8.85	15.80	0.60
2nd light blocking sheet-No. 1-180 deg.	3.14	0.55	−8.56	15.20	
2nd light blocking sheet-No. 2-0 deg.	3.21	0.89	−9.08	16.35	1.50
2nd light blocking sheet-No. 2-180 deg.	2.90	1.13	−8.64	14.85	

TABLE 1.4

FOV (deg.)	120	φs2 (mm)	1.22
Db (mm)	6.21	Ts1 (μm)	23
Ds1 (mm)	1.14	Ts2 (μm)	16
Ds2 (mm)	1.82	Ds1/Db	0.18
φb (mm)	4.54	Ds2/Db	0.29
φs1 (mm)	2.64		

2nd Embodiment

FIG. **2**A is a three-dimensional view observed from an object side of an optical lens assembly **200** according to the 2nd embodiment of the present disclosure, FIG. **2**B is a top view observed from the object side of the optical lens assembly **200** in FIG. **2**A, and FIG. **2**C is a partially cross-sectional view of the optical lens assembly **200** in FIG. **2**A. With reference to FIG. **2**A to FIG. **2**C, the optical lens assembly **200** includes a lens barrel **210** and an optical lens group **230**. The lens barrel **210** includes a light entering hole **211**, which is configured for allowing a light to enter the lens barrel **210**. The lens barrel **210** accommodates the optical lens group **230**, and an optical axis z passes through the optical lens group **230** (as shown in FIG. **2**C). The optical lens group **230** includes a first lens element **271**, a second lens element **272**, a third lens element **273**, a fourth lens element **274**, a fifth lens element **275** and a sixth lens element **276** in order from the object side (i.e., a left side in FIG. **2**C) to an image side (i.e., a right side in FIG. **2**C) along the optical axis z. A total number of lens elements in the optical lens group **230** is six. The reference numerals of the transparent lens elements such as the first lens element **271**, etc. are omitted in FIG. **2**A and FIG. **2**B. Partial surface shapes of the lens elements are omitted in FIG. **2**C. A number of the light blocking sheet of the optical lens group **230** is at least one, and the optical lens group **230** specifically further includes annular optical elements such as a light blocking sheet **240**, another light blocking sheet, a spacer, a retainer, etc. The light blocking sheet **240** is disposed and connected between the first lens element **271** and the second lens element **272**.

FIG. **2**D is a top view of the light blocking sheet **240** of the optical lens assembly **200** in FIG. **2**A. With reference to FIG. **2**C and FIG. **2**D, the light blocking sheet **240** is an opaque sheet-shaped element and surrounds the optical axis z to form a light passing hole **241**, which is in a circular shape. The light blocking sheet **240** includes an object-side surface **245** and an image-side surface **246**, and the object-side surface **245** is located more adjacent to the light entering hole **211** than the image-side surface **246** thereto. A first film layer **249** is disposed on the object-side surface **245**. The first film layer **249** is disposed from the light passing hole **241** along a direction being away from the optical axis z, and a coverage area of the first film layer **249** is smaller than an area of the object-side surface **245**.

FIG. **2**E is a cross-sectional view along line **2**E-**2**E in FIG. **2**D (not drawn with an actual scale). With reference to FIG. **2**E, the light blocking sheet **240** specifically includes a base layer **262** and a covering layer **263**, the first film layer **249** is disposed on and in physical contact with an object-side surface of the base layer **262**, and an image side surface of the base layer **262** is in physical contact with the covering layer **263**.

FIG. **2**F is a top view of a light blocking sheet **250** that can be applicable to the optical lens assembly **200** in FIG. **2**A, and an object-side surface **255** of the light blocking sheet **250** is observed in FIG. **2**F. With reference to FIG. **2**F, the light blocking sheet **240** of the optical lens group **230** may be replaced by the light blocking sheet **250**, and the light blocking sheet **250** may be disposed and connected between the first lens element **271** and the second lens element **272**. The light blocking sheet **250** is an opaque sheet-shaped element and surrounds the optical axis z to form a light passing hole **251**, which is in a circular shape. An annular wall forming the light passing hole **251** includes a plurality of arc-shaped convex portions, and each of the arc-shaped convex portions protrudes toward the optical axis z, and the arc-shaped convex portions are connected in sequence. A shape of a light passing hole of a light blocking sheet of an optical lens assembly according to the present disclosure can be in any shape, and is not limited thereto.

With reference to the following Table 2, a maximum field of view of the optical lens assembly **200** is FOV. In a direction along the optical axis z, a distance between a most object-side end **215** of the lens barrel **210** and a most image-side end **216** of the lens barrel **210** is Db, and a distance between the most object-side end **215** of the lens barrel **210** and the first film layer **249** is Ds. A diameter of the light entering hole **211** is φb, a diameter of the light passing hole **241** is φs, and a thickness in the direction along the optical axis z of the light blocking sheet **240** is Ts. The

following Table 2 lists the parameter values according to the aforementioned definitions of the optical lens assembly **200** in the 2nd embodiment. In addition, regarding other details of the light blocking sheet **240** in the 2nd embodiment, the contents of the first light blocking sheet **140** and the second light blocking sheet **150** in the 1st embodiment can be referred, but the light blocking sheet **240** is not limited thereto.

TABLE 2

FOV (deg.)	117.3	φs (mm)	1.29
Db (mm)	5.2	Ts (μm)	23
Ds (mm)	0.9798	Ds/Db	0.19
φb (mm)	2.9		

3rd Embodiment

FIG. **3**A is a three-dimensional view observed from an object side of an optical lens assembly **300** according to the 3rd embodiment of the present disclosure, FIG. **3**B is a top view observed from the object side of the optical lens assembly **300** in FIG. **3**A, and FIG. **3**C is a partially cross-sectional view of the optical lens assembly **300** in FIG. **3**A. With reference to FIG. **3**A to FIG. **3**C, the optical lens assembly **300** includes a lens barrel **310** and an optical lens group **330**. The lens barrel **310** includes a light entering hole **311**, which is configured for allowing a light to enter the lens barrel **310**. The lens barrel **310** accommodates the optical lens group **330**, and an optical axis z passes through the optical lens group **330** (as shown in FIG. **3**C). The optical lens group **330** includes a first lens element **371**, a second lens element **372**, a third lens element **373**, a fourth lens element **374**, a fifth lens element **375** and a sixth lens element **376** in order from the object side (i.e., a left side in FIG. **3**C) to an image side (i.e., a right side in FIG. **3**C) along the optical axis z. A total number of lens elements in the optical lens group **330** is six. The reference numerals of the transparent lens elements such as the first lens element **371**, etc. are omitted in FIG. **3**A and FIG. **3**B. Partial surface shapes of the lens elements are omitted in FIG. **3**C. A number of the light blocking sheet of the optical lens group **330** is at least two, and the optical lens group **330** specifically further includes annular optical elements such as a first light blocking sheet **340**, a second light blocking sheet **350**, another light blocking sheet, a spacer, a retainer, etc. The first light blocking sheet **340** is disposed and connected between the first lens element **371** and the second lens element **372**, and the second light blocking sheet **350** is disposed and connected between the second lens element **372** and third lens element **373**.

FIG. **3**D is a top view of the lens barrel **310** of the optical lens assembly **300** in FIG. **3**A. With reference to FIG. **3**A to FIG. **3**D, an object-side portion **313** of the lens barrel **310** may include a top wall **314** surrounding the optical axis z to form the light entering hole **311**, and a second film layer **319** is disposed on an outer surface facing the object side of the top wall **314**.

A reflected light is obtained from the second film layer **319** irradiated by the standard illuminant D65, a color index of the reflected light is defined according to the CIE 1976 L*a*b* color space, the color index is CI2, the reflected light has a maximum reflectivity in a spectrum in the wavelength range of 380 nm to 780 nm, a wavelength range of a wavelength corresponding to the maximum reflectivity minus 50 nm to the wavelength thereto plus 50 nm is a high reflectivity section, a wavelength range remained in a wavelength range of 380 nm to 780 nm excluding the high reflectivity section is a second reflectivity section, an average reflectivity in the high reflectivity section is $R2_{high}$, an average reflectivity in the second reflectivity section is $R2_2$, and the following conditions are satisfied: $CI2=\{(L^*)\times[(a^*)^2+(b^*)^2]\}^{1/2}$, $11\leq CI2\leq 41$; and $1.8\leq R2_{high}/R2_2\leq 6.2$.

FIG. **3**E is a top view of the first light blocking sheet **340** of the optical lens assembly **300** in FIG. **3**A, and FIG. **3**F is a top view of the second light blocking sheet **350** of the optical lens assembly **300** in FIG. **3**A. With reference to FIG. **3**C, FIG. **3**E and FIG. **3**F, the first light blocking sheet **340** is an opaque sheet-shaped element and surrounds the optical axis z to form a light passing hole **341**. The first light blocking sheet **340** includes an object-side surface **345** and an image-side surface **346**, and the object-side surface **345** is located more adjacent to the light entering hole **311** than the image-side surface **346** thereto. A first film layer **349** is disposed on the object-side surface **345**. The second light blocking sheet **350** is an opaque sheet-shaped element and surrounds the optical axis z to form a light passing hole **351**. The second light blocking sheet **350** includes an object-side surface **355** and an image-side surface **356**, and the object-side surface **355** is located more adjacent to the light entering hole **311** than the image-side surface **356** thereto. A first film layer **359** is disposed on the object-side surface **355**.

The first film layer **349** is disposed from the light passing hole **341** along a direction being away from the optical axis z, and a coverage area of the first film layer **349** is smaller than an area of the object-side surface **345**. The first film layer **359** is disposed from the light passing hole **351** along the direction being away from the optical axis z, and a coverage area of the first film layer **359** is smaller than an area of the object-side surface **355**.

Diameters of the light passing holes **341**, **351** of the first light blocking sheet **340** and the second light blocking sheet **350**, respectively, are different. The diameter of the light passing hole **341** of the first light blocking sheet **340** closer to the object side is greater than the diameter of the light passing hole **351** of the second light blocking sheet **350**. Regarding other details of the first light blocking sheet **340** and the second light blocking sheet **350** in the 3rd embodiment, the contents of the first light blocking sheet **140** and the second light blocking sheet **150** in the 1st embodiment can be referred, but the first light blocking sheet **340** and the second light blocking sheet **350** are not limited thereto.

FIG. **3**G is a three-dimensional view observed from the image side of the first lens element **371** of the optical lens assembly **300** in FIG. **3**A. With reference to FIG. **3**C and FIG. **3**G, the first lens element **371** is disposed on an object side of the first light blocking sheet **340** and the second light blocking sheet **350**. The first lens element **371** includes an optical effective region **383** and a peripheral region **384**. The optical effective region **383** is configured for being passed through by the light. The peripheral region **384** is located farther from the optical axis z than the optical effective region **383** therefrom, and a third film layer **389** is disposed on at least one of a peripheral object-side surface **385** and a peripheral image-side surface **386** (at least the peripheral image-side surface **386**, specifically) of the peripheral region **384**.

FIG. **3**H is a schematic view of reflectivity of the first lens element **371** in FIG. **3**G, the third film layer **389** is disposed on the peripheral image-side surface **386** of the first lens element **371**, and third film layers may be disposed on an optical effective object-side surface and an optical effective

image-side surface (reference numerals omitted), respectively, of the optical effective region **383** of the first lens element **371**. With reference to FIG. **3**H and further to Table 3.1, Table 3.2, Table 3.3 and Table 3.4 as the following, Table 3.1 to Table 3.4 list parameter values of the optical lens assembly **300** and the third film layer **389** of the first lens element **371** thereof in the 3rd embodiment of the present disclosure.

In detail, with reference to the following Table 3.1, Table 3.1 lists the reflectivity values of the third film layer **389** of the peripheral image-side surface **386** and the third film layer of the optical effective object-side surface of the first lens element **371** of the optical lens assembly **300** in the 3rd embodiment of the present disclosure. In Table 3.1, the unit of the reflectivity value is %. The relationship diagram between the wavelengths and the corresponding reflectivity values listed in Table 3.1 is shown in FIG. **3**H.

With reference to the following Table 3.2 and Table 3.3, another reflected light is obtained from the third film layer **389** irradiated by the standard illuminant D65, another color index of the another reflected light is defined according to the CIE 1976 L*a*b* color space, the another color index is CI3, the another reflected light has another maximum reflectivity in another spectrum in the wavelength range of 380 nm to 780 nm, a wavelength range of a wavelength corresponding to the another maximum reflectivity minus 50 nm to the wavelength thereto plus 50 nm is another high reflectivity section, a wavelength range remained in a wavelength range of 380 nm to 780 nm excluding the another high reflectivity section is another second reflectivity section, an average reflectivity in the another high reflectivity section is $R3_{high}$, an average reflectivity in the another second reflectivity section is $R3_2$, the wavelength corresponding to the another maximum reflectivity is λ_{RMax}, the another maximum reflectivity is R_{Max}, and an average reflectivity of the another reflected light in the wavelength range of 380 nm to 780 nm is R_{3878}. The following Table 3.2 and Table 3.3 list the parameter values according to the aforementioned definitions of the optical lens assembly **300** in the 3rd embodiment.

With reference to the following Table 3.4, a maximum field of view of the optical lens assembly **300** is FOV. In a direction along the optical axis z, a distance between a most object-side end **315** of the lens barrel **310** and a most image-side end **316** of the lens barrel **310** is Db, a distance between the most object-side end **315** of the lens barrel **310** and the first film layer **349** is Ds1, and a distance between the most object-side end **315** of the lens barrel **310** and the first film layer **359** is Ds2. A diameter of the light entering hole **311** is φb, a diameter of the light passing hole **341** is φs1, and a diameter of the light passing hole **351** is φS2. A thickness in the direction along the optical axis z of the first light blocking sheet **340** is Ts1, and a thickness in the direction along the optical axis z of the second light blocking sheet **350** is Ts2. The following Table 3.4 lists the parameter values according to the aforementioned definitions of the optical lens assembly **300** in the 1st embodiment.

TABLE 3.1

Wavelength (nm)	1st lens element-peripheral image-side surface	1st lens element-optical effective object-side surface
380	22.8855	24.9187
381	21.4447	24.4597
382	20.4477	23.7284
383	19.1480	22.9525
384	18.0618	21.8881
385	17.0734	21.4246
386	16.0328	20.8750
387	15.0127	20.1195
388	14.1026	19.4997
389	13.1253	18.7424
390	12.1780	17.9810
391	11.3753	17.2883
392	10.5274	16.5558
393	9.7866	15.9688
394	9.0401	15.2542
395	8.3521	14.6754
396	7.6550	13.9682
397	7.0576	13.3030
398	6.5004	12.6523
399	5.9813	12.0081
400	5.5252	11.5072
401	5.0935	10.9106
402	4.6776	10.4070
403	4.2876	9.8733
404	3.9525	9.3069
405	3.6269	8.7913
406	3.3530	8.3095
407	3.1225	7.8481
408	2.9209	7.4307
409	2.7302	7.0076
410	2.5666	6.5921
411	2.4255	6.2186
412	2.2858	5.8507
413	2.2110	5.4716
414	2.1438	5.1371
415	2.0678	4.8215
416	2.0489	4.5278
417	2.0102	4.2656
418	1.9864	3.9956
419	1.9869	3.7413
420	1.9880	3.4996
421	2.0070	3.2712
422	2.0359	3.0681
423	2.0811	2.8706
424	2.1106	2.6983
425	2.1597	2.5224
426	2.2067	2.3647
427	2.2538	2.2148
428	2.3172	2.0660
429	2.3711	1.9463
430	2.4389	1.8250
431	2.5098	1.7127
432	2.5653	1.6112
433	2.6322	1.5173
434	2.6906	1.4305
435	2.7527	1.3558
436	2.8104	1.2828
437	2.8768	1.2097
438	2.9470	1.1492
439	2.9996	1.1066
440	3.0684	1.0516
441	3.1116	1.0149
442	3.1670	0.9606
443	3.2064	0.9308
444	3.2620	0.9010
445	3.3125	0.8715
446	3.3527	0.8562
447	3.3832	0.8303
448	3.4229	0.8100
449	3.4519	0.7914
450	3.4811	0.7715
451	3.4993	0.7704
452	3.5343	0.7554
453	3.5584	0.7501
454	3.5834	0.7442
455	3.5870	0.7481
456	3.5962	0.7320
457	3.6013	0.7314
458	3.6105	0.7308
459	3.6184	0.7227
460	3.6171	0.7233

TABLE 3.1-continued

Wavelength (nm)	1st lens element-peripheral image-side surface	1st lens element-optical effective object-side surface
461	3.6163	0.7290
462	3.6116	0.7338
463	3.6039	0.7389
464	3.5902	0.7337
465	3.5708	0.7383
466	3.5578	0.7362
467	3.5393	0.7430
468	3.5249	0.7422
469	3.5106	0.7506
470	3.4904	0.7510
471	3.4493	0.7491
472	3.4273	0.7593
473	3.3955	0.7588
474	3.3657	0.7589
475	3.3377	0.7603
476	3.3043	0.7657
477	3.2676	0.7668
478	3.2304	0.7675
479	3.1919	0.7665
480	3.1508	0.7690
481	3.1096	0.7696
482	3.0737	0.7724
483	3.0283	0.7624
484	2.9933	0.7688
485	2.9441	0.7700
486	2.8990	0.7658
487	2.8602	0.7673
488	2.8070	0.7621
489	2.7584	0.7604
490	2.7129	0.7595
491	2.6706	0.7548
492	2.6225	0.7572
493	2.5720	0.7523
494	2.5233	0.7494
495	2.4734	0.7424
496	2.4247	0.7408
497	2.3752	0.7342
498	2.3268	0.7311
499	2.2853	0.7281
500	2.2315	0.7238
501	2.1815	0.7186
502	2.1338	0.7106
503	2.0822	0.7067
504	2.0370	0.7007
505	1.9901	0.6934
506	1.9436	0.6908
507	1.9002	0.6841
508	1.8498	0.6791
509	1.8026	0.6700
510	1.7557	0.6600
511	1.7120	0.6586
512	1.6682	0.6489
513	1.6256	0.6429
514	1.5827	0.6369
515	1.5403	0.6288
516	1.4963	0.6219
517	1.4545	0.6137
518	1.4126	0.6054
519	1.3745	0.5978
520	1.3315	0.5910
521	1.2942	0.5836
522	1.2571	0.5772
523	1.2186	0.5707
524	1.1830	0.5621
525	1.1447	0.5534
526	1.1103	0.5467
527	1.0772	0.5379
528	1.0439	0.5328
529	1.0123	0.5232
530	0.9793	0.5156
531	0.9480	0.5084
532	0.9171	0.5025
533	0.8857	0.4933
534	0.8560	0.4851
535	0.8273	0.4777
536	0.8011	0.4713
537	0.7748	0.4640

TABLE 3.1-continued

Wavelength (nm)	1st lens element-peripheral image-side surface	1st lens element-optical effective object-side surface
538	0.7480	0.4568
539	0.7235	0.4487
540	0.6967	0.4399
541	0.6716	0.4337
542	0.6493	0.4282
543	0.6267	0.4184
544	0.6054	0.4130
545	0.5846	0.4068
546	0.5640	0.4002
547	0.5421	0.3928
548	0.5237	0.3850
549	0.5043	0.3798
550	0.4887	0.3726
551	0.4710	0.3640
552	0.4566	0.3596
553	0.4408	0.3532
554	0.4230	0.3469
555	0.4101	0.3402
556	0.3933	0.3333
557	0.3803	0.3278
558	0.3682	0.3211
559	0.3555	0.3164
560	0.3436	0.3098
561	0.3315	0.3041
562	0.3201	0.2985
563	0.3094	0.2940
564	0.2987	0.2850
565	0.2888	0.2787
566	0.2797	0.2733
567	0.2724	0.2691
568	0.2623	0.2661
569	0.2548	0.2580
570	0.2467	0.2524
571	0.2363	0.2450
572	0.2328	0.2398
573	0.2251	0.2353
574	0.2183	0.2303
575	0.2147	0.2261
576	0.2060	0.2204
577	0.2014	0.2160
578	0.1958	0.2106
579	0.1894	0.2044
580	0.1870	0.1987
581	0.1813	0.1945
582	0.1795	0.1926
583	0.1759	0.1865
584	0.1737	0.1825
585	0.1686	0.1782
586	0.1624	0.1708
587	0.1590	0.1652
588	0.1562	0.1598
589	0.1563	0.1582
590	0.1543	0.1534
591	0.1491	0.1487
592	0.1499	0.1453
593	0.1443	0.1398
594	0.1425	0.1362
595	0.1420	0.1330
596	0.1385	0.1274
597	0.1410	0.1240
598	0.1396	0.1197
599	0.1382	0.1158
600	0.1346	0.1111
601	0.1346	0.1079
602	0.1317	0.1030
603	0.1319	0.0995
604	0.1337	0.0965
605	0.1295	0.0924
606	0.1313	0.0886
607	0.1297	0.0862
608	0.1279	0.0823
609	0.1277	0.0778
610	0.1252	0.0739
611	0.1250	0.0713
612	0.1271	0.0676
613	0.1253	0.0663
614	0.1261	0.0638

TABLE 3.1-continued

Wavelength (nm)	1st lens element-peripheral image-side surface	1st lens element-optical effective object-side surface
615	0.1240	0.0606
616	0.1228	0.0564
617	0.1216	0.0512
618	0.1210	0.0498
619	0.1224	0.0483
620	0.1227	0.0451
621	0.1204	0.0438
622	0.1200	0.0400
623	0.1195	0.0386
624	0.1192	0.0354
625	0.1163	0.0336
626	0.1182	0.0315
627	0.1168	0.0281
628	0.1166	0.0286
629	0.1164	0.0254
630	0.1146	0.0236
631	0.1140	0.0220
632	0.1138	0.0194
633	0.1121	0.0186
634	0.1121	0.0173
635	0.1122	0.0167
636	0.1114	0.0169
637	0.1087	0.0149
638	0.1074	0.0145
639	0.1077	0.0129
640	0.1063	0.0121
641	0.1041	0.0109
642	0.1039	0.0121
643	0.1035	0.0121
644	0.1031	0.0122
645	0.1034	0.0122
646	0.0986	0.0110
647	0.0980	0.0119
648	0.0957	0.0125
649	0.0955	0.0127
650	0.0970	0.0139
651	0.0947	0.0153
652	0.0935	0.0161
653	0.0923	0.0167
654	0.0883	0.0182
655	0.0880	0.0189
656	0.0849	0.0210
657	0.0838	0.0231
658	0.0828	0.0238
659	0.0846	0.0269
660	0.0819	0.0299
661	0.0777	0.0312
662	0.0782	0.0347
663	0.0735	0.0357
664	0.0750	0.0391
665	0.0745	0.0428
666	0.0716	0.0459
667	0.0719	0.0494
668	0.0689	0.0541
669	0.0671	0.0575
670	0.0643	0.0610
671	0.0652	0.0645
672	0.0633	0.0685
673	0.0625	0.0737
674	0.0627	0.0801
675	0.0602	0.0831
676	0.0593	0.0905
677	0.0575	0.0949
678	0.0541	0.1002
679	0.0560	0.1044
680	0.0534	0.1120
681	0.0533	0.1180
682	0.0531	0.1237
683	0.0510	0.1316
684	0.0512	0.1385
685	0.0475	0.1454
686	0.0468	0.1511
687	0.0454	0.1603
688	0.0469	0.1664
689	0.0469	0.1755
690	0.0459	0.1833
691	0.0455	0.1917

TABLE 3.1-continued

Wavelength (nm)	1st lens element-peripheral image-side surface	1st lens element-optical effective object-side surface
692	0.0429	0.1988
693	0.0427	0.2070
694	0.0430	0.2163
695	0.0425	0.2273
696	0.0445	0.2360
697	0.0426	0.2455
698	0.0432	0.2557
699	0.0460	0.2667
700	0.0411	0.2770
701	0.0430	0.2867
702	0.0438	0.2969
703	0.0437	0.3079
704	0.0464	0.3209
705	0.0477	0.3313
706	0.0477	0.3431
707	0.0466	0.3555
708	0.0491	0.3657
709	0.0487	0.3793
710	0.0507	0.3935
711	0.0530	0.4065
712	0.0538	0.4193
713	0.0576	0.4327
714	0.0589	0.4466
715	0.0590	0.4621
716	0.0613	0.4744
717	0.0618	0.4881
718	0.0650	0.5028
719	0.0684	0.5188
720	0.0717	0.5356
721	0.0751	0.5496
722	0.0764	0.5651
723	0.0785	0.5807
724	0.0795	0.5974
725	0.0847	0.6153
726	0.0902	0.6294
727	0.0939	0.6467
728	0.0958	0.6667
729	0.1008	0.6829
730	0.1039	0.7004
731	0.1068	0.7186
732	0.1118	0.7353
733	0.1174	0.7537
734	0.1211	0.7707
735	0.1268	0.7917
736	0.1308	0.8103
737	0.1370	0.8313
738	0.1416	0.8508
739	0.1474	0.8703
740	0.1536	0.8908
741	0.1584	0.9103
742	0.1660	0.9319
743	0.1722	0.9539
744	0.1775	0.9737
745	0.1835	0.9967
746	0.1897	1.0176
747	0.1949	1.0396
748	0.2035	1.0608
749	0.2108	1.0837
750	0.2204	1.1066
751	0.2286	1.1297
752	0.2358	1.1556
753	0.2420	1.1755
754	0.2516	1.1995
755	0.2600	1.2231
756	0.2682	1.2473
757	0.2767	1.2730
758	0.2871	1.2949
759	0.2974	1.3226
760	0.3059	1.3482
761	0.3135	1.3739
762	0.3242	1.3989
763	0.3316	1.4223
764	0.3428	1.4481
765	0.3519	1.4742
766	0.3665	1.5030
767	0.3764	1.5281
768	0.3861	1.5551

TABLE 3.1-continued

Wavelength (nm)	1st lens element-peripheral image-side surface	1st lens element-optical effective object-side surface
769	0.3970	1.5806
770	0.4054	1.6076
771	0.4209	1.6349
772	0.4312	1.6623
773	0.4426	1.6894
774	0.4561	1.7193
775	0.4680	1.7461
776	0.4792	1.7768
777	0.4908	1.8044
778	0.5023	1.8322
779	0.5179	1.8608
780	0.5302	1.8896

TABLE 3.2

	1st lens element-peripheral image-side surface	1st lens element-optical effective object-side surface
R_{Max} (%)	22.8855	24.9187
λ_{RMax} (nm)	380	380
$R3_{high}$ (%)	6.88	10.56
$R3_2$ (%)	0.90	0.52
$R3_{high}/R3_2$	7.61	20.17
R_{3878} (%)	1.66	1.80

TABLE 3.3

Measurement items	L*	a*	b*	CI3 = {(L*) × [(a*)^2 + (b*)^2]}^1/2
1st lens element-peripheral image-side surface	6.76	1.46	−23.62	61.51
1st lens element-optical effective object-side surface	3.27	1.10	−12.84	23.30

TABLE 3.4

FOV (deg.)	157.8	φs2 (mm)	1.15
Db (mm)	4.87	Ts1 (μm)	40
Ds1 (mm)	1.01	Ts2 (μm)	23
Ds2 (mm)	1.36	Ds1/Db	0.21
φb (mm)	4.92	Ds2/Db	0.28
φs1 (mm)	1.9		

4th Embodiment

FIG. **4**A is a three-dimensional view of an electronic device **40** according to the 4th embodiment of the present disclosure, and FIG. **4**B is a block diagram of the electronic device **40** in FIG. **4**A. With reference to FIG. **4**A and FIG. **4**B, the electronic device **40** includes at least one optical lens assembly **400**, which includes a lens barrel **410** and an optical lens group **430**. The optical lens assembly **400** may be the aforementioned optical lens assembly **100** of the 1st embodiment, the aforementioned optical lens assembly **200** of the 2nd embodiment, the aforementioned optical lens assembly **300** of the 3rd embodiment, or another optical lens assembly according to present disclosure.

Specifically, the electronic device **40** is a smart phone and includes four optical lens assemblies **400**. From a left side to a right side in FIG. **4**A, the four optical lens assemblies **400** may be an ultra-wide-angle lens assembly (e.g., the maximum field of view in a range of 93 degrees to 175 degrees), a wide-angle main lens assembly (e.g., the maximum field of view in a range of 65 degrees to 90 degrees), a telephoto lens assembly (e.g., the maximum field of view in a range of 20 degrees to 50 degrees) and an ultra telephoto lens assembly (e.g., the maximum field of view in a range of 5 degrees to 20 degrees) in order, and the maximum field of view of each of the optical lens assemblies **400** is not limited thereto. The four optical lens assemblies **400** are disposed in an inner space **43** of the electronic device **40**, and the light enters the four optical lens assemblies **400** via four light entering holes on a lens cover **42** of a housing **41** of the electronic device **40**. It should be understood that FIG. **4**A is only an exploded schematic view of the lens cover **42** and the inner space **43**, and does not mean that the lens cover **42** is separated from the electronic device **40** during a user's operation.

In addition, the electronic device **40** can further include but not be limited to a control unit, a storage unit, a random access memory, a read-only memory, or a combination thereof.

Furthermore, the user activates the capturing mode via the user interface **45** of the electronic device **40**. At this moment, the imaging light of the optical lens group **430** is converged on the image sensor **460**, and the electronic signal associated with image is output to an image signal processor (ISP) **44**.

To meet a specification of a camera of the electronic device **40**, the electronic device **40** can further include an optical anti-shake mechanism **490**, which can be an optical image stabilization (**01**S). Furthermore, the electronic device **40** can further include at least one auxiliary optical element (its reference numeral is omitted) and at least one sensing element **46**. According to the 4th embodiment, the auxiliary optical elements are a flash module **47** and a focusing assisting module **48**. The flash module **47** can be configured to compensate a color temperature, and the focusing assisting module **48** can be an infrared distance measurement component, a laser focus module, etc. The sensing element **46** can have functions for sensing physical momentum and kinetic energy, such as an accelerator, a gyroscope, a Hall Effect Element, to sense shaking or jitters applied by hands of the user or external environments. Accordingly, the optical lens assembly **400** of the electronic device **40** equipped with an auto-focusing mechanism and the optical anti-shake mechanism **490** can be enhanced to achieve the superior image quality. Furthermore, the electronic device **40** according to the present disclosure can have a capturing function with multiple modes, such as taking optimized selfies, high dynamic range (HDR) under a low light condition, 4K resolution recording, etc. Furthermore, the users can visually see the captured image through the user interface **45** (i.e., the display screen, the touch screen) and manually operate the view finding range on the user interface **45** to achieve the autofocus function of what you see is what you get.

The foregoing description, for purpose of explanation, has been described with reference to specific embodiments. It is to be noted that Tables show different data of the different embodiments; however, the data of the different embodiments are obtained from experiments. The embodiments were chosen and described in order to best explain the principles of the disclosure and its practical applications, to thereby enable others skilled in the art to best utilize the disclosure and various embodiments with various modifications as are suited to the particular use contemplated. The embodiments depicted above and the appended drawings are exemplary and are not intended to be exhaustive or to limit

the scope of the present disclosure to the precise forms disclosed. Many modifications and variations are possible in view of the above teachings.

What is claimed is:

1. An optical lens assembly, comprising:

a lens barrel comprising a light entering hole, which is configured for allowing a light to enter the lens barrel; and

an optical lens group, wherein the lens barrel accommodates the optical lens group, and an optical axis passes through the optical lens group;

wherein the optical lens group comprises:

a plurality of lens elements; and

at least one light blocking sheet being an opaque sheet-shaped element and surrounding the optical axis to form a light passing hole, wherein the light blocking sheet comprises an object-side surface and an image-side surface, the object-side surface is located more adjacent to the light entering hole than the image-side surface thereto, and a first film layer is disposed on the object-side surface;

wherein a reflected light is obtained from the first film layer irradiated by a standard illuminant D65, a color index of the reflected light is defined according to a CIE 1976 L*a*b* color space, the color index is CI, the reflected light has a maximum reflectivity in a spectrum in a wavelength range of 380 nm to 780 nm, a wavelength range of a wavelength corresponding to the maximum reflectivity minus 50 nm to the wavelength thereto plus 50 nm is a high reflectivity section, a wavelength range remained in a wavelength range of 380 nm to 780 nm excluding the high reflectivity section is a second reflectivity section, an average reflectivity in the high reflectivity section is R_{high}, an average reflectivity in the second reflectivity section is R_2, and the following conditions are satisfied:

$$CI=\{(L^*)\times[(a^*)^2+(b^*)^2]\}^{1/2};$$

$$8\leq CI\leq 41; \text{ and}$$

$$1.8\leq R_{high}R_2\leq 6.2.$$

2. The optical lens assembly of claim **1**, wherein the color index is CI, the average reflectivity in the high reflectivity section is R_{high}, the average reflectivity in the second reflectivity section is R_2, and the following conditions are satisfied:

$$11\leq CI\leq 28; \text{ and}$$

$$2.2\leq R_{high}/R_2\leq 4.8.$$

3. The optical lens assembly of claim **1**, wherein the wavelength corresponding to the maximum reflectivity is λ_{RMax}, and the following condition is satisfied:

$$380 \text{ nm}\leq\lambda_{RMax}\leq 580 \text{ nm}.$$

4. The optical lens assembly of claim **3**, wherein the maximum reflectivity is R_{Max}, and the following condition is satisfied:

$$0.5\%\leq R_{max}\leq 4\%.$$

5. The optical lens assembly of claim **1**, wherein an average reflectivity of the reflected light in the wavelength range of 380 nm to 780 nm is R_{3878}, and the following condition is satisfied:

$$0.1\%\leq R_{3878}\leq 2\%.$$

6. The optical lens assembly of claim **1**, wherein a difference appears between two color indexes of any two points, respectively, on the first film layer, an absolute value of the difference is |ΔCI|, and the following condition is satisfied:

$$0\leq|\Delta CI|\leq 4.7.$$

7. The optical lens assembly of claim **1**, wherein the first film layer is disposed from the light passing hole along a direction being away from the optical axis, and a coverage area of the first film layer is smaller than an area of the object-side surface.

8. The optical lens assembly of claim **1**, wherein a number of the at least one light blocking sheet is at least two, and the first film layer is disposed on the object-side surface of each of the light blocking sheets.

9. The optical lens assembly of claim **8**, wherein diameters of the light passing holes of the at least two light blocking sheets, respectively, are different, and the diameter of the light passing hole of one of the at least two light blocking sheets closer to an object side is greater than the diameter of the light passing hole of the other of the at least two light blocking sheets.

10. The optical lens assembly of claim **1**, wherein a thickness in a direction along the optical axis of the light blocking sheet is Ts, and the following condition is satisfied:

$$7 \text{ μm}<Ts<50 \text{ μm}.$$

11. The optical lens assembly of claim **1**, wherein a diameter of the light entering hole is φb, a diameter of the light passing hole is φs, and the following condition is satisfied:

$$\varphi s<\varphi b.$$

12. The optical lens assembly of claim **11**, wherein the diameter of the light entering hole is φb, the diameter of the light passing hole is φs, and the following condition is satisfied:

$$0.31\leq(\varphi b-\varphi s)/\varphi b\leq 0.95.$$

13. The optical lens assembly of claim **12**, wherein a maximum field of view of the optical lens assembly is FOV, and the following condition is satisfied:

$$93 \text{ degrees}\leq FOV\leq 175 \text{ degrees}.$$

14. The optical lens assembly of claim **12**, wherein in a direction along the optical axis, a distance between a most object-side end of the lens barrel and a most image-side end of the lens barrel is Db, a distance between the most object-side end of the lens barrel and the first film layer is Ds, and the following condition is satisfied:

$$0.05\leq Ds/Db\leq 0.41.$$

15. The optical lens assembly of claim **1**, wherein an object-side portion of the lens barrel comprises:

a top wall surrounding the optical axis to form the light entering hole, wherein a second film layer is disposed on the top wall;

wherein another reflected light is obtained from the second film layer irradiated by the standard illuminant D65, another color index of the another reflected light is defined according to the CIE 1976 L*a*b* color space, the another color index is CI2, the another reflected light has another maximum reflectivity in another spectrum in the wavelength range of 380 nm to 780 nm, a wavelength range of a wavelength corresponding to the another maximum reflectivity minus 50 nm to the wavelength thereto plus 50 nm is another

high reflectivity section, a wavelength range remained in a wavelength range of 380 nm to 780 nm excluding the another high reflectivity section is another second reflectivity section, an average reflectivity in the another high reflectivity section is $R2_{high}$, an average reflectivity in the another second reflectivity section is $R2_2$, and the following conditions are satisfied:

$$CI2=\{(L^*)\times[(a^*)^2+(b^*)^2]\}^{1/2};$$

$$11\leq CI2\leq 41; \text{ and}$$

$$1.8\leq R2_{high}/R2_2\leq 6.2.$$

16. The optical lens assembly of claim **1**, wherein one of the lens elements is disposed on an object side of the light blocking sheet, and the one of the lens elements comprises:

an optical effective region configured for being passed through by the light; and

a peripheral region located farther from the optical axis than the optical effective region therefrom, wherein a third film layer is disposed on at least one of a peripheral object-side surface and a peripheral image-side surface of the peripheral region;

wherein further another reflected light is obtained from the third film layer irradiated by the standard illuminant D65, further another color index of the further another reflected light is defined according to the CIE 1976 L*a*b* color space, the further another color index is CI3, and the following conditions are satisfied:

$$CI3=\{(L^*)\times[(a^*)^2+(d^*)^2]\}^{1/2}; \text{ and}$$

$$11\leq CI3\leq 75.$$

17. The optical lens assembly of claim **16**, wherein the further another reflected light has further another maximum reflectivity in further another spectrum in the wavelength range of 380 nm to 780 nm, a wavelength range of a wavelength corresponding to the further another maximum reflectivity minus 50 nm to the wavelength thereto plus 50 nm is further another high reflectivity section, a wavelength range remained in a wavelength range of 380 nm to 780 nm excluding the further another high reflectivity section is further another second reflectivity section, an average reflectivity in the further another high reflectivity section is $R3_{high}$, an average reflectivity in the further another second reflectivity section is $R3_2$, and the following condition is satisfied:

$$2.5R3_{high}/R3_{2\leq 34}.$$

18. An electronic device, comprising:

the optical lens assembly of claim **1**.

* * * * *