CLAIMS

1. A spectacle lens comprising:

an object-side surface and an eyeball-side surface;

a first refractive region having a first refractive power based on a prescription for correcting a refractive error of an eye; and

a second refractive region having a refractive power different from the first refractive power, the second refractive region having a function of forming a focal point at a position other than a retina of the eye so as to suppress progression of the refractive error of the eye,

wherein an interface portion is disposed inside the spectacle lens,

the interface portion includes a base portion, and convex portions protruding from the base portion, or concave portions recessed from the base portion,

the interface portion is sandwiched by only two types of members,

the function of the second refractive region is exerted by using mutually different respective refractive indexes of the two types of members sandwiching the interface portion therebetween, and the convex portions or the concave portions, and

the two types of members sandwiching the interface portion therebetween are a defocus surface substrate on which the base portion and the convex portions or the concave portions are provided, and a covering member provided on the defocus surface substrate and the covering member onto which the shape of the convex portions or the concave portions of the defocus surface substrate is transferred, and

an outermost surface portion of the spectacle lens that corresponds to the convex portions or the concave portions is smooth,

wherein the term “smooth” refers to the state of a surface whose rate of change in the average surface power (unit: D) at a given position of the surface in a given direction is 0.5 D/mm or less, wherein the average surface power is represented by the following expression:

Average surface power = Average curvature of curved surface (unit: 1/m)*(Refractive index - 1.0).

2. The spectacle lens according to claim 1,

wherein the covering material is a hard coating layer,

the interface portion is formed by a defocus surface substrate on which the convex portions or the concave portions are provided, and the hard coating layer provided on the defocus surface substrate.

3. The spectacle lens according to claim 2,

wherein the hard coating layer includes a segment smoothing layer that covers the base portion and the convex portions or the concave portions provided on the defocus surface substrate, and that planarizes the convex portions by filling concave portions between the convex portions if the convex portions are provided, or planarizes the concave portions by filling the concave portions themselves if the concave portions are provided, and a scratch resistant layer that covers the segment smoothing layer.

4. The spectacle lens according to claim 2 or 3,

wherein the convex portions are provided on the defocus surface substrate, and a refractive index of the defocus surface substrate is larger than a refractive index of the hard coating layer, or

the concave portions are provided on the defocus surface substrate, and a refractive index of the defocus surface substrate is smaller than a refractive index of the hard coating layer.

5. The spectacle lens according to claim 1,

wherein the interface portion is formed by a defocus surface substrate on which the convex portions or the concave portions are provided, and lens substrates provided so as to sandwich the defocus surface substrate therebetween.

6. The spectacle lens according to claim 5,

wherein the convex portions are provided on the defocus surface substrate, and a refractive index of the defocus surface substrate is larger than a refractive index of the lens substrates, or

the concave portions are provided on the defocus surface substrate, and a refractive index of the defocus surface substrate is smaller than a refractive index of the lens substrates.

7. The spectacle lens according to any one of claims 1 to 6,

wherein a protruding height of the convex portions or a recessed depth of the concave portions is 4 μm or more.

8. The spectacle lens according to any one of claims 1 to 6, wherein an outermost surface of the spectacle lens is polished surface.

9. A method for manufacturing a spectacle lens including:

an object-side surface and an eyeball-side surface;

a first refractive region having a first refractive power based on a prescription for correcting a refractive error of an eye; and

a second refractive region having a refractive power different from the first refractive power, the second refractive region having a function of forming a focal point at a position other than a retina of the eye so as to suppress progression of the refractive error of the eye, the method comprising:

placing an interface portion inside the spectacle lens,

the interface portion including a base portion, and convex portions protruding from the base portion or concave portions recessed from the base portion;

the interface portion is sandwiched by only two types of members,

causing the function of the second refractive region to be exerted by using mutually different respective refractive indexes of the two types of members sandwiching the interface portion therebetween, and the convex portions or the concave portions,

the two types of members sandwiching the interface portion therebetween are a defocus surface substrate on which the base portion and the convex portions or the concave portions are provided, and a covering member provided on the defocus surface substrate and the covering member onto which the shape of the convex portions or the concave portions of the defocus surface substrate is transferred, and

smoothing an outermost surface portion of the spectacle lens that corresponds to the convex portions or the concave portions,

wherein the term “smooth” refers to the state of a surface whose rate of change in the average surface power (unit: D) at a given position of the surface in a given direction is 0.5 D/mm or less, wherein the average surface power is represented by the following expression:

Average surface power = Average curvature of curved surface (unit: 1/m)*(Refractive index - 1.0).

10. The method for manufacturing a spectacle lens according to claim 9, further comprising:

a segment smoothing step of applying a segment-smoothing chemical solution to the convex portions or the concave portions provided on a defocus surface substrate on which the convex portions or the concave portions are provided, curing the segment-smoothing chemical solution, and planarizing the convex portions by filling concave portions between the convex portions if the convex portions are provided, or planarizing the concave portions by filling the concave portions themselves if the concave portions are provided, thereby forming a segment smoothing layer; and

a scratch resistant layer forming step of applying a scratch-resistant-layer chemical solution different from the segment-smoothing chemical solution to the segment smoothing layer, and curing the scratch-resistant-layer chemical solution, thereby forming a scratch resistant layer on the segment smoothing layer.

11. The method for manufacturing a spectacle lens according to claim 9, further

comprising the steps of:

bonding at least a part of a peripheral edge portion of a first lens-substrate mold on which an object-side surface or an eyeball-side surface is formed, to at least a part of a peripheral edge portion of a defocus surface substrate on which the convex portions or the concave portions are provided;

placing a second lens-substrate mold on which an eyeball-side surface or an object-side surface is formed, on a side opposite to the first lens-substrate mold, with the defocus surface substrate interposed between the second lens-substrate mold and the first lens-substrate mold; and

filling a raw material composition of a lens substrate between the first lens-substrate mold and the defocus surface substrate, and between the defocus surface substrate and the second lens-substrate mold, after bringing a cavity between the first lens-substrate mold and the defocus surface substrate and a cavity between the second lens-substrate mold and the defocus surface substrate into communication, thereby

sandwiching the interface portion between the defocus surface substrate on which the convex portions or the concave portions are provided, and a lens substrate provided on the defocus surface substrate.

12. The method for manufacturing a spectacle lens according to any one of claims 9 to 11, wherein the smoothing comprises polishing.