CLAIMS

1. An ophthalmic lens for use in inhibiting or reducing myopic progression in a person comprising:

Providing a central portion of a lens enabling clear distance vision; and

while maintaining clear distance vision and without introducing diffractive effects, *providing another portion of the lens* increasing depth of focus in the person's eyes so as to enable relief of accommodative stress during near vision.

2. The ophthalmic lens according to Claim 1, and wherein:

the step of increasing depth of focus comprises creating an unfocused optical blur surrounding an image on the person's fovea.

3. The ophthalmic lens according to claim 2, and further comprising:

providing an optical surface that enables an increase in depth of focus.

4. The ophthalmic lens according to claim 3, and wherein:

the depth of focus increase is at least +0.25 diopters.

5. The ophthalmic lens according to claim 4, and wherein:

the depth of focus increase is +0.25 diopters to +1.00 diopters.

6. The ophthalmic lens according to claim 1, and wherein:

accommodative lag in the user is reduced by at least +0.25 diopters.

7. The ophthalmic lens according to claim 6, and wherein:

the reduction in accommodative lag is in the range of +0.25 diopters to +2.00 diopters.

8. The ophthalmic lens according to claim 1, and wherein:

the step of enabling clear distance vision comprises providing distance correction power and a peak refractive power in the range of +1 to +10 diopters greater than the distance correction power.

9. A method of designing a refractive lens for inhibiting or reducing myopic progression, comprising:

determining a person's unaided eye depth of focus;

defining a treatment lens having a continuous power distribution configured to increase the person's depth of focus when in use.

10. An ophthalmic lens comprising:

an apex having distance vision correcting power;

a power distribution increasing smoothly radially outward, from the apex to a peak power rise more positive than the distance vision correcting power;

the power distribution having a first power at design point between the vision-correcting power and the peak power rise, the power of the distribution between the apex and design point sufficiently like in power to the distance vision correcting power to

contribute to distance correction;

the first power sufficient to create blur outside the design point;

the power distribution power outside the design point sufficient to create a blur surrounding images on the user's fovea.

11. An ophthalmic lens according to claim 10 wherein the peak power rise is in the range of +1 to +10 diopters.

12. An ophthalmic lens according to claim 10 and wherein the design point is at a radial distance from the apex in the range of 0.5 millimeters and 1.5 millimeters.

13. An ophthalmic lens according to claim 10 and wherein:

the lens is configured to reduce a user's lag of accommodation at least 0.25 diopters.

14. An ophthalmic lens according to claim 10 and wherein:

the lens is an intraocular lens.

15. An ophthalmic lens according to claim 10 and wherein:

the lens is formed in a person's optical tissue.

16. A method of inhibiting or reducing myopic progression in a person comprising:

providing the lens of Claim 7 to a person for use in the eye.

17. Use of an ophthalmic lens for inhibiting or reducing myopic progression in a person comprising:

forming an optical surface in a person's eye, the optical surface configured to increase the person's depth of focus during use.

18. A system for use in treating myopia, comprising:

providing a lens having a central region about the apex of the lens which yields clear distance vision, and an optical blur region immediately surrounding said central region which yields an unfocused optical image; such that the lens provides an induced aperture and an increased depth of focus; and

providing a protocol designed to inhibit or reduce myopic progression in the eye.

19. The system of Claim 18 wherein the protocol enables relief of accommodative stress in the eye.

20. The system of Claim 19 wherein said depth of focus is at least +.25 diopters.

21. The system according to claim 19, and wherein:

the user has a reduction in accommodative lag of at least +0.25 diopters.

22. The system according to claim 19, wherein:

the reduction in accommodative lag is in the range of +.25 to +2.0 diopters.

23. The system of Claim 18 wherein said central region has a distance correction.

24. The system of Claim 18 wherein:

said blur region comprises an optical surface creating a power distribution that varies smoothly from an apical power at the apex designed for distance correction through rapidly changing power surrounding said apical power.

25. A system for use in treating myopia, comprising:

providing a lens having a central region about the apex of the lens which yields clear distance vision, and a blur region immediately surrounding said central region which has a power distribution changing smoothly from said central region outwardly to a maximum power greater than an apical power, said rapidly increasing power distribution yielding an unfocused optical blur to the optical image, such that the lens provides an induced aperture and an increased depth of focus; and

providing a protocol designed to inhibit or reduce myopic progression in the eye.

26. The system of Claim 25 wherein the protocol enables relief of accommodative stress in the eye.

27. A system according to claim 25, and wherein:

the user has a reduction in accommodative lag of at least +0.25 diopters.

28. The system of Claim 25 wherein said depth of focus is at least +.25 diopters.

29. The system of Claim 25 wherein said central region has a distance correction.

30. A method of designing a refractive lens for inhibiting or reducing myopic progression, comprising:

determining a person's unaided eye depth of focus;

defining a treatment lens having a continuous power distribution configured to increase the person's depth of focus when in use; and

providing a protocol designed to inhibit or reduce myopic progression in the eye.

31. The method of Claim 30 wherein said protocol includes having an individual wear said lens over an extended period of consecutive days but not necessarily when sleeping.

32. A system for use in treating myopia using an ophthalmic lens comprising:

providing an ophthalmic lens having an apex having distance vision correcting power; a power distribution increasing smoothly radially outward from the apex to a peak power rise more positive than the distance vision correcting power; wherein the power distribution has a first power at a design point between the vision-correcting power and the peak power rise, the power of the distribution between the apex and design point being sufficiently like in power to the distance vision correcting power to contribute to distance correction; the first power being sufficient to create blur outside

the design point; the power distribution power outside the design point being sufficient to create a blur surrounding images on the user's fovea;

and providing a protocol designed to inhibit or reduce myopic progression in the eye.

CLAIMS

1. An ophthalmic lens comprising:

an apex having distance vision correcting power;

a power distribution increasing smoothly radially outward, from the apex to a peak power rise more positive than the distance vision correcting power;

the power distribution having a first power at design point (DP) between the vision-correcting power and the peak power rise, the power distribution between the apex and design point sufficiently like in power to the distance vision correcting power to contribute to distance correction, the power distribution increasing at a first rate between the apex and the design point;

the power distribution having a second power outside of the design point, the power distribution outside of the design point sufficient to create blur surrounding images on the user's fovea, the power distribution increasing at a second rate greater than the first rate immediately outside of the design point,

the first power and power distribution structured to increase depth of focus and to reduce accommodative lag stress for the user of the lens over time and a period of generally all day wear to reduce the progression of myopia.

2. An ophthalmic lens according to claim 1 wherein the peak power rise is in the range of +1 to +10 diopters.

3. An ophthalmic lens according to claim 1 and wherein the design point (DP) is at a radial distance from the apex in the range of 0.5 millimeters and 1.5 millimeters.

4. An ophthalmic lens according to claim 1 and wherein:

the lens is configured to reduce a user's lag of accommodation +0.25 to +1.00 diopters.

5. An ophthalmic lens according to claim 1 and wherein:

the lens is an intraocular lens.

6. An ophthalmic lens according to claim 1 and wherein:

the lens is formed in a person's optical tissue.

7. A method of designing a refractive lens for reducing myopic progression, comprising:

determining a person's unaided eye depth of focus;

defining a treatment lens having a smooth and continuous power distribution configured to increase the person's depth of focus when in use,

the power distribution having a first power at a design point (DP) between the vision-correcting power and the peak power rise, the power distribution between the apex and design point sufficiently like in power to the distance vision correcting power to contribute to distance correction, the power distribution increasing at a first rate between the apex and the design point;

the power distribution having a second power outside of the design point, the power distribution outside of the design point sufficient to create blur surrounding images on the user's fovea, the power distribution increasing at a second rate greater than the first rate immediately outside of the design point;

diagnosing a user with myopia; and

implementing the treatment lens as a means to reduce progression of myopia, the first power and power distribution structured to increase depth of focus and to reduce accommodative lag stress for the user of the lens over time and a period of generally all day wear to reduce the progression of myopia.

8. A kit of ophthalmic lenses for treating myopia, comprising:

providing lenses each having a central region about the apex of the lens that yields clear distance vision, and an optical blur region immediately surrounding the central region that yields an unfocused optical image such that the lens provides an induced aperture and an increased depth of focus; and

providing instructions for use of the lenses, according to a protocol designed to reduce myopic progression in the eye.

9. The kit of claim 8 wherein the protocol enables relief or reduction of accommodative stress in the eye.

10. The kit of claim 9 wherein said depth of focus is at least +0.25 to +1.00 diopters.

11. A kit, according to claim 9, and wherein: the user has a reduction in accommodative lag of +0.25 to +1.00 diopters.

12. The kit of claim 8 wherein:

said blur region comprises an optical surface creating a power distribution that varies smoothly from an apical power at the design point through rapidly changing power surrounding said apical power.

13. A method of designing a refractive lens for reducing myopic progression, comprising:

determining a person's unaided eye depth of focus;

defining a treatment lens having a continuous power distribution configured to increase the person's depth of focus when in use; and

providing instructions for applying said lens according to a protocol designed to reduce myopic progression in the eye.

14. The method of claim 13 wherein said protocol includes having an individual wear said lens over an extended period of consecutive days but not necessarily when sleeping.

15. A kit using ophthalmic lenses comprising:

providing a pair of ophthalmic lenses each having an apex having distance vision correcting power;

a power distribution increasing smoothly radially outward from the apex to a peak power rise more positive than the distance vision correcting power;

wherein the power distribution has a first power at a design point between the vision-correcting power and the peak power rise, the power of the distribution between the apex and design point being sufficiently like in power to the distance vision correcting power to contribute to distance correction;

the first power being sufficient to create blur outside the design point;

the power distribution outside the design point being sufficient to create a blur surrounding images on the user's fovea; and

providing instructions for applying said lens according to a protocol designed to reduce myopic progression in the eye.