CLAIMS

1. An ophthalmic lens formed by a method comprising:
   determining a power profile based on a power profile function defined by a base optical power, an amount of spherical aberration at a radial distance from a geometric center of a lens, and a bump function;
   adjusting the power profile based at least on minimizing a shape metric comprising a through-focus flatness (TFF) metric of a through-focus curve; and
   forming the lens to exhibit the adjusted power profile.
2. The lens of claim 1, wherein forming a lens comprises configuring the geometric shape of the lens.
3. The lens of claim 1, wherein the spherical aberration, and parameters of the bump function are configured to vary by refractive prescription.
4. The lens of claim 1, wherein the spherical aberration, and parameters of the bump function are configured based on a characteristic of a target population.
5. The lens of claim 4, wherein the characteristic is at least one of a pupil size or a vergence variance.
6. The lens of claim 1, wherein the spherical aberration, and parameters of the bump function are configured based on pupil size and vergence variances for a specific prescription or target population.
7. The lens of claim 1, wherein forming a lens comprises configuring an internal gradient refractive index profile of the lens.
8. The lens of claim 1, wherein forming a lens comprises configuring a geometric shape of the lens and an internal gradient refractive index profile of the lens.
9. The lens of claim 1, wherein forming a lens comprises configuring a main body of the lens such that a light propagating through the lens is refracted to exhibit the adjusted power profile.
10. The lens of claim 1, wherein forming a lens further comprises configuring a main body of the lens such that at least an intensity of light propagating through the lens is changed to exhibit a target apodization profile.

11. The lens of claim 10, wherein the intensity of light propagating through the lens is changed by apodizing the lens.
12. The lens of claim 11, wherein the apodizing the lens is based on a transmittance profile defined by a continuous function, with a non-monotonically varying transmittance.
13. The lens of claim 12, wherein a maximum of transmittance is at a pupil center and a minimum value is positioned less than an optical zone (OZ) radius
14. The lens of claim 13, wherein the transmittance is based on a polynomial function.
15. The lens of claim 12, wherein a shape of the transmittance profile relative to a radial position on the lens is defined by a decrease from the center to a middlepoint and then an increase to a peripheral point.
16. The lens of claim 1, wherein the

TFF is defined by $TFF = \int_{v_{t-\delta}}^{v_{t+\delta}} \left|\frac{df(v)}{dv}\right| dv$.

17. An ophthalmic lens comprising:

    a main body configured to exhibit a power profile based on a power profile function defined by a base optical power, an amount of spherical aberration at a radial distance from a geometric center of a lens, and a bump function,

    wherein the power profile is optimized based at least on minimizing a shape metric comprising a through-focus flatness (TFF) metric of a through-focus curve.
18. The lens of claim 17, wherein the bump function comprises a multifocal function.
19. The lens of claim 17, wherein the spherical aberration, and parameters of the bump function are configured to vary by refractive prescription.
20. The lens of claim 17, wherein the spherical aberration, and parameters of the bump function are configured based on pupil size and vergence variances for a specific prescription or target population.
21. The lens of claim 17, wherein the main body is configured by configuring a geometric shape of the lens.

22. The lens of claim 17, wherein the main body is configured by configuring an internal gradient refractive index profile of the lens.
23. The lens of claim 17, wherein the main body is configured by configuring a geometric shape of the lens and an internal gradient refractive index profile of the lens.
24. The lens of claim 17, wherein the main body is configured such that a light propagating through the lens is refracted to exhibit the power profile.
25. The lens of claim 17, wherein the main body is configured such that at least an intensity of light propagating through the lens is changed to exhibit a target apodization profile.
26. The lens of claim 25, wherein the intensity of light propagating through the lens is changed by apodizing the lens.
27. The lens of claim 26, wherein the apodizing the lens is based on a transmittance profile defined by a continuous function, with a non-monotonically varying transmittance.
28. The lens of claim 27, wherein a maximum of transmittance is at a pupil center and a minimum value is positioned less than an optical zone (OZ) radius.
29. The lens of claim 28, wherein the transmittance is based on a polynomial function.
30. The lens of claim 29, wherein a shape of the transmittance profile relative to a radial position on the lens is defined by a decrease from the center to a middle point and then an increase to a peripheral point.
31. The lens of claim

17, wherein the TFF is defined by $TFF = \int_{v_{t-\delta}}^{v_{t+\delta}} \left|\frac{df(v)}{dv}\right| dv$.

32. An ophthalmic lens comprising:

a main body configured to exhibit a power profile based on a power profile function defined by a base optical power, an amount of spherical aberration at a radial distance from a geometric center of a lens, and a bump function,

wherein the power profile provides vision correction and is further optimized to slow myopia progression or treat presbyopia based at least on minimizing a shape metric comprising a through-focus flatness (TFF) metric of a through-focus curve.

33. The lens of claim 32, wherein the main body is configured by configuring a geometric shape of the lens.
34. The lens of claim 32, wherein the spherical aberration, and parameters of the bump function are configured to vary by refractive prescription.
35. The lens of claim 32, wherein the spherical aberration, and parameters of the bump function are configured based on pupil size and vergence variances for a specific prescription or target population.
36. The lens of claim 32, wherein the main body is configured by configuring an internal gradient refractive index profile of the lens.
37. The lens of claim 32, wherein the main body is configured by configuring a geometric shape of the lens and an internal gradient refractive index profile of the lens.
38. The lens of claim 32, wherein the main body is configured such that a light propagating through the lens is refracted to exhibit the power profile.
39. The lens of claim 32, wherein the main body is configured such that at least an intensity of light propagating through the lens is changed to exhibit a target apodization profile.
40. The lens of claim 39, wherein the intensity of light propagating through the lens is changed by apodizing the lens.
41. The lens of claim 40, wherein the apodizing the lens is based on a transmittance profile defined by a continuous function, with a non-monotonically varying transmittance.
42. The lens of claim 41, wherein a maximum of transmittance is at a pupil center and a minimum value is positioned less than an optical zone (OZ) radius.
43. The lens of claim 42, wherein the transmittance is based on a polynomial function.
44. The lens of claim 32, wherein the TFF is defined by $TFF = \int_{v_{t-\delta}}^{v_{t+\delta}} \left|\frac{df(v)}{dv}\right| dv$.

45. A method of forming an ophthalmic lens, the method comprising:
    determining a power profile based on a power profile function defined by a base optical power, an amount of spherical aberration at a radial distance from a geometric center of a lens, and a bump function;
    adjusting the power profile based at least on minimizing a shape metric comprising a through-focus flatness (TFF) metric of a through-focus curve; and
    forming a lens to exhibit the adjusted power profile.
46. The method of claim 45, wherein forming a lens comprises configuring a geometric shape of the lens.
47. The method of claim 45, wherein the spherical aberration, and parameters of the bump function are configured to vary by refractive prescription.
48. The method of claim 45, wherein the spherical aberration, and parameters of the bump function are configured based on pupil size and vergence variances for a specific prescription or target population.
49. The method of claim 45, wherein forming a lens comprises configuring the internal gradient refractive index profile of the lens.
50. The method of claim 45, wherein forming a lens comprises configuring a geometric shape of the lens and an internal gradient refractive index profile of the lens.
51. The method of claim 45, wherein forming a lens comprises configuring a main body of the lens such that the light propagating through the lens is refracted to exhibit the adjusted power profile.
52. The method of claim 45, wherein forming a lens comprises configuring a main body of the lens such that at least an intensity of light propagating through the lens is changed to exhibit a target apodization profile.
53. The method of claim 52, wherein the intensity of light propagating through the lens is changed by apodizing the lens.

54. The method of claim 53, wherein the apodizing the lens is based on a transmittance profile defined by a continuous function, with a non-monotonically varying transmittance.
55. The method of claim 54, wherein a maximum of transmittance is at a pupil center and a minimum value is positioned less than optical zone (OZ) radius
56. The method of claim 44, wherein the transmittance is based on a polynomial function.
57. The method of claim 54, wherein a shape of the transmittance profile relative to a radial position on the lens is defined by a decrease from the center to a middle point and then an increase to a peripheral point.
58. The method of claim 45, wherein the TFF metric is defined by $TFF = \int_{v_{t-\delta}}^{v_{t+\delta}} \left|\frac{df(v)}{dv}\right| dv$.
59. The lens of claim 41, wherein a shape of the transmittance profile relative to a radial position on the lens is defined by a decrease from the center to a middle point and then an increase to a peripheral point.