Claims:

1. A monofocal ophthalmic lens having an optical power, comprising;

an optical filter operable to filter out at least visible light having a wavelength less than 450 nm;

a first monofocal diffractive structure adapted to produce a focus corresponding to the optical power for visible light in a first wavelength range above 550 nm and to reduce longitudinal chromatic aberration to less than one diopter for incoming visible light in the first wavelength range;

a second monofocal diffractive structure outside the first diffractive structure in a radial direction and adapted to produce a focus for visible light corresponding to the optical power in a second wavelength range between 450 nm and 550 nm and to reduce longitudinal chromatic aberration for incoming visible light in the second wavelength range to less than one diopter while allowing longitudinal chromatic aberration in the first wavelength range in an amount greater than that in the first monofocal diffractive structure.

2. The ophthalmic lens of Claim 1, wherein a diffractive efficiency of the first diffractive structure is 100% for a design wavelength of 580 nm.

3. The ophthalmic lens of Claim 1, wherein a diffractive efficiency of the second diffractive structure is 100% for a design wavelength of 505 nm.

4. The ophthalmic lens of Claim 1, wherein the lens has an overall power up to 6 D and the first diffractive structure and the second diffractive structure each have a respective diffractive power less than 3 D.

5. The ophthalmic lens of Claim 1, wherein the lens has an overall power up to 21 D and the first diffractive structure and the second diffractive structure each have a respective diffractive power less than 4.25 D.

6. The ophthalmic lens of Claim 1, wherein the optical filter comprises a UV-absorbing material.

7. The ophthalmic lens of Claim 1, wherein the ophthalmic lens is formed from a cross-linked copolymer of 2-phenylethyl acrylate and 2-phenylethyl methacrylate.

8. The ophthalmic lens of Claim 1, wherein the focus of the first diffractive structure coincides with the focus of the second diffractive structure.

9. The ophthalmic lens of Claim 1, wherein the focus of the second diffractive structure is a distance-vision focus.

10. The ophthalmic lens of Claim 1, wherein the first diffractive structure extends to a radius of at least 2 mm, and the second diffractive structure extends to a radius of at least 3 mm.

11. A method of manufacturing a monofocal ophthalmic lens having an optical power, comprising:

determining a first profile for a first monofocal diffractive structure adapted to produce a focus corresponding to the optical power for visible light in a first wavelength range above 550 nm and to reduce longitudinal chromatic aberration to less than one diopter for incoming visible light in the first wavelength range;

determining a second profile for a second monofocal diffractive structure outside the first diffractive structure in a radial direction and adapted to produce a focus for visible light corresponding to the optical power in a second wavelength range between 450 nm and 550 nm and to reduce longitudinal chromatic aberration for incoming visible light in the second wavelength range to less than one diopter while allowing longitudinal chromatic aberration in the first wavelength range in an amount greater than that in the first monofocal diffractive structure;

forming the monofocal ophthalmic lens with the first profile and the second profile and incorporating an optical filter operable to filter out at least visible light having a wavelength less than 450 nm.

12. The method of Claim 11, wherein a diffractive efficiency of the first diffractive structure is 100% for a design wavelength of 580 nm.

13. The method of Claim 11, wherein a diffractive efficiency of the second diffractive structure is 100% for a design wavelength of 505 nm.

14. The method of Claim 11, wherein the lens has an overall power up to 6 D and the first diffractive structure and the second diffractive structure each have a respective diffractive power less than 3 D.

15. The method of Claim 11, wherein the lens has an overall power up to 21 D and the first diffractive structure and the second diffractive structure each have a respective diffractive power less than 4.25 D.

16. The method of Claim 11, wherein the optical filter comprises a UV-absorbing material.

17. The method of Claim 11, wherein the ophthalmic lens is formed from a cross-linked copolymer of 2-phenylethyl acrylate and 2-phenylethyl methacrylate.

18. The method of Claim 11, wherein the focus of the first diffractive structure coincides with the focus of the second diffractive structure.

19. The method of Claim 11, wherein the focus of the second diffractive structure is a distance-vision focus.

20. A monofocal ophthalmic lens having an optical power, comprising:

an optical filter operable to filter out at least light having a wavelength below 450 nm;

at least one central monofocal diffractive structure having a radius within a selected pupil size for photopic conditions, wherein the at least one diffractive structure is configured to correct longitudinal chromatic aberration to less than one diopter in a wavelength range corresponding to peak visual receptivity for photopic vision; and

a monofocal optical region outside the radius of the first diffractive structure having the optical power, the optical region configured to allow longitudinal chromatic aberration in an amount greater than the longitudinal chromatic aberration allowed by the at least one diffractive structure, wherein the longitudinal chromatic aberration allowed by the optical region shifts light energy from a peak visual receptivity for photopic vision toward a peak visual receptivity for scotopic vision and the longitudinal chromatic aberration allowed by the optical region is less than one diopter in a wavelength range corresponding to the peak visual receptivity for scotopic vision.

21. The ophthalmic lens of Claim 20, wherein the optical region is a refractive region of the ophthalmic lens.

22. The ophthalmic lens of Claim 20, wherein the optical region comprises a second diffractive structure allowing chromatic aberration to a greater degree than the at least one central diffractive structure in the wavelength range corresponding to the peak visual receptivity for photopic vision.

23. The ophthalmic lens of Claim 22, wherein a relative area covered by the at least one central diffractive structure and the second diffractive structure at least partially produces the shift in light energy toward the peak visual receptivity for scotopic vision.

24. The ophthalmic lens of Claim 22, wherein a refractive power of the optical region is adjusted to focus light to compensate for a myopic shift for scotopic vision.

25. An method of manufacturing a monofocal ophthalmic lens having an optical power , comprising:

determining an optical filter operable to filter out at least light having a wavelength below 450 nm;

determining a first profile for at least one central monofocal diffractive structure having a radius within a selected pupil size for photopic conditions, wherein the at least one diffractive structure is configured to correct longitudinal chromatic aberration to less than one diopter in a wavelength range corresponding to peak visual receptivity for photopic vision; and

determining a second profile for a monofocal optical region outside the radius of the first diffractive structure having the optical power, the optical region configured to allow longitudinal chromatic aberration in an amount greater than the longitudinal chromatic aberration allowed by the at least one diffractive structure, wherein the longitudinal chromatic aberration allowed by the optical region shifts light energy from a peak visual receptivity for photopic vision toward a peak visual receptivity for scotopic vision and the longitudinal chromatic aberration allowed by the optical region is less than one diopter in a wavelength range corresponding to the peak visual receptivity for scotopic vision; and

manufacturing the monofocal ophthalmic lens with the optical filter and the first and second profiles for the at least one central diffractive region and the optical region.

26. The method of Claim 25, wherein the step of determining the first profile comprises determining the radius for the central diffractive structure simultaneously with determining the second profile.

27. The method of Claim 26, further comprising determining a relative area covered by the at least one central diffractive structure and the second diffractive structure to at least partially produce the shift in light energy toward the peak visual receptivity for scotopic vision.

28. The method of Claim 25, further comprising determining a refractive power of the optical region to be adjusted to focus light to compensate for a myopic shift for scotopic vision.