Claims

1. A contact lens for use in preventing or slowing the development or progression of myopia, the lens including an optic zone and a peripheral zone surrounding the optic zone, the optic zone comprising:

   a central region, the central region having a first optical axis and a curvature providing a base power and centred on a centre of curvature that is on the first optical axis; and

   an annular region, wherein the annular region circumferentially surrounds the central region, and wherein the annular region comprises a treatment zone having a characteristic that reduces the contrast of an image of an object that is formed by light passing through the central region and the treatment zone compared to an image of an object that would be formed by light passing through only the central region, the treatment zone comprising an add-power region having a curvature providing an add-power of 0.5 D or more, wherein an anterior surface of the treatment zone defines a curved annular surface, such that light from each distant point object is focused by the treatment zone to form a focused arc at a proximal focal surface, the focused arc being outside of and extending in a direction around the blur circle formed by the light focused by the central region, and such that a single image is not formed at the proximal focal surface;

   wherein

   the characteristic that causes the contrast reduction varies with meridian around the annular region, and

   wherein the peripheral zone has a constant thickness profile in every meridian or a variation in thickness configured to promote rotation of the lens.

2. The contact lens according to claim 1, wherein the peripheral zone has a variation in thickness configured to promote rotation of the lens, and wherein the thickness profile of the peripheral zone has no axis of mirror symmetry.

3. The contact lens according to claim 1, wherein the peripheral zone has a variation in thickness configured to promote rotation of the lens, and wherein the thickness of the peripheral zone is constant on one half of the lens and varies on the other half of the lens.

4. The contact lens according to claim 3, in which the variation on the other half of the lens provides a prism ballast on that half of the lens.

5. The contact lens according to claim 1, wherein the peripheral zone has a variation in thickness configured to promote rotation of the lens, and wherein the thickness of the peripheral zone varies periodically around the lens.

6. The contact lens according to claim 5, in which the periodic variation is a sinusoid, triangular or sawtooth waveform.

7. The contact lens according to claim 1, wherein the annular region comprises a plurality treatment zones separated by regions that do not substantially reduce the contrast of an image of an object that is viewed through the annular region compared to an image of an object that is viewed through the central region.

8. The contact lens according to claim 7, wherein the treatment zones are arranged at regular intervals around the circumference of the annular region.

9. The contact lens according to claim 1, wherein the treatment zone comprises a strong contrast reduction region having a characteristic that reduces the contrast of an image of an object that is viewed through the treatment zone compared to an image of an object that is viewed through the central region by 50% or more, wherein the area of the strong contrast reduction region is less than 50% of the area of the annular region.

10. The contact lens according to claim 8, wherein the treatment zone further comprises a weaker contrasting reduction region having a characteristic that reduces the contrast of an image of an object that is viewed through the treatment zone compared to an image of an object that is viewed through the central region between 10% and 50%.

11. The contact lens according to claim 1, wherein the add-power region has a curvature providing a max add power of at least 2.0 D, and wherein the treatment zone further comprises a lower add power region having a curvature providing a low add-power of between 0 D and 1.5 D.

12. The contact lens according to claim 1, wherein the annular region may comprise at least one base-power region, having the curvature providing the base power and centred on the centre of curvature of the central region.

13. The contact lens according to claim 1, wherein the curvatures are curvatures of the anterior surface of the lens.

14. The contact lens according to claim 1, wherein the treatment zone includes a feature that increases scattering of light passing through the treatment zone compared to light passing through the central region.

15. The contact lens according to claim 14, wherein the feature is disposed on an anterior surface of the annular region.

16. The contact lens according to claim 1, wherein the treatment zone has a characteristic that causes diffraction of light passing through the treatment zone.

17. The contact lens according to claim 1, wherein the central region is substantially circular in shape and has a diameter of between 2 and 7 mm.

18. The contact lens according to claim 1, wherein the annular region extends radially outwards from a perimeter of the central region by between 0.5 and 1.5 mm.

19. The contact lens according to claim 1, wherein the base power is between 0.5 D and -15.0 D.

20. The contact lens according to claim 1, wherein the lens comprises an elastomer material, a silicone elastomer material, a hydrogel material, or a silicone hydrogel material, or mixtures thereof.

21. The contact lens according to claim 1, wherein the lens is formed using a lathing process.

22. A method of manufacturing a contact lens, the method comprising:

forming a contact lens, the lens including an optic zone and a peripheral zone surrounding the optic zone, the optic zone comprising:

a central region, the central region having a first optical axis and a curvature providing a base power and centred on a centre of curvature that is on the first optical axis; and

an annular region, wherein the annular region circumferentially surrounds the central region, and wherein the annular region comprises a treatment zone having a characteristic that reduces the contrast of an image of an object that is viewed through the treatment zone compared to an image of an object that is viewed through the central region, the treatment zone comprising an add-power region having a curvature providing an add-power of 0.5 D or more, wherein an anterior surface of the treatment zone defines a curved annular surface, such that light from each distant point object is focused by the treatment zone to form a focused arc at a proximal focal surface, the focused arc being outside of and extending in a direction around the blur circle formed by the light focused by the central region, and such that a single image is not formed at the proximal focal surface; wherein

the characteristic that causes the contrast reduction varies with meridian around the annular region, and

wherein the peripheral zone has a constant thickness profile in every meridian or a variation in thickness configured to promote rotation of the lens.