Claims

1. A multifocal ophthalmic lens, wherein:

a first surface of the lens is shaped to form a first surface power map;

a second surface of the lens is shaped to form a second surface power map;

the first and second surface power maps together form a lens power map;

the first surface power map, the second surface power map, or the lens power map comprises a spiral, the spiral having a variation across at least a portion of the lens, the spiral having a first periodic component, in a radial direction extending outwards from the centre of the portion, and a second periodic component having a substantially constant period, in an azimuthal direction about the centre of the portion.

2. The multifocal ophthalmic lens according to claim 1, wherein:

the first periodic component has a period of greater than 100 microns; and

the second periodic component has a period of greater than 6 degrees.

3. The multifocal ophthalmic lens according to claim 1, wherein the variation of the spiral comprises an offset in power, the offset changing according to a radial distance from the centre of the portion.

4. The multifocal ophthalmic lens according to claim 1, wherein a peak power of one or more arms of the spiral varies according to one or both of: a radial distance from the centre of the portion and an azimuthal position about the centre of the portion.

5. The multifocal ophthalmic lens according to claim 1, wherein:

a peak power of each arm of the spiral does not vary with radial distance from the centre of the portion; and

the peak power of at least one arm of the spiral differs from that of the other arms.

6. The multifocal ophthalmic lens according to claim 1, wherein each of the first surface power map and the second surface power map vary smoothly across the portion.

7. The multifocal ophthalmic lens according to claim 1, wherein:

the portion of the lens comprises a central region and an outer region, the outer region surrounding the central region;

the lens power map within the outer region comprises the spiral; and

the lens power map does not vary periodically within the central region.

8. The multifocal ophthalmic lens according to claim 7, wherein the central region has a diameter of less than 50% of that of the portion.

9. The multifocal ophthalmic lens according to claim 7, wherein:

the lens comprises a transition region, the transition region surrounding the central region and the outer region surrounding the transition region; and

the lens power map varies such that the transition region provides a smooth transition between the central zone and the outer zone.

10. The multifocal ophthalmic lens according to claim 1, wherein a twist rate of the spiral varies according to a radial distance from the centre of the portion.

11. The multifocal ophthalmic lens according to claim 1, wherein a width of one or more arms of the spiral differs from a corresponding width of the other arms of the spiral.

12. The multifocal ophthalmic lens according to claim 11, wherein, at a pre-determined radial distance from the centre of the portion, the spiral changes its direction of rotation.

13. A multifocal ophthalmic lens according to claim 1, wherein the ophthalmic lens is a contact lens, a spectacle lens, or an intraocular lens.

14. A method of manufacturing a multifocal ophthalmic lens, the method comprising:

operating a lathe to shape a first surface of one of: a lens, a mould for a lens, or an insert for manufacturing a mould for a lens to form a first surface power map;

operating a lathe to shape a second surface of the lens, mould, or insert to form a second surface power map;

wherein:

the combination of the first and second surface power maps forms a lens power map;

the first surface power map, the second surface power map, or the lens power map comprises a spiral, the spiral having a variation across at least a portion of the lens, mould or insert, the spiral having a first periodic component, in a radial direction extending outwards from the centre of the portion, and a second periodic component having a substantially constant period, in an azimuthal direction about the centre of the portion.

15. A method of improving vision of a person, the method comprising:

providing a multifocal ophthalmic lens according to claim 1 to a person in need of improved vision.

16. The multifocal ophthalmic lens according to claim 1, wherein the ophthalmic lens is a centre distance contact lens, or a centre near contact lens.

17. The multifocal ophthalmic lens according to claim 7, wherein the central region has an optical power corresponding to a distance vision correction.

18. The multifocal ophthalmic lens according to claim 7, wherein the central region has an optical power corresponding to a near vision correction.