Claims

1. A multifocal ophthalmic lens wherein:

a first surface of the lens varies across at least a portion of the lens to form a first surface power map;

the first surface power map comprises a spiral, with a power that varies substantially periodically both radially outwards from and angularly about an optical axis of the lens;

a period of the radial variation is greater than 100 microns; and

a period of the angular variation is ~~greater than 6~~a unit fraction of 360 degrees.

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

the ophthalmic lens is a contact lens; and

the first surface varies across an optic zone of the contact lens to form the first surface power map.

3. ~~A~~The multifocal ophthalmic lens according to claim~~s~~ 1 ~~or 2~~, wherein the power varies smoothly across the portion.

4. ~~A~~The multifocal ophthalmic lens according to claim 3, wherein the power varies both radially and angularly as one of: a rounded square wave and a sinusoid.

5. ~~A~~The multifocal ophthalmic lens according to claim~~s~~ 1 ~~or 2~~, wherein the power varies both radially and angularly as a square wave.

6. ~~A~~The multifocal ophthalmic lens according to ~~any preceding~~ claim 1, wherein the periods of the radial and angular variations are each substantially constant across the portion.

7. ~~A~~The multifocal ophthalmic lens according to ~~any of~~ claim~~s~~ 1 ~~to 5~~, wherein the period of at least one of the radial and angular variations changes according to one or both of: a radial distance from the optical axis of the lens and an angular position about the optical axis of the lens.

8. ~~A~~The multifocal ophthalmic lens according to ~~any preceding~~ claim 1, wherein:

the lens comprises a central region and an outer region~~–~~, the central region immediately surrounding the optical axis of the lens and the outer region surrounding the central region;

the power of the central region does not vary periodically across the central region; and

the outer region comprises the angular and radial variations in power.

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

10. ~~A~~The multifocal ophthalmic lens according to claim~~s~~ 8 ~~or 9~~, wherein:

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

the power of the transition region varies to provide a smooth transition between the central and outer regions.

11. ~~A~~The multifocal ophthalmic lens according to ~~any preceding~~ claim 1, wherein:

the lens comprises a second surface which varies across the portion of the lens to form a second surface power map;

the second surface power map comprises a spiral, with a power that varies substantially periodically radially outwards from and angularly about the optical axis of the lens;

a period of the radial variation of the second surface power map is greater than 100 microns; and

a period of the angular variation of the second surface power map is ~~greater than 6~~a unit fraction of 360 degrees.

12. ~~A~~The multifocal ophthalmic lens according to claim 11, wherein:

the first surface power map and the second surface power map each comprise a spiral; and

the spirals provided by the first and second surface power maps twist in opposing directions.

13. ~~A~~The multifocal ophthalmic lens according to ~~any preceding~~ claim 11, wherein the multifocal ophthalmic lens is a myopia control lens.

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

operating a lathe to shape a first surface of at least one of: a lens, a mould for a lens, or an insert for manufacturing a mould for a lens, such that:

the first surface varies across at least a portion of the lens to form a first surface power map;

the first surface power map comprises a spiral;

the first surface power map varies substantially periodically both radially outwards from and angularly about an optical axis of the lens;

a period of the radial variation is greater than 100 microns; and

a period of the angular variation is ~~greater than 6~~a unit fraction of 360 degrees.

15. ~~A~~The method according to claim 14, further comprising operating a lathe to shape a second surface of the lens, the mould, or the insert, such that:

the second surface varies across the portion of the lens to form a second surface power map;

the second surface power map comprises a spiral;

the second surface power map varies substantially periodically both radially outwards from and angularly about an optical axis of the lens;

a period of the radial variation is greater than 100 microns; and

a period of the angular variation is ~~greater than 6~~a unit fraction of 360 degrees.

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

providing a multifocal ophthalmic lens ~~according to any of claims 1 to 13~~ to a person in need of improved vision, wherein

a first surface of the lens varies across at least a portion of the lens to form a first surface power map;

the first surface power map comprises a spiral, with a power that varies substantially periodically both radially outwards from and angularly about an optical axis of the lens;

a period of the radial variation is greater than 100 microns; and

a period of the angular variation is a unit fraction of 360 degrees.