Claims:

1. An ophthalmic lens comprising a design that includes correction factors for near and far vision based on wavefront data and pupil size wherein the use of the lens slows or stops the progression of myopia; and
wherein the lens comprises a convex surface with a central optic zone surrounded by a peripheral zone further surrounded by an edge zone, and a concave surface which rests on the wearer's eye; wherein the lens power at any location in the optical zone is described by the sum of the apical distance averaged wavefront derived power plus a correction which is derived from a single, partial multiple or multiple of the difference between the distance and near average wavefront derived power at each location (x) and the difference between die apical near and distance wavefront derived powers, the optical lens power being useful in controlling or slowing the progression of myopia.

2. A method of designing a contact lens comprising:
acquiring wavefront data;
converting the wavefront data to a radial power map; and
generating a lens power profile that includes correction factors for near and far vision based on wavefront data and pupil size.

3. The lens as claimed in Claim 1 or the method as claimed in Claim 2, wherein the total population wavefront data is acquired.

4. The lens as claimed in Claim 1 or the method as claimed in Claim 2, wherein sub-population wavefront data is acquired.

5. The lens as claimed in Claim 1 or the method as claimed in Claim 2, wherein wavefront data for an individual are acquired.

6. The lens as claimed in Claim 1 or the method as claimed in Claim 2, wherein the wave-

front data is an average of multiple wavefront files.

7. The lens as claimed in Claim 1 or the method as claimed in Claim 2, wherein the lens design power profile is calculated by averaging all meridians to a rotationally symmetric form.

8. The lens as claimed in Claim 1 or the method as claimed in Claim 6, wherein the lens design power profile is calculated by neutralizing the natural negative power shift in the group average data of a near power profile.

9. The lens as claimed in Claim 1 or the method as claimed in Claim 6, wherein the lens design power profile is calculated as being proportional to the chord diameter from the centre of the lens.

10. The lens as claimed in Claim 1 or the method as claimed in Claim 6 wherein the lens design power profile is calculated by adding a multiple of the chord diameter from the centre of the lens.

11. The lens as claimed in Claim 1 or the method as claimed in Claim 6, wherein the lens design power profile is calculated by adding a portion of the chord diameter from the centre of the lens.

12. An article comprising computer-usable medium having computer readable instructions stored thereon for execution by a processor to perform a method comprising: converting wavefront data characterizing an eye to a radial power map and generating a lens power profile that includes correction factors for near and far vision based on wavefront data and pupil size.

13. The article of claim 12, that produces a lens design for a lens with a convex surface with a central optic zone surrounded by a peripheral zone which is further surrounded by an edge

zone, and a concave surface which rests on the wearer's eye.

14. The article of claim 13, wherein in such design the lens power at any location in the optical zone is described by the sum of the apical distance averaged wavefront derived power plus a correction which is derived from a single, partial multiple or multiple of the difference between the distance and near average wavefront derived power at each location (x) and the difference between the apical near and distance wavefront derived powers, the optical lens power being useful in controlling or slowing the progression of myopia.

15. An ophthalmic lens comprising a design that includes correction factors for near and far vision based on wavefront data and pupil size wherein said the use of the lens slows or stops the progression of myopia; and wherein lens power is determined by:

$$Pow\text{PR } of = RPD_{(0)} + k_{(x)} \left((RPD_{(x)} + (RPN_{(0)} - RPD_{(0)}) - RPN_{(X)}\right)$$

16. The lens as claimed in any one of Claims 1 to 11, wherein the lens is a contact lens.

Claims:

1. A method of designing contact lenses, the method comprising:
a) acquiring wavefront data;
b) converting the wavefront data to a radial power map;
c) generating a lens power profile that includes correction factors for near and far vision based on the acquired ocular wavefront data and measured pupil size, the lens design power profile being calculated by averaging all meridians to a rotationally symmetric form; and
d) fabricating contact lenses from the lens power profile.

2. The method as claimed in Claim 1, wherein the total population wavefront data is acquired.

3. The method as claimed in Claim 1, wherein sub- population wavefront data is acquired.

4. The method as claimed in Claim 1, wherein wavefront data for an individual are acquired.

5. The method as claimed in Claim 1, wherein the wavefront data is an average of multiple wavefront files.