

CLAIMS

What is claimed is:

1. An apparatus for measuring an un-hydrated device, the apparatus comprising:
a displacement sensor comprising a laser source, wherein the laser source is capable of generating a laser beam;
an objective lens additionally comprised in the displacement sensor, wherein the objective lens comprises an optical lens which focuses the laser beam;
an oscillator for oscillating the objective lens;
a forming optic supporting a polymerized optic device, said forming optic positioned in the path of the laser beam; and
a camera for determining a relative sharpness of a focal point of the laser beam through the objective lens.
2. The apparatus of claim 1, wherein the displacement sensor has an operating range of 30mm or less.
3. The apparatus of claim 2, wherein the displacement sensor is capable of measuring a thickness of between about plus 1 millimeter to minus 1 millimeter.
4. The apparatus of claim 1, further comprising a sensor rotation axis.
5. The apparatus of claim 1, further comprising a sensor adjuster wherein, one or more of said sensor adjuster may one or both of align and adjust the displacement sensor.
6. The apparatus of claim 5, wherein the sensor adjuster comprises one or more of an x sensor adjuster, a y sensor adjuster, and a z sensor adjuster.
7. The apparatus of claim 1, wherein the oscillator is capable of moving the objective lens up and down between two points.
8. The apparatus of claim 1, wherein the forming optic comprises a glass.
9. The apparatus of claim 1, wherein the forming optic comprises a quartz.
10. The apparatus of claim 1, further comprising a kinematic mounting device.
11. The apparatus of claim 10, the kinematic mounting device operates as a mounting device for a forming optic assembly.

12. The apparatus of claim 11, wherein the mounting device secures the forming optic assembly in a fixed position, relative to another position.
13. The apparatus of claim 12, wherein the forming optic assembly comprises both of the forming optic and a metal frame.
14. The apparatus of claim 1, further comprising a forming optic rotation axis.
15. The apparatus of claim 1, further comprising a forming optic adjuster wherein, one or more of said forming optic adjuster may one or both of align and adjust the kinematic mount.
16. The apparatus of claim 14, wherein the forming optic adjuster comprises one or both of a forming optic x adjuster and a forming optic y adjuster.

CLAIMS

What is claimed is:

1. A method for measuring an un-hydrated ophthalmic lens comprising:
 - providing an apparatus for measuring said un-hydrated ophthalmic lens including a displacement sensor having a laser source capable of generating a laser beam, an objective lens for focusing said laser beam, an oscillator for oscillating the objective lens, and a camera for determining a relative sharpness of a focal point of the laser beam;
 - positioning a forming optic mandrel having a convex surface in the path of the laser beam;
 - obtaining a reference measurement of the shape of the optic mandrel using the apparatus for measuring;
 - forming the un-hydrated ophthalmic optic lens on the convex surface of the optic mandrel;
 - positioning the forming optic mandrel and formed ophthalmic lens in the path of the laser beam;
 - measuring the optic mandrel with the formed ophthalmic lens using the apparatus for measuring; and
 - calculating an axial thickness of the ophthalmic lens by comparing the reference measurement to the measurement of the optic mandrel with the formed ophthalmic lens.
2. The method according to claim 1, wherein the measurement steps are performed using spherical coordinates.
3. The method according to claim 2, wherein the spherical coordinates are converted into Cartesian coordinates.

4. The method according to claim 1, wherein the forming step further comprises forming the ophthalmic lens in a free form manner.
5. The method according to claim 4, wherein the forming step further comprises forming the ophthalmic lens by polymerizing a Lens Forming Mixture directly onto the optic mandrel;
6. The method according to claim 5, wherein the Lens Forming Mixture is polymerized using actinic radiation.