## CLAIMS

1. A method for determining the presence of an electrical charge on a surface of an ophthalmic lens mold (1, 10), the method comprising the steps of

exposing a sensor crystal (22) of a sensor element (2) to a surface of an ophthalmic lens mold (1) on which an electrical charge generating an electrical field may be present,

converting a light beam (31) emitted from a laser light source (3) into a linearly polarized measurement light beam (34) by passing the light beam (31) through the sensor element (2),

processing the linearly polarized measurement light beam (34) exiting the sensor element (2) in a measurement unit (4),

wherein the step of converting the light beam (31) into a linearly polarized measurement light beam (34) by passing the light beam (31) through the sensor element (2) comprises:

converting the light beam (31) emitted from the laser light source (3) into a linearly polarized light beam (32) having a first polarization direction by passing the light beam (31) through a linear polarizer (21),

converting the linearly polarized light beam (32) exiting the linear polarizer (21) into an elliptically polarized light beam (33) by passing the linearly polarized light beam (32) through the sensor crystal (22), the sensor crystal being selected from a non-centrosymmetrical crystallographic point group $\bar{4}3$ m,

converting the elliptically polarized light beam (**33**) exiting the sensor crystal (**22**) into the linearly polarized measurement light beam (**34**) by passing the elliptically polarized light beam (**33**) through a quarter-wave polarizer (**23**), wherein the linearly polarized measurement light beam (**34**) has a second polarization direction forming a polarization angle ($\phi$) with the first polarization direction of the linearly polarized light beam (**32**) exiting the linear polarizer (**21**) and entering the sensor crystal (**22**), the polarization angle ($\phi$) of the linearly polarized measurement light beam (**34**) being representative of the presence of the electrical field generated by the electrical charge on the surface of the lens mold (**1**) which the sensor crystal (**22**) is exposed to, and

wherein the step of processing the linearly polarized measurement light beam (**34**) in the measurement unit (**4**) comprises:

rotating the second polarization direction of the linearly polarized measurement light beam (**34**) by passing the polarized measurement light beam through a Faraday rotator (**41**, **42**) thereby forming a rotated linearly polarized measurement light beam (**35**, **36**),

converting the rotated linearly polarized measurement light beam (**35**, **36**) into an analyzer light beam (**37**) by passing the rotated linearly polarized measurement light beam (**35**, **36**) through an analyzer (**43**),

converting the analyzer light beam (**37**) into an electrical detection signal (**441**) with the aid of a photodetector (**44**) and evaluating the electrical detection signal (**441**) generated by the photodetector (**44**) with the aid of an evaluator (**45**) thereby determining the presence of the electrical charge on the surface of the ophthalmic lens mold (**1**).

2. The method according to claim 1, wherein the propagation direction of the light beam (31) passing through the sensor element (2) is perpendicular to the surface of the ophthalmic lens mold (1) the sensor crystal (22) is exposed to.

3. The method according to claim 1, wherein the sensor crystal (22) is selected from the non-centrosymmetrical crystallographic point group $\bar{4}3$ m and has crystallographic faces along the crystallographic planes $[1\bar{1}0]\times[110]\times[001]$, wherein the electrical field (11) is parallel to the direction of the crystallographic plane [110], and wherein the propagation direction of the linearly polarized light beam (32) exiting the linear polarizer (21) and entering the sensor crystal (22) has a propagation direction parallel to the crystallographic plane $[1\bar{1}0]$.

4. The method according to claim 2, wherein the sensor crystal (22) is selected from the non-centrosymmetrical crystallographic point group $\bar{4}3$ m and has crystallographic faces along the crystallographic planes $[1\bar{1}0]\times[110]\times[001]$, wherein the electrical field (11) is parallel to the direction of the crystallographic plane [110], and wherein the propagation direction of the linearly polarized light beam (32) exiting the linear polarizer (21) and entering the sensor crystal (22) has a propagation direction parallel to the crystallographic plane $[1\bar{1}0]$.

5. The method according to claim 1, wherein the analyzer (43) is a linear polarizer allowing light having a third polarization direction perpendicular to the first polarization direction of the linearly polarized light beam (32) exiting the linear polarizer (21) and entering the sensor crystal (22) to pass through the analyzer (43).

6. The method according to claim 2, wherein the analyzer (43) is a linear polarizer allowing light having a third polarization direction perpendicular to the first polarization direction of the linearly polarized light beam (32) exiting the linear polarizer (21) and entering the sensor crystal (22) to pass through the analyzer (43).

7. The method according to claim 1, wherein evaluating the electrical detection signal (441) generated by the photodetector (44) is performed in the evaluator (45) using a phase-locked loop, the evaluator (45) controlling a direct current driving the Faraday rotator (41) to rotate the second polarization direction of the linearly polarized measurement light beam (34) by an angle ($\alpha$) determined by the electrical detection signal (441) generated by the photodetector (44) and evaluated in the evaluator (45).

8. The method according to claim 1, wherein the second polarization direction of the linearly polarized measurement light beam (34) is rotated by passing the linearly polarized measurement light beam (34) through a first Faraday rotator (41) thereby forming a non-modulated rotated linearly polarized measurement light beam (35), and by thereafter passing the non-modulated rotated linearly polarized measurement light beam (35) through a second Faraday rotator (42) thereby forming a modulated rotated linearly polarized measurement light beam (36), with the first Faraday rotator (41) being driven by a direct current supplied by a direct current driver (411) controlled by the evaluator (45), and with the second Faraday rotator (42) being driven by an alternating current supplied by an alternating current driver (421) connected to an oscillator (47).

9. The method according to claim 7, wherein the modulated rotated linearly polarized measurement light beam (36) is converted into the electrical detection signal (441), and wherein the direct current supplied by the direct current driver (411) controlled by the evaluator (45) and driving the first Faraday rotator (41) is varied by the phase-locked loop of the evaluator (45) until the modulated electrical detection signal (441) is symmetrical around a minimum value.

10. The method according to claim 8, wherein the modulated rotated linearly polarized measurement light beam (36) is converted into the electrical detection signal (441), and wherein the direct current supplied by the direct current driver (411) controlled by the evaluator (45) and driving the first Faraday rotator (41) is varied by the phase-locked loop of the evaluator (45) until the modulated electrical detection signal (441) is symmetrical around a minimum value.

**11**. The method according to claim **1**, wherein the sensor crystal (**22**) is a single crystal selected from the group consisting of $Bi_4Ge_3O_{12}$, $Bi_4Si_3O_{12}$ and GaAs.

**12**. The method according to claim **1**, wherein the photodetector (**44**) is a PIN-diode.

**13**. The method according to claim **2**, wherein the photodetector (**44**) is a PIN-diode.

**14**. The method according to claim **1**, wherein the laser light source (**3**) is a helium-neon laser or a laser diode.

**15**. The method according to claim **1**, wherein the surface of the lens mold (**1**) is a lens forming surface.

**16**. The method according to claim **1**, wherein the distance between the surface of the lens mold (**1**) and the sensor crystal (**22**) is in the range of 0.5 mm to 20 mm.

**17**. The method according to claim **2**, wherein the distance between the surface of the lens mold (**1**) and the sensor crystal (**22**) is in the range of 0.5 mm to 20 mm.

**18**. An apparatus for determining the presence of an electrical charge on a surface of an ophthalmic lens mold (**1**) comprising:

a laser light source (**3**) for emitting a light beam (**31**) defining a beam path,

a sensor element (**2**) comprising a sensor crystal (**22**) arranged in the beam path of the light beam (**31**), the sensor crystal (**22**) being exposable to a surface of an ophthalmic lens mold on which an electrical charge generating an electrical field (**11**) may be present, the sensor element (**2**) being configured for converting the light beam (**31**) emitted by the laser light source (**3**) into a linearly polarized measurement light beam (**34**) by having the light beam (**31**) emitted by the laser light source (**3**) pass through the sensor element (**2**),

a measurement unit (**4**) for processing the linearly polarized measurement beam (**34**) exiting the sensor element (**2**),

wherein the sensor element (2) comprises

a linear polarizer (21) having a first polarization direction and being arranged in the beam path of the light beam (31), the linear polarizer (21) being configured for converting the light beam (31) emitted from the laser light source (3) into a linearly polarized light beam (32) having a first polarization direction,

the sensor crystal (22) which is selected from the non-centrosymmetrical crystallographic point group

$\bar{4}3m$, the sensor crystal (22) being arranged in the beam path of the linearly polarized light beam (32) for converting the linearly polarized light beam (32) exiting the linear polarizer (21) into an elliptically polarized light beam (33), and

a quarter-wave polarizer (23) being arranged in the beam path of the elliptically polarized light beam (33) exiting the sensor crystal (22), the quarter-wave polarizer (23) being configured for converting the elliptically polarized light beam (33) into the linearly polarized measurement light beam (34) having a second polarization direction forming a polarization angle ($\phi$) with the first polarization direction of the linearly polarized light beam (32) exiting the linear polarizer (21) and entering the sensor crystal (22), the polarization angle ($\phi$) of the linearly polarized measurement light beam (34) being representative of the presence of the electrical field generated by the electrical charge on the surface of the lens mold (1) which the sensor crystal (22) is exposable to,

and wherein the measurement unit (4) comprises

a Faraday rotator (41, 42) arranged in the beam path of the linearly polarized measurement light beam (34) and configured for rotating the second polarization direction of the linearly polarized measurement light beam (34) to form a rotated linearly polarized measurement light beam (35, 36)

an analyzer (**43**) being arranged in the beam path of the rotated linearly polarized measurement light beam (**35**), the analyzer being configured for converting the rotated linearly polarized measurement light beam (**35, 36**) into an analyzer light beam (**37**),

a photodetector (**44**) for converting the analyzer light beam (**37**) into an electrical detection signal (**440, 441**), and

an evaluator (**45**) for evaluating the electrical detection signal (**440, 441**) generated by the photodetector (**44**) to determine the presence of the electrical charge on the surface of the ophthalmic lens mold (**1**).

**19**. The apparatus according to claim **18**, wherein the sensor crystal (**22**) is selected from the non-centrosymmetrical crystallographic point group $\bar{4}3m$ and has crystallographic faces along the crystallographic planes [1 $\bar{1}$0]×[110]×[001].

**20**. The apparatus according to claim **18**, wherein the measurement unit (**4**) comprises

a first Faraday rotator (**41**) arranged in the beam path of the polarized measurement light beam (**34**) and connected to a direct current driver (**411**) controlled by the evaluator (**45**), for rotating the polarization direction of the linearly polarized measurement light beam (**34**) to form a non-modulated rotated polarized measurement light beam (**35**), and

a second Faraday rotator (**42**) arranged in the beam path of the non-modulated rotated linearly polarized measurement light beam (**35**) and connected to an alternating current driver (**421**) connected to an oscillator (**47**) to form a modulated rotated linearly polarized measurement light beam (**36**),

and wherein the analyzer (**43**) of the measurement unit (**4**) is a linear polarizer having a polarization direction perpendicular to the polarization direction of the linear polarizer (**21**) of the sensor element (**2**).