WHAT IS CLAIMED IS

1. A method of manufacturing a plurality of optical devices ~~(20a)~~ for cameras, each optical device ~~(20a)~~ having a fix focus lens module ~~(2a)~~ and a mount element ~~(3a)~~ for assembling with an image sensor comprising an image sensor plane ~~(5)~~, wherein the lens modules are designed for cameras with identical design, each fix focus lens module ~~(2a)~~ comprising one or more lenses ~~(17a, 18a)~~ or lens parts, the method comprises the steps of:

   - manufacturing a plurality of lens modules ~~(2a..d)~~, wherein the lens modules are replicated on wafer scale, and wherein the replication process comprises molding or embossing;
   - determining a lens module focusing parameter value (FP) for each lens module ~~(2a..d)~~;
   - providing and allocating mount elements ~~(3a..b)~~ to the lens modules ~~(2a..b~~, whereas the mount elements ~~(3a..b)~~ are to be arranged within the optical devices ~~(20a)~~ to define a fixed separation distance ~~(6a..b)~~ between the lens modules ~~(2a..b)~~ and the image sensor plane ~~(5)~~, the mount elements ~~(3a..b)~~ having variable mount section lengths ~~(7a..b)~~ by means of which the geometrical distance ~~(6a)~~ between the lens module ~~(2a)~~ and the image sensor plane ~~(5)~~ is adjusted for each lens module ~~(2a..d)~~ individually or in groups dependent on the optical properties of the lens modules ~~(2a..b)~~, to compensate the variation of the lens module focusing parameter values between the plurality of lens modules ~~(2a..d)~~, so that the focal plane of the lens modules falls into the image plane, particularly the image sensor plane ~~(5)~~, or ~~li~~lies within the depth of focus of the camera containing the optical device ~~(20a)~~;
   - assembling the lens modules ~~(2a)~~ and the mount elements ~~(2a)~~ in order to form optical devices ~~(20a)~~.

2. ~~A~~The method according to claim 1, wherein the lens module focusing parameter corresponds to ~~the~~a flange ~~focus~~focal length (FFL) or to a lens module parameter based on the ~~flange focal length~~FFL, and wherein the method comprises the steps of determining the lens module focusing parameter value by direct or indirect measuring of the FFL

value or by determining of the parameter value based on the flange focal length (FFL) ~~(6a..d)~~ of the corresponding lens modules ~~(2a..d)~~.

3. ~~A~~The method according to claim 1 or 2, wherein the manufacturing of lens modules ~~(2a..d)~~ further comprises the steps of:

   - manufacturing one or more than one wafer or a wafer stack assembly ~~(1)~~ each wafer or wafer stack assembly containing a plurality of lens modules ~~(2a..d)~~;
   - separating each wafer or wafer stack assembly ~~(1)~~ into individual lens modules ~~(2a..d)~~;.

4. ~~A~~The method according to one of the preceding claims 1 to 3, wherein the method further comprises the steps of:

   - defining at least two classes of focusing parameter values (FP), particularly FFL-classes, each class of focusing parameter value(s) encompassing a lens module focusing parameter value or a range of lens module focusing parameter values, which the lens module ~~(2a..d)~~ may feature;
   - allocating each lens module ~~(2a..d)~~ to a class of focusing parameter value(s) based on the determined, particularly measured, lens module focusing parameter values ~~(6a..d)~~;
   - providing and allocating to each class of focusing parameter value(s) a class of mount elements ~~(3a..b)~~ with a defined mount section length ~~(7a..b)~~, particularly a mount FFL section length, depending on the lens module focusing parameter value or the range of lens module focusing parameter values of the class to which the mount elements ~~(3a..b)~~ are allocated;
   - allocating to each lens module ~~(2a..b)~~ of a class a mount element ~~(3a..b)~~ of this class;

5. ~~A~~The method according to one of the preceding claims 1 to 4, wherein the mount section length ~~(7a..b)~~ of the mount elements ~~(3a..b)~~ is graded in steps of 5 - 10 µm, particularly of 10 µm between the classes of mount elements ~~(3a..b)~~.

6. ~~A~~The method according to one of the preceding claims 3 to 5, wherein lens modules ~~(2a..d)~~ of a wafer or wafer stack assembly ~~(1)~~ or lens modules ~~(2a..d)~~ between different wafer or wafer stack assemblies ~~(1)~~ have a different focusing parameter values, particularly flange focal lengths (FFL) ~~(6a..d)~~, due to fabrication tolerances of the lens structure.

7. ~~A~~The method according to one of the preceding claims 1 to 6, comprising the step of manufacturing one or more wafer stack assembly ~~(1)~~ each wafer stack assembly ~~(1)~~ containing a plurality of lens modules ~~(2a..b)~~, wherein the wafer stack assembly ~~(1)~~ contains a first wafer ~~(23a)~~ and a second wafer ~~(25a)~~, on each wafer a plurality of lens structures ~~(17a..b, 18a..b)~~ for lens modules ~~(2a..b)~~ are provided, e.g. replicated, and wherein the first and second wafer ~~(23a, 25a)~~ are bonded via a spacer wafer ~~(24a)~~, the spacer wafer ~~(24a)~~ having a plurality of through holes ~~(16a..b)~~, wherein the through holes ~~(16a, 16b)~~ are aligned with the lens structures ~~(17a..b, 18a..b)~~.

8. ~~A~~The method according to one of the preceding claims 1 to 7, wherein the optical devices further comprise optoelectronic units ~~(4)~~, each with an image sensor comprising an image sensor plane ~~(5)~~, and the optoelectronic units ~~(4)~~ are preferably manufactured on a wafer-scale, wherein a wafer or a wafer stack assembly is produced which contains a plurality of optoelectronic units ~~(4)~~, and wherein the wafer or wafer stack assembly is separated into individual optoelectronic units ~~(4)~~, and the optoelectronic units ~~(4)~~, the lens modules ~~(2a..b)~~ and the mount elements ~~(3a..b)~~ are brought together, preferably assembled, in operative connection.

9. ~~A~~The method of manufacturing a camera comprising the steps of manufacturing optical devices according to any one of claims 1-8 and further comprising the step of building in the optical devices into the cameras.

10. A plurality of optical devices ~~(20a..b, 60a..b)~~, in particular for cameras, preferably manufactured with the method according to one of the claims 1 to 8, wherein the optical devices ~~(20a..b, 60a..b)~~ each comprise a lens module ~~(2a..b, 42a..b)~~ and a mount element ~~(3a..b, 43a..b)~~, wherein the lens modules are designed for cameras with identical design, and the lens modules are replicated on wafer scale, wherein the replication process comprises molding or embossing, and the lens modules ~~(2a..b, 42a..b)~~ of at least two optical devices ~~(20a..b, 60a..b)~~ have different lens module focusing parameter values, particularly flange focal lengths (FFL), and wherein the mount elements ~~(3a..b, 43a..b)~~ of the optical devices ~~(20a..b, 60a..b)~~ have variable mount section lengths ~~(7a..b, 47a..b)~~, and the mount section length ~~(7a..b, 47a..b)~~ of the corresponding mount element ~~(3a..b, 43a..b)~~ is adapted to the focusing parameter value, particularly flange focal length (FFL) ~~(6a..b, 46a..b)~~ of the corresponding optical device ~~(20a..b, 60a..b)~~, so that the focal plane of the lens module ~~(2a..b, 42a..b)~~ falls into an image plane, particularly the image sensor plane ~~(5)~~ of an optoelectronic unit ~~(4)~~ to be brought in operative connection with the optical device ~~(20a..b, 60a..b)~~ or lies within the depth of focus of a camera containing the optical device ~~(20a)~~.

11. ~~A~~The plurality of optical devices ~~(20a..b, 60a..b)~~ for cameras according to claim 10, wherein the mount element ~~(3a..b, 43a..b)~~ is in the form of a hollow cylindrical element which accommodates the lens module ~~(2a..b, 42a..b)~~ and wherein the mount element ~~(3a..b, 43a..b)~~ contains on its inside a first contact surface ~~(10, 50)~~ for the lens module ~~(2a, 42a)~~, which serves as dead stop or supporting surface for the lens module ~~(2a..b, 42a..b)~~ introduced into the mount element ~~(3a..b, 43a..b)~~, and the mount element ~~(3a..b, 43a..b)~~ contains a second contact surface ~~(11, 51a..b)~~ designed for supporting the mount element directly or indirectly on an optoelectronic unit to be brought in operative connection with the optical device ~~(20a..b, 60a..b)~~, and whereas the distance between the first

contact surface ~~(10, 50)~~ and the second contact surface ~~(11, 51a..)~~ in axial direction (D) of the mount element ~~(3a..b, 43a..b)~~ defines the mount section length, particularly the mount FFL section length ~~(7a..b, 47a..b)~~ of the mount element ~~(3a..b, 43a..b)~~.

12. ~~A~~The plurality of optical devices ~~(20a..b)~~ for cameras according to claim ~~10 or~~ 11, wherein the mount element ~~(3a..b)~~ contains on its inside at least one protrusion ~~(9a)~~ forming the first contact surface ~~(10)~~, which serves as dead stop or supporting surface for the lens module ~~(2a..b)~~ introduced into the mount element ~~(3a..b)~~.

13. ~~A~~The plurality of optical devices ~~(20a..b)~~ for cameras according to claim ~~10~~11 or ~~11~~12, wherein on ~~the~~ an end face of the mount element ~~(43a..b)~~ lying opposite to the second contact surface ~~(51a..b)~~, the mount element ~~(43a..b)~~ is partially closed by a cover element ~~49~~, whereas the cover element ~~49~~ forms on its inside the first contact surface ~~(50)~~, which serves as a dead stop for the lens module ~~(42a..b)~~ introduced into the mount element ~~(43a..b)~~.

14. ~~A~~The plurality of optical devices ~~(20a..b, 60a..b)~~ for cameras according to one of the claims 10 to 13, wherein the optical device ~~(20a..b, 60a..b)~~ comprises an optoelectronic unit ~~(4)~~ brought in operative connection with the mount element ~~(3a..b, 43a..b)~~ and the lens module ~~(2a..b, 42a..b)~~ of the optical device ~~(20a..b, 60a..b)~~.

15. ~~A~~The plurality of cameras containing optical devices ~~(20a)~~ according to one of the claims 10 to 14.