

errors will cancel each other out statistically, as the number of substrates in the stack increases, because the number of the substrates in the stack is too small for this. Every error in the alignment between two substrates furthermore has a direct impact on the optical path of the entire, highly complex, optical system. If, in the subsequent use, a light cone passes through the highly complex optical system, a corresponding error in the positioning of two optical elements can irrevocably interfere with a light cone and can thus adversely affect the entire optical imaging.

Embodiments of the invention provide a method and a substrate holder, by means of which the disadvantages of the prior art can be eliminated and the alignment errors in response to the bonding of the substrates can be minimized, and highly complex optical systems can be produced with slight deviations.

According to a first aspect of the present invention, there is provided a method for bonding at least three substrates to form a substrate stack, wherein the substrate stack has at least one lowermost substrate, a middle substrate, and an upper substrate, including the steps of: aligning the middle substrate to the lowermost substrate and bonding the middle substrate to the lowermost substrate, then aligning the upper substrate and bonding the upper substrate to the middle substrate, characterized in that the upper substrate is aligned to the lowermost substrate.

According to a second aspect of the present invention, there is provided substrate holder for the above method, wherein the substrate holder has recesses for accommodating lenses and fixing elements, preferably vacuum openings, for fixing a substrate.

All combinations of at least two features, which are specified in the description, in the claims and/or the drawings, also fall within the scope of the invention. In the case of specified value ranges, values within the mentioned boundaries shall also be considered as being disclosed as threshold values and shall be capable of being claimed in any combination. If individual or a plurality of method steps can be carried out on different devices or modules, they will in each case be disclosed separately as independent method.

Hereinafter, the directions X and Y refer to directions in the substrate plane, which are perpendicular to one another. The Z direction is arranged perpendicular to the substrate plane or to the directions X and Y, respectively, thus resulting in a Cartesian coordinate system.

In the further course of the publication, the method according to the invention will be described in an exemplary manner using the alignment of substrates with optical elements, in particular lenses. It is clear to the person of skill in the art in the field that the method according to the