

wherein the second substrate is deformed by deformation of the plate, wherein the thickness of the deformable plate is between 0.1 and 10 mm, a plate is arranged between the first substrate and the first chuck, wherein the first substrate with the plate is deformed with respect to the first chuck before the bonding, or during the bonding, or before and during the bonding, and at least one of the plates is fixed by first fixing means arranged in a ring-shaped manner, on the circumference of the chucks, exclusively in the region of the circumferential edge of the plate.

According to a second aspect of the present invention, there is provided a device for bonding a first substrate to a second substrate at mutually facing contact surfaces of the substrates, having: a first chuck for mounting the first substrate and a second chuck for mounting the second substrate, wherein the second chuck comprises a plate, the plate is arranged between the second substrate and a surface of the second chuck, wherein bend-changing means for deforming the plate with the second substrate with respect to the second chuck can be controlled during the bonding, wherein the second substrate is deformed by deformation of the plate, wherein the thickness of the deformable plate is between 0.1 and 10 mm, a plate is arranged between the first substrate and the first chuck, wherein the first substrate with the plate is deformed with respect to the first chuck before the bonding, or during the bonding, or before and during the bonding, and at least one of the plates is fixed by first fixing means arranged in a ring-shaped manner, on the circumference of the chucks, exclusively in the region of the circumferential edge of the plate.

~~According to a third aspect of the present invention, there is provided~~ Disclosed herein is a plate for fixing a first plate side on a chuck of a device using a first fixing means and for fixing a first or second substrate on a second plate side arranged opposite the first plate side using a second fixing means, the plate having at least one fixing-element connection for the, fluid-technical, connection of the second fixing means to the chuck, wherein a deformation of the plate is adjustable, wherein the thickness of the deformable plate is between 0.1 and 10 mm.

All combinations of at least two features specified in the description, the claims and/or the drawings also fall within the scope of the invention. When value ranges are given, values lying inside the limits mentioned should also be considered as disclosed as limit values and claimable in any desired combination.

Embodiments of the invention are based on the idea that a plate is arranged between at least one of the substrates and the corresponding chuck, wherein the substrate with the plate is bent with respect to the chuck before and/or during the bonding. A, preferably planar, mounting surface of the chuck for mounting the plate and the substrate is consequently not deformed in particular. The chuck is used in particular for deforming/bending the

CLAIMS:

1. A method for bonding a first substrate (4o) to a second substrate (4u) on mutually facing contact surfaces (4k) of the substrates (4o, 4u), the first substrate (4o) being mounted on a first chuck (1o) and the second substrate (4u) being mounted on a second chuck (1u), and wherein the second chuck (1u) comprises a plate (17u) and the plate (17u) being arranged between the second substrate (4u) and a surface of the second chuck (1u), wherein
~~characterized in that~~

the second substrate (4u) with the plate (4u) is deformed with respect to the second chuck (1u) before the bonding, or during the bonding, or before and during the bonding, wherein the second substrate (4u) is deformed by deformation of the plate (17u), wherein the thickness of the deformable plate is between 0.1 and 10 mm,

a plate (17o) is arranged between the first substrate (4o) and the first chuck (1o), wherein the first substrate (4o) with the plate (17o) is deformed with respect to the first chuck (1o) before the bonding, or during the bonding, or before and during the bonding, and

at least one of the plates (17u, 17o) is fixed by first fixing means (2) arranged in a ring-shaped manner, on the circumference of the chucks (1u, 1o), exclusively in the region of the circumferential edge of the plate (17o, 17u).

- ~~2. The method according to Claim 1, in which a plate (17o) is arranged between the first substrate (4o) and the first chuck (1o), wherein the first substrate (4o) with the plate (17o) is deformed with respect to the first chuck (1o) before the bonding, or during the bonding, or before and during the bonding.~~

- ~~32.~~ The method according to Claim 1 ~~or 2~~, in which the deformation is set, or controlled, or set and controlled prior to a contacting of the contact surfaces (4k) mirror symmetrically, or concentrically, or mirror symmetrically and concentrically to the contact surfaces (4k).
43. The method according to Claim 1 ~~or 2~~, in which at least one of the deformations, due to fluid-pressure loading, is set, or controlled, or set and controlled by means of a bending means (5, 5') loading the plate (17u, 17o).
- ~~5. The method according to Claim 2, in which at least one of the plates (17u, 17o) is fixed by first fixing means (2) arranged annularly on the circumference of the chucks (1u, 1o).~~
64. The method according to Claim ~~51~~, in which at least one of the substrates (4u, 4o) is fixed by second fixing means (2'), of the plate (17u, 17o), connected to the first fixing means (2) of the chuck.
75. The method according to any one of claim 1 ~~or 2 or 5 or~~ 64, in which the deformation of at least one of at least one of the substrates (4o, 4u) and at least one of the plates (17o, 17u) is detected by curvature measuring means comprising sensors (3) including distance sensors.
86. The method according to any one of claim 1 ~~or 2 or 5 or~~ 64, in which a curvature radius of the plate (17u) is adjustable.
97. A device for bonding a first substrate (4o) to a second substrate (4u) at mutually facing contact surfaces (4k) of the substrates (4o, 4u), having:

- a first chuck (1o) for mounting the first substrate (4o) and a second chuck (1u) for mounting the second substrate (4u), wherein the second chuck (1u) comprises a plate (17u),
- the plate (17u) is arranged between the second substrate (4u) and a surface of the second chuck (1u), wherein
characterized in that

bend-changing means for deforming the plate (17u) with the second substrate (4u) with respect to the second chuck (1u) can be controlled during the bonding, wherein the second substrate (4u) is deformed by deformation of the plate (17u), wherein the thickness of the deformable plate is between 0.1 and 10 mm,

a plate (17o) is arranged between the first substrate (4o) and the first chuck (1o), wherein the first substrate (4o) with the plate (17o) is deformed with respect to the first chuck (1o) before the bonding, or during the bonding, or before and during the bonding, and

at least one of the plates (17u, 17o) is fixed by first fixing means (2) arranged in a ring-shaped manner, on the circumference of the chucks (1u, 1o), exclusively in the region of the circumferential edge of the plate (17o, 17u).

108. The device according to Claim 97, in which a plate (17o) is arranged between the first substrate (4o) and the first chuck (1o), wherein the first substrate (4o) with the plate (17o) is constructed in a deformable manner with respect to the first chuck (1o) before the bonding, or during the bonding, or before and during the bonding.

119. The method according to Claim 97 or 108, in which at least one of the first chuck (1o) and the second chuck (1u) have, at least one of mechanical, bending means and fluid-pressure loading means for setting, or controlling, or setting and controlling the deformations.

- [1210](#). The device according to Claim [97](#) or [108](#), in which at least one of the first chuck (1o) and the second chuck (1u) have, annularly arranged, first fixing means (2) for fixing the plate (17o, 17u).
- [1311](#). The device according to Claim [1210](#), in which at least one of the plates has second fixing means (2'), connected to the first fixing means (2) of the chuck (1o, 1u) .
- [1412](#). The device according to at least one of Claim [97](#) or [108](#), in which at least one of the plates (17o, 17u) has a Young's modulus of between 0.01 GPa and 1100 GPa.
- [1513](#). The device according to Claim [108](#), in which the deformations can be detected by means of bend-measuring means comprising sensors including distance sensors.
- [1614](#). The device according to Claim [108](#) or [1513](#), in which a curvature radius of the plate (17u) is adjustable.
- ~~17. A plate for fixing a first plate side (20) on a chuck (1u, 1o) of a device using a first fixing means (2) and for fixing a first or second substrate (4o, 4u) on a second plate side (21) arranged opposite the first plate side (20) using a second fixing means (2'), the plate having at least one fixing element connection (6', 6'') for the, fluid technical, connection of the second fixing means (2') to the chuck (1o, 1u), wherein a deformation of the plate is adjustable, wherein the thickness of the deformable plate is between 0.1 and 10 mm.~~
- ~~18. The plate according to claim 17, wherein a curvature radius of the plate is adjustable.~~

~~19. The method according to Claim 2, in which at least one of the plates (17u, 17o) is fixed by first fixing means (2) arranged in a ring shaped manner, on the circumference of the chucks (1u, 1o), exclusively in the region of the circumferential edge of the plate (17o, 17u).~~

~~20~~15. The method according to Claim ~~5~~1, in which at least one of the substrates (4u, 4o) is fixed by second fixing means (2'), of the same type, of the plate (17u, 17o), connected to the first fixing means (2) of the chuck.

~~21~~16. The device according to Claim ~~42~~10, in which at least one of the plates has second fixing means (2'), of the same type, connected to the first fixing means (2) of the chuck (1o, 1u) for fixing the substrates (4u, 4o).