~~Substrate-Product Substrate Combination as Well as Device and Process for Producing a Substrate-Product Substrate Combination~~

Claims

1. Process for producing a substrate-product substrate combination by aligning, bringing into contact, and bonding a contact side (2o) of a large-area substrate (2, 2') to a support surface (5o) of a carrier substrate (5, 5') acting as an enforcement of the large-area substrate (2, 2'), whereby the large-area substrate (2, 2') ~~when contact is produced~~ has a larger mean diameter d1 than the mean diameter d2 of the carrier substrate (5, 5') when contacting, wherein the mean diameter d1, d2 is measured on the maximum of the cross sectional contour,

wherein the large-area substrate (2, 2') is thinned after contacting and thereby the mean diameter d1 is reduced only by means of the form of the cross section of the large-area substrate (2, 2') at its peripheral contour (2u) to $d1 \leq d2$, wherein the cross sectional contour of the large-area substrate (2, 2') on the contact side (2o) comprises a very large edge radius, in order to enable the reduction of the mean diameter.

~~2. Process according to Claim 1, in which after being brought into contact, the substrate (2, 2') is back-thinned, whereby the diameter d1 is reduced by the shape of the cross-section of the substrate (2, 2') on its peripheral contour (2u), in particular to d1 <= d2.~~

~~3. Process according to Claim 1 or 2, in which the substrate (2, 2') has an annular shoulder (2a, 2a') that is produced in particular by providing an edge radius and/or by looping back the peripheral contour (2u).~~

~~4. Process according to one of the preceding claims, in which an annular width dR of the shoulder (2a, 2a') is larger than or equal to the difference between d1 and d2.~~

~~5. Process according to one of Claims 3 or 4, in which during back-thinning, a thickness D_1 of the substrate (2, 2') is reduced up to or over the shoulder (2a, 2a').~~

~~6. Substrate (2, 2') for the production of a substrate-product substrate combination by aligning, bringing into contact, and bonding a contact side (2o) of the large-area substrate (2, 2') to a support surface (5o) of a carrier substrate (5, 5'), whereby the substrate (2, 2) has a diameter d1 that can be reduced by the shape of the cross-section of the substrate (2, 2') on its peripheral contour (2u) during back-thinning.~~

~~7. Substrate according to Claim 6, in which the substrate (2, 2') has an annular shoulder (2a, 2a') that is produced in particular by providing an edge radius and/or by looping back the peripheral contour (2u).~~

~~8. Use of a large-area substrate (2) with a mean diameter d1 for aligning and bringing into contact a carrier substrate (5) with a mean diameter d2 for the further processing of the large-area substrate (2), whereby the mean diameter d1 is larger than the mean diameter d2.~~

~~9. Use according to Claim 8, in which the diameter d2 is 500 µm smaller, in particular 400 µm smaller, preferably 300 µm smaller, more preferably 200 µm smaller, and more preferably 100 µm smaller.~~

~~10. Device for the production of a substrate-product substrate combination by aligning, bringing into contact, and bonding a contact side (2o) of a large-area substrate (2, 2') to a support surface (5o) of a carrier substrate (5, 5'), whereby the substrate~~

~~(2, 2') when contact is produced has a larger mean diameter d1 than the mean diameter d2 of the carrier substrate (5, 5'), with the following features:~~

~~A substrate holding means (1) for attaching the substrate (2, 2'),~~

~~A carrier substrate holding means (4) for attaching the carrier substrate (5, 5'),~~

~~Detection means (11, 13) for detection, at least in sections, of a peripheral contour (2u) of the substrate (2, 2') attached to the substrate holding means (1) and detection, at least in sections, of a peripheral contour (5u) of the carrier substrate (5, 5') attached to the carrier substrate holding means (4) relative to a contact plane of the substrate (2, 2') with the carrier substrate (5, 5'),~~

~~Aligning means (6, 8) for aligning the substrate (2, 2') relative to the carrier substrate (5, 5'), whereby the aligning means (6, 8) are controlled by controlling means based on the peripheral contours (2u, 5u) detected by the detection means (11, 13), and~~

~~Contacting means (3) for bringing the substrate (2), aligned relative to the carrier substrate (5), into contact with the carrier substrate (5).~~

~~11. Device according to Claim 10, whereby the detection means (11, 13) relative to the substrate (2, 2') and/or relative to the carrier substrate (5, 5') can be rotated by rotational means (6) and/or can be adjusted relative to the substrate (2, 2') and/or relative to the carrier substrate (5, 5') by an adjustment system (8) in the X- and/or Y-direction parallel to the contact plane.~~

~~12. Device according to Claim 10 or 11, whereby the detection means (11, 13) are attached to a carrier unit (7) that is designed in particular to be annular in sections and that can be arranged at least in sections on the peripheral side with respect to the substrate (2, 2') and/or the carrier substrate (5, 5').~~

~~13. Device according to at least one of Claims 10 to 12, whereby the detection means (11, 13) are designed to detect the shape of the cross-section of the substrate (2, 2') on its peripheral contour (2u) in such a way that the back-thinning of the substrate (2, 2') can be controlled so that the diameter d1 is reduced, in particular to d1 <= d2.~~

~~14. Device according to at least one of Claims 10 to 13, whereby the device has means for back-thinning the substrate (2, 2') to a thickness D_1 of the substrate (2, 2') up to or over the shoulder (2a, 2a').~~

~~15. Substrate-carrier substrate combination, consisting of a support surface (5o) of a carrier substrate (5, 5'), whereby the substrate (2, 2') has a larger mean diameter d1 than the mean diameter d2 of the carrier substrate (5, 5').~~