

not sufficient for the alignment accuracy to be very good in the centre of the substrates, but to diminish towards the edge.

In the prior art, there are, as already mentioned earlier, a number of methods and systems, with the aid of which an attempt can be made to exert an influence on the bonding process, such as for example publications WO2017162272A1, EP2656378B1 or WO2014191033A1.

One of the greatest challenges in bonding is the period of time in which the two substrates are joined with one another independently. That is the period of time from the bond initiation up to the complete contacting of the contact faces of the substrates. The alignment of the two substrates with respect to one another can still change decisively here compared to the previous alignment. Once the two substrate surfaces are first joined together, a separation is theoretically again possible, but is associated with high costs, low throughput and susceptibility to errors.

Embodiments of the present invention provide a device and a method for bonding two substrates, with which the problems of the prior art are eliminated and in particular the bonding accuracy, in particular at the edge of the substrates, is increased.

All combinations of at least two features given in the description, in the claims and/or the drawings also fall within the scope of the invention. In stated value ranges, values lying inside the stated limits are also deemed to be disclosed as limiting values and can be claimed in any combination.

According to a first aspect of the present invention, there is provided a substrate holder for mounting a substrate, comprising fixing elements for fixing the substrate, wherein the fixing elements can be grouped into zones, wherein the zones are arranged circular ring-shaped, wherein the zones are arranged exclusively in the periphery of the substrate holder, wherein the zones are separated azimuthally from each other.

A zone is an arbitrary number of fixing elements, irrespective of whether the fixing elements are located spatially adjacent or on opposite edge regions. Since a zone represents a number of fixing elements, the definition or the establishment of a zone can also change with time.

In the following text of the publication, reference will be made to the shape or the position of the zone. This means the shape and the positions of the envelope surrounding all the fixing elements inside one such zone. When mention is made of the switching capability of a zone, this means the switching capability of all the fixing elements inside the zone. In particular, the switching-off of a zone means the switching-off of all the fixing elements inside the zone. Unaffected by this, preferably all fixing elements inside a zone can also be switched individually. In the extreme case, a zone contains only one fixing element.

All the fixing elements of the same zone can preferably be triggered by a single control element, in particular a control valve with the use of vacuum fixing elements. It is thus advantageously possible to switch all the fixing elements of a zone simultaneously.

The various fixing elements or zones can in particular be switched offset in time, in order to advantageously deform the advancing bonding wave in a targeted manner.

According to a second aspect of the present invention, there is provided a method for fixing and bonding a substrate or a plurality of substrates with the above substrate holder, wherein the fixing elements are grouped into zones, wherein the zones are constituted in the form of circular rings.

Claims

1. A substrate holder (1,1',1'',1''',1'''',1''''') for mounting a substrate (13), comprising fixing elements (6,6',6'') for fixing the substrate (13), wherein the fixing elements (6,6',6'') can be grouped into zones (7, 7'), wherein the zones (7, 7') are arranged circular ring-shaped, wherein the zones are arranged exclusively in the periphery of the substrate holder, wherein the zones are separated azimuthally from each other.
2. The substrate holder (1,1',1'',1''',1'''',1''''') according to claim 1, wherein the zones (7, 7') are arranged symmetrically relative to the centre of the substrate holder (1,1',1'',1''',1'''',1''''').
3. The substrate holder (1,1',1'',1''',1'''',1''''') according to at least one of the preceding claims, wherein the zones (7, 7') are arranged in a plurality of circular rings around the centre of the substrate holder (1,1',1'',1''',1'''',1''''').
4. The substrate holder (1,1',1'',1''',1'''',1''''') according to at least one of the preceding claims, wherein the zones (7, 7') are uniformly spaced apart from one another in the radial direction and/or in the azimuthal direction.
5. The substrate holder (1,1',1'',1''',1'''',1''''') according to at least one of the preceding claims, wherein the zones (7, 7') are formed with a changing width, in particular with an increasing width, from the centre of the substrate holder (1,1',1'',1''',1'''',1''''') to the edge of the substrate holder (1,1',1'',1''',1'''',1''''').

6. The substrate holder (1,1',1'',1''',1'''',1''''') according to at least one of the preceding claims, wherein the zones (7, 7') can be switched individually.
7. The substrate holder (1,1',1'',1''',1'''',1''''') according to at least one of the preceding claims, wherein a plurality of zones (7, 7') can be grouped and switched in common.
8. The substrate holder (1,1',1'',1''',1'''',1''''') according to at least one of the preceding claims, wherein the number of fixing elements (6,6',6'') in the zones (7, 7') can be changed flexibly.
9. The substrate holder (1,1',1'',1''',1'''',1''''') according to at least one of the preceding claims, wherein the fixing elements (6, 6') can be assigned flexibly to different zones (7, 7').
10. The substrate holder (1,1',1'',1''',1'''',1''''') according to at least one of the preceding claims, wherein the fixing elements (6, 6') can be triggered in a cross-zonal manner.
11. A method for fixing and bonding a substrate (13) or a plurality of substrates with a substrate holder (1,1',1'',1''',1'''',1''''') according to at least one of the preceding claims, wherein the fixing elements (6,6',6'') are grouped into zones (7, 7'), wherein the zones (7, 7') are constituted in the form of circular rings.
12. The method according to claim 11, wherein the zones (7, 7') are switched individually.

13. The method according to at least one of the preceding claims, wherein a plurality of zones (7, 7') are grouped and switched in common.
14. The method according to at least one of the preceding claims, wherein the number of fixing elements (6, 6', 6'') in the zones (7, 7') can be changed flexibly.
15. The method according to at least one of the preceding claims, wherein the fixing elements (6, 6') are assigned to different zones (7, 7').