

own weight. The lower the distance separating the two substrates, the higher the probability of contact (and therefore of damage).

5 A cutting device and method are known from document EP 1385683 allowing the two parts originating from the fracturing of a fracturable assembly to be separated with high precision. Such a method involves placing the fracturable assembly horizontally on a fixed and flat chassis, with the chassis also supporting a wedge and a support for moving a fixed blade on this movement support. The lateral surface of the fracturable assembly is brought into abutment against the wedge, with the blade being intended
10 to initiate, in the fracture plane, the separation of the fracturable assembly.

However, this document does not address the issue of the prospect of the parts originating from the fracturable assembly once the separation is complete. Indeed, for such a device it can be difficult to keep each part at a distance from each other, in particular in order to be able to grip them, handle them and move them without risk of
15 damage or contamination.

Disclosure of the invention

20 An aim of the invention is to at least partly address the aforementioned disadvantages by proposing a device allowing minimal intervention for separating the two parts of a horizontal fracturable assembly after fracturing, and allowing said parts to be easily handled, thus limiting the risks of damage or of contamination.

25 With a view to achieving this aim, an embodiment of the present application seeks to provide a holding device for a fracturable assembly intended to separate along a fracture plane defined between an upper part and a lower part of the fracturable assembly, the holding device comprising:

- at least two protrusions configured to keep the fracturable assembly suspended
30 in a substantially horizontal holding position, the protrusions being intended to be located between the upper part and the lower part against a peripheral chamfer of the upper part;
- a support, located below and at a distance from the protrusions, so as to ~~gravitationally~~ receive the lower part by gravity, when the fracturable assembly is

separated, and to keep ~~it at a distance~~the lower part separate from the upper part held by the protrusions, the distance between the support and the protrusions being between 1.5 and 10 mm.

- 5 Such a device allows the two parts of the fracturable assembly to be separated and to be kept at a distance from each other without recourse to any external handling, which handling is likely to damage or to contaminate either one of the parts. The separation is provided solely by the effect of gravity on the lower substrate.
- 10 Such a device also has the advantage of not exerting any contact with the facing faces of each of the parts of the fracturable assembly. A contact or a stress exerted on a face of the fracturable assembly is likely to degrade the quality of the fracture and, consequently, to reduce the uniformity of the transferred layers. Therefore, a device according to the invention has the advantage of providing substrates exhibiting
- 15 significant surface homogeneity.

According to other advantageous and non-limiting features of the invention, considered alone or according to any technically feasible combination:

- 20 ~~— the distance between the support and the protrusions is between 1.5 and 10 mm, preferably between 2 and 5 mm;~~
- the protrusions are disposed on columns;
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- at least one protrusion is disposed on a detachable column able to be moved in order to place the fracturable assembly in the holding position;
 - the holding device comprises at least three protrusions;
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- the holding device also comprises means for initiating a fracture wave for initiating, in the fracture plane, the separation of the fracturable assembly;
 - the initiation means comprise a blade;

Claims

1. ~~A H~~holding device for a fracturable assembly intended to separate along a fracture plane defined between an upper part and a lower part of the fracturable assembly, the holding device comprising:
 - at least two protrusions configured to keep the fracturable assembly suspended in a substantially horizontal holding position, the protrusions being intended to be located between the upper part and the lower part, against a peripheral chamfer of the upper part;
 - a support, located below and at a distance from the protrusions, so as to ~~gravitationally~~ receive the lower part, by gravity when the fracturable assembly is separated, and to keep the lower part separate it at a distance from the upper part held by the protrusions, the distance between the support and the protrusions being between 1.5 and 10 mm.
- ~~2. Holding device according to the preceding claim, wherein the distance between the support and the protrusions is between 1.5 and 10 mm, preferably between 2 and 5 mm.~~
- ~~32. The H~~holding device according to ~~one of the preceding claims~~claim 1, wherein the protrusions are disposed on columns.
- ~~43. The H~~holding device according to ~~one of the preceding claims~~claim 1 or 2, wherein at least one protrusion is disposed on a detachable column able to be moved in order to place the fracturable assembly in the holding position.
- ~~54. The H~~holding device according to one of the preceding claims, comprising at least three protrusions.
- ~~65. The H~~holding device according to one of the preceding claims, ~~also further~~ comprising means for initiating a fracture wave for initiating, in the fracture plane, ~~the~~ separation of the fracturable assembly.

~~76.~~ The Hholding device according to ~~one of the preceding claims~~claim 5, wherein the initiation means comprise a blade.

~~87.~~ The Hholding device according to ~~one of the preceding claims~~claim 5, wherein the initiation means comprise an ultrasonic device able to emit an ultrasonic wave.

~~98.~~ The Hholding device according to one of the preceding claims, wherein the support is intended to receive the lower part in ~~the a~~ vicinity of a rear face of the lower part and comprises a recess to allow the lower part to be gripped by its rear face.

~~109.~~ A Sseparation equipment for separating a fracturable assembly, the separation equipment comprising an enclosure and, disposed in the enclosure, a holding device according to one of Claims 1 to ~~98~~.

~~1110.~~ The Sseparation equipment according to ~~the preceding~~ claim 9, wherein the enclosure is a chamber of a furnace for heat treating the fracturable assembly and for embrittling the fracture plane.

~~1211.~~ The Sseparation equipment according to ~~the preceding~~ claim 10, wherein the furnace comprises means for heating by convection, by IR or microwave radiation, or by induction.

~~1312.~~ The Sseparation equipment according to ~~the preceding~~ claim 11, wherein the furnace is a single-wafer rapid annealing furnace.