

WHAT IS CLAIMED IS:

1. A dividing method for dividing a plate-shaped workpiece, the dividing method comprising:

a starting point region forming step of forming a starting point region serving as a starting point of division along a planned dividing line set on the workpiece, wherein said starting point region forming step is performed by applying a laser to the workpiece to create a modified layer including cracks;

a heating step of heating the workpiece after performing said starting point region forming step, wherein during said heating step, said cracks formed during said starting point region forming step are extended;

a cooling step of cooling the workpiece after performing said heating step;

a dividing step of dividing the workpiece along the starting point region by applying a force to the workpiece after performing said cooling step; and

a sheet affixing step of affixing an expanding sheet to the workpiece before performing said dividing step, wherein said sheet affixing step is performed after performing said cooling step;

said dividing step applying the force to the workpiece by expanding the expanding sheet.

2. The dividing method according to claim 1, wherein said heating step and said cooling step are each performed repeatedly, thereby extending cracks formed in the starting point region.

3. A dividing method for dividing a plate-shaped workpiece, the dividing method comprising:

a starting point region forming step of forming a starting point region serving as a starting point of division along a planned dividing line set on the workpiece;

a heating step of heating the workpiece after performing said starting point region forming step;

a cooling step of cooling the workpiece after

performing said heating step;

a dividing step of dividing the workpiece along the starting point region by applying a force to the workpiece after performing said cooling step; and

a sheet affixing step of affixing an expanding sheet to the workpiece before performing said dividing step, wherein said sheet affixing step is performed after performing said cooling step;

said dividing step applying the force to the workpiece by expanding the expanding sheet,

wherein said starting point region forming step comprises using a laser beam with a condensing point that extends in a region from a top surface of the workpiece to a bottom surface of the workpiece, thereby forming a plurality of fine holes and altered regions surrounding each of the fine holes.

4. The dividing method according to claim 3, further comprising using a condensing point correcting plate for condensing the laser beam such that the condensing point

extends in the region from the top surface of the workpiece to the bottom surface of the workpiece.

5. The dividing method according to claim 1, wherein said heating step is performed with a heating surface set at 180° C. for a time period of one minute.

6. The dividing method according to claim 1, wherein the workpiece comprises a silicon wafer.

7. The dividing method according to claim 1, wherein the workpiece is formed of GaN.

8. The dividing method according to claim 1, wherein the workpiece is formed of SiC.

9. The dividing method according to claim 1, wherein the workpiece is formed of a ceramic.

10. The dividing method according to claim 1, wherein the workpiece is formed of lithium tantalate.

11. The dividing method according to claim 1, wherein the workpiece is formed of lithium niobate.

12. The dividing method according to claim 1, wherein the workpiece is formed of a metal.

13. The dividing method according to claim 1, wherein the workpiece is formed of sapphire.

14. The dividing method according to claim 1, wherein said heating step is performed using a hot plate.