

rotated in the same direction. The rotational speeds of the polishing platen and the dresser are in this case variable and independent of one another.

5 However, the effect that is achieved by the known methods for dressing polishing pads does not usually last long and also does not produce a satisfactory effect for many polishing pads that are used.

10 It therefore continues to be desirable to provide a possible way of dressing polishing pads by which the polishing pads have the best possible polishing quality after the dressing and the effect of the dressing lasts as long as possible.

15 This object is achieved by a method according to the independent patent claim. Advantageous refinements are provided by the subclaims and the description that follows.

20 Summary of the invention

According to an aspect of the invention, there is provided a method for dressing one polishing cloth or
25 two polishing pads simultaneously, in which a polishing cloth has been applied to a polishing plate, with at least one dresser, which is equipped with at least one dressing element, this at least one dressing element being in contact with the at least one polishing cloth
30 to be dressed, wherein the at least one polishing plate is rotated with a relative rotational speed and the at least one dresser is rotated with a relative rotational speed and at least two different combinations of directions of rotation of the two pairs of polishing
35 plates and pin wheels are executed during the simultaneous dressing of two polishing pads or during the dressing of one polishing cloth of the polishing

plate and of the at least one dresser, and the at least two different combinations include the rotation of the polishing plates in opposite directions of rotation or the rotation of the pin wheels in opposite directions
5 of rotation during the simultaneous dressing of the two polishing pads, and the rotation of the polishing plate and the at least one dresser in opposite directions during the dressing of the one polishing cloth.

10 Advantages of the invention

The method according to the invention serves for dressing polishing pads, in particular dressing foamed polishing pads for use in the polishing of
15 semiconductor wafers. The method according to the invention may be used both for dressing an individual polishing cloth and for simultaneously dressing two polishing pads.

20 Semiconductor wafers are slices of semiconductor materials such as single-element semiconductors (silicon, germanium), compound semiconductors (for example comprising one element from the third main group of the periodic table, such as aluminum, gallium
25 or indium, and one element from the fifth main group of the periodic table, such as nitrogen, phosphorus or arsenic) or compounds thereof (for example $\text{Si}_{1-x}\text{Ge}_x$, $0 < x < 1$).

Patent claims:

1. A method for dressing one polishing cloth or two polishing pads (11, 12) simultaneously, in which a polishing cloth (11, 12) has been applied to a polishing plate (21, 22), with at least one dresser (4), which is equipped with at least one dressing element (8), this at least one dressing element (8) being in contact with the at least one polishing cloth (11, 12) to be dressed, wherein the at least one polishing plate (21, 22) is rotated with a relative rotational speed and the at least one dresser (4) is rotated with a relative rotational speed and at least two different combinations of directions of rotation of the two pairs of polishing plates (21, 22) and pin wheels (31, 32) are executed during the simultaneous dressing of two polishing pads (11, 12) or during the dressing of one polishing cloth (11) of the polishing plate (21) and of the at least one dresser (4), and

the at least two different combinations include the rotation of the polishing plates (21, 22) in opposite directions of rotation (ω_{21} , ω_{22}) or the rotation of the pin wheels (31, 32) in opposite directions of rotation (ω_{31} , ω_{32}) during the simultaneous dressing of the two polishing pads (11, 12), and the rotation of the polishing plate (21) and the at least one dresser (4) in opposite directions during the dressing of the one polishing cloth (11).

2. The method as claimed in claim 1, wherein, when simultaneously dressing two polishing pads (11, 12), the at least one dresser (4) is rotated by a rolling device comprising an inner gear wheel (31) and an outer gear wheel (32).

3. The method as claimed in claim 2, wherein the directions of rotation (ω_{21} , ω_{22} , ω_{31} , ω_{32}) of at least one of the two pairs of polishing plates (21, 22) and pin wheels (31, 32) are reversed at least once during the dressing.

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4. The method as claimed in claim 2, wherein the directions of rotation (ω_{21} , ω_{22} , ω_{31} , ω_{32}) of only one of the two pairs of polishing plates (21, 22) and pin wheels (31, 32) are reversed at the same time during the dressing.

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5. The method as claimed in claim 1, wherein, when dressing only one polishing cloth (11), at least the direction of rotation (ω_{21}) of the polishing plate (21) or the direction of rotation (ω_4) of the dresser (4) is reversed once.

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6. The method as claimed in claim 1, wherein, when dressing only one polishing cloth, at least the direction of rotation (ω_{21}) of the polishing plate (21) and the direction of rotation (ω_4) of the dresser (4) are reversed once.

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7. The method as claimed in one of claims 1 to 6, wherein disks or rings covered with one or more dressing elements (8) are used as dressers (4).

25 8. The method as claimed in one of claims 1 to 7, wherein the dressing elements (8) have surfaces covered with diamonds.

9. The method as claimed in one of claims 1 to 8, wherein one to five dressers (4) are used simultaneously.

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10. The method as claimed in one of claims 1 to 9, wherein at least three dressers (4) are used simultaneously.

11. The method as claimed in one of claims 1 to 10, wherein the polishing pads (11, 12) are foamed polishing pads.

12. The method as claimed in claim 11, wherein polishing pads
5 foamed from polyurethane are used as foamed polishing pads.

13. The method as claimed in either of claims 1 and 2, wherein
the mutually facing faces of the upper polishing plate (22) and
the lower polishing plate (21) are set plane-parallel to one
10 another.

14. The method as claimed in one of claims 1, 2 or 13, wherein
the dressers (4) have clearances and in these clearances there
are freely movable and/or fixed dressing elements (8).

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15. The method as claimed in one of claims 1 to 14, wherein a
dressing agent, in particular a liquid, is applied to the
polishing pads (11, 12) during the dressing.