

CLAIMS

1. An end point detection method based on a drive current supplied to a drive unit that rotates and drives one of a polishing table that holds a polishing pad and a holding unit that holds a polishing target and presses the polishing target against a polishing pad, the end point detection method comprising:

a first determination step of determining whether a polishing condition of a polishing process to be executed coincides with a preset specific polishing condition;

an adjustment step of adjusting a current control parameter in a drive control unit that controls the drive current, the current control parameter related to a change in the drive current with respect to a change in a driving load of the drive unit, if it is determined in the first determination step that the polishing condition coincides with the specific polishing condition;

a detection step of detecting the drive current supplied to the drive unit based on the current control parameter adjusted in the adjustment step; and

an end point detection step of detecting an end point of polishing based on the drive current detected in the detection step.

2. The end point detection method according to claim 1, further comprising

a second determination step of determining whether to add the polishing condition of the polishing process in execution

to the specific polishing condition based on the drive current detected in the detection step during the execution of the polishing process.

3. The end point detection method according to claim 2, wherein

the polishing condition of the polishing process in execution is added to the specific polishing condition in the second determination step if a change in the drive current detected in the detection step is smaller than a threshold value when the driving load of the drive unit is changed.

4. The end point detection method according to claim 2, wherein

in the end point detection step, the end point of polishing is detected based on a change in the drive current detected in the detection step, and

the polishing condition of the polishing process in execution is added to the specific polishing condition in the second determination step if the end point of polishing is not detected in the end point detection step.

5. The end point detection method according to any one of claims 1 to 4, wherein

the current control parameter is adjusted in the adjustment step such that the change in the drive current becomes large with respect to the change in the driving load of the drive unit.

6. The end point detection method according to any one of claims 1 to 5, wherein

when the drive control unit controls the drive current

based on a deviation between an actual rotational speed of one of the polishing table and the holding unit and a target rotational speed,

a control gain in the control based on the deviation is increased in the adjustment step.

7. The end point detection method according to any one of claims 1 to 6, wherein

when the polishing process includes a plurality of stages, the current control parameter is adjusted in part of the plurality of stages in the adjustment step.

8. The end point detection method according to any one of claims 1 to 7, wherein

the polishing condition includes at least one of a type of a polishing target, a type of a polishing recipe, a type of a polishing pad, and a type of a polishing liquid.

9. A polishing apparatus comprising:

a drive unit that rotates and drives one of a polishing table that holds a polishing pad and a holding unit that holds a polishing target and presses the polishing target against the polishing pad;

a drive control unit that controls a drive current supplied to the drive unit; and

an adjustment unit that adjusts a current control parameter in the drive control unit, the current control parameter related to a change in the drive current with respect to a change in a driving load of the drive unit, if a polishing condition of a polishing process to be executed coincides with a preset specific polishing condition.

10. The polishing apparatus according to claim 9, further comprising

a determination unit that determines whether the polishing condition of the polishing process to be executed coincides with the preset specific polishing condition, wherein

the adjustment unit adjusts the current control parameter in the drive control unit if the determination unit determines that the polishing condition of the polishing process coincides with the specific polishing condition.

11. The polishing apparatus according to claim 10, further comprising

a current detection unit that detects the drive current supplied from the drive control unit to the drive unit during execution of the polishing process, wherein

the determination unit determines whether to add the polishing condition of the polishing process in execution to the specific polishing condition based on the drive current detected by the current detection unit.

12. The polishing apparatus according to claim 11, wherein

the determination unit adds the polishing condition of the polishing process in execution to the specific polishing condition if a change in the drive current detected by the current detection unit is smaller than a threshold value when the driving load of the drive unit is changed.

13. The polishing apparatus according to claim 11, further comprising

an end point detection unit that detects an end point of

polishing based on a change in the drive current detected by the current detection unit, wherein

the determination unit adds the polishing condition of the polishing process in execution to the specific polishing condition if the end point detection unit does not detect the end point of polishing.

14. The polishing apparatus according to any one of claims 9 to 13, wherein

the adjustment unit adjusts the current control parameter such that the change in the drive current becomes large with respect to the change in the driving load of the drive unit.

15. The polishing apparatus according to any one of claims 9 to 14, wherein

the drive control unit controls the drive current based on a deviation between an actual rotational speed of one of the polishing table and the holding unit and a target rotational speed, and

the adjustment unit increases a control gain in the control based on the deviation.

16. The polishing apparatus according to any one of claims 9 to 15, wherein

when the polishing process includes a plurality of stages,

the adjustment unit adjusts the current control parameter in part of the plurality of stages.

17. The polishing apparatus according to any one of claims 9 to 16, wherein

the polishing condition includes at least one of a type of a polishing target, a type of a polishing recipe, a type of

a polishing pad, and a type of a polishing liquid.