# CLAIMS

1. A coating method for applying a coating solution onto a substrate, comprising the steps of:

holding a substrate by a substrate holder for holding and rotating the substrate;

a solvent liquid film forming step of supplying a solvent for the coating solution from a solvent supply nozzle onto the substrate to form an annular liquid film of the solvent in a peripheral area of the substrate;

a coating solution supply step of supplying the coating solution from a coating solution supply nozzle to the center of the substrate while rotating the substrate at a first rotational speed; and

a coating solution spreading step of allowing the coating solution to spread on the substrate by rotating the substrate at a second rotational speed which is higher than the first rotational speed, wherein the supply of the solvent from the solvent supply nozzle is continued until just before the coating solution comes into contact with the liquid film of the solvent in the solvent liquid film forming step or the coating solution spreading step,

wherein in the solvent liquid film forming step, the annular liquid film of the solvent is formed by supplying the solvent from the solvent supply nozzle, positioned above a peripheral portion of the substrate, while rotating the substrate at a rotational speed of more than 0 rpm and not more than the first rotational speed, and

wherein before the start of the coating solution spreading step, a gap is secured between the liquid film of the solvent and the coating solution by blowing a dry gas from a dry gas nozzle onto a position between the solvent

supply nozzle and the center of the substrate in a plan view.

2. The coating method according to claim 1, wherein in the solvent liquid film forming step, the annular liquid film of the solvent is formed by supplying the solvent from the solvent supply nozzle, which is moving along a peripheral portion of the substrate, while keeping the substrate stationary or rotating the substrate at a rotational speed of more than 0 rpm and not more than the first rotational speed.

3. The coating method according to claim 2, wherein the solvent supply nozzle includes a plural number of nozzles.

4. The coating method according to claim 1, wherein in the solvent liquid film forming step, the solvent is supplied from the solvent supply nozzle to a position at a radial distance of about 30 mm to 100 mm from the center of the substrate.

5. The coating method according to claim 1, wherein the supply of the solvent is continued until the distance between the outer peripheral end of the coating solution and the inner peripheral end of the annular liquid film of the solvent becomes 5 mm to 60 mm.

6. The coating method according to claim 1, wherein in the solvent liquid film forming step, the annular liquid film of the solvent is formed by supplying the solvent to the center of the substrate to form a puddle of the solvent, subsequently rotating the substrate to allow the solvent to

diffuse on the substrate, thereby forming a liquid film of the solvent on the entire surface of the substrate, and then blowing a dry gas onto the center of the substrate to remove the liquid film of the solvent from a central portion of the substrate.

7. The coating method according to claim 1, wherein prior to the solvent liquid film forming step, a pre-wetting step is performed by supplying the solvent from the solvent supply nozzle, positioned above a peripheral portion of the substrate, to the peripheral portion while rotating the substrate at a rotational speed of more than 0 rpm and not more than the first rotational speed, and then allowing the solvent to spread to the periphery of the substrate by increasing the rotational speed of the substrate from the first rotational speed.

8. The coating method according to claim 7, wherein in the pre-wetting step, the supply of the solvent from the solvent supply nozzle is stopped during the period when the solvent is allowed to spread to the periphery of the substrate.

9. A computer-readable storage medium storing a program that operates on a computer as a controller for controlling a coating apparatus so that it performs the coating method according to claim 1.

10. A coating apparatus for applying a coating solution onto a substrate, comprising:

a substrate holder for holding and rotating the substrate;

a coating solution supply nozzle for supplying the coating solution onto the substrate;

a solvent supply nozzle for supplying a solvent for the coating solution onto the substrate;

a dry gas nozzle for blowing a dry gas onto the substrate;

a first movement mechanism for moving the coating solution supply nozzle;

a second movement mechanism for moving the solvent supply nozzle;

a third movement mechanism for moving the dry gas nozzle; and

a controller configured to control the substrate holder, the coating solution supply nozzle, the solvent supply nozzle, the dry gas nozzle, the first movement mechanism, the second movement mechanism and the third movement mechanism so that they perform a method comprising the steps of: holding a substrate by the substrate holder for holding and rotating the substrate; a solvent liquid film forming step of supplying the solvent for the coating solution from the solvent supply nozzle onto the substrate to form an annular liquid film of the solvent in a peripheral area of the substrate; a coating solution supply step of supplying the coating solution from the coating solution supply nozzle to the center of the substrate while rotating the substrate at a first rotational speed; and a coating solution spreading step of allowing the coating solution to spread on the substrate by rotating the substrate at a second rotational speed which is higher than the first rotational speed,

wherein in the solvent liquid film forming step the annular liquid film of the solvent is formed by supplying the solvent from the solvent supply nozzle, positioned

above a peripheral portion of the substrate, while rotating the substrate at a rotational speed of more than 0 rpm and not more than the first rotational speed, and

wherein before the start of the coating solution spreading step, a gap is secured between the liquid film of the solvent and the coating solution by blowing the dry gas from the dry gas nozzle onto a position between the solvent supply nozzle and the center of the substrate in a plan view.

11. The coating apparatus according to claim 10, further comprising a support section to which the solvent supply nozzle is mounted and which is configured to be rotatable above the substrate on a vertical axis passing through the center of the substrate as the axis of rotation, and a rotary drive mechanism for rotating the support section, wherein the annular liquid film of the solvent is formed in a peripheral area of the substrate by supplying the solvent from the solvent supply nozzle while rotating the support section by means of the rotary drive mechanism.