Claims

1. A diluted solution production method of producing a diluted solution of a second liquid by adding the second liquid to a first liquid, the method comprising the steps of:

feeding the first liquid to a first pipe; and

controlling pressure in a tank that stores the second liquid so as to add, through a second pipe that connects the tank to the first pipe, the second liquid to the first liquid flowing through the first pipe,

the step of adding the second liquid including the steps of:

measuring a flow rate of the first liquid or the diluted solution that flows through the first pipe;

measuring a component concentration of the diluted solution,

measuring a pressure in the first pipe; and

controlling the pressure in the tank, based on the measured values of the flow rate, the component concentration, and the pressure, so as to adjust the component concentration of the diluted solution to a specified value.

2. The diluted solution production method according to claim 1, wherein

the step of adding the second liquid includes feeding the second liquid to the second pipe in a laminar flow state.

3. The diluted solution production method according to claim 1 or 2, wherein

the step of adding the second liquid includes feeding the second liquid to the second pipe having an inner diameter in a range of more than 0.1 mm and 4 mm or less.

4. The diluted solution production method according to any one of claims 1 to 3, wherein

the step of measuring the pressure in the first pipe includes measuring an in-pipe pressure at a connection between the first pipe and the second pipe.

5. The diluted solution production method according to claim 4, wherein

the step of adding the second liquid further includes the step of adjusting the in-pipe pressure at the connection to be a specified value based on the measured value of the in-pipe pressure.

6. The diluted solution production method according to any one of claims 1 to 5, wherein the first liquid is ultrapure water, and the second liquid is an aqueous solution containing dissolved electrolyte.

7. The diluted solution production method according to any one of claims 1 to 5, wherein the first liquid is ultrapure water, and the second liquid is an ammonia aqueous solution.

8. A diluted solution production apparatus for producing a diluted solution of a second liquid by adding the second liquid to a first liquid, the apparatus comprising:

a first pipe that supplies the first liquid;

a tank that stores the second liquid;

a second pipe that supplies the second liquid from the tank to the first pipe;

a flowmeter that measures a flow rate of the first liquid or the diluted solution that flows through the first pipe;

a meter that measures a component concentration of the diluted solution,

a pressure gauge that measures a pressure in the first pipe; and

a controller that controls pressure in the tank, based on measured values of the flowmeter, the meter, and the pressure gauge, so as to adjust the component concentration of the diluted solution to a specified value.

9. The diluted solution production apparatus according to claim 8, wherein the second liquid flows through the second pipe in a laminar flow state.

10. The diluted solution production apparatus according to claim 8 or 9, wherein the second pipe has an inner diameter in a range of more than 0.1 mm and 4 mm or less.

11. The diluted solution production apparatus according to any one of claims 8 to 10, wherein

the first liquid is ultrapure water, the second liquid is an aqueous solution containing dissolved electrolyte, and the meter is an electric conductivity meter.

12. The diluted solution production apparatus according to any one of claims 8 to 10, wherein

the first liquid is ultrapure water, the second liquid is an ammonia aqueous solution, and

the meter is an electric conductivity meter.

13. The diluted solution production apparatus according to any one of claims 8 to 12, wherein

the pressure gauge is arranged to measure an in-pipe pressure at a connection between the first pipe and the second pipe.

14. The diluted solution production apparatus according to claim 13, further comprising

a connection pressure regulator that adjusts the in-pipe pressure at the connection to a specified value based on the measured value of the pressure gauge.