liquid leakage from a pipette due to volatilization of volatile liquid.

SOLUTIONS TO THE PROBLEMS

[0011]

A processing method according to the present disclosure is a processing method for a volatile liquid using a pipette including a cylinder, a piston that slides in the cylinder, and a tip attached to a tip end of the cylinder, the tip including a suction/ejection port, the pipette performing suction and ejection of a liquid through the suction/ejection port of the tip in accordance with movement of the piston. The processing method includes the following steps:

a low-volatility liquid suction step of sucking a low-volatility liquid that is less volatile than the volatile liquid through the suction/ejection port;

an air suction step of sucking air through the suction/ejection port after the low-volatility liquid suction step; and

a volatile liquid suction step of sucking the volatile liquid through the suction/ejection port after the air suction step.

[0011a]

In an aspect, there is provided a processing method for a liquid to be sucked using a pipette including a cylinder, a

piston that slides in the cylinder, and a tip attached to a tip end of the cylinder, the tip including a suction/ejection port, the pipette performing suction and ejection of a liquid through the suction/ejection port of the tip in accordance with movement of the piston, the processing method comprising a liquid suction step of sucking the liquid to be sucked through the suction/ejection port,

the processing method comprising, before the liquid suction step, if the liquid to be sucked is a volatile liquid:

a low-volatility liquid suction step of sucking a low-volatility liquid that is less volatile than the liquid to be sucked through the suction/ejection port; and

an air suction step of sucking air through the suction/ejection port after the low-volatility liquid suction step.

[0012]

A liquid processing apparatus according to the present disclosure is an apparatus configured to perform the processing

piston that slides in a vertical direction in the cylinder, and a tip, the tip being attached to a lower end of the cylinder in such a way that an suction/ejection port provided at a tip end of the tip faces downward, the pipette performing suction and ejection of a liquid through the suction/ejection port of the tip in accordance with movement of the piston;

a driving mechanism that causes the pipette to operate;

a liquid container accommodating a liquid to be sucked;

a low-volatility liquid container accommodating a low-volatility liquid; and

a control part that controls the driving mechanism,

wherein the control part is configured to control the driving mechanism in such a way that, if the liquid to be sucked is a volatile liquid, a low-volatility liquid suction operation of sucking a preset amount of the low-volatility liquid from the low-volatility liquid container, and an air suction operation of sucking a preset amount of air through the suction/ejection port after the low-volatility liquid suction operation are performedbefore a liquid suction operation of sucking a predetermined amount of the liquid to be sucked from the liquid container is.

[0013]

CLAIMS

1. A processing method for a liquid to be sucked using a pipette including a cylinder, a piston that slides in the cylinder, and a tip attached to a tip end of the cylinder, the tip including a suction/ejection port, the pipette performing suction and ejection of a liquid through the suction/ejection port of the tip in accordance with movement of the piston, the processing method comprising a liquid suction step of sucking the liquid to be sucked through the suction/ejection port,

the processing method comprising, before the liquid suction step, if the liquid to be sucked is a volatile liquid:

a low-volatility liquid suction step of sucking a low-volatility liquid that is less volatile than the liquid to be sucked through the suction/ejection port; and

an air suction step of sucking air through the suction/ejection port after the low-volatility liquid suction step.

2. The processing method according to claim 1, wherein the amount of air sucked through the suction/ejection port in the air suction step is determined in accordance with the volatility of the liquid to be sucked and the sucking amount of the liquid to be sucked in the volatile liquid suction step.

3. The processing method according to claim 1 or 2, further comprising;

a checking step of checking whether the liquid to be sucked is a volatile liquid; and

a determining step of determining whether to perform the low-volatility liquid suction step and the air suction step.

4. The processing method according to any one of claims 1 to 3, wherein the low-volatility liquid is any one of water, dimethyl sulfoxide, glycerol, and phenol.

5. The processing method according to any one of claims 1 to 4, wherein the volatile liquid is any one of acetonitrile, methanol, ethanol, acetone, toluene, isopropanol, hexane, butanol, cyclohexane, ethylene glycol, benzene, chloroform, acetaldehyde, triethylamine, phenol, naphthalene, formaldehyde, tetrahydrofuran, and ethyl acetate, or a liquid containing 10% or more of these.

6. A liquid processing apparatus comprising:

a pipette including a vertically positioned cylinder, a piston that slides in a vertical direction in the cylinder, and a tip, the tip being attached to a lower end of the cylinder in such a way that an suction/ejection port provided at a tip end of the tip faces downward, the pipette performing suction

and ejection of a liquid through the suction/ejection port of the tip in accordance with movement of the piston;

a driving mechanism that causes the pipette to operate;

a liquid container accommodating a liquid to be sucked;

a low-volatility liquid container accommodating a low-volatility liquid; and

a control part that controls the driving mechanism,

wherein the control part is configured to control the driving mechanism in such a way that, if the liquid to be sucked is a volatile liquid, a low-volatility liquid suction operation of sucking a preset amount of the low-volatility liquid from the low-volatility liquid container, and an air suction operation of sucking a preset amount of air through the suction/ejection port after the low-volatility liquid suction operation are performed before a liquid suction operation of sucking a predetermined amount of the liquid to be sucked from the liquid container is performed.

7. The liquid processing apparatus according to claim 6, wherein the sucking amount of air of the air suction operation is determined in accordance with the volatility of the liquid to be sucked and the sucking amount of the liquid to be sucked of the volatile liquid suction operation.

8. The liquid processing apparatus according to claim 6 or

7, wherein the control part stores a list of volatile liquids, and is configured to determine whether the liquid to be sucked is a volatile liquid based on the list.

9. The liquid processing apparatus according to any one of claims 6 to 8, wherein the low-volatility liquid is any one of water, dimethyl sulfoxide, glycerol, and phenol.

10. The liquid processing apparatus according to any one of claims 6 to 10, wherein the volatile liquid is any one of acetonitrile, methanol, ethanol, acetone, toluene, isopropanol, hexane, butanol, cyclohexane, ethylene glycol, benzene, chloroform, acetaldehyde, triethylamine, phenol, naphthalene, formaldehyde, tetrahydrofuran, and ethyl acetate, or a liquid containing 10% or more of these.