CLAIMS

WHAT IS CLAIMED IS:

1. A fluid ejection device, comprising:

a fluid supply chamber to store fluid;

a plurality of ejection chambers including nozzles and corresponding ejection members to selectively eject the fluid through the respective nozzles;

a channel to establish fluid communication between the fluid supply chamber and the ejection members;

a temperature adjustment module to establish at least one temperature of the fluid of the fluid ejection device; and

a sensor unit having a sensor plate, the sensor unit to detect at least one impedance in the fluid corresponding to the at least one temperature.

2. The fluid ejection device according to claim 1, wherein the sensor unit selectively detects a first impedance of the fluid corresponding to a first temperature established by the temperature adjustment module and a second impedance of the fluid corresponding to a second temperature established by the temperature adjustment module different than the first temperature.

3. The fluid ejection device according to claim 1, wherein the sensor unit detects a plurality of impedances in the fluid corresponding to the at least one temperature at predetermine time periods.

4. The fluid ejection device according to claim 1, wherein the sensor unit further comprises:

an air bubble detect micro-electro-mechanical systems (ABD MEMS) pressure sensor.

5. The fluid ejection device according to claim 1, wherein the sensor plate is disposed in the channel.

6. The fluid ejection device according to claim 1, wherein the sensor unit comprises a pressure sensor unit such that the sensor plate is disposed in one of the ejection chambers.

7. A fluid ejection device, comprising:

a fluid supply chamber to store fluid;

a plurality of ejection chambers including nozzles and corresponding ejection members to selectively eject the fluid through the respective nozzles;

a channel to establish fluid communication between the fluid supply chamber and the ejection members;

a temperature adjustment module to establish at least one temperature of the fluid of the fluid ejection device; and

an air bubble detect micro-electro-mechanical systems (ABD MEMS) pressure sensor to detect at least one impedance in the fluid corresponding to the at least one temperature, the ABD MEMS including a sensor plate.

8. The fluid ejection device according to claim 16, wherein the ABD MEMS selectively detects a first impedance of the fluid corresponding to a first temperature established by the temperature adjustment module and a second impedance of the fluid corresponding to a second temperature established by the temperature adjustment module different than the first temperature.

9. The fluid ejection device according to claim 7, wherein the ABD MEMS detects a plurality of impedances in the fluid corresponding to the at least one temperature at predetermine time periods.

10. The fluid ejection device according to claim 7, wherein the sensor plate is disposed in the channel.

11. The fluid ejection device according to claim 7, wherein the ABD MEMS comprises a pressure sensor unit such that the sensor plate is disposed in one of the ejection chambers.

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WHAT IS CLAIMED IS:

1. A fluid ejection device, comprising:

a fluid supply chamber to store fluid;

a plurality of ejection chambers including nozzles and corresponding ejection members to selectively eject the fluid through the respective nozzles;

a channel to establish fluid communication between the fluid supply chamber and the ejection members;

a temperature adjustment module to establish at least one temperature of the fluid of the fluid ejection device; and

a sensor unit having a sensor plate, the sensor unit to detect at least one impedance in the fluid corresponding to the at least one temperature.

2. The fluid ejection device according to claim 1, further comprising:

a temperature identification module to identify the at least one temperature of the fluid of the fluid ejection device.

3. The fluid ejection device according to claim 2, wherein the sensor unit selectively detects a first impedance of the fluid corresponding to a first temperature established by the temperature adjustment module and a second impedance of the fluid corresponding to a second temperature established by the temperature adjustment module different than the first temperature.

4. The fluid ejection device according to claim 1, wherein the sensor unit detects a plurality of impedances in the fluid corresponding to the at least one temperature at predetermine time periods.

5. The fluid ejection device according to claim 1, further comprising:

a de-capping module to place the respective nozzles in a non-capped state for a period of time; and

wherein the sensor unit detects the at least one impedance in the fluid while the nozzles are in the non-capped state.

6. The fluid ejection device according to claim 1, wherein the sensor unit further comprises:

an air bubble detect micro-electro-mechanical systems (ABD MEMS) pressure sensor.

7. The fluid ejection device according to claim 1, further comprising:

a generator unit to supply a multi-frequency excitation signal to the sensor unit, the sensor unit to transmit the multi-frequency excitation signal from the sensor plate through the fluid to a grounding member to obtain one of a range of voltage values and a range of current values on the sensor plate.

8. The fluid ejection device according to claim 1, wherein the sensor unit detects electrochemical impedances based on the respective frequencies of the multi-frequency excitation signal and the one of the range of voltage values and the range of current values.

9. The fluid ejection device according to claim 7, wherein the multi-frequency excitation signal comprises at least one of a sinusoidal waveform and a pulse waveform.

10. The fluid ejection device according to claim 1, wherein the sensor plate is disposed in the channel.

11. The fluid ejection device according to claim 7, wherein the sensor unit comprises a pressure sensor unit such that the sensor plate is disposed in one of the ejection chambers.

12. A method of detecting impedance in fluid in a fluid ejection device, the method comprising:

establishing fluid communication between an ejection chamber and a fluid supply chamber through a channel of the fluid ejection device such that the ejection chamber includes a nozzle and an ejection member to selectively the eject fluid through the nozzle;

establishing at least one temperature of the fluid ejection device by a temperature adjustment module; and

detecting at least one impedance in the fluid at the at least one temperature by a sensor unit having a sensor plate.

13. The method according to claim 12, further comprising:

identifying the at least one temperature of the fluid ejection device by a temperature identification module

14. The method according to claim 12, wherein the at least one temperature comprises a plurality of temperatures.

15. The method according to claim 12, wherein the detecting at least one impedance in the fluid at the at least one temperature by a sensor unit having a sensor plate further comprises:

heating fluid to the at least one temperature by a temperature adjustment module;

supplying a multi-frequency excitation signal to the sensor unit from a generator unit;

transmitting the multi-frequency excitation signal by the sensor unit from the sensor plate through the fluid to a grounding member to obtain one of a range of voltage values and a range of current values on the sensor plate; and

detecting electrochemical impedances based on the respective frequencies of the multi-frequency excitation signal and the one of the range of voltage values and the range of current values.